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Supreme Court of the United States

[redacted]

No. 27

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vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1938

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APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

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115 (Excerpts from)—Hearings before the Subcommittee of the House Committee on Appropriations, Seventy-Fourth Congress, Second Session, 1936 (original exhibit) 2222 2691
116 (Excerpts from)—Hearings before the Subcommittee of the House Committee on Appropriations, Seventy-Fifth Congress, First Session, 1937 (original exhibit).. 2228 2700
116-A—Photostat of page 359 of Exhibit 116... 2252 2728
117—Appendix E (contracts), pages 157 to 236 of TVA Annual Report of fiscal year ending June 30, 1935..... 2253 2729
118—Appendix A (contracts), pages 141 to 260 of TVA Annual Report of fiscal year ending June 30, 1936..... 2296 2771
119—Power contract between TVA and Amory, Mississippi, October 15, 1936..... 2358 2846
120—Power contract between TVA and New Albany, March 1, 1937 (omitted)..... 2367 2852
121—Supplemental contract between TVA and Okolona, March 24, 1937..... 2368 2853
122—Supplemental contract between TVA and Holly Springs, February 2, 1937..... 2370 2855
123—Power contract between TVA and Florence, July 6, 1936 (omitted) 2371 2856
124—Power contract between TVA and Tuscumbia, March 8, 1937 (omitted)..... 2371 2857

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125—Power contract between TVA and Knoxville, March 1, 1934	2372	2857
126—Power contract between TVA and Russellville, March 13, 1934	2373	2857
127—Power contract between TVA and Decatur, Alabama, March 14, 1934	2374	2858
128—Power contract between TVA and Guntersville, May 21, 1937	2375	2858
129—Power contract between TVA and Chattanooga, June 17, 1937	2376	2859
130—Power contract between TVA and Middlesboro, Kentucky, July 29, 1937	2377	2860
131—Amendatory contract between TVA and Middlesboro, Kentucky, October 20, 1937 (omitted)	2382	2866
132—Power contract between TVA and Trenton, Tennessee, August 23, 1937	2383	2867
133—Power contract between TVA and Jackson, Tennessee, September 1, 1937	2393	2873
134—Power contract between TVA and Paris, Tennessee, November 2, 1937	2402	2879
135—Power contract between TVA and Prentiss County Electric Power Association, December 1, 1936 (omitted)	2411	2885
136—Power contract between TVA and Cullman County Electric Membership Corporation, August 4, 1936 (omitted)	2411	2886
137—Power contract between TVA and Gibson County Electric Membership Corporation, August 13, 1936 (omitted)	2412	2886
138—Power contract between TVA and Middle Tennessee Electric Membership Corporation, August 13, 1936 (omitted)	2412	2886
139—Power contract between TVA and Pickwick Electric Membership Corporation, August 26, 1936 (omitted)	2413	2886
140—Power contract between TVA and Duck River Electric Membership Corporation, October 31, 1936 (omitted)	2413	2887
141—Power contract between TVA and Southwest Tennessee Electric Membership Corporation, December 9, 1936 (omitted)	2414	2887
142—Power contract between TVA and Joe Wheeler Electric Membership Corporation, September 24, 1937	2415	2887
143—Power contract between TVA and Cherokee County Electric Membership Corporation, November 2, 1937	2416	2888

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144—Power contract between TVA and Northeast Mississippi Electric Power Association, March 26, 1937 (omitted)..... 2417 2888
145—Supplementary contract between TVA and Northeast Mississippi Electric Power Association, July 27, 1937..... 2418 2888
146—Power contract between TVA and Alabama Asphaltic Limestone Company, May 1, 1936 (omitted)..... 2419 2889
147—Power contract between TVA and Goodyear Decatur Mills, May 1, 1936 (omitted) 2419 2889
148—Power contract between TVA and L. & N. Ry. Company, June 22, 1936 (omitted). 2420 2889
149—Power contract between TVA and Rockwood Alabama Stone Company, August 25, 1936 (omitted)..... 2420 2890
150—Power contract between TVA and Robbins Tire & Rubber Company, November 1, 1936 (omitted) 2421 2890
151—Power Contract between TVA and Aluminum Company of America, July 20, 1937 (omitted) 2421 2890
152—Amendatory contract between TVA and Aluminum Company of America, dated July 20, 1937 (omitted) 2422 2890

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153—Power contract between TVA and American Aggregates Corporation, March 29, 1937 (omitted)..... 2423 2891
154—Power contract between TVA and Falkville Milling Company, April 1, 1937 (omitted) 2423 2891
155—Power contract between TVA and Wade & Richey, May 1, 1937 (omitted)..... 2424 2891
156—Power contract between TVA and Lacey Asphaltic Limestone Company, May 13, 1937 (omitted)..... 2424 2891
157—Power contract between TVA and Volunteer Portland Cement Company, August 14, 1936 (omitted)..... 2425 2891
158—Assignment of contract between Volunteer Portland Cement Company and TVA 2426 2892
159—Contract between TVA and United States of America concerning Sardis Dam, March 14, 1937 (omitted) 2430 2894

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160—Contract between TVA and Victor Chemical Works, July 2, 1937 (omitted)..... 2430 2895
161—Contract between TVA and Electro Metallurgical Company, August 17, 1937 (omitted)..... 2431 2895
162—Construction contract between TVA and Meigs County Electric Membership Corporation, June 29, 1936..... 2432 2895
163—Construction contract between TVA and Cullman County Electric Membership Corporation, dated August 4, 1936..... 2449 2909
164—Construction contract between TVA and Cullman County Electric Membership Corporation, dated February 19, 1936... 2453 2911
165—Supplemental construction contract between TVA and Cullman County Electric Membership Corporation, dated February 27, 1937..... 2454 2912
166—Construction contract between TVA and North Georgia Electric Membership Corporation, September 4, 1936..... 2455 2913
167—Construction contract between TVA and Middle Tennessee Electric Membership Corporation, September 15, 1936..... 2456 2914
168—Construction contract between TVA and Southwest Tennessee Electric Membership Corporation, December 9, 1936.... 2457 2914
169—Construction contract between TVA and Gibson County Electric Membership Corporation, March 30, 1937..... 2458 2915
170—Construction contract between TVA and Joe Wheeler Electric Membership Corporation, September 24, 1937..... 2459 2916
170-A—Construction contract between TVA and Joe Wheeler Electric Membership Corporation, May 14, 1937..... 2464 2919
171—Construction contract between TVA and Monroe County Electric Power Association, July 7, 1937..... 2472 2925
172—Construction contract between TVA and Duck River Electric Membership Corporation, June 15, 1937..... 2473 2925
173—Construction contract between TVA and City of Pulaski, August 23, 1935..... 2474 2926
174—Construction contract between TVA and City of Dayton, January 24, 1936..... 2479 2929
175—Construction contract between TVA and Town of Bolivar, September 7, 1937..... 2490 2937

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176—Operating contract between TVA and Lincoln County Electric Membership Corporation, October 1, 1935 ..... 2491 2938
177—Supplemental contract between TVA and Lincoln County Electric Membership Corporation, June 19, 1936 ..... 2495 2941
178—Operating contract between TVA and Monroe County Electric Power Association, February 1, 1936 ..... 2496 2941
179—Operating contract between TVA and Pickwick Electric Membership Corporation, April 21, 1936 ..... 2499 2943
180—Operating contract between TVA and Bedford Electric Membership Corporation, May 18, 1936 ..... 2505 2947
181—Sale and loan contract between TVA and Gibson County Electric Membership Corporation, August 13, 1936 ..... 2510 2950
182—Map showing the location of new industries in the State of Alabama (original exhibit) [omitted] 2522 2960
183—Chart showing the Alabama Power Company gross sales of appliances annually from 1927 to 1936 (original exhibit) [omitted] 2523 2960
184—Graph showing the number of miles of rural lines of the Alabama Power Company in each of the years from 1923 to date (original exhibit) [omitted] 2523 2960
185—Copy of the rules of the Alabama Public Service Commission concerning rural lines 2524 2961
186—Memorandum listing municipalities which sold their systems to the Alabama Power Company 2531 2967
187—Rotogravure pamphlet issued by the Electric Home and Farm Authority (original exhibit) [omitted] 2532 2968
188—Booklet printed by the United States Printing Office describing the various TVA projects (original exhibit) 2533 2969
189—Booklet entitled "TVA Electricity Rates" (original exhibit) 2533 2977
190—Booklet entitled "Development of the Tennessee Valley" (original exhibit) .. 2533 2985
191—List of Alabama towns voting to acquire electric systems in the years 1933 to 1937 ..... 2534 3001

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192—Comparison of the rates of the Alabama Power Company and the TVA.....	2535	3002
193—Contingent power contract between residential consumers and the City of Albertville, Alabama (omitted)	2536	3003
194—Letter from Rockwood Alabama Stone Company to Alabama Power Company, giving notice of termination of contract.	2537	3003
195—Letter from Decatur Iron & Steel Company to Alabama Power Company, giving notice of termination of contract...	2538	3004
196—Power contract between TVA and Alcorn County Electric Power Association, dated June 30, 1937.....	2539	3004
197—Binder contract signed by Hammond Green with the City of Albertville, Alabama	2541	3006
198—Comparison of The Tennessee Electric Power Company and Tennessee Valley Authority rates	2542	3007
199—Map of Northeast Mississippi showing lines of Mississippi Power Company, TVA, cooperatives and municipalities (original exhibit) [omitted].....	2542	3007
200—Letters from the City of Columbus to the Mississippi Power Company.....	2544	3008
201—Letters from the City of Aberdeen to the Mississippi Power Company.....	2547	3011
202—Letter from the Mayor of Starkville to the Mississippi Power Company.....	2552	3015
203—Binder contract circulated in the City of Columbus, Mississippi	2553	3016
204—Questionnaire filled out by J. L. Street for the City of Columbus, Mississippi.....	2554	3016
205—Map of West Tennessee and Paris districts of Kentucky-Tennessee Light & Power Company (original exhibit) [omitted]	2558	3017
206—Map of North Tennessee division of the Tennessee Electric Power Company (original exhibit) [omitted]	2559	3017
207—Map of East Tennessee division of Tennessee Electric Power Company (original exhibit) [omitted]	2560	3017
208—Map of Middle Tennessee division of The Tennessee Electric Power Company (original exhibit) [omitted].....	2561	3017

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Complainants' Exhibits Nos.—Continued.	Original	Print
209—Map of Cumberland division of The Tennessee Electric Power Company (original exhibit) [omitted]	2562	3018
210—Map of West Tennessee Power & Light Company territory (original exhibit) [omitted]	2563	3018
211—List of former customers of West Tennessee Power & Light Company now being served by the City of Jackson with TVA power	2564	3019
212—Letter November 2, 1937 from Thompson Baking Company to West Tennessee Power & Light Company	2565	3020
213—Letter of Earl Wall of TVA distributed in West Tennessee Power & Light Company territory	2566	3021
214-223, incl.—Franchises granted by Alabama counties to TVA	2567	3022
224—Power contract dated November 5, 1937 between TVA and Tippah County Electric Power Association	2572	3026
225-264, incl.—Franchises granted by Tennessee Counties to TVA	2573	3026
265—Franchise from Town of Fayetteville to TVA	2594	3037
266—Map of Tennessee showing counties granting franchises to TVA (original exhibit) [omitted]	2597	3040
267-274, incl.—Charters of Alabama Co-operative Associations	2598	3040
275-319, incl.—Franchises granted by Tennessee counties to co-operative associations	2607	3049
320—Map of Tennessee showing counties granting franchises to co-operative associations (original exhibit) [omitted]	2631	3066
321—Map of Tennessee showing counties which have granted electric franchises to TVA counties which have granted electric franchises to electric membership corporations and counties which have granted electric franchises to both TVA and electric membership corporations (original exhibit) [omitted]	2632	3066
322—Certificate of Secretary of State showing TVA has not qualified to do business in Tennessee	2633	3066
323—Certificate of Secretary of State of Georgia showing TVA has not qualified to do business in Georgia	2635	3067

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Statement of evidence—Continued.

Complainants' Exhibits Nos.—Continued.	Original	Print
324—Certificate of Secretary of State showing TVA has not qualified to do business in Mississippi	2635	3067
325—Certificate of Secretary of State showing TVA has not qualified to do business in Alabama	2635	3068
326—Map of Northern Division of Alabama Power Company (original exhibit) [omitted]	2636	3068
327—Map entitled "Transmission and Distribution systems of the complainant companies and transmission lines of others situated within 250 miles of any TVA dam whether constructed or authorized or recommended for construction" (original exhibit) [omitted]	2637	3068
328—Report to Congress by TVA on "The Unified Development of the Tennessee River System" (original exhibit) [omitted]	2638	3068
329—Map of the Dalton division of the Georgia Power Company (original exhibit) [omitted]	2639	3069
330—Map of the State of Georgia showing transmission and distribution system of the Georgia Power Company and municipalities in which that Company owns distribution systems and arcs 100, 150 and 250 miles from Chickamauga, Guntersville and Hiwassee Dams (original exhibit) [omitted]	2640	3069
331—Tabulation showing the number of customers and the total kwh. sales within each of the three zones shown on map, Exhibit 330	2641	3070
332—Map of the transmission and rural distribution lines of the complainant companies, the Tennessee Valley Authority and the cooperatives (original exhibit) [omitted]	2642	3071
332-a—Map entitled "Transmission and rural distribution lines completed, under construction and proposed in the area penetrated by TVA as of November 1, 1937" (original exhibit [omitted]	2642	3071
333—Map showing the relation of the TVA transmission lines to the load centers in the area (omitted)	2642	3071

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Complainants' Exhibits Nos.—Continued. Original Print
333-a—Map enttiled "TVA Transmission lines completed, under construction and proposed, and principal load centers of TVA and complainant companies situated within 100 miles of any TVA dam constructed, or authorized or recommended for construction" (original exhibit) [omitted] 2643 3071
334—Design of a system to serve existing TVA loads (original exhibit) [omitted]..... 2643 3071
335—Map showing the transmission lines of the complainants and the load centers in the area (omitted) 2643 3072
335-a—Map entitled "Transmission lines of complainant companies completed and under construction and principal load centers of TVA and complainant companies situated within 100 miles of any TVA dam constructed or authorized or recommended for construction" (original exhibit) [omitted] 2644 3072
336—Maps showing the lines of the Tennessee Electric Power Company by five-year intervals from 1917 to date (original exhibit) [omitted] 2645 3072
337—Letter May 14, 1937 of notice sent by the Tennessee Railroad and Public Utilities Commission in connection with the proposed Nashville steam plant (omitted). 2645 3072
338—Contract between the Yates Bleachery Company and The Tennessee Electric Power Company dated April 13, 1937 (omitted in printing) 2646 3072
339—Pencil memorandum in the hand writing of Mr. Ayres, containing a comparison of TVA, TEP Co., and the Georgia Power Company rates 2650 3073
340—Note left by Mr. Ayres with A. E. Yates, giving T. R. Hunnicutt's Chattanooga address (omitted) 2651 3073
341—Proposed contract between the Yates Bleachery Company and the North Georgia Electric Membership Corporation 2652 3074
342—Map and profile showing the low dam plan (original exhibit) [omitted]..... 2666 3083
343—Map and profile showing the TVA plan (original exhibit) [omitted]..... 2666 3083

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344—Chart showing water traffic on the Tennessee River, 1927 to 1934, relation of sand and gravel movement (original exhibit) [omitted] 2666 3083
345—Chart showing the approximate distribution of average freight movements on the Tennessee River, 1927 to 1934, inclusive (original exhibit) [omitted]... 2666 3083
346—Chart showing a comparison of the alternative methods of developing the Tennessee River (original exhibit) [omitted] 2666 3083
347—A page from the Waterways Journal of St. Louis, Missouri, September 18, 1937, relating an incident concerning a storm near Wheeler Dam (omitted) 2667 3083
348—Tabulation showing the 1930 population of cities and towns on the Tennessee River and tributaries which suffer from flood damage 2668 3084
349—Table showing the flood damages to cities and towns, railways and highways in the entire Tennessee River Basin..... 2669 3084
350—Chart showing variation in flow day by day during the maximum flood to be expected on the Tennessee River at and above Chattanooga (Knoxville, Loudon and Chattanooga) (original exhibit) [omitted] 2670 3085
351—Chart of the flood profile of the Tennessee River from Knoxville to Chattanooga, showing the bottom of the river, the low water line, a line joining the highest stage at various points reached by the highest flood of record, and a line joining the peak stage at various points reached by the maximum flood to be expected (original exhibit) [omitted].. 2670 3085
352—Map of the Tennessee River Basin showing the location of the system of flood control reservoirs designed by Ford Kurtz and the existing power reservoirs in May, 1933 (original exhibit) [omitted] 2670 3085
353—Table showing certain engineering data on system of flood control to achieve maximum practicable protection 2671 3086

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354—Map of the Tennessee River Basin showing the TVA Unified Plan recommended to Congress and the existing power reservoirs in May, 1953 (original exhibit) [omitted]	2672	3087
355—Table showing the engineering data on the elements of the TVA Unified Plan which would in any way affect floods at and above Chattanooga	2673	3088
356—Table listing the towns and cities on the main river and the Emory River showing the comparison of reductions in maximum flood stage above Chattanooga which would be brought about by the Kurtz system of flood control and the non-dependable reductions which might be brought about by the TVA Unified Plan	2674	3088
357—Chart showing reductions in flow day by day which would be brought about by flood control system recommended by Kurtz and by the TVA Unified Plan during the maximum flood to be expected on the Tennessee River at and above Chattanooga (Knoxville, Loudon and Chattanooga) (original exhibit) [omitted]	2675	3089
358—Chart showing the reduction in flow day by day which would be brought about at Harriman by the proposed flood control system during the maximum flood to be expected on the Emory River (original exhibit) [omitted]	2675	3089
359—Graph entitled "Flood profile of the Tennessee River, Knoxville to Chattanooga, showing reductions in stage which would be brought about by recommended flood control system and by TVA Unified Plan" (original exhibit) [omitted]	2675	3089
360—Table showing a comparison of lands which would be flooded by the recommended flood control system and by the TVA Unified Plan	2676	3090
361—Chart showing a comparison of the recommended flood control system and the TVA Unified Plan as to construction costs and additional prime power at sixty per cent load factor (original exhibit) [omitted]	2677	3091

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362—Chart entitled "Comparison of the power and flood control functions of the Norris Dam and reservoir as constructed in TVA's Unified Plan with the proposed dam and reservoir on the Clinch River in the recommended flood control system" (original exhibit) [omitted]..... 2677 3091
363—Tabulation showing the costs of transportation on land and on water..... 2678 3091
364 (Excerpts from)—Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, Seventy-Fourth Congress, First Session (original exhibit) 2679 3092
365 Excerpts from)—Hearings before the Committee on Military Affairs, House of Representatives, Seventy-Fourth Congress, First Session (original exhibit). 2694 3110
366 (Excerpts from)—Hearings before the Committee on Military Affairs, House of Representatives, Seventy-Fourth Congress, First Session, Volume 2 (original exhibit) 2706 3121
367—Table showing combined one-hour peaks by months for the Appalachian Electric Power Company, the Kentucky and West Virginia Power Company and Kingsport Utilities, Inc. for the years 1928 to 1937 2711 3126
368—Graph showing the curve of the combined system peaks of Appalacnian Electric Power Company, Kentucky & West Virginia Power Company, and Kingsport Utilities, Inc., and also the estimate of the demand for the future..... 2712 3126
369—Table showing by years the combined loads and generating capacities from 1928 to 1941 inclusive of the Appalachian Electric Power Company, the Kentucky and West Virginia Power Company and Kingsport Utilities, Inc..... 2713 3126
370—Graph showing the combined loads and generating capacities from 1928 to 1941 for Appalachian Electric Power Company, Kentucky & West Virginia Power Company, and Kingsport Utilities, Inc..... 2714 3126
371—Table "Summary of Capacities Available to Commonwealth & Southern System—1937 (Southern System)"..... 2715 3127

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372—Graph of Commonwealth & Southern Corporation southern properties, capacities and loads from 1929 to 1939 (original exhibit) [omitted] 2716 3128
373—Complete resolution of the Knoxville City Council dated February 21, 1933..... 2717 3128
374—A booklet consisting of ten sheets entitled "Adequacy of Power Supply Facilities, Carolina Power & Light Company, Tennessee Public Service Company and Holston River Electric Company"..... 2718 3128
375—A booklet consisting of seven pages entitled "Adequacy of Power Supply Facilities, Arkansas Power & Light Company, Louisiana Power & Light Company, Memphis Power & Light Company, Mississippi Power & Light Company and West Tennessee Power & Light Company"..... 2729 3139
376—A booklet consisting of three pages entitled "Birmingham Electric Company Actual and Estimated Load Data 1927 to 1940, inclusive" 2736 3146
377—A contingent power contract for residential consumers circulated in Scottsboro prior to the municipal election there..... 2739 3149
378—A letter, dated February 22, 1936, from David Lilienthal to Roy McCullough, Jr. 2740 3150
379—This number inadvertently was given to a non-existent deposition exhibit..... 2742 3153
380—Copy of an agreement dated April 6, 1936, between TVA and the promoters of the North Georgia Electric Membership Corporation 2743 3153
381—Petition for charter of the North Georgia Electric Membership Corporation [omitted] 2748 3155
382—Order of Whitfield County Superior Court granting the charter to the North Georgia Electric Membership Corporation [omitted] 2748 3156
383—Assignment of the promoters' agreement by the promoters to the North Georgia Electric Membership Corporation 2749 3156
384—Map of the lines of the North Georgia Electric Membership Corporation attached to the TVA-North Georgia Electric Membership Corporation construction contract of June, 1936 [omitted]..... 2752 3157

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385—Construction loan contract between the United States of America (REA) and North Georgia Electric Membership Corporation dated September 2, 1936 [omitted]	2753	3158
386—Mortgage deed of trust between North Georgia Electric Membership Corporation and the First National Bank of Dalton [omitted]	2753	3158
387—By-laws of the North Georgia Electric Membership Corporation	2754	3158
388—Article entitled "Here are the Answers"	2771	3169
389—Letter dated March 31, 1937, from R. Carter Pittman to T. R. Hunnicutt, Division Manager of TVA at Chattanooga	2775	3171
390—Transcribed notes of a meeting at Cullman on May 6, 1936, at which a cooperative organization was organized	2777	3173
391—Form TVA 189-DE [omitted]	2794	3184
392—TVA form 231-DE [omitted]	2794	3184
393—Rural electrification survey neighborhood plan, information sheet [omitted]	2794	3184
394—TVA form 211-DE for discount on wiring for electric ranges and water heaters	2795	3185
395—Check dated July 21, 1937, from TVA to T. L. Bonner for wiring house	2797	3186
396—Remittance advice from TVA to T. L. Bonner	2798	3187
397—Envelope in which matter was sent by TVA to T. L. Bonner	2799	3188
398—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of June 24, 1936	2800	3189
399—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of November 4, 1936	2818	3201
400—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation on November 13, 1936	2821	3204
401—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation dated March 4, 1937	2828	3209
402—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of March 19, 1937	2833	3212
403—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of April 6, 1937	2837	3215

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404—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of June 4, 1937 ..... 2844 3220
405—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of June 16, 1937 ..... 2849 3223
406—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of July 6, 1937 ..... 2864 3233
407—By-laws of Middle Tennessee Electric Membership Corporation [omitted] 2871 3238
408—TVA Proposed Rural Electrical Development, Rutherford-Wilson project 2872 3238
409—Map entitled "Mississippi River System, drainage areas of main tributaries" (original exhibit) [omitted] 2882 3244
410—Map showing Mississippi River flood control plan (original exhibit) [omitted] .. 2883 3244
411—Diagram showing relation between valley storage without dam, valley storage eliminated by reservoir, and controllable storage available 2884 3244
412—Letter dated September 8, 1937, to J. F. Burleson, as Mayor of Haleyville, from Martin G. Gheser of TVA 2885 3244
413—Letter dated February 12, 1935, from F. F. Beauchamp of TVA to the City of Cullman, Alabama [omitted] 2886 3245
414—Letter dated April 13, 1936, to F. F. Beauchamp of TVA from Mayor Dunlap of Cullman [omitted] 2886 3245
415—Letter dated May 27, 1936, to F. F. Beauchamp of TVA from Mayor Dunlap of Cullman [omitted] 2886 3245
416—Letter dated July 9, 1936, to Mayor Dunlap from F. F. Beauchamp [omitted] ... 2886 3245
417—Letter dated August 4, 1936, to F. F. Beauchamp from Mayor Dunlap [omitted] .. 2886 3246
418—Report of Electric Power Board of Review re City of Decatur, Alabama 2887 3246
419—Application for loan and grant by Sheffield, Alabama. (Original and revised applications) 2893 3249
420—Loan and grant contract between Sheffield, Alabama and PWA dated December 28, 1934 ..... 2895 3251
421—Application for loan and grant by Tuscumbia, Alabama. (Original and revised applications) 2916 3270

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Complainants' Exhibits Nos.—Continued.	Original	Print
422—Loan and grant contract between PWA and Tuscumbia, Alabama	2916	3270
423—Application for loan and grant by Courtland, Alabama	2917	3271
424—Loan and grant contract between Courtland, Alabama, and PWA [omitted]	2919	3272
425—PWA Form 210, dated July 1, 1936, entitled "Terms and Conditions [omitted]	2919	3272
426—Application for loan and grant by Decatur, Alabama	2920	3273
427—PWA loan and grant contract with the City of Decatur, dated December 6, 1934	2923	3276
428—Letter from David Lilienthal to Captain R. H. Elliott, Director of PWA, dated April 6, 1934, re Decatur application	2924	3276
429—Letter dated April 10, 1934, to David E. Lilienthal from R. H. Elliott in reply to preceding Exhibit	2926	3278
430—Application for loan and grant by Hartselle, Alabama	2927	3278
431—PWA loan and grant contract with Hartselle, Alabama [omitted]	2929	3280
432—Supplemental PWA contract with Hartselle, Alabama, dated December 4, 1935	2929	3281
433—Application for loan and grant by Muscle Shoals, Alabama	2930	3281
434—PWA loan and grant contract dated December 16, 1935, with Muscle Shoals, Alabama [omitted]	2931	3282
435—Subsequent PWA contract with Muscle Shoals, Alabama, dated February 29, 1936 [omitted]	2931	3282
436—Application for loan and grant by Russellville, Alabama	2931	3282
437—PWA loan and grant contract with Russellville, Alabama, dated November 9, 1935 [omitted]	2932	3283
438—Subsequent PWA contract with Russellville, Alabama, dated December 4, 1935 [omitted]	2932	3283
439—Application for loan and grant by Guntersville, Alabama	2932	3283
440—PWA loan and grant contract with Guntersville, Alabama, dated November 2, 1935 [omitted]	2935	3286
441—PWA contract with City of Guntersville, Alabama, dated December 4, 1935 [omitted]	2935	3286

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Statement of evidence—Continued.
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442—Application for loan and grant by Tarrant City, Alabama. (Original and revised applications) 2935 3286
443—PWA loan and grant contract with Tarrant City, Alabama..... 2938 3289
444—Application for loan and grant by Bessemer, Alabama. (Original and revised applications) 2939 3290
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446—Memorandum from O. M. Rau of the Electrical Power Board of Review of PWA to Henry T. Hunt, PWA Deputy Administrator, dated August 29, 1934..... 2944 3295
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464—Letter dated March 8, 1934, from H. M. Waite, PWA Deputy Administrator, to David E. Lilienthal of TVA..... 2967 3311
465—Letter dated March 23, 1934, from P. M. Benton, PWA Finance Director, to David E. Lilienthal of TVA..... 2969 3312
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481—Letter from K. S. Wingfield, of PWA, to Joseph Swidler, TVA attorney, dated December 22, 1933..... 2980 3320
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485—Senate document 184, Seventy-Fourth Congress, Second Session (original exhibit) [omitted] 2990 3329
486—Table showing kwhr. generated including both firm and secondary power in the seven States of the Tennessee Valley.... 2991 3329
487—Comparison of average of the yield of bonds of nine of the complainant Companies with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted] 2992 3329
488—Comparison of the yield of Alabama Power Company 4½% bonds due 1967 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted].... 2992 3329
489—Comparison of the yield of Appalachian Electric Power Company 5% bonds due 1956 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted] 2992 3330
490—Comparison of the yield of Birmingham Electric Company 4½% bonds due 1968 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted] 2992 3330
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505—Table showing out-of-pocket costs of TVA power, Unified Plan—ultimate development, excluding initial stage of Wilson Dam 3008 3344
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518—TVA Board of Directors resolution dated August 29, 1935, and allotment release attached concerning rural lines in Prentiss County, Mississippi..... 3019 3357
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543—TVA Board of Directors resolution dated September 21, 1936, and allotment release attached concerning rural and transmission lines for the Middle Tennessee Electric Membership Corporation..... 3031 3368
544—TVA Board of Directors resolution dated September 23, 1936, and allotment release attached concerning rural line construction for City of Athens in Limestone County, Alabama 3032 3369
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547—TVA Board of Directors resolution dated October 22, 1936, and allotment release attached concerning Mimosa rural line extension in Lincoln County, Tennessee [omitted] 3034 3371
548—TVA Board of Directors resolution dated October 26, 1936, and allotment release attached concerning New Albany, Mississippi, rural line..... 3034 3371
549—TVA Board of Directors resolution dated December 7, 1936, and allotment release attached concerning rural lines for Gibson County Electric Membership Corporation 3035 3372
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553—TVA Board of Directors resolution dated April 9, 1937, and allotment release attached concerning rural lines in Franklin County, Alabama 3037 3374
554—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning additions to Tupelo and Pontotoc substations and having reference to the Sardis Dam line..... 3038 3375
555—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning rural lines in Lawrence and Morgan Counties, Alabama.. 3038 3376
556—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning rural line to New Harmony for the city of New Albany, Mississippi [omitted] 3039 3376
557—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the Pontotoc-Sardis transmission line and Sardis substation [omitted] 3039 3377
558—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the changes in the Hartselle substation [omitted]..... 3039 3377
559—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the rural line extension and substation changes for Tishomingo County Electric Power Association [omitted] 3040 3377
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562—TVA Board of Directors resolution dated July 2, 1937, and allotment release attached concerning 110 kv. Arkansas tie line from Memphis [omitted]..... 3040 3378
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564—TVA Board of Directors resolution dated July 23, 1937, and allotment release attached concerning service to the Volunteer Portland Cement Company..... 3041 3378
565—TVA Board of Directors resolution dated August 13, 1937, and allotment release attached concerning rural lines for the Duck River Electric Membership Corporation, Tennessee 3041 3378
566—TVA Board of Directors resolution dated August 13, 1937, and allotment release attached concerning rural lines for South west Tennessee Electric Membership Corporation 3042 3379
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568—TVA Board of Directors resolution dated October 16, 1933, authorizing contracts with Florence, Tuscumbia, Sheffield, Muscle Shoals and other municipalities on the Tupelo transmission line..... 3043 3379
569—TVA Board of Directors resolution dated December 15, 1933 authorizing Mr. Lilienthal to create a corporation to discount commercial paper to be obtained from manufacturers of electrical appliances licensed by TVA (EHFA) 3043 3380
570—TVA Board of Directors resolution dated December 16, 1933, approving the construction of rural lines in the five Mississippi counties of Lee, Pontotoc, Monroe, Alcorn, Tishomingo, and Lauderdale county in Alabama..... 3043 3380

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572—TVA Board of Directors resolution dated June 3, 1937, authorizing Dr. Morgan to write a letter to the War Department with reference to Sardis Dam and the line thereto 3048 3386
573—TVA Board of Directors resolution dated October 5, 1937, and the exhibit attached thereto concerning the construction of power houses at Chickamauga and Guntersville dams 3050 3388
574—TVA Board of Directors resolution dated July 30, 1933, authorizing the construction of a transmission line from Wilson Dam to Cove Creek..... 3051 3389
575—TVA Board of Directors resolution dated October 16, 1933, authorizing certain basic provisions to be placed in the contracts between TVA and municipalities, a copy of which provisions is attached to the resolution 3051 3389
576—TVA Board of Directors resolution dated October 16, 1933, approving the wholesale rate schedule for Tupelo, a copy of which is attached 3055 3393
577—TVA Board of Directors resolution dated May 31, 1934, authorizing a contract which is attached between TVA and the Alcorn County E. P. A..... 3056 3395
578—A series of resolutions of the Board of Directors dated July 27, 1934, and the contract between TVA and the Carolina Power and Light Company attached thereto 3061 3401
579—TVA Board of Directors resolution concerning Young and Rubicam contract.. 3064 3406
580—TVA Board of Directors resolution dated October 9, 1934, with the attached resolution of the city council of Knoxville.. 3065 3406
581—TVA Board of Directors resolution dated March 18, 1935, authorizing a contract attached thereto with EHFA..... 3069 3412
582—TVA Board of Directors resolution dated May 7, 1935, approving an agreement between TVA and the city of Athens dated April 23, 1935, attached thereto..... 3076 3421

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583—TVA Board of Directors resolution dated July 25, 1935, approving a contract between TVA and Tishomingo County Electric Power Association dated July 19, 1935, a copy of which is attached thereto [omitted]	3079	3426
584—TVA Board of Directors resolution dated November 16, 1935, approving a contract between TVA and Tombigbee Electric Power Association dated October 19, 1935, a copy of which is atached thereto [omitted]	3080	3427
585—TVA Board of Directors resolution dated November 16, 1935, approving a contract with the City of Dayton entitled "Agreement for Cooperation in Construction of Rural Lines," November 2, 1935	3081	3427
586—TVA Board of Directors resolution dated November 16, 1935, approving a supplementary contract between TVA and Alcorn County Electric Power Association, August 26, 1936, a copy of which is attached thereto [omitted]	3083	3430
587—TVA Board of Directors resolution dated December 20, 1935, approving a contract between TVA and New Albany, Mississippi, a copy of which is attached thereto [omitted]	3083	3430
588—TVA Board of Directors resolution dated December 23, 1935, approving the contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services dated October 1, 1935, a copy of which is attached thereto [omitted]	3083	3430
589—TVA Board of Directors resolution dated December 31, 1935, approving a supplementary contract between TVA and Alcorn County Electric Power Association dated December 31, 1935, a copy of which is attached thereto	3084	3430
590—TVA Board of Directors resolution dated January 10, 1936, authorizing construction of a dam in the Hiwassee River on the Fowler Bend site	3085	3432
591—TVA Board of Directors resolution dated December 31, 1935, authorizing construction of Chickamauga Dam	3086	3433

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592—TVA Board of Directors resolution dated January 18, 1936, approving a sale and loan contract between TVA and Monroe County Electric Power Association, dated January 15, 1936, a copy of which is attached thereto..... 3086 3433
593—TVA Board of Directors resolution dated February 1, 1936, approving a contract between TVA and Dayton, Tennessee, for the sale of rural lines, dated January 24, 1936, a copy of which is attached thereto 3090 3439
594—TVA Board of Directors resolution dated February 10, 1936, approving a contract between TVA and the city of Amory dated February 14, 1936, a copy of which is attached thereto [omitted]..... 3093 3441
595—TVA Board of Directors resolution dated February 11, 1936, approving a sale and loan contract between TVA and Pontotoc County Electric Power Association dated February 12, 1936, a copy of which is attached thereto..... 3098 3441
596—TVA Board of Directors resolution dated February 11, 1936, approving a contract between TVA and Monroe County Electric Power Association concerning the operation of rural lines and the collection of bills dated February 1, 1936, a copy of which is attached thereto [omitted] 3100 3451
597—TVA Board of Directors resolution dated April 27, 1936, approving a contract between Alcorn County Electric Power Association, Pickwick Electric Membership Corporation and TVA dated April 21, 1936, a copy of which is attached thereto 3101 3451
598—TVA Board of Directors resolution dated April 27, 1936, approving the execution of a quitclaim deed from the TVA to the Alcorn County Electric Power Association [omitted]..... 3105 3457
599—TVA Board of Directors resolution dated April 27, 1936, approving a contract between Pickwick Electric Membership Corporation and TVA dated April 21, 1936, a copy of which is attached thereto 3105 3457

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600—TVA Board of Directors resolution dated April 27, 1936, approving a contract between TVA and Alcorn County Electric Power Association dated April 21, 1936, a copy of which is attached thereto [omitted] 3105 3457
601—TVA Board of Directors resolution dated May 28, 1936, approving an operation contract between Bedford County Electric Membership Corporation and TVA dated May 18, 1936, a copy of which is attached thereto..... 3105 3457
602—TVA Board of Directors resolution dated July 31, 1936, approving an amendment to an agreement between the Meigs County Electric Membership Corporation and TVA, a copy of which is attached to the exhibit [omitted]..... 3106 3458
603—TVA Board of Directors resolution dated August 11, 1936, approving a contract between TVA and Cullman County Electric Membership Corporation dated August 4, 1936, a copy of which is attached thereto 3106 3458
604—TVA Board of Directors resolution dated August 21, 1936, approving a sale and loan agreement between TVA and Gibson County Electric Membership Corporation dated August 13, 1936, a copy of which is attached thereto..... 3106 3458
605—TVA Board of Directors resolution dated September 5, 1936, approving an agreement for sale between TVA and Pickwick Electric Membership Corporation dated August 26, 1936, a copy of which is attached thereto [omitted]..... 3106 3458
606—TVA Board of Directors resolution dated September 5, 1936, approving a supplementary contract between TVA and Milan, Tenn., dated May 25, 1936, a copy of which is attached thereto [omitted]. 3107 3459
607—TVA Board of Directors resolution dated September 5, 1936, approving a contract for the sale of properties between TVA and the city of Athens, Alabama, dated October 9, 1936, a copy of which is attached thereto [omitted]..... 3107 3459

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608—TVA Board of Directors resolution dated December 23, 1936, approving a contract between TVA and Southwest Tennessee Electric Membership Corporation dated December 9, 1936, a copy of which is attached thereto [omitted] 3107 3459
609—TVA Board of Directors resolution dated December 23, 1936, approving a contract between TVA and Duck River Electric Membership Corporation dated October 31, 1936, a copy of which is attached thereto [omitted] 3107 3459
610—TVA Board of Directors resolution dated January 8, 1937, approving a contract between TVA and Lincoln County Electric Membership Corporation, a copy of which is attached thereto [omitted] 3108 3459
611—TVA Board of Directors resolution dated February 11, 1937, approving a so-called emergency operation contract between TVA and Tishomingo County Electric Power Association dated January 26, 1937, a copy of which is attached thereto [omitted] 3108 3460
612—TVA Board of Directors resolution dated February 11, 1937, approving a supplementary contract between TVA and Holly Springs, Mississippi, dated February 2, 1937, a copy of which is attached thereto 3108 3460
613—TVA Board of Directors resolution dated March 10, 1937, approving a contract between TVA and Dayton, Tennessee, dated March 17, 1937, a copy of which is attached thereto [omitted] 3108 3460
614—TVA Board of Directors resolution dated March 31, 1937, approving a contract entitled "Emergency Operation Contract between TVA and Alcorn County Electric Power Association," dated April 1, 1937, a copy of which is attached thereto [omitted] 3108 3460
615—TVA Board of Directors resolution dated April 9, 1937, approving the transfer of certain franchises from TVA to the Southwest Tennessee Electric Membership Corporation [omitted] 3108 3460

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616—TVA Board of Directors resolution dated April 9, 1937, approving a supplementary contract between TVA and Okolona, Miss., dated March 24, 1937, a copy of which is attached thereto 3109 3461
617—TVA Board of Directors resolution dated June 3, 1937, authorizing the construction of 110 kv. transmission line between Norris Dam and Volunteer Portland Cement Company [omitted] 3109 3461
618—TVA Board of Directors resolution dated June 3, 1937, approving a contract between TVA and Bolivar, Tenn., dated March 20, 1937, a copy of which is attached thereto 3109 3461
619—TVA Board of Directors resolution dated June 9, 1937, approving a contract with the Electric Power Board of Chattanooga, Tenn. [omitted] 3114 3466
620—TVA Board of Directors resolution dated June 23, 1937, approving an "Emergency Operation Contract between TVA and Dickson, Tennessee", dated June 11, 1937, a copy of which is attached thereto [omitted] 3114 3467
621—TVA Board of Directors resolution dated July 12, 1937, granting an extension of time to the Monroe County Electric Power Association for the first payment of principal on its indebtedness to the TVA 3114 3467
622—TVA Board of Directors resolution dated July 20, 1937, approving a supplementary contract between TVA and Athens, Alabama, dated July 23, 1937, a copy of which is attached thereto..... 3115 3468
623—TVA Board of Directors resolution dated July 29, 1937, approving a contract entitled "Emergency Operation Contract between TVA and Pickwick Electric Membership Corporation" dated July 14, 1937, a copy of which is attached thereto [omitted] 3117 3471
624—TVA Board of Directors resolution dated July 29, 1937, approving a contract between TVA and Joe Wheeler Electric Membership Corporation for the sale and construction of rural lines dated May 14, 1937, a copy of which is attached thereto 3118 3471

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625—TVA Board of Directors resolution dated August 13, 1937, approving the sending of a letter by Mr. Lilienthal to Mr. Dempster, city manager, of Knoxville, Tenn., a copy of which letter is attached thereto 3118 3472
626—TVA Board of Directors resolution dated August 13, 1937, approving a supplementary contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services dated June 29, 1937, a copy of which is attached thereto [omitted].... 3122 3476
627—TVA Board of Directors resolution dated September 24, 1937, unanimously approving a schedule of generating installations at the various dam projects..... 3122 3476
628—Telegram dated May 13, 1936, from Edgar M. Queeny of the Monsanto Chemical Company to Wendell Willkie..... 3123 3477
629—A chart of the soundings made in the upper regions of the pool above Mitchell Dam and a study of the approach channel and locks at the head of that reservoir 3124 3478
630—A table showing the cost to the Alabama Power Company of the facilities devoted solely to navigation on the Alabama, Coosa and Tallapoosa river systems.... 3125 3479
631—Excerpts from the application of the Alabama Power Company for a license for Jordon Dam 3126 3479

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632—A table showing the payments from 1921 to 1936 inclusive made to the United States by the Alabama Power Company on account of the licenses issued by the Federal Power Commission to that company 3139 3487
633—Press release dated August 25, 1933, entitled "Power Policy of the Tennessee Valley Authority" 3140 3487
634—Press release dated September 14, 1933 announcing the TVA rates..... 3142 3490
635—A magazine article dated August 14, 1937, entitled "The Tennessee Valley Looks to the Future" 3144 3493

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636—(This exhibit was withdrawn by agreement of counsel when counsel for Defendants permitted the desired data to be read into the record) 3160 3509
637—PWA press release No. 44 ..... 3161 3509
638—PWA press release No. 468 [omitted] 3164 3510
639—PWA press release No. 709 ..... 3165 3511
640—PWA press release No. 868 [omitted] 3167 3512
641—PWA press release No. 989 ..... 3168 3512
642—PWA press release No. 1165 ..... 3172 3514
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644—Letter dated November 8, 1933, signed by H. M. Waite, deputy administrator 3178 3517
645—President's letter creating the National Power Policy Committee 3180 3518
646—PWA press release [omitted in printing] 3183
647—"Power Views of Franklin D. Roosevelt" .. 3209 3520
648—Press release of EHFA dated May 20, 1935 ..... 3260 3550
649—Contract between TVA and EHFA (first three pages only offered in evidence) .. 3266 3554
650—EHFA circular, March, 1937, re plan for financing retail purchase of electrical appliances 3269 3555
651—EHFA circular, May, 1936, re plan for financing retail purchase of electrical appliances 3272 3559
652—EHFA circular [omitted] 3273 3559
653—EHFA circular re time payment plan 3274 3559
654—EHFA circular, dated April, 1935, re plan for financing retail purchase of electrical appliances 3282 3564
655—EHFA circular 3283 3564
656—EHFA circular listing the territories where EHFA service was available 3286 3568
657-680 Incl.—Correspondence and memoranda between TVA and EHFA 3290 3571
681—EHFA Press Release dated May 26, 1934.
682—List as of June 30, 1937 giving the locations and numbers of dealers for which TVA collects 3338 3598
683—REA Press Release, dated August 7, 1936 [omitted] 3339 3599
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685—Letter dated April 28, 1936 to REA from North Georgia Electric Membership Corporation over the signature of R. C. Pittman to REA	3342	3600
686—Message of the Governor of Tennessee to the Legislature, January 22, 1935	3350	3605
687—Message of the Governor of Tennessee to the Legislature, April 8, 1935	3356	3609
688—Charter issued by the State of Tennessee to the Middle Tennessee Electric Membership Corporation [omitted]	3365	3618
689—A Subpoena Duces Tecum for the books and records of TVA showing the number of employees in the Department of Electricity as of October 1, 1937, etc.	3366	3618
690—A Subpoena Duces Tecum for a copy of the letter, dated on or about October 15, 1934, from TVA (Lilienthal) to Mayor Overton of Memphis	3367	3618
691—A Subpoena Duces Tecum for various letters of TVA beginning with a letter dated on or about March 27, 1934, from TVA or Mr. Lilienthal to the President of the United States or Federal Trade Commission	3368	3619
692—A Subpoena Duces Tecum for various letters and telegrams passing between Senator Black of Alabama and TVA	3369	3620
693—A Subpoena Duces Tecum for all letters and telegrams between TVA and REA from and after May 11, 1935	3370	3621
694—A Subpoena Duces Tecum for a press release dated on or about September 7 or 8, 1937, and a copy of speech given by David Lilienthal on or about November 17, 1933	3371	3621
695—A Subpoena Duces Tecum requesting various letters and circular letters issued by TVA beginning with a circular letter dated on or about September 21, 1936, from B. S. Robinson of TVA entitled "Another Electrical Fair for your Benefit"	3372	3622
696—A Subpoena Duces Tecum for various letters and telegrams passing between TVA and the North Alabama cities and PWA officials beginning with a letter dated on or about October 16, 1933, from Harry Berry to TVA or Director Lilienthal	3374	3623

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697—A Subpoena Duces Tecum for three letters beginning with a letter dated on or about October 5, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal.. 3376 3625
698—A resolution of the TVA Board of Directors, dated August 21, 1936, concerning pool level elevations at Chickamauga Dam 3377 3626
699—A resolution of the TVA Board of Directors, dated November 18, 1933, authorizing Mr. Lilienthal to continue co-operation with the manufacturers of electrical appliances 3377 3627
700—Tennessee Valley Authority five-year program condensed statement..... 3378 3628
701—Excerpt from TVA Minutes, dated June 26, 1933..... 3379 3629
702—Excerpt from TVA Minutes, dated July 11, 1933 ..... 3380 3629
703—Excerpt from TVA Minutes, dated July 30, 1933 ..... 3382 3630
704—Excerpt from TVA Minutes, dated August 5, 1933 ..... 3385 3631
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706—Excerpt from TVA Minutes, dated September 21, 1933..... 3388 3632
707—Excerpt from TVA Minutes, dated September 29, 1933..... 3396 3636
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710—Excerpt from TVA Minutes, dated October 24, 1933..... 3413 3644
711—Excerpt from TVA Minutes, dated October 24, 1933 ..... 3416 3645
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713—Excerpt from TVA Minutes, dated December 16, 1933 ..... 3422 3648
714—Excerpt from TVA Minutes, dated January 19, 1934..... 3423 3648
715—Excerpt from TVA Minutes, dated March 30, 1934 ..... 3424 3649
716—Excerpt from TVA Minutes, dated April 13, 1934 ..... 3431 3652
717—Excerpt from TVA Minutes, dated June 30, 1934 ..... 3435 3653

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718—Excerpt from TVA Minutes, dated July 17, 1934 ..... 3438 3655
719—Excerpt from TVA Minutes, dated August 7, 1934 ..... 3439 3655
720—Excerpt from TVA Minutes, dated September 18, 1934..... 3441 3656
721—Copy of letter from Arthur E. Morgan, Chairman of the TVA Board of Directors to President Roosevelt, dated May 10, 1934 ..... 3442 3656
722-769 inclusive—(These numbers were inadvertently given by the reporter to press releases in the Ashwander Case which are given other exhibit numbers in this case. There are, therefore, no physical exhibits bearing these numbers.)..... 3449 3659
770—Synopsis of letter from Henry T. Hunt of PWA to David Lilienthal and letter in reply thereto from Mr. Lilienthal to Mr. Hunt dated November 22, 1934..... 3450 3659
771—Copy of telegram dated June 19, 1934, from Mayor Farr of Tuscumbia to David Lilienthal 3453 3661
772—Telegram dated June 20, 1934, from David Lilienthal to Mayor Farr..... 3454 3661
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774—Budgetary statement—"Estimate of appropriations fiscal year ending June 30, 1936" and the justification thereof..... 3457 3663
775—TVA answers to certain interrogations respective to its corporate functions..... 3464 3666
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777—Opinion of PWA Electric Power Board of Review re Decatur, Alabama..... 3469 3668
778—Order of the Power Administrator establishing the Electric Power Board of Review 3478 3673
779—TVA Press Release, dated August 22, 1933. Opposition before Federal Power Commission to application by private companies for license 3480 3673
780—TVA Press Release, dated July 24, 1933. Llewellyn Evans sent to Muscle Shoals area 3481 3674
781—TVA Press Release, dated July 31, 1933. Preparation of plans for transmission line 3483 3675

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783—TVA Press Release, dated August 10, 1933. Division of duties among directors	3485	3676
784—TVA Press Release, dated August 24, 1933. Applications from cities	3488	3677
785—TVA Press Release, dated August 30, 1933. Transmission line surveys start	3489	3678
786—TVA Press Release, dated August 31, 1933. A. E. Morgan address before Kiwanis Club of Knoxville	3490	3679
787—TVA Press Release, dated September 2, 1933. Transfer of Muscle Shoals properties to TVA	3491	3679
788—TVA Press Release, dated September 5, 1933. Application from municipalities	3492	3679
789—TVA Press Release, dated September 22, 1933. Conditions for construction of Wheeler Dam	3494	3680
790—TVA Press Release, dated September 28, 1933. D. E. Lilienthal address before Rotary Club of Chattanooga	3496	3681
791—TVA Press Release, dated October 9, 1933 Bids on Transmission line equipment	3502	3684
792—TVA Press Release, dated October 11, 1933. Announcement of A. E. Morgan broadcast	3504	3685
793—TVA Press Release, dated October 12, 1933. Text of A. E. Morgan broadcast	3505	3686
794—TVA Press Release, dated October 13, 1933. Lilienthal's statement re local elections	3508	3687
795—TVA Press Release, dated October 15, 1933. CCC cooperation with TVA	3509	3688
796—TVA Press Release, dated October 17, 1933. Lilienthal address before Rotary Club of Memphis	3511	3689
797—TVA Press Release, Dated October 20, 1933. A. E. Morgan address to Chamber of Commerce of Asheville, N. C.	3518	3693
798—TVA Press Release, dated November 4, 1933. Awarding contract for Transmission line equipment	3523	3695
799—TVA Press Release, dated November 7, 1933. Lilienthal address before Rotary, Chamber of Commerce and Exchange Clubs of Nashville	3525	3696
800—TVA Press Release, dated November 11, 1933. Lilienthal address before Lawyers Club, Atlanta, Georgia	3536	3702

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801—TVA Press Release, dated November 15, 1933. Terms and conditions for retail sales of electricity by municipalities... 3548 3709
802—TVA Press Release, dated November 19, 1933. A. E. Morgan statement re importance of electric power..... 3553 3712
803—TVA Press Release, dated November 21, 1933. A. E. Morgan address to National Academy of Sciences, Boston, Mass.... 3555 3713
804—TVA Press Release, dated November 22, 1933. Sheffield, Alabama, contract for TVA power 3561 3716
805—TVA Press Release, dated December 5, 1933. CWA cooperation with TVA.... 3563 3717
806—TVA Press Release, dated December 5, 1933. A. E. Morgan address to American Institute of Electrical Engineers, New York City..... 3564 3718
807—TVA Press Release, dated December 12, 1933. CWA cooperation with TVA.... 3572 3722
808—TVA Press Release, dated December 18, 1933. TVA to develop Aurora project on Tennessee River..... 3574 3723
809—TVA Press Release, dated December 20, 1933. Construction of lines and CWA cooperation 3576 3724
810—TVA Press Release, dated December 20, 1933. Announcement of creation of Electric Home and Farm Authority, Inc. 3578 3725
811—TVA Press Release, dated December 20, 1933. Announcement of creation and purposes of Electric Home and Farm Authority, Inc. 3580 3726
812—TVA Press Release, dated December 28, 1933. Announcement of proposed organization of farm cooperatives..... 3582 3727
813—TVA Press Release, dated January 5, 1934. Announcement of agreement with C. & S..... 3583 3728
814—TVA Press Release, dated January 5, 1934. Supplemental statement re agreement TVA-C. & S..... 3587 3730
815—TVA Press Release, dated January 6, 1934. Lilienthal address before American Academy of Political & Social Science, Philadelphia 3590 3731
816—TVA Press Release, dated January 20, 1934. Organization of EHFA perfected. 3598 3735

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817—TVA Press Release, dated January 20, 1934. Lilienthal address broadcast.... 3601 3737
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825—TVA Press Release, dated April 5, 1934. Personnel of EHFA..... 3624 3750
826—TVA Press Release, dated April 6, 1934. Organization of County cooperatives in Mississippi and Alabama..... 3626 3751
827—TVA Press Release, dated April 6, 1934. Announcement of sale and demonstration by EHFA at Tupelo..... 3629 3752
828—TVA Press Release, dated April 7, 1934. EHFA offices at Chattanooga..... 3632 3753
829—TVA Press Release, dated April 9, 1934. EHFA activities 3634 3755
830—TVA Press Release, dated April 10, 1934. EHFA appliance prices..... 3636 3756
831—TVA Press Release, dated April 10, 1934. Announcement of plan of county cooperatives 3639 3758
832—TVA Press Release, dated April 16, 1934. EHFA and TVA emblem..... 3641 3759
833—TVA Press Release, dated April 17, 1934. TVA emblem and announcement of purpose 3645 3761
834—TVA Press Release, dated April 22, 1934. Lilienthal address before Tennessee Valley Institute of University of Chattanooga 3647 3762
835—TVA Press Release, dated April 22, 1934. EHFA offices and display rooms at Chattanooga 3659 3768

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836—TVA Press Release, dated April 23, 1934. Announcement of TVA contract with advertising agency	3661	3768
837—TVA Press Release, dated April 25, 1934. EHFA electric home specialists	3663	3770
838—TVA Press Release, dated April 25, 1934. Electrical home	3664	3770
839—TVA Press Release, dated April 25, 1934. Lilienthal address before League of Women Voters, Boston, Mass	3665	3771
840—TVA Press Release, dated April 25, 1934. Origin of TVA emblem	3684	3781
841—TVA Press Release, dated April 26, 1934. EHFA demonstration at Tupelo	3686	3782
842—TVA Press Release, dated May 16, 1934. A. E. Morgan address before the Lower Tennessee Valley Association	3689	3783
843—TVA Press Release, dated May 17, 1934. Lilienthal address before the National Association of Mutual Savings Banks, New York	3699	3788
844—TVA Press Release, dated May 18, 1934. A. E. Morgan address to the Civic Clubs of Huntsville, Alabama	3713	3798
845—TVA Press Release, dated May 18, 1934. The first year of the TVA	3724	3801
846—TVA Press Release, dated May 21, 1934. Broadcast of Directors	3727	3803
847—TVA Press Release, dated January 22, 1936. Lilienthal address to National Retail Dry Goods Association, Annual Convention, New York	3731	3805
848—TVA Press Release, dated December 30, 1935. Lilienthal address at meeting of American Historical Association and American Political Science Association, Chattanooga	3733	3806
849—TVA Press Release, dated April 10, 1936. Announcement of expansion of lines—PWA loan to Okolona	3738	3809
850—TVA Press Release, dated April 13, 1936. Announcement of construction of rural lines	3739	3809
851—TVA Press Release, dated April 18, 1936. Announcement of construction of rural lines	3740	3810
852—TVA Press Release, dated July 23, 1936. Announcement of contract with Aluminum Company of America	3741	3810

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854—TVA Press Release, dated August 19, 1936. Announcement of contract with Volunteer Portland Cement Company..... 3745 3812
855—TVA Press Release, dated August 28, 1936. Cullman County Electric Fair..... 3746 3812
856—TVA Press Release. Announcement of construction of rural lines..... 3748 3813
857—TVA Press Release, dated October 1, 1936. Norris Dam generators in operation.... 3749 3814
858—TVA Press Release, dated October 12, 1936. Athens, Alabama, county-wide distribution 3750 3814
859—TVA Press Release, dated October 17, 1936. Wm. I. Nichols, address before Public Ownership League of America, Springfield, Ill. 3753 3815
860—TVA Press Release, dated November 16, 1936. A. E. Morgan address before U. S. Conference of Mayors, Washington, D. C. 3756 3817
861—TVA Press Release, dated March 23, 1937. A. E. Morgan address before Annual Conference of Schoolmens' Week, University of Minnesota..... 3759 3818
862—TVA Press Release, dated November 28, 1935. Publication of telegram and TVA letter re construction of rural lines by companies 3763 3820
863—TVA Press Release, dated May 30, 1934. A. E. Morgan address before the Central States Forestry Congress..... 3774 3826
864—TVA Press Release, dated June 1, 1934. Payment to Mississippi Power Company for property transferred..... 3781 3829
865—TVA Press Release, dated June 3, 1934. Contract with Alcorn County Electric Power Association 3782 3830
866—TVA Press Release, dated June 12, 1934. EHFA combined appliances..... 3788 3834
867—TVA Press Release, dated June 13, 1934. Release of correspondence with National Power & Light Company re Knoxville purchase 3790 3834
868—TVA Press Release, dated June 22, 1934. Lilienthal address at Jackson, Tennessee, to civic leaders..... 3820 3850

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869—TVA Press Release, dated June 23, 1934. Receipt of offer for sale of Alabama properties 3824 3852
870—TVA Press Release, dated July 1, 1934. Statement of Carl A. Bock re dams.... 3825 3853
871—TVA Press Release, dated July 6, 1934. Announcement of plan for purchase of North Alabama properties and exposition of methods whereby towns may obtain TVA electricity..... 3828 3854
872—TVA Press Release, dated July 14, 1934. Statement of Carl A. Bock re construction of dam near Asheville, N. C..... 3830 3856
873—TVA Press Release, dated July 15, 1934. Announcement of reduced bills through TVA power at Athens, Alabama..... 3831 3856
874—TVA Press Release, dated July 15, 1934. Announcement of exercise of option from Alabama Power Company re North Alabama towns 3832 3856
875—TVA Press Release, dated July 17, 1934. Announcement of agreement to acquire property of Tennessee Public Service Company at Knoxville..... 3834 3857
876—TVA Press Release, dated July 18, 1934. Savings which will result from purchase of Tennessee Public Service Company property 3842 3861
877—TVA Press Release, dated July 18, 1934. A. E. Morgan announcement re coal industry 3845 3863
878—TVA Press Release, dated July 27, 1934. Announcement of execution of contract for purchase of Tennessee Public Service Company properties..... 3847 3864
879—TVA Press Release, dated August 1, 1934. John B. Blandford, Jr., broadcast..... 3852 3867
880—TVA Press Release, dated August 7, 1934. Lilienthal and Llewellyn Evans study English Grid System..... 3857 3869
881—TVA Press Release, dated August 27, 1934. List of towns applying or making inquiries for power..... 3860 3871
882—TVA Press Release, dated October 1, 1934. Visit of Power Authority of State of New York to TVA..... 3864 3873

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883—TVA Press Release, dated October 2, 1934. A. E. Morgan address before the Technical Club of Madison and Milwaukee Engineering Club 3867 3874
884—TVA Press Release, dated October 6, 1934. Statement filed by the TVA with the Alabama Public Service Commission... 3874 3878
885—TVA Press Release, dated October 8, 1934. Service to rural lines in Lauderdale County, Alabama 3886 3884
886—TVA Press Release, dated October 9, 1934. Statement by Lilienthal upon conclusion of visit of trustees of New York Power Authority 3888 3886
887—TVA Press Release, dated October 22, 1934. E. S. Draper, address at National Conference on City Planning and American Civic Association, St. Louis, Mo..... 3889 3886
888—TVA Press Release, dated November 7, 1934. Statement issued on first anniversary of Norris Dam construction..... 3894 3889
889—TVA Press Release, dated October 26, 1934. A. E. Morgan's transactions with coal associations 3896 3889
890—TVA Press Release, dated November 19, 1934. Arrangement for valuation of private utilities' property at Aurora Dam site 3900 3892
891—TVA Press Release, dated December 17, 1934. A. E. Morgan address at Wharton School, University of Pennsylvania.... 3903 3893
892—TVA Press Release, dated November 5, 1934. A. E. Morgan address before the Democratic Women's Luncheon Club at Philadelphia 3909 3896
893—TVA Press Release, dated January 16, 1935. Announcement TVA will open office in Birmingham on January 18th.. 3917 3900
894—TVA Press Release, dated May 13, 1935. A. E. Morgan address before Rotary Club of Columbus, Ohio..... 3918 3901
895—TVA Press Release, dated July 31, 1935. A. E. Morgan address before Chattanooga Flood Protection District Commission, at Chamber of Commerce, Chattanooga 3921 3903
896—TVA Press Release, dated September 22, 1935. Announcement of celebration at Fayetteville, Tennessee 3935 3910

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897—TVA Press Release, dated October 1, 1935. Lilienthal address at Fayetteville on opening of farm lines in Lincoln County, Tennessee	3938	3911
898—TVA Press Release, dated October 21, 1935. Sixth Rural Cooperative launched	3945	3915
899—TVA Press Release, dated October 24, 1935. Lilienthal address at Dickson, Tennessee	3947	3916
900—TVA Press Release, dated November 2, 1935. TVA transmission loop in West Tennessee	3954	3920
901—TVA Press Release, dated November 26, 1935. Lilienthal address before meeting under auspices of City of Louisville, Kentucky	3956	3921
902—TVA Press Release, dated July 29, 1936. Morgan address before TVA employees at Knoxville	3963	3924
903—A map of the Gilbertsville pool at elevation 370 [omitted]	3965	3925
904—"Figure 3. Capacity Curve for Norris Reservoir with Controlling Elevations" taken from article by James S. Bowman in "Civil Engineering", April, 1935 (original exhibit)	3966	3925
905—"Figure 2. Storage Required for Various Regulated Flows at Florence, Alabama" taken from article by James S. Bowman in "Civil Engineering" for April, 1935 (original exhibit)	3966	3925
906—A photograph of the plaque on the Miami Conservancy dams, stating that the use of the dams for power development would be a menace to the cities below [omitted]	3966a	5926
907—A hydrograph of elevation of Norris Reservoir during 1936 and 1937 (original exhibit) [omitted]	3967	3929
908—A Resolution of the Board of Directors of TVA dated July 1, 1936, creating a Committee on Water Control Operations	3968	3929
909—A chart from page 515 of Complainants' Exhibit 115 (Hearings on Second Deficiency Appropriations Bill, 1937) showing TVA system demand generator installations and firm power capacity, actual and projected to the end of 1940 (original exhibit) [omitted]	3969	3929

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910—Daily reports of releases of water at Norris Dam [omitted]	3970	3929
910-A—A water control bulletin dated December 19, 1936, concerning the operation of Wheeler reservoir	3971	3930
910-B—A sheet of statistics concerning river stages and rainfall for the date February 9, 1937	3972	3930
911—Daily reports of releases of water at Norris Dam [omitted]	3973	3931
912—Defendants' Exhibit 29 in the Ashwander case, showing Norris Dam and the amount of dead storage available there and the amount available for flood control (original exhibit) [omitted]	3974	3931
913—Plate 19 from Volume 2 of House Document 328, which is a graph of floods on the Tennessee River (original exhibit) [omitted]	3975	3931
914—Defendants' Exhibit 30 in the Ashwander case, which is a sketch showing surcharge storage provided to compensate for flood storage displaced by a reservoir (original exhibit) [omitted]	3975	3931
915—Defendants' Exhibit 31 in the Ashwander case, which is a graph of the Tennessee River showing channel storage below Knoxville (original exhibit) [omitted]	3975	3931
916—A table based upon the daily river bulletins of TVA, identified as Complainants' Exhibit 910, showing the discharge below Norris Dam in August, September and October, 1936	3976	3932
917—A list of the dams proposed in C. T. Barker's substitute navigation scheme	3977	3933
918—The TVA Neighborhood Plan	3978	3934
919—Operating statistics of TVA for the month of August, 1937	3990	3946
920—A table showing the farm census data for Alabama as of January 1, 1935	3997	3953
921—A table prepared by the Statistical Department of the Edison Electric Institute stating certain figures concerning rural electrification in the United States	3998	3954
922—A letter dated January 8, 1938, to the Alabama Power Company from the Rockwood Alabama Stone Company [omitted]	3999	3955

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923—Water control bulletins Nos. 1 to 9 inclusive 4000 3955
924—Papers designated as water control memorandum Nos. 1 to 24 inclusive, the first one being dated July 27, 1937, and the last one being dated December 31, 1937 4007 3961
925—Map prepared by the Tennessee Valley Authority Project Planning Division entitled "Tennessee River Plan and Profile Existing and Proposed High Dams" (original exhibit) [omitted] 4019 3973
926—Table entitled "Tennessee Valley Authority Tabulation of Principal Features of Present and Proposed Dam and Reservoir Projects September 29, 1937"..... 4020 3974
927—Chart entitled "Tennessee Valley Authority Proposed Program of Dam Construction" 4021 3974
928—The original power contract between TVA and the City of Florence, dated March 12, 1934 ..... 4022 3975
929—The original power contract between TVA and the City of Tuscumbia, dated March 14, 1934 ..... 4029 3980
930—The original power contract between TVA and the City of Sheffield, dated March 14, 1934 ..... 4030 3981
931—Subpoena duces tecum for report of United States Department of the Interior, Bureau of Reclamation, entitled, "Economic Height of Norris Dam," by E. B. Debler, Hydraulic Engineer, dated November 1, 1933 ..... 4031 3982
932—Table entitled "Comparative Lockage Times per Lock (no allowance for open river navigation)" 4032 3982
933—A diagram entitled "Coal Transfer and Transit Facilities" at Norris Dam (original exhibit) [omitted]..... 4033 3983
934—A table showing the gross hydro plant generation in kwh. of the Alabama Power Company at Lay Dam, Mitchell Dam, Jordan Dam, Martin Dam, Upper Tallassee Dam and Thurlow Dam for the years 1932 to 1936..... 4034 3984
935—A table entitled "Comparative Lockage Times—Tennessee River" 4035 3984
936—House Document 306, 74th Congress, First Session (original exhibit) [omitted]... 4036 3985

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937—Four sheets showing the proposed subscribers on Highway No. 15 near Fayetteville, Tennessee, and the amount subscribed by each..... 4037 3986
938—A report labeled "Memorandum Covering Proposed Electric Service to Elora, Tennessee, Flintville, Tennessee, U. S. Government Fish Hatchery in Warren Hollow, Kelso, Tennessee..... 4041 3987
939—A letter dated November 10, 1932, to Mr. Joe C. Guild, Jr., from Malcolm R. Williams enclosing a letter to Mr Williams dated September 27, 1932, from Charlie Beatty 4045 3991
940—A report of the district engineer entitled "Memorandum as to the feasibility of extending a 2300 volt single phase line from Fayetteville to serve the communities of Kelso, Flintville and the U. S. Government Fish Hatchery"..... 4047 3993
941—A tabulation of floods which have occurred between April 15 and November 30 on rivers in and near the Tennessee River basin 4048 3994
942—A table and a chart showing the weekly loads of the Complainant Companies for the year 1937..... 4050 3996
943-953, Inc.—Certificates of Incorporation of Mississippi Rural Cooperative Organizations 4051 3996
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[fol. 1] [File endorsement omitted]

IN CHANCERY COURT OF KNOX COUNTY, TENNESSEE

THE TENNESSEE ELECTRIC POWER COMPANY, a Maryland Corporation; Franklin Power & Light Company, a Tennessee Corporation; Memphis Power & Light Company, a New Jersey Corporation; Southern Tennessee Power Company, a Delaware Corporation; Birmingham Electric Company, an Alabama Corporation; Mississippi Power Company, a Maine Corporation; Appalachian Electric Power Company, a Virginia Corporation; Georgia Power Company, a Georgia Corporation; Carolina Power & Light Company, a North Carolina Corporation; Tennessee Public Service Company, a Maine Corporation; Holston River Electric Company, a Tennessee Corporation; Alabama Power Company, an Alabama Corporation; Kentucky & West Virginia Power Company, Inc., a Kentucky Corporation; Kingsport Utilities, Incorporated, a Virginia Corporation; Kentucky-Tennessee Light & Power Co., a Kentucky Corporation; West Tennessee Power & Light Company, a Florida Corporation; Mississippi Power & Light Company, a Florida Corporation; East Tennessee Light & Power Company, a Virginia Corporation; Tennessee Eastern Electric Company, a Massachusetts Corporation, Complainants,

VS.

TENNESSEE VALLEY AUTHORITY, a Body Corporate, Created by an Act of Congress Approved May 18, 1933; Arthur E. Morgan, Individually and as an Executive Officer and Director of Tennessee Valley Authority; Harcourt A. Morgan, Individually and as an Executive Officer and Director of Tennessee Valley Authority, and David E. Lilienthal, Individually and as an Executive Officer and Director of Tennessee Valley Authority, Defendants.

[fol. 2] BILL OF COMPLAINT FOR AN INJUNCTION AND OTHER RELIEF—Filed May 29, 1936; Filed in D. C. U. S., July 15, 1936

To The Hon. A. E. Mitchell, Chancellor, Holding the Chancery Court at Knoxville, Tennessee:

Complainants, for cause of action against the Defendants, allege:

Parties Complainant

I

Complainant, The Tennessee Electric Power Company, is a corporation organized and existing under the laws of the State of Maryland, is a citizen of said state, is duly qualified to carry on its business in the State of Tennessee and in the State of Georgia, and is a resident of said states, having its principal office and place of business in the City of Chattanooga, Tennessee.

Complainant, Franklin Power & Light Company, is a corporation organized and existing under the laws of the State of Tennessee, is a citizen of said State and has its principal office and place of business in the City of Franklin, Tennessee.

Complainant, Memphis Power & Light Company, is a corporation organized and existing under the laws of the State of New Jersey, is a citizen of said state, is duly qualified to carry on its business in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Memphis, Tennessee.

Complainant, Southern Tennessee Power Company, is a corporation organized and existing under the laws of the State of Delaware, is a citizen of said state, is duly qualified to carry on its business in the states of Alabama and Tennessee and is a resident of said states, having its principal office and place of business in the City of Chattanooga, Tennessee.

Complainant, Birmingham Electric Company, is a corporation organized and existing under the laws of the State [fol. 3] of Alabama, is a resident and citizen of the State of Alabama and has its principal office and corporate domicile in the City of Birmingham, Alabama.

Complainant, Mississippi Power Company, is a corporation organized and existing under the laws of the State of Maine, is a citizen of said state, is duly qualified to carry on its business in the State of Mississippi, and is a resident of said state, having its principal office and place of business in the City of Gulfport, Mississippi.

Complainant, Appalachian Electric Power Company, is a corporation organized and existing under the laws of the State of Virginia, is a resident and citizen of the State of Virginia, is duly qualified to carry on its business in the

States of Virginia and West Virginia, and has its principal office and corporate domicile in the City of Roancke, Virginia.

Complainant, Georgia Power Company, is a corporation organized and existing under the laws of the State of Georgia, is a resident and citizen of the State of Georgia, and has its principal office and corporate domicile in the City of Atlanta, Georgia.

Complainant, Carolina Power & Light Company, is a corporation organized and existing under the laws of the State of North Carolina, is a resident and citizen of the State of North Carolina, is duly qualified to carry on its business in the States of North Carolina and South Carolina, and has its principal office and corporate domicile in the City of Raleigh, North Carolina.

Complainant, Tennessee Public Service Company, is a corporation organized and existing under the laws of the State of Maine, is a citizen of said state, is duly qualified to carry on its business in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Knoxville, Tennessee.

Complainant, Holston River Electric Company, is a corporation organized and existing under the laws of the State of Tennessee, is a resident and citizen of the State of Ten- [fol. 4] nessee, and has its principal office and corporate domicile in the City of Rogersville, Tennessee.

Complainant, Alabama Power Company, is a corporation organized and existing under the laws of the State of Alabama, is a resident and citizen of the State of Alabama and has its principal office and corporate domicile in the City of Attalla, Alabama.

Complainant, Kentucky & West Virginia Power Company, Inc., is a corporation organized and existing under the laws of the State of Kentucky, is a resident and citizen of the State of Kentucky, and has its principal office and corporate domicile in the City of Ashland, Kentucky.

Complainant, Kingsport Utilities, Incorporated, is a corporation organized and existing under the laws of the State of Virginia, is a citizen of said state, is duly qualified to carry on its business in the State of Tennessee, and is a resident of Tennessee, having its principal office and place of business in the City of Kingsport, Tennessee.

Complainant, Kentucky-Tennessee Light & Power Co., is a corporation organized and existing under the laws of the

State of Kentucky, is a citizen of the State of Kentucky, is duly qualified to carry on its business in the State of Kentucky and in the State of Tennessee, and is a resident of said states, having its principal office and place of business in the City of Bowling Green, Kentucky.

Complainant, West Tennessee Power & Light Company, is a corporation organized and existing under the laws of the State of Florida, is a citizen of said state, is duly qualified to carry on its business in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Jackson, Tennessee.

Complainant, Mississippi Power & Light Company, is a corporation organized and existing under the laws of the State of Florida, is a citizen of said state, is duly qualified to carry on its business in the State of Mississippi, and is a [fol. 5] resident of said state having its principal office and place of business in the City of Jackson, Mississippi.

Complainant, East Tennessee Light & Power Company, is a corporation organized and existing under the laws of the State of Virginia, is a resident and citizen of the State of Virginia, is duly qualified to carry on its business in the States of Virginia, Tennessee, and North Carolina, and has its principal office and corporate domicile in the City of Bristol, Virginia.

Complainant, Tennessee Eastern Electric Company, is a corporation organized and existing under the laws of the State of Massachusetts, is a citizen of said state, is duly qualified to carry on its business in the States of Virginia, Tennessee, and North Carolina, and has its principal office and place of business in the city of Bristol, Tennessee.

Parties Defendant

II

The Defendant, Tennessee Valley Authority (hereinafter sometimes called TVA), is a body corporate created by an Act of Congress approved May 18, 1933 (48 Stat. 58, 16 U. S. C. 831) known as the Tennessee Valley Authority Act of 1933, with the right to sue and be sued. TVA has established and maintains its principal office and place of business in the City of Knoxville, Tennessee, from which it carries on a proprietary business as a public utility for the generation, transmission, distribution and sale of elec-

tric light, heat, and power in the State of Tennessee, Mississippi, Georgia and Alabama, although it has not qualified to do business in any of said States. Said Defendant TVA, as hereinafter more specifically set forth, is exercising and threatening to exercise, and is performing and threatening to continue to perform certain acts pursuant to alleged powers and authority claimed by it to be conferred upon it by said Tennessee Valley Authority Act of 1933, as amended, but which powers and authority are not actually, lawfully or constitutionally conferred upon or vested in it thereby.

[fol. 6] The Defendants, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal, are severally over the age of twenty-one years, citizens of the State of Tennessee and residents of Knoxville, Tennessee. They are the three chief Executive Officers and sole members of the corporate authority of the Tennessee Valley Authority known as its Board of Directors. Under the Tennessee Valley Authority Act of 1933, both prior to and subsequent to the amendment of 1935, said Board of Directors has been and is charged with the duty of directing the exercise of all the powers of the Tennessee Valley Authority. They are sued in their respective individual capacities, and also in their joint and several capacities as officers and directors of, and constituting the governing board of said Tennessee Valley Authority. They, and each of them, are as hereinafter more specifically set forth, exercising and threatening to exercise, and are performing and threatening to continue to perform, certain acts pursuant to alleged powers and authority claimed by them to be conferred upon them and each of them in their aforesaid official capacitites under said Tennessee Valley Authority Act of 1933, and amendments thereto, but which powers and authority are not actually, lawfully, or constitutionally, conferred upon or vested in them or in any of them thereby.

Persons Not Joined as Beyond Jurisdiction of Court

III

Harold L. Ickes is the duly appointed, qualified and acting Administrator of the Federal Emergency Administration of Public Works (hereinafter sometimes called PWA), appointed by Executive Order of the President of the

United States of America dated July 8, 1933, in pursuance of the provisions of Section 201(a) of Title of the Act of Congress of June 16, 1933, entitled "National Industrial Recovery Act." He confederated and acted with the Defendants in the performance of some of the acts hereinafter charged to be illegal and is a proper but not neces-
[fol. 7] sary party. He is not joined as a party Defendant because he is not within the jurisdiction of this Court in that he is a citizen of the State of Illinois, temporarily residing in the District of Columbia.

Capacities in Which Complainants Sue

IV

Complainants have a common interest in the subject of this suit and in obtaining the relief herein sought in that all of them are affected in substantially the same way by the operation of the Tennessee Valley Authority Act and by the acts of the Defendants sought to be justified under that Act. The injuries from which Complainants seek relief are all caused by the operation of said Act and by the same acts of the Defendants hereinafter charged to be illegal. This suit is brought to enjoin the execution of a single unlawful plan on the part of the Defendants directed against the business of the Complainants as a class, not because of any individual characteristics of the various businesses of the Complainants, but because the Complainants are operating as privately owned utilities within certain territory hereinafter more particularly described. The unlawful actions of the Defendants are all parts of a comprehensive plan, which would not be made fully apparent by the partial disclosures of several suits, nor could a series of separate suits show fully the injuries to the Complainants threatened by the consummation of the unlawful plan and action of the Defendants. The promotion of the convenient administration of justice and the prevention of a multiplicity of suits justify and require that Complainants unite their causes of action and join in a single suit.

[fol. 8] V

Complainants institute and bring this suit each in its several capacities as citizens and property owners lawfully engaged in business and as owners of real and personal

property and franchises, suffering or threatened with irreparable injury to such rights and properties and further as Federal, State, County and municipal taxpayers sustaining special damages and special tax burdens peculiar to them and not sustained by taxpayers generally. Unless the relief prayed for herein is granted, Complainants' said businesses, properties and franchises will be irreparably injured, damaged or destroyed with the result that each Complainant will suffer direct pecuniary loss far in excess of $3,000 and in many cases amounting to many millions of dollars, all as hereinafter more particularly set forth.

Status of Complainants as Taxpayers

VI

Complainants are each subject to special tax burdens to which taxpayers generally are not subject, including, among others, the tax imposed by Section 616 of the Federal Revenue Act of 1932, as amended, upon electrical energy sold by Complainants for domestic and commercial consumption in an amount equal to 3% of the price for which Complainants sell the same, social security taxes and special taxes for unemployment and relief now imposed by general Revenue Acts but formerly imposed by Sections 211 to 219, inclusive, of the National Industrial Recovery Act for the purpose of obtaining funds to repay monies borrowed by the Federal Government to meet expenditures purported to be authorized by Title II of said Act, or to meet such expenditures directly to the extent that they are not met by borrowed funds. Complainants are also severally subject to and pay large sums in the form of general taxes to the Federal Government.

In addition to the general and special tax burdens hereinabove set forth, Complainants and each of them are sub- [fol. 9] ject to special and general taxes levied upon privately owned electric utilities by the several States and their political subdivisions and annually pay large sums in the form of special and general taxes so levied on privately owned electric utilities to the several States and political subdivisions in which Complainants severally carry on business or own property. Complainants annually pay Federal, State, County and municipal taxes, including the special tax burdens above mentioned, except social security

taxes not effective until January 1, 1936, in sums approximately as follows:

Complainant, The Tennessee Electric Power Company	$2,120,000
Complainant, Franklin Power & Light Company	5,000
Complainant, Memphis Power & Light Company	887,925
Complainant, Southern Tennessee Power Company	5,000
Complainant, Birmingham Electric Company	761,000
Complainant, Mississippi Power Company	340,000
Complainant, Appalachian Electric Power Company	2,848,000
Complainant, Georgia Power Company	2,350,000
Complainant, Carolina Power & Light Company	1,284,000
Complainant, Tennessee Public Service Company	439,490
Complainant, Holston River Electric Company	5,415
Complainant, Alabama Power Company	2,475,000
Complainant, Kentucky & West Virginia Power Company, Inc.	251,000
Complainant, Kingsport Utilities, Incorporated	45,000
Complainant, Kentucky-Tennessee Light & Power Co.	180,000
Complainant, West Tennessee Power & Light Company	104,000
Complainant, Mississippi Power & Light Company	562,471
Complainant, East Tennessee Light & Power Company	73,286
Complainant, Tennessee Eastern Electric Company	89,157

[fol. 10] Property Rights and Equities of Complainants

VII

Complainants are severally public utilities and each possesses all the rights, powers and franchises necessary under the laws of the State or States in which it does business, for the generation, transmission and sale of electric energy at wholesale and retail or at retail, in the territory served by it and all local powers, rights and privileges necessary for the distribution and sale of electric energy within the boundaries of the political subdivisions in which it renders electric service. Such powers, rights and privileges in gen-

eral are indeterminate or extend over a substantial number of years in the future.

In many instances Complainants respectively are rendering electric service to customers within the territory served by them under long term written agreements for the sale and purchase of large quantities of power. These contracts in general have several years in the future to run.

The aforesaid rights, powers, privileges, franchises and contracts and the reasonable expectancy of their renewal are property rights vested in the Complainants. Except for interference therewith by Defendants, which is threatened as hereinafter set forth, said rights, powers, privileges, franchises and contracts will remain in full force and effect until their expiration or full performance and each Complainant has a reasonable, probable and valuable expectancy of their renewal at or before their expiration.

VIII

For more than twenty years Complainant, The Tennessee Electric Power Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in 64 of the 95 counties in the State of Tennessee, as graphically shown upon the map which is hereto attached, marked "Exhibit A," and made a part hereof, and in the Counties of Murray, Walker, Catoosa and Fannin in the State of Georgia. It is also en- [fol. 11] gaged in the business of furnishing transportation in and about the Cities of Chattanooga and Nashville, Tennessee, and water and ice service in several communities in Tennessee. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system, which together with its transportation and other properties, has a value in excess of $99,000,000. Said system, exclusive of 8,000 k. w. generating capacity leased and under contract, includes hydroelectric generating plants with an installed capacity of 136,886 k. w., steam generating plants with an installed capacity of 104,322 k. w., 1,603 miles of high tension transmission lines, and 4,467 miles of distribution lines with all appurtenant equipment.

One of its hydroelectric projects, namely, its dam across the Tennessee River at Hales Bar, near Chattanooga, Ten-

nessee, was constructed under an Act of Congress of April 26, 1904, as amended. Said Act required Complainant's predecessor to purchase and pay for all lands on either side of the river necessary to the construction and operation of said project, including flowage rights and rights of way, required it to construct and complete the necessary locks and dam at its expense under specifications and plans to be approved by the Secretary of War, and required it to deed the aforesaid land and improvements to the United States in consideration of which it, and its successors and assigns, were given the right to possess and use the water power produced for a period of 99 years.

In reliance upon the terms and conditions of said Act of April 26, 1904, as amended, it expended large sums of money in the construction of its dam and project works and in the construction of transmission lines, sub-stations and distribution systems in order to market the power to be generated at such dam and project works, all within the area which the Defendants have marked out for seizure under their plan and program as hereinafter more particularly set out in Paragraphs XIII to XVIII, inclusive.

[fol. 12] The United States has received and accepted the benefits of the works of the Complainant which were constructed in reliance that under the aforesaid Act of Congress Complainant would have the right and privilege to serve the market for which said hydroelectric generating plant was intended and would have the right to dispose of the energy generated in said plant without unlawful interference or competition from or instigated by the Federal Government, or its agencies, and in reliance that the rights granted to Complainant under said Act would not be revoked prior to the expiration of said grant except upon payment of full compensation as provided by the terms thereof. To permit Defendants to consummate their plan hereinafter set forth would permit the United States to take without compensation the consideration which the Federal Government agreed Complainant should receive for making such public improvement and would be a violation of the aforesaid rights of Complainant.

Said Complainant serves approximately 122,000 electric customers in an area of 25,000 square miles, with a population of approximately 1,275,000 inhabitants. Its gross annual electric revenue is approximately $10,750,000. Se-

curities outstanding include $46,534,800 in bonds, $24,129,600 in preferred stock, and $17,794,000 in common stock.

For six years Franklin Power & Light Company has been engaged in the business of transmitting, distributing and selling electricity as a public utility in the City of Franklin, Tennessee, and the vicinity thereof, and during a part of such time in generating such electricity. For the purpose of such service it has owned and now owns a steam plant and distribution system of the value of approximately $350,000. The community that it serves has a population of approximately 5,000. It has approximately 850 customers. Its gross annual revenues are approximately $70,000 and it has $107,538.50 of outstanding obligations. Its approximate annual sales of current amount to 3,500,000 k.w.

For more than fifty years Complainant, Memphis Power & Light Company, and its predecessors in interest, have [fol. 13] been engaged, and said Complainant is now engaged in the business of generating, transmitting, distributing and selling electricity as a public utility, and in the distribution and sale of natural gas, to the City of Memphis and the inhabitants of said City and its vicinity. For the purpose of furnishing electric service within said area it owns, operates, and maintains an electric generating, transmitting, and distributing system with a value for physical properties alone in excess of $25,000,000. Said system includes steam-generating plants with an installed capacity of 54,000 k.w., 307.89 miles of high-tension transmission lines, and 733.98 miles of distribution lines with all appurtenant equipment. It serves directly and indirectly approximately 52,614 customers in an area of 801 square miles, with a population of approximately 312,000 inhabitants. Its gross annual electric revenue is approximately $4,400,000. Securities outstanding include $15,275,000 in bonds, 61,264 shares of no par preferred stock, and 400,000 shares of no par common stock.

For more than six years the Complainant, Southern Tennessee Power Company, has owned certain property used and useful in transmitting electricity from Wilson Dam at Muscle Shoals to Iron City, Tennessee, near the Tennessee-Alabama State line, where its transmission line interconnects with the transmission system of The Tennessee Electric Power Company. Throughout this period its property has been and still is leased to The Tennessee Electric Power

Company and used by said Company in carrying on its business as a public utility. The value of the property of this Complainant and the ability of this Complainant to secure any return thereon is dependent upon the possibility of the use of such property by The Tennessee Electric Power Company or some other public utility; and if the privately owned utilities operating in this territory, through loss of business or otherwise, are deprived of the need or ability to use said property, the value of this Complainant's property will be reduced to junk value and its earning capacity will be destroyed. The properties of this Complainant have a value in excess of $500,000 including approximately 15 miles of high tension transmission lines. Its gross annual [fol. 14] revenue is approximately $250,000. It has 10 shares of no par value capital stock issued and outstanding at a stated value of $100 and approximately $100,000 of surplus and reserves and $400,000 of notes payable to The Commonwealth & Southern Corporation (Delaware).

For more than thirty-five years Complainant, Birmingham Electric Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged in the business of transmitting, distributing and selling electricity and furnishing electric transportation services as a public utility in the county of Jefferson, Alabama and in the municipalities of Birmingham, Bessemer, Homewood, Fairfield, Tarrant City, Brighton, Lipscomb and Irondale in said state. For the purpose of furnishing electric service within said area it owns, operates, and maintains an electric transmitting, distributing and transportation system with a value for physical plant alone in excess of $25,000,000. It serves directly approximately 60,904 customers in an area of 95.54 square miles, with a population of approximately 337,000 inhabitants. Its gross annual electric revenue is approximately $4,027,000. Securities outstanding include $12,200,000 in bonds, 63,572 shares of no par value preferred stock with preference in liquidation to the extent of $6,357,200, and 800,000 shares of no par common stock.

For more than twenty years Complainant, Mississippi Power Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in 44 of the 82 counties in

the State of Mississippi, as graphically shown upon the attached map hereinabove referred to, which is marked "Exhibit A" and made a part hereof. It is also engaged in furnishing transportation in several cities.

For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value in excess of $15,000,000 (including a small amount of transportation property). Said system exclusive of 4,950 k.w. generating capacity under contract includes steam generating [fol. 15] plants with an installed capacity of 18,822 k.w., 800 miles of high tension transmission lines, and 1,339 miles of distribution lines with all appurtenant equipment. It serves approximately 37,000 electric customers in an area of 13,000 square miles, with a population of approximately 220,000 inhabitants. Its gross annual electric revenue is approximately $2,700,000. Securities outstanding include $10,829,700 in bonds, $3,523,092 in preferred stock, and $4,500,000 in common stock.

For more than forty years Complainant, Appalachian Electric Power Company, and its predecessors in interest, have been carrying on and developing its business of generating, transmitting, distributing and selling electricity as a public utility, and said Complainant is now engaged in carrying on said business in the Counties of Boone, Cabell, Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Logan, McDowell, Mason, Mercer, Mingo, Monroe, Nicholas, Putnam, Raleigh, Roane, Summers, Wayne, and Wyoming in the State of West Virginia, in the Counties of Albemarle, Amherst, Bedford, Bland, Botetourt, Buchanan, Campbell, Carroll, Craig, Dickenson, Fluvanna, Franklin, Giles, Grayson, Henry, Montgomery, Nelson, Pittsylvania, Pulaski, Roanoke, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe in the State of Virginia and in Sullivan County, Tennessee. For the purpose of furnishing electric service within said area it owns, operates, and maintains an electric generating, transmitting and distributing system with a value in excess of $133,750,000. Said system includes hydroelectric generating plants with an installed capacity of 44,900 k.w., steam generating plants with an installed capacity of 296,225 k.w., 2,292 miles of high-tension transmission lines and 3,240 miles of distribution lines, with all appurtenant equipment.

It serves directly and indirectly approximately 129,200 customers in an area of 12,400 square miles, with a population of approximately 671,000 inhabitants. Its gross annual electric revenue is approximately $18,500,000. Securities outstanding include $83,543,000 in bonds and $53,500,167 in preferred and common stock.

[fol. 16] For more than twenty years, Complainant, Georgia Power Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in 134 of the 161 counties in the State of Georgia, as graphically shown on the attached map hereinabove referred to, which is marked "Exhibit A" and made a part hereof. It is also engaged in furnishing transportation, gas, water and ice in several cities in Georgia, and steam heat in Atlanta, Georgia. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system which together with its transportation, gas and other properties, has a value in excess of $260,000,000. Said system, exclusive of 26,028 k.w. generating capacity leased and under contract, includes hydroelectric generating plants with an installed capacity of 287,387 k.w., steam generating plants with an installed capacity of 92,226 k.w., 3,738 miles of high tension transmission lines, and 6,110 miles of distribution lines with all appurtenant equipment.

In reliance upon State, County and municipal franchises and licenses, said Complainant expended a large sum of money in the construction of its dam and project works and in the construction of transmission lines, substations and distribution systems in order to transmit to market the power to be generated at such dam and project works. It has outlined and described a territory which it proposed to supply with such power, and which it ultimately did supply and which it is supplying at the time of filing this bill of complaint. Such market which it now supplies is in large part within that area which the Defendants have marked out for seizure under their plan and program as hereinafter more particularly set out in Paragraphs XIII to XVIII inclusive.

Complainant, Georgia Power Company, serves approximately 170,000 electric customers in an area of 49,500 square

miles, with a population of approximately 2,750,000 inhabitants. Its gross annual electric revenue is approximately [fol. 17] $19,000,000. Securities outstanding include $119,779,600 in bonds, $43,308,399 in preferred stock, and $87,778,002 in common stock.

For more than thirty years Complainant, Carolina Power & Light Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in the western portion of North Carolina, including portions of Haywood, Transylvania, Henderson, Buncombe, Madison, Yancey, Avery, Mitchell and Jackson Counties in said state, and in the eastern portion of North Carolina and part of South Carolina, all as more particularly shown on the attached map hereinbefore referred to, which is marked "Exhibit A" and made a part hereof. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value for physical plant alone in excess of $92,000,000. Said system includes ten hydroelectric generating plants with an installed capacity of 204,800 k.w., steam-generating plants with an installed capacity of 43,000 k.w., 2,055 miles of high-tension transmission lines, and 2,762 miles of distribution lines. The largest of its hydroelectric projects was built under license from the Federal Power Commission, issued on a finding that the power had a market in North Carolina and South Carolina and requiring Complainant to install costly navigation structures as part consideration for such license.

In reliance upon such license, said Complainant expended a large sum of money in the construction of its dam and project works and in the construction of transmission lines, substations and distribution systems in order to transmit to market the power to be generated at such dam and project works. In its application to the Federal Power Commission for a license, said Complainant being required to indicate the proposed use or market for the power to be developed, outlined and described a territory which it proposed to supply with such power, and which it ultimately did supply and which it is supplying at the time of filing this bill of complaint. Such market which it now supplies is within that [fol. 18] area which the Defendants have marked out for

seizure under their plan and program as hereinafter more particularly set out in Paragraphs XIII to XVIII inclusive.

Complainant, in good faith, accepted said license from the Federal Power Commission with the agreement and understanding with the Federal Government under the Federal Water Power Act and the license issued to Complainant thereunder, that Complainant would have, as part of the consideration for incurring such obligations and making such investments, the right and privilege freely to serve the market and dispose of the energy generated in said plant without unlawful interference or competition from, or instigated by, the Federal Government, or its agencies, which have an option under said license and under Section 14 of the Federal Water Power Act to acquire the property covered thereby upon expiration of the license period, upon payment of the then net investment of the Licensee or the fair value of the property covered by the license, whichever is less. The United States has accepted the benefits of the works of the Complainant and the Complainant has complied with all of its duties and obligations under the license issued to it. To permit Defendants to consummate their plan hereinafter set forth would seriously impair Complainant's ability to perform its obligations under said license, would permit the United States to take without compensation the consideration which the Federal Government agreed Complainant should receive for making such public improvement or assuming such public obligation and would be a violation of the duties owed by the Government and of the rights of Complainant under its license.

Complainant, Carolina Power & Light Company, serves directly approximately 75,324 customers in an area of 22,000 square miles, with a population of approximately 443,000 inhabitants. It serves at wholesale 25 other companies and municipalities, including Tennessee Public Service Company, which resell such electricity to their customers. It sells to Tennessee Public Service Company under contract [fol. 19] practically all of the electricity required by the Tennessee Public Service Company for distribution and sale in Knoxville, Tennessee, and vicinity. Its gross annual electric revenue is approximately $10,000,000. Securities outstanding include $46,000,000 in bonds, 119,736 shares of preferred stock and 2,500,000 shares of common stock.

For many years Complainant, Tennessee Public Service

Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in the City of Knoxville, Tennessee, and in the towns of Sevierville, Newport, Dandridge, White Pine, and Jefferson City, and to rural customers in the Counties of Knox, Jefferson, Cocke, Sevier and Union in the State of Tennessee. It also furnishes public transportation service in and about the City of Knoxville. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system, which together with its other properties has a total value for physical plant alone in excess of $17,356,000. Said system includes a hydroelectric plant with an installed capacity of 150 k.w., steam generating plants with an installed capacity of 6,125 k.w., 180.58 miles of high-tension transmission lines, and 842.96 miles of distribution lines, with all appurtenant equipment. It serves directly and indirectly approximately 29,786 customers in an area of 393 square miles, with a population of approximately 140,000 inhabitants. Its gross annual revenue is approximately $2,509,000 from its electric properties and $670,000 from its railway properties. Securities outstanding include $7,780,000 in bonds, 50,000 shares of no par value preferred stock, and 1,000,000 shares of no par value common stock.

For many years Complainant, Holston River Electric Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged in the business of purchasing, transmitting, distributing and selling electricity as a public utility in and about the town of Rogersville, Hawkins County, Tennessee, and to rural customers in Hawkins and Hamblen Counties, Tennessee. For the [fol. 20] purpose of furnishing electric service within said area it owns, operates and maintains a transmitting and distributing system with a value for physical plant alone in excess of $258,000. Said system includes 8.81 miles of high-tension transmission lines and 97.87 miles of distribution lines, with all appurtenant equipment. It serves directly approximately 907 customers in an area of 50 square miles, with a population of approximately 7,000 inhabitants. Its gross annual electric revenue is approximately $40,000.

Securities outstanding include $6,000 in par value of common stock.

For more than twenty years Complainant, Alabama Power Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility, said Complainant now conducting such operations in 65 of the 67 counties of the State of Alabama, being all of the counties in said State excepting Pike and Conecuh. It also furnishes transportation in the cities of Tuscaloosa and Huntsville and ice and water in several communities. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value for physical plant alone in excess of $175,000,000. Said system, exclusive of 53,550 k.w. generating capacity leased and under contract, includes hydro-electric generating plants with an installed capacity of 414,500 k.w., steam generating plants with an installed capacity of 157,262 k.w., 4,002 miles of high tension transmission lines, and 3,930 miles of distribution lines, with all appurtenant equipment. Three of its six hydro-electric projects, namely, Mitchell Dam and Jordan Dam on the Coosa River, and Martin Dam on the Tallapoosa River, were built under fifty-year licenses from the Federal Power Commission issued on July 27, 1921, November 7, 1925, and June 7, 1924, respectively, on findings that each of such dams on the Coosa River was necessary and convenient for the development and improvement of navigation and utilization of power therein and was best adapted to a comprehensive scheme of development and [fol. 21] utilization of the Coosa River for such purposes; that the impounding and release of waters from the dam on the Tallapoosa River, a non-navigable stream, would benefit navigation and flood control on the Alabama River, a navigable stream, formed by the junction of the Tallapoosa and Coosa rivers; that there was a market in Alabama for the power output of such plants and that such projects were justified in the public interest. The total installed capacity of such plants is 332,500 k.w. The terms of the licenses under which such dams were constructed on the Coosa River require Complainants to install costly navigation structures as part consideration for such licenses. A fourth hydro-electric project was built under authority of an Act of Congress of March 4, 1907.

In reliance upon such licenses issued under the provisions of the Federal Water Power Act, and upon the terms and conditions of the Act of Congress of March 4, 1907, said Complainant expended a large sum of money, to-wit, in excess of $50,000,000, in the construction of such dams and project works; and a sum of money in excess of $50,000,000 in the construction of transmission lines, substations and distribution systems in the State of Alabama in order to transmit to market the power to be generated at such dams and project works. In its several applications to the Federal Power Commission for licenses, said Complainant being required to indicate the proposed use or market for the power to be developed, outlined and described a territory which it proposed to supply with such power, and which it ultimately did supply and which (except as to a small portion of such market which is now being supplied by the Defendant TVA, as a result of the sale of a part of the said Complainant's system to the Defendant TVA under the terms of a contract dated January 4, 1934) it is supplying at the time of filing this bill of complaint. And said Complainant says that such market which it now supplies is within that area which the Defendants have marked out for seizure under their plan and program as hereinafter more particularly set out in Paragraphs XIII to XVIII inclusive. [fol. 22] Complainant, in good faith, accepted said licenses from the Federal Power Commission and, in reliance upon the terms and conditions of said Act of March 4, 1907, built the projects above referred to, and incurred liability with reference to the improvement of the navigable features of the Coosa and Tallapoosa Rivers, with the agreement and understanding with the Federal Government under the Act of March 4, 1907 and under the Federal Water Power Act and the licenses issued to Complainant thereunder, that Complainant would have, as part of the consideration for incurring such obligations and making such investments, the right and privilege freely to serve the market and dispose of the energy generated in said plants without unlawful interference or competition from, or instigated by, the Federal Government, or its agencies, which have an option under said licenses and under Section 14 of the Federal Water Power Act to acquire the property covered thereby upon the expiration of the license period, upon payment of the then net investment of the Licensee or the fair value of the property covered by the license, whichever is less. The

United States has accepted the benefits of the works of the Complainant and the Complainant has complied with all of its duties and obligations under the licenses issued to it and under the Act of March 4, 1907. To permit Defendants to consummate their plan hereinafter set forth would seriously impair Complainant's ability to perform its obligations under said licenses and under said Act with reference to improvement of navigation and otherwise, would permit the United States to take without compensation the consideration which the Federal Government agreed Complainant should receive for making such public improvements or assuming such public obligations and would be a violation of the duties owed by the Government and of the rights of Complainant under its licenses and under said Act.

Complainant Alabama Power Company's system serves directly and indirectly approximately 94% of the customers for electricity in Alabama being 200,000 customers in an area of 50,000 square miles, with a population of 2,000,000. [fol. 23] Its gross annual electric revenue is approximately $16,000,000. Securities outstanding include $96,925,000 in bonds, $35,751,258.22 in preferred stock, and $48,961,300 in common stock.

For more than forty years Complainant, Kentucky & West Virginia Power Company, Inc., and its predecessors in interest, have been carrying on and developing the business of generating, transmitting, distributing and selling electricity as a public utility, and said Complainant is now carrying on said business in the Counties of Pike, Martin, Perry, Knott, Johnson, Boyd, Greenup, Letcher, Carter, Floyd, Breathitt, Rowan, Leslie and Magoffin in the State of Kentucky. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value in excess of $13,345,000. Said system includes steam-generating plants with an installed capacity of 19,500 k. w., 406 miles of high-tension transmission lines, and 476 miles of distribution lines, with all appurtenant equipment. It serves directly and indirectly approximately 19,600 customers in an area of 1,621 square miles with a population of approximately 142,000 inhabitants. Its gross annual electric revenue is approximately $3,050,000. All of the securities of Kentucky & West Virginia Power Company, Inc. are pledged under the mortgage, dated May 1, 1926, of the Ap-

palachian Electric Power Company to Bankers Trust Company as Trustee. The securities so deposited consist of $8,499,000 in bonds, $802,000 in preferred stock, and $3,345,525 in common stock.

For about twenty years Complainant, Kingsport Utilities, Incorporated, and its predecessors in interest, have been carrying on and developing the business of generating, transmitting, distributing and selling electricity as a public utility, and Complainant is now carrying on said business in the Counties of Sullivan and Hawkins in the State of Tennessee. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value in excess of $2,180,000. Said system includes steam-generating plants with an installed capacity of 11,400 [fol. 24] k. w., 5.7 miles of high-tension transmission lines, and 111 miles of distribution lines, with all appurtenant equipment. It serves directly and indirectly approximately 3,800 customers in an area of 23 square miles with a population of approximately 12,000 inhabitants. Its gross annual electric revenue is approximately $460,000. All of the securities of Kingsport Utilities, Incorporated, are pledged under the mortgage dated May 1, 1926, of the Appalachian Electric Power Company to Bankers Trust Company as Trustee. The securities so deposited consist of $1,044,000 in bonds, $500,000 in preferred stock, and $500,000 in common stock.

For more than twenty-five years Complainant, Kentucky-Tennessee Light & Power Co., and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in 24 counties in the State of Kentucky and in 9 counties in the State of Tennessee, all as shown on the attached map, hereinbefore referred to, which is marked "Exhibit A" and made a part hereof. For the purpose of furnishing electric service within said area it owns, operates and maintains an electric generating, transmitting and distributing system with a value for physical plant alone in excess of $13,000,000. Said system includes hydro-electric generating plants with an installed capacity of 375 k. w., steam and oil-generating plants with an installed capacity of 19,012 k. w., 567.5 miles of high tension transmission lines, and 498.2 miles of distribution lines, with all appurtenant equipment. It serves

directly and indirectly approximately 30,238 customers in an area of 2,730 square miles, with a population of approximately 118,000 inhabitants. Its gross annual electric revenue is approximately $1,898,000. Securities outstanding include $7,342,600 in bonds, and $1,651,100 in common stock.

For approximately forty years Complainant, West Tennessee Power & Light Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, transmitting, distributing and selling electricity as a public utility in nine counties located in the western portion of the State of Ten- [fol. 25] nessee all as shown on the attached map hereinbefore referred to, which is marked "Exhibit A" and made a part hereof. For the purpose of furnishing electric service within said area, it owns, operates and maintains an electric generating, transmitting and distributing system, and gas distributing system, water plants, ice factories, and street railway system, its entire physical properties having a value in excess of $3,375,000. Said electric system includes steam and oil generating plants and stations, with an installed capacity of 5,228 k. w., approximately 200 miles of high-tension transmission lines, and approximately 150 miles of distribution lines, with all appurtenant equipment It serves directly and indirectly approximately 10,000 electric, 4,000 gas and 1,000 water customers; the area served by its electric service comprises approximately 2,000 square miles, with a population of approximately 50,000 inhabitants. Its gross annual electric revenue is approximately $607,000. Securities outstanding include 100,000 shares of no par common stock having a stated value of $1,500,000.

For many years Complainant, Mississippi Power & Light Company, and its predecessors in interest, have been engaged, and said Complainant is now engaged, in the business of generating, purchasing, transmitting, distributing and selling electricity as a public utility in the western portion of the State of Mississippi, including the Cities of Jackson, Vicksburg, Natchez and Greenville and including approximately 200 other communities, said area being more particularly shown on the attached map hereinbefore referred to, which is marked "Exhibit A" and made a part hereof. It also is engaged in the acquisition, transportation and distribution of natural gas within the same territory in in the State of Mississippi. For the purpose of furnishing electric service within said area it owns, operates and main-

tains an electric generating, transmitting and distributing system with a value for physical plant alone in excess of $15,000,000. Said system includes 456.8 miles of high-tension transmission lines and 2,398 miles of distribution lines, with all appurtenant equipment. It serves directly and indirectly approximately 40,000 electric customers and 16,000 [fol. 26] gas customers. Its gross annual electric revenue is approximately $3,640,000 and its gross annual income from its other properties is approximately $1,106,000. Securities outstanding include $16,569,980 in bonds and other funded indebtedness, 69,000 shares of first preferred stock, 35,000 shares of second preferred stock, and 1,000,000 shares of common stock.

For many years Complainants, East Tennessee Light & Power Company, and its subsidiary, Tennessee Eastern Electric Company, and their predecessors in interest, have been engaged, and said Complainants are now engaged in the business of generating, transmitting, distributing and selling electricity as a public utility in the Counties of Johnson, Greene, Washington, Hawkins, Carter, Sullivan and Unicoi in the State of Tennessee, in the Counties of Scott and Washington in the State of Virginia and in the County of Avery in the State of North Carolina. For the purpose of furnishing electric service within said area they own, operate and maintain an electric generating, transmitting and distributing system with a value for physical plant alone in excess of $8,000,000. Said system includes three hydroelectric plants having an installed capacity of 15,900 k. w., a steam generating plant with an installed capacity of 8,500 k. w., 145 miles of high-tension transmission lines, and 660 miles of distribution lines, with all appurtenant equipment. Said companies serve directly and indirectly approximately 16,754 customers in a territory with a population of approximately 90,000 inhabitants. They also manufacture and distribute gas to approximately 1,670 customers. The gross annual electric revenue of said companies is approximately $1,144,000, and the gross annual income from the sale of gas is approximately $81,000. Securities outstanding include $5,304,500 in bonds, $1,224,328 in preferred stock, and 50,000 shares of no par common stock.

The territory served by each of the Complainants except Franklin Power & Light Company, the location of TVA

dams built, under construction or authorized, and the loca-
[fol. 27] tion of TVA dams recommended for construction are graphically shown on the map marked "Exhibit A" attached hereto and made a part hereof. A few small electric utilities which operate in the territory generally served by some of the Complainants are not shown on Exhibit A, nor is a small market area in northwestern Alabama very recently acquired by TVA. The location of transmission lines acquired, constructed or under construction by TVA, the location of certain of the transmission lines for which congressional appropriations have been requested by TVA but omitting 398 miles of additional transmission lines and 800 miles of proposed rural lines for which TVA has also requested congressional appropriations, the location of the principal transmission lines of the existing utilities including the Complainants, the location of TVA dams built, under construction or authorized and the location of TVA dams recommended for construction are severally shown upon the map marked "Exhibit B" attached hereto and made a part hereof.

IX

Complainants are public utilities with facilities more than adequate to supply, and fully supplying, the needs for electric service of the inhabitants of the territories respectively served. Their properties and facilities are more than adequate fully to meet all demands for electric service in the territories served by them for a reasonable time in the future, and when and if further capacity shall be required, the Complainants are severally ready, willing and able to supply the same. The properties and facilities of each of the Complainants used in rendering electric service are modern and efficient and are thoroughly equipped to and do render modern, adequate, efficient, dependable and economical service to the public. The system of each Complainant is designed and constructed to fit the peculiar requirements of the area in which it serves. The several systems of the Complainants represent intensive applications of the economies of large-scale integrated electric distribution. The plant and property of each Complainant, used in supplying such public utility service, has been developed and
[fol. 28] perfected as a going concern of great value over a period of many years.

There is no demand or market for electric energy in the

territories served by the several Complainants beyond that supplied by them. Since the commencement of their respective operations, Complainants and their predecessors at all times have severally been and are now ready, able and willing to serve any and all customers within the territories in which they respectively operate. The inhabitants of the areas served respectively by the Complainants are, and for many years prior hereto have been ready, willing and desirous of using the services of the Complainants. As more particularly alleged in Paragraph VIII, they and their predecessors, in reliance upon their franchise rights, have severally, over a period of many years, established, extended, operated and maintained, and Complainants now severally own, operate and maintain, their respective businesses as going solvent concerns, with many employees, customers and business contacts, financial credit and reputation acquired, established, developed and expanded at great expense, and having great value. Complainants and their predecessors, throughout the periods during which they have rendered service, have severally built up goodwill of great value. Over a period of many years the Complainants have contributed time, money and man power at a cost of millions of dollars for the development of both the technological and business sides of the industry and have thereby created intangible values of great benefit to the public and the industry.

The good relations developed, established and existing between the Complainants and their respective customers represent one of the most valuable assets of each. The aggregate of the good will thus built up by the adequacy and reasonableness of the services rendered by all the Complainants is a large and valuable factor in the favor with which the investing public regards the industry in which the Complainants are engaged and creates the market in which the securities of the Complainants have been sold and in the future must be sold in the course of Complainants' [fol. 29] activities as going concerns. Except for the acts of the Defendants hereinafter specified, the friendly and established business relationships existing between the Complainants and their respective customers will continue on the same satisfactory basis which now exists and which has existed for many years past with mutual satisfaction and benefit to the Complainants and their customers.

X

The Complainants severally have continuously pursued the policy of reducing their respective rates for electric service, and such rates today are reasonable and yield Complainants no more than a reasonable return. The rates and service of each of the Complainants are also subject to regulation and are fully and adequately regulated by the public authorities of the respective States in which they operate in the shape generally of public service commissions, exercising the sovereign powers of the respective States. Such public service commissions represent a system of American State and local regulation of public service utilities which, beginning about thirty years ago at the time when the electric industry was commencing to expand into its modern size, has developed concurrently with the growth of that industry. Under said system the respective States and their subdivisions have exercised a constantly broadening jurisdiction and control over the methods, services, rates, revenues and securities of the said utilities in the interest of the consumers of their electricity, the investors in their securities, and the revenues of the State where their activities are carried on. This development of regulation has been steadily growing in efficiency and adequacy. The decisions of these commissions have produced and are steadily expanding a system of American administrative law recognized by all fair-minded students of the subject as reasonable, effective and flexible in its adaptation to the needs of the respective localities and States where it is applied and as a creditable example of local self-government.

[fol. 30] The several Complainant companies have organized under the laws of the several States and in effect have accepted the invitation extended by them to create the facilities which, in harmony with their declared policy and subject to the regulatory authority established by them, will supply said States and their people the advantages of electric service. They have thus, and in reliance upon the right and power of the said States reserved to them under the Ninth and Tenth Amendments to the Constitution of the United States, invested the great sums of money herein severally shown, complied with the regulation imposed by the police power of the several States, and constructed and extended their systems in conformity with the policy of said States. The securities of the Complainants in the amount

of many millions of dollars are widely held by the investing public in the United States and foreign countries, who have invested their funds in such lawful business enterprises under the authority and protection of the Constitution of the United States.

The Complainants and their predecessors by the acceptance of franchises, permits and consents and by entering into and upon the business of supplying electric energy and service to such States, their political subdivisions and their citizens and residents, became not only entitled but obligated by law to continue to furnish at reasonable, uniform and non-discriminatory rates such services within the territories now served, respectively, by them until by action of the several States, their properly authorized regulatory bodies or their duly authorized political subdivisions, these Complainants are severally relieved of such obligation. Each State in which Complainants operate has declared its own local public policy in relation to the manner, terms and conditions in and upon which electric public utility service shall be undertaken and carried on in such States. For illustration, the established regulatory policies of the States of Alabama, Georgia and Tennessee is to maintain uniform rates throughout the State as part of a policy to provide equality of opportunity, to promote a uniform development of all of the resources of the State and to avoid unnecessary conges-
[fol. 31] tion of population in particular centers. Each Complainant is required to conform to the public policy of the State or States in which it serves.

XI

As hereinafter more fully appears, the Tennessee Valley Authority Act was passed in 1933 as part of a permanent "National Power Policy" and purported to authorize the establishment of a great Federally-owned and operated public utility, to operate in all, or a substantial part, of each of the territories served by each of the Complainants and in which the Complainants had severally built up and established going businesses through the expenditure of much time and effort and great sums of money. Purporting to act pursuant to and under the authority of the Tennessee Valley Authority Act, the Defendant- sometime in 1933 promulgated a plan unlawfully to disrupt the good relations existing between Complainants and their respective custo-

mers, to appropriate their respective markets, to invade and destroy the property, business and business relationships of the Complainants in the preceding paragraph described, and unlawfully conspired together and with the Federal Administration of Public Works, its officers and agents, and have ever since so conspired by and through unlawful means to take unlawfully from the Complainants their businesses, rights and properties, all as hereinafter more particularly set forth.

The Permanent National Power Policy

XII

Late in 1932 and early in 1933, the present Executive announced and subsequently the National Administration under his leadership officially undertook the execution of a permanent "National Power Policy" to make electricity "more broadly available at cheaper rates to industry, to domestic and to agricultural consumers," to effectuate Federal regulation of rates for the intrastate generation, distribution and sale of electricity, to establish Federal regu- [fol. 32] lation and control over matters of policy and service in connection with intrastate electric utilities and to promote and bring about public ownership or cooperative ownership of facilities for the generation, transmission and distribution of electricity in intrastate commerce.

In furtherance of said "National Power Policy" the Federal Government has created the Tennessee Valley Authority and is promoting other power projects in various parts of the country to be built, owned and operated by the Federal Government as "yardsticks" by which to measure the cost of electricity, to regulate intrastate rates and charges for electricity and to promote public ownership of local intrastate electric facilities, and has established or utilized various additional agencies, such as the Public Works Administration, the Electric Home and Farm Authority, and the Rural Electrification Administration. Such agencies have been and are actually engaged in carrying out various phases of said "National Power Policy."

This policy and its purpose was in part announced and defined in an address delivered by the present Executive at Portland, Oregon, on September 21, 1932, where he stated:

"* * * * Where a community * * * is not satisfied with the service rendered or the rates charged by the private

utility, it has the undeniable right as one of its functions of government * * * to set up * * * its own governmentally owned and operated service. * * * The fact that a community can, by vote of the electorate, create a yardstick of its own, will, in most cases, guarantee a good service and low rates to its population * * * 'a birch rod in the cupboard.'

"That is the principle that applies to communities. I would apply the same principle to the Federal and State Governments."

"Here you have the clear picture of four great government power developments in the United States, the St. Lawrence River in the Northeast, Muscle Shoals in the Southeast, the Boulder Dam project in the Southwest, and finally, but by no means the least of them, the Columbia River in the Northwest. Each one of these will be forever a national [fol. 33] yardstick to prevent extortion against the public and to encourage the wider use of that servant of the people—electricity."

The nature and purpose of this policy was restated and emphasized in an address delivered by the present Executive at Milwaukee, Wisconsin, on September 30, 1932, in which he said:

"We recognize, also that because government regulation is often unable to keep up with the various devices of private utility companies that seek to evade the broad public policy, from time to time it is necessary for government to have what I called, up in Portland, Oregon, a 'birch rod' in the cupboard—two birch rods in fact.

"One of them is the development by government of certain great water-power resources, to be used as a yardstick for the benefit of the people;

* * * * * * *

"The other 'birch rod' is the principle of public policy which would allow any community or county or city or any town or any village or any district actually to engage in the supplying of electricity * * *."

In further definition and emphasis of the nature and purpose of this policy, the President in his St. Lawrence Treaty Message (Senate Document 110, 73rd Congress, Second Ses-

sion) delivered to the Congress in Joint Session in January 3, 1934, stated:

"As you know, I have advocated the development of four great power areas in the United States, each to serve as a yardstick and each to be controlled by government or governmental agencies. The Tennessee Valley plans and projects of the Southeast, the Boulder Dam on the Colorado River in the Southwest, the Columbia River projects in the Northwest are already under construction. The St. Lawrence development in the Northeast calls for action."

And on July 9, 1934, the President caused to be established in the Federal Administration of Public Works a National Power Policy Committee and stated with reference to said Committee in a letter of said date, addressed to Harold L. Ickes, as Federal Administrator of Public Works, that:

[fol. 34] "Its duty will be to develop a plan for the closer cooperation of the several factors in our electrical power supply—both public and private—whereby national policy in power matters may be unified and electricity be made more broadly available at cheaper rates to industry, to domestic and, particularly, to agricultural consumers."

On September 30, 1935, in his address at Boulder Dam, President Roosevelt, as reported in the New York Times of October 1, 1935, said:

"These great government power projects will affect not only the development of agriculture and industry and mining in this section they serve, but they will also prove useful yardsticks to measure the cost of power throughout the United States. * * *"

The existence, nature, purpose and scope of this policy have been further publicly announced and defined by other executive officers of the Federal Government charged with the execution of various phases of said policy as shown in Exhibit C, attached hereto, and made a part hereof.

The Power Program Authorized by the Tennessee Valley Authority Act

XIII

The Tennessee Valley Authority Act became effective on May 18, 1933, and was amended on August 31, 1935. This

Act, which was passed as part of and pursuant to the aforesaid "National Power Policy," created the defendant corporation, Tennessee Valley Authority, and purported to authorize, if it did not make mandatory, the construction, development and operation of a great Federally owned and operated public utility system for the generation and distribution of electricity in the Tennessee Valley, and contiguous territory within physical transmission distance of the generating plants to be constructed.

The Act on its face discloses a purpose and intent (1) to authorize a large and indeterminate number of great works [fol. 35] for the direct and primary purpose of creating a vast supply of electric power to be deliberately produced for use in carrying on a great Federally owned public utility and not as an incident of the exercise of any powers delegated to the United States by the Constitution; (2) to utilize the electric power so developed under the pretext of disposing of property of the United States so as to establish the United States on a vast scale in the industry or business of producing, transmitting and selling electric power as a proprietary and commercial venture, to launch the Federal Government upon a competitive commercial enterprise and to draw to the Federal Government the conduct and management of a business having no relation to the powers for which that Government was established; (3) to dispose of such electric energy not for the public benefit but for the private benefit of certain classes of people living in a restricted area of the nation; and (4) to dispose of the property so wrongfully acquired in a manner inconsistent with the foundation principles of our dual system of Government and so as to govern the concerns reserved to the States.

To carry on this business of producing, transmitting and selling electric power as a commercial venture and to accomplish the foregoing objectives, the Act creates a corporation (16 U. S. C. 831) having the usual powers and characteristics of a private business corporation such as the right of succession (16 U. S. C. 831c(a)), the power to sue and be sued (16 U. S. C. 831c(b)), the power to make such contracts as are authorized by its charter (16 U. S. C.

831c(d)), the power to "purchase or lease and hold such real and personal property as it deems necessary or convenient in the transaction of its *business,*" and to "dispose of any such personal property held by it" (16 U. S. C. 831c(f)), "such powers as may be necessary or appropriate for the exercise of the powers herein specifically conferred upon the corporation" (16) U. S. C. 831c (g)), and the power to employ such persons "as are necessary for the transaction of its *business,*" to fix their compensation and to define their duties without regard to the Civil Service laws of the United States. (16 U. S. C. 831b.)

[fol. 36] That the primary purpose of this business corporation is to carry on the proprietary commercial industry or business of generating, transmitting and selling electric power is clear upon the face of the Act. This appears from the following provisions of the Act, among others:

1. TVA "shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses and other structures * * * at any point *along the Tennessee River or any of its tributaries,* * * *" (16 U. S. C. 831c(i)).

2. TVA "shall have power to acquire or construct power houses, power structures, transmission lines * * * and incidental works in the Tennessee River and its tributaries, * * *" (16 U. S. C. 831c(j)).

3. TVA "shall have power to exercise the power of eminent domain, and to condemn all property that it deems necessary for carrying out the purposes of this chapter, * * *" (16 U. S. C. 831c(i)).

4. TVA "shall have power to unite the various power installations into one or more systems by transmission lines" and the Directors of the Authority are ordered "to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system." (16 U. S. C. 831c(j)).

5. TVA shall have power "to produce, distribute and sell electric power, as herein particularly specified." (16 U. S. C. 831d(l)).

6. "No director shall have financial interest in any public utility corporation engaged in the business of distributing and selling power to the public nor * * * in any business

that may be adversely affected by the success of the corporation * * * as a *producer of electric power.*" (16 U. S. C. 831a (f)).

7. The Act authorizes the construction of "a dam in and across Clinch River in the State of Tennessee * * * according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the Clinch River may be impounded and stored above said dam [fol. 37] for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam: * * *" (16 U. S. C. 831p).

8. The TVA Board is authorized to enter into contracts for the exchange of power "with *other power systems*" and for "emergency or break-down relief." (16 U. S. C. 831k).

9. "The (TVA) Board is * * * authorized to sell the surplus power not used in its operations and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; * * *" (16 U. S. C. 831i).

10. "The (TVA) Board is authorized to enter into contracts for such sale for a term not exceeding twenty years, * * *" (16 U. S. C. 831i).

11. "In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines, the Board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, * * *" (16 U. S. C. 831i).

12. "That in order to supply farms and small villages with electric power directly * * *, the Board in its discretion shall have power to acquire existing electric facilities used in serving such farms and small villages: * * *" (16 U. S. C. 831i).

13. "In order to place the Board upon a fair basis for making such contracts and for receiving bids for the sale of such power, it is hereby expressly authorized * * * to construct, lease, purchase or authorize the construction of transmission lines within transmission distance from the place where generated and to interconnect with *other systems.*" (16 U. S. C. 831k).

14. The Board may lease transmission lines to others "but no such lease shall be made that in any way interferes [fol. 38] with the use of such transmission line by the Board: * * *" (16 U. S. C. 831k).

15. "To facilitate the disposition of surplus power" the Corporation is authorized to extend credit to municipalities and non-profit organizations for the acquisition of existing facilities if they will purchase TVA power (16 U. S. C. 831k-1) and for such purpose the corporation is authorized to sell not exceeding $50,000,000 in bonds (16 U. S. C. 831n-1).

16. Section 831*l* provides for payments to the States (Tennessee and Alabama only) in lieu of taxes upon the gross proceeds of the sale of power.

17. "The Board shall keep complete accounts of its costs of generation, transmission and distribution of electric energy, and shall keep a complete account of the total cost of generating and transmission facilities constructed or otherwise acquired by the Corporation, * * *" (16 U. S. C. 831m).

18. The TVA Board is required to report such costs "according to such uniform system of accounting for public utilities as the Federal Power Commission has" prescribed. (16 U. S. C. 831m).

19. "The Board is authorized and directed to make studies, experiments and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, * * *" (16 U. S. C. 831i).

20. Any lease of the nitrate plant by TVA must provide that "the Board will sell to the lessee power for the operation of said plant *at the same schedule of prices that it*

charges all other customers for power of the same class and quantity." (16 U. S. C. 831d(n)).

21. TVA is vested with "exclusive use, possession and control of * * * Dam Numbered 2, located at Muscle Shoals, its power house, and all hydroelectric and operating appurtenances (except the locks) and all machinery, lands and buildings in connection therewith and all appurtenances thereof, * * *" (16 U. S. C. 831f(a)).

[fol. 39] 22. The TVA Board is required to file an annual report containing "an itemized statement of the cost of power at each power station, * * *" (16 U. S. C. 831h (a)).

23. TVA is required to reimburse the Comptroller General for such part of the expenses of the annual audit "as may be allocated to the cost of generating, transmitting and distributing electric energy * * *" (16 U. S. C. 831h (b)).

24. "The (TVA) Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this chapter provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority" (16 U. S. C. 831h-l).

25. The TVA Board is authorized to issue and sell on the credit of the United States not exceeding $50,000,000 in bonds for "the construction of any future dam, steam plant or other facility, to be used in whole or in part for the generation or transmission of electric power" (16 U. S. C. 831n).

26. The Board is required as soon as practicable to sell power at rates which will "make the power projects self-supporting and self-liquidating, * * *" (16 U. S. C. 831m).

27. The TVA Board is forbidden to convey land "on which there is a permanent dam, hydraulic power plant, fertilizer plant or munitions plant, heretofore or hereafter built by or for the United States or for the Authority." (16 U. S. C. 831c(k)).

28. The Corporation is given the right to use all patented methods, formulae and scientific information "necessary to enable the Corporation to use and employ * * * any method of improving and cheapening the production of hydroelectric power, * * *" (16 U. S. C. 831r).

29. TVA is expressly authorized to retain out of the proceeds of its operations each year "such part of such proceeds as in the opinion of the Board shall be necessary for the Corporation in the operation of dams and reservoirs, in conducting *its business* in generating, transmitting and distributing electric energy * * *" (16 U. S. C. 831y).

[fol. 40] The method of disposal of the electric power to be wrongfully developed as aforesaid is not in the public interest but by the terms of the Act the method of disposal is to be for the special and private benefit of the inhabitants of the area within transmission distance of the generating plants to be constructed and particularly of the specially favored classes of rural and domestic consumers. The method of disposal of the power by the very terms of the statutory scheme is inconsistent with the foundation principles of our dual system of government and is contrived to govern the concerns reserved to the States. Thus the statutory scheme specifically provides for the regulation of intrastate electric rates by contract, for the preference of domestic and rural consumers over industrial consumers, for the regulation of intrastate electric rates through unrestrained Federally subsidized competition and the deliberate and purposeful creation of a great surplus of electric energy and for the promotion of public ownership of intrastate electric utilities without regard to the policy of the several States. These facts appear from the following provisions of the Act, among others:

1. "In the sale of such current by the (TVA) Board, it shall give preference to States, counties, municipalities and cooperative organizations of citizens or farmers not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members: * * *" (16 U. S. C. 831i).

2. "All contracts made with private companies or individuals for the sale of power, which power is to be resold for a profit, shall contain a provision authorizing the Board

to cancel said contract upon five years' notice in writing if the Board needs said power to supply the demands of States, counties or municipalities" (16 U. S. C. 831i).

3. "In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines, the Board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make rules and regulations governing such sale and distribution of such [fol. 41] electric power as in its judgment may be just and equitable: * * *" (16 U. S. C. 831i).

4. "The Board is authorized to include in any contract, for the sale of power such terms and conditions, *including resale rate schedules*, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this chapter, and in case the purchaser shall fail to comply with any such terms and conditions, or violate any such rules and regulations, said contract may provide that it shall be voidable at the election of the Board: * * *" (16 U. S. C. 831i).

5. "It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity" (16 U. S. C. 831j).

6. Whenever a public or cooperative non-profit organization will agree to construct a transmission line to a Government generating plant or main transmission line, the Board is authorized and directed to make a contract to sell the public or cooperative organization power for thirty years (16 U. S. C. 831k).

7. All contracts between TVA and a municipality or cooperative organization shall require sale and distribution to the ultimate consumer without discrimination upon penalty of voiding the contract (16 U. S. C. 831k).

8. "That as to any surplus power not so sold as above provided to States, counties, municipalities, or other said organizations, before the Board shall sell the same to any person or corporation engaged in the distribution and re- [fol. 42] sale of electricity for profit, it shall require said person or corporation to agree that any resale of such electric power by said person or corporation shall be made to the ultimate consumer of such electric power at prices that shall not exceed a schedule fixed by the Board from time to time as reasonable, just and fair; and in case of any such sale, if an amount is charged the ultimate consumer which is in excess of the price so deemed to be just, reasonable, and fair by the Board, the contract for such sale between the Board and such distributor of electricity shall be voidable at the election of the Board * * *" (16 U. S. C. 831k).

The Act contains minute provisions suitable only to the creation of a great power utility. This power program has no direct, real or substantial relation to navigation nor any other constitutional function of the Federal Government. The real, direct and primary object of the statute and program authorized thereby is the creation of a great Federally owned and operated utility and any references to navigation or to any other constitutional objective of Federal power are insubstantial, incidental and indirect and mere pretenses or pretexts under which it is sought to achieve an object not entrusted to the Federal Government but reserved to the States.

The Act seeks to set up and create an economic public policy contrary to the economic policy recognized and of force under the laws of the several States where the Act is operative and seeks to set up a Federally owned and operated business of generating, distributing and selling electricity; and the Defendants, as hereinafter more fully appears, are seeking to set up and apply such policy in these States. The policy declared by said Act, by favoring and giving preference to the sale and resale of electric energy and power without profit, creates or threatens to create un-

fair competition with the business of selling electric energy and power in said States by corporations which, being organized with private capital under the laws of the several States as hereinbefore more particularly set forth, must necessarily rely for their existence on making a fair profit as is allowed and authorized under the laws of the States [fol. 43] in which they operate. The Act, in thus attempting to set up a general economic public policy in the guise of selling property alleged to belong to the United States so as to favor a non-profit or socialistic policy in competition with and in preference to a profit policy, invades the reserved rights of the States and threatens to take the respective properties of these Complainants without due process of law.

Under the TVA Act, as amended, the number and capacity of steam and hydroelectric plants for the generation of electricity which the Defendants may construct and operate in the Tennessee basin, the quantity of electricity which the Defendants may create and manufacture for sale in a proprietary business, the extent to which and the territory in which TVA may acquire and construct lines for the transmission of electricity for distribution and sale and the extent and location of the territory in which TVA may engage in the proprietary business of generating and selling electricity are wholly undefined. Said Act, as amended, purports to vest complete and uncontrolled discretion in the defendants in relation to such matters and also the right to permit or prohibit the construction of hydroelectric plants by others, including Complainants, on the Tennessee River or any of its tributaries (16 U. S. C. 831y-1).

Except for the power to be produced through the operation of the facilities at Wilson Dam (which was constructed under the National Defense Act of 1916) to the extent the production and sale of such power has been held lawful and not to exceed the capacity which there existed prior to the doing of any of the acts herein complained of, the power to be produced under the program authorized by the Act is not surplus power incidentally produced by constitutional Federal works, but power which is to be deliberately and purposefully produced for the express purpose of distributing and selling such power as a proprietary business enterprise in a vast and undefined territory as hereinbefore set forth.

[fol. 44] **Threatened Injury to Complainants Through Power Program Authorized by TVA Act**

XIV

The Tennessee River is formed by the junction of the French Broad and Holston Rivers in eastern Tennessee 4½ miles above Knoxville. It flows southwest into northern Alabama, thence in a general westerly course across northern Alabama and from the northeast boundary of Mississippi nearly due north across Tennessee and Kentucky and enters the Ohio River at Paducah, Kentucky, 652 miles from the junction of the French Broad and Holston Rivers. It has a drainage area of over 40,000 square miles.

The Act authorizes the Defendants to develop each and all of the water power sites upon the Tennessee River and its tributaries and to construct such steam plants as they may see fit. A survey by the Corps of Engineers of the United States Army has established, and Complainants therefore allege, that there are 149 available water power sites upon the Tennessee River and its tributaries. The survey further shows, and Complainants therefore allege, that these water power sites, together with auxiliary steam plants, will provide over 5,000,000 k.w. of firm power and will produce 25 billion kilowatt hours of energy annually. The Act authorizes the Defendants to distribute this power throughout the area within transmission distance of the generating stations authorized to be constructed under the statutory program. Economical transmission distance in the present development of the art is 250 miles. Each of the territories served by the Complainants is wholly or in large part within 250 miles of some generating plant to be built under the program authorized by the Act, all as more fully appears from the map marked Exhibit A, attached hereto and made a part hereof. The annual consumption of electricity in the area within transmission distance of generating plants to be constructed under the statutory plan is approximately 14 billion kilowatt hours or only 56% of the quantity of electricity which the execution of the statutory plan will produce. The Complainants now supply, and their facilities are more than [fol. 45] adequate to supply, the present consumption of electricity in those parts of said area served respectively by them and Complainants' facilities are adequate to supply any probable increase in demand therein for a reasonable

period in the future; and if and when further facilities should be required they are ready, willing and able to provide them. Those parts of the area not served by Complainants are served by other existing privately-owned utilities with facilities more than adequate to supply the present consumption therein and any reasonable increase over a substantial future period. There is no need or use for the power to be produced by the Defendants as all demands for electricity are being met by Complainants in their territories and by other existing privately-owned utilities in the remainder of said area within transmission distance of the generating plants to be constructed under the statutory plan. The electric power to be produced by the Defendants under the statutory plan can only be sold, even in part, through displacement of the Complainants in the conduct of their respective businesses. The execution of the program authorized by the statute will necessarily and inevitably destroy all or a substantial part of the business and property of each of the Complainants.

The Power Program Promulgated by Defendants

XV

After the passage of the Tennessee Valley Authority Act in 1933, the Defendants, claiming to act pursuant to and under the authority of said Act, promulgated and officially announced a program for the construction, development and operation of a great Federally owned and operated public utility system for the generation and distribution of electricity in the territory within physical transmission distance of the electric generating plants to be constructed under the program. This program contemplates ultimately the unified development by TVA of all power sites on the Tennessee River and all of its tributaries under unified con- [fol. 46] trol as an integrated electric power system, the acquisition and development by TVA of all the water power sites on the Tennessee River and all of its tributaries, the construction and operation by TVA of hydroelectric plants at such sites, the use of auxiliary steam plants, the interconnection of all such power plants and the acquisition at prices fixed by TVA or the displacement by destructive and Federally subsidized competition of privately owned electric utilities in the area within physical transmission distance

of the generating plants to be constructed. To obtain an outlet for the electricity to be produced, said program further contemplates the appropriation of the entire market for electricity in the Tennessee basin and such larger area as the continually increasing quantity of power to be developed by the progressive execution of the program would be capable of serving. The appropriation of this market is to be accomplished by the construction or acquisition of transmission lines to points within physical transmission distance of all generating plants to be constructed and operated by TVA, and by the acquisition and operation of electric distribution plants in the area, either by TVA itself, or by political sub-divisions of the various States, under contract to use TVA power, and upon such terms and condition that TVA shall control and regulate electric rates and regulate electric service throughout the area to the exclusion of the States concerned and of their regulatory Commissions. For the taking of such market now held by the Complainants no appropriation is made by law and the Defendants propose and plan to take the market and property of the Complainants, without paying just compensation therefor.

The program, as promulgated by the Defendants, calls for the elimination of existing privately owned utilities in the area to the end that TVA shall have a compact market territory in which it will be the only purveyor of electric service as a public utility. To that end TVA proposes to acquire such transmission lines as it can use at its own price or to render them valueless through the construction of duplicate lines with Federal funds. The Defendants decline to sell power to existing privately owned utilities [fol. 47] other than as a temporary expedient. The TVA claims, under this program, the right to construct and operate duplicate distribution systems but the plan permits and encourages municipalities which will bind themselves to use TVA power to acquire existing distribution systems in the area at distress prices approved by TVA or to construct duplicate municipal distribution systems with such assistance and subsidization through TVA and other Government agencies as will bring about a destructive competition and destroy the business and property values of existing privately owned utilities. Under the program generating stations and transmission lines which are not desired by TVA will be rendered valueless; and unless

existing utilities will sell distribution systems to TVA or to the municipalities at grossly inadequate prices fixed by TVA, their businesses and property values in such municipalities are to be destroyed through the construction of duplicate systems and ruthless, Federally subsidized competition. The program has been briefly stated by the defendant Lilienthal, as follows:

"• • • the provisions of the Muscle Shoals (TVA) Act, together with the declarations of the President of the United States, required the Authority (TVA) to establish a yardstick. In other words, that the Authority was under the mandate to construct or acquire, either competitively or by purchase, the transmission systems and have the municipalities construct or acquire the distribution systems in a given area, so that it could determine the fair price at which electric energy should be sold."

On August 25, 1933, the Defendants in an official public announcement of their power program specified the initial market area to be appropriated by TVA as portions of Tennessee, Mississippi and Alabama, and at the same time announced their intention of appropriating the market for power throughout the entire area within commercial or economic transmission distance of its generating plants, as additional power should be developed by the progressive execution of the program. A copy of this announcement and copies of other official and public announcements of the [fol. 48] power program promulgated by TVA are attached hereto, marked Exhibit D, and made a part hereof.

The acknowledged objects and purposes intended to be accomplished by the Defendants through the foregoing program are:

(a) To establish complete public ownership of utility generating, transmission and retail or distribution facilities for electricity in a large area of the Nation;

(b) To establish a policy of rate making which will promote domestic and rural use at the expense of industrial use;

(c) To regulate local intrastate electric rates and service to supplant State regulation of public utilities on the theory that regulation by the States and agencies established by State laws has been inadequate and unsatisfactory;

(d) To establish a "yardstick" to measure the reasonableness of and to regulate the rates of privately owned utilities in or adjoining the area or elsewhere throughout the United States; and

(e) To promote public ownership of utilities throughout the nation as well as within selected area.

Except for the power to be produced through the operation of the facilities at Wilson Dam (which were constructed under the National Defense Act of 1916) to the extent the production and sale of such power has been held lawful and not to exceed the capacity which there existed prior to the doing of any of the acts herein complained of, the power to be produced under the program promulgated by the Defendants is not surplus power incidentally produced by Federal works, but power which is to be deliberately produced by said Defendants for the express purpose of distributing and selling such power as a proprietary business enterprise in the vast territory hereinbefore described, and through actual and threatened direct Federal and Federally subsidized competition, to effecuate Federal regulation of rates and service for intrastate electric service and to promote public ownership of public electric utilities as part of the permanent "National Power Policy."

[fol. 49] Threatened Damage to Complainants Through Power Program Promulgated by Defendants

XVI

The power program promulgated by the Defendants, like that authorized by the Act (which is described in Paragraph XIII supra), will develop 5,000,000 k.w., of firm power and will produce 25 billion kilowatt hours of energy annually. This power program provides for the construction of transmission lines sufficient to service all territory within transmission distance of any generating station. Economical or commercial transmission distance in the present development of the art is 250 miles. Each of the territories served by the Complainants is wholly or in part within 250 miles of some generating plant to be built under the power program promulgated by the Defendants, all as more fully appears on the map marked Exhibit A, attached

hereto, and made a part hereof. The entire consumption of electricity in the area within commercial or economical transmission distance of the generating stations to be constructed under the Defendants' power program is approximately 14 billion kilowatt hours annually or only 56% of the quantity of electricity to be produced by the Defendants under their program. This demand is already fully supplied by the Complainants and other public utilities operating within this area. The facilities of the Complainants and other existing utilities in this area are more than adequate to supply the present consumption of electricity therein and are fully adequate to supply any increase in demand in said territory for a reasonable period in the future; and if and when further facilities should be required, they are ready, willing and able to supply them. There is no need for this power to be produced by the Defendants; and it can be sold, even in part, only through the displacement of the Complainants in the conduct of their respective businesses. The execution of the program promulgated by the Defendants will necessarily and inevitably destroy all or a substantial part of the business and property of each of the Complainants. The promulgation of the program by the Defendants, purporting to act under the Ten- [fol. 50] nessee Valley Authority Act and in the discharge of official duty, threatens to decrease the marketability of the property of each of the Complainants in the threatened area, to depreciate the value of such property, to impair Complainant's ability to refinance maturing obligations and to impair the ability of such Complainants to finance new construction in said area. The promulgation of the program casts a cloud upon the rights of each of the Complainants and threatens each of the Complainants with irreparable injury.

Acts Done by Defendants in Execution of Their Power Program

XVII

Shortly after the promulgation of their power program, the Defendants, with their agents and servants, aggressively entered upon, and ever since have continued the execution of their promulgated program and are now threatening to carry it to completion. In execution of their power

program the Defendants have done and are doing, among other things, the following acts:

(1) They have assumed use, control and possession of Wilson Dam and U. S. Nitrate Plant No. 2 Steam Plant.

(2) They have undertaken the construction of Norris Dam and power plant on the Clinch River, a tributary of the Tennessee River, at a cost of approximately $36,000,000.

(3) They have undertaken the construction of the Wheeler Dam and power plant located approximately 15 miles above Wilson Dam on the Tennessee River. This dam and power plant will cost approximately $39,700,000.

(4) They have undertaken the construction of the Pickwick Landing Dam and power development located on the Tennessee River, approximately 50 miles below Wilson Dam. This dam and power development will cost approximately $35,800,000.

(5) The Defendants have initiated and are proceeding with the construction of the Guntersville Dam and power [fol. 51] project which is located on the Tennessee River near Guntersville, Alabama. This dam and power project will cost approximately $37,600,000.

(6) The Defendants have selected the site and have authorized the beginning of construction of the Chickamauga Dam and power project on the Tenneesee River about 7 miles upstream from Chattanooga. This dam and power project will cost approximately $41,500,000.

(7) The Defendants have recommended to Congress the construction of the Watts Bar Dam and power project, have tentatively selected its site, and are now engaged in exploratory work at the site. Construction work has been scheduled to start in the near future. This dam and power project is located on the Tennessee River about midway between Knoxville and Chattanooga, and will cost approximately $40,800,000.

(8) The Defendants have recommended to Congress the construction of the Gilbertsville Dam and power project, and have scheduled its construction to start in the near future, and are now engaged in exploratory work to fix its exact site. This dam and power project is located on the Ten-

nessee River, in Kentucky, approximately 23 miles above the confluence of the Tennessee River with the Ohio. It is estimated to cost $87,000,000.

(9) The Defendants have recommended to Congress the construction of the Coulter Shoals Dam and power project, have tentatively selected its site and have scheduled its construction to start in the near future. This dam and power project is located on the Tennessee River about 50 miles below Knoxville. It is estimated to cost $24,400,000.

(10) The Defendants have been authorized by Congress to begin the construction of the Fowler Bend Dam and power project, which is located on the Hiwassee River in Tennessee, 76 miles above the confluence of the Hiwassee with the Tennessee River. It is estimated to cost $20,400,000.

[fol. 52] (11) The Defendants have recommended to Congress the construction of the Fontana Dam and power project, have selected its site and have scheduled its construction to start in the near future. This dam and power project is located on the Little Tennessee River, in North Carolina, 68 miles above the confluence of the Little Tennessee with the Tennessee River. It is estimated to cost $42,400,000.

(12) The Defendants have recommended to Congress and have scheduled for commencement in the near future an increase in the height of Wilson Dam, at a cost of $500,000. The estimated cost of the completed development is $53,200,000.

(13) The Defendants have recommended to Congress and have scheduled an increase in the height of the Hales Bar Dam, a private dam constructed under Congressional authority by the Chattanooga and Tennessee Power Company, a predecessor of Complainant, The Tennessee Electric Power Company. This increase in height will cost approximately $4,500,000.

(14) The Defendants have stated in a report to the Congress that provision for the installation of electric generating equipment is being made in the design of all dams under construction or recommended for construction by the defendants.

(15) The above-mentioned ten dams, now under construction or recommended and scheduled for construction, exclu-

sive of Hales Bar, as particularly set forth in the special report of TVA to Congress, March 31, 1936, together with Wilson Dam and the U. S. Nitrate Plant No. 2 Steam Plant, both of which are completed, will have, upon completion with appropriate power installations, a capacity of 1,200,000 kilowatts of firm power and will produce 6,307,000,000 kilowatt-hours of firm energy annually when operated as a coordinated group.

[fol. 53] (16) Defendants have undertaken and are in process of completing works which will increase the firm power which may be developed at Wilson Dam (located at Muscle Shoals, Alabama), over and above that incidentally produced by the lawful construction of the dam under the National Defense Act of 1916, by 175,600 kilowatts of firm capacity, capable of producing 923,100,000 k. w. h. of firm energy annually on the basis of 60% annual load factor (on the basis of 100% annual load factor, these quantities become 94,300 k. w. and 826,100,000 k. w. h.). The firm capacity of Wilson Dam as constructed under the National Defense Act of 1916 and without the increase resulting from the completion of additional works in the Tennessee River or the use of the 60,000 k. w. steam plant at Nitrate Plant No. 2, or other steam plants, is 27,700 k. w., capable of producing 242,600,000 k. w. h. of firm energy annually on the basis of 100% annual load factor (on the basis of 60% annual load factor, those quantities become 27,700 k. w. and 145,600,000 k. w. h.).

Defendants have undertaken and entered into contracts for the supply of electric energy for a period of 20 years to various communities and industrial corporations and have agreed to supply firm power to other and larger cities to a total amount far in excess of the amount of firm power which may be generated at Wilson Dam at its capacity as constructed under the National Defense Act of 1916 and prior to the doing of any of the acts herein complained of.

(17) Each of the territories served by the respective Complainants is wholly, or in large part, within 250 miles of one of the aforesaid dams and generating plants projected by the Defendants, all as more particularly appears from the map marked Exhibit A attached hereto and made a part hereof.

(18) The Defendants have recommended a construction schedule for the foregoing dams which would produce a sys-

tem of eleven completed dams by July 1, 1943. The Defend- [fol. 54] ants have a large staff engaged in planning this construction program. The Defendants also have surveys under way to determine the most feasible sites for additional dams on the Tennessee and its tributaries, and have a large staff engaged in planning a further dam building program for the future.

(19) Defendants have acquired, constructed, are constructing or contemplate the construction of transmission and rural lines in the States of Mississippi, Tennessee, Alabama and Georgia, which will aggregate more than 3600 miles by July 1937. These lines are shown in part more particularly upon the map marked Exhibit B, attached hereto and made a part hereof.

(20) Upon information and belief Defendants have caused plans to be prepared for the construction of high tension transmission lines from one or more of the dam projects hereinbefore described to or near the city of Chattanooga, Tennessee, the city of Knoxville, Tennessee, the city of Memphis, Tennessee, the city of Nashville, Tennessee, the city of Columbia, Tennessee, the city of Jackson, Mississippi, the city of Meridian, Mississippi, the city of Evansville, Indiana, the city of Cincinnati, Ohio, the city of Louisville, Kentucky, the city of Birmingham, Alabama, the city of Atlanta, Georgia, the city of St. Louis, Missouri, the city of Gadsden, Alabama and other cities.

(21) Upon information and belief the Defendants have a large staff preparing plans for such transmission lines as will be necessary to permit the Tennessee Valley Authority to serve the entire area designated in their promulgated program to the exclusion of all existing privately-owned utilities.

(22) The Defendants have purchased, attempted to purchase or to promote the purchase of retail distribution systems, all franchises, contracts and going business relating to such systems in Knoxville, Tennessee, Memphis, Tennessee, Decatur, Hartselle, Russelville, Courtland, Leighton, Cherokee, Sheffield, Albany, Austinville, Falkville, Tuscumbia, [fol. 55] Florence and Belle Mina, Alabama, and many other cities, municipalities and unincorporated communities in the area designated in their promulgated program.

(23) The Defendants have entered into contracts for the sale of power to Knoxville, Tennessee, Memphis, Tennessee, Bessemer, Alabama, Tarrant City, Alabama, Tupelo, Mississippi, Alcorn County, Mississippi, Mississippi Electric Power Association, Athens, Alabama, New Albany, Mississippi, Pulaski, Tennessee, Pontotoc County, Mississippi, Muscle Shoals, Alabama, Amory, Mississippi, Prentiss, County, Mississippi, Dickson, Tennessee, and other municipalities in the area designated in the promulgated program. In each case Defendants by contract have undertaken to regulate the retail rates for electric service and otherwise to regulate the retail service of electric utilities in said cities and municipalities to the exclusion of the police powers of the states, the powers of their regulatory commissions, or the powers of the municipal subdivisions. Upon information and belief the Defendants have also entered into negotiations with other cities, including Chattanooga, Tennessee and Dalton, Georgia, for similar contracts for the sale of power. In some cases the Defendants have (by duress and coercion exercised as hereinafter more particularly set forth in Paragraph XIX hereof) not merely compelled privately owned utilities to sell certain of their local distribution systems but have by the contract of purchase undertaken, in defiance and disregard of the sovereignty and rights of the States, to control and regulate the rates at which the privately owned utilities should continue to serve in the territory in which the Defendants were temporarily permitting them to remain in business and thereby sought to oust the jurisdiction of the States and of their regulatory Commissions over the rates of such privately owned utilities.

(24) These Defendants have conducted and are still conducting a studied and systematic campaign of propaganda, solicitation, and local political activity in the area designated [fol. 56] in the promulgated program for the purpose of disrupting the established business relations between the Complainants and their customers, destroying the good will and seizing the markets which the Complainants have built up through years of effort and the investment of vast sums of money, and inducing and inciting the residents of communities served by Complainants, under high-pressure propaganda financed with taxpayers' money, to cooperate with the Defendants in their scheme to develop a great federally-owned and operated electric power utility as an absolute

monopoly in the vast territory marked by the Defendants for appropriation. This campaign has been carried on through public addresses of the individual Defendants, personal solicitation by the individual Defendants and their agents, local political activity, radio addresses, magazine articles and dissemination of sensational pamphlets and posters, mailed at taxpayers' expense under Government frank throughout and beyond the area designated in the promulgated program.

In September, October and November of 1933, the defendant Lilienthal made speeches in the principal Cities in the Tennessee Valley and adjacent territory, and particularly in Chattanooga, Tennessee, Memphis, Tennessee, Nashville, Tennessee, and Atlanta, Georgia, in which he enunciated the President's yardstick principle of "regulation through competition" and urged the municipalities throughout the area designated in the promulgated program to cooperate with the Defendants in establishing a great Federally-owned and operated electric utility as an absolute monopoly in the territory. From time to time thereafter in 1933, 1934, 1935 and 1936, the Defendants, Arthur E. Morgan and Lilienthal, continued to make public addresses and to correspond with customers of the Complainants in the Tennessee Valley and elsewhere in behalf of the plan and scheme of the Defendants to carry out the program hereinbefore described. During said period the Defendant Lilienthal, purporting to act as an official repre- [fol. 57] sentative of and spokesman for the government of the United States, met with various members of the governing bodies of the Cities of Birmingham, Bessemer, Tarrant City, Memphis, Knoxville, Chattanooga, and other cities in the selected area, and urged and incited them forthwith to substitute a publicly-owned local utility distributing TVA power for the local distribution systems of the various complainants.

(25) Since the promulgation of their program the Defendants have consistently attempted, and continue to attempt to coerce and compel the Complainants, as owners of existing facilities, to sell transmission lines and distribution systems at distress prices far below their fair value, even without allowance for severance damages caused to the rest of Complainants' systems under threat that unless Complainants accede to the demands of the Defendants they will

construct, or cause to be constructed, duplicate facilities subsidized in construction and operation by federal funds which the Defendants hold themselves out as having for expenditure at their discretion for such purposes and, by seizing the markets of existing utilities, render the properties of the existing utilities wholly valueless.

(26) The Defendants have caused Bills, designed to forward their power program, to be submitted to the Legislatures of various states in the selected area, and have lobbied, directly or through their agents, for, and brought about, the passage of such Bills. Typical of these Bills are those which Defendants caused to be introduced in and which were subsequently enacted by the Legislature of Tennessee. The character of these statutes is shown by the preambles which are set forth in Exhibit E attached hereto and made a part hereof. For a full statement of these statutes Complainants pray leave to refer to the official laws of the State of Tennessee.

[fol. 58] (27) The Defendants have established TVA offices and installed TVA personnel in various localities throughout the area designated in the promulgated program to disseminate propaganda in behalf of the program of the Defendants even where the TVA is not yet doing any business.

(28) On December 19, 1933 the Electric Home and Farm Authority (a Delaware corporation) was incorporated with the defendant directors of TVA as its sole directors. It was created and used as an instrumentality to promote the realization of the power program of these Defendants. The purpose of the Electric Home and Farm Authority, as directed by the individual Defendants, as its slogan stated, was to proceed toward an "electrified America" and to provide "electricity for all" through the Federal financing of electric consuming devices which might be sold only in those areas in which TVA operated, or in which the rates of the privately-owned utilities had been approved by the Defendants. The Electric Home and Farm Authority, under the direction of the individual Defendants, caused to be made up colorful rotogravure pamphlets which advertised in spectacular and dramatic fashion the TVA construction program and the joys of TVA electricity, and, after having made up these pamphlets, with the aid of costly advertising and pub-

licity experts caused them to be circulated at the expense of Federal taxpayers throughout and beyond the area designated in the power program promulgated by the Defendants. When the legality of Electric Home and Farm Authority, the Delaware corporation organized as an agency of TVA in the promotion of its power program, was called into question, the defendant directors of TVA, in order to avoid a final decision by the Supreme Court, dissolved said Delaware corporation. On August 1, 1935, a successor Electric Home and Farm Authority was incorporated under the laws of the District of Columbia; and since that time said new corporation has been acting with TVA and the individual [fol. 59] Defendants in the promotion of their power program as well as in attempting to regulate and lower rates in other sections of the country.

(29) The Defendants have officially reported to the Congress that merely that phase or part of their power program in active course of development is designed to create a business of producing, transmitting and selling electricity which will yield a gross annual income in excess of $23,000,000.

(30) Defendants have solicited large industrial customers of some of the Complainants and for the purpose of detaching such customers the Defendants have offered to supply electricity for industrial purposes at arbitrary, non-compensatory, confiscatory and discriminatory rates. They have attempted to persuade customers of Complainants to breach existing contracts. For the purpose of detaching said customers the Defendants have engaged in unfair competition and have offered and made discriminatory rates in violation of the valid laws of the States of Tennessee, Alabama and other States in which the Defendants are operating or seek to operate. The Complainants are unable to meet such unfair competition not only because the rates quoted are non-compensatory and made possible only by subsidies from Federal and State taxpayers, but also because Complainants are forbidden by State law to make discriminatory rates for competitive purposes.

All of the foregoing acts and things have been done by the Defendants in the execution of their power program hereinbefore more particularly described; and said Defendants are threatening to continue, and unless restrained by this Court will continue the execution of said program and

will carry it to completion to the irreparable damage of each of these Complainants.

[fol. 60] XVIII

The program authorized by the Act and the program promulgated by the Defendants, as applied to the territory involved in this suit, are also severally, as stated in the Tennessee Valley Authority Act (16 U. S. C. 831u, 831v), programs for the "economic and social development of said areas" and "experiments in social and economic planning." The activities of the Defendants in carrying out their program are not even remotely or indirectly related to the regulation of commerce among the States and with foreign Nations. Except with respect to power available at Wilson Dam prior to the doing of any of the acts herein complained of, the program of the Defendants is one of creating by publicity and promise of Federal subsidy an outlet for power deliberately produced as a commercial enterprise to be sold in unlawful and destructive competition with power now available in adequate quantities through the operation of the Complainants.

Complainants are informed by the annual reports of the TVA for the fiscal years ended June 30, 1934 and June 30, 1935, respectively, believe and therefore allege that the Defendant TVA, acting unedr the direction and control of the individual Defendants, both directly and through the operations of its subsidiary, The Tennessee Valley Associated Cooperatives, Inc., and through the medium of the Electric Home & Farm Authority, is engaged primarily in the business of constructing, developing and placing in operation an electric utility enterprise entirely proprietary in character and in promotion thereof is engaged collaterally in various business enterprises such as the manufacture and distribution of fertilizer in commercial quantities, the conduct of social service projects such as prevention of erosion of lands owned by private individuals, experiments in methods for the production of ceramics, experiments with the diet of individuals residing in the Tennessee Valley, studies of uses to which lands owned by private individuals can be put in order to increase production of crops, research into the matter of possible treated food crops to supple-[fol. 61] ment standard agriculture, economic and geographical surveys with reference to raw materials existing

in lands owned by private individuals; experiments in demonstrations of scientific domestic cooking on electric ranges and the planning of use of lands in aid of agriculture.

The power program authorized by the Act and the power program promulgated by the Defendants have no real or substantial relation to the improvement of navigation, as an incident to the regulation of commerce and in so far, if at all, as either program is sought to be so justified, it is a sham and pretense. All of the works being built or planned by the Defendants are designed and are of a character primarily and essentially to generate electricity as part of the Power Program hereinbefore described. Any relation whatsoever of the program authorized by the Act or promulgated by the Defendants to the improvement of navigation or provision for national defense is indirect, insubstantial, incidental and remote; and even such indirect, insubstantial, incidental and remote relation, if it exists, is limited to an insignificant fraction of such programs and the activities encompassed by them. The program authorized by the Act and the program promulgated by the Defendants, as they relate to the generation and distribution of electric power through facilities other than Wilson Dam to the extent the production and sale of power at Wilson Dam has been held legal and not to exceed the capacity which there existed prior to the doing of any of the acts herein complained of, is totally unrelated to the improvement of navigation or the provision for national defense; and Complainants are informed by the Defendants and by the President of the United States, believe, and therefore allege that the primary purpose of these programs is to invoke the "yardstick principle" for the purpose of regulating phases of the intrastate utility businesses of Complainants and other privately owned utilities, or the destruction of such privately owned utility businesses, through the medium of publicly owned electric utilities [fol. 62] operating and to operate in competition with the private enterprises of the Complainants and as a matter of policy to promote the public ownership of electric utilities.

Cooperation Between Defendants and Federal Administrator of Public Works to Destroy or Acquire Properties of Complainants at Distress Prices.

XIX

The Defendants have adopted an unlawful plan and have cooperated and threaten to continue to cooperate in the exe-

cution thereof with one Harold L. Ickes, as Administrator of the Federal Administration of Public Works, to carry on a systematic campaign to coerce and intimidate Complainants as owners of distribution systems or transmission lines in municipalities or territory in which TVA desires to seize the market to sell such distribution systems and transmission lines either to TVA, or to the municipalities, at prices arbitrarily fixed by the Defendants and far below the fair value of the property sought to be taken. To effectuate this unlawful plan the Defendants inform owners of the properties desired that unless they sell the property at a price arbitrarily fixed by the Defendants, either TVA or the municipalities will build a duplicate distribution system or transmission system with Federal funds and by competition, so subsidized with Federal funds as to be completely destructive to competitors not having access to the Federal Treasury, render the property of the "recalcitrant" utilities valueless except for junk. To make effective this coercion and intimidation and to secure the property desired for less than fair value, said Ickes, as Administrator of Public Works (acting in some instances in cooperation with the Works Progress Administration) on the request of the Defendants authorizes and announces a gift to the municipality of 30% to 45% of the cost of the duplicate distribution or transmission system and agrees to furnish the balance of the cost out of Federal funds borrowed on the credit of the United States and repayable, if at all, only out of the earnings, if any, of the duplicate plant, all upon condition that [fol. 63] the municipality shall agree to use TVA power and will, as soon as legally possible, oust the existing utility from the municipality.

Allotments of such gifts and "loans" are made available to the municipalities if the utility refuses to surrender its property to the Defendants or their nominees on their own terms; but if and so long as the utility agrees to "sell" its property to the Defendants or the municipality, as the Defendants may elect, at an arbitrary distress price fixed by the Defendants, such allotments are promptly cancelled regardless of the wishes of the municipality. The Defendants, acting in concert with said Ickes, have already applied this policy at Knoxville, Tennessee, Memphis, Tennessee, Florence, Alabama, Bessemer, Alabama, Tarrant City, Alabama, Decatur, Alabama, Sheffield, Alabama, and other cities where

the Defendants have appropriated or sought to appropriate the market for electricity. The Defendants, acting in concert with said Ickes, threaten to continue to apply this policy in acquisition or attempted acquisition of properties of each of the Complainants as the Defendants progressively expand their electric power enterprise in the territories respectively served by the Complainants, which territories are more specifically described in Paragraph VIII, supra.

The Defendants pursuant to the unlawful plan before described have also cooperated and continue to cooperate with the said Ickes and the Federal Administration of Public Works to force municipalities in which TVA desires to appropriate the market for electricity, to agree to purchase of TVA power under threats that otherwise allotments of Federal funds for public works in such municipalities will be denied, or, if already made, will be cancelled. The manner in which both phases of this conspiracy between the Defendants and said Ickes has been and is being carried on and the design and purpose of such conspiracy is illustrated by the telegram dispatched by the said Ickes from Washington, D. C., under date of July 11, 1934, to Honorable Lee Glenn, Mayor of Florence, Alabama. Said telegram reads as follows:

[fol. 64] "Washington, D. C., 1934, July 11.

Hon. Lee Glenn, Mayor, Florence, Ala.

Lilienthal TVA has explained proposal to communities North Alabama whereby Authority will purchase distribution facilities Florence and other communities from Alabama Company, rehabilitate them and turn them back to communities. Also your proposal amend your application such manner Florence purchases existing facilities and uses PWA funds for rehabilitations and extensions. Lilienthal informs me that all other communities in area affected have approved TVA plan, that Florence alone is holding out. Policy Public Works is to support TVA. Its proposal furthers regional operation rural electrification pursuant to President's desires, whereas your proposal impedes that policy. This administration will advance no funds to Florence for expenditures inconsistent TVA plan. It will aid entire region and in our judgment is highly advantageous to you. However allotment and grant will be maintained pending completion transaction between TVA and Alabama

Company. Suggest you promptly take appropriate action accept TVA proposal so that it may exercise option within effective period.

Ickes, Administrator."

The Defendants cooperating in the execution of said unlawful plan with said Ickes are perverting and misusing the power, if any, with which they are vested by the Tennessee Valley Authority Act and the power, if any, with which said Ickes is vested under the National Industrial Recovery Act and the Emergency Relief Appropriation Act, to secure the property of these Complainants at less than fair value and thereby confiscate their property without just compensation and wrongfully to destroy the businesses and good will of these Complainants. Unless these Defendants are enjoined by this Court, they will continue so to conspire with said Ickes and through the unlawful and unconstitutional use of the funds of the United States confiscate the property of the Complainants and cause the Complainants and each of them vast and irreparable injury.

[fol. 65] The Attempted Regulation of Complainants' Rates in Confiscatory

XX

The avowed purpose of the program authorized by the Act and promulgated by the Defendants is to effect a Federal regulation of intrastate electricity rates and service by a so-called "yardstick" method or "regulation by competition." Even if the power to regulate intrastate electric rates were vested in the Federal Government and "regulation by competition" were otherwise a constitutional method of exercising such power, the regulation sought to be imposed by the program authorized by the Act and promulgated by the Defendants is illegal and void in that the so-called yardstick constitutes an illegal and unconstitutional attempt to regulate and fix the rates of privately owned and operated utilities and particularly of the Complainants at the non-compensatory and confiscatory level of the TVA wholesale rate and the TVA regulated and prescribed retail rates, which are respectively made possible only through the subsidization of the TVA operations at the expense of Federal and State taxpayers and the subsidization of the municipal distribution plants by the Federal Treasury, or

through the acquisition of properties of existing utilities at distress prices under the coercion of the Defendants, aided and abetted by said Ickes and the Public Works Administration, as hereinbefore more particularly set forth.

The Defendants seek to regulate the rates of the Complainants by the following so-called yardstick rates. The so-called yardstick for wholesale rates is the TVA wholesale rate. The so-called yardstick for cost of distribution is the amount which TVA arbitrarily fixes and allows municipalities for the cost of local distribution. The so-called yardstick for retail rates is the sum of the TVA wholesale rate to municipalities and the amount which TVA arbitrarily fixes and allows municipalities to add to the TVA wholesale rate to cover the costs of local distribution. Each of such so-called yardsticks is dishonest, unfair, unreasonable and confiscatory as a measure of the rates of these Complainants or other privately owned utilities.

[fol. 66] The so-called TVA yardstick for wholesale rates is dishonest, unfair, unreasonable and confiscatory as a measure of the rates of these Complainants or other privately owned and operated utilities in that it excludes the cost of the major part of the investment necessary to render the service and excludes necessary operating expenses which TVA either ignores or recoups from State and Federal taxpayers instead of from rates in the following respects, among others:

(1) Under the Act only a minor fraction of the cost of hydroelectric developments and steam power plants built or used by TVA is charged to the development of power. (16 U. S. C. 831m.) Such allocation of cost of hydroelectric developments and steam power plants built or used by TVA as is made to the development of power is insufficient, arbitrary, unreasonable and without any basis in fact. Under the claimed authority of the statute, the defendants have, for illustration, charged nothing to power development out of a total investment of $125,000,000 at Muscle Shoals. They first announced in public hearings they would charge $29,000,000 to power, and later reduced this to $21,000,000, but later stated no allocation to power had as yet been determined. On the other hand, privately owned utilities, including Complainants, are not only required to bear the entire cost of hydroelectric developments but must agree to install

navigation facilities and furnish power for navigation purposes without compensation.

(2) TVA does not charge in operating expenses any return even on the fractional part of the investment allocated to power production. No allowance in operating expenses has been made even for the low bond interest paid by the United States upon the money borrowed by the United States to finance TVA.

(3) TVA is relieved of the cost of securing capital by the simple expedient of using the money out of the United States Treasury and, if it elects, selling bonds to cover the full cost of its projects on the credit of the United States.

[fol. 67] (4) TVA is relieved of all Federal income and excise taxes and of all State property, income, excise and occupational taxes; and in lieu thereof under the Act pays only an insignificant percentage of the gross proceeds received from the sale of power in Alabama and Tennessee, which is arbitrarily fixed and subject to change without the consent of the States. (16 U. S. C. 831 l.) The sum so paid by TVA in lieu of taxes does not exceed one per cent of the taxes paid by Complainants upon property of like value and operations of like magnitude.

(5) TVA is relieved of the cost of insurance or damages commonly covered by Workmen's Compensation Insurance and all such costs are paid from the Federal Treasury. (16 U. S. C. 831b.)

(6) TVA is given a preferential freight rate which is not available to Complainants for the same service; and all of the officials and employees of TVA are given preferential passenger fares.

(7) TVA franks all letters, bills, statements and advertising.

(8) TVA makes only an inadequate allowance for annual depreciation; and in 1935 made no allowance whatever.

(9) TVA is relieved of the expense of complying with State laws and costs of State regulation.

(10) Automobiles and airplanes owned by TVA, and gasoline consumed by them are exempt from all forms of taxes and licenses.

The so-called "yardstick" for measuring the costs of distribution, which is arbitrarily fixed by TVA, is dishonest, unfair, unreasonable and confiscatory as a measure of rates of the Complainants and other privately owned utilities for the reason that it does not include the following costs, among others, necessary for rendering such service:

(1) Sales promotion, auditing, engineering, and local services are furnished to such municipalities by TVA without charge.

(2) Such municipal distribution systems are relieved of all Federal income and excise taxes and of all State prop- [fol. 68] erty, income, excise and occupational taxes. Such taxes represent a substantial part of the necessary costs of operation of a privately owned distribution system. Even the paper or bookkeeping entry set up by such municipalities in lieu of taxes at the direction of TVA is substantially less than 50% of the tax required to be paid by a privately owned utility upon similar property and operations; and this inadequate bookkeeping figure is not paid out but is available for working capital and new construction.

(3) The capital investment in the municipal distribution systems is arbitrary reduced through gifts from the Federal Treasury of from 30% to 45% of the cost of such distribution systems.

(4) The balance of the capital necessary to construct such municipal distribution systems has been and is being supplied from the Treasury of the United States on the credit of the United States at low interest rates made possible by the use of the credit of the Federal Government and payable, if at all, only out of revenue.

(5) In cases of "loans" and grants for construction of duplicate municipal distribution systems PWA has in some cases stipulated:

"No depreciation charges, taxes, or other items of expense, except normal operating expenses and power and lighting extensions shall be charged against the revenues of this project."

(6) Where the publicly owned distribution system has been acquired from a privately owned utility, the capital has been supplied through loans of Federal funds by the TVA so

that the cost of capital required has been arbitrarily reduced through use of the credit of the United States.

(7) Where municipal distribution systems have been acquired from privately owned utilities, the capital investment has been further reduced by the conspiracy of the Defendants and said Ickes, as herein more particularly set forth, to coerce such privately owned utilities into selling such property at prices arbitrarily fixed by the Defendants and far below fair value under threat of destruction through [fol. 69] cutthroat competition financed at the expense of the Federal Treasury.

(8) In many instances the stated investment in municipal and co-operative distribution plants has been arbitrarily reduced by TVA in pursuance of regulatory powers asserted by it under its contracts so as to accord with rates arbitrarily established and fixed for retail service in such municipalities.

Such a method of rate regulation is unfair, arbitrary, unreasonable and confiscatory and constitutes the taking without just compensation of the property and market of the utilities sought to be regulated in violation of the Fifth Amendment of the Federal Constitution. The Defendants are applying and threaten to continue to apply this method of regulation to the Complainants and, unless the Defendants are enjoined by this Court, they will regulate the rates of Complainants for intrastate electric service by such unfair, dishonest, arbitrary, confiscatory and destructive competition to the irreparable damage of each of these Complainants.

XXI

With full knowledge that the so-called TVA yardstick for wholesale rates and the so-called TVA yardsticks for retail rates in municipalities distributing TVA power were and are dishonest, unreasonable, arbitrary, unfair, non-compensatory, and confiscatory in the respects and for the reasons in Paragraph XX more particularly set forth, the Defendants have through speeches, radio broadcasts and written and oral propaganda, represented to the inhabitants of communities served by the Complainants that such so-called yardsticks were and are fair measures of reasonable and compensatory rates for electric service supplied by the

Complainants and have thereby unfairly, wrongfully and improperly attempted to incite the inhabitants of communities served by Complainants to build publicly-owned systems to use TVA power, to mislead the inhabitants of communities served by the Complainants into believing that [fol. 70] they were and are being charged unreasonable rates for service, to disrupt the good relations existing between the Complainants and their customers, to destroy the good-will built up by Complainants through years of effort and a large investment of money, to destroy the ability of Complainants to finance their businesses, to stir up political agitation against privately-owned utilities and to bring Complainants into disrepute and disfavor in the communities in which they are doing business, all to the end that Defendants by unfair, wrongful and dishonest competition and propaganda may seize for themselves the market created and developed by the Complainants over a long period of years.

Defendants' Program and Acts Unauthorized or Unconstitutional

XXII

The acts done and threatened by the Defendants, as hereinbefore more particularly described, are all in furtherance of the doing of business by the TVA as an electric utility in a proprietary capacity in the various States in which some part of the area covered by the promulgated program is situated, without any lawful franchise, any certificate of convenience and necessity or any occupational license. In conducting this proprietary utility business, the Defendants deny the sovereignty of the various States in which the business is carried on or is to be carried on, refuse to submit to the regulation or control of said States or any of them, refuse to pay occupational or other taxes imposed by said States upon the privilege of carrying on a utility business in said States and refuse to comply with any of the laws of any of said States regulating or relating to public utilities or the carrying on of the business of a public utility.

XXIII

Defendants, purporting to proceed under the Tennessee Valley Authority Act aforesaid, further threaten illegal

and unlawful competition with Complainants and each of [fol. 71] them by engaging in a private and proprietary business, not governmental or national in character, not interstate, and not essential or necessary to the discharge of any constitutional federal function, contrary to and in defiance and disregard of and without compliance with the laws of the several States in which Complainants severally do business, particularly, (1) valid state laws regulating the rates and service of public utilities engaged in the business of generating, transmitting, and distributing electric light and power; (2) valid state laws relating to foreign corporations doing business within their limits; (3) valid state laws imposing franchise, license, real estate, and other taxes on such corporations; (4) valid state laws forbidding or regulating monopoly, restraint of trade, and unfair competition.

XXIV

Many of the acts of the Defendants herein complained of including particularly those set forth in Paragraph XIX hereof are not in terms authorized by the Tennessee Valley Authority Act of 1933, as amended, or by any other law.

XXV

The Tennessee Valley Authority Act of 1933 as amended, (insofar as it attempts to authorize the power program described in said Act and the power program and acts of the Defendants hereinbefore set forth), the program described by said Act, the program promulgated by the Defendants, and the things done, being done, and threatened by said Defendants in furtherance of said programs and in reliance upon the said Act, are severally unlawful, unconstitutional and void for the following reasons:

(1) Neither said Act, the power program authorized by said Act, the power program promulgated by the Defendants, nor the things done, being done, or threatened by the Defendants in pursuance of said programs and in reliance upon said Act are authorized by any power delegated to the Federal Government by the Constitution or any of its amendments.

[fol. 72] (2) The Tennessee Valley Authority Act of 1933 as amended, the power program sought to be authorized by that Act, the power program promulgated and sought to

be carried out by the Defendants, and the things done, being done, and threatened, in the execution of said act and of said programs, severally attempt to extend Federal power over matters of intrastate commerce and local police power, and particularly over the regulation of intrastate public utilities, including the Complainants, in contravention of the Ninth and Tenth Amendments to the Constitution of the United States, and severally constitute the taking of property of the Complainants in violation of the Fifth Amendment to the Federal Constitution.

(3) The Tennessee Valley Authority Act fails to indicate or establish any adequate legislative standard to guide the administrative officers charged with the administration of said Act, but, on the contrary, attempts unlawfully to delegate legislative power to the President of the United States and such administrative officers, including the Defendants herein, in violation of Article I, Section 1, Article II, Section 8, Clauses 1, 2, and 18, and Article II, Section 1 of the Constitution of the United States. The Act seeks to delegate to the individual Defendants the uncontrolled and unguided discretion to do whatever they may think best in the matter of development of water power and in the matter of social and economic planning in the Tennessee Valley and adjacent territory and in the regulation of electric rates.

(4) The Tennessee Valley Authority Act fails to provide for any hearing for persons whose rights will be injured and whose property will be taken by the Defendants and, as construed and applied by the Defendants, attempts to provide for the extra-legal condemnation and appropriation of property of the Complainants and thereby denies to Complainants due process of law as a matter of procedure in violation of the Fifth Amendment to the Constitution of the United States.

[fol. 73] (5) The Tennessee Valley Authority Act of 1933, as construed and applied by the Defendants, the power program authorized by the Act and the power program promulgated by the Defendants severally seek to regulate the rates of Complainants for electric utility service through Federally subsidized competition so that the rates of Complainants shall be fixed without evidence, without a hearing, and without the opportunity for judicial examination and re-

view to determine the reasonableness or unreasonableness of said rates and thereby deny the Complainants due process of law as a matter of procedure in violation of the Fifth Amendment to the Federal Constitution.

Damages; No Remedy at Law

XXVI

As hereinbefore more fully appears, the mere existence of the Tennessee Valley Authority Act as an ostensibly constitutional and valid statute, the power program authorized by that Act, the power program promulgated by the Defendants, the acts done and threatened by the Defendants in furtherance and execution of their power program severally threaten each of the Complainants with irreparable injury. The execution of the power program authorized by the Act or the power program promulgated by the Defendants will necessarily and inevitably destroy all or a substantial part of the business and property of each of the Complainants. Many of Complainants, as hereinbefore more particularly alleged in Paragraph VIII hereof, own and operate transportation lines and facilities, gas properties with plants and mains for serving natural and artificial gas to their respective customers, and water and ice plants with appurtenant equipment for delivery and service, all of which properties and the businesses connected therewith, in each case are managed and carried on as an integrated business. These related and interdependent enterprises and businesses are valuable assets to the respective Complainants, represent-
[fol. 74] ing many millions of dollars in invested capital, and supply profitable uses for otherwise surplus power capacity. Their operation as an integrated business results in economies of operation which reduce the cost of carrying on each of such activities as well as the cost of carrying on the electric business. The loss or destruction of such Complainants' electrical and power businesses would deprive them of the economies of such integrated operation and would greatly damage, if not destroy, the value of the aforesaid properties and businesses which have been developed as adjuncts thereto. The acts of the Defendants thus directly threaten substantial damages to the non-electric as well as the electric business and property of each of the Complainants. The acts of the Defendants, done and threatened as hereinbefore more particularly set forth,

threaten irreparable damage to each of the Complainants. The mere existence of the Tennessee Valley Authority Act as an ostensibly valid statute and the promulgation of the program of the Defendants purporting to act pursuant to and in discharge of their duty under that Act threatens to decrease the marketability of the property of each of the Complainants in the threatened area, to depreciate the value of such property, to impair the ability of Complainants to refinance maturing obligations and to impair the ability of the Complainants to finance new construction in the threatened area. The acts and threats of the Defendants cast a cloud upon the franchises, businesses and properties of each of the Complainants. Unless these Defendants are enjoined, the Complainants will severally suffer vast and irreparable injury as hereinbefore more specifically set forth, for which they severally have and can have no adequate remedy at law.

Prayer

Wherefore, the Complainants pray:

(1) That process issue against the Defendants requiring them and each of them to answer this Bill, but not under oath or affirmation, the benefit thereof being hereby expressly waived by the Complainants.

[fol. 75] (2) That this Court, upon the final hearing hereof, shall adjudge and decree that the Tennessee Valley Authority Act of 1933, as amended, the power program authorized by said Act, and the power program promulgated by the Defendants are severally in violation of the Constitution of the United States in the circumstances and particulars hereinbefore set forth and in so far as they undertake to authorize the Defendants to perform and engage in the acts and practices of which complaint is made.

(3) That this Court shall, by its final judgment, enjoin Defendants, their agents and employees, separately and severally:

(a) From further executing the Tennessee Valley Authority Act of 1933, the power program authorized by said Act or the power program promulgated by the Defendants.

(b) From purchasing, constructing or otherwise acquiring works for the purpose of creating a supply of electric

power for use in carrying on a Federally owned electric public utility.

(c) From disposing of electricity generated at dams or other works constructed by or on behalf of the United States (whether valid structures or not) so as to establish the United States in the industry or business of producing, transmitting and selling electric power as a proprietary, commercial and competitive venture, and so as to draw to the Federal Government the conduct and management of such business.

(d) From disposing of electric energy generated at dams or other works constructed by or on behalf of the United States (whether valid structures or not) for the private benefit of certain classes of the people or for the private benefit of a group of people living in certain areas of the Nation.

(e) From disposing of electricity generated at dams or other works constructed by or on behalf of the United States (whether valid structures or not) so as to regulate and control rates and service for intrastate electric utilities, pro- [fol. 76] mote public ownership of such utilities, or otherwise govern the concerns reserved to the States.

(f) From constructing, purchasing or otherwise acquiring hydro-electric plants, electric generating stations, electric transmission lines, electric distribution systems or other power facilities, except (1) such transmission lines as may be necessary and appropriate for the transmission of power generated at Wilson Dam to the extent the production and sale of power at Wilson Dam has been held legal and not to exceed the capacity which there existed as the dam was constructed under the National Defense Act of 1916 and before the performance of any of the acts complained of in the foregoing Bill and (2) then only upon payment to the Complainants of just compensation for any markets now supplied by, or for any other property of, the Complainants, which the Defendants may take in disposing of such power from Wilson Dam.

(g) From selling electric energy produced by water power or steam, except (1) such energy as may be produced by Wilson Dam to the extent the production and sale

of power at Wilson Dam has been held legal and not to exceed the capacity as the dam was constructed under the National Defense Act of 1916 and under the conditions there existing before the performance of any of the acts complained of in the foregoing Bill and (2) then only upon payment to the Complainants of just compensation for any markets now supplied by, or for any other property of, the Complainants, which the Defendants may take in disposing of such energy produced by Wilson Dam.

(h) From carrying on a campaign of organized propaganda, at Federal expense, to promote public ownership and operation of electric utilities under contract or in privity with TVA or dominated by TVA.

(i) From carrying on a campaign to promote public ownership and operation of electric utilities in municipalities or territory served by the Complainants or any of them.

[fol. 77] (j) From regulating the rates or service of municipal electric utilities in the territory served by Complainants or any of them through contract, purchase, economic coercion, or otherwise.

(k) From providing management, sales, engineering and other free services to Complainants' competitors.

(l) From interfering with or disrupting the business, service, contract or utility relations of the Complainants or any of them with the design and purpose of promoting a policy of public ownership or of carrying out a program of regulation of rates and service by yardsticks or competition.

(m) From selling electricity in unfair competition with the Complainants or any of them through establishment of rates less than the cost of service under the subsidization of State and Federal taxpayers.

(n) From using Federal funds to construct or purchase electric utility distribution systems either for direct operation as a public utility by TVA or for transfer to municipalities to be operated under control of rates and service by TVA.

(o) From regulating or attempting to regulate the rates or service of Complainants or any of them through the

establishment of so-called "yardsticks" or through competition subsidized by the Federal Treasury and by exemption from State and Federal taxes.

(p) From confederating and acting in concert with Harold L. Ickes, as Administrator of Public Works, to induce and persuade municipalities served by the Complainants or any of them, to construct duplicate facilities, to control the rates of municipalities receiving allotments from the PWA as part of the "national power policy" to regulate and lower intrastate rates for electric service, to disrupt the business, service, contract or utility relations existing between the Complainants or any of them and their customers.

(q) From carrying on political agitation to persuade municipalities served by the Complainants or any of them to [fol. 78] hold elections to determine the question of municipal ownership and operation of electric public utilities in said municipalities and from unfair and unwarranted interference with the businesses of the Complainants or any of them.

(r) From engaging in the business of electric public utility in any of the territories served by any of the Complainants.

(s) From supplying the markets and customers now being supplied by any of the Complainants or any customers in the area now served by any of Complainants.

(t) From engaging in the business of an electric public utility in any of the territories served by any of the Complainants without complying with the State laws regulating the establishment and conduct of the business of a public utility therein, the State laws regulating the doing of business in said states by a foreign corporation or any of the State laws forbidding or regulating monopoly, restraint of trade and unfair competition.

(u) From engaging in any way in practices which constitute unfair competition with any of the Complainants in territory served by them.

(4) That this Court shall by its final decree grant such other and further relief whether herein specifically prayed for or not as right and justice shall require and as to this Court shall seem meet, just and proper.

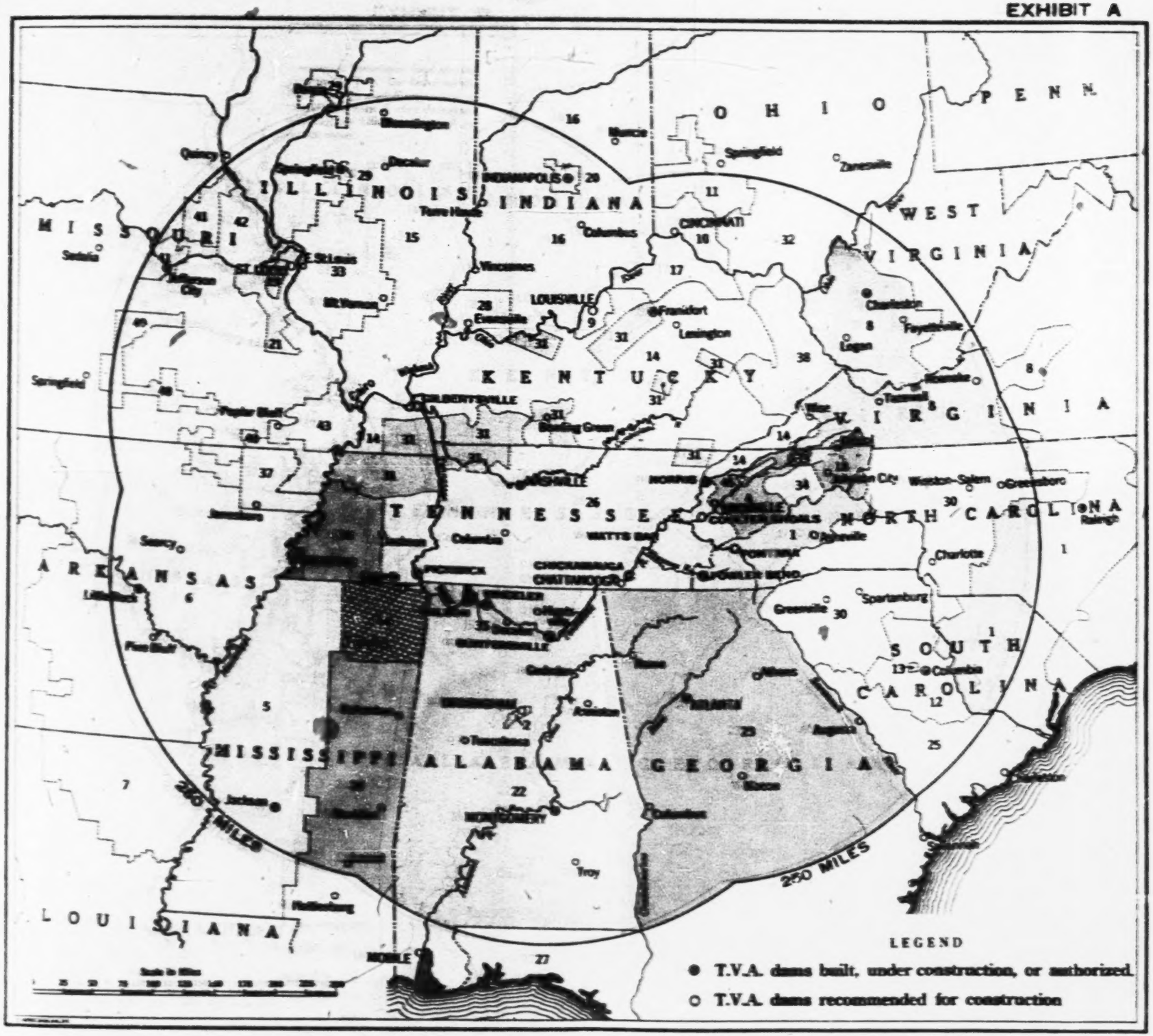
(5) This is the first application for injunction or other extraordinary relief in this cause.

Frantz, McConnell & Seymour, 700 Burwell Building, Knoxville, Tennessee; Trabue, Hume & Armistead, American Trust Building, Nashville, Tennessee; Baker, Hostetler, Sidlo & Patterson, Union Trust Building, Cleveland, Ohio, Solicitors for Complainants.

[fols. 79-80] *Duly sworn to by R. W. Lamar. Jurat omitted in printing.*

(Here follow two maps, Exhibits A and B, side folios 81 and 82)

EXHIBIT A

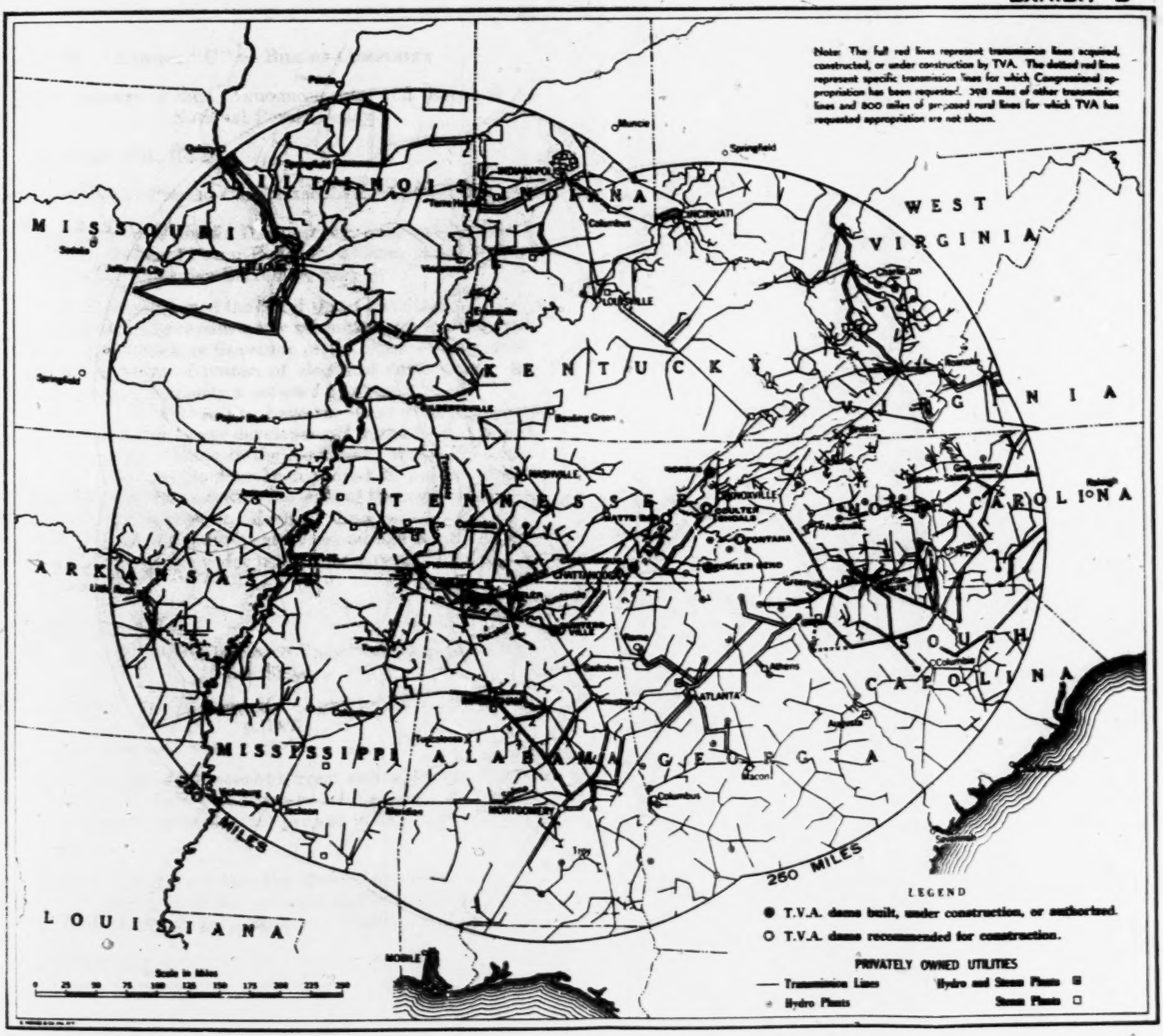


1. Carolina Power & Light Company
2. Birmingham Electric Company
3. Memphis Power & Light Company
4. Tennessee Public Service Company
5. Mississippi Power & Light Company
6. Arkansas Power & Light Company
7. Louisiana Power & Light Company
8. Appalachian Electric Power Company
9. Louisville Gas and Electric Company
10. The Cincinnati Gas and Electric Company
11. The Dayton Power and Light Company
12. Broad River Power Company
13. Lexington Water Power Company
14. Kentucky Utilities Company
15. Central Illinois Public Service Company
16. Public Service Company of Indiana
17. Kentucky Power & Light Company
18. East Tennessee Light & Power Company
19. Lockeke Power & Light Company
20. Indianapolis Power & Light Company
21. Union Electric Light and Power Company
22. Alabama Power Company
23. Georgia Power Company
24. Mississippi Power Company
25. South Carolina Power Company
26. The Tennessee Electric Power Company
27. Gulf Power Company
28. Southern Indiana Gas and Electric Company
29. Central Illinois Light Company
30. Duke Power Company
31. Kentucky-Tennessee Light & Power Co.
32. The Southern Ohio Electric Company
33. Illinois Power and Light Corporation
34. Tennessee Eastern Electric Company
35. Southern Tennessee Power Company
36. West Tennessee Power & Light Company
37. Arkansas-Missouri Power Company
38. Kentucky & West Virginia Power Company, Inc.
39. Kingsport Utilities, Inc.
40. Missouri Electric Power Company
41. Missouri Power & Light Company
42. East Missouri Power Company
43. Missouri Utilities Company
44. Tennessee Valley Authority
45. Holston River Electric Company

• Companies thus designated are complainants

Notes—
Each company in the foregoing list is numbered to correspond with its service area number on the map.

EXHIBIT B


Note: The full red lines represent transmission lines acquired, constructed, or under construction by TVA. The dotted red lines represent specific transmission lines for which Congressional appropriation has been requested. 398 miles of other transmission lines and 800 miles of proposed rural lines for which TVA has requested appropriation are not shown.
ILLINOIS
INDIANA
WEST VIRGINIA
MISSOURI
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
ARKANSAS
SOUTH CAROLINA
MISSISSIPPI
ALABAMA
GEORGIA
LOUISIANA
250 MILES
250 MILES
Springfield
Peoria
Quincy
Springfield
Indianapolis
Muncie
Terre Haute
Cincinnati
Columbus
Louisville
Springfield
Jefferson City
Poplar Bluff
Bowling Green
Nashville
Knoxville
Chattanooga
Asheville
Greenville
Atlanta
Athens
Columbia
Augusta
Macon
Columbus
Montgomery
Jackson
Vicksburg
Meridian
Tupelo
Mobile
Scale in Miles
0 25 50 75 100 125 150 175 200 225 250
LEGEND
T.V.A. dams built, under construction, or authorized.
T.V.A. dams recommended for construction.
PRIVATELY OWNED UTILITIES
Transmission Lines
Hydro Plants
Hydro and Steam Plants
Steam Plants

[fol. 83] EXHIBIT "C" TO BILL OF COMPLAINT

Representative Public Announcements and Releases re National Power Policy

1. September 21, 1932.

Speech of Present Chief Executive. At Portland

Power Views of Franklin D. Roosevelt, compiled November 1934 for National Power Policy Committee, by Joel David Wolfsohn, Executive Secretary, page 8

"I have strengthened the belief that I have had for a long time, and that I have constantly set forth in my speeches and papers in my work as Governor of the State of New York, that the question of power, of electrical development and distribution is primarily a *national* problem." • • •

"• • • Here then you have the clear picture of four great government power developments in the United States, the St. Lawrence River in the Northeast, Muscle Shoals in the Southeast, the Boulder Dam project in the Southwest, and, finally, but by no means the least of them, the Columbia River in the northwest. Each of these will be forever a national yardstick to prevent extortion against the public and to encourage the wider use of that servant of the people —electricity."

2. April 10, 1933.

Executive Message. Tennessee Valley Development—Muscle Shoals

(House Doc. No. 15, Cong. Rec. April 10, 1933, p. 1423; id., p. 1451)

"To the Congress:

"The continued idleness of a great *national investment* in the Tennessee Valley leads me to ask Congress for legislation necessary to enlist this project in the service of the people.

[fol. 84] "It is clear that the Muscle Shoals development is but a small part of the potential public usefulness of the entire Tennessee River. Such use, if envisioned in its en-

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Emphasis ours.

tirety, transcends mere power development: it enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short, this power development of war days leads logically to national planning for a complete river watershed involving many States and the future lives and welfare of millions. It touches and gives life to all forms of human concerns.

"I, therefore, suggest to the Congress legislation to create a Tennessee Valley Authority—a corporation clothed with the power of Government but possessed of the flexibility and initiative of a private enterprise. It should be charged with the broadest duty of planning for the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and its adjoining territory for the general social and economic welfare of the Nation. This authority should also be clothed with the necessary power to carry these plans into effect. Its duty should be the rehabilitation of the Muscle Shoals development and the co-ordination of it with the wider plan.

"Many hard lessons have taught us the human waste that results from lack of planning. Here and there a few wise cities and counties have looked ahead and planned. But our Nation has 'just grown.' It is time to extend planning to a wider field, in this instance comprehending in one great project many States directly concerned with the basin of one of our greatest rivers.

"This in a true sense is a return to the spirit and vision of the pioneer. If we are successful here we can march on, step by step, in a like development of other great natural territorial units within our borders."

[fol. 85] 3. 1933

Thirteenth Annual Report of the Federal Power Commission, p. IX

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"* * * Pursuant to an Executive order of the President (Executive Order No. 6251, Aug. 19, 1933, under title II of the National Industrial Recovery Act), the Commission has undertaken a survey of the water resources *of the nation* as they relate to the conservation, development, control, and utilization of water power and of the relation of water power

to other industries and to interstate and foreign commerce. The allocation of necessary funds available under the public works section of the National Industrial Recovery Act for this purpose permits the Commission to make an investigation prescribed by section 4 (a) of the Federal Water Power Act, which heretofore has not been possible for lack of necessary funds.

"On the basis of this survey the Commission is directed to assist the Federal Emergency Administrator of Public Works in formulating *a comprehensive program of public works pertaining to the development of water power and the transmission of electrical energy.* Under authority of this Executive order, the Commission has also instituted an investigation of the cost of the transmission of electrical energy in the United States and its distribution to consumers, this being in harmony with the purpose of Senate Resolution 80, introduced by Senator Costigan. A still further duty imposed by this Executive order upon the Commission is that of investigating and reporting upon applications for loans referred to it by the Federal Emergeny Administrator of Public Works for construction of public-works projects involving the development and utilization of electric power. In order to assist in expediting the national recovery program, the Commission has given immediate consideration to such applications in reporting on the engineering and economic aspects of the proposed projects."

[fol. 86] 4. August 15, 1933.

Arthur E. Morgan, N. B. C. Radio Address, TVA Press Release, August 16, 1933

"This picture of the Tennessee River drainage area is in many respects typical of many rural areas in America. In so far as the efforts of the Tennessee Valley Authority are successful, they may serve as *precedents for other regions.*"

5. September, 1933.

Arthur E. Morgan, Planning in the Tennessee Valley, Current History, September, 1933, p. 663

"If the act is at fault in the uneven emphasis given to various subjects, that can be corrected by the type of organization set up. The Tennessee Valley Authority is

a corporation, administered by a board of three directors who *report directly to the President, and are chiefly subject to his control. Under his direction* it is their function to bring design and proportion into the affairs of the corporation and to insure that a smoothly operating and well-matured program shall emerge to express the dominant purpose of the act." (Page 664.)

6. October 17, 1933.

Lilienthal, Memphis. TVA Press Release, October 17, 1933

"Seated before an open fire in his home in Warm Springs last February, Franklin D. Roosevelt formulated and expressed *a new national policy* for the development of the resources of our country. In one of his first informal conversations with the people, he told of his plan for the development of the Tennessee River Valley—a plan which marks the beginning of a new departure in American economic and political history.

• • • • • • •

"The Authority is not engaged in a punitive expedition against the utilities. The Authority is an instrument of the people of the United States. It is charged with the [fol. 87] duty of carrying out *a national power policy,* and the safeguarding of the public interest in the country's greatest resource, profoundly affecting the future development and prosperity of our country, and all of its people. This policy has not been formulated over night. It is not a mere political accident. It represents more than a decade of careful consideration. It has been thoroughly debated in the Congress of the United States; it has been *sponsored by the President of the United States.* The power program of the Authority is *an integral part of a larger policy* for the economic development of the United States.

• • • • • • •

"The Authority must carry out *the national policy* entrusted to it. It must acquire a market for its power. It must work toward a wider use of electricity in the home, the farm and the factory.

• • • • • • •

"As a new neighbor of yours, I appeal to you not to permit this opportunity for *national leadership* to fail through any lack of your support. I appeal to you to refuse to listen to the voices of those of little vision and of selfish purpose. This program will succeed only if you of the area treat this as a national project. I appeal to you to throw your energies and devotion into *this national program* which can mean so much to you and to your children."

7. November 10, 1933.

Lilienthal, Atlanta. TVA Press Release November 11, 1933

"The Tennessee Valley Authority Act marks the beginning of *a new national power policy and national power program.* This new national policy has two major objectives. The first objective is more effective protection of the public interest, by the setting up of a measure of public operation of power as a 'yardstick.' The second objective of this new national policy is a greatly increased use of electricity in the homes, the farms, and the factories of the United States—an electrified America.

[fol. 88] "The President and the Congress have set themselves to the task of putting to work the vast sources of electricity which lie idle and unused. We are working toward no less a goal than the *electrification of America.* The plans have been laid. Legal authority is ample. The economic difficulties can be overcome. The project is practical and feasible. The program can be carried out. Within the next decade it lies within the power of the people of the United States to make electricity in very truth the servant of the average man and woman in the homes, farms and places of business of this country.

"The power program of the Authority is a crucial part of its plans for immediate action and of the long range program for the development of this region. This power program is of particular interest not only within the Valley, but it has and is intended to have *a national significance.* For the problems which center about the power question here in the southeastern region of the United States are questions not peculiar to this area, but which are *common to the country as a whole.*

• • • • • • •

"So much for the first objective of the Tennessee Valley Authority—the regulatory, public control purpose of this *national power policy*. We come then to the second objective, of at least equal significance.

"The power program of Congress and the President has as its major objective a constantly wider use of electricity. The goal of this *national power policy* is a constructive one: it is nothing less than the electrification of the homes and farms of the United States. It is for the Authority to lead the way through the tangle of engineering obstacles and of economic difficulties which obstruct the path to a genuinely widespread use of this great resource of electricity. I know something of the difficulties which lie ahead. This is not an academic exercise; it is not going to be a Sunday School picnic. We have been advised on the business problems which have to be surmounted. We know something of the engineering difficulties; of the problems of rising costs of transmission; of the problems of water control; of the difficulties of unfavorable peak loads. There is a serious prob- [fol. 89] lem of changing our custom of doing things. But in spite of all the difficulties, I am convinced that this objective of *an electrified America* is no mere Utopian dream. It can aid in the program of re-employment and national recovery toward which slowly but surely the American people, under the leadership of President Roosevelt, are moving.

* * * * * * *

"*Looking at the country as a whole,* without respect to public operation or private operation, it is perfectly evident that we now have and soon will have a tremendous surplus supply of electricity. Within the area of the Tennessee Valley, for example, privately owned electric companies have generating and transmission facilities which can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. * * * Out in Colorado, Boulder Dam is rapidly being carried toward completion at a total cost of $165,000,000. Boulder Dam on completion in 1937 will add to the nation's annual supply of electrical energy 4,330,000,000 KWH. At Grand Coulee on the Columbia River and at Bonneville in Oregon are two giant power developments which are under way, estimated to cost another $100,-

000,000. The State of New York and the Dominion of Canada are making plans for a giant power development on the St. Lawrence River with an installed capacity of 2,200,000 H.P."

8. December 6, 1933.

A. E. Morgan, *"Tennessee Valley Authority Opens a New Era of Social Planning,"* Premier Rayon Review. (Page 6)

"• • • Finally, in 1933, at President Roosevelt's suggestion, provision for the public ownership and operation of Muscle Shoals was incorporated in the Tennessee Valley Authority law. This provision may make possible the carrying out of one of *President Roosevelt's policies,* that of providing a publicly owned and operated power system as a 'yardstick' by which to measure the relative economy and efficiency of public and private ownership and operation.

"The present program calls for the construction of the Cove Creek Dam on the Clinch River, renamed the Norris [fol. 90] Dam. This dam will store 3,000,000 acre-feet of water and will more than double the prime power available at Muscle Shoals and at other dams on the Tennessee River."

9. January, 1934.

Lilienthal. *"Electrification of America,"* House Furnishing Review, page 52

"The power program of Congress and the President has as its major objective a constantly wider use of electricity. The goal of this *national power policy* is a constructive one; it is nothing less than the electrification of the homes and farms of the United States. It is for the Authority to lead the way through the tangle of engineering obstacles and of economic difficulties which obstruct the path to a genuinely widespread use of this great resource of electricity. • • •

• • • • • • • •

"The electric industry, both privately and publicly-owned, is running into a financial blind alley unless the use of electricity can be very substantially increased within the next three years. The plain fact is that the use of electricity has

fallen behind the installation of power generating facilities. This is true, almost without exception, *throughout the country.*"

10. January 20, 1934.

Lilienthal. Washington Radio Address, TVA Press Release

* * * * * * *

"The Tennessee Valley Authority from its offices at Muscle Shoals, Alabama, or Knoxville, Tennessee, will be glad to supply information or answer inquiries not only from the Tennessee Valley area, *but in any part of the country, concerning the Federal Government's plan* of bringing about a more comfortable and convenient home—through the use of the great national resource of electricity."

[fol. 91] 11. January 29, 1934.

A. E. Morgan, Washington. TVA Press Release, February 7, 1934

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"The Tennessee Valley Authority is the expression of a desire on the part of the President and Congress to work out in a limited area principles of *social and economic planning* which can later have application on a *wider scale.* * * *"

12. February, 1934.

Lilienthal. "*Lower Power Rates Mean More Appliance Sales.*" House Furnishing Review, page 50

"Second: The revision downward of electric rates. In my considered judgment the greatest single obstacle in the way of a widespread use of electricity has been the rates which have been charged for electricity. We believe that, with notable exceptions, the rates for electricity *throughout the United States* constitute a barrier between the people and the great resource of electricity. A drastic revision downward of electric rates is an essential part of this program. * * *"

13. February 6, 1934.

Dr. H. A. Morgan, Chattanooga. TVA Press Release

"State experiments, associated with the problems of agricultural home life and, to some extent, industry, have been in progress for many years. The Tennessee Valley Authority enterprise, however, is a new departure in our economic and political procedure. It is *national in its conception*, and is the first of its kind to be undertaken by any nation for the study of regional problems of nation-wide application.

• • • • • • •

"The 'yardstick' is to be applied to problems of the country's resources in order to determine more definitely the public's obligation to them and their place in *a national policy* of economic and social planning. • • •"

[fol. 92] 14. March, 1934.

Morgan. "*Bench-Marks in the Tennessee Valley, II a Birch Rod in the National Cupboard*" 23 Survey Graphic 105, (pp. 109-110)

"• • • President Roosevelt has suggested a course to pursue. He said in his Portland speech in September, 1932:

"'I therefore lay down the following principle: That where a community, a city, or county, or a district, is not satisfied with the service rendered or the rates charged by the private utility, it has the undeniable right as one of its functions of government, one of its functions of home rule, to set up, after a fair referendum has been taken, its own governmentally owned and operated service.

"'That right has been recognized in most of the states of the Union. Its general recognition by every state will hasten the day of better service and lower rates.

"'It is perfectly clear to me and to every thinking citizen that no community which is sure that it is now being served well and at reasonable rates by a private-utility company will seek to build or operate its own plant.

"'But on the other hand, the very fact that a community can, by vote of the electorate, create a yardstick of its

own, will, in most cases, guarantee good service and low rates to its population. I might call the right of the people to own and operate their own utility a "birch rod in the cupboard, to be taken out and used only when the child gets beyond the point where mere scolding does any good."

" 'That is the principle that applies to communities. I would apply the same principles to the federal and state government.

" 'State-owned or federal-owned power sites can and should properly be developed by government itself. When so developed, private capital should be given the first opportunity to transmit and distribute the power on the basis of the best service and the lowest rates to give a reasonable profit only.

" 'The right of the federal government and state governments to go further and to transmit and distribute where reasonable and good service is refused by private capital [fol. 93] gives to government, viz., the people, that same very essential "birch rod" in the cupboard.'

"And here we come to the significance of public generation and sale of power in the area of the Tennessee Valley Authority. * * *"

15. April 24, 1934.

Lilienthal, Boston. TVA Press Release April 25, 1934

"The Authority is charged with the duty of carrying out a national power policy, and the safeguarding of the public interest in the Country's greatest resource."

"* * * The Power program of the Authority is an integral part of a larger policy for the economic development of the United States."

16. May 17, 1934.

Lilienthal, New York City. NA Press Release

"We have been given *a national power policy* to execute in the Tennessee Valley. * * * It answers an overwhelming public demand, after a decade of experience injurious to both investors and consumers."

17. June 22, 1934.

Lilienthal, Jackson. TVA Press Release

"The Tennessee Valley project translates into concrete form a *vision of President Roosevelt.* The project was born in his mind, and it is being carried forward under his guidance. It is a part of a program for *national development.* It is not a local project. Its implications extend to the *outermost reaches of* this country."

18. July 9, 1934.

Letter of President Roosevelt Creating the National Power Policy Committee

Power Views of Franklin D. Roosevelt, compiled November 1934 for National Power Policy Committee, by Joel David Wolfsohn, Executive Secretary, page 17.

"I wish to establish in the Public Works Administration a Committee to be called the '*National Power Policy Com-*
[fol. 94] *mittee.*' Its duty will be to develop a plan for the closer co-operation of the several factors in our electrical power supply—both public and private—whereby national policy in power matters may be unified and electricity be made more broadly available at cheaper rates to industry, to domestic and, particularly, to agricultural consumers.

"Several agencies of the government, such as the Federal Power and Trade Commissions, have in process surveys and reports useful in this connection. The Mississippi Valley Committee of Public Works is making studies of the feasibility of power in connection with water storage, flood control and navigation projects. The War Department and Bureau of Reclamation have under construction great hydroelectric plants. Representatives of these agencies have been asked to serve on the committee. It is not to be merely a fact-finding body, but rather one for the development and unification of national power policy.

• • • • • • •

"It is not thought that it will be necessary to have frequent meetings of the full Committee. An adequate administrative staff will be provided, and personal expenses of the members of the Committee in connection with its meetings will be met.

"The Committee is to be advisory to the President."

19. August 5, 1934.

Speech of President Roosevelt at Grand Coulee, Washington

Power Views of Franklin D. Roosevelt, compiled November 1934 for National Power Policy Committee, by Joel David Wolfsohn, Executive Secretary, page 18.

"• • • It is going to affect not only the Columbia River Basin, *but it is going to affect all mountain States and the Pacific Coast territory,* and we are going to see, I believe, with our own eyes, electricity and power made so cheap that they will become a standard article of use, not only for agriculture and manufacturing, but also for every home within reach of an electric light line.

[fol. 95] "The experience of those sections of the world that have cheap power proves very conclusively that the cheaper the power the more of it is used—the more of it is used in home and small businesses; and that makes me believe that this low dam which we are undertaking at the present time is going to justify its existence before it is completed by your being able to contract for the sale of practically all of the power it will develop • • •"

20. November 18, 1934.

Speech of President Roosevelt at Topelo, Mississippi

Power Views of Franklin D. Roosevelt, compiled November 1934 for National Power Policy Committee, by Joel David Wolfsohn, Executive Secretary, pages 19-20.

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"I suppose that you good people know a great deal more of the efforts that we have been making in regard to the work of the Tennessee Valley Authority than I do, because you have seen its application in your counties and your own towns and your own homes, and, therefore, it will be like carrying coals to Newcastle for me to tell you about what has been done.

"But perhaps in referring to it I can use you as a text—a text that may be useful to many other parts of the Nation, *because people's eyes are upon you and because what you are doing here is going to be copied in every State in the Union before we get through.*

"We recognize that there will be a certain amount of—what shall I say?—rugged opposition to this development, but I think we recognize also that the opposition is fading as the weeks and months go by, fading in the light of practical experience."

21. June, 1935.

Ickes, "*Back to Work*"

"In addition to the fundamental studies which are being made by the Federal Power Commission by means of its PWA financing, a grant of $100,000 was made at the Presi-
[fol. 96] dent's suggestion to the *National Power Policy Committee.*" (p. 124.)

"It is not to be merely a fact-finding body but rather one for the development and unification of *national power policy.*" (p. 125.)

"As we have seen, in the far Southwest, out of a deep canyon of the Colorado River, has arisen Boulder Dam; in the Northwest human ants are building the Grand Coulee and Bonneville dams on the Columbia River; in the valley of the Tennessee the wartime Wilson Dam has been brought into fuller use and the Norris and Wheeler dams are being rushed for completion in 1936.

"Mammoth power plants, with intricate generators large enough to supply whole cities, are being erected beside the dams; land is being cleared for huge reservoirs, and thick transmission lines are being strung up to carry to home and factory the low-cost electricity that is to come. *This activity is only the beginning of a national plan to increase the supply of electric power and to bring down its cost.*" (pp. 125-6.)

"These 'yardsticks' provided by both municipal and Federal enterprises are so valuable that they alone would warrant PWA's expenditures for power undertakings. The *municipal projects have caused private utilities* to adjust their rates downward in wide areas and the *Federal projects* have brought about rate adjustments over still larger expanses of territory." (p. 147.)

22. December 29, 1935.

Lilienthal, Chattanooga.

"The difficulties are great, I grant, but the stake is great—nothing less than *the electrification of America.*"

[fol. 97] EXHIBIT "D" TO BILL OF COMPLAINT

Representative Public Announcements and Releases by Tennessee Valley Authority

I

General Scope and Nature of the TVA and Social Program

1. July 17, 1933.

TVA Press Release

"To begin with, the area of activity is not confined to Tennessee but takes in the basin of the river of that name in its wide sweep through seven states—Virginia, North Carolina, Georgia, Alabama, Mississippi, Kentucky and Tennessee."

2. August 15, 1933.

A. E. Morgan, Washington, D. C., Radio Address, TVA Press Release, August 16, 1933

"But while the provisions for producing power and fertilizer are prominent in the public attention, they are but incident in the whole plan for the Tennessee Valley Authority. That plan aims at nothing less than the displacement of haphazard and chance development by a far-reaching program of social and economic planning.

• • • • • • •

"With this medley of conditions, good and bad, the Tennessee Valley Authority is established in an effort to bring about an orderly and wholesome development of social and economic life. It will undertake to secure a balance between agriculture and industry by promoting the small scale endeavor to balance 'foreign' trade by developing industries peculiar to the region. Some of these will be large scale mass production projects, based on the presence of mineral resources and cheap power. Others should be in the nature of fine production, as of fine textiles, fine furniture or scientific instruments, which can be produced in small communities by intelligent craftsmanship and organization. Losses incurred in the management of local industries may be reduced by a centralized supply of technical service, such as

[fol. 98] accounting and advice on production and distribution. The encouragement of cooperatives also may reduce the waste of present methods."

3. August 25, 1933.

TVA Press Release

"The Power Policy of the Tennessee Valley Authority

"1. The business of generating and distributing electric power is a public business.

"2. Private and public interests in the business of power are of a different kind and quality and should not be confused.

"3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

"4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

"5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant, or setting up a competing plant, as circumstances may dictate.

"6. The fact that action by the Authority may have an adverse economic effect upon a privately-owned utility, should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately-owned utility.

"7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite

regions and to develop its program in those areas before going outside.

[fol. 99] "8. The initial areas selected by the Authority may be roughly described as:

(a) The region immediately proximate to the route of the transmission line soon to be constructed by the Authority between Muscle Shoals and the site of Norris Dam.

(b) The region in proximity to Muscle Shoals, including northern Alabama and northeastern Mississippi.

(c) The region in the proximity of Norris Dam (the new source of power to be constructed by the Authority on the Clinch River in northeast Tennessee).

"At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia and North Carolina, and that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

"To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size, (such as Chattanooga and Knoxville) and, ultimately, at least one city of more than a quarter million, within transmission distance, such as Birmingham, Memphis, Atlanta, or Louisville.

"While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately-owned utilities in the area do not cooperate in the working out of the program.

"Nothing in the procedure here adopted is to be construed in any sense a commitment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest require. Where special considerations exist, justifying the Authority going outside this initial area, the Authority will receive and consider applications based on such special considerations. Among such special considerations would be unreasonably high rates for service, and a failure or absence of public regulation to protect the public interest.

[fol. 100] "9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately-owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis.

"10. Accounting should show detail of costs, and permit of comparison of operations with privately-owned plants, to supply a 'yard-stick' and an incentive to both private and public managers.

"11. The accounts and records of the Authority as they pertain to power, will always be open to inspection by the public."

4. August 31, 1933.

A. E. Morgan, Knoxville, TVA Press Release

"It is a deliberate turning toward the future, a commitment to an ideal. Its success can depopulate cities, destroy a thousand entrenched privileges, invalidate a whole tradition of single-hearted self-interest.

"That sums up what this undertaking means to the President. This great project might have been located in any one of several parts of our country. It is not a pork barrel appropriation for the Tennessee region. It is part of the major program to try to find a way out of industrial chaos into a designed social and industrial order. If we do not see it that way, we do not see the heart of the Tennessee Valley program.

* * * * * * *

"Again I am going to quote, this time from the President when he was talking to a community up in New York State. Social and economic planning isn't a Tennessee Valley program or an Eastern problem—it is a world problem today and he sees it as such. The reason the Tennessee Valley Authority is in Tennessee is that it has to be somewhere and this is a good place. The same problem here is a National problem. The President said:

" 'We are engaged today, as you know—not just the government in Washington, but groups of citizens everywhere —in reviewing all kinds of human relationships* * *.' "

[fol. 101] 5. October 20, 1933.

A. E. Morgan, Asheville

• • • • • • •

"• • • By operating the Norris Dam and power plant and the Wilson Dam and power plant as a single system, a very great increase of power is possible. During the winter, when the Tennessee River is high and power is abundant at Muscle Shoals, the Norris Dam plant will be shut down and the water will be stored in the reservoir. During the summer when the Tennessee River is low and power is scarce, the Norris Dam power plant will be operated. The water used for generating power at the Norris Dam will then flow down to the Wilson Dam where it will be used again to develop more power. The two dams operated as a single system will generate about six times as much dependable power as either one alone. A transmission line is provided for in the law to connect these two plants and to regulate the supply of power between them. Materials are now being purchased and the land cleared for building that line."

• • • • • • •

6. October 31, 1933.

TVA Press Release

"The T.V.A. land planning program may be divided broadly into two parts, regional planning in its broadest sense, and town and community planning. I feel that we must proceed slowly on our regional planning and have no desire to superimpose a stereotyped pattern of perfection on the Tennessee Valley countryside. We are studying now to learn of the worthwhile developments of the Valley from the earliest times. Whatever we do, whether it be the designing of homes or the planning for use of large areas we want the essence of the scheme to be a reflection of the growth of the Valley itself and the feeling of the countryside. Hand in hand with physical planning and regional planning goes social and economic planning. We must have data on population trends, agricultural and mineral resources, age old customs and their significance and the capabilities of the people before we can determine intelligently what should be the pattern of life for the future for this vast area. • • •"

[fol. 102] 7. November 10, 1933.

Lilienthal, Atlanta. TVA Press Release November 11, 1933

"What the Tennessee Valley Authority is required to do in its power program is to set up an area for power operations. That area is to be on a comparable basis with typical private operations. To set up such a 'yardstick' the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, and with an adequately diversified industrial, commercial and residential load to provide a fair test. As business men, it is apparent to you that if the Authority is to serve only the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod."

* * * * * * *

"The people of the country must be brought to realize that there is a pool of electricity lying idle, ready and waiting to be used, and to realize what electricity can do in lightening their burdens, in increasing their incomes and making for a richer and better life.

* * * * * * *

"* * * We have and are in process of constructing a tremendous pool of power for the nation, most of which is in private ownership; a considerable percentage of which is represented by Governmental investment. A large portion of these power facilities will be idle and unused and a burden upon the investors and on the taxpayer unless we can get electricity through to the people on a broad scale. Low rates which will promote and encourage the use of electricity is an essential part of this program. * * *"

8. November 19, 1933.

A. E. Morgan. TVA Press Release

"At present, the power issue is in the Tennessee Valley Authority region. Let us hope that in the next few years, it can become so thoroughly mastered that we need give it but little thought. Our power resources here are so abundant that an adequate supply of power for all our needs [fol. 103] should be no more of a problem and a little more

of tax than abundant and pure water supply is at present. In fact, in our rural regions, an abundant supply of power should be less difficult to secure in many cases than an abundant supply of pure water. The power program of the Tennessee Valley Authority is being worked out under the direction of Mr. Lilienthal. His aim is to bring about a time when power will no longer be an important matter to demand our time and attention, when an abundant supply will be available to all at a cost so low as not to tax the family budget. * * *"

9. December, 1933.

TVA Pamphlet entitled *"Tennessee Valley Authority General Information"*

"Is the Authority concerned only with power at Muscle Shoals? The Authority is concerned with the power development of the valley region as a whole. It is authorized to construct such dams in the area as it deems necessary, and to generate and distribute power from them."

10. December 4, 1933.

A. E. Morgan, New York. TVA Press Release, December 5, 1933

"The power program of the Tennessee Valley Authority is an effort in a limited area to bring about a cheap and ample supply of power on a self-supporting basis, as one of the several conditions necessary to an enlightened and wholesome economy in the region it is trying to serve."

11. December 18, 1933.

TVA Press Release

"The Tennessee Valley Authority has decided that development of the Aurora Dam on the Tennessee river should be a part of the Authority's plan for an integrated power program embracing the entire Tennessee river basin."

[fol. 104] 12. January 5, 1934.

Lilienthal, Philadelphia. TVA Press Release, January 6, 1934

"The Tennessee Valley Authority bears two major relationships to business. One is that of a regulatory agency. The second is that of a stimulant to business.

* * * * * * *

"• • • The Act definitely puts the Federal government into the business of rendering electric service. • • •"

13. January 14, 1934.

TVA Press Release

"When we carry this program into every town and city and village, and every farm throughout the country, we will have written the greatest chapter in the economic, industrial and social development of America."

14. January 20, 1934.

TVA—Lilienthal, Washington, D. C. Radio Address. TVA Press Release

"• • • I want to tell you of some of the things which your Federal Government is doing in the field of electricity to make your home more convenient and more comfortable; what it is doing to lighten the labors of the millions of women who have the responsibility of guiding and caring for the home. More specifically, I shall speak of the work the Tennessee Valley Authority is doing to electrify the American Home.

• • • • • • •

"• • • To this new agency many duties and powers were given. To it was transferred the famous Government-owned hydroelectric plant at Muscle Shoals. One of the Tennessee Valley Authority's principal duties was to extend and broaden the use of electricity in the homes and on the farms, particularly in the seven states of the Tennessee Valley. By experiments and demonstrations, the Authority was to act as a spur in hastening the time when electricity [fol. 105] would be widely and generously used in making every home more comfortable and convenient.

"The Tennessee Valley Authority is now employing thousands of men and spending millions of dollars in the construction of two great power dams and a 230 mile electric transmission line. • • •

"It means that the average home is still barred from the almost limitless advantages of this great national resource. There is no sound reason why this condition should exist. It is part of the job of the Tennessee Valley Authority to see that this condition should not continue.

"There is no scarcity of a supply of electricity. The sources of electricity are abundant. We are convinced that the principal barrier to a wider use of electricity by the American housewife is the rates which are charged for electricity. We believe that, before the American home can be electrified, the rates charged in the country generally must be substantially and drastically reduced. And we believe further, that such reductions in rates will so greatly increase the sale of electricity that these reductions will be beneficial to the electric business.

"Drastically lower rates for electric service is the first step toward a wider use of electricity. The Tennessee Valley Authority is proceeding to put such substantially lower rates into effect in the area in which it is to distribute Muscle Shoals electricity.

. . . . . .

"* * * This is particularly the case with the farm home. The number of farms which have electric service in the Tennessee Valley, and in the United States generally, is shockingly small. The Tennessee Valley Authority is definitely committed to an extensive program of rural electrification. The other day, on a country road in northern Alabama, I watched a crew set poles for the first farm line ever constructed by the United States government. This line will bring electric service to farmers in that area who have for years desired service and who have adequate income to justify such service. Similar lines are being constructed in about 18 counties in Mississippi and Alabama, and others are planned in Tennessee."

[fol. 106] 15. January 26, 1934.

TVA Press Release

"The Tennessee Valley Authority is also at work building hundreds of miles of rural transmission lines which will serve the rural population in a large part of these ten counties acquired in Mississippi. More than sixty miles of rural transmission line has been completed and as soon as arrangements can be made for the distribution of T.V.A. power, these communities likewise will have the benefit of electric service which has heretofore not been available, and the low rates, which is a part of the T.V.A. program."

16. February 7, 1934.

A. E. Morgan, Washington, D. C. TVA Press Release, January 29, 1934

. . . . . .

"The Tennessee Valley Authority is the expression of a desire on the part of the President and Congress to work out in a limited area principles of social and economic planning which can later have application on a wider scale. . . .

. . . . . .

"Among the fundamental purposes to be achieved are: that haphazard and unregulated growth shall be displaced by intelligent and orderly planning; that great wastes in the present way of doing things shall be eliminated, among the greatest wastes at present being the wastes of frustrated hopes and ambitions of people who find no fair chance at life.

. . . . . .

"For instance, there is the matter of water power development. The Tennessee River system drains 40,000 square miles. It includes thousands of miles of streams, and a potential power development of several million horse power. In the past, individual power projects in this river system have been developed without relation to each other. . . . The enormous social waste of isolated developments must be eliminated. This means unified planning on a large scale."

[fol. 107] 17. February 23, 1934.

TVA Press Release

"As a means of carrying on a program of long-range planning and development, a special government agency, the Tennessee Valley Authority, was created among the first acts of the Roosevelt administration—a corporation with some powers of government and with the flexibility and initiative of a private enterprise."

18. March, 1934.

A. E. Morgan. Article entitled, "*Bench-Works in the Tennessee Valley, II A Birch Rod in the National Cupboard,*" 23 Survey Graphic 105

"By the methods I have described in this article, the TVA hopes to accomplish several objectives:

"First, it hopes to unify the development of water power for the entire Tennessee River System and thus avoid the enormous waste of various independent installations.

"Second, it intends to support vigorously the position that the generation and sale of power is properly a public function, in which it is proper for the public to engage.

"Third, it hopes to establish a 'yardstick' for power, to discover what electric power ought to cost the people, and to provide a comparison between public and private ownership.

"Fourth, it hopes to encourage the wider and freer use of electricity in the American home.

"Fifth, there are dangers and disadvantages in public ownership. To evade or to deny this fact can only lead to trouble. The TVA hopes to face honestly these disadvantages and if possible to remove or to master them."

19. March 14, 1934.

TVA Press Release

"In Section 2 of the Act the following statement occurs, 'All members of the board shall be persons who profess a belief in the feasibility and wisdom of this Act.' A board believing in the feasibility and wisdom of the Act could not [fol. 105] be expected to accomplish results unless supported by a staff with similar beliefs. It thereby becomes essential that all people holding major positions with the Authority also believe in the feasibility and wisdom of the Act. The Authority, therefore, seeks men and women who are not only technically qualified by training and experience for the job at hand, but who are also social minded."

20. April 21, 1934.

Lilienthal, Chattanooga. TVA Press Release, April 22, 1934

"The TVA has under way, as you know, a comprehensive program for the development of the power resources of the

Tennessee River and its tributaries. No more ambitious program of hydroelectric development has ever been actually undertaken in this country. • • • •

"As you know, we have started with the nucleus of Wilson Dam at Muscle Shoals. Within two years two more great dams will be completed—one, the Norris Dam on the headwaters of the Clinch River near Knoxville; the other, the Joe Wheeler Dam just above the Wilson Dam in Northern Alabama. Four other major dams of various types will probably be approved for early construction. A large staff is now planning the dam-building program for the next decade.

"Everything considered, the electricity produced in this vast public hydro-electric system will be as cheap as power can be produced in any part of the United States, and much cheaper than in many sections. One reason for this is the efficiency which arises from integrated control of an entire watershed under a single public ownership and administration. That ownership and control is one which is dominated by one purpose and one purpose only—service to the whole people to whom these streams belong. By the use of storage reservoirs and central control all the vast economies of large-scale production will be utilized, and the Tennessee River and its tributaries will be made to yield their great potential wealth into the hands of the people of the Tennessee Valley. The presence of coal in great quantities for standby and auxiliary steam plants will tend to keep the cost of elec- [fol. 109] tricity below that possible in areas having favorable hydroelectric power but in which coal is costly.

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"I am very definitely of the opinion that it is the Authority's duty to encourage and stimulate the growth of large-scale industry in the Tennessee Valley area. We are making provision for one of the largest hydro-electric developments in the world, with a potential three million horse power available. We are expending, and expect to expend, millions upon millions of dollars in construction activities, all looking toward the development of more and more power."

21. May 21, 1934.

Lilienthal, Washington, D. C. Radio Address. TVA Press Release, May 22, 1934

"Three barriers have stood in the way of a wider enjoyment of the benefits of electricity. First, the rates for service have been too high. The second obstacle has been the price of electricity-using equipment, such as ranges, refrigerators, water heaters, and other large appliances. And the third barrier has been a lack of knowledge of the manifold benefits of the electric home, and an understanding of all the ways in which electricity could be the servant of the average household.

"The Tennessee Valley Authority is hard at work on a program to remove these three barriers to a wider use of electricity in the average home—the barrier of high rates, of high appliance costs, of inadequate knowledge of the uses of electricity."

22. June 13, 1934.

A. E. Morgan, Testimony before Sub-committee of the Committee on Appropriations, U. S. Senate

Senator Dickinson: Now, as I get it then, for the four dams alone down there, your estimates are about $198,000,000.

Dr. Morgan: Yes; for the six dams.

Senator Dickinson: And how many of these dams are you constructing now?

Dr. Morgan: Two.

[fol. 110] Senator Dickinson: Which two?

Dr. Morgan: The Norris Dam and the Wheeler Dam.

Senator Dickinson: And what is the percentage of completion of those two dams?

Dr. Morgan: They will approach completion during the fiscal year of 1934-1935.

Senator Dickinson: Fiscal year ending June 30, 1935?

Dr. Morgan: Yes.

Senator Dickinson: They will probably be finished, then, during the calendar year of 1935?

Dr. Morgan: About that. There will be a little installation to carry over and some remainder of construction, but that is substantially so.

Senator Dickinson: Well now, in connection with these dams, the entire purpose is the production of electrical energy?

Dr. Morgan: That is the major purpose. The purpose of the Tennessee Valley Authority Act, of which these dams are a part, is to try to encourage and organize an orderly economic and social development in that region in place of the past haphazard development. With reference to the Tennessee River in particular, if we can develop the power on the Tennessee River by a unified and integrated program, we can, I think, develop power at not over half the rate that it would cost by a series of unrelated dams.

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"I would say also that so far as the development of the water power of the Tennessee River is concerned, that a single power plant on the Tennessee River, such as Muscle Shoals, is not even economically feasible. Muscle Shoals, taken by itself, is not an economically feasible unit. If it can be united with others so that reservoir projects can supply it with water in low season, we can make it at least three times as effective per dollar invested as it is today; and the same way with Norris Dam. Taken alone it is not a good investment, but taken in connection with its effects upon the other plants downstream, it becomes a very good investment.

"If we can carry out this project as a whole we can produce electric current at not over half what it would cost at a single plant here and there."

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[fol. 111] 23. July 1, 1934.

TVA Press Release

"Surveys are under way to determine the most feasible sites for additional dams on the Tennessee River and tributaries, Arthur E. Morgan, Chairman of the TVA, announced today."

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"• • • We are not proposing to build seven or eight separate power dams, operated individually for the benefit of the immediate vicinity. All dams wherever located, will

be linked by transmission lines and will thus form a single system. Regard the whole project as 'one huge dam,' if you wish to put it that way. No matter in which section of the Valley the electricity is generated, it will be available to all sections. * * *"

24. October 22, 1934.

TVA Press Release

"In connection with power, I interpret that to mean that wherever power can be transmitted from generating plants along the Tennessee River or its tributaries and the distance to which that power can be effectively transmitted, therein lies the area or region within the influence of our planning activity. * * *"

25. November 5, 1934.

TVA Press Release

"* * * The Wilson Dam at Muscle Shoals has only a relatively small capacity for prime power, as they call it, that is, dependable power the year round, because the river varies greatly in its flow. A year ago last summer, during a dry season, there was only water enough in the river to produce 25,000 kilowatts of energy. A year or two before, in the winter time, there was water enough to produce 600,000 kilowatts of energy, a range of about twenty-five to one. On the other hand, up on one of the branch streams we are building the Norris Dam and reservoir, a reservoir larger than any now existing in the United States, big enough [fol. 112] to hold the entire flow of the river above for a year at a time. The Norris Dam, taken by itself, might not be profitable, because if you spread that flow throughout the whole year, the energy might not be worth the cost. But suppose you take the Norris Dam and the Wilson Dam at Muscle Shoals together, what do you get? For about eight or nine months in the year, there is an abundant flow in the Tennessee River, and then for two or three months there is a low flow. Now, if you use the up river power plant to store water when there is abundance below, and to let it out during the one or two or three months when there is low water below, you can bring up the flow in the lower river so that instead of having 25,000 kilowatts capacity, it will have 150,000 kilowatts capacity. You can fill up those low periods, and you can make the Wilson Dam

worth very much more than it would be worth alone. So that neither of these projects is fully valuable by itself, but taken together, they produce some of the cheapest hydro-electric power in America.

"Those are just two cases. Below Norris Dam there are places for about eight or ten power plants along the Tennessee River. There is very little storage at any of those. By building the Norris Dam up river, you can more than double the value of each of the eight or ten down river. By building additional dams up river, you can further increase the value of every one down river. Taken independently, those power plants are of doubtful merit. Taken together, they produce one of the most economical power developments on the American continent.

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"Now, if we are going to have a case of public ownership, it must be somewhere, we must take an area. That area must be on a large enough scale to be comparable with other power developments. It can't be a little corner that is too small to be efficient. A natural unit of production is the Tennessee River watershed. Nature has made that a unit. The natural unit of consumption is an area that would use that power."

[fol. 113] 26. September 2, 1935.

Lilienthal, Detroit. TVA Press Release

"I want to emphasize that the Tennessee Valley project was not an emergency measure; it was not to be merely an unemployment relief measure."

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"• • • we were directed to transform the wasted water power of the Tennessee River into electricity and to distribute that electricity at fair rates so it could be used in the humblest home and the isolated farm."

27. October 1, 1935.

Lilienthal, Fayetteville, Tennessee. TVA Press Release

"TVA has an ample source of electricity from the Tennessee River. That electricity belongs to all of us. Transmission lines are being built."

28. November, 1935.

A. E. Morgan. Article entitled, "*Bench-Marks in the Tennessee Valley,*" Survey Graphic, page 529

"Two and a half years after its organization the Tennessee Valley Authority is employing 17,000 persons. Three large dams are under construction on the Tennessee River and its tributaries (two of them are nearly completed), and Congress has authorized construction of three more. In addition there are the TVA electrical and fertilizer programs. Taken altogether, the six dams and other construction work, in the number of men employed and in the amount of planning and supervision required, make up a job about three times that of Boulder Dam, and constitute one of the largest construction projects ever undertaken by the national government * * *."

[fol. 114] II

The Intent and Purpose to Regulate Rates by the Yardstick Principle or Subsidized Competition and to Regulate Service in Accord with the Social Theories of TVA

1. June 30, 1933

TVA Press Release

"The Authority intends to use Muscle Shoals as a 'yardstick' to determine the relative costs of public and private power operation * * *."

2. August 15, 1933.

A. E. Morgan, Washington, D. C. Radio Address. TVA Press Release, August 16, 1933

"Finally, in 1933, at President Roosevelt's suggestion, provision for the public ownership and operation of Muscle Shoals was incorporated in the Tennessee Valley Authority law. This provision may make possible the carrying out of one of President Roosevelt's policies—that of providing a publicly owned and operated power system as 'a yardstick' by which to measure the relative economy and efficiency of public and private ownership and operation."

3. September 28, 1933.

Lilienthal, Chattanooga

"The public must protect its interests in so vital a force. There are various expedients to accomplish this result. One is by commission regulation. It is pretty well recognized that regulation has not been entirely adequate to protect the public interest, and so to supplement regulation. Congress has provided for a measure of public operation on a limited scale. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity is a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interests involved, that the public, at any [fol. 115] time, may itself assume the function of providing itself with this necessity of community life.

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"What the Authority is trying to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations. To set up such a 'yardstick' the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, with enough population density and with a sufficiently diversified industrial, commercial and residential load to provide a fair test. As business men it is apparent to you that if the Authority is only to serve the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod. The Authority will necessarily have to undertake to serve an area of concentrated industrial territory, good farms and favorable distribution possibilities. It will, therefore, be necessary to include several cities of fair size in the area. The people of Knoxville and Birmingham are soon to vote on the acquisition of their distributing systems. We are now constructing a tie line between Muscle Shoals and the new dam at Cove Creek and we propose to enter into contracts with municipalities and other agencies desiring this service in the territory between those two points.

"Obtaining this fair market in which to sell power, seems to be in sight, in view of the interest shown by about one hundred fifty municipalities. In fact, the problem of choosing between applicants will apparently be a real one."

4. October 17, 1933.

Lilienthal, Memphis. TVA Press Release

"Is it any wonder then that the people are determined to maintain the most vigilant public control of this liberating force? Various expedients for the public's protection have been adopted. One is regulation by state commissions. It is generally recognized that such regulation has not been entirely adequate to protect the public interest. And so, to supplement regulation, Congress has provided for a measure of public operation on a limited scale. This public operation [fol. 116] is to serve as a yardstick by which to measure the fairness of electric rates.

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"What the Authority is required to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations * * *."

5. November 7, 1933.

Lilienthal, Nashville. TVA Press Release

"Now this is what had been going on in the United States. Regulations by commissions had in many states proved ineffectual. In some states it was perfectly obvious that the regulators were not regulating the utilities, but in effect, utilities were regulating the regulators. In other words, the regulatory commissions were doing an honest and sincere job, but were hampered by the inherent, and interminable procedure of regulation.

* * * * * * *

"Regulation by commissions has not proved adequate. To supplement regulation by commissions, Congress passed the Tennessee Valley Authority Act. The policy written into this Act does not represent an assault upon private management

and ownership of public utilities, but it is a determined attack on private mismanagement of the public business of power. The Tennessee Valley Act is a well considered effort to prevent a recurrence of the looting of the power business at the expense of the people back home—consumers and investors alike.

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"• • • The small investor was assured that public regulation would protect him against watered stock and would give him a measure of security. He was assured that the public utility industry was in the hands of men who regarded themselves as, in effect, trustees of a great public business. And, when the small investor learned the real facts, his resentment was even greater than that of the consumer, who felt that his rate for service could be much lower had the electric business been operated on a proper basis. With this background, Congress passed the Tennes- [fol. 117] see Valley Authority Act which provides for a measure of public operation of the power business.

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"This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interest involved, that the public, at any time, may itself assume the function of providing itself with this necessity of community life."

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6. November 10, 1933.

Lilienthal, Atlanta. TVA Press Release, November 11, 1933

"The national power policy of the President and the Congress written into the Tennessee Valley Authority Act recognizes that electric power, next to the soil, is our greatest resource. It recognizes that the people must maintain public control of this liberating force. This is the first objective of the national power policy to which I have referred.

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"And so, to supplement regulation by commissions, Congress passed the Tennessee Valley Authority Act. This Act is not an assault upon private ownership and management of public utilities. But it is a determined attack on private mismanagement of the public business of power at the expense of the people back home—consumers and investors alike.

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"It was with such a background that Congress passed the Tennessee Valley Authority Act, and set up a measure of public operation of the power business. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service. It is a reminder that unless that business is conducted by private corporations with fairness, without financial jaggiery and with a due sense of responsibility to the paramount public interest, that the public at any time may itself as- [fol. 118] sume the function of providing itself with this necessity of community life.

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"We believe that definite plans of the Authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inangurated by the Tennessee Valley Authority Act."

7. November 15, 1933.

Lilienthal Announcement, Washington, D. C. TVA Press Release

"The 20-year agreement between the TVA and Tupelo is expected to set a standard for contracts with other municipalities within transmission distance of Muscle Shoals. Besides rate schedules, the Tupelo contract carries with it certain rules and regulations applicable to all TVA customers. Among other things, Tupelo agrees:

"'(a) To administer its electric system as a separate department and not to mingle funds or accounts with those of any other of its operations.

"'(b) To keep its electric system accounts according to a system of accounts to be prescribed by Authority after conference with Contractor, which system of accounts will so far as possible be uniform with other systems prescribed and applied in other municipalities purchasing electrical energy from Authority. Authority agrees at its own expense to render advisory accounting service in the setting up and administering of such accounts.

"'(c) To furnish promptly to Authority such operating and financial statements relating to electric system operations as may be requested by Authority.

"'(d) To allow the duly authorized agents of Authority to have free access to all books and records relating to electric system operations.'

. . . . . .

[fol. 119] "*Development Surcharge*—Contractor agrees not to depart from the resale rates set forth in Schedule B (resale rates) without first securing the consent of Authority: Provided, however, that in order to maintain Contractor's revenues in the developmental period in which the increased demand for power may not compensate for the greatly reduced rates provided for in Schedule B, Contractor may impose a surcharge upon those classes of consumers subject to a surcharge under the provisions of said schedule!"

8. January 5, 1934.

TVA Press Release

"The essence of this agreement is the recognition by the power companies who are parties to the arrangement that the TVA is under a duty to operate a public power business, directly and through public agencies, in order to provide a public 'yardstick' of the fairness of the rates charged by privately owned utilities."

. . . . . .

"There has been a growing feeling that this method (regulation by Commission) of expressing the regulatory relation of the government to the public utility business was inadequate to meet the needs of the situation. These

critics insisted that commission regulation by and large, had been ineffective; that in many states instead of the regulators regulating the utilities, the utilities were regulating the regulators; that financial abuses of the most lurid sort had taken place despite regulation; that the processes of regulation were too slow; and that the great technological savings in the field of electricity had not been passed on to the consumers.

"The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public utilities not by quasi-judicial commissions, but by competition. The Act definitely puts the Federal government into the business of rendering electric service. The Authority is required to acquire a market, to set up an area in which to conduct its operations. The results of these operations in this limited area are intended to serve as a 'yardstick' by which to measure the fairness of the rates of private utilities, and to prevent destructive financial practices by pri- [fol. 120] vate utilities. In carrying out this competitive relation between the Federal government and the private business of electricity, the wastes of competition are to be eliminated, and the regulatory function of competition emphasized. In other words, duplication of facilities and competition in the same community is to be avoided. There is not time to discuss in detail the principles which the Authority has adopted to govern its operations in this new relation as a competitor of a public business. These principles have been set out by the Authority in its Power Policy, and have been discussed in some detail in various public statements."

9. February, 1934.

Lilienthal. Article entitled *"Lower Power Rates Mean More Appliance Sales."* House Furnishing Review

"Now the reasons for the existing rate schedules are many. Part is due to tradition. There is a tremendous accumulation of musty legal theory and out-moded engineering practices in the field of electric rates. Part of it is due to the fact that domestic and farm electric service is monopolistic; and it is typical of monopolies that they change their practices very slowly, if at all. In many cases it is due to pressure of an outrageous capital structure, to bad management, to lack of foresight. We believe that definite

plans of the authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inaugurated by the Tennessee Valley Authority Act."

10. March, 1934.

Lilienthal. Article entitled, "*Business and Government in the Tennessee Valley.*" The Annals of The American Academy of Political and Social Science (Volume 172, pp. 45-46).

. . . . . .

"The *power policy* written into the Tennessee Valley Authority Act represents an attempt to regulate public [fol. 121] utilities not by quasi-judicial commissions, but by competition. The act definitely puts the Federal Government into the business of rendering electric service. The Authority is required to acquire a market and to set up an area in which to conduct its operations. The results of these operations in this limited area are intended to serve as a 'yardstick' by which to measure the fairness of the rates of private utilities, and to prevent destructive financial practices by the latter."

"In carrying out this competitive relation between the Federal Government and the private business of electricity, the wastes of competition are to be eliminated and the regulatory function of competition emphasized."

11. April 21, 1934.

Lilienthal, Chattanooga. TVA Press Release, April 22, 1934

". . . This perennial scrutiny of the work of public servants will certainly do more to protect the consumer against inefficiency and excessive rates than the sympathetic wrist-tapping which goes under the name of public utility regulation in so many states."

12. April 24, 1934.

Lilienthal, Boston. TVA Press Release, April 25, 1934

"In many states it had become perfectly obvious that the regulators were not regulating the utilities, but that in

effect the utilities were regulating the regulators. In other states the regulatory commissions were doing an honest and sincere job, but were rendered ineffective by the interminable procedure of regulation. And so to supplement and reinforce regulation, Congress passed the Tennessee Valley Authority Act."

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"The first duty of the Tennessee Valley Authority in its power program is to set up what the President has called a 'yardstick' by which to measure the fairness of electric rates. It has an additional function. It is a reminder that unless that business is carried on by private corporations with a due sense of responsibility to the paramount pub- [fol. 122] lic interest, that the public, at any time may assume the function of providing itself with this necessity of community life.

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"So much for the first objectives of the Tennessee Valley Authority—the regulatory, public control purposes of this national power policy, we come then to the second objective of at least equal significance.

"The power program of Congress and the President has as its major objective a constantly wider use of electricity. The fundamental problem of the Tennessee Valley Authority, of the electric industry, of the Federal government, is to devise economic ways and means to make electricity generally available, of promoting the widest possible use of power in the home, on the farm and in the factory."

13. May 17, 1934.

Lilienthal, New York. TVA Release

"By 1933 the management of some of our major electric utilities had become a national scandal. It was inevitable that President Roosevelt and the Congress should squarely face this situation. It was inevitable that they should see that regulation alone was inadequate to fully protect either the consumer or the investor. It was plain to all that regulation needed strengthening and needed supplementing.

"Neither the industry nor the investors took effective action to meet this situation. The President and Congress,

in setting up the Tennessee Valley Authority, were merely responding to an overwhelming public sentiment. The public, investors and consumers alike, demanded an experiment on a broad scale, of public electric operation. This development was designed to serve as one means of seeking to prevent a continuation of financial and operating practices which had brought discredit on the entire industry, sound and unsound managements alike.

• • • • • • •

"The Authority is interested not merely in the expansion of its own electric sales; it is interested in increasing the consumption of electricity throughout the South, in disregard of public or private ownership."

[fol. 123] 14. May 18, 1934.

TVA Press Release

"Besides adopting a power policy and establishing rate schedules, the Authority has put into effect rules and regulations governing sale of its power • • •."

15. June 13, 1934.

A. E. Morgan. Testimony before Sub-committee of the Committee on Appropriations, U. S. Senate

"Senator Dickinson: In other words, as I understand it now, you are setting up in a municipality, a municipal cooperative organization for the purpose of buying from you electric current and distributing it among the patrons of that locality.

Dr. Morgan: We are cooperating with an association of citizens.

Senator Dickinson: And in that cooperative organization what influence do you have on rates?

Dr. Morgan: We make a contract with them in which we prescribe the maximum rates that they may charge.

Senator Dickinson: And that is as to the consumer.

Dr. Morgan: That is as to the consumer."

16. August 1, 1934.

TVA Press Release

"Wholesale and resale rates have been fixed. • • • A transmission line to connect Wilson, Wheeler and Norris dams is under construction. One hundred miles of rural

transmission lines have been pushed out into new territory. Arrangements have been made to serve more than fifty municipalities at greatly reduced rates, and private power companies have been stimulated to substantial rate reductions in other parts of the Valley."

[fol. 124] 17. October 10, 1934.

Lilienthal. Testimony before Tennessee Railroad and Public Utilities Commission

"By Mr. Johnston:

Q. Does the Authority stand ready as a wholesaler of power to all comers to enter into an agreement with City of Knoxville for the supply of its energy without any limitation as to the resale price?

A. No.

Q. Would not?

A. Would not, and would not as to any of those other municipalities.

Q. Would not as to any of these other municipalities?

A. Without any limitations?

Q. That is selling without any agreement, that is any one would buy from a private manufacturer?

A. We believe the statute requires that we do not enter into contracts without the resale rates.

Q. Don't let me interrupt you, but I just want to get that question. Will you read the answer there, or I can repeat it off the record.

(Mr. Howard reads:) 'The present policy, we believe the statute requires we do not enter into any contracts without resale rates.'

A. Without agreement as to resale rates."

18. October 13, 1933.

I hereby certify that the attached document is a true copy of Exhibit 10-13-33a approved by the Board of Directors at a meeting held October 13, 1933.

(S.) Charles E. Hoffman, Assistant Secretary.
(Seal.)

The following are excerpts from the foregoing document.

"We know the existing demand is being adequately supplied by the privately owned utilities. There are only two

ways whereby the Authority can dispose of this additional block of power: (1) Sale in bulk to the private utilities. [fol. 125] Since these utilities have now adequate supplies, this alternative implies the creation of additional demand consequent upon either a substantial industrial development, or substantial increases in domestic and farm use, rendering existing privately-owned facilities inadequate. Distribution would continue to be through the facilities of existing companies. Rates to the ultimate consumer of power purchased from the Authority would be regulated by the Authority, under the terms of the contract of purchase. (2) By sale of such power to municipalities or to the public agencies which are now being served by private utilities. The Authority might dispose of its power by taking part of the field now occupied and served by the existing utilities. A typical case is sale at wholesale to a municipality which owns its own distribution system, now purchasing at wholesale from a private utility. Since there are few municipalities in the area which own their distribution systems, such a method of disposing of the Authority's power would involve the acquisition by such municipalities of distribution facilities now owned by the utilities, or the construction of competing facilities."

* * * * * * *

"C. *The President's policy: The "Yardstick."*

President Roosevelt has uttered publicly that one of the functions of operation of Muscle Shoals is as a "yardstick" by which to measure the reasonableness of electric rate charges. In view of his sponsorship of this legislation, the yardstick idea must be taken to be definitely a part of the policy embodied in the Tennessee Valley Authority Act.

* * * * * * *

4. For the Authority's operations to provide a "yardstick" of public operation by which to measure private operation, it is essential that the Authority engage not only in the generation, but participate in the transmission and distribution of electricity, since these latter two phases of electric service represent the most important part of the cost of such service. A public yardstick, to have value,

necessarily means public operation from power house to consumer's premises. (It is for this reason that the Authority has adopted a policy of rate and accounting control of municipal distribution operations.)"

[fol. 126] III

Intent to Oust Existing Utilities and Monopolize the Electric Utility Business in the Tennessee Valley Area

1. October 17, 1933.

Lilienthal, Memphis

"I suppose it is obvious that all computations concerning costs are based on the expectation that the Authority will sell the power which it has available. Muscle Shoals was turned over to us as a going plant, but not as a going concern with customers. Obviously, if we sell only one kilowatt hour, our cost will be hundreds of thousands of dollars a kilowatt hour, rather than a few mills. If the power is not utilized in volume, no one will receive the great potential benefits of the wealth of the Tennessee River. It is axiomatic in the electric business that an increase in use decreases the cost per unit of output. Accordingly, we look forward to a maximum use of our facilities, because it is in that way that the Authority and those agencies which buy its power at wholesale can steadily bring down rates to the householder, the farmer and the business man, and bring to this area the economic and social benefits of the President's plan."

• • • • • • •

"The Authority must carry out the national policy entrusted to it. It must acquire a market for its power."

2. November 10, 1933.

Lilienthal, Atlanta. TVA Press Release, November 11, 1933

"Within the area of the Tennessee Valley, for example, privately owned electric companies have generating and transmission facilities which can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. A fair esti-

mate is that 25% of the investment in power houses and transmission lines is idle, and is piling up fixed charges, because the customers of these companies are still tied to a low average use of electricity. The Tennessee Valley [fol. 127] Authority has a hydro-electric plant at Muscle Shoals with a rated installed capacity of 250,000 H.P. But that is only the beginning of the story. The Authority is constructing a dam and power house at Cove Creek, and another dam and power house above Muscle Shoals at what is known as the 'Joe Wheeler' dam, which together will increase the capacity of Wilson Dam to at least 600,000 H.P.

* * * * * * *

"If we admit that the use of electricity cannot be increased many fold; if that is our mental attitude, then we must be logical and immediately stop construction of the Cove Creek dam and of the Joe Wheeler dam."

3. November 20, 1933.

A. E. Morgan, Boston. TVA Press Release, November 21, 1933

"* * * the economy of electric power in the Tennessee Valley area will depend much on large scale developments that are designed and operated as single integrated systems. The entire Tennessee River System, with its thousands of miles of streams, should be under one control and ownership, which means government ownership."

4. January 5, 1934.

TVA Press Release

"Had the power companies which are parties to this contract been unwilling to sell these facilities at a fair price, or had they insisted on payment for intangibles or water, the Authority would have been under a definite mandate to construct duplicating facilities rather than submit to being 'held up.'"

5. January, 1934.

A. E. Morgan. Magazine Article, "*Bench-Marks in the Tennessee Valley,*" 23 Survey Graphic 5

"Without suggesting any particular level of unit cost, I venture the opinion that if the water-power development

of the entire Tennessee River drainage area of 40,000 [fol. 128] square miles can be given a single unified ownership and control, the unit cost of power may be no more than half of what it would be with divided ownership and management. To illustrate: Near the east boundary of Tennessee is a damsite which will provide vast storage capacity for an area of very heavy rainfall and run-off of a few thousand square miles. From this point down the Tennessee River to its mouth is a fall of, roughly, one thousand feet, nearly all of which can be used for generating power.

* * * * * * *

"Now consider what would be accomplished by a single unified system, thoroughly interconnected by transmission lines and controlled from a single office. During wet seasons or wet years the storage dams would be closed until their reservoirs were filled, and all power would be developed from plants having no storage, or inadequate storage. If rains should be heavier on one tributary than on another, the full reservoirs would be drawn upon. On some of the smaller tributaries of the Tennessee, sometimes at high elevations, there are reservoir sites of very large capacity, but without water enough to fill them. Those cheapest and most capacious sites could be developed by building dams, and then, for off-peak hours at night, for a few wet months during the year, and for intermittent wet seasons, all surplus power could be used in pumping water uphill into those high reservoirs which would have power plants to be used during peak loads or for a standby supply. * * *

"With such a single integrated system under a single control, the full hydro-electric power possibilities of the region could be realized, and the cost per unit of private power might be not more than a half or even a third of the cost of separately owned and operated plants. * * *

"Such unified control and operation implies government ownership and operation. The control of this great electric-power system by a private corporation would give economic power over the people of the region which no self-appointed private business men ought to hold. Such management and operation would of necessity be governmental and public in its nature. * * *"

[fol. 129] 6. January, 1934.

A. E. Morgan. Magazine Article, *"The Tennessee Valley Authority,"* Scientific Monthly p. 64 (Address to the National Academy of Sciences, Massachusetts Institute of Technology, Cambridge, November 20, 1933)

"Lastly, the economy of electric power in the Tennessee Valley area will depend much on large-scale developments that are designed and operated as single integrated systems. The entire Tennessee River system, with its thousands of miles of streams, should be under one control and ownership, which means government ownership.

* * * * * * *

"* * * the value of that private plant will be doubled by the building of Norris Dam at public expense. Only by a single organized system of water power plants for the whole Tennessee River system can the full economy be realized. With that organization, water power may cost less than half what it would if the various units should be developed independently by private companies. Water power is to have stiff competition from steam and Diesel engines. If the Tennessee River region is to realize its possibilities in water power it can not afford to throw away this economy."

7. January, 1934.

Lilienthal. Magazine Article, *"Electrification of America."* In House Furnishing Review, p. 52

"Looking at the country as a whole, without respect to public operation or private operation, it is perfectly evident that we now have and soon will have a tremendous surplus supply of electricity. Within the area of the Tennessee Valley, for example, privately owned electric companies have generating and transmission facilities which can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. A fair estimate is that 25% of the investment in power houses and transmission lines is idle, and is piling up fixed charges, because the customers of these companies are still tied to a low average use of elec-

tricity. The Tennessee Valley Authority has a hydro-electric plant at Muscle Shoals with a rated installed capac- [fol. 130] ity of 250,000 H. P. But that is only the beginning of the story. The Authority is constructing a dam and power house at Cove Creek, and another dam and power house above Muscle Shoals at what is known as the 'Joe Wheeler' dam, which together will increase the capacity of Wilson Dam to at least 600,000 H. P. * * *"

8. March, 1934.

A. E. Morgan. Magazine Article, *"Purposes and Methods of the Tennessee Valley Authority"* appearing in The Annals of The American Academy of Political and Social Science (Vol. 172, p. 57)

"There is one other element that I want to mention in the matter of electric power. It is economy of generation. We are taking the position that the whole Tennessee River system ought to be a single unit in the planning and distribution of electric power. Some of the plants have abundant power only a part of the year; other plants can have storage so that all the power can be used all the year or in any part of the year. If we can use those plants at the time they have power and tie them all together as a unit, I believe we can get at least twice, possibly three times, as much value for a dollar's expenditure as we can if those plants are owned individually. I believe it is not possible to organize them under private ownership, unless we should have some great super-corporation dictating the economic conditions of life over an area three-quarters the size of England. We believe that public ownership is the only right way to integrate that system, and we are working on that program.

"And so, as we go along, we are trying to take one after another of the economic problems that arise in that region, to work from chaos into order. We are trying not to do it in an arbitrary way of taking the property because we want it, but are trying to find ways in which a transition can be made from the present regime to another regime in which there will be ownership at home, if possible, with elimination of excessive charges and of duplication and friction, in which the essence of economic planning can be achieved in an orderly and systematic and patient manner."

[fol. 131] 9. April 22, 1934.

Lilienthal, Boston. TVA Press Release, April 25, 1934

"The Authority must carry out the national policy entrusted to it. It must acquire a market for its power. It must work toward a wider use of electricity. None of these objectives will result in the predicted calamities to the industry and its bona fide investors. The Authority early adopted a policy of buying, at fair prices, the property of private utilities in the area selected for its 'yardstick' operations rather than to duplicate facilities and engage in destructive competition."

10. May 17, 1934.

Lilienthal, New York. TVA Press Release

"The Authority is under duty to acquire a market for its power. It is authorized to compete with existing utilities, and for this purpose is expressly empowered to erect duplicate facilities."

11. May 21, 1934.

Morgan. Testimony at House of Representatives Hearings, pp. 155, 156, 162, 163

"Mr. Bacon: On the question of the market for power, do you intend to take power into the big cities, like Birmingham and the other industrial centers of that region?

"Dr. Morgan: In purchasing from the Commonwealth & Southern Co., we made an agreement with them that we would not invade their territory for the present, until the Norris Dam is completed. After that, we hope we can make some arrangement for a division of territory.

"Mr. Thurston: Will you build dams first, or will you make the division before you build the dams?

"Dr. Morgan: We are building the dams."

* * * * * * *

"Dr. Morgan: * * * This project is an effort to set up a governmental development of power, and, if that is adopted, it seems to me a reasonable set-up that it should not be hamstrung and so limited that it is bound to fail. [fol. 132] "* * * We are trying to set up a unit that will be comparable to a well-managed private unit. It re-

quires an adequate area. * * * I hope we can help to establish a policy for the power industry."

* * * * * * *

"As I said this morning, if this project is to work at all, it must have some area to work in. We must in some way acquire an area to work in, either by setting up competing facilities to the present facilities, or by purchasing the facilities of present utilities."

* * * * * * *

"In our opinion, if we can carry through the program we have, we may cause a temporary disadvantage to the immediate power interests around there—to the companies immediately surrounding us. We are trying to make arrangements with them to purchase their utilities. This project is an effort to set up a governmental development of power, and, if that is adopted, it seems to me a reasonable set-up that it should not be hamstrung and so limited that it is bound to fail. * * *

"We are trying to take them over. We were in negotiation with the Commonwealth & Southern, and we have come to an agreement; as the other plants come into operation, we ought to take over more.

* * * * * * *

"Mr. Bacon: In purchasing these transmission lines, you have come to an agreement with the companies, but it is really an agreement under duress, is it not, because if they did not sell to you, you would duplicate their lines?

"Dr. Morgan: Yes."

"Mr. Bacon: So they were compelled to sell?

"Dr. Morgan: Yes—they were not obliged to; they could take the other course.

"Mr. Bacon: I understand.

"Dr. Morgan: Here we have a project as a whole. This project is for a yardstick for power, taking the set-up here. If there is no place to sell that power it is not a project, but only an idea. We have to see this as a whole, or else we cannot achieve it at all.

[fol. 133] "Mr. Bacon: I understand the necessity for taking over their transmission lines, but they were forced

to sell to you because if they did not sell to you, you would put power lines in and put them out of business.

"Dr. Morgan: We are not going to sell power unless we sell it somewhere.

"Mr. Bacon: Naturally, they will make the best deal with you that they can, of course.

"Dr. Morgan: I hope they will deal with us. We are carrying on some negotiations where the course is not so smooth.

"Mr. Bacon: If you hold a man up with a pistol, if he can get off with half of his possessions, he is going to do it."

12. June 1, 1934.

TVA Press Release

"The Authority is under duty to acquire a market for its power. * * * It is authorized to compete with existing utilities, and for this purpose, expressly empowered to erect duplicate facilities."

13. July 6, 1934.

TVA Press Release

" 'There are only two alternatives open to the people of North Alabama,' Mr. Lilienthal said. 'The first is to build duplicate and competing plants with the delay involved in getting construction under way and with the expense of acquiring enough customers to insure financial success.

" 'We believe that the communities would get 100 per cent of the business because of the lower rates and because of the loyalty of the people of these communities.

" 'The results of this alternative clearly, would be to render valueless the lines, poles, transformers, etc., which are now owned by the Alabama Power Company. This property is useful and has a value at the present time to the people of the community.' "

[fol. 134] 14. January 13, 1935.

A. E. Morgan, Swarthmore College. TVA Press Release, January 14, 1935

"Private initiative and rugged individualism showed no sense of social responsibility, no evidence of planning. If we can develop the Tennessee Valley as a unified system

we can do it at half the cost of private management. Public control is essential to prevent a great social and economic waste."

15. March, 1935.

Morgan. Magazine Article, *"Selfish Interests Must Go"* in The Forum, p. 131

"The program is under way. Whether it indicates that government ownership and operation are superior to private or vice versa, I believe events should determine. I believe that criticism of that program ought always to be free. I think, however, that criticism ought to be fair; and wherever there is an effort to misrepresent, to cloud the issue, to mislead the public and so to discredit such an undertaking because certain investors might suffer—there I think we have one of the evidences of how hard it is to establish anything new in our lives. Dividends have been paid through the years on securities which represent no outlay of money, and yet there is resentment at the suggestion that these imaginary values should be written off. This is an illustration of the difficulty of instituting the New Deal.

. . . . . .

"Wherever we turn we find that things as they are have become the basis of some personal interest. All the disabilities of our economic system have been taken advantage of in some way. For instance, go to a small town and you will commonly find five times as many merchants as are necessary. Four out of five are economic parasites. If that town could reorganize itself and have one fifth as many merchants and have the other four fifths of its leading citizens doing other services—taking care of the public health of the community, establishing dental and medical clinics, giving vocational guidance to the young people—we would have a better town. If the town can support five times as many people serving the public as are necessary [fol. 135] to run its stores, why not support people performing necessary services rather than people who are duplicating services which are already being performed? And yet, whenever any organization has made an effort

to eliminate a superfluity of personnel in any field, there is at once the cry that it is interfering with private interests.

• • • • • • •

"As a small boy, I heard a story about how the East Indians catch monkeys. According to the story, they take a coconut and cut a hole in it barely big enough for the monkey's empty hand to pass through. In it they place some lumps of sugar and then fasten the coconut to a tree. The monkey squeezes his hand inside the coconut and grasps the sugar and then tries to draw out his fist. But the hole is not large enough for his closed fist to go through, and greed is his undoing, for he will never give up the prize.

"American business to some degree is in the same situation. It is not yet willing to give up the sugar. Only so far as it becomes willing to relinquish this grasp can the New Deal survive and be a reality."

IV

The Intent and Purpose to Promote Public Ownership of Local Electric Utilities

1. October 17, 1933.

Lilienthal, Memphis. TVA Press Release

"To you who are investors in public utility securities, I want to speak very frankly: After long deliberation, a national policy has been determined upon whereby a limited example of public operation of the power business is to be set up and to be given a chance to show what it can do. This is now the nation's policy."

2. November 7, 1933.

Lilienthal, Nashville. TVA Press Release

"In order to fully understand the reasons for the power program set out in the Tennessee Valley Authority Act, it [fol. 136] is necessary to recall what has been happening in the United States during the past ten years. It is necessary to understand that the people back home have become thoroughly aroused and that they are determined that the disgrace which was cast upon the electric industry during

the past decade, and the losses which have been visited upon investors in public industries is not to be repeated.

"You are all thoroughly familiar with the sordid story. I need not recall to your minds the quarter of a million dollars which Samuel Insull paid to the Chairman of the Illinois Public Utilities Commission. Those of you who are investors in public utility securities are familiar with the story of gross inflation, of the pyramiding of stocks, of write-ups, of bonuses, of the purchase of isolated utility plants at outrageous and unreasonably high figures and the issuance of securities on the basis of such prices. Instances of these practices can be cited to you almost from coast to coast.

"I have no desire to intimate that every important executive in the public utility business followed such practices, but there can be no question that in the last decade the dominate power was in the hands of financial pirates and free-booters."

3. January 5, 1934.

TVA Press Release

"The essence of this agreement is a recognition by the power companies who were parties to the arrangement that the TVA is under a duty to operate a public power business, directly and through public agencies."

4. January, 1934.

A. E. Morgan. *"The Tennessee Valley Authority"* Published in Scientific Monthly p. 64 (Address to the National Academy of Sciences, Massachusetts Institute of Technology, Cambridge, November 20, 1933)

"Another object of the Tennessee Valley Authority is to make this region and the country as a whole more fully aware of the vast possibilities of electric power for enlarging the freedom and scope of modern life in the home and on the farm. This can only come with cheap power, from [fol. 137] which all speculation and exploitation have been removed. The electric power business is one of the simpler industries of our country. It does not compare in complexity with the shoe industry, the automobile industry or the railroad industry. No vast tribute should be paid for management and financing. Brought down to its simpler

necessities, electric power should be a universal convenience, supplied as city water supplies usually are, on a basis of service and not of commercial exploitation."

5. January, 1934.

A. E. Morgan. *"Bench-Marks in the Tennessee Valley,"* Published in 23 Survey Graphic 5

"Just as an adverse balance of foreign trade tends to bankrupt a nation, so the constant drain from a municipality of payments to a foreign-owned utility tends to economic impoverishment. Given administration of equal quality, the ideal status of a city utility is that it is fully amortized and is owned by the public it serves. Regional independence from a perpetual drain is no less important for an area as large as that of the TVA than for a city."

6. March, 1934.

A. E. Morgan. *"Purposes and Methods of the Tennessee Valley Authority"* Published in The Annals of The American Academy of Political and Social Science, (Vol. 172 pp. 53, 54)

"Outside Ownership of Utilities

"And let me divert right here to the matter of electric power. The utilities of that region are not largely owned locally. There is some preferred stock scattered around the country, mostly, it would appear, to widows and orphans. While the Tennessee Valley Authority law was in Congress, a large number of letters were received at the Capitol protesting against the passage of the law. They largely came from holders of the preferred stock and I think two thirds of them came from widows and orphans. I have a collection of possibly a hundred of those letters. I have wondered what economic accident it is that causes [fol. 138] such a backlog of widows and orphans for the utilities to appeal to for public support.

"Possibly 10 or 20 per cent of the ownership of the local utilities is in that region. The rest is outside; the control is outside, the dividends largely go outside to our large centers. The region exports money. A country that does too much of that is going to be in trouble."

* * * * * * *

"• • • We are taking the position that unless there is some necessary element of service rendered, foreign ownership is destructive to a community and its elimination is a sound element in social and economic planning."

7. March, 1934.

A. E. Morgan. *"Bench-Marks in the Tennessee Valley, II A Birch Rod in the National Cupboard,"* Published in 23 Survey Graphic 105, 110

"For the government to have a genuine 'yardstick' for power it must generate and sell power on such a scale that the operation can be representative of efficient management. Fortunately for this program, the drainage area of the Tennessee River, with certain limited areas and cities in addition, constitutes such a unit. At present it is almost an independent area, and can be treated as a unit with very little adjustment of physical facilities. The TVA, therefore, plans through a period of years to treat this region as a unit of power supply, and to attempt to demonstrate what is the normal and reasonable cost of electric power. Its general plan is to generate and transmit power to the individual communities, encouraging them to own and operate their own municipal or community distributing systems. The TVA will furnish engineering and accounting advice and supervision. In this way the communities can have the advantage of large-scale low-cost generation and transmission and also the advantage of local public ownership. For such a program, a fairly large area of operation is necessary."

[fol. 139] 8. April 21, 1934.

Lilienthal, Chattanooga. TVA Press Release, April 22, 1934

"Perhaps the most important factor in insuring a low cost for hydro-electric power in this region is the fact that the distribution of this power to the factories and homes and farms, for the most part, will be in the hands of public agencies. Industries seeking to use large blocks of hydro-electric power in the Tennessee Valley will not be forced to support dizzy towers of inflated capitalization. They will not have to pay for the financial misdeeds of the builders of utility pyramids. Under public distribution of power with centralized accounting, control and supervision in the

hands of a regional authority, there will be the greatest incentive to economy and managerial efficiency. Each community will try to make its record better than that of its neighboring community."

9. April 24, 1934.

Lilienthal, Boston. TVA Press Release, April 25, 1934

"Now this is what had been going on throughout the United States—financial excesses, political corruption, an enforced frugality in the use of a great natural resource."—

• • • • • • •

"Twenty million American homes are to be denied the full benefits of a great national resource in order that inflated stock may pay out."

10. June 13, 1934.

A. E. Morgan. Testimony before Sub-committee of the Committee on Appropriations, U. S. Senate

"Senator Dickinson: And, if it takes $300,000,000 to put in or make this experiment on behalf of the citizens involved here, might I inquire if you would state what you would think it would take from the public treasury and the taxpayers of the United States to help the people in the rest of the United States under a similar program?

Dr. Morgan: Most of that $300,000,000 is for power development, and will be gradually repaid out of revenues. [fol. 140] I think it will cost the taxpayers of America altogether less than it is now costing in the rest of the United States. For instance, in Knoxville, the people now are paying a certain rate for electric power. We believe that we can cut that rate decidedly and yet that the people can pay for their entire installation in 10 years out of the rest. That is, the rates they are paying now are so excessive, the taxes they are paying, in the form of electric rates now are so excessive that we can cut that 30 percent and yet out of the rest of it that they can pay the whole thing back in 10 years.

Senator Dickinson: It seems to me that is a tremendous indictment of all of the authorities that have had anything

to do with the supervision of electric rates in any of the localities or States where you happen to be distributing power.

Dr. Morgan: I am not commenting on that statement."

11. June 22, 1934.

Lilienthal, Jackson. TVA Press Release

"I am not an alarmist, but I want to warn you that powerful forces are at work to deprive the South of the greatest opportunity which ever came to any people. A year ago the disciples of greed and blindness that brought this country to the verge of a collapse had hurried into the storm cellars, whimpering and crying for help. • • •

"The people of the country must choose whether to follow the leadership of the President or the leadership of the selfish and blind that brought us so close to destruction.

"The first great test is in your hands here in the Tennessee Valley. Under the cover of various disguises, powerful forces are at work to destroy the long-time objectives of the Tennessee Valley Authority. In order to fill their own pockets, these powerful groups are ready at any cost to destroy the Tennessee Valley Authority's program and to keep the President's objectives from being fulfilled."

[fol. 141]

V

The Use of EHFA to Promote the Business of TVA as a Public Utility

1. December 20, 1933.

TVA Press Release

"David E. Lilienthal, Director of the Tennessee Valley Authority in charge of its power program, tonight issued the following statement in explanation of the purposes of the Electric Home and Farm Authority, Inc., just created by Executive Order of President Roosevelt.

"The objective of this program is a wider and greatly increased use of electricity in the homes and on the farms in the seven states of the Tennessee Valley. In order to carry out the program there must be a broadscale distribution of very low cost standard quality electric using ap-

pliances and concurrently a revision downward of electric rates. * * *

"It is proposed that the federal government participate in this program in the following ways:

"1. By assisting in financing the consumer in purchasing standard electric equipment at very low prices.

"2. By securing reductions in electric rates by agreement with the utilities publicly and privately owned so as to make use of this equipment feasible for the average householder and farmer.

"3. By engaging in educational work and research to further lower the cost of electric equipment and to make it better adapted to the needs of the average home and farm.

"Electric appliances are now sold by regular dealers for the manufacturers, by hardware and department stores, and by electric utilities. The program does not contemplate a disruption of these outlets. Each dealer will, of course, continue to exhibit and sell any lines of electric appliances he desires but he will also have an opportunity to sell the low-priced appliances which this program is expected to create. The program will stimulate the dealer's general business."

[fol. 142] 2. January 5, 1934.

Lilienthal, Philadelphia. TVA Press Release, January 6, 1934

"In common with other recently created agencies of government, the Tennessee Valley Authority has a definite duty and a definite role to play in this new function of government as a stimulating and coordinating force. There are a number of illustrations in the work of the Tennessee Valley Authority of this need of government stimulation. The most recent, and perhaps the best illustration, is afforded by the creation a few days ago, by order of President Roosevelt, of a subsidiary of the Tennessee Valley Authority, a Delaware corporation known as Electric Home and Farm Authority. The occasion for the creation of this agency and a brief analysis of its functions will show how the government can act as a stimulator and coordinator in its relation to business."

3. January 20, 1934.

TVA Press Release

"• • • On December 19, President Roosevelt issued an Executive Order creating an agency through which the Tennessee Valley Authority will carry this appliance program forward. It is called: Electric Home and Farm Authority, and its articles of incorporation were filed today. At present the corporation has funds to operate only in the seven Tennessee Valley States."

4. March 28, 1934.

TVA Press Release

"Mr. Lilienthal also announced that the financial set-up of the EHFA has been completed and that the million dollar capital from the NRA has been made available. In addition to this, the EHFA has access to a credit of ten million dollars from the RFC."

5. April 5, 1934.

TVA Press Release

"The Electric Home and Farm Authority is a special agency created by executive order of the President to carry [fol. 143] out an appliance program for TVA. Its central offices are to be established at Chattanooga."

6. April 6, 1934.

TVA Press Release

"First sale and demonstration of electric appliances manufactured for the Electric Home and Farm Authority will be held at Tupelo, Miss., early in May. All appliances will carry a distinguishing mark of the Authority."

7. April 16, 1934.

TVA Press Release

"The presence of this [TVA] emblem on a appliance means that the appliance has been built to EHFA specifications as to quality and design, and that the retail price fixed by the manufacturer is one which EHFA considers reasonably low.

• • • • • • •

"TVA emblem-bearing appliances cannot be sold or financed under the EHFA plan in a community until the local electric utility in such community has entered into a special agreement with EHFA."

8. April 17, 1934.

TVA Press Release

"• • • It [the TVA emblem] can be used only on appliances manufactured to EHFA quality and price specifications, and only on these appliances when they are sold in areas served at TVA rates or at rates which the Authority considers low enough to make use of this equipment feasible to families of low or moderate income."

9. May 24, 1934.

EHFA Press Release

"• • • Distribution of EHFA-approved appliances will be extended to other areas where rates for electricity are sufficiently reduced by private power companies to permit popular use of such conveniences."

[fol. 144] 10. August 23, 1934.

EHFA Press Release

"EHFA came into being primarily because the high cost of electric power and the high cost of household appliances have been a double barrier to the full use of electricity in homes and on farms. EHFA set out to remove this barrier by encouraging the reduction of rates and prices."

11. June 26, 1933.

The following quotation appears in the minutes of a meeting of the Board of Directors of the Tennessee Valley Authority held June 26, 1933:

"The Board adopted the following policy:

"That no employee of the Tennessee Valley Authority make statements respecting matters of future policies or activities of the Corporation before such policies or activities have been brought before the Board and action taken thereon."

I hereby certify that the foregoing is a true copy of a quotation which appears in the minutes of the above described meeting.

Charles E. Hoffman, Assistant Secretary.

12. August 5, 1933.

The following appears in the minutes of the Tennessee Valley Authority of August 5, 1933, with reference to publicity:

"It was decided that all publicity shall issue through the Publicity Department and that special publicity dealing with particular phases of the work shall have the approval of the Director concerned before it is released."

I certify that the above is a true and correct copy of that portion of the minutes of the Tennessee Valley Authority of August 5, 1933, with reference to publicity.

Tennessee Valley Authority, John L. Neely, Jr., Secretary.

[fol. 145] EXHIBIT "E" TO BILL OF COMPLAINT

Typical State Statutes Sponsored by Defendants

Tennessee Public Acts, 1935

Chapter 32

Senate Bill No. 113

(By Moss, Carter, Maxwell, Boyd, Harris, Sprouse, Chambers, Cate, Davies, Bramley, Todd, Draper, Mosby, Elkins, Lowe, Fowler, Abernathy, Atchley, Dodson, Trotter, Howell, Ewell, Ashley, Carden, Hale, Wright, Jones.)

An Act to authorize counties, incorporated cities and towns in the State of Tennessee to construct, purchase or otherwise acquire, and to operate and maintain electric generating or distributing systems, within or without the county or corporate limits, to construct, purchase or otherwise acquire, to operate, maintain or use, individually or jointly, a transmission line or lines, within or without the corporate or county limits, to make improvements, exten-

sions, betterments or additions to such electric systems, and such transmission line or lines to furnish electric power and energy to any consumer or consumers, to finance such acquisition, improvement, extension, betterment, or addition by the issuance of bonds and the acceptance of Federal grants, to provide for the supervision, management and control of such electric systems and such lines, to prescribe rules and policies to govern resale rates, disposition of revenue, and other operating and management practices of such systems, in order to promote the increased domestic use of electricity in rural and urban areas by enabling such counties, incorporated cities and towns to utilize the surplus power generated by the Tennessee Valley Authority, or the power generated at any other works or dams.

[fol. 146] Chapter 37

Senate Bill No. 122

(Moss, Carter, Maxwell, Boyd, Harris, Sprouse, Evins, Loveless, Hale, Todd, Chambers, Bramley, Cate, Davies, Wright, Draper, Lowe, Dodson, Abernathy, Atchley, Trotter, Howell, Ewell, Ashley, Garden, Fowler.)

An Act to authorize municipal corporations, counties, towns and cities owning and/or operating or authorized to acquire and/or operate, electric generation, transmission and/or distribution systems, in contracts with certain governmental agencies for the acquisition of such systems or for the purchase of electric power and energy to stipulate and agree to certain covenants, terms and conditions; and to validate any such covenants, terms and conditions heretofore stipulated or agreed to.

Senate Bill No. 124

(Moss, Carter, Maxwell, Boyd, Harris, Sprouse, Evins, Cate, Wright, Bramley, Draper, Fowler, Lowe, Abernathy, Atchley, Dodson, Hale, Trotter, Ewell, Howell, Ashley, Garden.)

An Act to Define and Limit the Authority, Powers and Jurisdiction of the Railroad and Public Utilities Commission So as to Exempt Therefrom Certain Federal and State Corporations, Agencies, Instrumentalities, and Other Public Bodies and Certain Non-profit Organizations Herein Defined as Non-Utilities; to Authorize Utilities to Sell, Lease

or otherwise Dispose of Their Property to Non-Utilities; and as a Part Hereof to Amend Sections 5380 to 5508, Inclusive, of the Official Code of Tennessee, Passed at the Regular Session of the General Assembly of the State of Tennessee in 1931, Known as the Code of Tennessee of 1932, Said Section of the Code Defining the Term "Public Utility."

[fol. 147] Senate Bill No. 121

(By Moss, Carter, Maxwell, Boyd, Harris, Sprouse, Loveless, Todd, Chambers, Cate, Wright, Bramley, Draper, Lowe, Abernathy, Atchley, Dodson, Hale, Trotter, Howell, Ewell, Ashley, Carden, Fowler.)

A Bill to Be Entitled: "An Act to Amend Chapter 23, of the Code of Tennessee, Being a Chapter Creating Railroad and Public Utilities Commission, and All Acts Amendatory Thereof, so as to Provide for an Appeal From or Review of, Orders, Judgments, Decrees and Regulations of Said Commission."

Public Acts of the Extra Session

Chapter 29

Senate Bill No. 7

Elkins	Harris
Mosby	Sprouse
Abernathy	Howell
Fowler	Atchley

An Act Validating, Ratifying, Approving and Confirming All Agreements Heretofore Entered Into Between Incorporated Cities or Towns, Counties and/or Special Taxing Districts of This State and the United States of America for the Making of Any Loan and/or Grant Under Title II of the National Industrial Recovery Act, and All Proceedings Taken in Performance, in Whole or in Part, of Any Such Agreements, Including the Authorization of Any Bonds, Notes, Warrants and Other Instruments, Obligations and/or Evidences of Indebtedness, and Authorizing Completion of All Such Proceedings, Including the Issuance, Sale and Delivery of Such Bonds.

[fol. 148] Chapter 30

Senate Bill Number 8

Elkins	Harris
Mosby	Sprouse
Abernathy	Howell
Fowler	Atchley

An Act Simplifying and Clarifying the Procedure for the Construction and Financing of Public Works Projects by Municipalities, Enabling Municipalities to Make and Perform Contracts With Federal Agencies Relating to the Construction and Financing of Such Projects and Conferring Additional Powers Upon Municipalities.

Chapter 31

Senate Bill No. 9

Elkins	Mosby
Abernathy	Fowler
Harris	Sprouse
Howell	Atchley

An Act Validating, Ratifying, Approving and Confirming All Bonds, Notes, Warrants and Other Instruments, Obligations and/or Evidences of Indebtedness Heretofore Issued and Sold by any Incorporated City or Town, County or Special Taxing District of This State to the United States of America or any Agency or Instrumentality Thereof.

Chapter 33

Senate Bill No. 18

Fowler	Boyd	Carden

An Act Providing for the Acquisition, Purchase, Construction, Reconstruction, Improvement, Betterment, Extension, Operation and Maintenance of Revenue-Producing Public Works by Any Incorporated City or Town; Authorizing and Regulating the Issuance of Revenue Bonds for Financing Such Public Works; and Providing for the Payment of Such Bonds and the Rights of Holders Thereof.

[fol. 149] IN CHANCERY COURT OF KNOX COUNTY, TENNESSEE

ORDER FOR REMOVAL—June 15, 1936.

The defendants, Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal, having within the time provided by law, filed their petition for removal of this cause to the District Court of the United States for the Eastern District of Tennessee, Northern Division, and having at the same time offered their bond in the sum of Five Hundred Dollars ($500.00) pursuant to statute; now, therefore, this court does hereby accept and approve said bond and grant said petition and does order that this cause be removed for trial to the next District Court of the United States for the Eastern District of Tennessee, Northern Division, and that all proceedings in this Court be stayed.

This 15 day of June, 1936.

A. E. Mitchell, Chancellor.

Clerk's certificate to foregoing papers omitted in printing.

[fol. 150] IN UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF TENNESSEE, NORTHERN DIVISION

In Equity. No. 228

THE TENNESSEE ELECTRIC POWER COMPANY, a Maryland Corporation, et al., Complainants,

v.

TENNESSEE VALLEY AUTHORITY, a Body Corporate Created by an Act of Congress Approved May 18, 1933, et al., Defendants

DISQUALIFICATION OF GEO. C. TAYLOR, JUDGE—Filed August 18, 1936

In this cause the judge of this court is of opinion that it would be improper for him to sit on its trial or to pass upon any preliminary questions that have been or may be presented testing the jurisdiction of the court. The reason for said belief on the part of the judge of the court is that members of his family are interested in the ownership of

companies that might be affected by the final decision of the case.

The clerk will enter this statement on the records of the court and certify forthwith an authenticated copy thereof to the Senior Circuit Judge for the Sixth Judicial Circuit, now in said circuit, so that further proceedings may be had under sections 17 and 18, title 28, United States Code.

Approved for entry.

(S.) Geo. C. Taylor, Judge.

[fol. 151] IN UNITED STATES DISTRICT COURT

DESIGNATION AND APPOINTMENT OF JOHN J. GORE AS JUDGE

It having been made to appear to me that the public interest so requires, I do hereby designate and appoint the Honorable John J. Gore, who is United States District Judge for the Middle District of Tennessee, to hold the United States District Court for the Eastern District of Tennessee in place of or in aid of the regular judge of such Eastern District.

Such designation and appointment are to continue in full force from and including this day to and including the 31st day of December, 1936; and the judge so designated is to have all the powers and be subject to all the duties contemplated by Sections 14, 18, and 19 of the Judicial Code, as now amended, being Sections 18, 22 and 23 of Title 28 of the United States Code.

Charles H. Moorman, Senior Circuit Judge, Sixth Judicial Circuit.

[fol. 152] IN UNITED STATES DISTRICT COURT

(Caption omitted)

AMENDMENT TO BILL OF COMPLAINT—Filed August 10, 1936

Now come the Complainants by their solicitors, and as of course, in accordance with Equity Rule 28, amend their Bill of Complaint, in the above-entitled cause as follows:

By striking out lines 10, 11, and 12 at page 75 thereof and inserting in place thereof the following words:

"That pending the final hearing in this cause this Court shall enjoin Defendants, their agents and employees, sep-

arately and severally, and by its final judgment, shall permanently enjoin Defendants, their agents and employees, separately and severally:"

By striking out lines 25, 26, 27, and 28 at page 78 thereof and inserting in place thereof the following words:

"(4) That in the event, during the pendency of this suit, the Defendants shall continue to prosecute the power program herein sought to be enjoined and shall construct or acquire facilities and works for the purpose of manufacturing and distributing electric power, this Court shall by its final decree require the Defendants to restore the conditions which existed at the time when this Bill was filed; and the Complainants pray that this Court shall by its final decree grant such other and further relief whether herein specifically prayed for or not as right and justice shall require and as to this Court shall seem meet, just and proper."

There are filed herewith the separate affidavits of:

Jo. C. Guild, Jr., President of The Tennessee Electric Power Company;

Laurence B. Howard, President of Franklin Power and Light Company;

W. J. O'Brien, President and General Manager of Memphis Power and Light Company;

O. J. Miller, President of Southern Tennessee Power Company;

J. S. Pevear, President of Birmingham Electric Company;

B. E. Eaton, President of Mississippi Power Company;

Newton M. Argabrite, Vice President of Appalachian Electric Power Company;

P. S. Arkwright, President of Georgia Power Company;

L. V. Sutton, President of Carolina Power and Light Company;

Paul O. Canaday, President of Holston River Electric Company;

[fol. 153] Thomas W. Martin, President of Alabama Power Company;

Newton M. Argabrite, Vice President of Kentucky and West Virginia Power Company, Inc.;

Newton M. Argabrite, Vice President of Kingsport Utilities, Inc.;

Henry D. Fitch, President of Kentucky-Tennessee Light and Power Company;

John Wisdom, President of West Tennessee Power and Light Company;

R. I. Brown, President of Mississippi Power and Light Company;

Charles E. Ide, Vice President of East Tennessee Light and Power Company; and

Charles E. Ide, Vice President of Tennessee Eastern Electric Company,

verifying the Bill of Complaint herein on behalf of each of said complainant companies, which said affidavits are presented and filed to be treated as the verification of the Bill of Complaint herein on the part of the Complainants named respectively in each of such affidavits.

Frantz, McConnell & Seymour, Trabue, Hume & Armistead, Baker, Hostetler, Sidlo & Patterson, by (S.) Charles M. Seymour, Solicitors for Complainants.

We certify that we have this day furnished to solicitor for Defendants copy of the foregoing amendment to Bill of Complaint.

Frantz, McConnell & Seymour, by (S.) Charles M. Seymour, Solicitors for Complainants.

August 10, 1936.

(For brevity the affidavits are omitted.)

[fol. 154] In United States District Court

(Caption omitted)

Motion to Quash Service of Subpoena and Dismiss Bill of Complaint for Lack of Jurisdiction—Filed August 14, 1936

Now come the defendants, Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal, appearing specially for the sole purpose of filing this motion without submitting generally to the jurisdiction of the court and move the court to vacate and quash the

attempted service of the subpoena herein and to dismiss this case as to them for want of jurisdiction over the persons of said defendants, and in support of said motion, show unto the court the following:

The defendant Tennessee Valley Authority is an agency of the Government of the United States of America, created and existing by virtue of the Act of Congress known as the Tennessee Valley Authority Act of 1933 (Public No. 17, 48 Stat. 58; Title 16, U. S. C. A., Section 831, et seq.) and as such governmental agency, the said Tennessee Valley Authority is not subject to suit in the courts of the State of Tennessee, is not amenable to service of process in said State, and has not consented to be sued in the courts of said State.

The defendants Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal are sued in this cause not in their individual capacities but in their respective official and representative capacities as the Directors of the said Tennessee Valley Authority performing the duties conferred upon them by said Act of Congress, the purpose of said suit being to restrain and enjoin them in the performance of said official duties and the said defendants are not subject to suit in their official and representative capacities in the courts of the State of Tennessee, are not amenable to the service of process in said State, and have not consented to be sued in said courts.

The defendants further show unto the court that Section 8(a) of the said Tennessee Valley Authority Act of 1933 provides as follows:

"The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the northern judicial district of Alabama within the meaning of the laws of the United States relating to the venue of civil suits."

The defendants allege that by the terms of this provision exclusive jurisdiction over civil suits against the defendant, Tennessee Valley Authority or against the Directors of said defendant, when sued in their official and representative capacities as such Directors, is vested in the United States District Court for the Northern Judicial District of Alabama and that no other court has jurisdiction over the persons of said defendants.

[fol. 155] The defendants would further show unto the court that the Chancery Court of Knox County, Tennessee, in which this action was originally filed, is without jurisdiction under any Tennessee statute or otherwise over suits against a governmental agency of the United States, established as such a public agency under a special Act of Congress, with its domicile and residence in the State of Alabama.

Wherefore, the defendants pray that this court will enter an order vacating and quashing the attempted service of process upon these defendants and dismissing this suit as to them for want of jurisdiction.

(S.) James Lawrence Fly, William C. Fitts, Jr., Solicitors for Defendants Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, David E. Lilienthal, Appearing Specially Herein for the Sole Purpose of Contesting the Jurisdiction Over Defendants in This Cause and Moving to Quash Service Upon Said Defendants on Such Grounds.

[fol. 156] In United States District Court

(Caption omitted)

Memorandum Opinion Overruling Motion to Quash Service of Subpoena and Dismiss Bill of Complaint for Lack of Jurisdiction—Filed October 17, 1936

The only question to be determined on this hearing is whether or not the Chancery Court of Knox County, Tennessee, has jurisdiction to try and determine the issues presented by the bill.

The case was removed from the Chancery Court of Knox County, under the provisions of Title 28 U. S. C. A. Section 71, to this Court.

Plaintiffs are public utility corporations, and are engaged in the business of generating, transmitting, distributing and selling electric energy at wholesale and retail in the boundaries of the respective political subdivisions in which they render service.

Defendant, The Tennessee Valley Authority, is a body corporate, created by an Act of Congress, approved May 18, 1933 (48 Stat. 58, 16 U. S. C. A. 831).

Defendants, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal, are averred to be residents of Knoxville, Knox County, Tennessee. They are the three chief executive officers, and sole members of the corporate authority of the Tennessee Valley Authority, and known as its Board of Directors, and as such, are charged with the duty of directing and the exercise of all the powers of the Tennessee Valley Authority. They are sued in their respective individual capacities, and also in their joint and several capacities as officers and directors of, and constituting the Governing Board of the Tennessee Valley Authority.

It is charged in the bill that the Tennessee Valley Authority has established and maintains its principal office and place of business in the City of Knoxville, Tennessee, from which it carries on a proprietary business as a public utility for the generation, transmission, distribution and sale of electric light and power in the States of Tennessee, Mississippi, Georgia and Alabama, and that they are exercising and threatening to exercise, and are performing and threatening to continue to perform, certain acts pursuant to alleged powers and authority claimed to be conferred upon them, in their official capacity, under the Tennessee Valley Authority Act of 1933, and amendments thereto, "but," it is charged, "which powers and authority are not actually lawfully or constitutionally conferred upon or vested in them, or in any of them thereby."

It is averred that the plaintiffs have a common interest in the subject of the litigation, and in obtaining the relief therein sought "in that all of them are affected in substantially in the same way by the operation of the Tennessee Valley Authority, and by the acts of the defendants sought to be justified under that Act." That the injuries from which they seek relief are caused by the operation of said act, which is averred to be illegal.

The bill is lengthy, and in order that there may be a clear understanding of the issues presented, a substantial sum- [fol. 157] mary of the charges is deemed necessary. It charges, in effect, that the complainants are severally public utility corporations, and each possesses all the rights, powers and franchises necessary under the laws of the several States in which it does business, for the generation, transmission and sale of electric energy at wholesale and retail, or at retail, in the territory served by it. Such rights, powers and privileges in general are indeterminate, or extend

over a substantial number of years in the future; that by the expenditure of millions of dollars, they have acquired a vast property and business, and have established a splendid financial credit, and a goodwill of much value; that they have invested many millions of dollars in tangible and intangible property of great value, and the defendants, acting collectively and individually, and also in concert with other persons and corporations, have conspired and confederated together, to destroy complainant's financial standing and good-will, and to confiscate and appropriate their properties; that the Tennessee Valley Authority Act purports to authorize, if it does not make mandatory the construction, development and operation of a great federally owned and operated public utility system for the generation, transmission, distribution and sale of electricity in the State of Tennessee and adjoining States, within the physical transmission distances of the generating plants constructed, and to be constructed; that the Act attempts to authorize a large indetermined number of dams and general works for the direct and primary purpose of creating a vast supply of electric power for the purpose of carrying on a federally-owned public utility, to establish the United States on a vast scale in the industry or business of producing, transmitting and selling electric power as a proprietary commercial venture; to launch the Federal Government upon a competitive commercial enterprise; to draw to the Federal Government the conduct and management of an intrastate business in the guise of disposing of property wrongfully acquired in a manner inconsistent with the foundation principles of our dual systems of government, to govern concerns reserved to the states. That to carry on its proprietary business as a commercial venture, the Act creates a corporation, having the usual powers and characteristics of a private business corporation; that the program authorized by the Act and promulgated by defendants, has no direct, real or substantial relation to navigation, nor to any other Constitutional function of the Federal Government; that any references in the Act to navigation or to any other Con- [fol. 158] stitutional object of Federal powers are insubstantial, incidental and indirect, "and mere pretenses or pretexts under which it is sought to achieve an object not entrusted to the Federal Government but reserved to the States." That the policy declared by the Act creates or threatens to create, unfair competition with the business of

complainants and others; that the policy adopted invades the reserved rights of the States, "and threatens to take the respective properties of these complainants without due process of law;" that the number and capacity of steam and hydro-electric plants for the generation of electricity, the number and location of dams which the Government proposes to erect and turn over to the corporation in the Tennessee Valley basin, the quantity of electricity which defendants may manufacture for sale in a proprietary business, the extent to which, and the territory in which, the Tennessee Valley Authority may acquire and construct transmission lines for the distribution and sale of electric energy are undefined by the Act; that the Act purports to vest complete and uncontrolled discretion to the defendants in relation to such matters, as well as the right to permit or prohibit the construction of hydro-electric plants by others, including complainants, on the Tennessee River and its tributaries. That there are one hundred forty-nine available water-power sites upon the Tennessee River and its tributaries, which come under the domain and control of defendants by the Act; that complainants are unable to compete with defendants, who are financed by public money out of the Treasury of the United States, in the generation, transmission and sale of electricity; and that the execution of the program authorized by the statute, will necessarily and inevitably destroy all, or a substantial part, of the business and property of each of the complainants.

That the defendants, after the passage of the Tennessee Valley Authority Act, claiming to act pursuant to and under the authority of said Act, promulgated and officially announced a program for the construction, development and operation of a great federally owned and operated public utility system for the generation and distribution of electricity in the territory within the physical transmission distances of the electric generating plants to be constructed under the program. That defendants propose and plan to take the market and property of complainants, without paying just compensation therefor; that the program promulgated calls for elimination in this area of existing privately [fol. 159] owned public utilities to the end that the Tennessee Valley Authority shall have a compact market territory in which it will be the only purveyor of electric services as a public utility; that the Tennessee Valley Authority proposes to acquire such transmission lines as it can use, at its

own price, or to render them valueless through the construction of duplicate lines, with Federal funds. That defendants decline to sell power to existing privately owned utilities other than as a temporary expedient. That it is the announced purpose of the defendants to appropriate the market for power throughout the entire area within commercial and economic transmission distances of its generating plants; to establish complete public ownership of utility generating transmission and retail or distribution facilities for electricity in a large area of the Nation; to establish a policy of rate making which will permit domestic and rural use at the expense of industrial use; to regulate local intrastate electric rates; to supplant State regulation of public utilities; to establish a "yardstick" to regulate the rates of privately owned utilities in, or adjoining the area "or elsewhere throughout the United States"; to promote public ownership of utilities "throughout the Nation as well as within the selected area."

That the power to be produced (except power to be produced through the operation of the facilities at Wilson Dam) under the program promulgated by defendants is not surplus power, incidentally produced by Federal works, but power which is to be deliberately produced by defendants for the express purpose of distributing and selling such power as a proprietary business enterprise, to effectuate Federal regulation of rates and service for intrastate electric service and to promote public ownership of public utilities as a part of a permanent "National Power Policy." That the promulgation of the program casts a cloud upon the rights of each of the complainants and threatens each of them with irreparable injury; that defendants, in addition to having assumed use, control and possession of Wilson Dam and Nitrate plant #2, steam plant, have undertaken the construction of Norris Dam and power plant on the Clinch River, the Wheeler Dam and Power plant in the vicinity of Muscle Shoals, in Alabama, the Pickwick Landing Dam, the Guntersville Dam and power project in Alabama, and have authorized the beginning and construction of the Chickamauga Dam and power plant near Chattanooga, and have recommended to Congress the construc-
[fol. 160] tion of other dams in the territory. That they have entered into contracts for the sale of power to the

cities of Knoxville, Memphis and other towns in Tennessee, Alabama and Mississippi. That defendants, by duress and coercion, not merely compelled privately owned utilities to sell certain of their local transmission systems, but have by contract of purchase, undertaken, in defiance and disregard of the sovereignty and rights of the State, to control and regulate the rates which the privately owned utilities should continue to serve, in the territory in which the defendants were temporarily permitted to remain in business, and thereby sought to oust the jurisdiction of the States and of their Regulation Commissions over the rates of such privately owned utilities.

It is averred that defendants have conducted, and are still conducting, a studied and systematic campaign of propaganda, solicitation and local political activity in the area designated in the promulgated program "for the purpose of disrupting the established business relations between the complainants and their customers, destroying the good will, and seizing the markets which the complainants have built up through years of effort and the investment of vast sums of money, and inducing and inciting the residents of communities served by complainants under high pressure propaganda financed with taxpayers' money, to cooperate with the defendants in their scheme to develop a great federally owned and operated electric power utility as an absolute monopoly in the vast territory marked by the defendants for appropriation; "that this campaign has been carried on through public addresses of, and personal solicitation, by the individual defendants and their agents, local political activity, radio addresses, magazine articles and dissemination of sensational pamphlets and posters, mailed at taxpayers' expense under Government frank, throughout and beyond the area designated in the promulgated program.

That defendants have solicited large industrial customers of certain of the complainants and for the purpose of obtaining such customers, the defendants have offered to supply electricity for industrial purposes at arbitrary, noncompensatory, confiscatory and discriminatory rates. They have attempted to persuade some customers of complainants to breach existing contracts, all in violation of the valid laws of the States of Tennessee, Alabama and other states in which the defendants are operating or seeking to operate; that complainants are unable to meet such unfair competi-

tion, not only because the rates quoted are noncompensatory [fol. 161] and made possible only by subsidies from federal and state taxpayers, but also because complainants are forbidden by State law to make discriminatory rates for competitive purposes.

In exhibits to the bill, are set out alleged quotations from public speeches, documents, letters, etc., asserted to have been uttered and circulated by the individual defendants, tending to show that the extent of the proposed program is to electrify America, by carrying out a "National Power Policy."

Many other acts and utterances too numerous to mention, which are alleged to be unlawful, are detailed in the bill.

The bill prays, among other things, that the Court, upon final hearing "shall adjudge and decree that the Tennessee Valley Authority Act of 1933, as amended, the power program authorized by said Act, and the power program promulgated by the defendants are severally in violation of the Constitution of the United States." And, that the Court shall, by its final judgment enjoin defendants, their agents and employees separately and severally, from (a) further executing the Tennessee Valley Authority Act of 1933, the power program authorized by said Act, or the power program promulgated by the defendants, and in general from engaging in the business of purchasing, constructing and otherwise acquiring works for the purpose of creating and supplying electric power for the use of carrying on a Federally owned public utility; from dispensing electricity generated at dams or other works constructed, by or on behalf of, the United States; for any purpose constructing, purchasing, or otherwise acquiring hydroelectric plants, electric stations, electric transmission lines, electric distribution systems, or other power facilities, except such transmission lines as may be necessary for the transmission of power generated at Wilson Dam to the extent that the production and sale of power at Wilson Dam has been held legal and not to exceed the capacity which there existed as the Dam was originally constructed; from carrying on a campaign of organized propaganda at Federal expense to promote public ownership and operation of electric utilities under control or in privity with or dominated by the Tennessee Valley Authority; from engaging in any way in practices which constitute unfair competition with any of the

complainants in territory served by them, etc., etc., and for general relief.

Defendants entered a special appearance for the purpose [fol. 162] of filing a motion to quash service of subpoena and dismiss the bill of complaint for lack of jurisdiction.

The motion is based upon the allegation that the Tennessee Valley Authority is an agency of the Government of the United States of America, created and existing by virtue of the Act of Congress known as the Tennessee Valley Authority Act of 1933, and as such Governmental agency, it is not subject to suit in Courts of the State of Tennessee, is not amenable to service of process in said State, and has not consented to be sued in the Court of said State.

Defendants, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal, aver that as Directors of the Tennessee Valley Authority, they are performing duties conferred upon them by an Act of Congress, and the suit being to restrain and enjoin them in the performance of official duties, they are not subject to suit in their official and representative capacities in the Courts of Tennessee, and are not amenable to the service of process in said suit, and have not consented to be sued in said Court.

The defendants further allege in their plea, that by the provisions of Section 8(a) of the Tennessee Valley Authority Act of 1933, exclusive jurisdiction over civil suits against them is vested in the United States District Court for the Northern Judicial District of Alabama, and that no other Court has jurisdiction over them.

Section 8(a) of the Tennessee Valley Authority Act reads:

"The corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The corporation shall be held to be an inhabitant and resident of the Northern Judicial District of Alabama within the meaning of the laws of the United States relating to the venue of civil suits."

Defendants aver in their plea that even if Section 8(a) of the Tennessee Valley Authority Act does not limit the forum in which they may be sued to the Northern Judicial District of Alabama, the Chancery Court of Knox County, Tennessee, cannot entertain jurisdiction over them because there is no statute in Tennessee vesting jurisdiction in a

State Court over an agency or instrumentality of the United States Government, and that the individual defendants are the agents or directors of said agency.

[fol. 163] Plaintiffs insist that the Tennessee Valley Authority is a corporation, claiming existence under the laws of the United States, engaged in a proprietary business, and that therefore, under the Tennessee Statute, is subject to suit in the State Courts, especially in "so far as relates to any transactions had, in whole or in part, within the State, or any cause of action arising here * * *," and also, independently of any statute attempting to confer jurisdiction, the Chancery Court of Knox County had jurisdiction under the common law.

Plaintiffs further insist that the Tennessee Valley Authority Act, properly construed, does not purport to impose any limitations upon the jurisdiction of any State or Federal Court over the Tennessee Valley Authority, or its directors, even in relation to acts within some Constitutional grant of power.

The statutory jurisdiction of a Tennessee State Court to entertain a suit against foreign corporations is found in Sections 8676 and 8677 of Williams Tennessee Code, 1932, which read:

"8676: Any foreign corporation claiming existence under any laws of the United States or any other State, or of any country foreign to the United States, or any business trust found doing business in this State, shall be subject to suit here to the same extent that corporations of this State, are by the laws hereof, liable to be sued, so far as relates to any transactions had, in whole or in part, within this State, or any cause of action arising here, but not otherwise."

"8677: Any corporation or trust having any transaction with persons, or having any transaction concerning any property situated in this State, through any agency whatever, acting for it within the State, shall be held to be doing business here within the meaning of Section 8676."

Defendants strongly rely upon the case of Board of Directors of the St. Francis Levee District vs. Bodkin Bros., 108 Tenn. 700, which is the leading case in this State upon that subject. The St. Francis Levee District was a public corporation created by the Act of the Legislature of the

State of Arkansas. The Act designated certain individuals as directors, and provided that they, and their successors in office would constitute a body politic and corporate by the name and style of the Board of Directors for the St. Francis Levee District, and by that name sue and be sued, and have [fol. 164] perpetual succession for the purposes thereinafter designated. The duties of the Board were declared to be to levee the St. Francis front of the Mississippi River in the State of Arkansas, and to maintain the same by building, rebuilding, repairing or raising levees on the Arkansas side of the River, and for the purposes of carrying into effect the objects and purposes of the Act, the Board was given power, among other things, to make contracts for construction and performance of said work.

The Board of Directors had an office in the City of Memphis, Tennessee, where some of its fiscal operations were transacted, and it had on deposit to its credit various sums of money in the several banks of that city.

Bodkin Brothers, citizens of Shelby County, Tennessee, entered into a contract with the Board of Directors for the construction of a portion of the levee.

The suit was brought in the Circuit Court of Shelby County, Tennessee, to recover damages for an alleged breach of the contract.

Defendants filed a plea in abatement to the declaration, averring in substance, that it was a public and governmental agency of the State of Arkansas, created by the Legislature of that State for the purpose of constructing levees, and setting forth the powers and duties of said Board under the Act creating it; that its situs was in the State of Arkansas, and that the contract sued upon was made in that State, where it was to be performed. It then averred that the Board was not liable to suit in the State of Tennessee, and that the service of subpoena attempted to be made upon its officers in Tennessee, did not constitute a legal service upon the Board.

The Supreme Court of Arkansas had previously adjudged the Board to be a public corporation, clothed with Governmental duties and functions, including the power to levy and collect public taxes. (The Supreme Court of the United States in Ashwander vs. Tennessee Valley Authority, 297 U. S. 227-402, has adjudged that defendant corporation is "an agency of the Federal Government.")

In passing upon the questions raised by the plea in abatement, the Supreme Court of Tennessee said that the Board of Directors "is purely a governmental agency or instrumentality of the State of Arkansas charged with the performance of duties and functions that vitally concern the general public," that "the meaning of the Act is that the State of Arkansas has given its consent to suits against [fol. 165] said Board in that State where said Board has its situs, and since it cannot have a situs outside of the State of its incorporation, it is not subject to suit in a foreign state." And further that "We can perceive no more reason why such an agency of the Government can be sued out of the State of its domicile than could a county, municipality, a Board of Education, a Board of Tax Assessors, although each were incorporated and empowered to sue and made liable to suit."

The decision of the Court in that case is supported by decisions of courts of other jurisdictions, such as Oil City vs. McAboy, 74 P. St. 249; Lehigh County v. Kleckner, 5 W. S. (Pa.) 181; Pack v. Greenbush Township, 62 Mich. 122; See also Nashville v. Webb, 114 Tenn. 432; Lambert v. Baltimore & Ohio R. R., 258 U. S. 377, decided since the decision in the Bodkin case.

The Bodkin case is authority upon the proposition that a suit cannot be maintained against a public corporation or governmental agency not engaged in a proprietary business in a court other than at the location of its situs (unless permission is expressly granted by its charter) for transactions lawfully committed within its delegated powers; but the facts of that case are entirely different from the facts of the instant case. There, no question as to the constitutionality of the Act creating the Board of Directors was involved, nor was it contended that the Board, in entering into a contract with Bodkin Brothers, exceeded the powers granted by its charter, nor that the contract was in any wise illegal, or ultra vires. It was found by the Supreme Court of Tennessee that the Board of Directors was not "a trading or commercial corporation organized for private investment," hence the Court held that the action against the Board of Directors was local, and not transitory, and therefore, suit could not be maintained in a jurisdiction other than that of its situs. In the case at bar, jurisdiction of this Court is invoked upon the ground, among others, that the power program provided for in the Act, is prohibited by the

Constitution of the United States, that the power program promulgated by defendants and the acts committed and threatened to be committed by them, are not authorized by the Act.

The Act creating the Tennessee Valley Authority provides that it may sue and be sued; locates its principal office in the vicinity of Muscle Shoals, Alabama, and provides it be an inhabitant and resident of the Northern Judicial District of Alabama within the meaning of the laws of [fol. 166] the United States relating to the venue of civil suits.

There is a distinction between an action to enjoin an agent, acting within the powers lawfully conferred upon him by a valid statute, and an action against an agent acting within the powers conferred upon him by an invalid statute, or by an agent acting in excess of the powers conferred upon him by a valid statute. Philadelphia v. Stimson, 223 U. S. 605, 619; Scranton v. Wheeler, 179 U. S. 141, 152; Lane v. Watts, 234 U. S. 525; U. S. v. Lee, 106 U. S. 196; Hammer v. Dagenbart, 247 U. S. 251; Goltra v. Weeks, 271 U. S. 536; Bank v. Devine, 125 U. S. 98.

I think it well established by the foregoing authorities that if a public officer be acting within the scope of the powers granted by a valid statute, and the statute creating the office or agency, limits the forum in which he may be sued, suit may be maintained only in the forum designated in the Act; but, if the agent be acting, or proposing to act, in such manner as to invade the personal rights secured by the Constitution to a citizen, or to inflict upon, or threaten to do damage to the property of a citizen, under an invalid statute, or if his acts, or proposed acts, be in excess of the power granted by a valid statute, he divests himself of his official character and becomes a private citizen, subject to suit in any court of competent jurisdiction in which the unlawful act is committed, or in which he may be found: Philadelphia v. Stimson, supra; Scranton v. Wheeler, supra; Lane v. Watts, supra; United States v. Lee, supra; Hammer v. Dagenbart, supra; Goltra v. Weeks, supra; Ferris, et al., v. Wilbur, Secretary of Navy, 27 Fed. (2d) (C. C. A. 4) 262; Sloan Shipyards, et al., vs. U. S. Fleet Corp., 258 U. S. 566; Devine v. Bank, supra, and the suit may be maintained against the individual attempting to so act, even without joining his superior officer in the suit: Colorado v. Toll, 268 U. S. 228.

In Devine v. Bank, supra, it is said he "who assumes to exercise powers not appertaining to his office, or not conferred upon him by law, such person is in so far forth not a Federal officer, and not protected by his office, and may be sued in a state court of the state embracing such territory, just as if he were a private citizen, by persons injured through such unlawful acts. Teal vs. Felton, 12 How. 284, 13 L. Ed. 990; Buck v. Colbath, 3 Wall. 334, 18 L. Ed. 275; Slocum v. Mayberry, 2 Wheat. 1, 4 L. Ed. 169; Scranton v. Wheeler, 179 U. S. 141, 151, 21 Sup. Ct. 48, 45 L. Ed. 126, 133."

[fol. 167] In Philadelphia v. Stimson, supra, pages 619 and 620, it is said:

"If the conduct of the defendant constitutes an unwarrantable interference with property of the complainant, its resort to equity for protection is not to be defeated upon the ground that the suit is one against the United States. The exemption of the United States from suit does not protect its officers from personal liability to persons whose rights of property they have wrongfully invaded. Little v. Barreme, 2 Cranch, 170, U. S. v. Lee, 106 U. S. 196, 220; Belknap v. Schild, 161 U. S. 10, 18; Trindal v. Wesley, 167 U. S. 204; Scranton v. Wheeler, 179 U. S. 141, 152. And in case of an injury threatened by his illegal action, the officer cannot claim immunity from injunction process. The principle has been frequently applied with respect to state officers seeking to enforce unconstitutional enactments. Osborn v. Bank of U. S., 9 Wheat. 738, 843, 868; Davis v. Gray, 16 Wall, 203; Pennoyer v. McConnaughy, 140 U. S. 1, 10; Scott v. Donald, 165 U. S. 107, 112; Smyth v. Ames, 169 U. S. 466; Ex parte Young, 209 U. S. 123, 159, 160; Ludwig v. Western Union Telegraph Company, 216 U. S. 146; Herndon v. C., R. I. & P. Ry. Co., 218 U. S. 135, 155; Hopkins v. Clemson College, 221 U. S. 636, 643-645. And it is equally applicable to a federal officer acting in excess of his authority or under an authority not validly conferred. Noble v. Union River Logging R. R. Co., 147 U. S. 165, 171, 172; School of Magnetic Healing v. McAnnulty, 187 U. S. 94.

"The complainant did not ask the court to interfere with the official discretion of the Secretary of War, but challenged his authority to do the things of which complaint was made. The suit rests upon the charge of abuse of

power, and its merits must be determined accordingly; it is not a suit against the United States."

In Appalachian Power Co. v. Smith, 67 Fed. (2d) (C. C. A. 4) 454, Judge Parker, speaking for the Court said:

"It is well settled, of course, that equity will in a proper case restrain officials of the government from acts constituting an invasion of individual rights where such acts are [fol. 168] not authorized by statute, or where the statute authorizing them is void because in conflict with some provision of the Constitution."

In Sloan Shipyards v. U. S. Fleet Corp., supra, it is said:

"If what we have said is correct, it cannot matter that the agent is a corporation rather than a single man."

Certainly Congress may create a corporate agency for a lawful and Constitutional purpose, and in so doing may provide the forum in which such agency may be sued. And, so long as it acts within the Constitutional powers granted, it may not be sued elsewhere. But, if the Act be invalid, or if the agency assumes powers not conferred, it is stripped of its immunity to be sued in the forum designated by the Act creating it, and assumes the role of an individual, who is answerable for his wrongs wherever found.

It is hardly reasonable to suppose that Congress intended to make these defendants immune from suit in any jurisdiction except in the Northern Judicial District of Alabama, for damages resulting by their unauthorized acts of whatever character.

Upon a former hearing, I was of opinion that it was necessary to pass upon the validity of the Tennessee Valley Authority Act to determine whether the Chancery Court of Knox County had jurisdiction of the cause. If it did not, this Court acquired none by a removal of the cause, and I was in doubt as to whether the averments in the bill to the effect that defendants were committing unauthorized acts to the injury of complainants, and threatening to continue to commit acts ultra vires the power granted by the Tennessee Valley Authority Act, were sufficient to vest the Chancery Court of Knox County with jurisdiction to entertain the suit. A further study of the bill and the authorities,

convinces me that it is unnecessary to pass upon the Constitutionality of the Tennessee Valley Authority Act to determine that question. But it is necessary that I scrutinize the bill to determine whether real, substantial Constitutional questions are involved, and that apparently, the bill is filed in good faith, and is not frivolous. City Railway Co. vs. Citizens Railway Co., 166 U. S. 557; I. C. Railroad vs. Adams, 108 U. S. 28; Pacific Electric Ry. Co. vs. Los Angeles, 194 U. S. 112; South Covington Ry. Co. vs. Newport, 259 U. S. 27; Flanders v. Coleman, 250 U. S. 228.

There may be cases where it would be proper to look to the Constitutionality of an Act to determine the question of jurisdiction, but I think the case made by the averments in this bill, brings it within the jurisdiction of this Court, regardless of the Constitutionality of the Tennessee Valley Authority Act. I think the averments, if proven, strip the defendants of their official character and constitute them private citizens in that regard, and, as seen above, when such conditions exist, they are subject to suit in any court of competent jurisdiction where they are committing said illegal and unconstitutional acts, and where process can be served.

I deem it unnecessary to pass upon plaintiff's proposition that "The Tennessee Valley Authority Act does not impose any limitations upon the jurisdiction of any State or Federal Court over the Tennessee Valley Authority, or its directors, even in relation to acts within some Constitutional grant of power, because jurisdiction will be taken upon another ground.

The motion to dismiss will be overruled. A decree will be entered accordingly.

This the 16th day of October, 1936.

(S.) Gore, Judge.

[fol. 169] IN UNITED STATES DISTRICT COURT

(Caption omitted)

DECREE OVERRULING MOTION TO QUASH SERVICE OF SUBPOENA AND DISMISS BILL OF COMPLAINT—Filed October 19, 1936

This cause came on to be heard upon the motion of the defendants to quash service of process and to dismiss the bill of complaint for want of jurisdiction, and upon briefs

and argument of counsel, and upon consideration, it is by the court

Ordered, Adjudged and Decreed, that said motion be and the same is hereby overruled and denied to all of which the defendants severally reserve an exception.

(S.) Gore, District Judge.

Dated this 19th day of October, 1936.

O. K. Frantz, McConnell & Seymour by Charles M. Seymour, Sols. for Compts.

O. K. T.V.A., et al. James Lawrence Fly, per H. H. F.

[fol. 170] In United States District Court

(Caption omitted)

Motion to Dismiss—Filed October 20, 1936

Now comes the defendants, Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal, by their solicitors, and move the court to dismiss the bill of complaint heretofore filed in this cause and each of said defendants separately and severally set down and assign the following separate grounds for said motion:

1. The bill is fatally defective as a pleading for the reason that it is so filled with political propaganda and confusing allegations of remote and speculative contingencies that it is unintelligible.

2. The bill is fatally defective because the allegations are so vague, indefinite and general as not to inform the defendants of the nature of the cause of action that they are called upon to defend.

3. The bill is fatally defective because the allegations are argumentative, evidentiary and impertinent and as such are in violation of the equity rules.

4. It affirmatively appears from the allegations of said bill that the complainants are attempting to obtain a decision, apart from definite and concrete acts threatening immediate interference with any legal rights of complainants, on abstract and hypothetical questions as to the rights

of the parties in possible contingencies not involving a present specific controversy, which the Supreme Court of the United States has already held "too vague and ill-defined to admit of judicial determination."

5. The bill fails to allege sufficiently the character, extent and immediacy of the injury inflicted or threatened to be inflicted upon the complainants by any acts of the defendants, and the manner in which such injury will be caused.

6. The bill is multifarious because of a misjoinder of parties complainant.

7. The bill is multifarious because of a misjoinder of causes of action.

8. It appears from the allegations of said bill of complaint that there is no joint cause of action in which each of the complainants has a legal interest.

9. It appears from the allegations of said bill of complaint that there is no one justiciable controversy existing between all of the complainants on one side and the defendants on the other. If any justiciable controversies have been alleged, they are separate and distinct and are not properly joined in this suit. If any justiciable controversies have been alleged, parties having no interest therein have been improperly joined as complainants.

[fol. 171] 10. It affirmatively appears from the allegations of said bill of complaint that the complainants are attempting to obtain a sweeping declaratory judgment to determine the validity of an alleged national program upon vague and indefinite allegations without a sufficient showing of actual or threatened overt acts inflicting injury upon each of the complainants.

Wherefore, the defendants pray that this court will enter an order dismissing the bill of complaint upon the grounds set out herein.

(S.) James Lawrence Fly, John Lord O'Brian, William C. Fitts, Jr., Solicitors for Defendants, Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal.

[fol. 172] In United States District Court

(Caption omitted)

Memorandum Opinion Overruling Motion to Dismiss—Filed November 9, 1936

I think the motion to dismiss should be overruled. If defendants desire, they may rely in their answer, upon the grounds set out in the motion to dismiss.

If the bill is vague, indefinite, confusing and too general or uncertain, as insisted by the motion and by counsel for defendants in their brief, the remedy is not by motion to dismiss, but, under General Equity Rule No. 20, by motion for a better statement of the nature of the claims, or, for further and better particulars of any matter stated in the pleadings.

I grant that the bill is lengthy and is, in some particulars, argumentative, but this objection is not misleading to defendants, or sufficient to justify the Court in dismissing the bill, or directing that it be redrafted. No advantage would enure to defendants should the impertinent or argumentative matters be stricken out as authorized by General Equity Rule No. 21. Such allegations when harmless, will not be stricken out on the claim of necessity for brevity only.

I also think that the bill is not multifarious because of misjoinder of parties complainant, or misjoinder of causes of action.

The tenth and last objection to the bill "that the complainants are attempting to obtain a sweeping declaratory judgment to determine the validity of an alleged national program upon vague and indefinite allegations without a sufficient showing of actual or threatened overt acts inflicting injury upon each of the complainants" is not sustained by the allegations of the bill. The gravamen of the bill is that the Act under which defendants are acting, the power program authorized by the Act, and the power program promulgated under color of the Act, and things which defendants are doing in the execution of such power program, are not authorized by the Constitution, and that the defendants are engaged in carrying out a single program, plan, or conspiracy, the execution of which will irreparably

injure, if it does not totally destroy, the property and business of each of the complainants; many specific acts done, and threatened to be done, by defendants in carrying out the program, are detailed and averred to be in excess of the authority granted by the Act, which applies to all of complainants, and hence all the complainants are jointly interested in the subject-matter of the litigation. The complainants may be interested in the outcome of the litigation in varying degrees, and the alleged injury threatened to be inflicted may not be uniform, but the relief sought by each and all of the complainants is similar, predicated upon the same alleged unlawful and unauthorized acts of defendants, and the same amount of evidence necessary to establish the alleged unlawful and unauthorized acts of defendants, as against one of the complainants, if it should sue alone, would also be necessary to make out a case in an action brought by all the complainants jointly.

[fol. 173] In order that the case may be appealed and the questions in issue be finally determined, I am extremely anxious to bring the case to a trial upon its merits at the earliest possible moment. Time is an important element in this litigation; the public, as well as the litigants, is vitally interested in an early termination of the controversy. I think the importance of a final decision of the questions involved, justifies the expression of this desire.

This the 7th day of November, 1936.

(Signed) Gore, Judge.

[fol. 174] In United States District Court

(Caption omitted)

Decree Overruling Motion to Dismiss—Filed November 12, 1936

This cause came on to be heard upon the motion to dismiss the bill of complaint filed by the defendants herein on October 20, 1936, and briefs and arguments of counsel, and upon consideration, it is by the Court ordered, adjudged and decreed that said motion to dismiss be and the same is hereby overruled and denied, and that the respective defendants be given until November 24, 1936, within which to

answer the bill of complaint, to all of which the several defendants severally reserve exceptions.

Dated this 9th day of November, 1936.

(S.) Gore, District Judge.

O. K. as to Form. (S.) Frantz, McConnell & Seymour; by Charles M. Seymour, Solicitors for Complainants.

O. K. as to Form. (S.) William C. Fitts, Jr., Solicitors for Defendants.

[fol. 175] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ANSWER OF TENNESSEE VALLEY AUTHORITY ET AL.—Filed November 24, 1936

Part I

Now come the defendants Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal and, severally answering the bill of complaint heretofore filed herein, say:

1

The defendants are not informed as to the allegations of Section I of the bill of complaint and therefore neither admit nor deny the same, but require strict proof thereof if deemed material.

2

Except as herein expressly admitted, the defendants deny the material allegations of Section II of said bill of complaint. Defendants admit that the Tennessee Valley Authority is a body corporate created by an Act of Con-
[fol. 176] gress approved May 18, 1933, known as the Tennessee Valley Authority Act of 1933, with the right to sue and be sued as therein prescribed, and admit that it has established and maintains an office in the City of Knoxville, Tennessee, but deny that said office is its principal office, and deny all other allegations in said section to the effect that the said defendant is carrying on a proprietary business as a public utility in the State of Tennessee, or elsewhere. The defendants allege that all of the acts that are being performed by the defendant Tennessee Valley Au-

thority are being legally performed pursuant to the powers and authority vested in it by the said Tennessee Valley Authority Act. The defendants admit that the defendants Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal are over the age of twenty-one (21) years and are the three chief executive officers and members of the Board of Directors of the Tennessee Valley Authority.

3

Except as expressly admitted herein, the defendants deny the material allegations of Section III of said bill of complaint. Defendants admit that Harold L. Ickes is the duly appointed and acting Administrator of the Federal Emergency Administration of Public Works. Defendants allege that under the allegations of the bill of complaint, the said Ickes is a necessary party defendant, and this suit cannot be maintained in the absence of him as such defendant.

4

Defendants deny the material allegations of fact contained in Section IV of said bill of complaint and particularly deny that the complainants severally or as a class have any legal standing to maintain this suit and deny [fol. 177] that there is any single or unlawful plan affecting any legal interest of the complainants severally or as a class, or that the various complainants are affected in the same or substantially the same manner by the Tennessee Valley Authority Act or the acts of the defendants done pursuant thereto, or that the complainants severally or as a class may challenge in this suit the validity of said Tennessee Valley Authority Act of the alleged plan or program of the defendants. Defendants further allege that, if the facts alleged in the bill regarding the alleged acts of the defendants are deemed material, said facts pertain to different complainants and necessarily differ and vary with respect to each and every complainant. And, as more fully hereinafter appears, there are so many separate and distinct questions, fundamental in character, of fact and law as to each of the particular complainants which do not relate to the cause of action, if any, of all the complainants severally or as a class, as to gravely prejudice the defend-

ants in endeavoring to prepare for and defend the many, diverse, and confused cases attempted to be stated in the bill. The defendants further deny that either the Tennessee Valley Authority Act or the acts of the defendants done pursuant thereto are directed against the complainants severally or as a class, or with any intent to injure any of the complainants, and allege that all the acts done by the defendants have been performed in furtherance of the statute and the purposes therein declared. Numerous of the complainants are so situated that they have not been and are not damaged or threatened with damage by any of the acts alleged to have been done or threatened to be done.

5

Defendants deny the material allegations contained in [fol. 178] Section V of said bill of complaint and for further answer say that there are special and different defenses as to various complainants; for example, that the complainants Tennessee Electric Power Company, Mississippi Power Company, Georgia Power Company, and Alabama Power Company, being the component companies in the so-called Commonwealth and Southern system, are estopped from maintaining this suit and calling into question the legality of the Tennessee Valley Authority Act and acts relating to the disposition of electricity under that statute for reasons hereinafter fully set forth; that there is a separate defense of res judicata to the suit of the complainant Georgia Power Company, as appears more fully hereinafter, and that there is a special defense of res judicata to the suit of the complainant Alabama Power Company, as will appear more fully hereinafter; other defenses hereinafter set forth pertain to the franchises, properties, contracts, and business operations of the various individual complainants.

Defendants further allege as a separate and additional defense to all of the complainants that, if the complainants ever had any right to relief because of the invalidity of the alleged power program or the existence of a single unlawful plan, as distinguished from a right to relief from definite and concrete acts affecting particular complainants each of the complainants has been guilty of laches sufficient to bar the maintenance of this suit, for the reason that they have delayed the bringing of this suit for a period of three

years during which they have had full notice of the existence of the Tennessee Valley Authority Act and the alleged promulgation of the so-called plan or program, as appears from the allegations of the bill. Defendants allege that during all of this period the complainants have had [fol. 179] full notice that the Tennessee Valley Authority was proceeding at great expense to the Government with the construction of certain dams, reservoirs, and appurtenant navigation and power facilities, described in said bill of complaint; that it was proceeding with the acquisition and construction of certain transmission lines to be utilized in the transmission and sale of electric energy available at said dams, and that large sums of money were being expended in permanent investments in reliance upon the power and authority vested in the Tennessee Valley Authority by the terms of the Act of Congress. Having rested upon their alleged rights during all of said period while vast expenditures were being made, the complainants, and each of them, are effectively barred from maintaining this suit.

6

Defendants are not informed as to the allegations of Section VI of said bill of complaint and therefore neither admit nor deny the same, but demand strict proof thereof if deemed material.

7

The defendants are not informed as to the allegations of Section VII of said bill of complaint and therefore neither admit nor deny the same, but demand strict proof thereof if deemed material and, for further answer, say:

That certain of the complainants, namely the Alabama Power Company and the Mississippi Power Company, have conveyed to the defendant Tennessee Valley Authority all rights, powers, privileges, franchises, and contracts in some of the territories where injury or threatened injury is alleged, as more fully appears hereinafter.

On information and belief defendants further allege that [fol. 180] the nature and extent of the alleged rights, privileges, and franchises of the various complainants vary widely; that various complainants are operating in various rural areas outside of municipal boundaries without the benefit of any franchise or property right to do business

in said areas, either because the state laws do not require franchises for utility operations in said areas or because complainants have failed to conform to state requirements that such franchises be secured, and that certain of the complainants are operating in various of the cities, where threatened injury is alleged, without franchises or under invalid claims of franchises, as appears more fully hereinafter.

8

The defendants are not able to state whether or not the so-called maps attached to the bill of complaint and marked Exhibit "A" and Exhibit "B" are accurate representations and therefore neither admit nor deny the truth of these allegations, but require strict proof thereof if deemed material. Except as hereinafter fully alleged, the defendants are not informed as to the other allegations in Section VIII of said bill of complaint and therefore neither admit nor deny the same, but demand strict proof thereof if deemed material.

9

The defendants deny the material allegations of fact contained in Section IX of said bill of complaint and, for further answer, say:

That complainants Tennessee Electric Power Company and Alabama Power Company are without sufficient dependable generating capacity to supply the demand for electric service in the areas in which they operate but are dependant upon purchases of power from other sources, [fol. 181] including the Tennessee Valley Authority; that as hereinbefore and hereinafter alleged, these complainants and the Georgia Power Company and the Mississippi Power Company, composing the Commonwealth and Southern system, have continuously purchased and used and are still purchasing and using substantial quantities of electric power from the defendant Authority in each year since the passage of the Tennessee Valley Authority Act.

That there is an adequate supply of generating capacity to meet present demands, or demands in the predictable future, in the areas served by the complainants apart from surplus power generated by the defendant Tennessee Valley Authority; that, as recent studies by the Federal Power Commission disclose, the areas in which the complainants operate are faced with an imminent power shortage unless

there are substantial additions to dependable generating capacity.

That there is a market for electric energy beyond that supplied by them in the areas which complainants claim to serve; that at the time of the passage of the Tennessee Valley Authority Act only approximately 3% of the rural residents in the said areas in which complainants generally were operating enjoyed the benefits of electric service; that many of these unserved rural inhabitants had long been anxious and willing to obtain electric service; that the complainants had failed to serve these rural inhabitants; that in the territory described by the complainants as served by them, there are and probably will be many industrial users of electricity not supplied or served by the complainants, that in the area described by the complainants as served by them, there are a number of municipalities serving their residents with electricity which have not for some years and do not now purchase electricity from the complainants. There is a general and rapidly increasing demand for electric energy in the vicinity of the Tennessee River basin.

[fol. 182]

10

The defendants are not informed as to the allegations contained in the first sentence of Section X of said bill of complaint and therefore neither admit nor deny the same but demand strict proof thereof if deemed material. Defendants are informed that the remaining allegations of said Section X are conclusions of law which they are not required to answer but if construed to be allegations of *act,* (fact) deny the same if deemed material.

11

The defendants deny the material allegations of fact contained in Section XI of said bill of complaint.

12

The defendants deny the material allegations of fact contained in Section XII of said bill of complaint and further state that said allegations are irrelevant, argumentative, and evidentiary, and have no bearing upon the issues in this cause.

The defendants are informed that the allegations of Section XIII of said bill of complaint are conclusions of law and argumentative statements which they are not required to answer, but if construed to be allegations of fact deny every allegation thereof, and for further answer say:

The Tennessee Valley Authority Act of 1933 authorizes the construction of such dams upon the Tennessee River and its tributaries as are necessary for the express purposes of improving navigation and controlling destructive flood waters in the Tennessee and Mississippi River Basins.

The defendants allege that the problem of improving [fol. 183] navigation upon the Tennessee River and its tributaries has been considered by the Congress of the United States almost continuously since 1824. In the period between 1852 and 1918 Congress authorized and made appropriations for seventeen surveys and projects covering all portions of the river, and during the same period ten such projects were authorized upon the tributaries. In 1918 Congress authorized the construction of Wilson Dam, providing a nine-foot slack water development over the Muscle Shoals rapids.

Pursuant to congressional authorization, a comprehensive survey of the Tennessee River and its tributaries with respect to navigation, flood control, and power development was undertaken by the Corps of Engineers of the War Department and completed on March 24, 1930. This report is contained in House Document No. 328, 71st Congress, 2d Session. The recommendations contained in this report were adopted by Congress in the Rivers and Harbors Act of 1930.

In its unimproved condition the Tennessee River is unsatisfactory for commercial navigation due to the following factors: (1) the extreme variations in stream flow between the summer and winter seasons; (2) the numerous natural obstructions, consisting principally of shoals and bars; (3) the steep slope and swift current.

During the past forty-five years, despite these obstacles, there has been considerable traffic upon the Tennessee River, increasing from one-half million tons in 1891 to a maximum of over two million tons in 1930. There is at the present time a large amount of potential through traffic which could be economically carried by water if the Ten-

nessee River were satisfactorily improved. A nine-foot minimum channel throughout the length of the river will permit continuous navigation through the Ohio and Mississippi Rivers without changing type of vessel, transshipment, or method of loading. The only feasible method [fol. 184] of obtaining an adequate navigation channel throughout the entire length of the Tennessee River is by means of a canalized development. This result cannot be obtained by open channel improvements. This channel could be obtained either by the construction of a series of thirty-two low lift dams or by the construction of seven high dams of the type authorized by the Tennessee Valley Authority Act. The United States Army Engineers have recognized the superiority of the high dam plan and originally recommended the construction of the alternative low dams upon the sole ground of economy, and have pointed out the advisability of adopting the high dam plan if some means could be devised for obtaining repayment of the excess cost by the sale of power created at such dams. Prior to the passage of the Tennessee Valley Authority Act the United States Army Engineers had in fact completed plans for a high dam at the site of the present Wheeler Dam and had started construction of the lock. Wherever the necessary funds can be obtained, the Army Engineers are now consistently replacing low dams with high dams because of the recognized superiority of the latter as navigation facilities. The high dams authorized by the Act will provide navigation facilities far superior to those that would be provided by the alternative low dam system due to the following factors: (1) a substantial saving in lockage time in a trip over the entire length of the river; (2) a substantial saving in the cost of operation and maintenance; (3) the improvement of navigation facilities upon the various tributaries and the reduction of the costs of future improvements; (4) the elimination of fluctuating pool levels and a consequent saving in the cost of operating and maintaining terminal facilities; (5) the elimination of high velocities, which impede upstream traffic; (6) an annual saving in dredging costs resulting from the reduction of silting; (7) the elimination of the necessity for breaking tows; [fol. 185] (8) wider channels resulting from high dams.

At the time of the passage of the Tennessee Valley Authority Act there was general recognition of the serious flood problem upon the Tennessee River and its tributaries,

involving the constant threat of interference with interstate traffic and the mails, not only upon the rivers themselves but upon the highways and railroads within the region. The interrelation of the problem of flood control upon the Tennessee and its tributaries with that of flood control upon the lower Mississippi was also recognized.

Floods have occurred frequently on the Tennessee River and its tributaries, many of which have been of great magnitude. It is probable that some floods of the future will be of much greater severity than any past flood of record. Such floods have in the past caused and, unless controlled, in the future will cause great damage to means and instrumentalities of interstate commerce and the mails and directly interrupt and impair communications and the flow of commerce on the Tennessee River and its navigable tributaries and on railroads and highways within the Tennessee River drainage basin. The construction of reservoirs in the Tennessee River and its main tributaries is necessary to afford adequate protection against such flood damage.

Floods have occurred frequently on the Mississippi River, particularly on the lower Mississippi between Cairo at the junction of the Ohio and Mississippi Rivers and the Gulf of Mexico. Many of these floods have been of great magnitude; probably floods of the future may be of even greater severity than any past flood of record. Such floods have in the past and, unless controlled, will cause great damage to means and instrumentalities of interstate commerce and the mails and directly interrupt and impair communications [fol. 186] and the flow of commerce in the Mississippi River and its navigable tributaries and on railroads and highways within the Mississippi River drainage basin. The construction of reservoirs in the tributaries of the Mississippi River, including the Tennessee River and its tributaries, is necessary to afford adequate protection against such flood damage. The Mississippi River Commission and the Chief of Engineers of the United States Army, in House Document No. 259, 74th Congress, 1st Session, 1935, recommended the construction of reservoirs in the tributaries of the Mississippi River for the control of destructive floods in the Mississippi River basin.

The defendants allege that in addition to providing the nine-foot navigation channel throughout the length of the Tennessee River and improving navigation facilities upon

the tributaries, the various dams authorized by the Act and now under construction will materially reduce the hazard of destructive floods, both in the Tennessee Valley and upon the lower Mississippi. Dams of this type are the only ones that will provide such flood control benefits, as low dams have no flood control value.

The said Act directs that the operation of all dams intrusted to the Authority be primarily for the purposes of navigation and flood control. Insofar as is consistent with said requirements, the Act also authorizes the conversion into electricity of water power necessarily created by said dams and the transmission and sale of the surplus thereof. Pursuant to the authority of said Act, the defendant Tennessee Valley Authority has proceeded in an effort to dispose of said surplus energy according to the terms of said Act.

[fol. 187] 14

The defendants deny the material allegations of fact contained in Section XIV of said bill of complaint, except that they admit the allegations of the first paragraph.

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The defendants deny the material allegations of fact contained in Section XV of said bill of complaint and, for further answer, say:

The defendants allege that said Tennessee Valley Authority Act provides for the construction of certain dams and reservoirs in the Tennessee River and certain of its tributaries, designed and to be operated to improve navigation and control destructive flood waters in the Tennessee and Mississippi River systems. Pursuant to the provisions of the said Act and authorization from the Congress, the defendant Tennessee Valley Authority is now engaged in the construction of four dams upon the main stream of the Tennessee River to improve navigation and control destructive flood waters in the Tennessee River and its tributaries and in the Mississippi River, namely, Wheeler Dam, near Decatur, Alabama; Pickwick Landing Dam, in the State of Tennessee; Guntersville Dam, near Guntersville, Alabama; and Chickamauga Dam, near Chattanooga, Tennessee. The Tennessee Valley Authority has recommended to the Congress that in the near future three additional dams should

be constructed upon the main stream of the Tennessee River, one to be located at or near Gilbertsville on the lower part of the Tennessee in the State of Kentucky, another at White Creek, or Watts Bar, on the upper part of the Tennessee above Chattanooga in the State of Tennessee, and a third at Coulter Shoals on the upper part of the Tennessee between Chattanooga and Knoxville in the State of Tennessee.

[fol. 188] Pursuant to the provisions of the said Act and authorization from the Congress, the defendant Tennessee Valley Authority has also constructed the Norris Dam upon the Clinch River, one of the major tributaries of the Tennessee River, which dam is designed for and has been, is being, and will continue to be operated to improve navigation and control destructive flood waters in the Tennessee, Clinch, and Mississippi Rivers. It regulates and will regulate such a large part of the run-off of the watershed above it as to substantially improve such navigation and control such flood waters in the said rivers. Pursuant to such provisions and authority, the construction of the Hiwassee Dam (sometimes called "Fowler Bend Dam" in the bill of complaint) on the Hiwassee River, a main tributary of the Tennessee, has been commenced and will be carried forward. This dam is designed and will be operated to improve navigation and control destructive flood waters in the Tennessee, Hiwassee, and Mississippi Rivers. It will regulate such a large part of the run-off of the watershed above it as to substantially improve such navigation and control such flood waters in the said rivers. If Congress should in the future appropriate the necessary funds, the aforesaid dams, when completed, in conjunction with those already existing (including the Hales Bar Dam of the complainant Tennessee Electric Power Company, and the raising of the Hales Bar Pool as described in subdivision (13) of Section 17 hereof) and those under construction upon the main streams of the Tennessee, will provide a nine-foot navigation channel, and provide an adequate supply of water therefor, for a distance of approximately 652 miles from Knoxville, Tennessee, to the mouth of the Tennessee River near Paducah, Kentucky.

Defendants further allege that each of the said dams hereinabove mentioned is authorized by the terms of the [fol. 189] Tennessee Valley Authority Act of 1933 as amended that each of them will substantially improve navigation and reduce destructive floods in the Tennessee and

Mississippi River systems and provide valuable facilities for the national defense. Defendants further allege that dams such as Wheeler, Pickwick, Guntersville, Chickamauga, Gilbertsville, Watts Bar and Coulter Shoals on the main stream of the Tennessee River, and dams such as Norris and Hiwassee on the tributaries are the only type of dams that would accomplish all of these purposes.

The defendants further allege that apart from the dams hereinabove referred to as constructed under construction or recommended, there is no intention to construct or recommend the construction in the predictable or reasonably near future of any other dams upon the Tennessee River and its tributaries. The Authority has constructed and recommended for construction only such dams as are necessary for the improvement of navigation and control of destructive floods on the Tennessee and Mississippi River systems. There never has been, and there is not now, any prospect that such dams would be constructed by any of the complainants or any party other than the Federal Government, or that any one interested primarily in the generation of power would construct such navigation and flood control dams at the locations and according to the designs, sequence of construction, and method of operation as has been done and is intended to be done by the Authority. There are numerous sites upon the Tennessee River system which are valuable for the development of power, but dams constructed at such sites would not contribute substantially to the improvement of navigation or the control of destructive floods, although their construction would be more feasible for the development of power than any of the dams constructed, under construction, or recommended for construction by the Authority; but the Authority has not constructed or recommended for construction and has no in- [fol. 190] tention and no authority under the Tennessee Valley Authority Act to construct such dams.

The dams constructed, under construction, and operated by the Tennessee Valley Authority, and their operation for improving navigation and controlling floods, have and will inevitably create property in the form of water power. The Tennessee Valley Authority Act authorizes the generation of electric energy at the said dams in so far as it is necessary to convert the said water power into electric energy in order to dispose of the said property of the United States which would otherwise go to waste and in order to

obtain revenue to reimburse the Government for the cost of the navigation and flood control facilities. Pursuant to the said Act, one generator has been installed and a second will be installed in the spring of 1937 at Wheeler Dam, and two generators have been authorized for installation at Pickwick Landing Dam in 1938, for the conversion of water power into electric energy. Pursuant to said Act, provision is also being made for the conversion of water power into electric energy at Norris Dam by the installation of two generators of 50,000 kw. capacity at said dam, but no firm or continuous power will be produced by such generators for the reason that during several months of the year it will be necessary, under the mandate of the said Act, to close down the power plant and store water in the Norris Reservoir for flood control and low water regulation for navigation. Only during those periods of the year when water is being released from said reservoir will electric energy be generated at said dam. Additional generators will not be installed at any of the dams except as it is determined from time to time that market demand will make possible the disposition of water power, and except as appropriations permit.

[fol. 191] It is true that by the terms of the Tennessee Valley Authority Act the steam electric generating plant located at Sheffield, Alabama, near Wilson Dam, was turned over to the defendant Tennessee Valley Authority. But the defendants allege that the said steam electric generating plant has not been and is not being operated and that there is no plan or intention to operate said plant now or in the future, or to construct or operate any other steam electric generating plants. The said plant is merely held by the defendant Tennessee Valley Authority as an emergency stand-by plant for national defense purposes in connection with the munitions plants located near Muscle Shoals, Alabama.

The defendant Tennessee Valley Authority has disposed of and will dispose of only such electric energy as is generated from water power inevitably created by the operation of the said dams for navigation and flood control and which is not needed for governmental purposes and which would otherwise be wasted. The Tennessee Valley Authority Act authorizes the Authority to sell such surplus power at wholesale to public and private agencies within reasonable transmission distance from the dams under the control give preference to public agencies in accordance with the

of the Tennessee Valley Authority. By the mandate of the said Act, the Tennessee Valley Authority is directed to long-established government policy of giving preference to public agencies in the sale of power and other public property. But defendants deny that they have promoted public ownership for the distribution of electric energy. The defendants deny that they have incited municipalities, or any other customers of the complainants, or any of them, to breach existing contracts with the complainants or to purchase their power requirements from the defendant Tennessee Valley Authority. The defendants allege that on the contrary there has existed in most of the communi-[fol. 192] ties involved, for many years prior to the creation of the defendant Tennessee Valley Authority, organized movements for the public ownership and operation of electric distribution systems. The defendants allege that in every instance of applications for service received by the Tennessee Valley Authority from the communities within the area, such applications have been made upon the initiative of the communities involved, without solicitation or incitation upon the part of the defendants.

Defendants allege that the Tennessee Valley Authority Act authorizes the construction and acquisition of transmission lines by the Tennessee Valley Authority in order to reach a market for the surplus electric energy which it generates and in order to avoid a monopoly by private agencies of government-owned power. Congress expressly recognized the long-existent private monopoly of the government-owned power at Wilson Dam. The same monopolistic situation would exist at the other dams now under construction or recommended for construction by the Authority if the sale of the surplus power should be limited to sales at the dam site. Congress authorized the acquisition of transmission lines in order to avoid such a monopoly and to effect a wide distribution of government-owned power at the various dams intrusted to the Authority. The said Act also authorizes the Tennessee Valley Authority to construct, acquire, and operate rural transmission lines for the purpose of disposing of said surplus electric energy direct to individual customers located on farms and in small villages.

The defendants allege that in the construction and acquisition of transmission lines by the Tennessee Valley Authority they have no purpose except to carry out the

provisions of the said Act to provide the necessary means for disposing of the surplus electric energy which is being generated at the government-owned dams. The defendants [fol. 193] allege that from the beginning of operations by the Tennessee Valley Authority, they have attempted wherever possible to prevent duplication of existing transmission and distribution facilities. This policy is expressly recognized in the Act. The Authority is attempting to dispose of its surplus power by satisfying increased demand for electric power and by satisfying demand for power in areas heretofore unserved. The Tennessee Valley Authority has refrained from constructing competing or duplicating transmission lines in every instance where a reasonable possibility of acquiring existing facilities presented itself. Defendants have suggested to the municipalities that have expressed a determination to exercise their legal rights to own and operate their own electric distribution systems that they avoid duplication and competition by attempting to acquire existing facilities whereever possible.

Defendants deny the allegations of the bill of complaint as to a so-called "yardstick". Defendants further deny that any regulation of complainants is the governing purpose of the defendants, or that the Authority regulates or endeavors to regulate the business of complainants in any way, or that it is authorized by the Act so to do. The defendants deny that they have ever solicited or endeavored to solicit or induce any person or public or private corporation to purchase electricity from the Authority or to make such purchase in order to affect or influence the rates of complainants in any way, but that, in every instance, as hereinbefore alleged, the application for the purchase of electric energy from the Authority has been made on the initiative of the applicant. The defendants deny that the Tennessee Valley Authority has ever granted or denied or ever intends to grant or deny any application for a contract for the purchase of power in order to influence or affect in any way the rates of complainants or out of regard for the [fol. 194] level of such rates. The defendants further say that, farm from endeavoring to execute contracts for the sale of power in order to regulate or in any way influence the rates of complainants, the Authority has in fact made many contracts for the sale of power to municipalities which had theretofore maintained and operated their own elec-

tric generating facilities and which were not served by any of the complainants or any privately-owned utility, and the Authority has made many constracts for the sale of power in rural areas and small villages which had not theretofore received electric service of any character and which the complainants manifested no interest in serving. The defendants deny that the Tennessee Valley Authority has refused to sell electric energy to the complainants except as a temporary expedient. The defendants allege that, on the contrary, the Authority, under the contract of January 4, 1934, contracted to dispose of surplus power to the subsidiary companies of the Commonwealth and Southern system, each of which is a complainant in this cause, and expressly undertook to reserve a minimum of 20,000 kw. of firm power for the said complainants, that said complainants have purchased and are still purchasing most of the power that has been and is being disposed of by the Authority, and that an average of 82,428,000 kwh. per month for the past four months ending October 31, 1936, at a total consideration for said period of $452,102, has been and is being disposed of in large amounts to said complainants and accepted by them to their benefit. The total power purchased from the Tennessee Valley Authority by the Commonwealth and Southern system since January 4, 1934, has amounted to approximately 775,853,935 kwh. at a total consideration of $1,544,302 through October 31, 1936.

Defendants allege, with respect to the real character of the so-called "yardstick," that the Tennessee Valley [fol. 195] Authority has endeavored to conduct its operations in an efficient and businesslike manner and to keep a full and public accounting of costs, and that it plans to make this information generally available to all having a proper interest. This is expressly embodied in Section 14 of the Tennessee Valley Authority Act. This section provides for accumulating accurate cost data, maintaining a uniform system of accounting, and keeping such other records as may be helpful in determining the actual cost and value of service, etc. The Authority is required to report this information from time to time to Congress and also make it available to the Federal Power Commission and other federal and state agencies. The nature of the so-called "yardstick" is clearly defined by this section of the statute and has always been so understood. The so-called "yardstick" is only a matter of accounting coupled with

publication of the information obtained. It does not have the effect of law. It is not expressed in terms of law. It does not purport to be law. It imposes no duty. It prescribes no regulation or penalty. Its function is educational, and at most advisory.

Defendants allege that the "power policy" of the Authority, as announced on August 25, 1933, was not effectuated and it was formally rescinded by Board Resolution on October 5, 1935. If deemed material, defendants deny that said "power policy" was adopted for the purposes alleged in the bill of complaint, and allege that all acts performed by the Authority before and since that statement was announced have been in accordance with the terms and pursuant to the declared purposes of the Tennessee Valley Authority Act, and that the Authority has no power policy other than that provided in the Tennessee Valley Authority Act.

The defendants deny that they, or any of them, have any intent or purpose, or have adopted any plan or program, [fol. 196] to injure the complainants, or any of them, or to accomplish the objects alleged in the bill. The defendants allege, upon the contrary, that every act performed by them has been governed by the terms of the Act by which the defendant Tennessee Valley Authority was created. The defendants deny that they have entered into any conspiracy or unlawful plan or program, or any plan or program, with Harold L. Ickes.

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The defendants deny the material allegations of fact contained in Section XVI of said bill of complaint, and for further answer the defendants allege that since 1932 there has been a substantial increase annually in the demand for electric power in the Tennessee Valley area; that there has been no corresponding increase in the generating capacity of the complainants in this area; that from 1929 to the present the relative increase of production of electricity has far exceeded the increase in plant capacity, including additions to generating capacity which have resulted from activities of the Tennessee Valley Authority; that in absence of increases in generating capacity in the area resulting from activities of the Tennessee Valley Authority, there would be no surplus generating capacity in 1937 but a substantial shortage which would rapidly in-

crease from the year 1937 on if the present trend of increasing power consumption in the area does not substantially vary; that certain of the complainants, and more particularly the subsidiarie of the Commonwealth and Southern Corporation, including the Alabama Power Company, the Tennessee Electric Power Company, the Mississippi Power Company, and the Georgia Power Company, have purchased substantial blocks of power from Wilson Dam previous to the passage of the Tennessee Valley [fol. 197] Authority Act, and since the passage of that Act up to the present, as hereinbefore set out; that since the passage of the Act these purchases were equal to ten per centum of the total sales to ultimate customers by the Alabama Power Company, the Georgia Power Company, and the Tennessee Electric Power Company combined; that during the late summer and fall, power companies, including some of the complainants in the Commonwealth and Southern system, drew upon all available surplus capacity of power plants operated by the defendant Authority at Wilson and Norris Dams, the latter having just been completed and put into operation; that contemporaneous with activities of the Tennessee Valley Authority since 1933 the power companies operating in the Tennessee Valley, including those complainants in close proximity to to the Authority, have without exception shown substantial increases in the number of customers served and in total sales to ultimate consumers during 1934 and 1935 and, on information and belief, will show substantial increases for the year 1936; that these increases have far exceeded the average annual increase for the United States as a whole; and that power requirements in the Tennessee Valley have been steadily growing in the years since the passage of the Tennessee Valley Authority Act and have reached a point where they are absorbing practically all of the generating capacity in the region; that defendants are informed and believe that there has already developed an ample market for the electricity presently made available at the dams of the Tennessee Valley Authority without reduction in the sales and income of the plaintiff companies; that the present acts of the Tennessee Valley Authority and those in the predictable future will not destroy any of the business and property of the complainants; that the Authority has no

intention to install generating capacity except as the market demands such installations; and that the alleged threatened damage to complainants is wholly remote and speculative.

[fol. 198] 17

Answering the allegations of Section XVII of said bill of complaint, the defendants say:

(1) The defendants admit that the use, control, and possession of Wilson Dam and the other Government properties located at Muscle Shoals, Alabama, including the nitrate plants and the Sheffield Steam Plant, have been delivered to the Tennessee Valley Authority under the terms of the Tennessee Valley Authority Act, but defendants deny that they intend to use or operate the said steam plant except to the extent described in Section 15 hereof.

(2) The defendants admit that, pursuant to authority vested in the Tennessee Valley Authority by said Act, the Authority has constructed Norris Dam upon the Clinch River, one of the main tributaries of the Tennessee River, for the purposes heretofore set forth. The defendants allege that the construction of said Norris Dam and the operation of the reservoir in accordance with the provisions of the said Act will increase and has already increased substantially the minimum navigable depths upon the Tennessee and Mississippi Rivers and will control and has already controlled substantially the water level on such rivers, and that the increase and control has been, is, and will be of substantial benefit to commercial navigation. The defendants further allege that the Norris Reservoir will provide a minimum navigable depth of six feet from the damsite 38 miles up the Powell River and 55 miles up the Clinch River. Before the passage of the Tennessee Valley Authority Act, the United States Army Engineers had started the formulation of plans for the construction of a dam known as Cove Creek Dam at the site where Norris Dam is located. The Norris Dam has been constructed insofar as navigation facilities [fol. 199] are concerned in substantial conformity with the previous plan and design of the United States Army Engineers. The defendants further allege that the Norris Dam Reservoir provides a total of approximately 2,900,000 acre feet of storage, which is sufficient for control of the runoff above the dam. The Clinch and Powell Rivers contribute

materially to the extreme flood peaks in the Tennessee, and flood control at this point is particularly important. The storage provided by this reservoir will be especially valuable during storms that produce maximum flood conditions in the upper Tennessee River and will contribute substantially to the control of floods upon the lower Mississippi. The operation of this dam as provided by the Act has improved and will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers. As estimated in House Document No. 328, the Cove Creek Dam as planned by the United States Army Engineers would have decreased the flood crest on the Tennessee River at Chattanooga in the flood of 1926 by over five feet The normal operation of Norris Dam as actually constructed, based upon these estimates, would have decreased the flood crest at Chattanooga in the flood of 1886 by over eleven feet and in the flood of 1917 by over six feet. The defendants further allege that during the past flood season, the operation of the Norris Dam for flood control, as provided by the Act, resulted in such a decrease in the flood crest at Chattanooga as to prevent a serious flood condition at that point. The defendants further allege that during the past summer when navigation upon the lower Tennessee and Mississippi Rivers was seriously handicapped by low water, the operation of the Norris Reservoir, as provided by the Act, increased the navigable depths below to such an extent that it was possible to continue navigation which would otherwise have been left stranded. The defendants further allege that [fol. 200] the construction of Norris Dam and the operation of the Norris Reservoir in the manner prescribed by the Act will result and has resulted in a material improvement in the Government property at Wilson Dam by increasing the amount of firm power there available, and will provide and has provided a valuable facility for national defense.

(3) The defendants admit that pursuant to the provisions of the said Act and authorization from the Congress, the Tennessee Valley Authority is proceeding with the construction of the Wheeler Dam upon the Tennessee River for the purposes heretofore set forth. The defendants allege that the construction of a dam or a series of dams at the site of the present Wheeler Dam has been considered by the United States Army Engineers and by Congress since 1914. At the time of the passage of the Tennessee Valley Authority

Act, the United States Army Engineers had completed their plans for a high dam at this site and had started the construction of the navigation lock therefor, which has been utilized by the Authority as a part of Wheeler Dam. As a result of the construction and operation of this dam in accordance with the provisions of the Act, the nine-foot navigable channel will be extended upstream for a distance of approximately 74 miles to the site of the Guntersville Dam, and a nine-foot navigable depth will be provided upon the Elk River, one of the tributaries of the Tennessee, for a distance of approximately 30 miles. Provision has been made in this dam for substantial flood storage. The construction and operation of Wheeler Dam as provided by the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(4) The defendants admit that pursuant to the provisions of the said Act and authorization from the Congress, the Tennessee Valley Authority is proceeding with the construction of the Pickwick Landing Dam upon the Tennessee River [fol. 201] for the purposes heretofore set forth. The defendants further allege that the construction and operation of Pickwick Landing Dam in accordance with the provisions of the Act will complete the nine-foot navigable channel upon the Tennessee River between Pickwick Landing Dam and Wilson Dam, a distance of approximately 53 miles. It has been recognized by the United States Army Engineers and Congress for many years prior to the passage of the Tennessee Valley Authority Act that the most necessary and desirable improvement upon the Tennessee River at the present time is that which will result from the completion of Wheeler and Pickwick Dams, since these two dams together, when operated as provided by the Act, will provide a navigable channel over that important section of the river between Pickwick Landing and Guntersville, a distance of approximately 127 miles. The construction and operation of Pickwick Dam in accordance with the provisions of the Act will extend the navigable channel back to the Wilson Dam pool, will overcome the very serious rapids and bars in that section of the river, and will make unnecessary the use of the existing Riverton Lock and Colbert Shoals Canal, which are wholly inadequate navigation facilities. Provision has been made in this dam for substantial flood storage.

The construction and operation of Pickwick Landing Dam as provided by the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(5) The defendants admit that pursuant to the provisions of the said Act and authorization from the Congress, the Tennessee Valley Authority is proceeding with the construction of the Guntersville Dam upon the Tennessee River near Guntersville, Alabama, for the purposes heretofore set forth. The construction and operation of Guntersville Dam in accordance with the provisions of the Act will provide the required nine-foot channel up to the existing Hales Bar [fol. 202] Dam, a distance of approximately 82 miles. The existing Widows Bar Lock and Dam, which lie in the upper section of the Guntersville pool and which are entirely inadequate for present and future navigation requirements, will be completely submerged and replaced by the Guntersville Dam facilities. The construction and operation of Pickwick Landing, Wheeler and Guntersville Dams as provided by the Act will result in extending the nine-foot channel from Pickwick Landing to the City of Chattanooga, a distance of approximately 257 miles. Provision is being made in this dam for substantial flood storage. The construction and operation of Guntersville Dam as provided by the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(6) The defendants admit that pursuant to the provisions of the said Act and authorization from the Congress, the Tennessee Valley Authority is proceeding with the construction of the Chickamauga Dam upon the Tennessee River near Chattanooga, Tennessee, for the purposes heretofore set forth. As a result of the construction and operation of this dam in accordance with the provisions of the Act, the nine-foot channel will be extended to the proposed site of the White Creek or Watts Bar Dam, a distance of 59 miles. This dam will also provide a nine-foot depth upon the Hiwassee River to the vicinity of Charleston, Tennessee. Provision is being made in this dam for substantial flood storage. The construction and operation of Chickamauga Dam as provided by the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(7) The defendants admit that the Tennessee Valley Authority has recommended to the proper committees of Congress that appropriations should be made in the future for the construction of Watts Bar Dam upon the Tennessee River for the purposes heretofore set forth. The defendants [fol. 203] further allege that the construction and operation of the Watts Bar Dam (previously known as the White Creek Dam) in accordance with the provisions of the Tennessee Valley Authority Act will continue the nine-foot navigable channel from the head of the Chickamauga pool to the proposed Coulter Shoals project, a distance of approximately 74 miles. This dam will also provide a nine-foot channel upon the Clinch River for a distance of about 25 miles and upon the Emory River for a distance of 12 miles above the junction of the Emory and Clinch Rivers. Provision will be made in this dam for substantial flood storage. The construction and operation of Watts Bar Dam in accordance with the provisions of the Tennessee Valley Authority Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(8) The defendants admit that the Tennessee Valley Authority has recommended to the proper committees of Congress the construction of Gilbertsville Dam upon the Tennessee River for the purposes heretofore set forth. The defendants have also recommended that appropriations should be made for exploratory work to investigate the site of this proposed dam. The construction and operation of the dam at the Gilbertsville site, (this dam was previously known as Aurora), in accordance with the provisions of the Tennessee Valley Authority Act will extend the nine-foot channel a distance of 184 miles to the site of Pickwick Landing Dam. Provision will be made in this dam for substantial flood storage. The construction and operation of Gilbertsville Dam in accordance with the provisions of the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(9) The defendants admit that the Tennessee Valley Authority has recommended to the proper committees of Congress that appropriations should be made in the future [fol. 204] for the construction of Coulter Shoals Dam upon the Tennessee River for the purposes heretofore set forth. The construction and operation of this dam in accordance

with the provisions of the Tennessee Valley Authority Act will extend the nine-foot channel from the Watts Bar pool for a distance of about 44 miles to a point above Knoxville, Tennessee. Provision will be made in this dam for substantial flood storage. The construction and operation of the Coulter Shoals Dam in accordance with the provisions of the Act will substantially improve navigation and control destructive flood waters in the Tennessee and Mississippi Rivers.

(10) The defendants admit that appropriations have been made by Congress for the beginning of construction of the Hiwassee Dam (sometimes referred to in the bill of complaint as the Fowler Bend Dam) upon the Hiwassee River, one of the main tributaries of the Tennessee River, for the purposes heretofore set forth. The construction and operation of this dam in accordance with the provisions of the Act will result in substantial improvement in navigation in the Tennessee, Hiwassee, and Mississippi Rivers. As presently planned, this reservoir will provide a storage capacity of approximately 440,000 acre feet, which is sufficient for control of the run-off from above the dam. The Hiwassee contributes materially to the extreme flood peaks on the Tennessee, and flood control at this point is particularly important. The storage provided by this reservoir will be especially valuable during storms that produce maximum flood conditions in the upper Tennessee River and will contribute substantially to the control of floods upon the lower Mississippi.

(11) The defendants admit that the Tennessee Valley Authority recommended to the proper committees of Congress appropriations for the construction of the Fontana Dam upon the Little Tennessee River, one of the main [fol. 205] tributaries of the Tennessee River, but state that no such appropriation has been made and that there is no intention of constructing said dam at any time within the predictable future.

(12) The defendants admit that the Tennessee Valley Authority has recommended to the Congress that an increase should be made in the height of Wilson Dam by the Government to improve said dam as a navigation, flood control, and national defense facility.

(13) The defendants admit that the Tennessee Valley Authority has recommended to the Congress that the Hales Bar Dam pool level should be raised. An increase in the height of such pool level is essential to the completion of the nine-foot channel. Defendants recommended to the Congress that the necessary raising of the pool level should be accomplished by constructing a low navigation dam in the vicinity of Chattanooga and suggested in the alternative that the same result might be accomplished by increasing the height of the Hales Bar Dam, if that should prove feasible.

(14) The defendants admit that provision of emplacements for the possible future installation of electric generating equipment is being made in the design of all dams constructed or under construction by the Tennessee Valley Authority. These emplacements will permit, but do not include, the installation of generators. No such installation of generators has been made, nor is there any intention to make such installation, except as set forth in Section 15 hereof. Construction of dams without such emplacements would preclude the later installation of generators. Such provision for emplacements is therefore necessary to avoid waste of water power when a demand arises for such power.

(15) The defendants deny the accuracy of the assumptions and computations upon which the allegations of subsection [fol. 206] (15) of Section XVII of said bill of complaint depend. The defendants further allege that the Tennessee Valley Authority has not operated and is not operating and has no intention of operating the said Sheffield Steam Plant for the production of power.

(16) The defendants admit that certain dams in process of construction, when operated for navigation and flood control by avoiding the high and low extremes in the flow of waters, will inevitably make dependable a greater amount of power at Wilson Dam, but the defendants allege that the exact amount of such increase depends upon assumptions and computations, and defendants deny the accuracy of the assumptions and computations upon which are based the allegations of the bill of complaint in this respect.

For further answer the defendants allege that the present dependable capacity of the Wilson Dam is 108,000 kw. firm at 60% load factor, such load factor being substantially in excess of the present or reasonably prospective load factor

of the Authority except for power requirements of complainant power companies. Defendants further allege that the present demand of existing customers of the defendant Tennessee Valley Authority, except complainant power companies, is 25,000 kw., being substantially less than the firm capacity of Wilson Dam; that the reasonably prospective demand of the said customers of the Authority within the predictable future is greatly less than the capacity of Wilson Dam as long existent and as it now exists; that the present demand of the present customers of the defendant Tennessee Valley Authority, plus the reasonably prospective demand of the present customers of the Authority, plus the reasonably prospective demands of the next several years of all of the customers now under contract with the Authority but not presently served and assuming that each will actually be served, and except for the demands of the complainant power companies, is substantially less than the capacity [fol. 207] of Wilson Dam.

Defendants further allege that the following table represents substantially the available hydroelectric power at Wilson, Wheeler, Pickwick and Norris Dams at the various times and under the various conditions set out in the said table:

	Firm Generating Capacity							
	Present		Present		April 1, 1937		Sept. 1, 1938	
	Wilson Dam		Wilson and Wheeler Dams (one generator at Wheeler)		Wilson and Wheeler Dams (two generators at Wheeler)		Wilson, Wheeler and Pickwick Dams (two Generators at Wheeler and Pickwick)	
With stream flow regulation from existing dams for navigation and flood control	88,500	kw. of continuous power	127,500	kw. of continous power	143,500	kw. of continuous power	202,000	kw. of continuous power
	108,000	kw. at 60% load factor	155,000	kw. at 60% load factor	187,000	kw. at 60% load factor	269,000	kw. at 60% load factor
With the above and the use of Norris Dam generators for auxiliary purposes	153,000	kw. of continuous power	185,000	kw. of continuous power	207,000	kw. of continuous power	268,000	kw. of continuous power
	190,000	kw. at 60% load factor	226,000	kw. at 60% load factor	258,000	kw. at 60% load factor	360,500	kw. at 60% load factor

[fol. 208] (17) The defendants admit that the territories served by the respective complainants are partially within 250 miles of one or more of the aforesaid dams, except that defendants deny that the Southern Tennessee Power Company has any operating territory within 250 miles of any of the aforesaid dams. The defendants further allege that the territories served by some of the complainants are not within 250 miles of each and every one of said dams; that, for example, the operating territory of the complainants Mississippi Power and Light Company and the Mississippi Power Company is not within 250 miles of Norris and Hiwassee Dams, now under construction, and Watts Bar and Coulter Shoals, recommended for construction; that the same is true of the West Tennessee Power and Light Company and the Memphis Power and Light Company; that, similarly, the operating territory of the complainants Kentucky and West Virginia Utilities Company, Appalachian Power Company, East Tennessee Power and Light Company, Tennessee Public Service Company, Carolina Power and Light Company, Kingsport Utilities Company, and Tennessee Eastern Electric Company and Holston River Electric Company are not within 250 miles of Pickwith Landing Dam, now under construction, and Gilbertsville Dam, recommended for construction; and that there are many similar instances.

(18) With respect to the construction schedule for dams recommended by the defendants, the recommendation itself is the best evidence and the defendants therefore attach hereto as Exhibit "A," and hereby make a part of this answer, the Report of March 31, 1936, to the Congress of the United States.

(19) Except as hereinafter specifically admitted, the defendants deny the material allegations of subdivision (19) of Section XVII of the said bill of complaint, relating to transmission and rural lines in the States of Mississippi, [fol. 209] Tennessee, Alabama, and Georgia. Defendants further say that the Tennessee Valley Authority has neither acquired nor constructed, nor has the Tennessee Valley Authority authorized the acquisition or construction of any transmission or rural lines in the territories of many of the complainants, including, for example, Franklin Power and Light Company, Southern Tennessee Power Company, Birmingham Electric Company, Appalachian Power Company,

Carolina Power and Light Company, Holston River Electric Company, Kentucky and West Virginia Power Company, Kingsport Utilities, Incorporated, East Tennessee Light and Power Company, and Tennessee Eastern Electric Company.

(20) The defendants admit that the Tennessee Valley Authority has constructed a transmission line from Wilson Dam to Norris Dam; that the Tennessee Valley Authority is constructing a transmission line from a point on said Wilson-Norris line located at or near White Creek to the site of the Chickamauga Dam, now under construction by the said Authority, which line is necessary for the purpose of supplying the power to construct said Chickamauga Dam. The defendants also admit that the Tennessee Valley Authority has authorized the construction of a transmission line from Pickwick Dam to the City of Memphis, Tennessee, and that it has authorized construction of a line which will extend from Wheeler Dam to the vicinity of the City of Columbia, Tennessee.

(21) The defendants deny the material allegations of subdivision (21) of Section XVII of the said bill of complaint.

(22) The defendants deny that the Tennessee Valley Authority has purchased or that there is any intention to purchase or that they have promoted or that there is any intention to promote the purchase of any retail distribution systems, franchises, contracts, or going business located in [fol. 210] the places named in said bill of complaint or in any other places, except such properties as were acquired under the contract of January 4, 1934, which was sustained by the Supreme Court in the *Ashwander* case. In some cases where municipalities, without solicitation or inducement by the Authority, have determined to acquire their own municipal electric systems, the Authority has suggested to such municipalities, for the sole purpose of avoiding duplication and any injury to any private power company then operating in such community, that they attempt to acquire the existing facilities.

(23) The defendants admit that the Tennessee Valley Authority has entered into contracts for the sale of electric energy to Knoxville, Tennessee; Memphis, Tennessee; Tupelo, Mississippi; Athens, Alabama; New Albany, Mississippi; Pulaski, Tennessee; Muscle Shoals, Alabama; Amory,

Mississippi; and Dickson, Tennessee; but the defendants deny that the Tennessee Valley Authority has entered into any such contracts with Bessemer or Tarrant City, Alabama. The defendants state that, while there are no contracts in existence with Alcorn County, Mississippi, Pontotoc County, Mississippi, or Prentiss County, Mississippi, there are existing contracts between the Tennessee Valley Authority and the Alcorn County Electric Power Association, the Pontotoc County Electric Power Association, and the Prentiss County Electric Power Association. Defendants deny that the Tennessee Valley Authority has made or authorized any contract with the Mississippi Electric Power Association. The defendants further state that as a part of the consideration for the said contract of January 4, 1934, the Alabama Power Company and the Mississippi Power Company agreed to the sale of power by Tennessee Valley Authority in the area served by the properties conveyed in north Alabama and Mississippi as described [fol. 211] in said contract, and transferred all franchises, contracts, privileges, and rights to do business relating to the use of said properties conveyed. Said contract also agreed to the sale of electricity by the Authority in various rural areas outside the said territory to purchasers who were not customers of the power companies, and to other non-customers outside said areas to a maximum load of 2500 kw. By extension agreement, dated October 7, 1936, this limit has been raised to 4000 kw. The defendants allege that the total sales by the Authority, either directly to rural customers or to the non-profit associations in the area served by these complainants, have not and will not exceed these contractual limits.

Defendants allege that the contracts the Tennessee Valley Authority has entered into for the sale of power, and more particularly those specified in the bill, vary substantially as to their terms. Defendants further allege that no complainant is operating in any city with which the Tennessee Valley Authority has a contract, except Knoxville and Memphis, Tennessee. Defendants further allege that aside from the areas served by the lines conveyed to the Authority by the Alabama Power Company under the contract of January 4, 1934, in every city with which the Authority has a contract, except Knoxville, Memphis and Jackson, Tennessee, the electric distribution systems were owned and

operated by the municipalities prior to the passage of the Tennessee Valley Authority Act. Defendants further allege that Tupelo, Athens, Amory, New Albany, and Muscle Shoals were located in territory in which complainants Alabama Power Company and Mississippi Power Company transferred their properties to the defendant Authority by the contract of January 4, and that none of these cities, except Tupelo and Athens, purchased power from any of com- [fol. 212] plainants before or after the passage of the Tennessee Valley Authority Act of 1933, but that each of them generated its own electric energy.

Defendants further allege that all the rural associations which are alleged by complainants to have contracted with the Tennessee Valley Authority are located within the territory in which the Mississippi Power Company sold all of its properties to the defendant Authority under the contract of January 4. Defendants allege that the complainant Georgia Power Company does not own or operate a distribution system in the City of Dalton, Georgia, and that the Tennessee Valley Authority has not made or authorized any contract with said city.

(24) As previously set out in this answer, the defendants deny the allegations with respect to a systematic campaign of propaganda, or any campaign of propaganda, in said subsection (24) of said Section XVII of the bill of complaint. The defendants allege that they have not conducted any plan or campaign directed against the complainants, and further state that they have not acted with any intent or purpose of injuring the complainants or any of them; and further allege that every act that has been performed by the Authority has been governed by the terms of the Act creating it. Defendants further say that such public addresses and radio addresses as may have been given by the individual defendants or other officers of the Tennessee Valley Authority, and such articles as may have been written by them, in each and every instance represent an expression of personal and unofficial opinion, not in the line of official business and without the approval or concurrence of the Board of Directors of the Tennessee Valley Authority. None of the acts of the individual directors complained of in the said bill represent any of the acts of the Tennessee Valley Authority, except as done by the directors acting as a Board [fol. 213] or as authorized by the Board.

(25) As previously set out in this answer, the defendants deny the allegations with respect to attempted coercion of the complainants and threatened duplication, and deny all other material allegations of fact contained in said subsection (25) of said Section XVII.

(26) The defendants admit that certain acts relating to certain aspects of the operations of the defendant Tennessee Valley Authority have been passed by the legislatures of the States of Alabama, Mississippi, and Tennessee, and allege that said acts show upon their face that said states have authorized the cities and other political subdivisions located within said states to perform certain acts that are complained of in the bill of complaint. Defendants further allege that such acts as have been enacted affecting the operations of the Tennessee Valley Authority in the various states differ in material respects in each state.

(27) The defendants admit that in order to carry on the work of the Tennessee Valley Authority it has been necessary to establish offices in certain localities in the area involved, but the defendants deny that such offices have been established for the purpose of disseminating propaganda, or with any purpose of injuring complainants, and allege that the offices have been established solely for the purposes of the Tennessee Valley Authority Act.

(28) The defendants admit that the Electric Home and Farm Authority, Inc., a Delaware corporation, was incorporated under an Executive Order of the President of the United States on December 19, 1933, and that the Directors of the defendant Tennessee Valley Authority were made the directors of said corporation. The defendants also admit that said corporation has been effectively dissolved and is no longer in existence and that on August 1, 1935, a new [fol. 214] corporation was incorporated under the laws of the District of Columbia; that said new corporation has no connection with any of the defendants; and that its directors are in no sense connected with the defendant Tennessee Valley Authority. However, defendants are informed and believe and therefore allege that certain of the complainants have had and continue to have business and contractual relations with the said Electric Home and Farm Authority, Inc.

(29) Defendants deny the material allegations of subsection (29) of said Section XVII of the bill of complaint and

say further that the allegations of this subsection are answered by the report itself, which it attached hereto as Exhibit "A."

(30) The defendants deny all of the material allegations of fact contained in subsection (30) of Section XVII of the bill of complaint. The defendant Tennessee Valley Authority has one contract to serve one customer of one of the complainants at the termination of the existing contract for service between said complainant and that customer. The contract with the Tennessee Valley Authority was made only after repeated requests by the said customer and without any solicitation or inducement whatever from the Tennessee Valley Authority. Except for this instance and except for customers served by transmission lines acquired under the contract of January 4, 1934, hereinabove referred to, being customers whom complainants operating in that territory agreed that the Authority should sell, the Authority is not serving and has no contract to serve a single customer of any of the complainants.

(31) Except as herein expressly admitted, the defendants deny all of the material allegations of fact contained in said Section XVII of said bill of complaint.

[fol. 215] The defendants further allege that so far as they are able to determine from the bill of complaint, the sole basis for a claim of actual or threatened injury on the part of seven of these complainants is the fact that they own certain properties located within a radius of 250 miles of some dam that may be constructed by the Tennessee Valley Authority. The defendants allege that the Authority is not now constructing and has not authorized the construction of any transmission line, has not sold nor authorized the sale of any electricity, and has not entered into or authorized any contracts for the sale of electricity in any part of the territory now served by the Franklin Power and Light Company, the Appalachian Electric Power Company, the Carolina Power and Light Company, the Holston River Electric Company, the Kingsport Utilities, Incorporated, the Kentucky and West Virginia Power Company, or the Tennessee Eastern Electric Company.

The defendants allege that another complainant, the Birmingham Electric Company, is engaged in business only in the City of Birmingham and adjoining territory, located in Jefferson County, Alabama, including the Cities of Tarrant

City and Bessemer, Alabama. The Authority has not made or authorized any contracts with any cities or other customers located within this territory. The Authority is not constructing and has not authorized the construction of any transmission line connecting its source of supply with this territory. As will more fully appear hereinafter, there is pending in the Supreme Court of the District of Columbia a suit filed by the Birmingham Electric Company to restrain the Cities of Tarrant City and Bessemer, the Tennessee Valley Authority and PWA from proceeding with plans to furnish electrical service to the residents of those cities in competition with the complainant and a temporary injunc- [fol. 216] tion has been issued pending the final determination of the legality of loans by the PWA to municipalities for municipal power plants.

The defendants further allege that another complainant, the Memphis Power and Light Company, is engaged in business only in the City of Memphis and the adjoining territory, all located in Shelby County, Tennessee. The defendants allege that although the Authority is constructing a transmission line which will reach Memphis when completed, not earlier than ten months from the date hereof, there is no existing transmission line connecting the City of Memphis with any dam or other source of power under the control of the Authority and that the City of Memphis does not own a distribution system with which it could compete if it so desired with the present system owned by the Memphis Power and Light Company. As will appear hereinafter, the suits already pending in the Supreme Court of the District of Columbia and in the state courts of Tennessee afford full protection to this complainant from any immediate threat of injury arising out of the alleged acts set out in the bill of complaint.

The defendants further allege that another of the complainants, the Tennessee Public Service Company, is engaged in business only in the City of Knoxville and adjoining rural territory; that there is no existing or authorized transmission line from the City of Knoxville to any dam or other source of power under the control of the Authority, and that the City of Knoxville does not own any distribution system which it could operate in competition with the Tennessee Public Service Company. As will more

fully appear hereinafter, this complainant is fully protected from any immediate threat of injury from the alleged acts set out in the bill of complaint by the suits that are now pending in the Supreme Court of the District of [fol. 217] Columbia and the state courts of Tennessee.

Defendants further allege that the complainant Georgia Power Company is not entitled in this case to be protected from any alleged threats of injury from the alleged acts set out in the bill of complaint since said acts are the subject matter of an action now pending in the United States District Court for the Northern District of Georgia, which is styled Georgia Power Company v. Tennessee Valley Authority, et al. In this suit, the complainant Georgia Power Company sought to enjoin the construction of transmission lines, the sale of power, and the execution of contracts in northern Georgia (the acts complained of in the instant bill) upon substantially the same grounds as those set forth in the present bill. The complainant's application for a temporary injunction was denied after a hearing upon the ground that said acts of the Tennessee Valley Authority were valid, and the case, after having been set for trial, was continued at the request of the Georgia Power Company. Defendants further allege that the extension of the contract of January 4 with the Commonwealth and Southern companies hereinbefore referred to, which includes the Georgia Power Company, affords additional protection to this complainant from any danger of the loss of customers now served by it.

The defendants further allege that the complainant Southern Tennessee Power Company is engaged in business only as a transmission company transmitting electric energy from the Wilson Dam to the Alabama-Tennessee state line, thereby connecting Wilson Dam with the transmission system of the Tennessee Electric Power Company. This transmission line, owned by this complainant, is leased to the Tennessee Electric Power Company. The bill does not allege any acts of the Authority which may injuriously affect the use of this line. The defendants allege that 40% [fol. 218] of the total power used by the Tennessee Electric Power Company for the months of June and July, 1936, was generated at Wilson Dam and transferred to said Company over this line, and the Tennessee Electric Power Company has, in fact, enjoyed a continually increasing and more

profitable business during the period since the passage of the Tennessee Valley Authority Act.

The allegations of the bill regarding acts of the Tennessee Valley Authority in the claimed territories of the Alabama Power Company, Mississippi Power Company and Tennessee Electric Power Company are answered in subsection (23) above.

With respect to complainants Mississippi Power and Light Company, West Tennessee Power and Light Company, East Tennessee Power and Light Company, and Kentucky-Tennessee Light and Power Company, the defendants allege that the bill of complaint does not allege that the Authority has entered into or authorized any contracts for the sale of power in the areas claimed to be served by said complainants.

18

Except as expressly admitted in this answer, the defendants deny the material allegations contained in Section XVIII of said bill of complaint.

19

Except as expressly admitted in this answer, the defendants deny the material allegations of fact contained in Section XIX of said bill of complaint except that the defendants admit that the telegram from Harold L. Ickes to Lee Glenn, Mayor of Florence, Alabama, quoted in said Section XIX, was sent.

For further answer defendants deny that they have any [fol. 219] plan whatever for the acquistion of complainants' properties or that they have entered into any conspiracy, agreement, or understanding of any character with the Administrator of Public Works for the purpose of acquiring the properties of the complainants.

The defendants allege that whenever it has become necessary to acquire transmission lines for the service of municipalities, small villages, and rural areas in the manner provided by the Act, the Authority has attempted to purchase existing privately-owned facilities rather than construct duplicating lines, in order to avoid injury to the complainants. The Authority alleges that under the contract of January 4, 1934, with the Alabama Power Company, Tennessee Electric Power Company, Mississippi Power Company, and Georgia Power Company, all subsidiaries of

the Commonwealth and Southern Company, the Authority contracted for the purchase of certain transmission lines in northern Alabama and for the acquisition of certain facilities of rural areas and small villages in northern Mississippi and that such properties have been already transferred to the Authority.

The Authority further denies that it has ever induced or solicited any municipality to acquire its own municipal power system, but in every instance the municipality has acted solely upon its own initiative. The Authority alleges that when a municipality has determined of its own initiative to acquire its own municipal power system the Authority has recommended that the municipality acquire the existing facilities of complainants rather than construct a duplicating system, and in some instances has attempted to cooperate to that end. The defendants further allege that the Authority is not under contract to purchase, and has no intention of attempting to purchase, any municipal distribution system [fol. 220] owned by any of the complainants for resale to municipalities or otherwise.

The defendants deny that the Authority has ever induced or solicited any municipality to make application to the Administrator of Public Works for a loan and grant to construct a municipal power system, but that in every instance the municipality has made such application upon its own initiative.

The defendants further deny that the Administrator of Public Works has granted any such application upon the request of the defendants. The defendants allege that in one case the defendant Lilienthal requested the Administrator of Public Works and he agreed to suspend granting the application of the City of Florence for a loan and grant for the construction of a municipal power plant, and that the sole purpose of the defendant was to dissuade the municipality from its determination to construct duplicating facilities, and to permit negotiations for the acquisition of the existing facilities of the Alabama Power Company in order to avoid injury to the company. The defendants allege that the City of Florence on its own initiative had determined to construct its own facilities and objected to purchasing the facilities of the Alabama Power Company at the price at which the Alabama Power Company was willing to sell. The defendants further allege that the City of Florence

has since purchased the municipal distribution system of the Alabama Power Company and at a price considerably higher than the maximum price which the city was willing to pay at the time the Authority requested the Administrator to suspend the granting of a loan and grant to the city.

20

Except as expressly admitted in this answer, the defend- [fol. 221] ants deny the material allegations of fact contained in Section XX of said bill of complaint.

21

The defendants deny the material allegations of fact contained in Section XXI of said bill of complaint.

22

The defendants deny the material allegations of fact contained in Section XXII of said bill of complaint.

23

The defendants are informed that the allegations contained in Section XXIII of said bill of complaint are conclusions of law which they are not required to answer, but if construed to be allegations of fact deny every material allegation thereof.

24

The defendants are informed that the allegations contained in Section XXIV of said bill of complaint are conclusions of law which they are not required to answer, but if construed to be allegations of fact deny every material allegation thereof.

25

The defendants are informed that the allegations contained in Section XXV of said bill of complaint are conclusions of law which they are not required to answer, but if construed to be allegations of fact deny every material allegation thereof.

26

The defendants deny the material allegations of fact contained in Section XXVI of said bill of complaint.

[fol. 222] Part II

For further answer to the bill of complaint as it relates to each of the separate complainants, the defendants say:

A. As to complainant Tennessee Electric Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) Defendants allege that said complainant is estopped to challenge the validity of the Tennessee Valley Authority Act or the acts of the defendants pursuant thereto for the reason that the said complainant has voluntarily accepted and received benefits under the Act and the acts of the defendants pursuant thereto, all in the respects challenged in the bill. In particular, defendants allege that this complainant is a party to a contract with the defendant Authority, dated January 4, 1934, a true and correct copy of which is attached hereto as Exhibit "B," and hereby incorporated herein; that said contract has been extended by agreement dated October 7, 1936, until February 3, 1937; that under said contract this complainant has purchased large quantities of electric energy from the defendant Authority and has thus recognized the legality of the generation and sale of such energy by the defendant Authority and has thus relied upon the validity of the Act of Congress creating the defendant Authority, having actually received benefits under such Act and contract; that even before execution of the said contract this complainant purchased large amounts of power from defendant Authority; that thereafter the complainant Tennessee Electric Power Company availed itself of the following amounts of power supplied by the defendant under the aforementioned contract for the periods specified below:

[fol. 223]

Period	Energy purchased by Tennessee Electric Power Company
January 4, 1934, to June 30, 1934	37,485,000 kwh.
Fiscal year ending June 30, 1935	2,438,100 kwh.
Fiscal year ending June 30, 1936	110,463,800 kwh.
July 1, 1936, through August 31, 1936	68,555,300 kwh.

The said complainant is still continuing to purchase large amounts of power generated by the defendant Tennessee

Valley Authority. During the low-water period from June 1, 1936, through August 31, 1936, the company had need for and utilized very substantial blocks of power supplied by the defendant Authority, the amounts purchased and relation to net system requirements of the complainant company being as follows:

Period	Energy supplied by defendant (kwh.)	Net system requirements of company	Percentages
June, 1936	31,534,600	77,164,200	40.87
July, 1936	34,100,700	83,430,300	40.87
August, 1936	34,454,800	86,510,800	39.83

During the present low-water season of the year 1936, during which a shortage of power has existed among the companies of the Commonwealth and Southern system, including this complainant, and when the demand of these companies for power from the Tennessee Valley Authority has exceeded the amount that could be supplied by firm power generated at Wilson Dam before the construction and operation of Norris and Wheeler Dams, this complainant, together with the other companies in the Commonwealth and Southern system, for its own benefit and for the purpose of meeting the shortage of power, purchased, used and sold, and is still purchasing, using and selling, large quantities of power made available by the Tennessee Valley Authority, as set out in the preceding table, including power generated, and known by it to have been generated, at Norris and Wheeler Dams and the increment of power made available, [fol. 224] and known to have been made available, at Wilson Dam by the release of water by Norris Dam from the Norris reservoir.

Under the contract of January 4, 1934, the said complainant agreed with defendant Tennessee Valley Authority, for the mutual benefit of both parties, to interchange electric energy at points designated in the contract; said interchange agreement has continuously been performed and said complainant has received, and is still receiving, the benefit of said contract in that it has received, and is still receiving, power from the Authority at points needed to serve its own customers.

Under the contract of January 4, 1934, the complainant Tennessee Electric Power Company agreed to supply the power required by the Authority for the construction of

Norris Dam and power plant on an interchange basis, that is, it agreed to deliver the required amounts of power to the Authority in the vicinity of Norris Dam in return for the receipt at Wilson Dam, Alabama, of equivalent amounts of power from the Authority; pursuant to said contract the company has delivered under this arrangement, and is still delivering, large amounts of power which were essential and which the company knew, and has at all times known, to be essential to the construction of Norris Dam, and that such power was specifically intended to be used for such purposes, and received an equivalent amount of energy from the Authority; and the company constructed a transmission line for service to the Authority in the construction of Chickamauga Dam and has knowingly supplied all the electricity needed for the construction of said dam; and the said interchange of power for the construction of Norris and Chickamauga Dams has benefited said complainant in that said complainant has been enabled to receive from Authority a supply of power at the place needed by complainant to serve its customers.

[fol. 225] As a part of the consideration in said contract of January 4, 1934, the defendant Authority agreed to limit its sales of surplus power to particular specified territory, with certain exceptions hereinafter related more fully, and to refrain from making sales in other territories served by the Commonwealth and Southern companies, including this complainant; that said agreement has been and is being carried out to the detriment and injury of the Tennessee Valley Authority and to the benefit of this complainant, which has knowingly received, and is still knowingly receiving, the benefits of this agreement and compliance therewith by the defendant Authority.

(3) The said complainant Tennessee Electric Power Company cannot question the validity of the construction and operation of Norris Dam by the Authority for the reason that said complainant now owns many acres of land which have been flooded and upon which Norris Dam and power plant and the reservoir which was created by the said Norris Dam are located; and the said complainant consented to the occupation of its land for the construction of said dam and reservoir, and it has agreed to sell the said lands to the Tennessee Valley Authority in return for the obligation of the Authority to pay therefor.

(4) This complainant can claim no right of contract or property because of the construction and operation of its hydroelectric project at Hales Bar on the Tennessee River as against the United States or any agency thereof, since said structure has not been constructed or operated according to the conditions prescribed by the Act of Congress granting permission to proceed with the project. The dam, as constructed, is defective and does not subserve the functions of the Government of the United States in the statutory terms on which the grant was conditioned. [fol. 226] The officials of the United States delegated to accept this property on behalf of the United States, so as to complete the arrangement under which this complainant now claims rights, have refused to accept this structure because of the defects heretofore referred to and said complainant has failed to correct said defects and to make said conveyance, all in violation of the statute and the laws of the United States.

(5) The valid existence of the so-called franchise of this complainant in the City of Chattanooga is now being litigated in the state courts of Tennessee, the City of Chattanooga having filed suit to have the franchise of this complainant to do business in that city declared void as an unlawful perpetuity within the prohibition of the constitution of the State of Tennessee. Defendants are informed and believe, and therefore allege, that the said indeterminate electric power franchise in the City of Chattanooga is a nullity; that the company is operating in the city without a franchise and on sufferance only. Defendants are further informed and believe, and therefore allege, that many, if not most, of the municipal franchises of this complainant in the State of Tennessee are indeterminate franchises and void under the constitution of the State of Tennessee as unlawful perpetuities within the meaning of the state constitution and that the complainant is operating in such municipalities on sufferance only.

(6) The Authority is not selling or under contract to sell electricity to any municipality in which or to which this complainant is selling and distributing electricity.

The Authority has contracts to sell electricity to, and only to, the municipalities of Dayton, Dickson, and Pulaski, in the alleged territory of complainant. Each of these municipalities did, prior to the date of contract with de-

[fol. 227] fendant Authority for the sale of power and its receiving service under said contract, generate all of its own electric energy. Each of these municipalities is distributing such energy purchased from the Authority on its own distribution system which it owned and operated for a long time prior to the passage of the Tennessee Valley Authority Act. Each of said municipalities has always operated its own generating plant and has never been a customer of the complainant. None of these municipalities is selling energy purchased from the Authority to customers in said municipalities in competition with the complainant and said complainant has no franchise to operate, and does not own or operate, any electrical properties in said municipalities. The sale of electric energy by the Authority for service is these municipalities does not damage the complainant; and any alleged damage to complainant is remote, indirect, speculative, conjectural, and negligible.

The Cities of Dayton and Pulaski, Tennessee, are, under authority of state law, selling electric energy at retail to rural residents outside the municipal limits on rural transmission lines owned and operated by these municipalities. Defendants are informed and believe, and therefore allege, that none of these rural customers has heretofore received service from this complainant; that prior to the beginning of operations by these municipalities in rural areas surrounding them this complainant had not provided or made available electric service to the residents of said rural areas; that for a long time prior to the offers of said municipalities to serve rural customers in the area surrounding them, said complainant had failed to provide electric service, either because it was unprofitable or because it was not interested in providing such service; that this complainant failed to provide such service to residents in [fol. 228] this area notwithstanding there were frequent requests over a long period of years by residents for such service when there was no other agency selling electric energy to which residents could make application.

The percentage of rural electrification in the territory of complainant prior to the creation of the defendant Tennessee Valley Authority was less than four per centum; such rural service as was rendered was almost wholly incidental to service to urban communities and consisted of tapping lines of low voltage primarily intended for service

to urban communities. Defendants are informed and believe, and allege that this complainant made no effort to sell electric power to the rural residents now served by these municipalities or in the vicinity of lines of these municipalities, constructed or under construction, until the complainant had knowledge of definite steps by these municipalities to furnish the service now undertaken or contemplated; not until this complainant knew surveys were undertaken and substantial sums of money expended by the said municipalities in conducting surveys and preparing for construction and operations did complainant show any interest or desire to serve the customers now served by such municipalities, or customers in the vicinity of lines of said municipalities, or do any act directed toward supplying the demands for electricity of the customers and areas served by said municipalities; in all the areas which municipalities are now serving or building lines for serving, the residents thereof had for many years been attempting without success to make arrangements for service from the complainant; any losses which complainant may suffer or acts which complainant may have done in serving, attempting to serve, or make service available to customers in areas served by said municipalities, were done or incurred and [fol. 229] are due to the abandonment of its policy of refusing rural service except as an incident to urban service and to the construction of new rural transmission lines without regard to the profitableness or feasibility thereof, but solely for the purpose of handicapping, obstructing and embarrassing the operations of said municipalities; any damage which complainant might suffer by operations of these municipalities or sales of electric energy by the defendant Authority to said municipalities, or any other acts of defendants Authority are due to its own acts and provide no basis for this action.

This complainant will suffer no damage from activities of these municipalities in rendering service to these rural residents hitherto unserved by the complainant; if said complainant can be said to suffer any damage from sales by these municipalities or sales of the Authority to said municipalities, such damage is so indirect, remote, speculative, hypothetical, conjectural and negligible as to constitute no basis for this action on behalf of this complainant; any competition which may result in said rural areas

served by these municipalities is competition from these municipalities and not from the defendant Authority; if these municipalities have served or will serve rural residents as customers which might otherwise be served by said complainant, the failure to obtain such potential customers will be due to the acts of these municipalities and not to acts of the defendant Authority.

(7) The defendant Authority is under contract to sell electricity at wholesale to certain non-profit corporations organized under the laws of the State of Tennessee; such corporations are cooperative membership corporations organized and doing business for the benefit of their members only and not for profit. As of the present date the Author- [fol. 230] ity is under contract to serve the following corporations who own lines or are operating in territory alleged to be operating territory of this complainant: Duck River Electric Membership Corporation, Pickwick Electric Membership Corporation, Meigs County Electric Membership Corporation, and the Middle Tennessee Electric Membership Corporation.

The corporations listed above, as of the present date were serving the following number of customers:

Pickwick Electric Membership Corporation	597
Duck River Electric Membership Corporation	317
Middle Tennessee Electric Membership Corporation	Not yet served
Meigs County Electric Membership Corporation	317

These corporations own transmission lines from which this service is rendered as follows:

Rural Transmission Lines:

Duck River Electric Membership Corporation	115 miles
Pickwick Electric Membership Corporation	96.3 "
Meigs County Electric Membership Corporation	110 "

Also, there are under construction some 261 miles of rural transmission lines to be owned and operated by the Middle Tennessee Electric Membership Corporation. There are also under construction approximately 200 miles of rural transmission lines to be owned and operated by the Meigs County Electric Membership Corporation.

None of these corporations is selling energy purchased from the Authority to customers which have heretofore received service from this complainant; the service fur-
[fol. 231] nished by these corporations constitutes new and additional service to rural residents not previously served. Said rural residents served by these corporations were without electric service prior to the initiation of operations by said corporations, and for a long time prior to the efforts of said corporations, said complainant failed to provide electric service either because it was unprofitable, or because it was not interested in providing such service, notwithstanding frequent requests over a long period of years by residents for such service when there was no other agency selling electric energy to which residents could make application.

Defendants are informed and believe, and allege that this complainant made no effort to sell electric power to the rural residents now served by these corporations or in the vicinity of lines of these corporations constructed or under construction until the complainant had knowledge of the initiation of definite operations by these corporations looking to furnishing the service now undertaken or contemplated; not until this complainant knew surveys were undertaken and substantial sums of money expended by the said corporations or the organizers thereof in conducting surveys and preparing for construction and operations did complainant show any interest or desire to serve the customers now served by such corporations, or customers in the vicinity of lines of said corporation, or do any act directed toward supplying the demands for electricity of the customers and areas served by said corporation; in all the areas which corporations are now serving or building lines for serving, the residents thereof had for many years been attempting without success to make arrangements for service from the complainant; any losses which complainant may suffer or acts which complainant may have done in serving, attempting to serve, or making service available to customers in areas served by said corporations were
[fol. 232] done or incurred and are due to the abandonment of its policy of refusing rural service except as an incident to urban service and to the construction of new rural transmission lines without regard to the profitableness or feasibility thereof, but solely for the purpose of handicapping, obstructing and embarrassing the operations of said cor-

porations; any damage which complainant might suffer by operations of these corporations or sales of electric energy by the defendant Authority to said corporations, or any other acts of defendant Authority are due to its own acts and provide no basis for this action.

Any alleged damage to said complainant from operations by these corporations or the sale of power by the defendant Authority at wholesale to said corporations is so indirect, remote, speculative, conjectural and negligible as to constitute no basis for the maintenance of this action on behalf of said complainant. Any competition which may result in rural areas now or in the future served by these corporations is competition from these corporations and not from the defendant Authority; if these corporations have served or will serve rural residents as customers which might otherwise some time in the future be served by said complainant, the failure to obtain such potential customers will be due to acts of these corporations and not to acts of the defendant Authority.

(8) The Authority has constructed or is constructing, and now owns rural transmission lines for a distance of 127 miles in Lincoln County, 30 miles in Anderson County, 5 miles in Knox County, and 10 miles in Roane County, within the alleged operating areas of complainant as alleged by the bill. The defendant Authority is using said lines to sell electric energy at retail to 482 rural residents in Lincoln County, 210 rural residents in Anderson County, 35 rural [fol. 233] residents in Knox County, and 70 rural residents in Roane County.

None of the rural residents now being served by the Authority was being served by this complainant prior to the time when such operations were initiated by the Authority, except that the Authority acquired from this complainant for a good and valuable consideration a short strip of rural transmission line in the immediate vicinity of Norris Dam, primarily for service to the Authority itself, and has been serving the rural customers of the company who were served from said strip of line. For a long time this complainant failed to provide service to the rural residents now being served by defendant Authority. This failure to attach these rural residents as customers was because it was unprofitable or because of lack of interest, notwithstanding repeated requests on the part of some of them for rural

service. This complainant will suffer no injury or damage because of the acts of the defendant Authority in selling electricity to these rural customers, and the alleged damage because of said sales is remote, indirect, speculative, hypothetical and negligible

(9) Defendants further allege that the Authority is under contract to serve the Monsanto Chemical Company, an industrial corporation located in Maury County, Tennessee, within the operating area of complainant as alleged by the bill; that the defendant Authority is now serving this customer. The Monsanto Chemical Company has only recently initiated operations and begun the construction of a plant in that vicinity, and has heretofore had no need for electric energy from this complainant at any place and has not contracted with this complainant for the purchase of electric energy at this or any other point; upon information and belief defendants allege that in the absence of the [fol. 234] Authority in said area said complainant would not have served the Monsanto Chemical Company. This sale of power to the Chemical Company under this contract does not damage said complainant; and any claimed damage because of said contract is remote, indirect, speculative, hypothetical and negligible.

(10) Service under all the contracts hereinabove referred to in the alleged territory of this complainant as described in the bill of complaint has been in full compliance with the contract of January 4, 1934, between complainant and the defendant Authority; under the terms of that contract the Authority agreed for the duration of the contract not to sell electric energy in the territory generally served by this complainant and other members of the Commonwealth and Southern system except that it was provided that the defendant Authority might sell electric energy in the territory served by this complainant and the other members of the Commonwealth and Southern system up to a demand of 2,500 kw.; all of the sales of power in the area of complainant and other members of the Commonwealth and Southern system, exclusive of the areas in which the Commonwealth and Southern Companies agreed to sell their electrical facilities to the defendant Authority, have not exceeded this limitation. The defendant Tennessee Valley Authority, by contract dated October 7, 1936, agreed to extend the contract of January 4, 1934, until February 3,

1937; and further agreed not to serve any customer of any of the Commonwealth and Southern companies signatory to the contract of January 4, 1934, including the complainant, or any customer in the area served by any of such companies (whether or not a customer of any of said companies, including the complainant), except to the extent of service aggregating not more than 4,000 kw. in demand, exclusive of the Monsanto Chemical Company; and this contract does not expire until February 3, 1937, and in itself con-
[fol. 235] stitutes a complete and adequate protection of any right or interest which the complainant may have, and is a bar to this suit.

(11) Defendant Authority is not now serving nor has it contracted to serve any customers whatsoever within the alleged operating area of such complainant, except as set out hereinabove, and the possibility of such future and hypothetical service to additional customers in the alleged territory of the complainant or of injury to the complainant resulting from such possible service is remote, indirect, speculative, hypothetical and negligible. The negotiations with the City of Chattanooga or any other municipality now served by the complainant have not resulted in any contract for sale of electric energy, nor has such sale been authorized by defendant Authority, and the possibility that the sale of electric energy under any such hypothetical or future contract would result in injury or damage to this complainant is so remote, because of the non-existence of such contract or necessary transmission facilities, or necessary distribution facilities, that said negotiations do not present a subject for controversy between this complainant and the defendants.

(12) The complainant cannot maintain this present suit upon the allegations set forth in the bill of complaint for the reason that this suit, in so far as this complainant is concerned, is barred by the pendency of two prior actions involving the same parties, and identical issues of fact and law, hereinafter described. More particularly, the defendants allege that there are now pending, and that there were pending at the date of the filing of the bill of complaint in this cause, the following prior actions:

[fol. 236] The Tennessee Electric Power Co. v. Lenoir City, Tennessee Valley Authority, Ickes, et al., which action, by number Equity No. 1873, was in-

stituted in November, 1935, in the Chancery Court of Loudon County, Tennessee.

The Tennessee Electric Power Co. v. Lewisburg, Tennessee Valley Authority, Ickes, et al., which action, by number Equity No. 1467, was instituted November 18, 1935, in the Chancery Court of Marshall County, Tennessee.

Attached hereto, marked Exhibits "C" and "D", respectively, and made a part hereof, are the bills of complaint in said actions. Both of said actions are substantially similar, each attacking the constitutionality of the Tennessee Valley Authority Act and seeking to enjoin the defendant municipalities in the respective cases from borrowing or accepting loans or grants from the defendant Ickes, as Federal Emergency Administrator of Public Works, and to enjoin the said municipalities from purchasing power from the Tennessee Valley Authority on the ground that the sale of such power is a part of an alleged unlawful program of the Authority in selling electric energy over transmission lines in unlawful competition with private enterprise; and in each of said cases it is alleged that the defendant municipalities and the Authority propose to enter into contracts for the sale by the Authority to the respective municipalities of electric energy to be utilized in the operation of the proposed respective municipal distribution systems, the tenor of such proposed contracts being alleged substantially in the terms of the bill of complaint in this present cause. Each of said bills contains a general attack upon the validity of the Tennessee Valley Authority Act as a subterfuge for a national power program, and alleges that the defendant Authority is exceeding the powers lawfully granted to it by the said Act.

In the case of The Tennessee Electric Power Co. v. Lenoir City, Tennessee Valley Authority, Ickes, et al., hereinabove [fol. 237] referred to, service was had on the Authority on November 27, 1935. On December 28 demurrers were filed on behalf of the Authority and Lenoir City, the Authority adding a motion to strike. The cause was continued to the next term of court by order entered May 4, 1936. On November 5, 1936, an order was entered continuing the cause to the next term of court, and said cause is now pending in the said court.

In the case of The Tennessee Electric Power Co. v. City of Lewisburg, Tennessee Valley Authority, Ickes, et al., hereinabove referred to, service was had on the Authority on November 26, 1935. Answers were filed by the city and by the Authority on January 25 and 26, 1936, respectively. The restraining order originally entered at the time of the filing of the bill was modified on April 21, 1936, following a hearing held March 25. On March 23, 1936, complainant filed a supplemental bill, and on August 14, 1936, the City of Lewisburg filed a supplemental answer. On September 3 the complainants filed a second supplemental bill, and on October 3 the City of Lewisburg filed an answer to the second supplemental bill. On October 3, 1936, the suit was dismissed, without prejudice, as to defendants Tennessee Valley Authority and Harold L. Ickes.

(13) This complainant is not affected or injured by sales of power by the Authority or related acts outside the complainant's alleged territory and therefore cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 238] B. As to the complainant West Tennessee Power & Light Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) The Authority is not selling or under contract to sell electricity in or to any municipality in which this complainant is selling and distributing electricity except that defendant Authority has contracted and is now serving the City of Jackson with electric energy solely for street lighting and similar municipal purposes, the contract between the said City of Jackson and the defendant Authority specifically prohibits any resale by the city of electricity purchased from the Authority. At the date of this contract with the City of Jackson and for a long period prior thereto, and sales thereunder, the city did not purchase electric energy from the complainant for the municipal purposes for which it now purchases energy from the Authority, but generated electric energy at its own plant; sales of electric energy by the Authority to the said city do not damage the complainant, and any alleged damage to complainant is remote, indirect, speculative, conjectural, and negligible.

(3) The Authority is not selling or under contract to sell electric energy to any municipality in the alleged territory of complainant except that the Authority is under contract to sell and is selling, electricity to the Cities of Bolivar and Somerville, Tennessee, two municipalities located in the alleged operating territory of the complainant; each of these municipalities, prior to the date of contract with defendant Authority for the sale of power and the inauguration of service thereunder, generated all of its electric energy; each of said municipalities has always operated its own generating plant and has never been a customer of [fol. 239] complainant; each of these municipalities is distributing such energy purchased from the Authority on its own distribution system which it owned and operated for a long time prior to the passage of the Tennessee Valley Authority Act; for a long time prior to the date of the contracts and the beginning of service under said contracts, these municipalities operated their own generating and distribution facilities and this complainant did not and does not contract with or sell electric power to or within these municipalities and has no franchise to do so; and the sale of electric energy to these cities by the Authority does not, and does not threaten to, damage the said complainant, and any alleged damage to said complainant because of said contract and sales thereunder is remote, indirect, speculative, conjectural, and negligible.

(4) The Authority has contracted with the Gibson County Electric Membership Corporation and has authorized the execution of a contract with the Southwest Tennessee Electric Membership Corporation to sell electric energy at wholesale, both of such parties being cooperative membership corporations organized under the state laws of Tennessee for the benefit of their own members and not for profit; that existing lines of the Gibson County Electric Membership Corporation are located in territory described by the bill of complaint as operating territory of this complainant, and the Gibson County Corporation is serving approximately 347 rural residents off of 102 miles of rural transmission lines; none of these rural residents served by the Gibson County Corporation were served by complainant but constitute new and additional service to customers not previously enjoying electric service.

The lines of the Southwest Tennessee Electric Membership Corporation will in the near future be constructed in

[fol. 240] territory described by the bill of complaint as operating territory of this complainant. These lines will serve rural resident- not now, or in the past, served by this complainant.

Prior to the beginning of rural electrification operations by these corporations, this complainant did not provide and is not now providing electric service to the residents of said rural areas; for a long time prior to the efforts of said corporations to serve rural customers in this area, said complainant had failed and refused to provide electric service either because it was unprofitable or because the complainant was not interested in providing such service, notwithstanding frequent requests over a long period of years by residents of such areas for such service when there was no other agency selling electricity to which residents could make application. The percentage of rural electrification in the territory of this complainant prior to the creation of the defendant Tennessee Valley Authority was less than five per centum; such rural service of complainant as was rendered was solely incidental to service to urban communities and consisted of tapping lines of low voltage primarily intended for service to urban communities; this complainant will suffer no damage from activities of these corporations in rendering service to these rural customers hitherto unserved by the complainant; and any damage to said complainant from operations by these corporations is indirect, remote, speculative, conjectural, and negligible.

Any competition which may result in said rural areas in the future is competition from these corporations and not from the defendant Authority; if these corporations have served, or will serve, rural residents as customers which might otherwise sometime in the future be served by said complainant, the failure to obtain such potential customers [fol. 241] will be due to acts of these corporations and not to acts of the defendant Authority.

(5) Defendant Authority is not now serving, nor has it contracted to serve, any customers whatsoever within the alleged operating area of complainant as described by the bill, except as set out hereinabove, and the possibility of future and hypothetical service to other customers in the alleged area of the complainant or of injury to the complainant resulting from such possible service is remote, indirect, speculative, conjectural, and negligible.

(6) This complainant is not affected or injured by sales of power by the defendant Authority outside the complainant's territory, and, therefore, cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 242] C. As to the complainant Mississippi Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) Defendants allege that said complainant is estopped to challenge the validity of the Tennessee Valley Authority Act or the acts of the defendants pursuant thereto for the reason that the said complainant has voluntarily accepted and received benefits under the Act and the acts of the defendants pursuant thereto, all in the respects challenged in the bill. In particular, defendants allege that this complainant is a party to a contract with the defendant Authority, dated January 4, 1934, and as hereinabove more particularly described, which contract has been extended by agreement dated October 7, 1936, until February 3, 1937; complainant is a subsidiary of the Commonwealth and Southern Corporation, and the Tennessee Electric Power Company, Alabama Power Company, and Georgia Power Company, all of whom are subsidiaries of the Commonwealth and Southern Corporation, were also parties to said contract and the extension thereof; complainant does not generate any substantial part of the electricity which it sells, but purchases its electricity supply from the Alabama Power Company; under said contract and the extension thereof, the Authority agreed to sell large quantities of electricity to the various Commonwealth and Southern subsidiaries who were parties to said contract; the systems of all of said subsidiary companies are interconnected, and the purchase of electricity by any of said companies operates to the benefit of all of said companies, in recognition whereof each of said subsidiary companies, including the complainant, agreed to joint and several liability for all power purchased from the Authority under said contract, and all of said companies appointed a single joint agent to whom said [fol. 243] power should be billed on behalf of all of said companies.

Under said contract the following amounts of power have been purchased by said companies, acting through said

agent, for all of which the said complainant is jointly and severally liable:

Period	Net Energy Delivered
January 4, 1934, to June 30, 1934	147,200,293 kwh.
Fiscal year ending June 30, 1935	2,902,620 kwh.
Fiscal year ending June 30, 1936	296,038,486 kwh.
July 1, 1936, through September 30, 1936	262,884,683 kwh.

The said purchases were commingled with the other power produced or purchased by the said companies, and the defendants are not advised as to the precise amount of such power which was used directly in the operations of the said complainant; however, complainant largely benefited and profited through the purchases of power by its agent for the use of itself and the other Commonwealth and Southern companies, and has used tremendous quantities of the power purchased from the defendant Authority in its operations and still continues to do so.

During the present low-water season of the year 1936, during which a shortage of power has existed among the companies of the Commonwealth and Southern system, including this complainant, and when the demand of these companies for power from the Tennessee Valley Authority exceeded the amount that could be supplied by firm power generated at Wilson Dam before the construction of Norris and Wheeler Dams, this complainant, together with the other companies in the Commonwealth and Southern system, for its own benefit and for the purpose of meeting the shortage of power, purchased and used large quantities of power from [fol. 244] the Tennessee Valley Authority, as aforesaid, including power generated, and known by it to have been generated, at Norris and Wheeler Dams, and the increment of power made available, and known to have been made available, at Wilson Dam by the release of water by Norris Dam from the Norris Reservoir, and continues to do so.

The interchange agreement between the defendant Authority and the Alabama and Tennessee Electric Power Companies enabled, and continues to enable, the latter companies to supply the demands of said Mississippi Power Company, and said complainant has received, and continues to receive, the benefits of said interchange agreement.

As a part of the consideration in said contract of January 4, 1934, and the extension thereof, the defendant Authority

agreed to limit its sales of surplus power to particular specified territory, with certain exceptions hereinafter related more fully, and to refrain from making sales in other territory served by the Commonwealth and Southern companies, including this complainant; said agreement has been carried out to the detriment and injury of the Tennessee Valley Authority and to the benefit of this complainant, which has knowingly received, and is still knowingly receiving, the benefits of this agreement and compliance therewith by the defendant Authority.

The complainant, under the terms of a certain contract, dated January 4, 1934, between this complainant and other subsidiaries of the Commonwealth and Southern Corporation, on the one hand, and the defendant Authority on the other, sold and conveyed to the defendant Authority, for good and valuable consideration, to wit, the sum of $850,000, all of its electrical properties in the Counties of Pontotoc, Lee, Itawamba, Union, Benton, Tippah, Prentiss, Tishomingo, and Alcorn, in the State of Mississippi; this conveyance was made approximately two and one-half years [fol. 245] ago, on, to wit, June 1, 1934; this contract and the conveyance thereunder were made with full knowledge by this complainant that certain of said properties were to be used by the defendant Authority for facilitating the sale of electric energy; simultaneously with the sale of such facilities to the defendant Authority, the Authority sold and conveyed such part of the transferred distribution facilities as were in Alcorn County to the Alcorn County Electric Power Association for a substantial consideration, and such facilities have been owned and operated by said Association from June 1, 1934, until the present date, and from time to time the Authority has conveyed the remainder of such of the transferred facilities as were useful in the retail distribution of electricity to various municipalities and cooperative associations of the State of Mississippi for good and valuable considerations. Having accepted the benefits of said transaction, and having recognized the legal authority of the defendant Authority to purchase and utilize these properties for the sale of electric energy, this complainant cannot now question the legal power of the defendant Authority to generate, transmit and sell electric energy in the manner set out in said bill of complaint.

(3) Defendants allege as a separate defense that under the contract of January 4, 1934, hereinabove described, this

complainant conveyed to the defendant Authority all rights, powers, privileges, franchises, and contracts in connection with its business in the counties heretofore mentioned and, therefore, this complainant has no property rights in that territory providing a basis for suit to enjoin operations of the type described in the bill by the defendant Authority in that territory.

(4) The Authority is not now selling power, has not contracted to sell power, and has not authorized the sale of [fol. 246] power to any customer within the territory in which the complainant is in fact operating, nor is any wholesale purchaser of power from the Authority disposing of such power at retail within such operating territory of the said complainant.

(5) The Authority is not selling or under contract to sell electricity to any person, municipality, or corporation operating outside the territory covered by the contract of January 4, 1934, and within the claimed operating area of complainant as alleged in the bill, except that the defendant Authority is under contract to serve and is serving the Cities of Okolona in Chickasaw County, Amory in Monroe County, the Monroe County Electric Power Association, which operates in parts of Monroe and Lowndes County, and the Pontotoc Electric Power Association, which operates in Pontotoc County and a part of Calhoun County, all in the State of Mississippi. The City of Okolona and the City of Amory at the date of the respective contracts with the defendant Authority for the sale of power and at the date when service was commenced under said contract and for a long time prior thereto, and prior to the enactment of the Tennessee Valley Authority Act, owned and operated their own generating and distribution facilities and generated and distributed electric energy to all those desiring electric service in these municipalities; said municipalities were not and have never been customers of this complainant; the complainant does not have any franchises or electrical facilities for carrying on a utility business in said municipalities. Sales of electric energy by the Authority to these municipalities do not damage or threaten to damage the said complainant; and any alleged damage to said complainant is remote, indirect, speculative, conjectural and negligible.

The City of Okolona is engaged in serving rural customers outside its corporate limits, under authority of the

[fol. 247] laws of the State of Mississippi, with power purchased at wholesale from the Authority, but defendants are informed, believe and allege that none of said rural customers have heretofore received service from this complainant or are within service distance of the facilities of this complainant, nor has this complainant ever made electric service available to any of such customers; prior to the beginning of operations by the City of Okolona in the rural areas surrounding it, this complainant had not provided or made available electric service to the residents of said rural areas; for a long time prior to the offers of this city to serve rural customers in the area surrounding it, said complainant had failed to provide electric service either because it was not interested in providing such service, or because it was unprofitable to do so. This complainant will suffer no injury or damage from activities of this municipality in rendering service to these rural residents hitherto unserved by this complainant; and any alleged damage from sales by the municipality is indirect, remote, speculative, hypothetical, conjectural and negligible.

Any alleged damage because of this service to rural customers is due to acts of the city and not to the acts of the defendant Authority.

Defendant Authority has contracted with the Monroe County Electric Membership Corporation to sell electric energy at wholesale; said corporation is a non-profit corporation organized under the laws of the State of Mississippi for the benefit of its members; existing lines of this corporation are located in the claimed operating territory of this complainant; the Monroe County Corporation is serving approximately 318 rural residents off of approximately 65 miles of rural transmission line; and none of these rural residents served by the Monroe County Electric Membership Corporation were ever served by com- [fol. 248] plainant but constitute new and additional customers not previously enjoying electric service.

The Pontotoc County Electric Power Association, which purchases all of its electricity requirements from the Authority, has constructed a line from Pontotoc in Pontotoc County to Bruce in Calhoun County, and is serving customers along the said transmission line and in the said City of Bruce. The distribution system in the City of Bruce was constructed, owned and operated until on or

about February 12, 1936, by the E. L. Bruce Lumber Company, and on that date said property was purchased, and is now operated, by the Pontotoc County Electric Power Association, and the Mississippi Power Company is not now operating, nor has it ever operated in the portion of Calhoun County in which the said City of Bruce is located, nor along the route of the transmission line from Pontotoc to Bruce, nor has it ever owned any electrical facilities in the vicinity of said line or of the Bruce distribution system, except the facilities in Pontotoc County which are not alleged by the bill to be within the operating territory of the said complainant. Prior to the beginning of rural electrification operations by this corporation, this complainant did not provide, and is not now providing, electric service to the residents of said rural areas. For a long time prior to the offer of said corporation to serve rural customers in this area, said complainant had failed and refused to provide electric service either because it was unprofitable or because the complainant was not interested in providing such service, notwithstanding the fact that there were frequent requests over a long period of years by residents of such areas for such service. This complainant will suffer no damage from activities of this corporation in rendering service to these rural customers hitherto unserved by the complainant; the percentage of rural electrification in the territory of this complainant prior to the creation of the defendant Tennessee Valley Authority was less than three [fol. 249] per cent; such rural service of complainant as was rendered was solely incidental to service of urban communities and consisted of tapping lines of low voltage primarily intended for service to urban consumers. Any alleged damage to said complainant from operations by this corporation is indirect, remote, speculative, conjectural and negligible. Any competition which may result in rural areas served by the Monroe or Pontotoc Associations is competition from these corporations and not from defendant Authority; if these corporations have served or do serve rural residents as customers which might otherwise some time in the future be served by the said complainant, the failure to obtain such potential customers will be due to the acts of these corporations and not to acts of the defendant Authority.

Service under said contracts with the Monroe County Association or the Pontotoc Association has been in full

compliance with the contract of January 4, 1934, between the complainant and defendant Authority; under the terms of that contract the Authority agreed for the duration of the contract not to sell electric energy in the territory generally served by this complainant and other members of the Commonwealth and Southern system, except that it was provided that the defendant Authority might sell electric energy in such territory up to a demand of 2500 kw; the sales of power in the area of complainant and other members of the Commonwealth and Southern system, exclusive of the areas in which the Commonwealth and Southern companies agreed to sell their electrical facilities to the defendant Authority, have not exceeded this limitation. The defendant Authority, by contract dated October 7, 1936, agreed to extend said contract of January 4, 1934, until February 3, 1937, and further agreed not to serve any customers of any of the Commonwealth and Southern [fol. 250] companies signatory to the contract of January 4, 1934, including the complainant, nor any customers in the area served by any of such companies (whether or not a customer of any of said companies, including the complainant) except to the extent of service aggregating not more than 4000 kw of demand, exclusive of the Monsanto Chemical Company; and this contract, which does not expire until February 3, 1937, in itself constitutes a complete and adequate protection to any right or interest which the complainant may have and is a bar to this suit.

(6) By the contract of January 4, 1934, and the extension thereof, the said complainant agreed to sales of power by the Authority, without limitation as to amount or location, to any municipality which was not on January 4, 1934, being served by power companies. The said Cities of Okolona and Amory were not served by complainant, and the said cities were not on January 4, 1934, or on any other date, customers of complainant, and the complainant cannot question the right of the Authority to sell power to the said cities.

(7) The Authority is not now serving, nor has it contracted to serve, any customers whatsoever, nor has it authorized service to customers in the operating territory of said complainant as described by the bill of complaint except as set out hereinabove, and that the possibility of future and hypothetical service to additional customers, or

damage to the complainant resulting from such possible service, is remote, indirect, speculative, conjectural and negligible.

(8) This complainant is not affected or injured by sales of power by the Authority outside the complainant's territory, and, therefore, this complainant cannot complain of said sales of power by the Authority or other acts related thereto.

[fol. 251] D. As to complainant Tennessee Public Service Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) The only franchise granted to this complainant by the City of Knoxville for the operation of an electric system in the municipal limits of the City of Knoxville is an indeterminate franchise; and defendants are advised that such franchises are invalid as perpetuities within the meaning of the prohibition of the constitution of the State of Tennessee; that, therefore, complainant is operating within said City of Knoxville without any valid franchise and solely on sufferance of the city; defendants further allege upon information and belief that all or most of the other municipal franchises of the said complainant are likewise indeterminate and void.

(3) This complainant cannot maintain this present suit upon the allegations set forth in the bill of complaint for the reason that this suit, insofar as this complainant is concerned, is barred by the pendency of prior actions involving the same parties and identical issues of fact and law. More particularly, defendants allege that there is now pending, and that there was pending at the date of the filing of the bill of complaint in this cause, an action styled "*Tennessee Public Service Co.* v. *Ickes, Tennessee Valley Authority, et al.,*" in the Supreme Court of the District of Columbia; that this suit, by number Equity No. 60,883, was filed on March 7, 1936, in that court, and presents a general attack upon the constitutionality of the Tennessee Valley Authority Act and a so-called power program alleged to have been promulgated thereunder, which program is described substantially in the terms of the bill of complaint

[fol. 252] in this cause. The bill of complaint in this pending action seeks temporary and permanent injunctions restraining Administrator Ickes from extending a loan and grant under Title II of the National Industrial Recovery Act (ch. 90, 48 Stat. 200) to the City of Knoxville for the construction of a municipal power system, and seeks to restrain the defendants in this action from offering or contracting to furnish electricity to said city; this suit attacks specifically the contract between the defendant Authority and the city referred to in the bill of complaint in the present cause; service was had on defendant Authority May 7, 1936; a temporary restraining order was issued on the date of the filing of the bill and was replaced on April 3, 1936, by a preliminary injunction. This action is now pending in the Supreme Court of the District of Columbia, and the pendency of this action at the date of the filing of the bill of complaint in the present cause constitutes a full and complete bar to the maintenance of the present suit. Attached hereto and hereby made a part hereof as Exhibit "E" is a true and correct copy of the bill of complaint in this action just described.

There is also pending an action styled "*Tennessee Public Service Co.* v. *City of Knoxville*," which action, by number Cause No. 26956, was filed on April 13, 1936, in the Chancery Court of Knox County. The bill of complaint in the aforementioned case does not join Tennessee Valley Authority as a party, but attacks the constitutionality of the Tennessee Valley Authority Act and seeks to enjoin temporarily and permanently the construction by the City of Knoxville of a proposed municipal distribution system or execution or consummation by the city of the contract with the defendant Authority for the purchase of electricity referred to in the bill of complaint in the pending cause. This [fol. 253] action presents a general attack upon the constitutionality of the Tennessee Valley Authority Act and a so-called power program alleged to have been promulgated thereunder, which program is described substantially in the terms of the bill of complaint in this cause.

(4) The Authority is not selling or under contract to sell in or to any municipality in which this complaint is selling or distributing electricity except that defendants admit that the Authority has contracted to sell electricity to the City of Knoxville, but the defendants further allege that it has

no transmission line at or near the said city, is not in a position to serve the said city and is under no obligation to construct a line for service to the city until the city is free to construct a municipal distribution system for the disposition of the power which the Authority has agreed to sell the said city; the city is now enjoined from building a municipal distribution system or purchasing said power, by an injunction issued in the Chancery Court of Knox County, Tennessee, in the case above described, and it will be approximately eight months from dissolution of said injunction before transmission facilities for service to Knoxville can be available; and any alleged damage to this complainant from the Authority's future and hypothetical sales of electricity is remote, indirect, speculative, conjectural and negligible.

The resale by the City of Knoxville of energy purchased by it from the Authority does not constitute competition by the Authority with the complainant or cause any legal injury to or afford any ground of complaint to said complainant.

(5) The only other customer which the defendant Authority is serving or has contracted to serve with surplus power in the alleged operating area of the said complainant is Volunteer Portland Cement Company. The Volunteer [fol. 254] Portland Cement Company is an industrial customer located in Knox County outside the City of Knoxville, which is now purchasing its power from the said complainant under a contract which expires April 15, 1937; the contract between defendant Authority and the said Volunteer Portland Cement Company provides that service shall begin on April 15, 1937; defendants have not solicited or in any way attempted to induce said contract with the Volunteer Portland Cement Company, but on the contrary negotiations with the company were undertaken at the express request and solicitation of the said company and on its sole initiative; the Authority proposes to begin service to the said company not earlier than April 15, 1937, as provided by the contract and will not have available the facilities necessary for service to said company prior to that date. The plant of this customer will be interconnected with Wilson Dam. Its maximum demand is 3000 kw. If the complainant has any remedy, it has a complete and

adequate remedy at law, since any possible future damages will be readily calculable.

Defendants further allege upon information and belief that the complainant is serving said Volunteer Portland Cement Company without certificate of convenience and necessity, and that complainant therefore has no standing to challenge the right of the defendant Authority to sell or of said Volunteer Portland Cement Company to buy surplus power of the Authority.

(6) Defendant Authority is not now serving nor has it contracted to serve any customers whatsoever within the operating area of complainant except as set out hereinabove, and the possibility of future and hypothetical service to other customers in the alleged area of the complainant, or of injury to the complainant resulting from such possible service, is remote, indirect, speculative, conjectural, [fol. 255] and negligible.

(7) This complainant is not affected or injured by sales of power by the Authority outside the complainant's territory, and therefore cannot complain of such sales of power by the Authority or acts related thereto.

E. As to the complainant Kentucky-Tennessee Light and Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) This complainant cannot maintain this suit upon the allegations set forth in the bill of complaint for the reason that this suit, insofar as this complainant is concerned, is barred by the pendency of a prior action involving the same parties and identical issues of fact and law. More particularly, the defendants allege that there is now pending, and that there was pending at the date of the filing of the bill of complaint in this cause, a suit entitled "*Kentucky-Tennessee Light and Power Co.* v. *City of Paris, Tennessee Valley Authority, Ickes, et al.,*" Equity No. 4031. This bill was instituted in the Chancery Court of Henry County, Tennessee, December 3, 1935, requesting temporary and permanent injunctions against the defendants doing any acts in furtherance of an alleged agreement for the making of a loan or grant by the PWA to the City of Paris for

construction of a municipal distribution system, attacking the constitutionality of the Tennessee Valley Authority Act, and requesting an injunction prohibiting the purchase of electricity by the city from the Authority. Service was had on the Authority pursuant to summons on December 13, [fol. 256] 1935. The city filed a plea in abatement and a demurrer on January 30, 1936, and the Authority filed an answer on February 3, 1936. On February 12, 1936, the complainant filed a reply to the plea in abatement of the city. The case is now pending. Attached hereto, marked Exhibit "F", and made a part hereof, is a copy of the bill of complaint in said action.

(3) The Authority is not selling, or under contract to sell, electricity to any municipality in which this complainant is selling or distributing electricity.

The Authority is not selling, or under contract to sell, electricity in or to any municipality in the alleged operating area of complainant as described by the bill, except that the Authority has contracted to sell electricity at wholesale to the City of Milan, in Gibson County, Tennessee. At and prior to the date of contract with the defendant Authority and the inauguration of service thereunder, the City of Milan generated and distributed electric energy for and in said city; the City of Milan has for a long time prior to the enactment of the Tennessee Valley Authority Act owned and operated its generating and distribution system, and has never been a customer of the complainant; the City of Milan is not selling electricity outside its corporate limits; the said complainant does not have, and never has had, any franchise to serve, and has not served, within the corporate limits of the City of Milan; there is no competition between the said city and the said complainant; and the sale of electric energy by the Authority to the City of Milan does not, and does not threaten to, damage the said complainant; and any alleged damage to said complainant because of said contract and sales thereunder is remote, indirect, speculative, conjectural and negligible.

[fol. 257] (4) The only other customer whom the Authority is serving, or has contracted to serve, in whole or in part within the alleged operating area of the said complainant, is the Gibson County Electric Membership Corporation; the said corporation is serving approximately 347 rural residents off of its lines; none of these rural residents was ever

served by complainant but such rural residents constitute new and additional customers not previously enjoying electric service. Prior to the beginning of rural electrification operations by said corporation, this complainant did not conduct or make available, and is not now conducting or making available, electric service to the residents of said rural areas; for a long time prior to the efforts of said corporation to serve rural customers in this area, said complainant had failed and refused to provide electric service, either because it was unprofitable or because this complainant was not interested in providing such service, notwithstanding that there were frequent requests over a long period of years by residents of such areas for such service when there was no other agency but complainant to which the residents of said areas could make application for electric service. The percentage of rural electrification in the territory of this complainant prior to the creation of the Tennessee Valley Authority was less than five per centum, and such rural service as was being rendered was incidental to service to urban communities and consisted of tapping lines of low voltage primarily intended for service to urban communities. This complainant will suffer no injury or damage from activities of such corporation in rendering service to these rural customers; and any alleged damage to said complainant from sales by this corporation [fol. 258] is direct, remote, speculative, conjectural and negligible.

Any competition which may result from the said Gibson County Corporation is competition from that corporation and not from the defendant Authority. If this corporation has served or will serve rural residents as customers which might otherwise sometime in the future be served by said complainant, the failure to obtain such potential customers will be due to acts of this corporation and not to the defendant Authority.

(5) Defendant Authority is not now serving, nor has it contracted to serve, any customers whatsoever in the alleged operating area of complainant except as set out hereinabove, and the possibility of such future and hypothetical service to additional customers, in the alleged territory of the complainant, or of injury to the complainant resulting

from such possible service, is remote, indirect, speculative, conjectural and negligible.

(6) This complainant is not affected or injured by sales of power by the Authority or related acts outside the complainant's territory, and therefore cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 259] F. As to the Complainant Birmingham Electric Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) Defendants further allege on information and belief that this complainant does not have a franchise to operate an electric system in the City of Bessemer, Alabama, and is operating within the limits of said city only at the sufferance and pleasure of the said City of Bessemer.

(3) This complainant cannot maintain this present suit upon the allegations set forth in the bill of complaint for the reason that this suit, insofar as this complainant is concerned, is barred by the pendency of prior actions involving the same parties and identical issues of fact and law. More particularly, the defendants allege that there are now pending and that there were pending at the date of the filing of the bill of complaint in this cause two actions styled, "*Birmingham Electric Co.* v. *Ickes, Tennessee Valley Authority, et al.,*" in the Supreme Court of the District of Columbia; that these suits, by number Equity No. 59,510 and Equity No. 59,500, were filed on September 17, 1935, in that court, and present a general attack upon the constitutionality of the Tennessee Valley Authority Act and a so-called power program alleged to be promulgated thereunder, which program is described substantially in the terms of the bill of complaint in this cause; that these bills of complaint in these pending actions seek temporary and permanent injunctions restraining Administrator Ickes from extending a loan and grant under Title II of the National Industrial Recovery Act (ch. 90, 48 Stat. 200) to the Cities of Bessemer and [fol. 260] Tarrant City for the construction of municipal power systems, and seek to restrain the defendants in this action from offering or contracting to furnish electricity to said cities; and that these suits attack specifically certain

power contracts which it is alleged the Authority and the respective defendant municipalities propose to enter into, which contracts are alleged in terms substantially similar to those used in the present bill in describing alleged power contracts between the Authority and the Cities of Bessemer and Tarrant City; that service in both actions was first had on defendants through service on the defendant Lilienthal on December 7, 1935; that preliminary injunctions as prayed were granted in both actions on January 7, 1936, following the prior granting of temporary restraining orders on October 30, 1935; that the Supreme Court of the District of Columbia indefinitely extended the times to answer in both actions at the same time the preliminary injunctions were granted; that both actions are now pending in the Supreme Court of the District of Columbia and constitute a full and complete bar to the maintenance of the present suit. Attached hereto, marked Exhibits "G" and "H," and made a part hereof, are true and accurate copies of the bills of complaint in the actions hereinabove described.

(4) Defendant Authority is not now serving, nor has it contracted to serve, any customers whatsoever within the operating territory of complainant as described by the bill, and the possibility of future and hypothetical service to additional customers in the alleged area of the complainant, or of injury to the complainant resulting from such possible service, is remote, indirect, speculative, conjectural, and negligible.

[fol. 261] Defendants deny that the Authority is under contract to sell electricity to the Cities of Bessemer and Tarrant City, as alleged in subsection (23) of Section XVII of the bill of complaint. There is no physical transmission line connection between properties belonging to the Tennessee Valley Authority and these cities; the construction of any such connecting line has not been authorized by the defendant Authority.

(5) This complainant is not affected or injured by sales of power by the Authority or related acts outside the complainant's territory and therefore cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 262] G. As to the complainant Memphis Power & Light Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) This complainant cannot maintain this suit upon the allegations set forth in the fill of complaint for the reason that this suit, insofar as this complainant is concerned, is barred by the pendency of a prior action involving the same parties and identical issues of fact and law. More particularly, defendants allege that there is now pending, and that there was pending at the date of the filing of the bill of complaint in this cause, an action styled *"Memphis Power & Light Co.* v. *Ickes, Tennessee Valley Authority, et al.,"* in the Supreme Court of the District of Columbia; that this suit, by number Equity No. 61,114, was filed on April 4, 1936, in that court, and presents a general attack upon the constitutionality of the Tennessee Valley Authority Act and a so-called power program alleged to have been promulgated thereunder, which program is described substantially in the terms of the bill of complaint in this cause. The bill of complaint in this pending action seeks temporary and permanent injunctions restraining Administrator Ickes from extending a loan and grant under Title II of the National Industrial Recovery Act (ch. 90, 48 Stat. 200) to the City of Memphis for the construction of a municipal power system, and seeks to restrain the defendants in this action from offering or contracting to furnish electricity to said city. This suit attacks specifically the contract between the defendant Authority and the city, referred to in the bill of complaint in the present cause. Service was had on the Authority May 6, 1936; a temporary injunction was issued on April 9, 1936, replacing a temporary restraining order made upon [fol. 263] the filing of the bill. This action is now pending in the Supreme Court of the District of Columbia. The pendency of this action at the date of the filing of the bill of complaint in the present cause constitutes a full and complete bar to the maintenance of the present suit. Attached hereto and hereby made a part hereof as Exhibit "I" is a true and correct copy of the bill of complaint in this action just described.

(3) The Authority is not selling or under contract to sell to any municipality in or to which this complainant is selling or distributing electricity except that the defendants admit that the Authority has contracted to sell electricity to the City of Memphis. Defendants further allege that the Au-

thority has no transmission line at or near the said city, but admit that it is planned to construct a high tension transmission line connecting Pickwick Dam and the City of Memphis and, further, allege that construction of said transmission line has been initiated; that said line and the necessary substation structures will not be completed for at least ten months from the date of this answer.

The resale by the City of Memphis of energy purchased by it from the Authority does not constitute competition by the Authority with the complainant or cause any legal injury to or afford any ground of complaint to said complainant.

(4) The Authority has authorized the execution of a contract with the Southwest Tennessee Electric Membership Corporation to sell electric energy at wholesale; said corporation is a cooperative membership corporation organized under the laws of the State of Tennessee to do business for the benefit of its members only and not for profit; lines of this corporation will in the near future be constructed in territory described by the bill of complaint as operating ter- [fol. 264] ritory of this complainant so far as the extent of such territory can be determined from the allegations thereof; these lines will serve only rural residents not now, or in the past, served by this complainant. Prior to the beginning of rural electrification operations by this corporation this complainant did not provide and is not now providing or making available, electric service to the residents of said rural areas; for a long time prior to the efforts of said Southwest Tennessee Electric Membership Corporation to serve rural customers in this area, said complainant had failed and refused to provide electric service either because it was unprofitable or because the complainant was not interested in providing such service, notwithstanding frequent requests over a long period of years by residents of such areas for such service when there was no other agency selling electricity to which such residents could make application.

The percentage of rural electrification in the territory of this complainant prior to the creation of the defendant Tennessee Valley Authority was less than five per centum; such rural service as was rendered was solely incidental to service to urban communities and consisted of tapping

lines of low voltage primarily intended for service to rural communities. This complainant will suffer no injury or damage from activities of this corporation in rendering service to these rural customers hitherto unserved by the complainant; any alleged damage to said complainant is indirect, remote, speculative, conjectural, and negligible. Any competition which complainants may meet in the future in rural areas will be competition from this corporation and not from the defendant Authority; if this corporation has served or will serve rural residents as customers which might otherwise sometime in the future be served by said complainant, the failure to obtain such potential customers [fol. 265] will be due to acts of this corporation and not to acts of the defendant Authority.

(5) Defendant Authority is not now serving nor has it contracted to serve any customers whatsoever within the operating area of complainant as described by the bill, so far as the defendants can determine the extent of that territory from the allegations thereof, except as set out hereinabove, and the possibility of future and hypothetical service to other customers in the alleged area of the complainant or of injury to the complainant resulting from such possible service is remote, indirect, speculative, conjectural, and negligible, and does not constitute a basis for maintaining this action on behalf of this complainant.

(6) This complainant is not affected or injured by sales of power by the Authority or related acts outside complainant's territory, and therefore cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 266] H. As to the complainant Georgia Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) Defendants allege that said complainant is estopped to challenge the validity of the Tennessee Valley Authority Act or the acts of the defendants pursuant thereto for the reason that the said complainant has voluntarily accepted and received benefits under the Act and the acts of the defendants pursuant thereto, all in the respects challenged in the bill. In particular, defendants allege that this com-

plainant is a party to a contract with the defendant Authority dated January 4, 1934, which contract has hereinabove been more particularly described and which contract has been extended by agreement dated October 7, 1936, for three months from November 3, 1936, until February 3, 1937. The complainant is a subsidiary of the Commonwealth and Southern Corporation and the Tennessee Electric Power Company Alabama Power Company and Mississippi Power Company all of whom are subsidiaries of the Commonwealth and Southern Corporation were also parties to said contract and extension thereof; complainant generates only a part of its electricity and purchases most of the remainder from the affiliated companies and the defendant Authority; under said contract and the extension thereof the defendant Authority agreed to sell large quantities of electricity to the various Commonwealth and Southern subsidiaries who were parties to said contract; the systems of all the said subsidiary companies are interconnected and the purchase of electricity by any of the said companies operates to the benefit of all the said companies in that a larger amount of electricity is available in the in- [fol. 267] terconnected systems of such companies for distribution among them as their requirements may demand; in recognition of these joint benefits from the purchase of power from the Authority under said contract each of said subsidiaries of the Commonwealth and Southern Corporation including the complainant agreed by such contract to be jointly and severally liable for all power purchased from the Authority under said contract and all of the said companies appointed a single joint agent to whom power should be billed on behalf of all of said companies; and under said contract the following amounts of power had been purchased by said companies acting through said agent, for all of which the said complainant is jointly and severally liable:

Period	Net Energy Delivered
January 4, 1934, to June 30, 1934	147,200,293 kwh.
Fiscal year ending June 30, 1935	2,902,620 kwh.
Fiscal year ending June 30, 1936	296,038,486 kwh.
July 1, 1936, through September 30, 1936.	262,884,683 kwh.

The said purchases were commingled with the other power produced or purchased by the said companies. The defend-

ants are not advised as to the precise amount of such power which was used directly in the operations of the said complainant; however, complainant largely benefited and profited through the purchases of such power by its agent for the use of itself and the other Commonwealth and Southern companies, and has used large quantities of the power purchased from the defendant Authority in its operations and still continues to do so.

During the present low-water season of the year 1936, during which a shortage of power has existed among the companies of the Commonwealth and Southern system, including this complainant, and when the demand of these companies for power from the Tennessee Valley Authority [fol. 268] has exceeded the amount that could be supplied by firm power generated at Wilson Dam before the construction of Norris and Wheeler Dams, this complainant, together with the other companies in the Commonwealth and Southern system, for its own benefit and for the purpose of meeting the shortage of power, has purchased and used large quantities of power from the Tennessee Valley Authority, as aforesaid, including power generated, and known by it to have been generated, at Norris and Wheeler Dams, and the increment of power made available, and known to have been made available, at Wilson Dam by the release of water by Norris Dam from the Norris Reservoir, and still continues to do so.

The interchange agreement between the defendant Authority and the Alabama and Tennessee Electric Power Companies enabled, and continues to enable, the latter companies to supply the needs of said Georgia Power Company, and said complainant has knowingly received and continues to receive the benefits of said interchange agreement.

As a part of the consideration in said contract of January 4, 1934, and the extension thereof, the defendant Authority agreed to limit its sales of surplus power to particular specified territory, with certain exceptions hereinafter related more fully, and to refrain from making sales in other territory served by the Commonwealth and Southern companies, including this complainant; said agreement has been carried out to the detriment and injury of the Tennessee Valley Authority and to the benefit of this complainant, which has knowingly received, and is still know-

ingly receiving, the benefits of this agreement and compliance therewith by the defendant Authority.

(3) Heretofore, and before the complainant Georgia Power Company filed the present bill in the Chancery [fol. 269] Court of Knox County, to wit, on May 1, 1934, the Georgia Power Company brought a suit against the defendants in the Superior Court of Catoosa County, Georgia, which suit was removed to the Federal Court for the Northern District of Georgia on motion of the defendants; and the said suit was for the same matter and demand, and to the same effect and for like relief as the complainant does by its present bill, to a large extent, demand and set forth; that is to say, the complainant in its said former suit alleged that:

The defendant Tennessee Valley Authority was engaged in the construction of certain transmission and rural distribution lines in northern Georgia and was negotiating to induce certain municipalities in northern Georgia which were being served by the complainant to enter into contracts for the purchase of electric energy from the Authority; the defendant Tennessee Valley Authority had executed a contract with certain other defendants, pursuant to which these other defendants were to cause a corporation to be created known as the North Georgia Electric Membership Corporation, to which the Authority would transfer the lines under construction under a long-time purchase contract; the contract between the Authority and the North Georgia Electric Membership Corporation conferred upon the Authority control of the resale and financial policies of the membership corporation; the power to be disposed of by the Authority in northern Georgia was not surplus power produced at Wilson Dam, or any other dam under the control and possession of the Authority, but was to be power generated by and purchased from the Tennessee Electric Power Company; the acts of the Authority complained of were not intended for the purpose of finding a market for the disposition of a legitimate surplus of power, but the sole purpose of the Authority was to influence and compete with the complainant as part of a general program [fol. 270] to regulate the rates of private utilities in the State of Georgia in disregard of the Georgia Public Service Commission; the Authority was endeavoring to solicit existing customers of the complainant in northern Georgia to

purchase electric energy from the Authority, and the Authority was making fraudulent and false representations as to the character of the complainant's service to this end.

The complainant prayed that all of the acts of the defendants complained of be adjudged illegal, and that the court issue an order enjoining such acts.

The defendant Tennessee Valley Authority filed an answer denying the material allegations of complainant's bill, and in particular denying that the Authority had ever solicited or intended to solicit or induce the customers of the Georgia Power Company, or any one, to purchase electric energy from the Authority, but that in every instance contracts of the Authority for the sale of electric energy had been made solely upon the request and initiative of the purchasers. The Authority admitted that it was engaged in constructing certain rural transmission lines in northern Georgia and entered into negotiations with certain municipalities in northern Georgia for the possible sale of the Authority's surplus power to such municipalities, but that such negotiations were solely at the initiative and request of the municipalities. The Authority further alleged that the purpose of the Authority in constructing or proposing to construct any line in northern Georgia was to obtain a market for the disposition of available surplus power at Wilson Dam; that the power to be disposed of over the lines under construction was to be obtained by a valid interchange agreement with the Tennessee Electric Power Company pursuant to which the latter would deliver electric [fol. 271] energy to the customers of the Authority in exchange for energy supplied to it by the Authority at Wilson Dam; that the Authority was constructing certain dams on the Tennessee River and its tributaries, to wit: Pickwick, Wheeler, and Chickamauga Dams on the Tennessee River and Norris Dam on the Clinch River; that the Authority contemplates the construction of a transmission line to connect the lines being constructed in northern Georgia with a substation at Chicamauga Dam, and that some time in the future the lines being constructed in northern Georgia would probably be served with electric energy produced at the dams under construction, as well as by electric energy generated at Wilson Dam.

On complainant's motion for a preliminary injunction, Circuit Judge Sibley, sitting as district judge, held that the construction of the rural lines complained of was within

the powers conferred upon the Authority by the Tennessee Valley Authority Act and the Constitution of the United States, and that the question of the validity of the resale rate provisions of the contract between the Authority and the North Georgia Electric Membership Corporation could not be raised until such time as the Georgia Public Service Commission should endeavor to regulate the resale rates for electric service to be disposed of by the lines under construction.

The order entered by the said court, and the pleadings therein, are attached hereto marked Exhibit "J" and made a part hereof. The opinion of Judge Sibley is published in Georgia Power Co. v. Tennessee Valley Authority, et al., 14 F. Supp. 675 (D. C. N. D. Ga., May 28, 1936).

Notwithstanding the decision of Judge Sibley in said former suit, the same allegations, issues and demands are made and set forth in the present bill of complaint by and on behalf of said complainant Georgia Power Company. [fol. 272] Therefore, this defendant pleads said former suit, proceedings, and adjudication in bar of the averments and claims advanced by the complainant Georgia Power Company in the present bill to the effect that the Authority's construction and operation of lines for the service of rural areas in northern Georgia is invalid or that the validity of the resale rate provisions of the Authority's contracts for the sale of electric energy in northern Georgia can be challenged by complainant, or that the complainant Georgia Power Company has any standing to question the validity of any alleged plan or program had or undertaken under the provisions of the Tennessee Valley Authority Act or any alleged plan or program of the defendants as set out in the bill of complaint in the case above described.

(4) This complainant cannot maintain this present suit upon the allegations set forth in the bill of complaint for the reason that this suit is barred by the pendency of the action described above in paragraph (3) on the date of the filing of the bill of complaint in the present cause, which action involves the same parties and identical issues of fact and law.

(5) The defendant Authority has contracted with the North Georgia Electric Membership Corporation to sell electric energy at wholesale; said corporation is a cooperative, organized and doing business under the laws of the

State of Georgia for the benefit of its members only, and not for profit. The existing lines of this corporation are located in the alleged territory of this complainant. The North Georgia Corporation is serving approximately 900 rural residents from 147 miles of rural transmission lines now completed, and will serve more rural customers in the future on these lines and approximately 172 miles of addi- [fol. 273] tional rural transmission lines which are now under construction; the said corporation is not serving electricity purchased from the Authority to any customers who are now or who have been customers of the said complainant, and the service furnished by this North Georgia Corporation constitutes new and additional service to rural residents not previously served. Prior to the beginning of operations by this North Georgia Corporation, this complainant had not provided or made available electric service to the residents of rural areas in which the North Georgia Corporation is operating; said rural areas were without electric service prior to the initiation of operations by said corporation, and for a long time prior to the efforts of said corporation said complainant failed to provide electric service, either because it was unprofitable or because complainant was not interested in providing such a service, notwithstanding frequent requests over a long period of years by residents for such service when there was no other agency selling electric energy to which residents could make application. The percentage of rural electrification in the territory of complainant prior to the creation of the defendant Tennessee Valley Authority was less than five per centum; such rural service as was rendered was almost wholly incidental to service to urban communities and consisted of tapping lines of low voltage primarily intended for service to urban communities. This complainant will suffer no damage from activities of this North Georgia Corporation in rendering service to these rural residents hitherto unserved by the complainant, and any alleged damage to this complainant from operations of this corporation or from the sale of power by the Authority at wholesale to said corporation is indirect, remote, speculative, conjectural and negligible.

[fol. 274] Defendants are informed and believe and allege that the complainant made no effort to sell electric power to the rural residents now served by this North Georgia Corporation or in the vicinity of the lines of this corpora-

tion, constructed or under construction, until this complainant learned of the definite steps taken by this corporation to furnish the service now undertaken or contemplated; not until this complainant knew that surveys were undertaken and substantial sums of money expended by this corporation or the organizers thereof in conducting surveys or in preparing for construction or operations did this complainant show any interest or desire to serve the customers now served by this corporation, or customers in the vicinity of the lines of this corporation constructed or under construction, or take any steps to supply the demands for electricity of the customers in areas served by this corporation; in all of the areas which said corporation is now serving or building lines to service, the residents had for many years been attempting without success to make arrangements for service from the complainant; any losses which complainant may suffer or acts which complainant may have done in serving, attempting to serve, or making service available to customers in areas served by this corporation were done or incurred and are due to the abandonment of its policy of refusing rural service except as an incident to urban service and to the construction of new rural transmission lines without regard to the profitableness or feasibility thereof, but solely for the purpose of handicapping, obstructing, and embarrassing the operations of the North Georgia Corporation; any damage which complainant might suffer from operations of this corporation or sales of electric energy by the defendant Authority to this corporation or any other acts of Defendant Authority [fol. 275] are due to its own acts and provide no basis for this action.

Competition which may result in rural areas now or in the future served by this corporation is competition from this corporation and not from the defendant Authority; if this corporation has served, or does serve in the future, additional rural residents as customers which might otherwise be some time served by said complainant, the failure to obtain such customers will be due to acts of this corporation and not to acts of the defendant Authority.

(6) Service under said contract with the North Georgia Electric Membership Corporation has been in full compliance with the contract of January 4, 1934, between the complainant and defendant Authority; under the terms of

that contract the Authority agreed for the duration of the contract not to sell electric energy in the territory generally served by this complainant and other members of the commonwealth and Southern system, except that it was provided that the defendant Authority might sell electric energy in the territory served by this complainant and the other members of the Commonwealth and Southern system up to a demand of 2500 kw; all of the sales of power in the area of complainant and other members of the Commonwealth and Southern system exclusive of the areas in which the Commonwealth and Southern companies agreed to sell their electrical facilities to the defendant Authority, have not exceeded this limitation. Defendant Authority, by contract dated October 7, 1936, agreed to extend said contract of January 4, 1934, until February 3, 1937, and further agreed not to serve any customers of any of the Commonwealth and Southern companies signatory to the contract of January 4, 1934, including the complainant, nor any customer in the area served by any of such companies (whether or not a customer of any of said companies, in- [fol. 276] cluding the complainant) except to the extent of service aggregating not more than 4000 kw. of demand, exclusive of the Monsanto Chemical Company; and this contract, which does not expire until February 3, 1937, in itself constitutes a complete and adequate protection to any right or interest which the complainant may have and is a bar to this suit.

(7) Defendant Authority is not now serving nor has it contracted to serve any customers in the alleged operating area of complainant, except as set out hereinabove, and the possibility of such future hypothetical service to additional customers in the alleged territory of the complainant or of injury to the complainant resulting from such possible service is remote, indirect, speculative, hypothetical and negligible.

While the Authority has received an inquiry from the City of Dalton with regard to the possible purchase of power by the city from the Authority for the operation of the city's municipally-owned electric distribution system, and representatives of the Authority have conferred with representatives of the city with regard thereto, such inquiry was in no way stimulated or solicited by the defendants or any of them, but was the wholly voluntary act of

the said city and such inquiry and discussions have not resulted in any contract for the sale of electric energy to the city nor has such sale been authorized by the defendant Authority; the Authority does not have transmission facilities at or near the said city which could be used for service to said City of Dalton and no such facilities are under construction or authorized by defendant Authority; and the possibility of damage to this complainant through the possible sale of power under any hypothetical contract is so remote that said negotiations do not present a subject for [fol. 277] controversy between this complainant and the defendants.

(8) This complainant is not affected or injured by sales of power by the Authority or related acts outside the complainant's territory and therefore cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 278] I. As to the complainant Alabama Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) The said complainant is a party to a contract with the defendant Tennessee Valley Authority dated January 4, 1934, the duration of which contract has been extended until February 3, 1937, by an agreement dated October 7, 1936. Pursuant to the terms of said contract of January 4, 1934, said complainant agreed to sell and convey and has sold and conveyed to the Tennessee Valley Authority for good and valuable considerations, to wit, the sum of $1,150,000.00 and other good and valuable considerations, all of the said complainant's low tension transmission lines (44 kv or lower), and all of its rural transmission lines and substations in the Counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan (exclusive of the Hulaco area), the north half of Franklin (including the Town of Red Bay), and the northern part of Cullman, together with all franchises, rights, powers, and privileges to use the properties sold and conveyed for the sale of electric energy in the areas served by the said properties, and together with all contracts for the sale of power served by said properties. The said complainant further agreed under the said

contract not to sell electricity in the areas served by the properties sold and conveyed to the Authority or in any area in which the said complainant did not own facilities for the generation, transmission, and distribution of electric energy at the date of the execution of said contract.

In the contract of January 4, 1934, this complainant did covenant and agree that after April 4, 1934, the Authority should have the right to sell electric energy to the respec- [fol. 279] tive municipalities in the above described counties, and parts thereof, for use and for resale by said municipalities. The Authority has in fact proceeded to contract to serve certain municipalities in these counties, but it is presently serving under such contracts only the Cities of Athens, Florence and Muscle Shoals, Alabama. Each of said municipalities now buying electricity at wholesale from defendant Authority owns its own distribution system and distributes this electricity, and this complainant has no franchise and owns no distribution system in said municipalities. Said municipalities are not selling any of the electricity purchased from the defendant Authority under such contracts in competition with said complainant. Defendant Authority has been selling electricity under said contracts to the City of Athens, Alabama, for more than two years, and to the City of Muscle Shoals, Alabama, for more than three years. The complainant does not now have and has not had a franchise to do business within the limits of the City of Muscle Shoals, Alabama, nor has it ever sold power within said city either at wholesale or retail. The said complainant has never had a franchise to sell or sold power generally within the City of Athens, Alabama, and its franchise rights, if any, to sell power to certain industrial customers within the limits of Athens, Alabama, were conveyed to the defendant Authority under the contract of January 4, 1934, which contract was approved as to the said complainant in the case of Ashwander v. Tennessee Valley Authority hereinabove referred to. Pursuant to the provisions of the contract of January 4, 1934, in which the said complainant agreed to dispose of its municipal distribution properties and franchises and other rights appertaining thereto in said cities in northern Alabama to the respective municipalities, this complainant, on July 15, 1936, sold and conveyed its electric distribution properties to the City of Florence, Alabama, which has owned and [fol. 280] operated said properties since said date. The

said complainant does not now nor has it for many years had a franchise to do business within the limits of Florence, Alabama. Under said contract of January 4, 1934, the said complainant agreed not to sell electricity in the cities of northern Alabama above described in such portions of said area in which it disposed of its urban and rural transmission lines, and under said contract the said complainant cannot engage in the sale of electricity in the City of Florence, Alabama, without violating the covenants of the said contract.

The defendant Authority is also selling electricity to the City of Sheffield, Alabama, which is located in one of the counties referred to in the contract of January 4, 1934. Said City of Sheffield is using power purchased from defendant Authority only for municipal purposes such as street lighting and similar municipal functions. Said City of Sheffield is not reselling any of the power purchased from defendant Authority in competition with said complainant. Said complainant is and has been for many years without a franchise to sell electricity within the City of Sheffield. Complainant agreed in the contract of January 4, 1934, that the Authority shall have the right to serve the City of Sheffield as hereinabove more particularly set forth.

All existing contracts to sell electricity between the Authority and municipalities in Alabama or alleged territory of the complainant are with municipalities located in said counties referred to in the contract of January 4, 1934.

By the said contract of January 4, 1934, the said complainant agreed to sell and assign not only the transmission lines and rights hereinabove referred to, but also certain contracts with industrial customers directly served from substations conveyed. The Authority is now contracting with and/or selling electricity only to said in- [fol. 281] dustrial customers. The only industrial customers to whom the Authority is selling electricity, or with whom the Authority has contracted to sell electricity in Alabama or territory of this complainant, as described in the bill of complaint, are the industrial customers served from said substations and whose contracts were sold and assigned by said complainant. The covenant of the said contract of January 4, 1934, obligating the said complainant not to sell electricity in such portions of the counties

in Alabama described in said contract of January 4, 1934, in which it sold its electrical facilities, applies to the said industrial customers and the complainant cannot therefore sell electricity to such customers except in violation of the contract of January 4, 1934.

(3) The Authority is not now serving nor has it contracted to serve any customer whatsoever within the operating area of this complainant claimed by the bill, outside of the territory in the counties in Alabama referred to in the contract of January 4, 1934, except that it has contracted to sell and is selling electricity to the Cullman County Electric Membership Corporation.

The said complainant never has obtained and does not now have any county franchise to maintain and operate transmission or distribution lines for electric service in Cullman County.

The Cullman County electric Membership Corporation is a corporation organized under the laws of the State of Alabama as a non-profit membership corporation for the benefit of its members only. Said corporation is serving 525 rural residents off of approximately 138 miles of rural transmission lines. The said corporation has never been a customer of said complainant and is not selling energy purchased from the Authority to rural customers which have heretofore received service from said complainant. The [fol. 282] service furnished by this corporation constitutes new and additional service to rural residents not previously served. Under the terms of said contract of January 4, 1934, it was provided that the defendant Tennessee Valley Authority might sell electric energy in the territory served by this complainant and the other members of the Commonwealth and Southern system outside of the areas served by the lines complainant agreed to convey to the Tennessee Valley Authority up to a demand of 2,500 kw. All of the sales of power in the areas of complainant and other members of the commonwealth and Southern system, exclusive of the areas in which the Commonwealth and Southern companies agreed to sell their electrical facilities to the defendant Authority, including the sale of power to the Cullman County Electric Membership Corporation, have not exceeded this limitation.

The area served by the said corporation was without electric service prior to the initiation of operations by said

corporation, either because it was unprofitable or because it was not interested in providing such service, notwithstanding frequent requests over a long period of years by residents for such service when there was no other agency selling electric energy to which the residents could make application.

The percentage of rural electrification in the territory of complainant prior to the creation of the defendant Tennessee Valley Authority was less than five per centum; such rural service as was rendered was almost wholly incidental to service to urban communities and consisted of tapping lines of low voltage primarily intended for service to urban communities. This complainant will suffer no damage from activities of this North Georgia Corporation in rendering service to these rural residents hitherto unserved by the complainant. Any alleged damage to complainant from [fol. 283] operations of this corporation is indirect, remote, speculative, conjectural, and negligible.

Defendants are informed and believe, and therefore further allege that this complainant made no effort to sell electric power to the rural residents now served by this corporation or in the vicinity of lines owned by this corporation until the complainant had knowledge of the initiation of operations by this corporation looking to furnishing the service now undertaken or contemplated; that not until this complainant knew surveys were undertaken and substantial sums of money expended by said corporation or the organizers thereof in conducting surveys and preparing for constructions and operations did complainant show any interest or desire to serve the customers now served by such corporation or customers in the vicinity of lines of said corporation, or do any act directed toward supplying the demands for electricity of the customers in areas served by said corporation; that in all the areas which said corporation is now serving or in which it contemplates service the residents had for many years been attempting without success to make arrangements for service from the complainant; that any losses which complainant may suffer or acts which complainant may have done in serving, attempting to serve, or making service available to customers in areas served by said corporation, are due solely to the construction of new rural transmission lines without regard to the profitableness or feasibility thereof, but solely for the pur-

pose of handicapping, obstructing and embarrassing the operations of said corporation.

Competition which may result in rural areas now or in the future served by this corporation is competition from this corporation and not from the defendant Authority; if this corporation has served or does serve in the future additional [fol. 284] rural residents as customers which might otherwise be sometime served by said complainant, the failure to obtain such customers will be due to acts of this corporation and not to acts of the defendant Authority.

(4) The defendant Tennessee Valley Authority, by contract dated October 7, 1936, agreed to extend the contract of January 4, 1934, until February 3, 1937, and further agreed not to serve any customer of any of the Commonwealth and Southern companies signatory to the contract of January 4, 1934, including the complainant, nor any customer in the area served by any of such companies (whether or not a customer of any of said companies, including the complainant) except to the extent of service aggregating not more than 4,000 kw in demand, exclusive of the Monsanto Chemical Company. This contract, which does not expire until February 3, 1937, in itself constitutes a complete and adequate protection of any right or interest which the complainant may have and is a bar to this suit.

(5) The Authority is not now serving, nor has it contracted to serve, any customers whatsoever, nor has it authorized service to customers in the alleged operating territory of said complainant, except as set out hereinabove, and the possibility of future and hypothetical service to additional customers, or damage to the complainant resulting from such possible service, is remote, indirect, speculative, conjectural, and negligible, and does not constitute a basis for maintaining this action.

(6) The complainant is not affected or injured by sales of power by the Authority outside the complainant's territory, and therefore this complainant cannot complain of said sales of power by the Authority or other acts related thereto.

[fol. 285] (7) Defendants allege that said complainant is estopped to challenge the validity of the Tennessee Valley Authority Act or the acts of the defendants pursuant thereto for the reason that the said complainant has voluntarily ac-

cepted and received benefits under the Act and the acts of the defendants pursuant thereto, all in the respects challenged in the bill. In particular, defendants allege that said complainant is a party to a contract with the defendant Authority dated January 4, 1934, as hereinabove more particularly described, which contract has been extended by agreement dated October 7, 1936, until February 3, 1937. Under said contract of January 4, 1934, this complainant has purchased large quantities of electric energy from the defendant Authority and has thus recognized the legality of the generation and sale of such energy by the defendant Authority, and has thus relied upon the validity of the Act of Congress creating the defendant Authority, having knowingly received benefits under such Act and contract entered into pursuant thereto. Even before the execution of said contract, this complainant purchased large amounts of power from the defendant Authority. Thereafter said complainant purchased the following amounts of power supplied by the defendant Authority under said contract in the periods specified below:

Period	Estimated energy purchased by Alabama Power Company
January 4, 1934, to June 30, 1934	109,715,293 kwh.
Fiscal year ending June 30, 1935	464,520 kwh.
Fiscal year ending June 30, 1936	185,574,686 kwh.
July 1, 1936, through September 30, 1936	160,000,000 kwh.

The said complainant is continuing to purchase large amounts of electric energy generated by the defendant Tennessee Valley Authority.

[fol. 286] During the present low-water period extending from June 1, 1936, to September 1, 1936, the company had need for and utilized very substantial blocks of power supplied by the defendant Authority, the amount purchased and relation to net system requirements of the complainant company being as follows:

Period	Energy supplied by defendant (kwh.)
June	20,285,600
July	55,526,900
August	50,281,700

During the present low-water season when a shortage of power existed among companies of the Commonwealth and

Southern system including this complainant, and when the demand of these companies for power from the Tennessee Valley Authority exceeded the amount that could be supplied by power generated at Wilson Dam before the construction and operation of Norris and Wheeler Dams, this complainant, together with the other companies of the Commonwealth and Southern system, for its own benefit and for the purpose of meeting the shortage of power, purchased, used and sold large quantities of power made available by the Tennessee Valley Authority, as set out in the preceding table, including power generated, and known by it to have been generated, at Norris and Wheeler Dams and increment of power made available, and known to have been made available, at Wilson Dam by the release of water by Norris Dam from the Norris Reservoir, and has contined to do so.

Under the said contract of January 4, 1934, the said complainant agreed to interchange power with the defendant Tennessee Valley Authority, Tennessee Valley Authority agreeing to deliver power to the complainant at Wilson Dam and other points at which power was needed by the complainant to serve its own customers, in exchange for an [fol. 287] equivalent amount of power delivered to the Authority at certain designated points to enable the Authority to serve its customers. The defendants allege that this interchange agreement has continuously been performed by the said complainant and the defendant Tennessee Valley Authority and that the said complainant has received and is still receiving the benefit of said interchange agreement.

Under the terms of said contract of January 4, 1934, the said complainant agreed to sell and convey and did sell and convey to the Tennessee Valley Authority certain properties for the transmission and distribution of electric energy, more particularly described above, with full knowledge that these properties were to be used by the Tennessee Valley Authority for the sale of electric energy. Under the same contract the said complainant agreed to sell and convey and did sell and convey to the Tennessee Valley Authority certain lands at the present site of the Wheeler Dam, with full knowledge that the Tennessee Valley Authority intended to construct and maintain the Wheeler Dam and reservoir upon these lands. The said complainant has received good and valuable consideration for the conveyance of said properties.

Under said contract of January 4, 1934, the complainant Alabama Power Company agreed to supply the power required by the Authority for the construction of Guntersville Dam by the defendant Authority in return for the receipt at Wilson Dam, Alabama, of equivalent amounts of power from the Authority; pursuant to said contract, the company has delivered under this arrangement, and is still delivering, large amounts of power which the company knew, and has at all times known, to be essential to the construction of the said Guntersville Dam, and that such power was specifically intended to be used for such pur- [fol. 288] pose; upon request of the Authority and on its account the company constructed a transmission line for service to the Authority in the construction of Guntersville Dam and for the supplying of power for said construction, as set out above, and has knowingly supplied all the electricity needed for the construction of said dam, and has received the benefits of said agreement.

(8) Heretofore and before the complainant Alabama Power Company filed the present bill in the Chancery Court of Knox County, to wit, on September 13, 1934, certain stockholders of the Alabama Power Company brought a suit against the defendants in the Circuit Court for the Eighth Judicial Circuit of Alabama, which suit was removed to the Federal District Court for the Northern Judicial District of Alabama on motion of the defendants. The stockholders claimed to sue on behalf of and in the right of the Alabama Power Company. The object of said suit was to enjoin the transfer by the Power Company to the Authority of certain transmission lines and other properties under a contract of January 4, 1934, upon the ground that the contract was in furtherance of an alleged illegal and unlawful power program of the defendants. The bill further sought to have adjudged invalid the alleged power program of the defendants in its entirety. The said suit involved many of the same matters, issues and demands, and prayed for similar broad relief, as the complainant Alabama Power Company does by the present bill, to a large extent, demand and set forth; that is to say, the complainants in the said suit alleged:

That the so-called "power program" is a part of the national power policy first conceived in speeches of the present Chief Executive made during a Presidential campaign;

that the Tennessee Valley Authority Act providing for the alleged "power program" was enacted by the Congress as part of this national policy and that the primary purpose [fol. 289] of said Act was to provide for the production of electric energy; that pursuant to said Act the defendants have promulgated a "power program," described in terms of speeches and announcements of officials of the Authority; that the acknowledged objectives of such program are the establishment of public ownership of utilities in a large area of the nation, the promotion of domestic and rural use of electricity at the expense of industrial use, the regulation of intrastate rates and the establishment of a yardstick to measure the reasonableness of rates; that the Act authorizes the Authority to develop and that it is planning to develop all potential water power sites on the Tennessee River and its tributaries and to generate and distribute the power produced at such sites; that the Authority is illegally engaged in "programs for economic and social development" and "experiments in social and economic planning"; that its program has no real or substantial relation to the improvement of navigation and that if it is sought to be justified as such, it is a "sham and pretense"; that the Authority had done or immediately threatened to do certain acts in execution of the alleged program, particularly the following: the construction of hydroelectric dams; the construction and operation of an interconnected network of transmission lines within transmission distance of all the dams; the purchase, financing and promotion of the purchase by others of local distribution systems for the disposition of electricity generated by the Tennessee Valley Authority either directly or in concert with the Public Works Administration; the execution of contracts for the supply of electric energy to various municipalities and other customers, including the fixing of resale rates by the terms of such contracts; the conduct of a systematic campaign of propaganda, solicitation and local political activity in the area in question; the forwarding of bills designed [fol. 290] to promote the "power program" to the legislatures of the various states and lobbying directly or through their agents for the passage of such bills; the use of the Electric Home and Farm Authority, Inc., to further the same program; and the solicitation of customers of the complainants by offers to supply electricity at arbitrary,

confiscatory, and discriminatory rates, unfair competition, and inducements to breach existing contracts.

The bill prayed that the contract of January 4, 1934, be adjudged invalid as in aid of the alleged illegal power program, and further, that the alleged power program be adjudged invalid in its entirety and that the defendants be enjoined from doing or threatening to do any and all acts in furtherance thereof.

The District Court ruled that the plaintiff stockholders were entitled to bring suit on behalf of and in the right of the Alabama Power Company upon the refusal of the Alabama Power Company to do so, and on the merits held that the contract was invalid and beyond the lawful powers of the Authority. The District Court limited relief to the annulment of the contract of January 4, 1934, as it related to the Alabama Power Company, and refused to grant a declaratory decree or other relief as to any other matter complained of. The trial court ruled, however, that the validity of the contract of January 4, 1934, must be determined by its relation to the so-called "power program." The trial court admitted evidence and made full findings that:

The Authority very early in 1933 promulgated a power program and policy for the promotion of an independent, Government-owned electric utility system without limitation to the power legitimately produced at Muscle Shoals or other increase of electricity lawfully produced elsewhere; [fol. 291] the objectives and purposes of the power program were to establish a national yardstick as to the cost of generation, transmission, and distribution, to supplement inadequate state regulation by competition, to promote public ownership of utility systems and to discriminate against industrial and commercial users of electricity in favor of rural and domestic users; in the execution of this program the Authority was attempting to exercise exclusive control over all 149 power sites in the Tennessee River system; the Authority was constructing Norris, Wheeler and Pickwick Dams with provision for installation of generating facilities; the Authority intended to combine the power produced at all dams into one pool by interconnection of all transmission lines into an independent system and had begun the construction of the Norris-Wheeler-Wilson

transmission line, the Authority's power system included all back-up and stand-by facilities necessary for an independent commercial system and the Authority had acquired and was operating independent diesel and steam plants, the power program necessarily included rural distribution systems, the Authority's program contemplated immediately the service of the area served by the lines to be conveyed by the several power companies under the contract of January 4, 1934, and the Authority had executed contracts with numerous municipalities and utilities, including the Cities of Knoxville and Pulaski in Tennesssee, the City of Tupelo and several non-profit associations in northeastern Mississippi, Cities of Athens, Florence, Sheffield, Tuscumbia, and others in Alabama, all of which contracts provided for complete control of resale rates and accounting methods by the Authority; the Authority was actively engaged in constructing and extending its own rural lines in Mississippi and Alabama; the power produced by the Authority could be marketed only by displacing the existing utilities; in order to find an outlet for its power, the Authority was attempting to purchase existing facilities of private utilities, or if private utilities refused to sell, to finance the acquisition of competing plants in cooperation with PWA; the Authority organized and used EHFA to finance electric appliances and engaged in extensive sales promotional activities in order to dispose of its power; and that the contract of January 4, 1934, between the Alabama Power Company and the Authority was "a substantial means and part in the power program herein outlined."

[fol. 292] From the decree enjoining the performance of the contract, the defendants appealed. The complainants filed a cross appeal from the action of the court denying the prayer for declaratory relief. On this cross appeal and on all appellate proceedings, complainant joined in the request for the relief sought by the stockholders against the Authority.

The Circuit Court of Appeals permitted the plaintiff stockholders to sue on behalf of and in the right of the Alabama Power Company and to assert any right or claim which the Alabama Power Company could have asserted. The Circuit Court of Appeals reversed the judgment of the District Court. The court held that the only issue which the complainants were entitled to raise was the validity of

the contract of January 4, 1934, as it related to the Alabama Power Company, and that the validity of said contract was to be determined on its own merits and without regard to the so-called "power program" of the defendants.

Upon the application of the complainants, the Supreme Court granted certiorari to review the judgment of the Circuit Court of Appeals. The Supreme Court sustained the right of the stockholders to maintain the suit on behalf of and in the right of the Alabama Power Company and to prosecute any right or claim which the Alabama Power Company could have asserted. The Supreme Court affirmed the judgment below and expressly held that the sole issue which the complainants were entitled to raise was the validity of the contract of January 4, 1934, as it related to the Alabama Power Company, and that the validity of said contract must be determined on its own merits and without regard to the so-called "power program" of the defendants. Upon the filing of the mandate of the Supreme Court in the District Court for the Northern Judicial District of Alabama, the District Judge entered a decree adjudging the contract of January 4, 1934, valid as it related to the [fol. 293] Alabama Power Company, and refused to grant leave to the complainants to file a so-called amended or supplemental bill challenging anew the alleged power program of the defendants.

Notwithstanding the decision of the Supreme Court in the former suit, the same allegations respecting the alleged "power program" and the same issues and demands with respect thereto are made again in this bill by and on behalf of the Alabama Power Company.

The statement of the allegations made, issues created, the proof and findings of the trial court, the holding of the District Court, the Circuit Court of Appeals and the Supreme Court, and the final decree entered by the District Judge in said former suit will be substantiated by reference to the record and opinions rendered therein, the record being hereto attached as Exhibit "K" and made a part hereof.

Therefore, defendants plead said former suit, proceedings and adjudication in bar of the averments and claims advanced by the complainant Alabama Power Company in the present bill to the effect that the Alabama Power Company may challenge the validity of the power program al-

leged to be authorized by the Act or promulgated by the defendants, or that complainant Alabama Power Company may challenge the validity of any act or acts of the defendants except such particular act or acts of a definite and concrete character which actually interfere or threaten to interfere with the rights of the Alabama Power Company, or that the said complainants may place in issue the validity of said alleged power program or programs as bearing on the validity of any particular, definite transaction actually interfering or threatening to interfere with the rights of the complainants.

[fol. 294] J. As to the complainant Mississippi Power and Light Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer:

(2) Defendant Authority is not in fact selling electricity nor has it contracted to sell electricity to any customer within the operating territory of the complainant, nor is any wholesale purchaser of power from the defendant Authority in fact selling, or under contract to sell, electricity within the operating territory of the complainant. Defendants admit, however, that they have a contract with, and are selling, electricity to the City of Holly Springs, in Marshall County, Mississippi, which appears to be within the claimed operating territory of complainant but defendants allege that said City of Holly Springs is not in fact within the operating territory of said complainant. The City of Holly Springs is not selling electricity at retail to rural residents within the operating territory of said complainant.

At and prior to the date of the contract with defendant Authority for the sale of power and the date of receiving service under said contract, and for a long time prior to the enactment of the Tennessee Valley Authority Act, the City of Holly Springs owned its own generating and distribution facilities, and generated and distributed electric energy to all those desiring electric service in said municipality; the City of Holly Springs was not, and has never been, a customer of this complainant. The complainant has no franchise or electric facilities and is not rendering service in the City of Holly Springs. Sales of electric energy

by the Authority to this municipality do not injure the complainant; if said sales result in injury to complainant it is remote, indirect, speculative, conjectural and negligible.

[fol. 295] (3) Defendant Authority is not now serving, nor has it contracted to serve, any customers whatsoever within the operating territory of complainant as described by the bill, except that it has contracted to and is serving the City of Holly Springs, as hereinabove set forth, and the possibility of future and hypothetical service to additional customers in the alleged area of the complainant or of injury to the complainant resulting from such possible service is remote, indirect, speculative, conjectural and negligible.

(4) This complainant is not affected or injured by sales of power by the Authority or related acts outside the complainant's territory and, therefore, cannot complain of such sales of power by the Authority or acts related thereto.

[fol. 296] K. As to the complainant Southern Tennessee Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) This complainant is a wholly-owned subsidiary of the Commonwealth and Southern Corporation or wholly-owned subsidiaries thereof, and it was organized solely to own that portion of the Tennessee Electric Power Company high tension transmission line between Wilson Dam, Alabama, and Nashville, Tennessee as lies within the State of Alabama; the said complainant does not operate the said line but has leased said line to the Tennessee Electric Power Company; the said complainant does not engage in the generation, transmission, distribution, purchase or sale of electric power except as set out above; it was created and is acting as an agency and instrumentality of the complainant Tennessee Electric Power Company, and, therefore, each and every defense alleged as to the said complainant Tennessee Electric Power Company is applicable to the said complainant Southern Tennessee Power Company and is hereby realleged and relied upon as to the said complainant Southern Tennessee Power Company.

(3) The activities of the defendant Authority have not resulted in an injury or threat of injury to this complainant that is not so speculative, conjectural, remote, and indirect as to provide no basis for the maintenance of this suit by said complainant; but, on the contrary, the gross annual revenue of complainant, which is due wholly from the use of the high tension transmission line hereinabove referred to, in the years since the defendant Authority initiated operations under the Tennessee Valley Authority Act has substantially exceeded the gross revenues prior to the passage [fol. 297] of the Tennessee Valley Authority Act and the initiation of operations thereunder by the defendant Authority, and the revenues have increased each year. The Authority is not competing, and has no contracts which will or can result in competition, with the said complainant, or in direct or substantial injury to said complainant.

L. As to the complainant Appalachian Electric Power Company, the defendants allege the following additional and separate defenses:

(1) The defendants reallege and rely upon each and every allegation of Part I of this answer.

(2) The sole basis for claim of actual or threatened injury on the part of this complainant is the fact that it owns certain properties located within a radius of 250 miles of some dam under construction or which the bill alleges may be constructed by the defendants, which properties are used for generation, transmission, distribution and/or sale of electric energy. The Authority is not now, and has never, constructed or authorized the construction of transmission lines, dams, power houses, or any other facilities used or useful for the generation, transmission, or sale of electricity in or anywhere near the property or the territory of the said complainant as alleged in the bill; nor does it now, or has it ever, owned any such properties in said alleged territory. It has not sold and is not selling, nor has it contracted to sell or authorized the sale of electricity in any part of the alleged territory. Any alleged injury or damage, actual or threatened, to this complainant from alleged operations by the Authority is indirect, remote, speculative, conjectural, hypothetical, and negligible. This complainant is not affected or injured by sales of power by the [fol. 298] Authority or related acts outside the complain-

ant's territory, and, therefore, cannot complain of such sales of power by the Authority or acts related thereto.

M. As to the complainant Holston River Electric Company, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete text of paragraph (2) in subdivision L of Part II of this answer.

N. As to the complainant East Tennessee Light & Power Company, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete test of paragraph (2) in subdivision L of Part II of this answer.

O. As to the complainant Tennessee Eastern Electric Company, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete text of paragraph (2) in subdivision L of Part II of this answer.

P. As to the complainant Kingsport Utilities, Incorporated, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete text of paragraph (2) in subdivision L of Part II of this answer.

[fol. 299] Q. As to the complainant Kentucky-West Virginia Power Company, Inc., the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete text of paragraph (2) in subdivision L of Part II of this answer.

R. As to the complainant Carolina Power & Light Company, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation appearing in Part I of this answer and incorporate by reference the full and complete text of paragraph (2) of subdivision L of Part II of this answer, except that defendants allege that there is now under construction in the alleged territory of this complainant, a high tension transmission line from the Santeetlah Dam of the Aluminum Company of America to the site of the Hiwassee Dam on the Hiwassee River, which transmission line has been constructed solely in order to enable the Authority to secure power for the construction of the Hiwassee Dam by the Authority, but in fact said transmission line as projected is not located in whole or in part within the operating territory of the said complainant. The Authority has not authorized the use of said line for any other purpose than that hereinabove recited. Any alleged damage to this complainant resulting from the construction of this line is remote, indirect, hypothetical, speculative, and negligible.

[fol. 300] S. As to the complainant Franklin Power & Light Company, the defendants allege the following additional and separate defenses:

(1) Defendants reallege and rely upon each and every allegation of Part I of this answer and incorporate by reference the full and complete text of paragraph (2) in subdivision L of Part II of this answer.

[fol. 301] Part III

For further answer to said bill of complaint the defendants hereby interpose the following legal defenses appearing upon the face of the bill, as authorized by the statutes and equity rules:

1. This Court is without jurisdiction over this action.

(a) Under the laws of the State of Tennessee this case was not within the jurisdiction of the Chancery Court of Knox County, Tennessee, from which it was removed.

(b) Under Section 8(a) of the Tennessee Valley Authority Act the jurisdiction of cases of this character is limited to the Northern Judicial District of Alabama.

2. The bill of complaint is without equity and the allegations thereof are not sufficient to establish a cause of action on behalf of the complainants, or any of them.

3. The allegations of the bill of complaint are not sufficient to show that the complainants or any of them have sufficient legal interest in the subject matter of the suit to entitle them to maintain this action.

4. The sale or contracts for sale of electric energy to competitors of complainants, or any of them, does not constitute legal injury and affords no ground of complaint to any complainant.

5. The allegations of the bill of complaint are not sufficient to establish the right of the complainants or any of them to maintain this suit in their capacity as federal, state, or local taxpayers.

[fol. 302] 6. The allegations of the bill of complaint are not sufficient to establish the right of the complainants, or any of them, to maintain this suit in their capacity as franchise holders or property owners.

7. The allegations of the bill of complaint are not sufficient to show any immediate threat of definite irreparable injury to the complainants, or any of them, resulting from definite, concrete acts of the defendants, but on the contrary the allegations relating to injury are remote, speculative, and contingent.

8. It affirmatively appears from the allegations of the bill of complaint that Harold L. Ickes, Administrator of the Federal Emergency Administration of Public Works, is a necessary and indispensable party to this action and that since he has not been joined as a party defendant the bill of complaint is fatally defective for non-joinder.

9. It affirmatively appears from the allegations of the bill of complaint that the various municipalities alleged to have entered into contracts for the purchase of electricity from the Tennessee Valley Authority and the various unnamed parties, including cooperative organizations and industrial customers, also alleged to have entered into such contracts, which contracts are alleged to be illegal and void,

are all necessary and indispensable parties defendant to this suit, and that since said parties have not been joined the bill of complaint is fatally defective for non-joinder.

10. The bill is fatally defective as a pleading for the reason that it is so filled with political propaganda and con- [fol. 303] fusing allegations of remote and speculative contingencies that it is unintelligible.

11. The bill is fatally defective because the allegations are so vague, indefinite, and general as not to inform the defendants of the nature of the cause of action that they are called upon to defend.

12. The bill is fatally defective because the allegations are argumentative, evidentiary, and impertinent, and as such are in violation of the equity rules.

13. The allegations of the bill of complaint do not set forth any definite and concrete acts threatened or performed by the defendants which will result in direct and immediate interference with any legal rights or complainants.

14. The bill cannot be maintained in its present form for the reason that the allegations thereof respecting the alleged "power program" do not present a justiciable controversy as to the complainants, considered severally or as a class, and the bill does not purport to allege any cause of action of a definite and concrete character, threatening to interfere with the rights of any particular complainant.

15. The bill is too vague, indefinite, and confusing to admit of judicial determination.

16. It affirmatively appears from the allegations of the bill of complaint that the complainants are attempting to obtain a decision on abstract and hypothetical questions as to the possible rights of the parties in various contingencies not involving a present specific controversy.

[fol. 304] 17. The bill fails to allege sufficiently the character, extent, and immediacy of the injury inflicted or threatened to be inflicted upon the complainants by any acts of the defendants, and the manner in which such injury will be caused.

18. The bill is multifarious because of a misjoinder of parties complainant.

19. The bill is multifarious because of a misjoinder of causes of action.

20. It appears from the allegations of said bill of complaint that there is no joint cause of action in which each of the complainants has a legal interest.

21. It appears from the allegations of said bill of complaint that there is no one justiciable controversy existing between all of the complainants on one side and the defendants on the other. If any justiciable controversies have been alleged, they are separate and distinct and are not properly joined in this suit. If any justiciable controversies have been alleged, parties having no interest therein have been improperly joined as complainants.

22. It affirmatively appears from the allegations of said bill of complaint that the complainants are attempting to obtain a sweeping declaratory judgment to determine the validity of an alleged national program upon vague and indefinite allegations without a sufficient showing of actual or threatened overt acts inflicting injury upon each of the complainants.

[fol. 305] Wherefore, having fully answered the said bill of complaint, the defendants pray that an order be entered herein dismissing said cause as to each and all of the said complainants, with costs.

(S.) James Lawrence Fly, John Lord O'Brian, William C. Fitts, Jr., Solicitors for the Defendants Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, David E. Lilienthal.

Duly sworn to by James Lawrence Fly. Jurat omitted in printing.

[fol. 306] RECITAL AS TO EXHIBITS TO ANSWER

All exhibits attached to the answer of the defendants are omitted, except Exhibits "A" and "K".

Exhibit "A" attached to answer to the original bill of complaint is the same as Complainants' Exhibit No. 328, being a copy of the Report to Congress by TVA on the Unified Development of the Tennessee River System, dated

March, 1936, and is here omitted since Complainants' Exhibit No. 328 is transmitted as an original exhibit.

Exhibit "K" attached to the answer to the original bill of complaint is a copy of the printed record in the case of Tennessee Valley Authority, et al., vs. Ashwander, et al., and is transmitted as an original exhibit.

[fol. 307] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MEMORANDUM OPINION ON APPLICATION FOR TEMPORARY INJUNCTION—Filed December 22, 1936

The bill makes an attack on the constitutionality of the Tennessee Valley Authority Act on fundamental grounds that are elaborately pleaded and vigorously urged at the bar, and it is earnestly insisted that the power program authorized by the Act transcends the power of Congress; it is insisted that the individual defendants, who are the directors of defendant corporation, misconceive the length to which they may lawfully go under the Act, and that they are exercising powers not conferred by the Act in executing the present program, to the very great and irreparable damage to complainants and their properties.

These allegations raise grave issues, both of law and fact, which cannot properly be determined upon a hearing of this kind.

The rule by which courts will be governed upon hearings of this nature are plainly stated by the text writers and the authorities. It makes it the duty of the Court to balance the equities if possible, upon the proofs submitted and do justice to all concerned.

If, from the allegations of the bill and averments of the answer, and the proof, the Court is in doubt as to the constitutionality of the Statute, and it appears just, the injunction will issue, otherwise it will not, or, if it appears that doubtful questions of law or fact are involved, the injunction will issue, if necessary to preserve the status of the parties and the injunction will issue if the injury to the moving party will be certain, immediate or great, if denied, or loss of inconvenience to the opposing party will be comparatively small and insignificant if granted.

The affidavits presented by both sides of this litigation show that a very active competition exists between complainants, some, at least, and the Tennessee Valley Authority. They show that both the complainants, or some of them, and the Tennessee Valley Authority are actively soliciting the other's business, each trying to influence customers not to contract for electric service with the other; they are building parallel transmission lines; the defendant admits that it is building distribution lines in and through territory served by some of the complainants, that in some instances these lines are duplication of the lines now in the service of the complainants.

It is shown that defendant is actively engaged in enlarg- [fol. 308] ing its service over a wide area now occupied by complainants, or some of them; that since August 19 last, it has erected one thousand miles of high tension transmission and distribution lines. Some of these lines are intended to aid the Government in constructing dams now under construction.

Defendants show by their affidavits, that it has not accelerated its construction work since notice of the application for temporary injunction in August last.

Balancing the equities between the parties as best I can, and following the rule announced by the text writers and the decisions, I am constrained to grant the temporary restraining order, restraining the defendants from further enlarging or extending their facilities for the transmission, distribution or sale of electric energy; from soliciting present, or potential customers of complainants and from negotiating contracts with present or potential customers of complainants. By this injunction is not meant to disturb the relations existing between the defendant and its customers as of this date, and it will be permitted to continue to furnish electric energy to its present customers, but it will not enlarge its facilities, or take on new customers.

The defendant will be permitted to complete its transmission lines and sub-stations now under construction as shown by the affidavit of A. H. Sullivan and W. W. Woodruff, presented to the Court by defendants, on December 12. I am unable to see where the completion of this equipment will very materially, if any, add to the damages, if any, already sustained by complainants. The affidavit above referred to shows that two of the projects are 95% completed; three are 90% completed; one is 85% completed; one 70%

completed; and two 10% completed. Defendants are in possession of, or have contracted for, materials necessary to complete these lines and sub-stations, and to enjoin further work on them would result of laying off many laborers now at work on the projects. I think so far as this work is concerned, the equities are with the defendants and that a greater injury would result to it by granting an injunction, than will result to the complainants by refusing it.

The injunction will not interfere with defendant's operation in the territory ceded to it by agreement of January 4, 1934, nor will it prevent other customers from tying onto rural lines now erected and being used by rural electric membership corporations.

This injunction to be in force until further orders of the Court.

This December 14, 1936.

(S.) Gore, Judge.

[fol. 309] In United States District Court

(Caption omitted)

Order Fixing Time for Taking Depositions—Filed January 19, 1937

In this cause by consent of the parties it is agreed that the time for the taking and filing of depositions by both parties shall not (as provided in Equity Rule 47) be computed from the date of the filing of the defendants' answer, but shall be computed from March 1, 1937. Said equity rule shall govern in all other respects, including the right of the defendants to take and file depositions at any time within thirty (30) days from the expiration of the time herein provided for the taking and filing of plaintiffs' depositions, and it is so ordered, adjudged and decreed.

Approved for entry.

Gore, Judge.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants.
William C. Fitts, Jr., Solicitor for Defendants.

[fol. 310] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER FIXING TIME FOR TAKING DEPOSITIONS—Filed March 19, 1937

In this cause by consent of the parties, it is agreed that the time for the taking and filing of depositions by both parties shall not (as provided in Equity Rule 47) be computed from the date of the filing of the defendants' answer, but shall be computed from May 1, 1937. Said equity rule shall govern in all other respects, including the right of the defendants to take and file depositions at any time within thirty (30) days from the expiration of the time herein provided for the taking and filing of plaintiffs' depositions, and it is so ordered, adjudged and decreed.

Approved for entry.

(S.) Gore, Judge.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants.
James Lawrence Fly, Solicitor for Defendants.

[fol. 311] IN UNITED STATES DISTRICT COURT

(Caption omitted)

DEFENDANTS' MOTION TO STRIKE PORTIONS OF BILL OF COMPLAINT*—Filed June 14, 1937

Now come the defendants, Tennessee Valley Authority, et al., by their attorneys, and move the Court to strike from the bill of complaint herein the following specified portions of said bill, this motion being directed separately and severally to each portion so specified upon the grounds that the said parts of the bill, and each of them, are impertinent, im-

* This motion does not apply, of course, to the Alabama Power Company and the Georgia Power Company, former complainants in this cause.

material, evidentiary, and argumentative and are not proper pleading:

1. The whole of section III.
2. The whole of section IX.
3. The whole of section X.
4. The whole of section XII.
5. The whole of section XIII.
6. The fourth paragraph of section XV beginning "The acknowledged objects", and ending "within selected area."
7. Subsections (24), (25), (26), (27), (28), and (29) of section XVII.
8. The first two paragraphs of section XVIII.
9. The whole of section XIX.
10. The whole of section XX.
11. The whole of section XXI.
12. The whole of section XXII.
13. The whole of section XXIII.
14. The whole of exhibits "C", "D" and "E".

The failure to strike these allegations will result in the trial of many improper issues, and will seriously prejudice the defendants in the preparation of their defense and in the conduct of the trial.

Respectfully submitted, James Lawrence Fly, General Counsel, Tennessee Valley Authority; John Lord O'Brian, Special Counsel, Tennessee Valley Authority; William C. Fitts, Jr., Solicitor, Tennessee Valley Authority, Solicitors for defendants.

[fol. 312] In United States District Court
(Caption omitted)

Defendants' Motion for Bill of Particulars*—Filed June 14, 1937

Now come the defendants by their solicitors and move the Court that an order be entered herein requiring complainants to furnish further and better particulars with regard to the bill of complaint in the following respects:

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* This motion does not apply, of course, to the Alabama Power Company and the Georgia Power Company, former complainants in this cause.

1

a. Copies of and a statement of the terms, conditions, and duration of each and every right, power, franchise, and privilege of each and every complainant under the laws of any State or political subdivision thereof, referred to in the first paragraph of section VII of the bill of complaint.

b. A statement as to whether and to what extent the conditions precedent to such rights, powers, privileges, and franchises have been complied with by such complainants.

c. Copies of and a statement of the terms, conditions, and duration of each and every long-term agreement of each and every complainant referred to in the second paragraph of section VII of the bill, and the name and location of each customer under such long-term contract referred to therein.

2

A statement showing accurately the location, type, and dependable capacity of each generating plant, transmission and distribution facility, identified as to each complainant, referred to in section VIII of the bill and purported to be shown in exhibit A thereto.

3

A copy and a statement of the terms of (a) "the right and privilege" of the Tennessee Electric Power Company referred to in the fourth paragraph of section VIII of the bill, and (b) "the agreement and understanding" of the Carolina Power & Light Company with the Federal Government referred to in the eighteenth paragraph of the same section.

4

A copy and a statement of the terms, conditions, and date of the deed from The Tennessee Electric Power Company to the United States, referred to in the second paragraph of section VIII of the bill.

5

A copy and a statement of the terms, conditions, and duration of the lease between The Tennessee Electric Power Company and the Southern Tennessee Power Company referred to in the eighth paragraph of section VIII of the bill.

[fol. 313] 6

A description of each activity of the defendants intended to be included in the general allegation of section XXIV of the bill as in excess of statutory authority.

7

In the event that section XXI of the bill is not stricken pursuant to defendants' motion concurrently made for that purpose, defendants move that complainants be required to furnish particulars setting forth a copy of each representation referred to in such section, the date thereof, the name of the person making it, and the occasion on which such representation was made, and a copy and description of any misrepresentation of any rate of any individual complainant.

The allegations concerning which particulars are requested are in such terms as not to inform the defendants of the issues they are called upon to defend, and the particulars herein requested are necessary in order to clarify the issues and to avoid prejudice to the defendants in the preparation for trial and the conduct of the defense in this case.

Respectfully submitted, James Lawrence Fly, General Counsel, Tennessee Valley Authority; John Lord O'Brian, Special Counsel, Tennessee Valley Authority; William C. Fitts, Jr., Solicitor, Tennessee Valley Authority, Solicitors for Defendants.

[fol. 314] [File endorsement omitted]

IN UNITED STATES CIRCUIT COURT OF APPEALS, SIXTH CIRCUIT

No. 7606

TENNESSEE VALLEY AUTHORITY et al., Appellants,

v.

THE TENNESSEE ELECTRIC POWER Co., et al., Appellees

Appeal from the United States District Court for the Eastern District of Tennessee, Northern Division

Decided May 14, 1937

Before Moorman, Simons, and Allen, Circuit Judges

OPINION—Filed May 14, 1937

SIMONS, Circuit Judge:

Nineteen corporations in the business of generating, transmitting and distributing electric energy as public utilities in the area within and contiguous to the Tennessee river basin commenced a suit in the Chancery Court at Knoxville, Tennessee, against the Tennessee Valley Authority, a corporation organized under special act of Congress, and the three directors of that corporation, to restrain acts being performed or threatened under powers claimed to be conferred by the TVA Act. They allege such acts to be either unauthorized or conferred by an unconstitutional grant of power. The suit was removed by the defendants to the United States District Court for the Eastern District of Tennessee. There a temporary injunction was granted, and the appeal is from the interlocutory decree. The Georgia Power Company, one of the plaintiffs, being restrained by an injunctional order subsequently issued out of the District Court for the Northern District of Georgia, and the Alabama Power Company, another, similarly restrained by the District Court for the Northern District of Alabama, [fol. 314-1] withdraw their support of the decree, but the remaining plaintiffs defend it.

The bill charges the defendants with having promulgated a program for the construction, development and operation of a great Federally owned and operated public utility sys-

tem for the generation, transmission and distribution of electricity, in all territory within physical transmission distance of the electric generating plants to be constructed under such program. It charges that with or without the authority of the act they contemplate construction of generating plants at 149 power sites on the Tennessee river and its tributaries, the construction of transmission and distribution lines to gridiron the entire area within 250 miles of such plants; that they plan to produce an amount of electric energy greatly exceeding the total consumption of the area, which includes all of the State of Tennessee and a large part of the six neighboring states. It charges that the execution of this program will irreparably injure if not wholly destroy the business and property of each of the plaintiffs, and that the defendants have already performed or are in process of performing a vast number of acts in the execution of their power program, which is being carried out as rapidly as possible. It charges the program itself, and all of the acts done pursuant to it to be unconstitutional and void, and that if the TVA Act purports to authorize such program, it is to that extent also unconstitutional and void. The defendants first challenged the jurisdiction of the court by motion to quash service of the subpœna, and later the sufficiency of the bill by a motion to dismiss. Upon the overruling of both motions they answered, denying the material allegations of the bill and challenging by supporting affidavits the right of the plaintiffs to either permanent or temporary relief. Their appeal not only assails the preliminary injunction, but brings up the jurisdictional and procedural questions decided against them below.

Jurisdiction must, of course, be first examined. The Tennessee Valley Authority is a public agency. By the terms of the statute creating it, its domicile is in Alabama. Therefore it is asserted that under the laws of Tennessee actions [fol. 314-2] against it are local and not transitory, and may be brought only in a court of competent jurisdiction at the place of its domicile, and this notwithstanding the fact that the bill charges lack of legal or constitutional authority for acts being or threatened to be performed in Tennessee.

Section 4, of the Tennessee Valley Authority Act, specifically provides that the corporation may sue and be sued in its corporate name. This provision is without qualification. Section 8 (a) is as follows:

"The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the Northern Judicial District of Alabama within the meaning of the laws of the United States relative to the venue of civil suits."

The laws relating to venue of civil suits are well understood, particularly since the clarification of their interpretation in Lee v. Chesapeake & Ohio Ry. Co., 260 U. S. 653. The present suit was begun in a state court of Tennessee. Under the authority of § 28 of the Judicial Code it was removed to that United States district court within the jurisdiction of which the state court action was pending. Whether a suit may be removed depends upon whether it could have been brought originally in the Federal district courts, which by § 24 of the Judicial Code, so far as applicable, have original jurisdiction of all suits of a civil nature, at common law or in equity, which arise under the Constitution or laws of the United States. This being such a case, it could have been brought originally in a Federal court. The test of removability is not whether the suit could have been brought in the particular district to which it was removed, but whether it could have been brought at all in a Federal district court. The venue of such suit after removal is not the district in which it might have originally been brought, but is the district in which the case is pending, for the right to remove is a personal privilege of the defendant, which he may assert or may waive. General Investment Co. v. Lake Shore & Michigan Southern Ry. So., 260 U. S. 245, 275. No question of Federal juris- [fol. 314–3] diction here arises by virtue of § 8 (a) of the TVA Act, and the laws in respect to venue.

But while venue is waived by removal of a cause from a State into a Federal court, want of jurisdiction in the State court is not cured thereby, but may be asserted after removal is consummated. Lambert Run Coal Co. v. Baltimore & Ohio R. R. Co., 258 U. S. 377; Cain v. Commercial Publishing Co., 232 U. S. 124, 131; General Investment Co. v. Lake Shore Ry., supra, 288. It is first urged on behalf of the appellants that they may not be sued in Tennessee because no local statute specifically authorizes suit against a public agency. Section 8676, Shannon's Code, however, provides

that any corporation claiming existence under the laws of the United States is subject to suit in Tennessee to the same extent as are local corporations. Denial of the applicability of this statute, based upon the rule that statutes which refer to corporations in general terms do not apply to public agencies, is not persuasive, for the Tennessee statute speaks not in general terms but with precision.

The principal challenge, however, to the jurisdiction of the Tennessee court is based upon the fact that the TVA Authority, being a public agency domiciled in Alabama, may not under the laws of Tennessee be sued in that state since actions against a public agency are local and not transitory, and suit may be brought against it only at its domicile. Authority for the Tennessee rule invoked is the leading case of Board of Directors of St. Francis Levee District v. Bodkin Bros., 108 Tenn. 700. There a suit was brought in Tennessee against the Levee District, which was a public corporation of Arkansas authorized to build levees on the Mississippi river. The Arkansas statute authorized it to sue and be sued, but domiciled the corporation in Arkansas. The Supreme Court of Tennessee held actions against such a Board not transitory but local, and that they must be brought at the place of domicile, resting its conclusion upon a rule of public policy, convenience and comity, which requires that public bodies should not be subject to the burden of carrying on law suits in scattered courts, since such suits inevitably hinder and delay the successful conduct of governmental functions.

[fol. 314-4] There is no challenge to the soundness of the rule of the Bodkin case. The question is whether it applies. The origin of, and the reasons underlying the rule were discussed by this court in Park Co. v. City of Decatur, 138 Fed. 550, 553. There a municipality of Illinois was sued by attachment in the courts of Kentucky. It was said, "As elsewhere, the municipalities of Illinois are localized in their sphere of operation. They have no legal presence elsewhere, and their officials do not and cannot ordinarily represent them abroad, certainly not for the purpose of receiving service of process against them, or giving jurisdiction over them in foreign courts. For this reason and because of the public inconvenience resulting from carrying on litigation in a distant forum, the rule has become quite generally recognized that such corporations cannot be sued elsewhere than in the venue of their location; and because

the venue of the courts in the counties of England and the states of the Union is usually, if not universally, coextensive with the boundaries of such counties, the rule is stated in the terms that a suit against a city or town or other limited municipal district must be brought in the courts of the county, and the county itself is only suable there." In fact in Pack, Wood & Co. v. The Township of Greenbush, 62 Mich. 122, the court indicated that the agents of a township may not bind the township by their acts or doings beyond the limit of the township unless expressly or impliedly authorized, for the localities in which they may exercise and perform them are limited by the boundaries of the township and the county in which it is located. The jurisdiction of a court may not therefore follow the persons of public officers wherever they may go beyond the municipalities for which they were elected or chosen. The Bodkin case does not go beyond this. It construed the Arkansas statute as giving consent to suits against the levee board only where the Board had its situs. Since it cannot have a situs outside of the state of its creation it is not subject to suit in a foreign state, and the levee district as an agency of the government is analagous to counties, municipalities, boards of education and the like.

[fol. 314-5] The Tennessee Valley Authority has no restricted situs. It is authorized under the act to carry on operations upon the Tennessee river and its tributaries without respect to state lines or the limits of judicial districts, and may acquire by purchase or condemnation anywhere, lands, easements or rights of way necessary to carry out the provisions of the act. In the exercise of the power of eminent domain conferred upon it, it may institute proceedings in any district court of the United States, within the jurisdiction of which required lands, easements, rights of way or other interests are located. Indeed, so unfettered is it by political subdivisions that commissioners who are to ascertain the value of property are not to be selected from the locality wherein land sought to be condemned lies. Residence is not synonymous with situs, and the act creating the Authority is replete with provisions pointing to its mobility and the transitory character of its activities. Neither the rule of the Bodkin case nor the reasons which gave it birth limit jurisdiction over an ambulatory corporation of this character to the courts of its domicile. The state court had jurisdiction, and the court below acquired it by removal.

It becomes unnecessary to consider other bases of jurisdiction asserted by the plaintiffs.

The challenge to the sufficiency of the bill is based upon two main grounds. It is said that the bill is defective because premised upon an alleged power program which is non-justiciable and because of an improper joinder of parties and causes which renders the bill multifarious, in violation of Equity Rules 26 and 37. In our opinion the existence of multifariousness must depend upon whether a justiciable controversy is presented by allegations of irreparable injury flowing from the authorization, promulgation and substantial initiation of the power program described in the bill. If there is no justiciable controversy between plaintiffs as a class and defendants, and one does not arise in respect to any plaintiff until some concrete act threatening irreparable injury to it is committed or threatened, such as the invasion of its territory by competing lines, the building of generating stations within transmission distance of its cus- [fol. 314-6] tomers or the like, then indeed the bill may be clearly multifarious, and as we understand the argument, so much the plaintiffs are ready to concede. But if the unitary power program, as permitted or commanded by the act, or as promulgated by the directors of the Authority, directly creates or imminently threatens irreparable injury to the plaintiffs, varying in degree, perhaps, in respect to each but identical in kind, then we fail to see misjoinder either of plaintiffs or causes of action, for "a bill is not multifarious that presents a common point of litigation, the decision of which will affect the whole subject matter, and will settle the rights of all the parties to the suit;" Equity Rules 28, U. S. C. A., 114, Compilers Note 227. The general principle is well understood.

In determining the sufficiency of the bill we are not required to examine anything but the structure of the bill itself. Nelson v. Hill, 5 How. 126, 132. It becomes necessary, therefore, to consider the case made by it. The general program has been described—it remains to consider the injury charged to flow therefrom. Each of the plaintiffs has, it is alleged, valid authority by franchise or otherwise, to carry on its business in the territory it serves either indeterminately or for a period of years. Each operates within transmission distance of electric generating plants constructed, under construction or proposed. Each owns

property of great value for the distribution and generation of electric energy within its service territory, with rates fixed by state authority. Each is supplying public utility service as a going concern, with large investments devoted to that purpose. Each has numerous agreements with consumers and reasonable expectancy of renewal of contracts. Each has issued stocks and bonds purchased by the public on the faith and credit of its lawfully granted authority and the protection afforded such investments by the laws of the State and the Constitution of the United States. There exists, it is said, a common threat to the interests of each in that the Tennessee Valley Authority Act permits those charged with its administration to acquire and develop all the water power sites on the Tennessee river and its tributaries, to build and utilize steam plants auxiliary thereto, [fol. 314-7] to interconnect vast electric generating plants into a superpower system, to acquire and construct transmission or distribution lines throughout the transmission area of these plants, and to distribute and sell power so generated to domestic, commercial, municipal and industrial users of light and power, and the area embraced includes all or a substantial part of the territory in which each plaintiff operates.

In short, it is asserted that the Act permits or commands, and the defendants propose, the construction, development and operation of a mammoth Federally owned and operated system for the generation and distribution of electricity in competition with each plaintiff through all or a substantial part of its territory. Electricity so produced will be sold at a price with which private producers cannot compete because its sale is to be subsidized by the public treasury. It is the purpose of the act and of the persons charged with its administration to eliminate all existing privately owned and operated utilities. Not only is the mere existence of the statute a threat to their business because it depresses the value of their present securities and destroys the market for additional securities required to permit expansion and modernization of properties, but the defendants are threatening to go beyond the clear authority of the act by constructing and operating hydro-electric plants with auxiliary steam plants, by interconnecting such plants into a vast power system, and so to take over the entire market for electricity

in the area. The defendants have announced that unless existing utilities sell their transmission lines to them such lines will be duplicated. They have announced their intention to regulate local intrastate rates and service by a so-called "yardstick" method through Federally subsidized competition which will supplant state regulation as inadequate and unsatisfactory. Their power program will be carried out in Kentucky, Alabama, Georgia, North Carolina, Mississippi and Tennessee, and will include such cities as Chattanooga, Knoxville, Birmingham, Memphis and Atlanta. They have conspired with the Federal Public Works Administrator to force the existing utilities in the area, including the plaintiffs, to sell their properties for less than fair value, failing which their properties and services will [fol. 314-8] be duplicated with monies advanced by the Public Works Administration. In pursuance of this program, it is alleged, definite portions of the area have already been occupied, and the public has been offered contracts for electric energy at confiscatory prices in furtherance of a systematic campaign to injure the plaintiffs and destroy their credit and good will. The general allegations are supported by specific allegations, which it is neither necessary nor convenient to recite. In brief, as was urged in argument, the plaintiffs conceive themselves to be united by a common peril, and united therefore they complain.

To the justiciability of their common grievance, the defendants rely for a complete answer upon specific rulings of the Supreme Court in Ashwander v. Tennessee Valley Authority, 297 U. S. 288. They lay the bill in the Ashwander case by the side of the present bill, and by exhaustive comparative analysis urge the conclusiveness of that decision on the issue now under consideration. The "deadly parallel" is frequently devastating, but so only when controversies are substantially identical and of equal breadth. We have given careful consideration to the Ashwalder case. It sustains constitutional power of TVA to enter into a specific contract with the Alabama Power Company, one of the original plaintiffs in the present suit. That contract related solely to the purchase by TVA of transmission lines for disposal of excess energy generated at Wilson dam and for exchange of energy. The Ashwander case was a derivative suit brought by preferred stockholders of the Alabama Power Company to set aside the contract as ultra vires. By limitations imposed upon the court by the na-

ture of the suit, and through limitations of the judicial process, the Ashwander case was kept within very narrow compass.

It is well understood, of course, that a stockholder may not maintain a suit in behalf of his corporation until he has made a demand upon the corporation that it do so, and the corporation has failed or refused to comply. The scope of the suit he may then maintain is limited by the scope of his demand. Ashwander and his fellow-stockholders were primarily concerned with the contract of January 4, 1934, for the sale by the Alabama Power Company of [fol. 314-9] the transmission lines running from Wilson Dam. The electric energy there generated was more than sufficient to supply all the requirements of the contract. The issues were confined to the constitutional authority for the construction by TVA of Wilson Dam, and for its disposal by reasonable method of the electric energy there generated. Finding the construction of Wilson Dam a valid exercise of constitutional power under the war and commerce clauses, the electric energy there generated to be property of the United States, for the sale of which authority exists in § 3 of Article IV of the Constitution, and the method of disposal not inappropriate according to the nature of the property, the court refused to set aside the contract, the decision concluding with the following: "The question of the constitutional right of the Government to acquire or operate local or urban distribution systems is not involved. We express no opinion as to the validity of such an effort, as to the status of any other dam or power development in the Tennessee valley, whether connected with or apart from the Wilson Dam, or as to the validity of the Tennessee Valley Authority Act or of the claims made in the pronouncements and program of the authority apart from the questions we have discussed in relation to the particular provisions of the contract of January 4, 1934, affecting the Alabama Power Company."

It is true that the stockholders in the Ashwander case sought a declaratory judgment with respect to the constitutional validity of the entire Tennessee Valley activity, and that the court did not recognize in their challenge to the Act, or to other things done in pursuance thereof, a case of actual controversy within the scope of the act of June 14, 1934, providing for declaratory judgments, for "the judicial power does not extend to the determination of ab-

stract questions," and a justiciable controversy does not arise save as pronouncements, policies and programs have "fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of the persons complaining." The court had clearly in mind, however, that the persons complaining in the Ashwander case were stockholders, whose interests might perhaps be affected by the invalidity of a specific contract [fol. 314-10] entered into by their corporation, but not necessarily or immediately affected by other acts or assertions of authority on the part of the Federal agency involved. This, we think, the court made plain: "While plaintiffs, as stockholders, might insist that the Board of Directors should take appropriate legal measures to extricate the corporation from particular transactions and agreements alleged to be invalid, plaintiffs had no right to demand that the directors should start a litigation to obtain a general declaration of the unconstitutionality of the Tennessee Valley Authority Act in all its bearings or a decision of abstract questions as to the right of the Authority and of the Alabama Power Company in possible contingencies."

The case made by the present bill presents a different aspect. Here are no preferred stockholders whose interests are limited to their distributive share in the assets of the corporation, and whose grievance is circumscribed by their own formulated estimate of it. Here are seventeen utility corporations already suffering the economic pinch of actual or threatened competition they conceive to be illegal, and facing what they conceive to be not only irreparable injury, but possible destruction, not through any one specific act of the defendants which singly considered may not be an unconstitutional exercise of power, but through a far flung program which they charge will inevitably effect and has for its very purpose their common annihilation. We are not convinced that the Ashwander decision precludes us from recognizing a justiciable controversy between these plaintiffs as a class and the Tennessee Valley Authority as an instrumentality of the Government involving the constitutional validity of the described program, whether authorized by the Act or transcending its authority.

Another consideration is of importance. Eighteen months have elapsed since the Ashwander decision in the Supreme Court. Three years have passed since the District Court announced the decision there reviewed. We are told that

the program of the Tennessee Valley Authority and its directors has gone forward with all reasonable dispatch. What then may have been merely tentative or speculative may now be approaching realization. What then was re- [fol. 314-11] mote may now be imminent, and mere concept have fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of those complaining. This may only be determined by full hearing on the merits. Moreover, the distinction between the case here made and that presented by the bill in the Ashwander case is not only clear but is brought into bold relief by the dissenting opinion in the Ashwander case. The injury and threat of injury is here assigned not to a single act or series of acts, but to the entire program, the full sweep of which is illustrated by the acts already done and proposed. The primary grievance in the Ashwander case related to the constitutional power of TVA to execute a specific contract. It was thought by the plaintiffs there to demonstrate invalidity of the contract not merely by challenging the power of the Authority to execute it, but by challenging its power to promulgate and carry into execution a power program of which the assailed contract was but a part, and to test the validity of the very act under the authority of which the program was conceived—even to the extent of seeking a declaratory judgment thereon. The power program was involved only as its possible invalidity might infect with invalidity the assailed contract. The dissent makes it clear that the court rejected the theory that "the plan makes the part unlawful." So while it results that one may not secure relief against an act which is not itself an unconstitutional exercise of power, it also results that one may not complain of a plan which, though possibly open to attack on the ground of constitutional invalidity, does not as such injure him, and this is but an application of the familiar principle that courts will not pass upon the constitutionality of a statute per se, but will set aside only when both invalidity and direct or imminent danger of injury to the persons complaining of its enforcement are made clear. Massachusetts v. Mellon, 262 U. S. 447. The court below did not err in overruling the motion to dismiss.

We reach, therefore, the question as to whether, upon the showing made, the plaintiffs have established their right to a temporary injunction of the scope granted, and upon this

issue it is not necessary for us to determine the meritorious [fol. 314-12] question as to the constitutional validity of the power program, for the ultimate rights of the plaintiffs should be decided only when the court is "in possession of the materials necessary to enable it to do full and complete justice between the parties." Eagle Glass & Mfg. Co. v. Rowe, 245 U. S. 275; Interstate Transit Co. v. City of Detroit, 46 Fed. (2d) 42, (C. C. A. 6). Ordinarily upon an appeal from an interlocutory order granting or refusing a temporary injunction, the determination of the trial court will not be disturbed "unless contrary to some rule of equity or the result of improvident exercise of judicial discretion." Meccano, Ltd. v. John Wanamaker, 253 U. S. 136, 141; City of Owensboro v. Cumberland T. N. T. Co., 174 Fed. 739, 747, (C. C. A. 6). The question here presented is not unattended with difficulty. It involves not only the substantial nature and debatable character of the claims of the plaintiffs, the probability of irreparable injury to them, the necessity and appropriateness of an injunction to maintain the status quo, but includes also the usual questions of balance of equities, and the possibility of severe damage to the defendants and to the public interest if the temporary injunction is wrongly issued. Relief is moreover based upon transgression of constitutional power by and under an act of Congress, and decision must ultimately if not presently be made with due regard to the presumption of validity that attaches to such enactment. Finally, the case presents the extraordinary situation in that the authority of the Congress to enact the statute in certain of its aspects, and to authorize thereby certain important transactions in respect to the construction of Wilson Dam, and to the sale and distribution by means of transmission lines of the electric energy there generated, has already been sustained by the Supreme Court, and that other acts and transactions here alleged to illustrate the sweep of the challenged power program are not readily to be distinguished from those heretofore validated. Granted that it is not necessary that the facts in support of a preliminary injunction be established with the same certainty that is required upon final hearing, and that we are not required to prejudge the meritorious controversy, yet it would seem that in a case of this kind, giving [fol. 314-13] full consideration to the history of the litigation, the gigantic public undertaking involved, the enormous sums of money already expended, the public interest which

may not be ignored, and while carefully considering the irreparable injury claimed, considering also possible overbalancing injury to the defendants and the public, the gravity of the factual and constitutional questions involved must be made to appear at least with more clearness than in the ordinary case, if not indeed, as suggested in the concurring opinion in the Ashwander case, "beyond peradventure clear."

Pursuant to the TVA Act, the Tennessee Valley Authority has now completed and put into operation not only the Wilson Dam, in the vicinity of Muscle Shoals, but the Norris Dam on the Clinch river, a tributary of the Tennessee river, and the Wheeler Dam on the Tennessee river. It has also initiated the construction of dams on the Tennessee river at Pickwick Landing, Tennessee, at Gunthersville, Alabama, and Chickamauga, in the vicinity of Chattanooga, Tennessee, and has entered upon preliminary operations for the construction of the Hiwassee Dam on the Hiwassee river, near Murphy, North Carolina. It has also recommended to Congress the construction of three additional dams on the Tennessee river, which, it asserts, will complete the contemplated nine-foot channel from Paducah to Knoxville and provide a substantial measure of flood control on the Tennessee and Mississippi river systems. It has been selling approximately 75% of its available electric power to four of the plaintiffs, and its existing electric service is limited to consumers in the service area of these four companies and of three others complaining.

The District Judge found that the defendants had acquired or constructed extensive electric transmission and rural distribution facilities; had built and are building transmission lines which duplicate those of the plaintiffs; had erected a substantial number of miles of high tension transmission and distribution lines, most of them rural; were actively in competition with some of the plaintiffs, offering electric service at substantially lower rates, and that pending determination of the suit upon its merits the plaintiffs are in danger of irreparable injury through fur- [fol. 314-14] ther enlargement and extension of facilities, solicitation and negotiation of contracts with actual or potential customers in the plaintiffs' service area, and that loss to the defendants by reason of the injunction would not be comparable to the damage likely to be suffered by the plain-

tiffs in the event the injunction should issue. Though he deemed it immaterial, he also concluded that the facts of record supported the following proposed finding:

"All of the transmission lines constructed or acquired, or under construction by the Tennessee Valley Authority, or physically connected with Wilson Dam are within transmission distance of Wilson Dam, except the Santeelah-Hiwassee Transmission line and substation. All of the power now being sold by the Authority is being delivered by means of these lines or by interchanges under the contract of January 4th. The present dependable capacity of Wilson Dam is in excess of the present power requirements of the existing customers of the Authority excluding complainant power companies. The present load now being sold to customers of the Authority other than the complainant power companies, is approximately 22,500 kw. The maximum amount of power that it is reasonably possible for the Authority to dispose of up to May 1st, 1937, by the use of facilities already existing or which may be constructed up to May 1st, 1937, is 37,000 kw.

Concluding that the suit raised grave questions both of law and of fact with reference to the validity of the Tennessee Valley Authority Act, and of the acts of the defendants done and being done in reliance upon it, he enjoined them from enlarging or extending their facilities other than the completion of certain lines and sub-stations in process of construction, from serving consumers not already served, from initiating new construction, from soliciting or negotiating contracts with customers of the plaintiffs, or consumers in their service areas, from supplying service connections to existing rural lines, and in the main from enlarging the service beyond the scope of the project already established. While it is unnecessary to recite all of the [fol. 314-15] provisions of the injunctional order, it must be conceded that it is sweeping. Less would perhaps not have sufficed the plaintiffs in view of the scope of their claims of irreparable injury, and more would doubtless have resulted in complete paralysis of the entire activity.

We have already indicated some of the considerations that must control decision upon the propriety of a temporary injunction. A complete catalogue cannot, of course, be compiled. A petitioner's own appraisal of his fears

is not to be disregarded, so it is important to note that the bill when filed contained no prayer for preliminary relief, was not amended to pray for it until long after suit had been begun, and in this respect was brought up for hearing more than six months after its filing date. It is also important to note that the trial judge in the Ashwander case, although subsequently holding the Tennessee Valley Authority's disposal of power illegal, refused to grant a preliminary injunction, and that Judge Sibley of the Fifth Circuit Court of Appeals, sitting by designation in the Northern District of Georgia, likewise refused to preliminarily restrain the activity of the defendants in the area served by the Georgia Power Company, one of the original plaintiffs here (Georgia Power Co. v. Tennessee Valley Authority et al., decided May 28, 1936).

However, grandiose may be the conception of its directors as to ultimate scope of the TVA project, it is clear, we think, that the presently contemplated plan includes provision only for a nine-foot level for navigation and flood control purposes on the Tennessee river. This will be accomplished by the seven dams building and proposed. There is no occasion, therefore, on the question of irreparable injury pendente lite to consider the effect of 149 inter-connected power supplying projects upon the rights of the plaintiffs in the present inquiry, however important that may become on final hearing. Nor is it to be supposed that all or substantially all of the construction already entered upon or planned can possibly be completed before the pending case may be reached and tried upon its merits. The trial judge found substantial support for a finding that the maximum amount of power reasonably possible for the [fol. 314-16] Authority to dispose of up to May 1, 1937, by the use of existing facilities, or those which might be constructed up to May 1, 1937, to be 37,000 kw. Without denying that some injury may be suffered if the injunction is lifted, it does not so clearly appear that it will of necessity overbalance the injury which must inevitably be suffered by the defendants and the public.

The possibility of maintaining the status quo by means of the injunction is not established. The court may not command the waters of the Tennessee river and its tributaries to cease their flow. The peculiar property that inheres in the power of falling water, and in the electric en-

ergy into which it may be translated, if not used, is forever lost. It is, moreover, inescapable that in the conduct of an activity of the size and scope herein delineated, a great organization must necessarily have been built up, including not only laborers, equipment and executives, but technological experts and specialists of many kinds. To appraise the injury to the defendants from the disorganization which must follow substantial or even partial cessation of activity is impossible, but that it will be great cannot be denied. So also in respect to the public interest involved. The loss, inconvenience and discomfort of the residents of the area in failing to obtain cheap electric energy, if it be found in the end that it may lawfully be supplied to them, may likewise not be measured, but equally incontrovertible is it that it will be great. Insofar, also, as restraint will delay effective control of the flood waters of the Tennessee river and its tributaries, the public interest in the achievement of that objective is similarly beyond appraisal. Human experience of the catastrophic effect upon great areas of overflowing rivers is too recent and too painful to permit of any doubt either as to the existence or extent of the public interest that is threatened by the maintenance of the injunction, and against which the threat to private interests must be balanced. From such possible injury it is clear no bond can adequately safeguard the public interest.

There is no occasion at this time to review the principles which govern courts in passing upon constitutional questions. The cases announcing them have been collected in [fol. 314-17] the concurring opinion of the Ashwander case, and public attention is presently focused upon them. The great power of the courts to set aside an act of Congress is exerted with reluctance in the ordinary case. It is invoked with even greater caution where great public enterprises are involved, and while it will be exercised only when it is absolutely necessary, this applies with even greater force on appeals from an interlocutory injunction [Allen v. Omaha Live Stock Co., 275 Fed. 1, 3 (C. C. A. 8)], for as was said by Judge Learned Hand, "We are told that to declare a statute unconstitutional we must be assured beyond question that it is such. A temporary stay now is a declaration for a time that it is unconstitutional; it is to dispense with the statute until the case be finally decided." Dryfoos v. Edwards, 284 Fed. 596, 603.

It is our conclusion under all of the circumstances of the case that the interlocutory injunction was improvidently granted, and should be set aside. We have given serious consideration to both the private interests and the public enterprise involved, and while "Elusive interests of haste should not be permitted to obscure substantial requirements of ordinary procedure" (Duke Power Co. v. Greenwood Co., 299 U. S. 259, 268), both are so important that undue delay in arriving at final judgment must likewise be avoided. To that end we have contributed as best we may by advancing the cause for argument and giving precedence to it in decision on present issues. We have no doubt that the District Judge, whose earnest application to the problems presented and whose courageous assumption of responsibility in respect to them is so evident upon this record, will cooperate with counsel to bring the cause to early hearing and disposition upon its merits.

Interlocutory decree reversed, and cause remanded for trial.

CONCURRING OPINION

ALLEN, Circuit Judge, concurring:

I concur with the conclusion and in the main in the opinion, but think that in addition to ruling upon the questions raised in this appeal, the court should lay down rules for the guidance of trial courts as to the practice of issu- [fol. 314-18] ing temporary injunctions which in effect suspend the operation of statutes.

The considerations which govern the issuance of temporary injunctions in a suit between private parties have often been applied in injunction suits against public officials, where the damage to the public is readily ascertainable and where the public interest may be properly protected. However, the decisions recognize a clear distinction where the damage to the public cannot be readily appraised and where the acts complained of involve, as here, a public policy authorized by statute, ordinance or order of a duly constituted public board or officer. Cf. Hurley v. Kincaid, 285 U. S. 104, note; Lagunitas Water Co. v. Marin County Water Co., 163 Cal. 332; Jones v. Lassiter, 169 N. C. 750; Red C. Oil Mfg. Co. v. Board of Agriculture, 172 Fed.

695, aff. 222 U. S. 380; Berdan v. Passaic Valley Sewerage Commissioners, 82 N. J. Eq. 235, aff. 83 N. J. Eq. 340. The public has an interest in the enforcement of all duly enacted law, and the citizens within the area of the Tennessee Valley Authority have a material and pecuniary interest in the enforcement of this particular law. Railroad Commission v. Central of Georgia Ry., 170 Fed. 225, 232, 233. Cf. Cook Brewing Co. v. Garber, 168 Fed. 942, 951. A preliminary injunction in such a case is rightly refused where it would be granted in a suit between private individuals. Cook Brewing Co. v. Garber, supra. Cf. New York City v. Pine, 185 U. S. 93, 97; Southern Counties Gas Co. v. City of Long Beach, 295 Fed. 530, 533; Water Company of Tonopah v. Public Service Commission, 250 Fed. 304. The delay in carrying out the statute resulting from issuance of a temporary injunction in cases similar to this is an injury to the public interest.[1] Where such a [fol. 314-19] statute is suspended by preliminary injunction the damage to the public interest cannot readily be appraised, and the public interest cannot be protected by the giving of bond. The equities cannot be balanced, and the status quo, so far from being maintained, is destroyed.

OPINION

MOORMAN, Circuit Judge, dissenting in part:

I agree to the setting aside of the injunction, not on the grounds stated in the opinion or concurrence, but for the reason that in my opinion the bill does not state a case

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[1] "The litigation is likely to end sooner if no injunction is in force. Its dispatch is greatly dependent upon the conduct of the case by the complainants. They would not be inclined to press the case for speedy decision when they have once secured a preliminary injunction. As long as it stands, it is as good as any other, and experience shows that it often has practically the effect of a permanent injunction. Knowledge of this fact was probably one of the causes for the enactment of the statute allowing appeals from these interlocutory orders." Railroad Commission of Alabama v. Central of Georgia Ry., 170 Fed. 225, 233 (C. C. A. 5).

for judicial decision. The suit is an attack on the aims and purposes of the Tennessee Valley Authority as expressed in its "power program." Its purpose is to obtain a decree invalidating the program, not as an act or acts done or about to be done, but in its plans and purposes. This tenders an abstract issue only. Ashwander v. Tennessee Valley Authority, 297 U. S. 288, holds that it is not a justiciable question. I find none in the bill. To spell one out from one or another of its allegations of fact would make it defective for joinder of parties having interests too widely variant. I am of opinion, therefore, that the bill should be dismissed, and I dissent from the holding that it should not.

[fol. 315] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER DISSOLVING PRELIMINARY INJUNCTION—Filed June 16, 1937

Pursuant to the mandate of the Circuit Court of Appeals for the Sixth Circuit, the decree of preliminary injunction entered herein on December 22, 1936, is hereby vacated and dissolved, and all costs as certified by the Clerk of the Circuit Court of Appeals in the mandate from that Court under date of June 14, 1937, are hereby assessed against the complainants.

(S.) Gore, District Judge.

June 15th, 1937.

Approved as to form: Frantz, McConnell & Seymour, Solicitors for Complainants. James Lawrence Fly, Solicitors for Defendants.

[fol. 316] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER ON DEFENDANTS' MOTION TO STRIKE—Filed July 3, 1937

This matter coming on to be heard on the motion of defendants to strike portions of the bill of complaint and argu-

ment of counsel, and the Court being of the opinion that said motion should be denied in part and granted in part,

It is Hereby Ordered, Adjudged, and Decreed that paragraphs 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, and 13 of said motion be and the same are hereby overruled and denied.

It is Further Ordered, Adjudged, and Decreed that paragraph 4 of said motion be and the same is hereby overruled and denied, except that it is hereby ordered that all of section XII of the bill of complaint except the first two paragraphs and the last paragraph thereof be and the same is hereby stricken from the bill of complaint. The allegations so stricken are not to be considered as part of the pleadings in this cause for any purpose whatsoever.

It is Further Ordered, Adjudged, and Decreed that paragraph 14 of said motion be and the same is hereby overruled and denied, except that the following items appearing in exhibit C to the bill of complaint are hereby stricken from the bill: items 1, 2, 18, 19, and 20. The said items so stricken are not to be considered as part of the pleadings in this cause for any purpose whatsoever.

To the ruling of the Court overruling and denying the prayers of said motion, the defendants duly reserved an exception. To the action of the Court in sustaining a part of said motion the complainants except.

Approved for entry.

Gore, District Judge.

July 2, 1937.

Approved as to form: Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants. William C. Fitts, Jr., Solicitor for Defendants.

[fol. 317] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER APPOINTING SPECIAL MASTER—Filed July 3, 1937

This 2nd day of July, 1937, came on for hearing the motion of complainants herein for an order appointing a special master herein, and upon consideration of said motion and the evidence offered in support of the same and statements

of solicitors for parties herein, the Court finds that a showing has been made of an exceptional condition herein requiring the appointment of a special master with the powers and duties hereinafter stated.

It is Therefore Ordered by the Court that Hal H. Clements, Jr., be and he is hereby appointed special master herein with the following powers and duties, viz:

1. Subject to the limitations contained in Equity Rules 46, 47, and 54 as to the circumstances in which depositions may be taken in suits in equity in the federal courts, said special master shall take and report to the Court with all due dispatch evidence offered by either complainants or defend- [fol. 318] ants upon the issues raised by the bill of complaint of complainants and the answer of defendants.

2. Said special master shall assign the times and places for the taking of evidence under this order and shall give notice to the parties hereto, or their solicitors, as to the particular hour and place he will begin to take testimony, and said master shall thereafter continue to take testimony from day to day or adjourn the taking of testimony from time to time and from place to place as said master may order. Notice of the time and place of such adjourned hearings to be given to the parties or their solicitors by said master. Said master is hereby authorized to take testimony at such places outside the limits of the Eastern District of Tennessee as said master may deem necessary, proper, or convenient. The Court reserves the right to authorize the taking of testimony before said master within the Eastern District of Tennessee if and when it appears that this cause will be accelerated thereby.

3. Said special master shall himself or by designation of one or more competent persons report stenographically and transcribe in typewriting the testimony of all witnesses heard by said master and all proceedings before him.

4. In the conduct of the proceedings before him, including the issuance of subpoenas, requiring answers to questions, compelling the production of documents, ruling upon the competency of evidence, and enforcing obedience to his rules of procedure, said special master shall have the same powers as those conferred upon examiners, commissioners, and masters by Equity Rules 51 and 52. Except as modified by

this order, the method of procedure set out in the Equity Rules shall be followed by said special master.

[fol. 319] 5. Except as modified by this order, the federal statutes and equity rules governing the taking and use of depositions on the trial of suits in equity in federal courts shall govern in this case.

Approved for entry.

Gore, District Judge.

O. K. William C. Fitts, Jr., Solicitor for Defendants.

O. K. Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants.

[fol. 320] In United States District Court

(Caption omitted)

Order on Defendants' Motion for Bill of Particulars—Filed July 8, 1937

This cause came on to be heard by consent of parties at Cookeville, Tennessee, on June 28, 1937, before the Honorable John J. Gore, District Judge, on the motion of defendants for bill of particulars filed in this cause on June 12, 1937, and after hearing the arguments of counsel, the Court is of the opinion that said motion should be, and the same is hereby overruled in its entirety except as to Sections 6 and 7 thereof, which are overruled with limitations, said limitations being that complainants shall furnish such particulars in these respects as they are able to do within a reasonable time, not exceeding thirty days from entry of this order, but that complainants shall not be precluded from proving any such matters at the trial, if they have not come to their knowledge within time to notify counsel for defendants before the trial, upon the ground that they have not been included in the particulars applied for by complainants before trial.

To the action of the Court in overruling said motion with the exceptions aforesaid the defendants severally except.

Approved for entry.

(S.) Gore, District Judge.

O. K. as to form: (S) J. Lawrence Fly, Solicitors for Defendants.

O. K. Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by (S.) Charles M. Seymour, Solicitor- for Complainants.

[fol. 321] In United States District Court

(Caption omitted)

Bill of Particulars—Filed Aug. 6, 1937

Now come the Complainants, by their solicitors, and for further and better particulars of the allegations set forth in Paragraph XXI of their Bill of Complaint, state that the Defendants have made representations as therein alleged at the times and places hereinafter set forth, among others, to wit:

1. On June 30, 1933 the Defendant TVA stated in a release to the press:

"The Authority intends to use Muscle Shoals as a 'Yardstick' to determine the relative costs of public and private power operation * * *."

2. On August 15, 1933 Defendant A. E. Morgan stated in a radio address at Washington, D. C., released to the press by Defendant TVA on August 16, 1933:

"Finally, in 1933, at President Roosevelt's suggestion, provision for the public ownership and operation of Muscle Shoals was incorporated in the Tennessee Valley Authority law. This provision may make possible the carrying out of one of President Roosevelt's policies—that of providing a publicly owned and operated power system as 'a yardstick' by which to measure the relative economy and efficiency of public and private ownership and operation."

[fol. 322] 3. On September 28, 1933 Defendant Lilienthal stated in a speech at Chattanooga, Tennessee:

"The public must protect its interests in so vital a force. There are various expedients to accomplish this result.

One is by commission regulation. It is pretty well recog- our operations cannot possibly be set up as a measuring rod. tect the public interest, and so to supplement regulation, Congress has provided for a measure of public operation on a limited scale. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity is a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interests involved, that the public, at any time, may itself assume the function of providing itself with this necessity of community life.

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"What the Authority is trying to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations. To set up such a 'yardstick' the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, with enough population density and with a sufficiently diversified industrial, commercial and residential load to provide a fair test. As business men it is apparent to you that if the Authority is only to serve the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod. The Authority will necessarily have to undertake to serve an area of concentrated industrial territory, good farms and favorable distribution possibilities. It will, therefore, be necessary to include several cities of fair size in the area. The people of Knoxville and Birmingham are soon to vote on the acquisition of their distributing systems. We are now constructing a tie line between Muscle Shoals and the [fol. 323] new dam at Cove Creek and we propose to enter into contracts with municipalities and other agencies desiring this service in the territory between those two points.

"Obtaining this fair market in which to sell power, seems to be in sight, in view of the interest shown by about one hundred fifty municipalities. In fact, the problem of choosing between applicants, will apparently be a real one."

4. On October 17, 1933 Defendant Lilienthal stated in a speech at Memphis, Tennessee, later released to the press by Defendant TVA:

"Is it any wonder then that the p-ople are determined to maintain the most vigilant public control of this liberating force? Various expedients for the public's protection have been adopted. One is regulation by state commissions. It is generally recognized that such regulation has not been entirely adequate to protect the public interest. And so, to supplement regulation, Congress has provided for a measure of public operation on a limited scale. This public operation is to serve as a yardstick by which to measure the fairness of electric rates.

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"What the Authority is required to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations • • •."

5. On November 7, 1933 Defendant Lilienthal stated in a speech at Nashville, Tennessee, later released to the press by Defendant TVA:

"Now this is what had been going on in the United States. Regulations by commissions had in many states proved ineffectual. In some states it was perfectly obvious that the regulators were not regulating the utilities, but in effect, utilities were regulating the regulators. In other words, the regulatory commissions were doing an honest and sincere job, but were hampered by the inherent and interminable procedure of regulation.

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"Regulation by commissions has not proved adequate. To supplement regulation by commissions, Congress passed [fol. 324] the Tennessee Valley Authority Act. The policy written into this Act does not represent an assault upon private management and ownership of public utilities, but it is a determined attack on private mismanagement of the public business of power. The Tennessee Valley Act is a well considered effort to prevent a recurrence of the looting of the power business at the expense of the people back home—consumers and investors alike.

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"* * * The small investor was assured that public regulation would protect him against watered stock and would give him a measure of security. He was assured that the public utility industry was in the hands of men who regarded themselves as, in effect, trustees of a great public business. And, when the small investor learned the real facts, his resentment was even greater than that of the consumer, who felt that his rate for service could be much lower had the electric business been operated on a proper basis. With this background, Congress passed the Tennessee Vallery Authority Act which provides for a measure of public operation of the power business.

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"This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interest involved, that the public, at any time, may itself assume the function of providing itself with this necessity of community life."

6. On November 10, 1933 Defendant Lilienthal stated in a speech at Atlanta, Georgia, released to the press on November 11, 1933 by Defendant TVA:

"The national power policy of the President and the Congress written into the Tennessee Valley Authority Act recognizes that electric power, next to the soil, is our greatest resource. It recognizes that the people must maintain public control of this liberating force. This is the first objective of the national power policy to which I have referred.

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[fol. 325] "And so, to supplement regulation by commissions, Congress passed the Tennessee Valley Authority Act. This Act is not an assault upon private ownership and management of public utilities. But it is a determined attack on private mismanagement of the public business of power at

the expense of the people back home—consumers and investors alike.

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"It was with such a background that Congress passed the Tennessee Valley Authority Act, and set up a measure of public operation of the power business. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service. It is a reminder that unless that business is conducted by private corporations with fairness, without financial jugglery and with a due sense of responsibility to the paramount public interest, that the public at any time may itself assume the function of providing itself with this necessity of community life.

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"We believe that definite plans of the Authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inaugurated by the Tennessee Valley Authority Act."

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"The Tennessee Valley Authority Act marks the beginning of a new national power policy and national power program. This new national policy has two major objectives. The first objective is more effective protection of the public interest, by the setting up of a measure of public operation of power as a 'yardstick'. The second objective of this new national policy is a greatly increased use of electricity in the homes, the farms, and the factories of the United States—an electrified America.

"The President and the Congress have set themselves to the task of putting to work the vast sources of electricity which lie idle and unused. We are working toward no less a goal than the electrification of America. The plans have been laid. Legal authority is ample. The economic difficulties can be overcome. The project is practical and feas-

[fol. 326] ible. The program can be carried out. Within the next decade it lies within the power of the people of the United States to make electricity in very truth the servant of the average man and woman in the homes, farms and places of business of this country.

"The power program of the Authority is a crucial part of its plans for immediate action and of the long range program for the development of this region. This power program is of particular interest not only within the Valley, but it has and is intended to have a national significance. For the problems which center about the power question here in the southeastern region of the United States are questions not peculiar to this area, but which are common to the country as a whole.

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"So much for the first objective of the Tennessee Valley Authority—the regulatory, public control purpose of this national power policy. We come then to the second objective, of at least equal significance.

"The power program of Congress and the President has as its major objective a constantly wider use of electricity. The goal of this national power policy is a constructive one; it is nothing less than the electrification of the homes and farms of the United States. It is for the Authority to lead the way through the tangle of engineering obstacles and of economic difficulties which obstruct the path to a genuinely widespread use of this great resource of electricity. I know something of the difficulties which lie ahead. This is not an academic exercise; it is not going to be a Sunday School picnic. We have been advised on the business problems which have to be surmounted. We know something of the engineering difficulties; of the problems of rising costs of transmission; of the problems of water control; of the difficulties of unfavorable peak loads. There is a serious problem of changing our custom of doing things. But in spite of all the difficulties, I am convinced that this objective of an electrified America is no mere Utopian dream. It can aid in the program of re-employment and national recovery toward which slowly but surely the American people, under the leadership of President Roosevelt, are moving."

[fol. 327] 7. On November 15, 1933 Defendant Lilienthal made the following announcement at Washington, D. C., later released to the press by Defendant TVA:

"The 20-year agreement between the TVA and Tupelo is expected to set a standard for contracts with other municipalities within transmission distance of Muscle Shoals. Besides rate schedules, the Tupelo contract carries with it certain rules and regulations applicable to all TVA customers. Among other things, Tupelo agrees:

"'(a) To administer its electric system as a separate department and not to mingle funds or accounts with those of any other of its operations.

"'(b) To keep its electric system accounts according to a system of accounts to be prescribed by Authority after conference with Contractor, which system of accounts will so far as possible be uniform with other systems prescribed and applied in other municipalities purchasing electrical energy from Authority. Authority agrees at its own expense to render advisory accounting service in the setting up and administering of such accounts.

"'(c) To furnish promptly to Authority such operating and financial statements relating to electric system operations as may be requested by Authority.

"'(d) To allow the duly authorized agents of Authority to have free access to all books and records relating to electric system operations.'

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"Developing Surcharge—Contractor agrees not to depart from the resale rates set forth in Schedule B (resale rates) without first securing the consent of Authority: Provided, however, that in order to maintain Contractor's revenues in the developmental period in which the increased demand for power may not compensate for the greatly reduced rates provided for in Schedule B, Contractor may impose a surcharge upon those classes of consumers subject to a surcharge under the provisions of said schedule!"

[fol. 328] 8. On January 5, 1934 the Defendant TVA stated in a release to the press:

"The essence of this agreement is the recognition by the power companies who are parties to the arrangement that

the TVA is under a duty to operate a public power business, directly and through public agencies, in order to provide a public 'yardstick' of the fairness of the rates charged by privately owned utilities."

* * * * * * *

"There has been a growing feeling that this method (regulation by Commission) of expressing the regulatory relation of the government to the public utility business was inadequate to meet the needs of the situation. These critics insisted that commission regulation by and large, had been ineffective; that in many states instead of the regulators regulating the utilities, the utilities were regulating the regulators; that financial abuses of the most lurid sort had taken place despite regulation; that the processes of regulation were too slow; and that the great technological savings in the field of electricity had not been passed on to the consumers.

"The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public utilities not by quasi-judicial commissions, but by competition. The Act definitely puts the Federal Government into the business of rendering electric service. The Authority is required to acquire a market, to set up an area in which to conduct its operations. The results of these operations in this limited area are intended to serve as a 'yardstick' by which to measure the fairness of the rates of private utilities, and to prevent destructive financial practices by private utilities. In carrying out this competitive relation between the Federal government and the private business of electricity, the wastes of competition are to be eliminated, and the regulatory function of competition emphasized. In other words, duplication of facilities and competition in the same community is to be avoided. There is not time to discuss in detail the principles which the Authority has adopted to govern its operations in this new relation as a competitor of a public business. These principles have been set out by the Authority in its Power Policy, and have been discussed in some detail in various public statements."

[fol. 329] 9. In February, 1934, Defendant Lilienthal in an article entitled, "Lower Power Rates Mean More Appliance Sales", in House Furnishing Review, stated:

"Now the reasons for the existing rate schedules are many. Part is due to tradition. There is a tremendous accumulation of musty legal theory and out-moded engineering practices in the field of electric rates. Part of it is due to the fact that domestic and farm electric service is monopolistic; and it is typical of monopolies that they change their practices very slowly, if at all. In many cases it is due to pressure of an outrageous capital structure, to bad management, to lack of foresight. We believe that definite plans of the authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inaugurated by the Tennessee Valley Authority Act."

10. In March, 1934, Defendant Lilienthal stated in an article entitled, "Business and Government in the Tennessee Valley", published in The Annals of The American Academy of Political and Social Science (Volume 172, pp. 45-46):

"• • • • • • •

"The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public utilities not by quasi-judicial commissions but by competition. The act definitely puts the Federal Government into the business of rendering electric service. The Authority is required to acquire a market and to set up an area in which to conduct its operations. The results of these operations in this limited area are intended to serve as a 'yardstick' by which to measure the fairness of the rates of private utilities, and to prevent destructive financial practices by the latter."

"In carrying out this competitive relation between the Federal Government and the private business of electricity, the wastes of competition are to be eliminated and the regulatory function of competition emphasized."

[fol. 330] 11. On April 21, 1934 Defendant Lilienthal stated in a speech at Chattanooga, Tennessee, released to the press on April 22, 1934 by Defendant TVA:

"• • • This perennial scrutiny of the work of public servants will certainly do more to protect the consumer

against inefficiency and excessive rates than the sympathetic wrist-tapping which goes under the name of public utility regulation in so many states."

12. On April 24, 1934 Defendant Lilienthal stated in a speech at Boston, Mass., released to the press on April 25, 1934 by Defendant TVA:

"In many states it had become perfectly obvious that the regulators were not regulating the utilities, but that in effect the utilities were regulating the regulators. In other states the regulatory commissions were doing an honest and sincere job, but were rendered ineffective by the interminable procedure of regulation. And so to supplement and reinforce regulation, Congress passed the Tennessee Valley Authority Act."

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"The first duty of the Tennessee Valley Authority in its power program is to set up what the President has called a 'yardstick' by which to measure the fairness of electric rates. It has an additional function. It is a reminder that unless that business is carried on by private corporations with a due sense of responsibility to the paramount public interest, that the public, at any time may assume the function of providing itself with this necessity of community life.

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"So much for the first objectives of the Tennessee Valley Authority—the regulatory, public control purposes of this national power policy, we come then to the second objective of at least equal significance.

"The power program of Congress and the President has as its major objective a constantly wider use of electricity. The fundamental problem of the Tennessee Valley Authority, of the electric industry, of the Federal government, is to devise economic ways and means to make electricity generally available, of promoting the widest possible use of power in the home, on the farm and in the factory."

[fol. 331] 13. On May 17, 1934 Defendant Lillienthal stated in a speech at New York, N. Y., later released to the press by Defendant TVA:

"By 1935 the management of some of our major electric utilities had become a national scandal. It was inevitable that President Roosevelt and the Congress should squarely face this situation. It was inevitable that they should see that regulation alone was inadequate to fully protect either the consumer or the investor. It was plain to all that regulation needed strengthening and needed supplementing.

"Neither the industry nor the investors took effective action to meet this situation. The President and Congress, in setting up the Tennessee Valley Authority, were merely responding to an overwhelming public sentiment. The public, investors and consumers alike, demanded an experiment on a broad scale, of public electric operation. This development was designed to serve as one means of seeking to prevent a continuation of financial and operating practices which had brought discredit on the entire industry, sound and unsound managements alike.

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"The Authority is interested not merely in the expansion of its own electric sales; it is interested in increasing the consumption of electricity throughout the South, in disregard of public or private ownership."

14. On May 18, 1934 Defendant TVA released to the press:

"Besides adopting a power policy and establishing rate schedules, the Authority has put into effect rules and regulations governing sale of its power • • • • •

[fol. 332] "Dr. Morgan: We make a contract with them in which we prescribe the maximum rates that they may charge.

"Senator Dickinson: And that is as to the consumer.

"Dr. Morgan: That is as to the consumer."

16. On August 1, 1934 Defendant TVA released to the press:

"Wholesale and resale rates have been fixed. • • • A transmission line to connect Wilson, Wheeler and Norris dams is under construction. One hundred miles of rural transmission lines have been pushed out into new territory. Arrangements have been made to serve more than fifty municipalities at greatly reduced rates, and private power companies have been stimulated to substantial rate reductions in other parts of the Valley."

17. On October 10, 1934 Defendant Lilienthal stated in his testimony before the Tennessee Railroad and Public Utilities Commission:

"By Mr. Johnston:

Q. Does the Authority stand ready as a wholesaler of power to all comers to enter into an agreement with City of Knoxville for the supply of its energy without any limitation as to the resale price?

A. No.

Q. Would not?

A. Would not, and would not as to any of those other municipalities.

Q. Would not as to any of these other municipalities?

A. Without any limitations?

Q. That is selling without any agreement, that is any one would buy from a private manufacturer?

A. We believe that statute requires that we do not enter into contracts without the resale rates.

[fol. 333] Q. Don't let me interrupt you, but I just want to get that question. Will you read the answer there, or I can repeat it off the record.

(Mr. Howard reads:) 'The present policy, we believe the statute requires we do not enter into any contracts without resale rates.'

A. Without agreement as to resale rates."

18. On October 13, 1933 Board of Directors of Defendant TVA approved the following statement:

"We know the existing demand is being adequately supplied by the privately owned utilities. There are only two ways whereby the Authority can dispose of this additional block of power: (1) Sale in bulk to the private utilities. Since these utilities have now adequate supplies, this alternative implies the creation of additional demand consequent upon either a substantial industrial development, or substantial increases in domestic and farm use, rendering existing privately-owned facilities inadequate. Distribution would continue to be through the facilities of existing companies. Rates to the ultimate consumer of power purchased from the Authority would be regulated by the Authority, under the terms of the contract of purchase. (2) By sale of such power to municipalities or to the public agencies which are now being served by private utilities. The Authority might dispose of its power by taking part of the field now occupied and served by the existing utilities. A typical case is sale at wholesale to a municipality which owns its own distribution system, now purchasing at wholesale from a private utility. Since there are few municipalities in the area which own their distribution systems, such a method of disposing of the Authority's power would involve the acquisition by such municipalities of distribution facilities now owned by the utilities, or the construction of competing facilities."

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"C. The President's policy: The "Yardstick."

President Roosevelt has uttered publicly that one of the functions of operation of Muscle Shoals is as a "yardstick" [fol. 334] by which to measure the reasonableness of electric rate charges. In view of his sponsorship of this legislation, the yardstick idea must be taken to be definitely a part of the policy embodied in the Tennessee Valley Authority Act.

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4. For the Authority's operations to provide a "yardstick" of public operation by which to measure private operation, it is essential that the Authority engage not only

in the generation, but participate in the transmission and distribution of electricity, since these latter two phases of electric service represent the most important part of the cost of such service. A public yardstick, to have value, necessarily means public operation from power house to consumer's premises. (It is for this reason that the Authority has adopted a policy of rate and accounting control of municipal distribution operations.)"

19. On October 17, 1933 Defendant Lilienthal stated in a speech at Memphis, Tennessee, later released to the press by Defendant TVA:

"I suppose it is obvious that all computations concerning costs are based on the expectation that the Authority will sell the power which it has available. Muscle Shoals was turned over to us as a going plant, but not as a going concern with customers. Obviously, if we sell only one kilowatt hour, our cost will be hundreds of thousands of dollars a kilowatt hour, rather than a few mills. If the power is not utilized in volume, no one will receive the great potential benefits of the wealth of the Tennessee River. It is axiomatic in the electric business that an increase in use decreases the cost per unit of output. Accordingly, we look forward to a maximum use of our facilities, because it is in that way that the Authority and those agencies which buy its power at wholesale can steadily bring down rates to the householder, the farmer and the business man, and bring to this area the economic and social benefits of the President's plan."

* * * * * * *

"The Authority must carry out the national policy entrusted to it. It must acquire a market for its power."

20. On November 10, 1933 Defendant Lilienthal stated in a speech at Atlanta, Georgia, released to the press on November 11, 1933 by Defendant TVA:

[fol. 335] "Within the area of the Tennessee Valley, for example, privately owned electric companies have generating and transmission facilities which can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. A fair estimate is that 25% of the investment in power houses

and transmission lines is idle, and is piling up fixed charges, because the customers of these companies are still tied to a low average use of electricity. The Tennessee Valley Authority has a hydro-electric plant at Muscle Shoals with a rated installed capacity of 250,000 H.P. But that is only the beginning of the story. The Authority is constructing a dam and power house at Cove Creek, and another dam and power house above Muscle Shoals at what is known as the 'Joe Wheeler' dam, which together will increase the capacity of Wilson Dam to at least 600,000 H.P.

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"If we admit that the use of electricity cannot be increased many fold; if that is our mental attitude, then we must be logical and immediately stop construction of the Cove Creek dam and of the Joe Wheeler dam."

21. On November 20, 1933 Defendant A. E. Morgan stated in a speech at Boston, Mass., released to the press on November 21, 1933 by Defendant TVA:

"• • • the economy of electric power in the Tennessee Valley area will depend much on large scale developments that are designed and operated as single integrated systems. The entire Tennessee River System, with its thousands of miles of streams, should be under one control and ownership, which means government ownership."

22. On January 5, 1934 Defendant TVA released to the press:

"Had the power companies which are parties to this contract been unwilling to sell these facilities at a fair price, or had they insisted on payment for intangibles or water, the Authority would have been under a definite mandate to construct duplicating facilities rather than submit to being 'help up.'"

[fol. 336] 23. In January, 1934 Defendant A. E. Morgan, in a magazine article entitled "Bench-Marks in the Tennessee Valley", published in 23 Survey Graphic, stated at pages 5 and 105:

"Without suggesting any particular level of unit cost, I venture the opinion that if the water-power development

of the entire Tennessee River drainage area of 40,000 square miles can be given a single unified ownership and control, the unit cost of power may be no more than half of what it would be with divided ownership and management. To illustrate: Near the east boundary of Tennessee is a dam-site which will provide vast storage capacity for an area of very heavy rainfall and run-off of a few thousand square miles. From this point down the Tennessee River to its mouth is a fall of, roughly, one thousand feet, nearly all of which can be used for generating power.

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"Now consider what would be accomplished by a single unified system, thoroughly interconnected by transmission lines and controlled from a single office. During wet seasons or wet years the storage dams would be closed until their reservoirs were filled, and all power would be developed from plants having no storage, or inadequate storage. If rains should be heavier on one tributary than on another, the full reservoirs would be drawn upon. On some of the smaller tributaries of the Tennessee, sometimes at high elevations, there are reservoir sites of very large capacity, but without water enough to fill them. Those cheapest and most capacious sites could be developed by building dams, and then, for off-peak hours at night, for a few wet months during the year, and for intermittent wet seasons, all surplus power could be used in pumping water uphill into those high reservoirs which would have power plants to be used during peak loads or for a standby supply. * * *

"With such a single integrated system under a single control, the full hydro-electric power possibilities of the region could be realized, and the cost per unit of private power might be not more than a half or even a third of the cost of separately owned and operated plants. * * *

"Such unified control and operation implies government ownership and operation. The control of this great electric-power system by a private corporation would give economic [fol. 337] power over the people of the region which no self-appointed private business men ought to hold. Such management and operation would of necessity be governmental and public in its nature. * * *"

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"Just as an adverse balance of foreign trade tends to bankrupt a nation, so the constant drain from a municipality of payments to a foreign-owned utility tends to economic impoverishment. Given administration of equal quality, the ideal status of a city utility is that it is fully amortized and is owned by the public it serves. Regional independence from a perpetual drain is no less important for an area as large as that of the TVA than for a city."

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"By the methods I have described in this article, the TVA hopes to accomplish several objectives:

"First, it hopes to unify the development of water power for the entire Tennessee River System and thus avoid the enormous waste of various independent installations.

"Second, it intends to support vigorously the position that the generation and sale of power is properly a public function, in which it is proper for the public to engage.

"Third, it hopes to establish a 'yardstick' for power, to discover what electric power ought to cost the people, and to provide a comparison between public and private ownership.

"Fourth, it hopes to encourage the wider and freer use of electricity in the American home.

"Fifth, there are dangers and disadvantages in public ownership. To evade or to deny this fact can only lead to trouble. The TVA hopes to face honestly these disadvantages and if possible to remove or to master them."

24. In January, 1934 Defendant A. E. Morgan, in a magazine article entitled, "The Tennessee Valley Authority," published in Scientific Monthly (Address to the National Academy of Sciences, Massachusetts Institute of Technology, Cambridge, November 20, 1933), stated at page 64:

[fol. 338] "Lastly, the economy of electric power in the Tennessee Valley area will depend much on large-scale developments that are designed and operated as single integrated systems. The entire Tennessee River system, with

its thousands of miles of streams, should be under one control and ownership, which means government ownership.

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"• • • the value of that private plant will be doubled by the building of Norris Dam at public expense. Only by a single organized system of water power plants for the whole Tennessee River system can the full economy be realized. With that organization, water power may cost less than half what it would if the various units should be developed independently by private companies. Water power is to have stiff competition from steam and Diesel engines. If the Tennessee River region is to realize its possibilities in water power it can not afford to throw away this economy."

25. In January, 1934 Defendant Lilienthal, in a magazine article entitled "Electrification of America", in House Furnishing Review, stated at page 52:

"Looking at the country as a whole, without respect to public operation or private operation, it is perfectly evident that we now have and soon will have a tremendous surplus supply of electricity. Within the area of the Tennessee Valley, for example, privately owned electric companies have generating and transmission facilities which can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. A fair estimate is that 25% of the investment in power houses and transmission lines is idle, and is piling up fixed charges, because the customers of these companies are still tied to a low average use of electricity. The Tennessee Valley Authority has a hydro-electric plant at Muscle Shoals with a rated installed capacity of 250,000 H.P. But that is only the beginning of the story. The Authority is constructing a dam and power house at Cove Creek, and another dam and power house above Muscle Shoals at what is known as the 'Joe Wheeler' dam, which together will increase the capacity of Wilson Dam to at least 600,000 H.P. • • •"

[fol. 339] 26. In March, 1934, Defendant A. E. Morgan stated in a magazine article entitled, "Purposes and Methods of the Tennessee Valley Authority," appearing in The

Annals of The American Academy of Political and Social Science (Vol. 172, p. 57):

"There is one other element that I want to mention in the matter of electric power. It is economy of generation. We are taking the position that the whole Tennessee River system ought to be a single unit in the planning and distribution of electric power. Some of the plants have abundant power only a part of the year; other plants can have storage so that all the power can be used all the year or in any part of the year. If we can use those plants at the time they have power and tie them all together as a unit, I believe we can get at least twice, possibly three times, as much value for a dollar's expenditure as we can if those plants are owned individually. I believe it is not possible to organize them under private ownership, unless we should have some great super-corporation dictating the economic conditions of life over an area three-quarters the size of England. We believe that public ownership is the only right way to integrate that system, and we are working on that program.

"And so, as we go along, we are trying to take one after another of the economic problems that arise in that region, to work from chaos into order. We are trying not to do it in an arbitrary way of taking the property because we want it, but are trying to find ways in which a transition can be made from the present regime to another regime in which there will be ownership at home, if possible, with the elimination of excessive charges and of duplication and friction, in which the essence of economic planning can be achieved in an orderly and systematic and patient manner."

27. On April 22, 1934 Defendant Lilienthal stated in a speech at Boston, Mass., released to the press on April 25, 1934 by Defendant TVA:

"The Authority must carry out the national policy entrusted to it. It must acquire a market for its power. It must work toward a wider use of electricity. None of these objectives will result in the predicted calamities to the industry and its bona fide investors. The Authority early [fol. 340] adopted a policy of buying, at fair prices, the property of private utilities in the area selected for its 'yardstick' operations rather than to duplicate facilities and engage in destructive competition."

28. On May 17, 1934 Defendant Lilienthal stated in a speech at New York, N. Y., later released to the press by Defendant TVA:

"The Authority is under duty to acquire a market for its power. It is authorized to compete with existing utilities, and for this purpose is expressly empowered to erect duplicate facilities."

29. On May 21, 1934 Defendant Dr. Morgan stated in his testimony at the House of Representatives hearing, pp. 155, 156, 162 and 163:

"Mr. Bacon: On the question of the market for power, do you intend to take power into the big cities, like Birmingham and the other industrial centers of that region?

"Dr. Morgan: In purchasing from the Commonwealth & Southern Co., we made an agreement with them that we would not invade their territory for the present, until the Norris Dam is completed. After that, we hope we can make some arrangement for a division of territory.

"Mr. Thurston: Will you build dams first, or will you make the division before you build the dams?

"Dr. Morgan: We are building the dams."

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"Dr. Morgan: • • • This project is an effort to set up a governmental development of power, and, if that is adopted, it seems to me a reasonable set-up that it should not be hamstrung and so limited that it is bound to fail.

"• • • We are trying to set up a unit that will be comparable to a well-managed private unit. It requires an adequate area. • • • I hope we can help to establish a policy for the power industry."

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"As I said this morning, if this project is to work at all, it must have some area to work in. We must in some way [fol. 341] acquire an area to work in, either by setting up competing facilities to the present facilities, or by purchasing the facilities of present utilities."

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"In our opinion, if we can carry through the program we have, we may cause a temporary disadvantage to the

immediate power interests around there—to the companies immediately surrounding us. We are trying to make arrangements with them to purchase their utilities. This project is an effort to set up a governmental development of power, and, if that is adopted, it seems to me a reasonable set-up that it should not be hamstrung and so limited that it is bound to fail. * * *

"We are trying to take them over. We were in negotiation with the Commonwealth & Southern, and we have come to an agreement; as the other plants come into operation, we ought to take over more.

* * * * * * *

"Mr. Bacon: In purchasing these transmission lines, you have come to an agreement with the companies, but it is really an agreement under duress, is it not, because if they did not sell to you, you would duplicate their lines?

"Dr. Morgan: Yes."

"Mr. Bacon: So they were compelled to sell?

"Dr. Morgan: Yes—they were not obliged to; they could take the other course.

"Mr. Bacon: I understand.

"Dr. Morgan: Here we have a project as a whole. This project is for a yardstick for power, taking the set-up here. If there is no place to sell that power it is not a project, but only an idea. We have to see this as a whole, or else we cannot achieve it at all.

"Mr. Bacon: I understand the necessity for taking over their transmission lines, but they were forced to sell to you because if they did not sell to you, you would put power lines in and put them out of business.

"Dr. Morgan: We are not going to sell power unless we sell it somewhere.

[fol. 342] "Mr. Bacon: Naturally, they will make the best deal with you that they can, of course.

"Dr. Morgan: I hope they will deal with us. We are carrying on some negotiations where the course is not so smooth.

"Mr. Bacon: If you hold a man up with a pistol, if he can get off with half of his possessions, he is going to do it."

30. On June 1, 1934 Defendant TVA released to the press:

"The Authority is under duty to acquire a market for its power. * * * It is authorized to compete with exist-

ing utilities, and for this purpose, expressly empowered to erect duplicate facilities."

31. On July 6, 1934 Defendant TVA released to the press:

" 'There are only two alternatives open to the people of North Alabama,' Mr. Lilienthal said. 'The first is to build duplicate and competing plants with the delay involved in getting construction under way and with the expense of acquiring enough customers to insure financial success.

" 'We believe that the communities would get 100 per cent of the business because of the lower rates and because of the loyalty of the people of these communities.

" 'The results of this alternative clearly, would be to render valueless the lines, poles, transformers, etc., which are now owned by the Alabama Power Company. This property is useful and has a value at the present time to the people of the community.' "

32. On January 13, 1935 Defendant A. E. Morgan stated in an address at Swarthmore College, released on January 14, 1935 to the press by Defendant TVA:

"Private initiative and rugged individualism showed no sense of social responsibility, no evidence of planning. If we can develop the Tennessee Valley as a unified system we can do it at half the cost of private management. Public control is essential to prevent a great social and economic waste."

[fol. 343] 33. In March, 1935, Defendant Morgan stated in a magazine article entitled, "Selfish Interests Must Go", published in The Forum, p. 131:

"The program is under way. Whether it indicates that government ownership and operation are superior to private or vice versa, I believe events should determine. I believe that criticism of that program ought always to be free. I think, however, that criticism ought to be fair; and wherever there is an effort to misrepresent, to cloud the issue, to mislead the public and so to discredit such an undertaking because certain investors might suffer—there I think we have one of the evidences of how hard it is to establish anything new in our lives. Dividends have been paid through the years on securities which represent no outlay of money, and yet there is resentment at the sug-

gestion that these imaginary values should be written off. This is an illustration of the difficulty of instituting the New Deal.

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"Wherever we turn we find that things as they are have become the basis of some personal interest. All the disabilities of our economic system have been taken advantage of in some way. For instance, go to a small town and you will commonly find five times as many merchants as are necessary. Four out of five are economic parasites. If that town could reorganize itself and have one fifth as many merchants and have the other four fifths of its leading citizens doing other services—taking care of the public health of the community, establishing dental and medical clinics, giving vocational guidance to the young people—we would have a better town. If the town can support five times as many people serving the public as are necessary to run its stores, why not support people performing necessary services rather than people who are duplicating services which are already being performed? And yet, whenever any organization has made an effort to eliminate a superfluity of personnel in any field, there is at once the cry that it is interfering with private interests.

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"As a small boy, I heard a story about how the East Indians catch monkeys. According to the story, they take a coconut and cut a hole in it barely big enough for the [fol. 344] monkey's empty hand to pass through. In it they place some lumps of sugar and then fasten the coconut to a tree. The monkey squeezes his hand inside the coconut and grasps the sugar and then tries to draw out his fist. But the hole is not large enough for his closed fist to go through, and greed is his undoing, for he will never give up the prize.

"American business to some degree is in the same situation. It is not yet willing to give up the sugar. Only so far as it becomes willing to relinquish this grasp can the New Deal survive and be a reality."

34. On October 17, 1933 Defendant Lilienthal stated in a speech at Memphis, Tennessee, later released to the press by Defendant TVA:

"To you who are investors in public utility securities, I want to speak very frankly: After long deliberation, a national policy has been determined upon whereby a limited example of public operation of the power business is to be set up and to be given a chance to show what it can do. This is now the nation's policy."

35. On November 7, 1933 Defendant Lilienthal stated in a speech at Nashville, Tennessee, later released to the press by Defendant TVA:

"In order to fully understand the reasons for the power program set out in the Tennessee Valley Authority Act, it is necessary to recall what has been happening in the United States during the past ten years. It is necessary to understand that the people back home have become thoroughly aroused and that they are determined that the disgrace which was cast upon the electric industry during the past decade, and the losses which have been visited upon investors in public industries is not to be repeated.

"You are all thoroughly familiar with the sordid story. I need not recall to your minds the quarter of a million dollars which Samuel Insull paid to the Chairman of the Illinois Public Utilities Commission. Those of you who are investors in public utility securities are familiar with the story of gross inflation, of the pyramiding of stocks, or write-ups, of bonuses, of the purchase of isolated utility plants at outrageous and unreasonably high figures and the issuance of securities on the basis of such prices. Instances of these practices can be cited to you almost from coast to coast.

[fol. 345] "I have no desire to intimate that every important executive in the public utility business followed such practices, but there can be no question that in the last decade the dominate power was in the hands of financial pirates and free-booters."

36. On January 5, 1934 Defendant TVA released to the press:

"The essence of this agreement is a recognition by the power companies who were parties to the arrangement that

the TVA is under a duty to operate a public power business, directly and through public agencies."

37. In January, 1934, Defendant A. E. Morgan stated in an article entitled "The Tennessee Valley Authority", published in Scientific Monthly at page 64 (Address to the National Academy of Sciences, Massachusetts Institute of Technology, Cambridge, November 20, 1933):

"Another object of the Tennessee Valley Authority is to make this region and the country as a whole more fully aware of the vast possibilities of electric power for enlarging the freedom and scope of modern life in the home and on the farm. This can only come with cheap power, from which all speculation and exploitation have been removed. The electric power business is one of the simpler industries of our country. It does not compare in complexity with the shoe industry, the automobile industry or the railroad industry. No vast tribute should be paid for management and financing. Brought down to its simpler necessities, electric power should be a universal convenience, supplied as city water supplies usually are, on a basis of service and not of commercial exploitation."

38. In March, 1934, Defendant A. E. Morgan stated, in an article entitled, "Purposes and Methods of the Tennessee Valley Authority", published in The Annals of The American Academy of Political and Social Science (Vol. 172 pp. 53, 54):

"Outside Ownership of Utilities

"And let me divert right here to the matter of electric power. The utilities of that region are not largely owned locally. There is some preferred stock scattered around the country, mostly, it would appear, to widows and orphans. [fol. 346] While the Tennessee Valley Authority law was in Congress, a large number of letters were received at the Capitol protesting against the passage of the law. They largely came from holders of the preferred stock and I think two thirds of them came from widows and orphans. I have a collection of possibly a hundred of those letters. I have wondered what economic accident it is that causes such a backlog of widows and orphans for the utilities to appeal to for public support.

"Possibly 10 or 20 per cent of the ownership of the local utilities is in that region. The rest is outside; the control is outside, the dividends largely go outside to our large centers. The region exports money. A country that does too much of that is going to be in trouble."

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"• • • We are taking the position that unless there is some necessary element of service rendered, foreign ownership is destructive to a community and its elimination is a sound element in social and economic planning."

39. In March, 1934, Defendant A. E. Morgan, in an article entitled, "Bench-Marks in the Tennessee Valley, II A Birch Rod in the National Cupboard," published in 23 Survey Graphic, stated at pages 105, 110:

"For the government to have a genuine 'yardstick' for power it must generate and sell power on such a scale that the operation can be representative of efficient management. Fortunately for this program, the drainage area of the Tennessee River, with certain limited areas and cities in addition, constitutes such a unit. At present it is almost an independent area, and can be treated as a unit with very little adjustment of physical facilities. The TVA, therefore, plans through a period of years to treat this region as a unit of power supply, and to attempt to demonstrate what is the normal and reasonable cost of electric power. Its general plan is to generate and transmit power to the individual communities, encouraging them to own and operate their own municipal or community distributing systems. The TVA will furnish engineering and accounting advice and supervision. In this way the communities can have the advantage of large-scale low-cost generation and transmission and also the advantage of local public ownership. For such a program, a fairly large area of operation is necessary."

[fol. 347] 40. On April 21, 1934 Defendant Lilienthal stated in a speech at Chattanooga, Tennessee, released to the press on April 22, 1934 by Defendant TVA:

"Perhaps the most important factor in insuring a low cost for hydro-electric power in this region is the fact that the distribution of this power to the factories and homes

and farms, for the most part, will be in the hands of public agencies. Industries seeking to use large blocks of hydro-electric power in the Tennessee Valley will not be forced to support dizzy towers of inflated capitalization. They will not have to pay for the financial misdeeds of the builders of utility pyramids. Under public distribution of power with centralized accounting, control and supervision in the hands of a regional authority, there will be the greatest incentive to economy and managerial efficiency. Each community will try to make its record better than that of its neighboring community."

41. On April 24, 1934 Defendant Lilienthal stated in a speech at Boston, Mass., released to the press on April 25, 1934 by Defendant TVA:

"Now this is what had been going on throughout the United States—financial excesses, political corruption, an enforced frugality in the use of a great natural resource."

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"Twenty million American homes are to be denied the full benefits of a great national resource in order that inflated stock may pay out."

42. On June 13, 1934 Defendant Dr. Morgan stated in his testimony before the Sub-committee of the Committee on Appropriations, U. S. Senate:

"Senator Dickinson: And, if it takes $300,000,000 to put in or make this experiment on behalf of the citizens involved here, might I inquire if you would state what you would think it would take from the public treasury and the taxpayers of the United States to help the people in the rest of the United States under a similar program?

"Dr. Morgan: Most of that $300,000,000 is for power development, and will be gradually repaid out of revenues. I [fol. 348] think it will cost the taxpayers of America altogether less than it is now costing in the rest of the United States. For instance, in Knoxville, the people now are paying a certain rate for electric power. We believe that we can cut that rate decidedly and yet that the people can pay for their entire installation in 10 years out of the rest. That is, the rates they are paying now are so excessive, the taxes they are paying, in the form of electric rates now are so ex-

cessive that we can cut that 30 per cent and yet out of the rest of it that they can pay the whole thing back in 10 years.

"Senator Dickinson: It seems to me that is a tremendous indictment of all of the authorities that have had anything to do with the supervision of electric rates in any of the localities or States where you happen to be distributing power.

"Dr. Morgan: I am not commenting on that statement."

43. On June 22, 1934 Defendant Lilienthal stated in a speech at Jackson, Tennessee, later released to the press by Defendant TVA:

"I am not an alarmist, but I want to warn you that powerful forces are at work to deprive the South of the greatest opportunity which ever came to any people. A year ago the disciples of greed and blindness that brought this country to the verge of a collapse had hurried into the storm cellars, whimpering and crying for help. • • •

"The people of the country must choose whether to follow the leadership of the President or the leadership of the selfish and blind that brought us so close to destruction.

"The first great test is in your hands here in the Tennessee Valley. Under the cover of various disguises, powerful forces are at work to destroy the long-time objectives of the Tennessee Valley Authority. In order to fill their own pocket , these powerful groups are ready at any cost to destroy the Tennessee Valley Authority's program and to keep the President's objectives from being fulfilled."

[fol. 349] Complainants are informed and believe that numerous other similar representations have been made by the several Defendants, but Complainants are not now in possession of the precise particulars with reference thereto.

For further and better particulars of the allegations set forth in Paragraph XXIV of the Bill of Complaint, Complainants herein say that they are advised and believe and therefore allege that whether the Tennessee Valley Authority Act as amended purports, when properly construed, to authorize the various acts of the Defendants set forth in the Bill and of which complaint is made a question of law, that all of said acts of the Defendants are either unauthorized by the Tennessee Valley Authority Act as amended, when properly construed, or said Act is to that extent unconstitu-

tional and void for the reasons set forth in Paragraph XXV of the Bill, that Complainants are in doubt whether there are any of said acts other than those set forth in Paragraph XXIV of the Bill which said statute does not attempt to authorize, and that therefore the Complainants are unable further to particularize which of said acts other than those already specified in Paragraph XXIV of the Bill are not attempted to be authorized by the Tennessee Valley Authority Act as amended, when properly construed.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants.

I certify that a copy of the foregoing has been delivered to opposing counsel.

Aug. 6, 1936.

(S.) Charles D. Snepp.

[fol. 350] IN UNITED STATES DISTRICT COURT

(Caption omitted)

STIPULATION RE CERTAIN OFFERS IN EVIDENCE—Filed August 14, 1937

Whereas, both the plaintiffs and the defendants during the course of the trial will or may have occasion to offer in evidence public records, reports or other documents; and

Whereas, both the plaintiffs and defendants desire to conserve the time of the Court, to avoid unnecessary costs and expenses and to expedite the trial insofar as possible;

It is Hereby Stipulated as follows:

1. That any printed copy of the following classes of printed documents: House Documents, Senate Documents, Official Reports to the President of the United States by appointed committees, Executive Orders, Official Reports to Congress, Official Reports of Cabinet Officers of the United States, Congressional Hearings, Reports of Congressional Committees, Congressional Records, and all documents showing upon their face that they were printed by the U. S. Government Printing Office, may be offered in evidence without further proof of its authenticity and without further

proof that the said printed copy is accurate and what it purports to be, all further proof of the genuineness and authenticity of said documents being expressly waived.

[fol. 351] 2. That any officially printed copy of any document officially published by any State, or Department of such State, or of any report or survey by official research and investigating bodies of any of the various States, bearing in print upon its face identification as such, may be offered in evidence without further proof of its authenticity and without further proof that it is a correct and accurate copy of what it purports to be, all further proof of authenticity being expressly waived.

3. That Hal H. Clements, Jr., Special Master, shall request from the Mississippi River Commission copies of the following records and data and that such records and data so received by him and transmitted to the Court may be offered or used in evidence by any of the parties without further proof that they are correct and accurate copies of what they purport to be, all further proof of authenticity being expressly waived.

Daily hydrographs for the Mississippi River at Belmont, Mo., for the years 1895 to 1902, inclusive;

Daily hydrographs for the Mississippi River at Columbus, Ky., for the years 1903 to 1927, inclusive;

Daily hydrographs for the Mississippi River at Hickman, Ky., for the years 1928 to 1932, inclusive;

Stream flow records for the Mississippi River in the vicinity of Cairo, Illinois, for whatever period these data may be available.

4. That on or before September 15, 1937, counsel for plaintiffs will deliver to counsel for defendants:

(a) Copies of all corporate charters, franchises, licenses, certificates of convenience and necessity and privileges of any of the original plaintiffs, or their predecessors, from the United States or any State, county, or municipality or any State regulatory body;

(b) Copies of any declaration of intention to construct dams and project works filed with the Federal Power Commission, any preliminary permits issued by the Federal Power Commission for the construction of dams and proj-

ect works, any applications to, licenses and amendments to licenses, granted by the Federal Power Commission, and any instruments acknowledging compliance with the provisions of licenses by the Federal Power Commission or any other Department of the United States or officer thereof; and

[fol. 352] (c) Copies of any certificates, licenses, instruments of approval or other authorizations or acknowledgments issued, made or granted by any Department of the United States, or officer thereof, respecting any dams or hydroelectric plants, or respecting the construction of any dams or hydroelectric plants of the original complainants;

and that the same may be offered in evidence without further proof of their authenticity and without further proof that they are correct and accurate copies of what they purport to be, all further proof of authenticity being expressly waived.

5. That on or before September 1, 1937, counsel for the plaintiffs will deliver to counsel for the defendants copies of the following documents, to wit:

(1) Speech delivered by C. A. Collier, Vice President of the Georgia Power Company, to the Southeastern Electrical Exchange Conference at Savannah, Georgia, on March 29, 1934.

(2) Speech delivered by F. A. Newton to the Convention of the Edison Electrical Institute on June 7, 1934 at Atlantic City, New Jersey.

(3) Speech delivered by F. A. Newton to the Convention of the Edison Electrical Institute on June 8, 1934 at Atlantic City, New Jersey.

(4) Speech delivered by Wendell Wilkie, President of of the Commonwealth & Southern Corporation, at a meeting of the Investment Bankers Association at New York City on October 31, 1934.

(5) Speech delivered by Wendell Wilkie, President of the Commonwealth & Southern Corporation, to the Rotary Club at Birmingham, Alabama, on November 7, 1934.

(6) Speech delivered by Wendell Wilkie, President of the Commonwealth & Southern Corporation, to the Economic Club in New York City on January 21, 1935.

(7) Speech delivered by J. A. Longley, Vice President and General Manager of the Tennessee Electric Power Company, at Chattanooga, Tennessee, on January 29, 1935.

(8) Speech delivered by J. A. Longley, Vice President and General Manager of the Tennessee Electric Power Company, at the University of Chattanooga, Chattanooga, Tennessee, on February 26, 1935.

(9) Statement made by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in the House of Representatives at Washington, D. C., on March 14, 1935.

(10) Speech delivered by Wendell Wilkie, President of the Commonwealth & Southern Corporation, to the Chamber of Commerce Convention at Washington, D. C., on May 1, 1935.

(11) Speech delivered by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at the Town Hall Club, New York City, on December 4, 1935.

[fol. 353] (12) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in New York Times, under date of December 4, 1935.

(13) Statement by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Forbes Magazine under date of December 15, 1935.

(14) Speech delivered by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at the New York Bond Club, New York City, December 20, 1935.

(15) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in the Wall Street Magazine under date of December 21, 1935.

(16) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Barrons Magazine under date of December 23, 1935.

(17) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Edison Electrical Institute Bulletin under date of January, 1936.

(18) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Public Utilities Fortnightly under date of January 30, 1936.

(19) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Journal of Land & Public Utility Economy under date of February, 1936.

(20) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in New York Herald Tribune under date of February 19, 1936.

(21) Press release by Wendell Wilkie, President of the Commonwealth & Southern Corporation, under date of February 24, 1936.

(22) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in News Review under date of February 24, 1936.

(23) Quoted remarks by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Literary Digest under date of February 29, 1936.

(24) Radio address by Wendell Wilkie, President of the Commonwealth & Southern Corporation, over NBC Network on March 5, 1936.

(25) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Public Service Magazine for April, 1936.

(26) Statement of T. W. Martin, President, Alabama Power Company, before the House Ways and Means Committee of the Alabama Legislature, April, 1936.

(27) Statement by T. W. Martin, President, Alabama Power Company, to stockholders of the Alabama Power Company under date of April 9, 1936.

(28) Speech by Wendell Wilkie, President of the Commonwealth & Southern Corporation, over Radio Station WABC on April 15, 1936.

(29) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Electrical Institute Bulletin under date of May, 1936.

[fol. 354] (30) Statement by T. W. Martin, President, Alabama Power Company, issued at Birmingham, Alabama, under date of May 4, 1936.

(31) Address by T. W. Martin, President, Alabama Power Company, in Mobile Times under date of May 6, 1936.

(32) Report by Wendell Wilkie, President of the Commonwealth & Southern Corporation, to stockholders of Commonwealth & Southern Corporation under date of May 22, 1936.

(33) Article by P. S. Arkwright, President of the Georgia Power Company, in Forbes Magazine under date of June 1, 1936.

(34) Speech by Wendell Wilkie, President of the Commonwealth & Southern Corporation, under date of June, 1936, delivered at Annual Conference of Mutual Savings Banks.

(35) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Financial World under date of June 3, 1936.

(36) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Public Service Magazine, June, 1936.

(37) Speech by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at Chattanooga, Tennessee on June 15, 1936.

(38) Statement by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at Chattanooga, Tennessee on June 18, 1936.

(39) Article by J. C. Guild, Jr., President of the Tennessee Electric Power Company, in Public Utilities Fortnightly, under date of July 2, 1936.

(40) Article by J. C. Guild, Jr., President of the Tennessee Electric Power Company, under date of July 3, 1936.

(41) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, under date of July 12, 1936.

(42) Article by P. S. Arkwright, dated July 12, 1936.

(43) Article by J. C. Guild, Jr., President of the Tennessee Electric Power Company, under date of August 18, 1936.

(44) Speech by T. W. Martin, President, Alabama Power Company, at Birmingham, Alabama, August 19, 1936.

(45) Release by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at Washington, D. C., September 18, 1936.

(46) Release by Wendell Wilkie, President of the Commonwealth & Southern Corporation, at Washington, D. C., September 22, 1936.

(47) Letter from J. C. Guild, Jr., President of the Tennessee Electric Power Company, to stockholders of the Tennessee Electric Power Company, dated September 30, 1936.

(48) Letter from T. W. Martin, President, Alabama Power Company, to stockholders of the Alabama Power Company, dated October 1, 1936.

[fol. 355] (49) Statement by Wendell Wilkie, President of the Commonwealth & Southern Corporation, issued at Washington, D. C., October 1, 1936.

(50) Article by T. W. Martin, President, Alabama Power Company, in Manufacturers Record, October, 1936.

(51) Article by C. W. Kellogg, President of the Edison Electrical Institute, in New York Journal of Commerce, October 8, 1936.

(52) Speech by C. W. Kellogg, President of the Edison Electrical Institute, to the Philadelphia Association of Security Salesmen at University Club, Philadelphia, Pa., on October 22, 1936.

(53) Speech by C. W. Kellogg, President of the Edison Electrical Institute, to the Investment Bankers Association of Augusta, Georgia, on December 6, 1936.

(54) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, under date of January 3, 1937, in New York Times.

(55) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in the Annalist under date of January 8, 1937.

(56) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in Electrical World under date of January 9, 1937.

(57) Press release by T. W. Martin, President, Alabama Power Company, under date of January 15, 1937.

(58) Article by Wendell Wilkie, President of the Commonwealth & Southern Corporation, in United States News under date of January 21, 1937.

(59) Statement by Wendell Wilkie, President of the Commonwealth & Southern Corporation, on the Cancellation of the Power Pool under date of January 27, 1937.

(60) Announcement made by Wendell Wilkie, President of the Commonwealth & Southern Corporation, on February 3, 1937, that the Commonwealth & Southern Corporation had decided to allow the Tennessee Valley Authority contract to expire.

(61) Statement by Wendell Wilkie, President of the Commonwealth & Southern Corporation, on February 4, 1937, that the Commonwealth & Southern Corporation had decided to allow Tennessee Valley Authority contract to expire.

(62) Sixty page discussion on Power Pool Problem, and related problems, issued by Commonwealth & Southern Corporation on February 17, 1937.

(63) Speech by P. S. Arkwright before Augusta Rotary Club, Augusta, Georgia, on May 25, 1937.

(64) Speech by C. W. Kellogg, President of the Edison Electrical Institute, before the Edison Electrical Institute, Chicago, Illinois, in June, 1937.

(65) Statement by P. S. Arkwright before Georgia Public Service Commission on July 13, 1937.

[fol. 356] (66) Statement issued by T. W. Martin, President, Alabama Power Company, published in the Birmingham Age-Herald, Birmingham, Alabama, July 22, 1937.

together with all newspaper advertisements or published statements relating to the Tennessee Valley Authority or any rural electrification group or association served or proposed to be served by it, or relating to any of the officers or directors of the Tennessee Valley Authority, published or paid for by any of the original complainants, by the Commonwealth & Southern Corporation, or the Electric Bond &

Share Corporation or any director or officer of any of said companies.

It is further agreed that counsel for the plaintiffs will deliver to counsel for the defendants, upon demand, copies of any additional specified documents or papers of the same general type as those listed above. On or before September 1, 1937, counsel for the defendants will deliver to counsel for the plaintiffs copies of all annual or other official reports to Congress, published speeches, published articles, or advertisements, or press releases, of any of the defendants, or any of their respective directors or officers. Any of the documents described in this paragraph may be offered in evidence without further proof of their authenticity and without further proof that they are correct and accurate copies of what they purport to be, all further proof of authenticity being expressly waived.

6. It is expressly agreed that this Stipulation shall in nowise preclude either the plaintiffs or the defendants from objecting to the introduction in evidence of any such report, record, or document by reason of its irrelevancy, immateriality or incompetency upon any other ground or grounds than lack of proof of authenticity. Nothing contained herein shall be construed as a waiver of any privilege that may exist as to confidential communications or official documents.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Plaintiffs.
James Lawrence Fly, Solicitor for Defendants.

[fol. 357] IN UNITED STATES DISTRICT COURT

(Caption omitted)

SUGGESTION THAT ACT OF CONGRESS OF AUGUST 24TH, 1937 REQUIRES APPLICATION TO SENIOR OR PRESIDING CIRCUIT JUDGE FOR DESIGNATION OF TWO ADDITIONAL JUDGES TO HEAR CAUSE—Filed August 28, 1937

To the Honorable John J. Gore, United States District Judge:

With reference to the above entitled cause now pending before you by designation, in the United States District

Court for the Eastern District of Tennessee, we respectfully call your attention to the following situation:

On the 24th day of August instant, the President approved a recently passed Act of Congress entitled "An Act to Provide for Intervention of the United States, Direct Appeals, etc."; and such Act is now in full force and effect. Section 3 thereof provides, among other things, that "No interlocutory or permanent injunction suspending or restraining the enforcement, operation, or execution of, or setting aside in whole or in part any Act of Congress, upon the ground that such Act or any part thereof is repugnant to the Constitution of the United States, shall be issued" except upon the conditions in such section specified. In our judgment, the injunction sought in this case upon the final hearing is sought in part, though not wholly, upon the ground thus specified in Section 3, and therefore the conditions thereof become applicable, and plaintiff's application for such injunction (which application exists by the pendency of the final hearing) must be heard and determined by three judges, as in this section specified.

We therefore respectfully suggest that you immediately request that the Senior Circuit Judge, or in his absence, the Presiding Circuit Judge of this Circuit, designate two other judges to participate in hearing and determining such application.

For your convenience, and subject to your approval, we hand you herewith a draft of such request for your use for that purpose.

Respectfully, Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Complainants.

(For brevity the draft of the request for designation of additional Judges is omitted.)

[fol. 358] IN UNITED STATES DISTRICT COURT

(Caption omitted)

AMENDMENT TO STIPULATION OF AUGUST 14, 1937—Filed Sept. 2, 1937

It is agreed that the stipulation filed in this cause on August 14, 1937 be amended so as to show that the defendants have requested the plaintiffs to deliver to counsel for the defendants copies of the following documents, subject to the terms and provisions of said stipulation:

1. All reports to stockholders issued by any of the original plaintiffs during the period between January 1, 1927 and the present date.

2. A copy of the application of The Tennessee Electric Power Company to the State Railroad and Public Utilities Commission of Tennessee, for permission to issue bonds for the purpose of building a steam plant near Nashville, Tennessee.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Plaintiffs. William C. Fitts, Jr., Solicitor for Defendants.

[fol. 359] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MOTION TO COMPEL DEFENDANTS TO PRODUCE DOCUMENTS AND PERMIT INSPECTION THEREOF—Filed September 20, 1937

Now come the Complainants in the above entitled cause by their solicitors and move this Court for an order compelling Defendants herein to produce and permit the Complainants to inspect in advance of trial the documents hereinafter described in Exhibit A, hereto attached and made a part hereof, in said Defendants' possession or under their control, containing evidence material to the cause of action of Complainants and admissible in evidence herein, as more fully appears from the affidavit of Charles M. Seymour, hereto attached as Exhibit B and made a part hereof.

Baker, Hostetler, Sidlo & Patterson Trabue, Hume Armistead, Frantz, McConnell & Seymour, Solicitors for Complainants.

A copy of this motion and exhibits has been delivered to the solicitor for defendants.

Frantz, McConnell & Seymour, by Charles D. Snepp.

[fol. 360] EXHIBIT "A" TO MOTION TO PRODUCE DOCUMENTS, ETC.

Records of Tennessee Valley Authority Comprising Engineering Data, Maps, Drawings, Charts, Graphs, Tabulations, Surveys and Reports With Respect to the Dam Construction or Reservoir of Each of the Dams now Constructed or to Be Constructed by Tennessee Valley Authority Named in the "Unified Plan" Submitted to Congress on March 31, 1936, as Follows:

1. Norris Dam:

(a) Scale drawing showing general plan of Norris Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of bottom of dam, elevation of center line of slide gates, dimensions of slide gates, elevation of top of overflow section, and elevation of top of gates.

(d) Volume area curves for Norris Dam Reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of non-overflow section of dam, showing elevation of center line of penstock and top of dam.

(f) Drawing showing downstream elevation of dam with overall dimensions, length of spillway, length and number of gates, and length of non-overflow sections.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Norris Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

[fol. 361] 2. Hiwassee Dam:

(a) Scale drawing showing general plan of Hiwassee Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of bottom of dam, elevation of center line of slide gates, dimensions of slide gates, elevation of top of overflow section, and elevation of top of gates.

(d) Volume area curves for Hiwassee Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of non-overflow section of dam, showing elevation of center line of penstock and top of dam.

(f) Drawing showing downstream elevation of dam with overall dimensions, length of spillway, length and number of gates, and length of non-overflow section.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Hiwassee Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

3. Fontana Dam:

(a) Scale drawing showing general plan of Fontana Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

[fol. 362] (c) Drawing of section through overflow part of dam showing elevation of bottom of dam, elevation of center line of slide gates, dimensions of slide gates, elevation of top of overflow section, and elevation of top of gates.

(d) Volume area curves for Fontana Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of non-overflow section of dam showing elevation of center line of penstock and top of dam.

(f) Drawing showing downstream elevation of dam with overall dimensions, length of spillway, length and number of gates, and length of non-overflow sections.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of Fontana Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

4. Coulter Shoals Dam:

(a) Scale drawings showing general plan of Coulter Shoals Dam and Power House.

(b) Contour map of reservoirs area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates and elevation of bottom of dam.

(d) Volume area curves for Coulter Shoals reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam.

[fol. 363] (f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Coulter Shoals Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

5. Watts Bar Dam:

(a) Scale drawings showing general plan of Watts Bar Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates and elevation of bottom of dam.

(d) Volume area curves for Watts Bar Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

[fol. 364] (i) Complete set of land maps comprising the land map of Watts Bar Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

6. Chickamauga Dam:

(a) Scale drawings showing general plan of Chickamauga Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates and elevation of bottom of dam.

(d) Volume area curves for Chickamauga Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Chickamauga Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

[fol. 365] 7. Guntersville Dam:

(a) Scale drawings showing general plan of Guntersville Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates, and elevation of bottom of dam.

(d) Volume area curves from Guntersville Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam and bottom of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Drawing of section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Guntersville Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

8. General Joe Wheeler Dam:

(a) Scale drawings showing general plan of General Joe Wheeler Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates, and elevation of bottom of dam.

[fol. 366] (d) Volume area curves for General Joe Wheeler Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Section through non-overflow part of dam showing elevation of top of dam and bottom of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the General Joe Wheeler Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

9. Wilson Dam:

(a) Scale drawings showing general plan of Wilson Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gates and elevation of bottom of dam.

(d) Volume area curves for Wilson Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam and bottom of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Section through power house showing center line of waterway, number of units, size of water wheel and generator installation in kw. and kva.

[fol. 367] (h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Wilson Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

10. Pickwick Landing Dam:

(a) Scale drawings showing general plan of Pickwick Landing Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gate, and elevation of bottom of dam.

(d) Volume area curves for Pickwick Landing Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam and bottom of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Drawing of section through power house showing center line of penstock, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of the Pickwick Landing Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

[fol. 368] 11. Gilbertsville Dam:

(a) Scale drawings showing general plan of Gilbertsville Dam and Power House.

(b) Contour map of reservoir area showing contours by 10 ft. elevations from elevation of bottom of dam up to elevation of top of gates.

(c) Drawing of section through overflow part of dam showing elevation of top of dam, elevation of top of gate, and elevation of bottom of dam.

(d) Volume area curves for Gilbertsville Dam reservoir from elevation of bottom of dam up to elevation of top of gates.

(e) Drawing of section through non-overflow part of dam showing elevation of top of dam and bottom of dam.

(f) Drawing showing downstream elevation of dam with general overall dimensions, length of spillway section, length and number of gates, and elevation of roadway.

(g) Drawing of section through power house showing center line of waterway, number of units, size of water wheel and generator installation in kw. and kva.

(h) Drawing showing navigation lock with dimensions of length, width and height of lock, elevations of upper and lower miter and guard sills, dimensions of upper and lower gates and size of filling and emptying culverts.

(i) Complete set of land maps comprising the land map of Gilbertsville Dam reservoir.

(j) All daily reports on stream flow, rainfall storage and pond elevations prepared by Tennessee Valley Authority.

[fol. 369] Engineering and Technical Data Prepared by or in the Possession of Tennessee Valley Authority Relating to the Generation, Transmission or Distribution of Electricity, Tennessee Valley Authority Department of Electricity, or Costs of Program.

1. All maps, drawings, sketches, tabulations and data showing transmission, distribution or rural electric lines, the respective mileage of each of said lines, the capacity thereof, date the construction began and date line was energized, constructed or now under construction by Tennessee Valley Authority under contract or otherwise.

2. All maps, drawings, sketches, tabulations and data showing transmission, distribution or rural electric lines, the respective mileage of each of said lines, the capacity thereof, and proposed date of construction, proposed to be constructed or projected for construction by Tennessee Valley Authority under contract or otherwise.

3. All maps, drawings, sketches, tabulations and data showing transmission, distribution or rural electric lines, the respective mileage of each of said lines and the capacity thereof and the date of acquisition, acquired from municipalities or privately owned public utilities by Tennessee Valley Authority.

4. All maps, drawings, sketches, tabulations and data showing the location, date of acquisition of site, type capacity and structural design of each of the sub-stations that have been or are now being constructed by Tennessee Valley Authority or which are proposed to be constructed by said Authority or which have been or are now proposed to be acquired by said Authority from other governmental agencies or privately owned public utilities in any of the states of Tennessee, Alabama, Kentucky, Georgia or Mississippi since the date of the organization of said Authority.

5. All surveys made by Tennessee Valley Authority or by any municipality, cooperative electric association or other governmental agency or agencies or individual or group of individuals and furnished to said Tennessee Valley Authority showing potential consumer demand and number of potential customers in any area comprising a part of any of the states of Tennessee, Alabama, Kentucky, Georgia or Mississippi together with all estimates or tabulations made by Tennessee Valley Authority of the cost of constructing lines to said areas and serving said areas or any of them, and estimated revenues therefrom.

6. All surveys made by Tennessee Valley Authority or by any individual, corporation, association or agency, either

public or private, and furnished to Tennessee Valley Authority of any of the customers of any of the Complainants, together with any estimates relating thereto showing the consumer demand, cost of service to or revenues from said customers or any of them.

7. Books and records of Tennessee Valley Authority showing:

[fol. 370] (a) The number of employees in the Department of Electricity as of January 1, 1937 and as of September 15, 1937;

(b) The names, addresses, position or duties and salary or rate of compensation of each of said employees as of January 1, 1937 and September 15, 1937; and

(c) Date of first employment of each of said employees.

8. All reports, estimates or tabulations submitted to or made by the Directors of Tennessee Valley Authority, or any of them or any of the Defendants, in reference to Wilson Dam, Norris Dam, Wheeler Dam, Pickwick Landing Dam, Gilbertsville Dam, Guntersville Dam, Chicamauga Dam, Watts Bar Dam, Coulter Shoals Dam, Hiwassee Dam, Fontana Dam and Hales Bar Dam, or any of them, showing allocations or tentative allocations of the cost or value of each of said Dams to electric power development, navigation, flood control, fertilizer manufacture and national defense.

9. The allocations of the value of Wilson Dam as taken over by Tennessee Valley Authority between flood control, navigation, electric power development, fertilizer manufacture and national defense (a) approved by the Board of Directors of Tennessee Valley Authority and submitted to the President of the United States, and (b) approved by the President and returned to the Tennessee Valley Authority.

10. The separate allocations of the costs of Norris Dam and Joe Wheeler Dam, or either of them, between flood control, navigation, electric power development, fertilizer manufacture and national defense (a) approved by the Board of Directors of Tennessee Valley Authority and submitted to the President, and (b) approved by the President and returned to said Tennessee Valley Authority.

11. The books and records of Tennessee Valley Authority showing payments to the states of Alabama and Tennessee on account of the sale of electric power generated at any of the dams of Tennessee Valley Authority for each of the years 1933 to date.

12. The books and records of Tennessee Valley Authority showing the cost of generation, transmission and distribution of electric energy produced by said Authority for each of the years from 1933 to date and the total cost of generating, transmission and distribution facilities constructed or acquired by said Authority in each of said years.

13. The books and records of Tennessee Valley Authority showing the total sum paid or expended to date to electrical contractors or potential users of electricity in any [fol. 371] of the states of Tennessee, Alabama, Kentucky, Georgia or Mississippi as an allowance to assist in defraying the cost of wiring the house or buildings of any prospective electric consumer by reason of said consumer's agreement to install an electric range or water heater or both.

14. All reports of operations or earnings and all financial statements furnished or delivered to Tennessee Valley Authority by any cooperative electric association or municipality purchasing electric energy from Tennessee Valley Authority, specifically including the cooperative electric associations and municipalities hereinafter named, to wit:

Municipalities

Alabama	Tennessee	Mississippi
Athens	Bolivar	Amory
Birmingham	Chattanooga	Holly Springs
Cherokee	Clinton	New Albany
Courtland	Columbia	Okolona
Decatur	Dayton	Tupelo
Florence	Dickson	
Hartselle	Jackson	
Muscle Shoals	Johnson City	
Russellville	Knoxville	
Sheffield	Lenoir City	
Tuscumbia	Lewisburg	
	Memphis	
	Milen	

Municipalities—Continued

Georgia	Tennessee	Kentucky
Cartersville	Nashville	Louisville
Dalton	Newbern	Middlesboro
Lafayette	Paris	
	Pulaski	
	Somerville	
	Trenton	

Cooperative Electric Power Associations

Alcorn County Elec. Power Assn.
Prentiss County Elec. Power Assn.
Monroe County Elec. Power Assn.
Tishomingo County Elec. Power Assn.
Duck River EMC.
Lincoln County Power District or Lincoln County EMC.
Gibson County EMC.
Lauderdale County Power District.
Alabama Power District.
Lauderdale County Corporation.
Clarke-Washington EMC.
Bradley County EMC.
West Tennessee EMC.
Marshall County EMC.
DeKalb County EMC.
Franklin County EMC.
West Monroe County Elec. Power Assn.
Fayette County EMC.
Marshall County EMC.
Pontotoc County Elec. Power Assn.
Meigs County EMC.
North Georgia EMC.
Tombigbee County Elec. Power Assn.
Middle Tennessee EMC.
Southwest Tennessee EMC.
Pickwick EMC.
Cullman County EMC.
Colbert County Power District.
Morgan and Lawrence Counties, Alabama.
Colbert County Corporation.
Bedford County EMC.
Madison County EMC.
East Tennessee EMC.

Cooperative Electric Power Associations—Continued

Guntersville EMC.
Madison County EMC.
Lee County EMC.
4 County Elec. Power Assn.
Stone's River EMC.
Franklin County EMC.

[fol. 372] EXHIBIT "B" TO MOTION TO PRODUCE DOCUMENTS, ETC.

Affidavit

STATE OF TENNESSEE,
County of Knox, ss:

Charles M. Seymour, being first duly sworn, says that he is one of the solicitors for Complainants herein.

It is alleged in Complainants' Bill of Complaint, among other things, that the dams constructed or proposed to be constructed by Defendants herein are constructed for the direct and primary purpose of producing electric energy proposed to be deliberately produced at said dams for use in creating and operating a great federally-owned public utility and not as an incident to the exercise of any powers delegated to the United States by the Constitution; that none of said dams serve nor are they designed to serve any real or substantial purpose of navigation or otherwise that may lawfully or constitutionally be served by the government of the United States or any lawful agency thereof; that the Defendants, in the construction of said dams, designed the same and provided for the creation of huge reservoirs back of each of said dams for the primary purpose of assuring the production of tremendous quantities of electric energy by the generating units installed or proposed to be installed at each of said dams, and that the drawings, maps, charts, graphs, tabulations, surveys, reports and data prepared or recorded by Defendants, or their representatives, [fol. 373] and which are now in the possession of or under the control of said Defendants, in connection with the construction of said dams, more fully described in Exhibit A, attached to and made a part of the Motion of which this Affidavit is a part and to which it is attached, are necessary

to be produced in advance of trial for the inspection by Complainants to enable Complainants to prove said allegations; that none of said drawings, maps or documents are in the possession of any of the Complainants herein; and that said maps, drawings and documents, and each of them, are material and relevant and are admissible in evidence herein.

It is further alleged in said Bill of Complaint, among other things, that Defendant Tennessee Valley Authority was organized and all of said Defendants have been continuously engaged from and after its organization in carrying out a plan, the objects of which were, among other things: (a) to create and operate a great federally-owned public utility; (b) to control and regulate the rates of privately owned public utilities, including Complainants', by means of federally subsidized competition and to compel reductions of said rates without regard to the statutes, rules or regulations of the respective states in which said utilities are engaged in business and in invasion of the powers reserved to the states by the Constitution of the United States; and (c) to promote public ownership and operation of public utilities by means of propaganda and federally subsidized competition. The corporate records and documents of the Defendant Tennessee Valley Authority, described in the Exhibit A attached to the Motion of which this Affidavit is a part and more fully described therein contain [fol. 374] information (not in the possession of Complainants) which will tend to prove said allegations of complainants' Bill, and the production of said corporate records and the inspection thereof by Complainants in advance of the trial hereof is necessary to enable Complainants to prove the allegations of said Bill at the trial of this action; said records are material and relevant and admissible in evidence herein.

Further affiant saith not.

Charles M. Seymour.

Sworn to before me and subscribed in my presence this 20th day of September, 1937. Elsie Schettler, Notary Public. My Notarial Commission expires July 10, 1938. (Seal.)

[fol. 375] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MOTION FOR LEAVE TO TAKE DEPOSITION OF HAROLD L. ICKES—
Filed September 20, 1937

Now come Complainants herein by their solicitors and move the Court for an order permitting complainants to take the testimony of Harold L. Ickes, residing in Washington, D. C., by deposition de bene esse or by oral examination before the Special Master heretofore appointed by the United States District Court for the Eastern District of Tennessee, Northern Division, by order dated July 2, 1937, a copy of which order is hereto attached and marked "Exhibit A", for the reasons that the testimony of said Harold L. Ickes is necessary to enable complainants to prove certain allegations of plaintiffs' Bill of Complaint herein and that said testimony could not be previously taken in this cause for reasons more fully set forth and appearing in the affidavit of Raymond T. Jackson, one of the solicitors of complainants, hereto attached, marked "Exhibit B" and made a part hereof.

Frantz, McConnell & Seymour, Trabue, Hume & Armistead, Baker, Hostetler, Sidlo & Patterson, Solicitors for Complainants.

A copy of this motion and exhibits has been delivered to the Solicitor for defendants.

Frantz, McConnell & Seymour, by Charles D. Snepp.

[fol. 376] RECITAL AS TO EXHIBIT "A" TO MOTION

Exhibit "A" attached to the motion for leave to take the deposition of Harold L. Ickes is a copy of the order appointing Hal H. Clements, Jr., as Special Master and to avoid duplication is here omitted.

[fol. 377] EXHIBIT "B" TO MOTION FOR LEAVE TO TAKE DEPOSITION OF HAROLD L. ICKES

IN UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT OF RAYMOND T. JACKSON

STATE OF OHIO,
Cuyahoga County, ss.:

Raymond T. Jackson being first duly sworn on oath deposes and says:

That he is a member of the firm of Baker, Hostetler, Sidlo & Patterson, and one of the counsel for plaintiffs in the above-entitled suit;

That on July 27, 1937 affiant communicated by telephone with Mr. James Lawrence Fly, general counsel for the Tennessee Valley Authority, who was then in Washington, D. C., with reference to deferring the taking of the deposition of the Honorable Harold L. Ickes, Administrator of the Federal Emergency Administration of Public Works; that affiant informed Mr. Fly that if Mr. Fly insisted, affiant would take the deposition of Mr. Ickes during that week and before July 31, 1937, but that affiant requested that the taking of Mr. Ickes' deposition be deferred for the reasons: (1) that owing to the illness of Mr. Newton D. Baker, the senior member of affiant's firm, it had become necessary for affiant to participate in the argument of the case of Duke [fol. 378] Power Company v. Greenwood County, et al., in the United States Circuit Court of Appeals for the Fourth Circuit at Asheville, North Carolina, on August 3, 1937; that under the previous arrangements it had been planned that Mr. Baker would argue said case in the Fourth Circuit Court of Appeals and affiant had not expected to have any responsibility in that matter; that as a result of the changed circumstances caused by Mr. Baker's illness it was necessary for affiant to devote some time to the suit and the briefs in preparation for said argument, and further to meet Mr. S. W. O'B. Robinson, Jr., general counsel for the Duke Power Company, prior to the day set for argument in the case, to confer with Mr. Robinson with reference to the division and presentation of said arguments; that counsel

for plaintiffs was anxious, if possible, to avoid taking the deposition of Mr. Ickes, both as a matter of convenience to counsel for defendants and plaintiffs in this case and in deference to the fact that Mr. Ickes had recently been ill and it was uncertain whether he was yet fully recovered from his illness so that his health was such that he should be subjected to any burdens which could be avoided for the time being; that counsel for plaintiffs conceived that it might be possible to avoid taking Mr. Ickes' deposition if sufficient information were obtained through the depositions of other officers and agents of the Federal Emergency Administration of Public Works, and that if not, it might be possible to supplement the depositions of other officers and agents of the Federal Emergency Administration of Public Works by a stipulation with reference to Mr. Ickes' testimony and avoid the necessity of taking his deposition; that these facts were stated to Mr. Fly as reasons for the request to defer the taking of Mr. Ickes' deposition; that Mr. Fly [fol. 379] under these circumstances agreed that the taking of the deposition of Mr. Ickes might be deferred and after Mr. Fly had expressed the wish that the deposition be taken, if that proved necessary, by August 15th, it was agreed in the conversation between affiant and Mr. Fly that shortly after affiant returned from argument of the case of Duke Power Company v. Greenwood County at Asheville, North Carolina, affiant would communicate with Mr. Fly with reference to the taking of Mr. Ickes' deposition, and it was expressly stated by affiant that if it proved impossible to avoid taking Mr. Ickes' deposition counsel for plaintiffs desired to arrange the deposition at a time which would meet the convenience both of counsel for the defendants in this cause and the convenience of Mr. Ickes, who had been ill and who on his return would obviously be pressed with accumulated matters requiring his attention and decision;

That affiant after his return from the argument of the case of Duke Power Company v. Greenwood County at Asheville, North Carolina, on the morning of August 7, 1937 attempted to telephone to Mr. Fly at Knoxville with reference to the taking of Mr. Ickes' deposition or the making of a stipulation in lieu thereof; that affiant was informed that Mr. Fly had left for Washington; that on Monday, August 9, 1937, Charles M. Seymour, Esq., Knoxville, Tennessee, one of the counsel for the plaintiffs in this cause, by telephone informed affiant that he was attempting to

communicate with Mr. Fly with reference to a different stipulation which had been under discussion between counsel for plaintiffs and defendants in this cause and that when and if Mr. Seymour, who had the advantage of local communication with Mr. Fly's staff in Knoxville, should succeed in getting into communication with Mr. Fly, Mr. Seymour would advise affiant so that affiant might communicate with Mr. Fly with reference to the taking of the deposition [fol. 380] of Mr. Ickes; that later on August 9, 1937 Mr. Seymour informed affiant that he was unable to reach Mr. Fly anywhere by telephone in Washington but that Mr. Seymour was continuing his efforts to get in communication with Mr. Fly and would inform affiant as soon as he was able to do so;

That when Mr. Seymour informed affiant on Tuesday, August 10, 1937, that he had been unable to establish direct communication with Mr. Fly in Washington but had heard indirectly from him through other counsel for the Tennessee Valley Authority, affiant then attempted to communicate by telephone with Mr. Fly in Washington; that affiant was unable to reach Mr. Fly by telephone in Washington; that on the afternoon of August 10, 1937 affiant then sent to Mr. Fly at Washington a telegram reading as follows:

"Telegram

August 10, 1937.

James Lawrence Fly, Esq., Hayes Adams Club, Washington, D. C.:

Have been trying to reach you by telephone since Saturday morning stop Realize you are very busy but desire to discuss with you at your earliest convenience whether taking of deposition deferred by agreement between us may be avoided and if not when most convenient to you for us to take deposition.

R. T. Jackson";

that on August 11, 1937 Mr. Fly accepted affiant's telephone call in Washington and informed affiant that he had failed to accept affiant's call before because he had assumed that the call was with reference to the same stipulation in regard to which Mr. Seymour had been attempting to talk with him by telephone; and that since Mr. Fly had arranged for Mr. William C. Fitts, Jr., one of the counsel for the Tennessee Valley Authority, to handle said stipulation with

Mr. Seymour, Mr. Fly had thought it unnecessary to ac-
[fol. 381] cept affiant's call; that in the telephone conversation of August 11, 1937 with Mr. Fly, affiant informed Mr. Fly that counsel for plaintiffs were not certain whether they would be able to propose a stipulation in lieu of the taking of Mr. Ickes' deposition; that a definite conclusion on that point would be facilitated by an opportunity to examine the exhibits which had been obtained through the depositions of other officers and agents of the Public Works Administration which had not yet been transcribed and supplied by the reporter to counsel for plaintiffs; that plaintiffs desired to do whatever would meet the convenience of counsel for the defendants in the matter of taking Mr. Ickes' deposition; that if it were agreeable to Mr. Fly to wait until copies of the exhibits obtained from the other agents or officers of PWA should be received from the reporter, counsel for plaintiffs would examine them as speedily as possible and attempt to propose a stipulation in lieu of taking the deposition; that Mr. Fly stated that that would be satisfactory, but suggested that we should urge the reporter to expedite the furnishing of copies;

That thereupon affiant immediately communicated with Mr. Charles M. Seymour and requested him to ask the reporter to expedite as much as possible the transcription of said exhibits and testimony and the forwarding of a copy to affiant at Cleveland, Ohio; that such testimony and some, but not all of the exhibits, that had been produced by other witnesses connected with the Public Works Administration were received at Cleveland, Ohio, on Tuesday, August 17th, 1937; that counsel for plaintiffs immediately examined the same and attempted to draft a stipulation in lieu of taking Mr. Ickes' deposition;

That on August 19, 1937 affiant attempted to telephone
[fol. 382] to Mr. Fly with reference to the making of a stipulation in lieu of taking Mr. Ickes' deposition, or the setting of a day for taking the same, and was informed that Mr. Fly was in Asheville, North Carolina, and that Mr. Fly could not be reached by telephone, but that Mr. Fly was expected back in Knoxville that afternoon; that affiant left a request that Mr. Fly should call immediately on his return; that thereafter, and in order to facilitate an early disposition of the matter, affiant then telephoned Mr. William C. Fitts, Jr., one of the counsel for the Tennessee Valley Authority, and informed Mr. Fitts of his efforts to reach

Mr. Fly, requested Mr. Fitts to urge Mr. Fly to telephone affiant as soon as he returned that day, and said to Mr. Fitts that a suggested stipulation in lieu of taking Mr. Ickes' deposition and of a character similar to that made by the parties in Ashwander v. Tennessee Valley Authority was being drafted and sent out to co-counsel for their approval; that it was proposed to submit such stipulation as soon as approval could be obtained by co-counsel and certain other interested parties; that it occurred to affiant that perhaps it would be desirable and that perhaps Mr. Fly would prefer to set some definite date for taking Mr. Ickes' deposition convenient to counsel for the defendants and Mr. Ickes, with the understanding that counsel would attempt in the meantime to reach a stipulation in lieu of taking the deposition, but that if negotiations for such stipulation failed then the deposition would be taken upon the day previously fixed;

That Mr. Fly did not return affiant's call on August 19, 1937, and that on August 20, 1937 affiant again called Mr. Fly by telephone and repeated the substance of the statement theretofore made to Mr. Fitts; that Mr. Fly then said that he was insistent that the stipulation be concluded im- [fol. 383] mediately or the deposition taken; that affiant pointed out that it would be impossible to take the deposition during that week, since the next day was Saturday, and also that if there were going to be a bona fide effort to secure a stipulation in lieu of taking the deposition of Mr. Ickes it would be necessary to have a little time in which to iron out any differences of view between the parties; that thereupon it was agreed that attempts should be made to set the taking of Mr. Ickes' deposition for Wednesday, August 25, providing it were possible to secure Mr. Ickes for that purpose at that time; and that in the meantime counsel for plaintiffs would submit a proposed stipulation in lieu of taking said deposition;

That counsel for plaintiffs immediately prepared a subpoena duces tecum to serve upon Mr. Ickes and went to Washington on Sunday, August 22, 1937 to arrange for its issuance and service; that said subpoena duces tecum was issued Monday morning, August 23, and was served immediately on Mr. G. G. Madigan, who had been previously designated by Mr. Ickes to accept service of subpoenas on matters relating to Public Works Administration; that counsel for plaintiffs were informed that Mr. Ickes (as all parties had previously known) had been ill; that he had only re-

sumed such attention as he could give to his numerous duties a short time before the adjournment of Congress in order to dispose of necessary matters and give certain information with reference to pending legislation which had to be taken care of prior to the adjournment of Congress; that Mr. Ickes had immediately left Washington for a short rest and that he would not be available until his return for the taking of his deposition; that plaintiffs were informed by counsel for the Public Works Administration and believed that Mr. Ickes would return not later than within two or three weeks and possibly sooner, and that at any time there-[fol. 384] after Mr. Ickes would be available to give his deposition subject to reasonable consideration for his convenience and the duties of his office; that counsel for plaintiffs desired to take his deposition at such time as would meet the reasonable convenience of Secretary Ickes and the reasonable convenience of counsel for the defendants;

That on Monday, August 23, 1937, counsel for plaintiffs left a copy of the subpoena duces tecum for Mr. Ickes with Mr. Robert E. Sher, counsel for the Power Division of the Public Works Administration and that Mr. Sher stated that he would collect the documents described and would advise with counsel for the defendants, and unless counsel for defendants objected would deliver copies of such documents, with certain possible minor exceptions which are not material here, to counsel for plaintiffs in the hope that it would expedite the making of a stipulation in lieu of taking Mr. Ickes deposition; that Mr. Sher later in the day on August 23, 1937 advised counsel for plaintiffs that he had communicated with counsel for the defendants and that they had objected to any such documents being delivered to counsel for plaintiffs in advance of the making of the stipulation or an examination of Mr. Ickes;

That counsel for plaintiffs, on August 23, 1937, submitted to counsel for the defendants a proposed stipulation of Secretary Ickes; that counsel for the defendants refused to make any stipulation of any kind whatsoever with reference to Mr. Ickes' testimony, even refusing to stipulate any of the facts previously stipulated by the same counsel with reference to what Mr. Ickes would testify if called as a witness in the case of Ashwander v. Tennessee Valley Authority;

That affiant then communicated with Mr. Robert E. Sher, counsel for the Power Division of the Public Works Ad-

[fol. 385] ministration, with reference to Mr. Ickes' whereabouts and whether his deposition might be taken elsewhere than in Washington; that Mr. Sher advised affiant that he would not be able to ascertain Mr. Ickes' whereabouts or the precise date of his return to Washington before Wednesday, August 25, 1937; that he would dislike to see Mr. Ickes disturbed while he was seeking a short rest; and that Mr. Sher would if possible inform the affiant on Wednesday, August 25, 1937, when Mr. Ickes would return to Washington, whether it would be possible to take Mr. Ickes' deposition in the interim and if possible when Mr. Ickes' deposition could be taken, if no stipulation could be made between counsel in this case in lieu of taking such deposition.

That on Wednesday, August 25, 1937, Mr. Sher informed affiant by telephone that Mr. Sher was not free to disclose Mr. Ickes' whereabouts as he had left positive orders that he should not be disturbed during the period of his rest and that therefore it would not be possible to arrange any agreement for the taking of Mr. Ickes' deposition prior to Mr. Ickes' return to Washington at the conclusion of his rest. Affiant later learned from newspaper news stories that Mr. Ickes did not return to Washington until about September 11, 1937.

Affiant understood and now understands from the foregoing information and from information made available to the public generally through the public press, and upon the basis of such information therefore states, that it would have been impossible for Mr. Ickes to agree to give his deposition before his departure for the aforesaid rest, as Mr. Ickes, during the short period intervening between his resumption of duties following his illness and his departure [fol. 386] for such rest, had been continuously occupied so far as his health permitted with official business and particularly with the pressure of matters incident to the adjournment of Congress; that Mr. Ickes would have been compelled to decline to give his deposition until a later date unless compelled by court order to do so sooner and that to have compelled Mr. Ickes to give his deposition sooner would have been to disregard the reasonable convenience of Secretary Ickes under the circumstances.

The motion to which this affidavit is attached for an order permitting plaintiffs to take the deposition of Mr. Ickes was not filed immediately following the refusal of counsel for defendants on August 23, 1937, to stipulate in lieu of

taking such deposition because the Congress, a short time prior to its adjournment on August 21, 1937, had passed a bill which necessitated the hearing on this case by a court composed of three United States judges, which bill was signed by the President of the United States a few days thereafter; the judges comprising said court were not designated until Friday, September 17, 1937, and affiant was first informed thereon on the morning of Saturday, September 18, 1937.

Further affiant sayeth not.

Raymond T. Jackson.

Sworn to before me and subscribed in my presence this 18th day of September, 1937. Joan Atkinson, Notary Public. My commission expires July 10, 1940.

[fol. 387] IN UNITED STATES DISTRICT COURT

(Caption omitted)

APPLICATION OF COMPLAINANTS FOR AN ORDER REQUIRING DEFENDANTS TO PRODUCE DOCUMENTS OR IN THE ALTERNATIVE FOR EXTENSION OF TIME FOR TAKING TESTIMONY BEFORE SPECIAL MASTER—Filed September 20, 1937

Now come complainants by their solicitors and represent to the court as follows:

1. Subsequent to the former order of this court dated the 2nd day of July, 1937, appointing the Honorable Hal H. Clements, Jr., Special Master with authority to take evidence offered by the parties hereto and report the same to the court, complainants did, pursuant to order of said Special Master, commence to take evidence before said Special Master on the 20th day of July, 1937, which date was the earliest practicable date that said Special Master could hold hearings; and thereafter complainants proceeded diligently with the taking of evidence before said Special Master in the states of Georgia, Tennessee, Alabama and the District of Columbia. The taking of testimony in the states of Georgia, Tennessee and Alabama was completed on Monday, the 26th day of July, 1937, and the taking of testimony was commenced in the District of Columbia on Wednesday, the 28th day of July, 1937, at ten o'clock A. M.

[fol. 388] 2. Complainants caused subpoenas duces tecum to be issued by the District Court of the United States for the District of Columbia for several witnesses residing therein one of whom was John M. Carmody, the Administrator of Rural Electrification Administration. Due to the absence of said witness from Washington, D. C. the subpoena duces tecum was not served on him until Friday, July 30, 1937, which by its terms directed said witnesses to appear on Saturday, July 31, 1937, at eleven o'clock A. M. before said Special Master.

3. The subpoena duces tecum served on said John M. Carmody required him to produce, among other things, any and all correspondence between Tennessee Valley Authority, its officers, directors or employees, or Arthur E. Morgan, Harcourt A. Morgan or David E. Lilienthal, or any of them and Rural Electrification Administration and any of its officers, directors or employees relating to, discussing or having to do with the making, or any of the terms of any contracts or agreements between Rural Electrification Administration and cooperatives organized and existing in the area in which the Tennessee Valley Authority is operating, including each of the following named cooperatives, to wit:

Clarke-Washington Electric Membership Corporation.
Cullman County Electric Membership Corporation.
Franklin County Electric Membership Corporation.
Marshall County Electric Membership Corporation.
North Georgia Electric Membership Corporation.
Pontotoc County Electric Power Association.
Monroe County Electric Power Association.
4-County Electric Power Association.
Meigs County Electric Membership Corporation.
Duck River Electric Membership Corporation (old Bedford County Electric Membership Corporation).
Middle Tennessee Electric Membership Corporation (old Stone's River Electric Membership Corporation).
Southwest Tennessee Electric Membership Corporation.
Lauderdale County Corporation.
Alabama Power District.
Lee County Electric Membership Corporation.

[fol. 389] DeKalb County Electric Membership Corporation.
Guntersville Electric Membership Corporation.
Madison County Electric Membership Corporation.
Alcorn County Electric Power Association.
Prentiss County Electric Power Association.
Tombigbee Electric Power Association.
West Monroe County Electric Power Association.
Lincoln County Electric Membership Corporation.
Fayette County Electric Membership Corporation.
Tishomingo County Electric Power Association.
Pickwick Electric Membership Corporation.
Gibson County Electric Membership Corporation.
East Tennessee Electric Membership Corporation.
West Tennessee Electric Membership Corporation.
Tri-County Electric Membership Corporation.
Colbert County Power District.
Lauderdale County Corporation.
Colbert County Corporation.
Cherokee County Electric Membership Corporation.
Joe Wheeler Electric Membership Corporation.

4. Said John M. Carmody, while being examined as a witness, stated that he was sure that there was in his possession correspondence of the kind and character called for by said subpoena duces tecum but said witness refused to produce the same, refused to comply with the request of the solicitors for complainants that said correspondence be produced and refused to obey the order and direction of said Special Master so to do.

5. By reason of the refusal of said witness John M. Carmody to produce the correspondence so subpoenaed and requested as hereinbefore set forth and by reason of the limitations of time allowed complainants for the taking of testimony before said Special Master complainants were unable to complete the taking of evidence before the Special Master within the time heretofore fixed by this court for the taking thereof. In order for complainants to complete the taking of the testimony of said Carmody before said Special Master a proceeding would need be inaugurated in the United States District Court for the District of [fol. 390] Columbia to obtain an order of said court direct-

ing said John M. Carmody to obey the subpoena duces tecum served on him, and produce the correspondence described in said subpoena and submit to examination before said Special Master. Defendants, by their solicitors, have objected before said Special Master to the holding of any further hearings by said Special Master, to the taking of any additional testimony before him and to the making of any order by said Special Master continuing the examination of the witness Carmody until such time as an order from the United States District Court for the District of Columbia directing said witness to produce said correspondence could be obtained.

6. Complainants believe and hence aver that counterparts of all of said correspondence are now in the possession of or under the control of the defendants herein. Said correspondence is material and relevant to the determination of the issues involved in this case, and the production thereof by defendants herein is necessary to enable complainants to fully prove the allegations of their Bill of Complaint herein.

7. Complainants do not desire to prolong said hearings before said Special Master or incur the expense or possible delays that would be involved in inaugurating and carrying on any process by way of contempt proceedings or otherwise against said John M. Carmody in the United States District Court for the District of Columbia but complainants do desire, and assert that they are now entitled to have produced by the defendants counterparts of the correspondence sought to be produced from said Carmody as Administrator of Rural Electrification Administration, to wit, any and all correspondence between Tennessee [fol. 391] Valley Authority, its officers, directors or employees or Arthur E. Morgan, Harcourt A. Morgan or David E. Lilienthal or any of them and Rural Electrification Administration and any of its officers, directors or employees relating to, discussing or having to do with the making of or the terms of any and all contracts or agreements between Rural Electrification Administration and cooperatives organized and existing in the area in which Tennessee Valley Authority is operating, specifically including each of the cooperatives hereinbefore named in Paragraph 3 hereof; that said correspondence should now be produced by defendants herein or, in the alternative,

that the time within which complainants may take testimony before said Special Master should be extended for such period of time as may be necessary to enable appropriate proceedings in the United States District Court for the District of Columbia against the said John M. Carmody to be inaugurated and consummated and the taking of said witness's testimony to be thereafter completed.

8. In addition to the foregoing the complainants represent that the following unpublished records and data in the custody and possession of the Mississippi River Commission at Vicksburg, Mississippi, are necessary in the trial of this cause and material to a determination of the issues herein:

Daily hydrographs for the Mississippi River at Belmont, Mo., for the years 1895 to 1902, inclusive;
Daily hydrographs for the Mississippi River at Columbus, Ky., for the years 1903 to 1927, inclusive;
Daily hydrographs for the Mississippi River at Hickman, Ky., for the years 1928 to 1932, inclusive;
Stream flow records for the Mississippi River in the vicinity of Cairo, Illinois, for whatever period these data may be available;

[fol. 392] that unless the authentication of the aforesaid data is waived by the defendants it will be necessary to obtain the production and authentication thereof by further depositions before the Special Master in Vicksburg, Mississippi; and that, in the event of the refusal of the defendants to stipulate or in the event of the refusal of said Mississippi River Commission to produce on request the records and data referred to, the complainants desire to take the testimony of such officer or officers of the Mississippi River Commission as may have custody of the records in question and to take such further steps and measures as may be necessary and appropriate to require the production and authentication of such evidence.

Wherefore, complainants pray this court for an order directing defendants herein to produce the correspondence in defendants' possession or under its control hereinbefore described in paragraphs 3 and 7 of this application in order that complainants may inspect and make copies of the same forthwith or at such time in advance of the trial of this

cause as to this court may seem just and proper or, in the alternative, for an order extending the time within which complainants may take evidence before said Special Master until proceedings in the United States District Court for the District of Columbia to require said witness to produce said correspondence have been consummated and the taking of the testimony of said witness can be completed and authorizing and directing the Special Master to order a further hearing or hearings in the District of Columbia to accomplish such purpose and directing said Special Master to make such other and further orders as may be necessary to complete the examination of said John M. Carmody in order that the testimony of said witness may be taken and [fol. 393] reported to this court in accordance with the former order of this court dated July 2, 1937.

Complainants further pray the court for a finding that the documents and records hereinbefore described in Paragraph 8 of this application are necessary in the trial of this cause and material to the determination of the issues herein; and for an order extending the time within which complainants may offer evidence before said Special Master respecting the aforesaid records and data of the Mississippi River Commission at Vicksburg, Mississippi, and authorizing and directing said Special Master to make such orders or inaugurate or carry out such proceedings including any orders fixing a date or dates for hearings as may be necessary or proper or as the parties and their counsel may agree upon to effectuate the production and authentication of said records and documents.

(S.) Baker, Hostetler, Sidlo & Patterson, Union Trust Building, Cleveland, Ohio; Trabue, Hume & Armistead, American Trust Building, Nashville, Tennessee: Frantz, McConnell & Seymour, 700 Burwell Building, Knoxville, Tennessee, Solicitors for Complainants.

A copy of this motion has been delivered to the Solicitor for defendants.

Frantz, McConnell & Seymour, by Charles D. Snepp.

[fol. 394] *Duly sworn to by Wm. H. Bemis. Jurat omitted in printing.*

[fol. 395] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER DESIGNATING JUDGES TO TRY CASE—Filed September 21, 1937

It having been made to appear to me, as Senior Circuit Judge of the Sixth Judicial District of the United States, that there is pending before the Honorable John J. Gore, in the United States District Court for the Eastern District of Tennessee in this circuit, an action entitled The Tennessee Electric Power Company, et al. vs. Tennessee Valley Authority et al, Cause No. 228 in equity, wherein a permanent injunction is sought involving the constitutionality of an Act of Congress affecting the public interest;

Now, therefore, I, as such Senior Circuit Judge of the Sixth Judicial Circuit, do hereby designate the Honorable John D. Martin, United States District Judge for Western District of Tennessee, to participate with the Honorable Florence E. Allen, United States Circuit Judge for the Sixth District, also this day designated, and the Honorable John J. Gore, in the hearing and determining of the application for the injunction therein sought.

(S.) Charles H. Moorman, Senior Circuit Judge, Sixth Judicial Circuit.

Dated, Louisville, Ky., September 17, 1937.

[fol. 396] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER DESIGNATING JUDGES TO TRY CASE—Filed September 21, 1937

It having been made to appear to me, as Senior Circuit Judge of the Sixth Judicial District of the United States, that there is pending before the Honorable John J. Gore, in the United States District Court for the Eastern District of Tennessee in this circuit, an action entitled The Tennessee Electric Power Company, et al. vs. Tennessee Valley Authority et al, Cause No. 228 in equity, wherein a perma-

nent injunction is sought involving the constitutionality of an Act of Congress affecting the public interest;

Now, therefore, I, as such Senior Circuit Judge of the Sixth Judicial District, do hereby designate the Honorable Florence E. Allen, a Circuit Judge of said Circuit, to participate with the Honorable John J. Gore and the Honorable John D. Martin, United States District Judge for the Western District of Tennessee, also this day designated, in the hearing and determining of the application for the injunction therein sought.

(S.) Charles H. Moorman, Senior Circuit Judge, Sixth Judicial Circuit.

Dated, Louisville, Ky., September 17, 1937.

[fol. 397] In United States District Court

(Caption omitted)

Affidavit of James Lawrence Fly—Filed September 27, 1937

James Lawrence Fly, first being duly sworn, on oath deposes and says:

That he is General Counsel for the Tennessee Valley Authority and is one of the solicitors of record for the defendants in the above-entitled cause. Affiant and the other counsel for the defendants in this cause are now devoting their entire time to the preparation of the evidence to be presented to this Court upon final hearing, now set for October 18, 1937. Thorough and detailed preparation of the proof to be offered is necessary not only for the protection of the interests of the defendants but also in order that this proof may be so organized that it can be presented to the Court in a simple and easily understandable form.

As will appear from this affidavit, much of the time of the affiant and of his co-counsel up to August 1, 1937, was monopolized by the proceedings instituted by the complainants for the taking of depositions. These were taken in three Southern States and in the District of Columbia. The claim of need for this deposition is quite without merit. Unnecessarily to resume the taking of these depositions at this time, only three weeks prior to the date of final hearing and long

after the time allotted for such proceedings, would result in serious prejudice to the defense of this cause. If the complainants after long delay, are now permitted to take the deposition of Administrator Ickes as prayed in their motion, it will be necessary for affiant and his co-counsel to abandon the preparation of the defense for a period of at least three days, which will be necessarily consumed by the taking of this deposition at Washington. This burden, under the facts, [fol. 398] affiant feels should not be placed upon the defense.

As appears from the records in this case, the answer of the defendants was filed on November 24, 1936, and this cause has been at issue since that time. Accordingly, under equity rule 47, the time for the taking of depositions by the complainants would have expired sixty (60) days from that date, or on January 23, 1937, unless said time were extended by stipulation of the parties or order of the Court for good cause shown. In order to prevent the expiration of the time under the rule the parties agreed to an order extending the complainants' time for taking depositions until sixty (60) days from March 1, 1937. This order was entered by the Court on January 19, 1937. Subsequently a second order extending the time for the taking of depositions until sixty (60) days from May 1, 1937, was entered by the Court by agreement of the parties on March 19, 1937. Messrs. William H. Bemis and Charles M. Seymour of counsel for the complainants conferred with affiant concerning matters connected with the case and with particular reference to the time to be allowed the complainants for the taking of depositions. At that time affiant pointed out that the time allowed by the last order of extension would expire on July 1, 1937. Affiant also made it clear to opposing counsel at that time that it was of great importance to the defendants that the taking of depositions by the complainants should be completed at a time sufficiently in advance of the date of the final hearing, which at that time had been set for October 12, 1937, to enable counsel for the defendants to properly prepare the defense of this case. Affiant also stressed the fact that in his opinion there was no justification or excuse for taking any extensive depositions in view of the express provisions of equity rule 46 adopting the practice of trying suits in equity by the testimony of witnesses in open court so far as possible. After much discussion as to the necessity for an extension of time, affiant finally reached a tentative agree-

ment to the effect that the complainants' time for taking depositions would be extended to July 25, 1937. Subsequently at the time of a preliminary hearing upon other matters the Court, with the consent of the affiant, entered an order extending the time during which complainants' [fol. 399] depositions might be taken to August 1, 1937. This order was entered on July 3, 1937, the same date upon which the order appointing the special master for the taking of depositions was entered.

The decree of the District Court dissolving the preliminary injunction that had been previously issued in this cause had been entered on June 15, 1937. Complainants under existing and subsequent orders of the Court as above recited had from that date to August 1 in which to complete the taking of depositions. Nevertheless no move was made to proceed with such depositions until July 20, upon which date complainants began the taking of various depositions in Tennessee, Alabama, and Georgia. To the best of affiant's recollection, nothing was said during the period of time from June 15 to July 27 concerning the desirability or necessity of taking the deposition of the Honorable Harold L. Ickes. On July 27 affiant, together with counsel representing the complainants, was in Washington, D. C., prepared to be present at the taking of various depositions by the complainants. On July 28 the complainants took the depositions of Mr. Michael Strauss, Publicity Director of the Public Works Administration, and Colonel Horatio Hackett, the Assistant Administrator. Blanket subpoenas duces tecum calling for a myriad of documents with but a remote bearing upon the issues in this suit were issued and served upon these gentlemen. Both of these witnesses responded to the subpoenas, made no objection to the scope thereof, and produced the documents called for without limitation. These documents from the files of the Public Works Administration were freely and extensively produced and were marked in evidence before the special master. To the best of affiant's knowledge, Administrator Ickes was at his office in Washington at the time these depositions were taken. So far as affiant knows, no effort was made to issue and serve a subpoena upon him at that time.

It is true that about this same time, either on July 27 or July 28, Mr. Raymond Jackson of counsel for the complainants telephoned affiant from Cleveland, stating that he had

important court engagements and desired a few days in which to consider the necessity of taking the deposition of [fol. 400] Administrator Ickes. Mr. Jackson at that time led affiant to understand that in all probability there would be no necessity for taking the deposition but that he desired to look over the other depositions before coming to a final decision. He expressed the further thought that in all probability if any more material proved necessary it would probably consist of two or three documents concerning which a stipulation would be possible. Affiant at that time reiterated his strenuous objections to the consumption of so much time and effort with the date for final hearing rapidly approaching but stated that he would consent to extending the time for the consideration of this one deposition for a period of ten (10) days. Thereafter Mr. Jackson telephoned affiant on two occasions and stated that he had not yet been able to go over the other depositions and that he would need additional time. Under protest, affiant, by repeated concessions, finally agreed to extend the time for this one deposition up to Wednesday, August 25, twenty-five (25) days after the time allowed by the last court order had expired. Affiant at this time clearly stated that no further extensions would be granted by request under any circumstances. Finally, on Monday, August 23, counsel for complainants presented to affiant a proposed stipulation concerning the testimony of Administrator Ickes.

Far from merely covering the authentication of a limited number of documents, as had been the original understanding, the proposed stipulation called for numerous admissions, statements of opinion, summaries and conclusory interpretations of documents already offered in evidence, etc. In order that the Court may have before it the exact information as to the nature of the stipulation that was presented, a true copy of the same is attached to this affidavit and made a part hereof. Affiant submits that the nature of this proposed stipulation demonstrates that complainants have no substantial or proper need for this deposition.

Affiant further states that counsel representing complainants have available to them the complete record of the proceedings in the United States District Court for the North- [fol. 401] ern District of Alabama in the case of Ashwander, et al. v. Tennessee Valley Authority, et al., including the PWA documents and correspondence included therein; that

several of these same complainants have been involved in previous litigation with the PWA in which these documents and correspondence have been in their possession; and that counsel for the complainants have been counsel in several other cases directly involving the PWA and in such cases have had full opportunity to examine the Administrator with reference to the documents in his possession. The Administrator has been examined in at least two of these cases, and the various documents may be found in several different records in the possession of these complainants and of their counsel. Throughout the taking of the depositions in Washington complainants were represented by at least four members of their own legal staff with full opportunity to examine the representatives of the PWA and with free access to the various documents and records of that agency.

Affiant from the date of the conference with complainants' counsel on June 11, 1937, to the present time, has consistently and continuously insisted that while he and his co-counsel were perfectly willing to allow complainants a reasonable and generous time in which to complete the taking of depositions, despite the fact that under the equity rules they were never entitled to any such extension as of right, he would insist that this phase of the litigation should be brought to an end sufficiently in advance of the date set for final hearing to permit adequate preparation of the defense without the need for any delay of the trial. Affiant states that the tactics of complainants in postponing the taking of depositions to the last possible moment and then seeking further extensions of time have seriously handicapped affiant and his co-counsel in the preparation of this cause for final hearing. Affiant further states that any further extension of time with the date of final hearing now set for October 18, less than a month away, would seriously prejudice the rights of the defendants.

James Lawrence Fly.

Sworn to before me and subscribed in my presence this — day of September, 1937. —— ——, Notary Public. My Commission expires —— —, ——.

[fol. 402] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER PERMITTING AMENDMENT TO MOTION TO COMPEL DEFENDANTS TO PRODUCE CERTAIN DOCUMENTS AND PERMIT INSPECTION THEREOF—Filed September 29, 1937

By leave of Court granted on the 27th day of September, 1937, complainants are permitted to amend the said motion heretofore filed on September 20, 1937, so as to add to Exhibit "A" thereto as item 12 of the list of "Records of the Tennessee Valley Authority comprising Engineering data, maps, drawings, charts, drafts, tabulations, etc.," the following:

(12) Original set of prints, in post binder, topographic sheets comprising "topographic map of Tennessee River Valley" made from plane table survey and aerial photographs under the direction of the local district engineer, Chattanooga, Tennessee, District, U. S. Engineer Department at Large, 1922-1927, on which is indicated by colors, symbols or conventional signs the various classes of lands and buildings with valuations thereof as appraised in the field by personnel of the Chattanooga District for consideration and study of the detailed cost of recommending navigation-power projects covered in final report on survey of Tennessee River and tributaries, North Carolina, Tennessee, Alabama and Kentucky, covering navigation, flood control, power development and irrigation printed in House Document No. 328, 71st Congress, 2d Session; and accompanying 21 notebooks in three-fourths leather showing recapitulation of estimated damage by flowage to lands and structures as shown on above mentioned topographic sheet on the recommended navigation-power projects Tennessee River.

Florence E. Allen, United States Circuit Judge. John J. Gore, United States District Judge. John D. Martin, United States District Judge.

Approved for Entry: Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp. William C. Fitts, Jr., Solicitor for Defendants.

[fol. 403] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER PERMITTING AMENDMENT TO MOTION TO TAKE DEPOSITION OF HAROLD L. ICKES—Filed September 29, 1937

By leave of Court, granted this 27th day of September, 1937, complainants are permitted to amend their motion to take the deposition of Harold L. Ickes by filing as Exhibit "C" to said motion a copy of the proposed stipulation on the testimony of Harold L. Ickes which was delivered to defendants on August 23, 1937.

Florence E. Allen, United States Circuit Judge. John J. Gore, United States District Judge. John D. Martin, United States District Judge.

Approved for Entry: Baker, Hostetler, Sidlo & Patterson, Frantz, McConnell & Seymour, Trabue, Hume & Armistead, by Charles D. Snepp, Sol. for Complainants. William C. Fitts, Jr., Sol. for Defendants.

[fol. 404] EXHIBIT "C" TO MOTION FOR LEAVE TO TAKE THE DEPOSITION OF HAROLD L. ICKES

IN UNITED STATES DISTRICT COURT

(Title omitted)

STIPULATION

The parties to the above-styled cause, acting by and through their respective solicitors of record, do hereby stipulate and agree that if Harold L. Ickes were called as a witness in this cause he would testify as follows:

That he is now, and at all times since July 12, 1933, has been, the duly appointed, qualified and acting Administrator of the Federal Emergency Administration of Public Works.

That he is now, and at all times has been, the Chairman of the National Power Policy Committee since that Committee was created in the Public Works Administration by order of the President on July 9, 1934.

That prior to November 1, 1933 David E. Lilienthal conferred with the Administrator with reference to the making

of loans and grants of federal funds through the Public Works Administration to municipalities or other public bodies for the construction of electric distribution systems to use TVA power, and that the Administrator expressed his willingness to cooperate with the Tennessee Valley Authority where loans and gifts of federal funds through the Public Works Administration would aid or assist the Tennessee Valley Authority in carrying out its power policy by considering in a cooperative manner applications for loans and gifts of federal funds to be made through the Public Works Administration for the construction of local electric distribution systems in the Tennessee Valley area where the municipalities had, or would, enter into contracts with the Tennessee Valley Authority for the use and distribution of electricity produced by the Tennessee Valley Authority.

[fol. 405] That sometime prior to November 2, 1933 David E. Lilienthal brought to the attention of the Administrator orally (by letter) a letter written by Harry Berry, Engineer of the Tennessee Public Works Board, to Mr. Lilienthal under date of October 16, 1933, in which Mr. Berry stated that in accordance with a statement of a Mr. Robert, Assistant Secretary of the Treasury, no federal funds would be used for the construction of a duplicate power plant in the municipality (and that a true copy of said letter written by Mr. Lilienthal to the Administrator is attached hereto as Exhibit A); that under date of November —, 1933 the Administrator wrote a letter to Harry Berry, Engineer of the Tennessee Public Works Board, with reference to said matter, a true copy of which letter is attached hereto as Exhibit B; that the Administrator, under date of November —, 1933, wrote a letter to David E. Lilienthal with reference to the aforesaid letter of Harry Berry, of which a true copy is attached hereto as Exhibit C.

That on or about November 18, 1933 the city of Knoxville filed an application with the Public Works Administration for a loan and grant in the total amount of $3,225,000 (the loan to be secured by general obligation bonds of the city of Knoxville) for the construction of an electric distribution system in the city of Knoxville to use TVA power; said application being Exhibit 87 to the testimony of Horatio B. Hackett taken in this cause.

That on November 29, 1933 the Administrator stated in a press conference that Knoxville would have a good chance

of getting a municipal power loan and that "PWA would discuss the Knoxville situation with TVA officials because the latter was so deeply concerned with the problem"; that the nature of the concern theretofore expressed by officials of the Tennessee Valley Authority to the Administrator was that the Tennessee Valley Authority should secure a market for electricity in Knoxville and the surrounding area, and that the statement made by the Administrator at said press conference correctly stated the facts as they were known to him and as they had been made known to him by David E. Lilienthal and other representatives of the Tennessee Valley Authority.

That on or about December 8, 1933 the Administrator sent a telegram to the Tennessee Public Works Board, of which a true copy is attached hereto as Exhibit D; that said telegram was sent by the Administrator after David E. Lilienthal had called upon the Administrator and urged speed upon the application of the city of Knoxville, upon the ground, among others, that Knoxville was the "largest city which had decided to join the government's 'yardstick' power program in the Valley" and that the Administrator thereupon took action to speed up the handling of the application of the city of Knoxville at the request of, and for the reasons urged by, Mr. Lilienthal.

That prior to November 18, 1933 the city of Knoxville had filed applications with the Public Works Administration for the loan and grant of federal funds for the repair and construction of public schools and for the repair and replacement of public bridges; that said applications had been approved by the State Board of Public Works; that thereafter said applications were disapproved by the Administrator for the reason that the financial situation of the city of Knoxville was such that the loans could not be properly secured.

[fol. 406] That pursuant to the receipt of the aforesaid telegram from the Administrator directing the Tennessee Public Works Board to speed up action on the application of the city of Knoxville for a loan and gift of federal funds for the construction of a local electric distribution system, and on or about —— —, 193-, the Tennessee Public Works Board disapproved the application of the City of Knoxville for a loan and grant of federal funds through the Public Works Administration for the construction of a mu-

nicipal electric distribution system to use TVA power, upon the ground that the general revenue bonds to be issued by the city of Knoxville to the Public Works Administration for the loan would not be properly secured because of the impaired credit and poor financial condition of the city of Knoxville.

That thereafter, and subsequent to advice given to the city officials, orally or in writing, (a true copy of such writing being attached hereto as Exhibit E), by the Tennessee Valley Authority and the Administrator, the city appealed from the action of the Tennessee Public Works Board to the Administrator; and that on —— —, 193-, the Administrator and the President approved the application of the city of Knoxville for a loan and grant of federal funds through the Public Works Administration for the construction of an electric distribution system in the city of Knoxville to use TVA power, in the total amount of $2,600,000, of which $600,000 was a gift, and that such approval was given subsequent to conferences and written communications between David E. Lilienthal and other representatives of the Tennessee Valley Authority and the Administrator or his agents, true copies of all telegrams, letters or other written communications passing between the Tennessee Valley Authority or any of its officers or agents and the Administrator or any of his agents with reference thereto being attached hereto as Exhibit F-1, etc.

That subsequent to the approval of the application of the city of Knoxville for a loan and grant of federal funds through the Public Works Administration for the construction of an electric distribution system in the city of Knoxville, the Tennessee Valley Authority informed the Public Works Administration that the Tennessee Valley Authority and the City of Knoxville were attempting to negotiate the purchase of the facilities of the Tennessee Public Service Company in and about the city of Knoxville; that pursuant to such information, and at the request of the Tennessee Valley Authority, the execution of a loan and grant agreement between the city of Knoxville and the Public Works Administration, pursuant to the approval of said application of said city, was held in abeyance awaiting the outcome of such negotiations; that PWA furnished such assistance as it could to the Tennessee Valley Authority to enable its negotiations for the purchase of such facilities

to be brought to successful fruition and so advised TVA in a letter dated March 8, 1934 which is Exhibit 87-E in the testimony of Horatio B. Hackett taken in this cause; that when David E. Lilienthal advised the Public Works Administration of the refusal of the Tennessee Public Service Company to accept the offer of the city of Knoxville for its facilities in said city, supplemented by the offer of the Tennessee Valley Authority for certain of the outlying properties of said utility (a true copy of which letter, dated March 22, 1934, is hereto attached, marked Exhibit G), the Public Works Administration accepted such statement as satisfactory evidence of the inability of the city [fol. 407] of Knoxville to purchase such facilities, which had been made a condition precedent to the making of a loan and grant agreement under the application of said city approved as aforesaid (a copy of which letter is attached as Exhibit 87-F to the testimony of Horatio B. Hackett in this cause); that thereupon and thereafter, and under date of April 2, 1934, the Public Works Administration entered into a contract with the city of Knoxville for a loan and grant of federal funds for the construction of a local electric distribution system in the city of Knoxville to use TVA power (a copy of said contract being Exhibit 87-A to the testimony of Horatio B. Hackett in this cause).

That thereafter said contract between the Public Works Administration and the city of Knoxville was continued in effect while the Tennessee Valley Authority for a period of more than three months attempted to negotiate for the purchase of the property of the Tennessee Public Service Company in Knoxville and in Eastern Tennessee, or for its sale to the city of Knoxville; that the Administrator, or his agents in the Public Works Administration, were kept informed by David E. Lilienthal, or other representatives of the Tennessee Valley Authority, of the progress of such negotiations, and that with the knowledge and consent to the Administrator said David E. Lilienthal and the Tennessee Valley Authority used said contract between the Public Works Administration and the city of Knoxville as a threat that unless the Tennessee Public Service Company would sell its facilities at a price acceptable to the Tennessee Valley Authority, a duplicate electric distribution system would be constructed in the city of Knoxville with federal funds provided by the Public Works Administration, with the result of greatly depreciating or

destroying the value of the facilities and business of the Tennessee Public Service Company in the city of Knoxville and surrounding territory.

That on July 26, 1934 the Tennessee Valley Authority entered into a contract with the Tennessee Public Service Company, subject to approval by the Tennessee Railroad and Public Utility Commission, for the purchase of the electric distribution and transmission facilities of the Tennessee Public Service Company in the city of Knoxville and in Eastern Tennessee; that the Administrator was duly advised by the Tennessee Valley Authority of the making of said contract; that the Administrator then, or shortly thereafter, advised David E. Lilienthal that the contract between the city of Knoxville and the Public Works Administration would be continued in effect until the transaction between the Tennessee Valley Authority and the Tennessee Public Service Company should have been consummated; and that the administrator did maintain the contract between the Public Works Administration and the city of Knoxville in effect until the Tennessee Valley Authority, having failed to effect the consummation of its contract with the Tennessee Public Service Company, withdrew from said contract with the Tennessee Public Service Company on October —, 1934; and that after the Tennessee Valley Authority had advised the Public Works Administration that the Tennessee Valley Authority had abandoned its attempt to purchase the facilities of the Tennessee Public Service Company in the city of Knoxville and Eastern Tennessee, the Public Works Administration did whatever it could to expedite and forward the carrying out of the contract between the Public Works Administration and the city of Knoxville for the construction of a local electric distribution system through a loan and grant of federal funds for the use of TVA power.

[fol. 408] That on December 15, 1933, the city of Decatur, Alabama, filed an application with the Public Works Administration (which is Exhibit 77 to the testimony of Horatio B. Hackett taken in this cause) for a loan and grant of federal funds for the construction of a municipal electric distribution system for the use of TVA electricity; that shortly thereafter the Public Works Administration sent a letter to Miss Margaret Owen, Washington repre-

sentative of the Tennessee Valley Authority (a true copy of which letter is attached hereto as Exhibit H), requesting information and advice from the Tennessee Valley Authority before action should be taken by the Public Works Administration on said application; that such information and advice was furnished to the Public Works Administration by David E. Lilienthal acting as director and general counsel of the Tennessee Valley Authority, in a letter dated April 6, 1934 (copy of which letter is Exhibit 77-B to the testimony of Horatio B. Hackett taken in this cause); that the aforesaid letter of David E. Lilienthal to the Public Works Administration stated, among other things, that "the Tennessee Valley Authority regards the serving of Decatur, Alabama, as particularly desirable in its development of the electric utility 'yardstick' "; that the attitude and desires of the Tennessee Valley Authority with reference to the application of the city of Decatur were taken into consideration by the Public Works Administration in passing upon said application; that thereafter the application of the city of Decatur for said loan and grant was approved by the Special Board of the Public Works Administration on August 15, 1934, and by the President on August 16, 1934, for the stated reason, among others, "that the Tennessee Valley Authority has acquired the necessary transmission lines to serve said distribution system and the financing of said project will aid said Authority in obtaining a market for its electrical energy" (Exhibit 99 to the testimony of Horatio B. Hackett taken in this cause); and that on December 6, 1934, a loan and grant agreement was executed between the Public Works Administration and the city of Decatur for the construction of an electric distribution system in said city for the use of TVA power.

That separate applications were filed by the city of Bessemer and the city of Tarrant City, Alabama, with the Public Works Administration on or about —— —, 193-, for loans and grants of federal funds for the construction of electric distribution systems in said cities and a steam generating plant to supply the needs of said cities; that thereafter the Public Works Administration requested the Tennessee Valley Authority to inform the Public Works Administration whether or not the proposed steam plant would serve a useful purpose in and conform to the plans of the Tennessee Valley Authority for marketing its power in that area, and whether the approval of the

applications would be helpful by favorably affecting negotiations of the Tennessee Valley Authority for acquiring facilities of existing utilities in that area (Exhibit 88-B and Exhibit 88-C to the testimony of Horatio B. Hackett taken in this cause); that the Tennessee Valley Authority informed the Public Works Administration that the immediate approval of the applications upon the conditions (which had been suggested by Mr. Rau of the Electric Power Board of Review, a division of the Public Works Administration created by the Administrator) that construction work should be deferred until TVA power should [fol. 409] be available to serve said cities and that the amount of the loan and grant for the construction of electric distribution systems in said cities should be earmarked for that purpose, would further the TVA program (Exhibit 85-E to the testimony of Horatio B. Hackett taken in this cause); that thereafter and on the advice or request of the Public Works Administration said applications were revised so as to eliminate from the project the construction of a steam generating plant to supply electricity used by said cities and to substitute the construction of a transmission line approximately fifty miles long to connect with TVA transmission lines and provide TVA power to supply said cities; that thereafter, and on or about —— —, 193-, said applications of the city of Bessemer and the city of Tarrant City were approved by the Public Works Administration for the construction of electric distribution systems in said cities and for the construction of a transmission line of approximately fifty miles in length to connect said distribution systems with transmission lines of the Tennessee Valley Authority (Exhibits 82-A and 83-A to the testimony of Horatio B. Hackett taken in this cause).

That on August 30, 1933, the cities of Sheffield and Tuscumbia, Alabama, and on November 15, 1933, the city of Florence, Alabama, severally filed applications with the Public Works Administration for loans and grants of federal funds for the construction of municipal electric distribution systems in each of said cities; that said applications were promptly approved by the Alabama State Board of the Public Works Administration and forwarded to the Administrator at Washington; that the Administrator shortly thereafter approved and made allotments upon each of said applications; that loan and grant agreements were not entered into between the Public Works Adminis-

tration and said cities of Florence, Sheffield and Tuscumbia until December 28, 1934; that the Public Works Administration, while making and maintaining allotments upon said applications pending the conclusion of negotiations which the Tennessee Valley Authority was carrying on for the purchase of the municipal distribution systems of the utility serving said cities, declined to enter into loan and grant agreements with said cities so long as said negotiations of the Tennessee Valley Authority were in progress; that after the failure of the negotiations of the Tennessee Valley Authority for the purchase of said municipal distribution systems, which was publicly announced by David E. Lilienthal on December 14, 1934, and on request of said David E. Lilienthal, the Public Works Administration expedited action on said applications and the execution of loan and grant agreements which were concluded with said cities for the construction of municipal electric distribution systems therein on December 28, 1934; that in the interim while TVA was attempting to purchase said municipal electric distribution systems of the existing utility at prices acceptable to TVA, the Public Works Administration declined to enter into loan and grant agreements with said cities; that the telegram from the Administrator to Mayor Lee Glenn of Florence, Alabama, dated July 11, 1934 (printed at page 64 of the Bill of Complaint) was sent after a conference with David E. Lilienthal.

[fol. 410] That from time to time after January 4, 1934 consideration and action on application for loans and grants of federal funds from Alabama towns for the construction of local electric distribution systems in the area covered by a certain contract between the Tennessee Valley Authority and the Alabama Power Company under date of January 4, 1934 were effected by advice from the Tennessee Valley Authority as to the existing status of its negotiations for the purchase of such properties; that allotments were made by the Public Works Administration upon applications of such towns for the construction of local electric distribution systems, and maintained pending the negotiations of the Tennessee Valley Authority for the purchase of the properties of the existing utilities in said towns, and that after the failure of such negotiations and on the request of David E. Lilienthal, consideration and action upon such applications was expedited by the Public Works Administration.

That the Administrator did whatever he could to help the Tennessee Valley Authority work out its problem of disposing of the electricity generated by it.

That counsel for Tennessee Valley Authority appeared as amicus curiae with counsel for the Public Works Administration in filing the brief in the Supreme Court of Alabama in the case of Oppenheim v. City of Florence, 229 Ala. 50, in support of the validity of the proposed revenue bonds to be issued by the city of Florence to PWA for the proposed PWA loan and grant to that town.

That the Administrator of Public Works regards that part of the Tennessee Valley Authority program relating to the generation, transmission and sale of power as constituting a part of the general policy and program of the National Administration.

That in 1935 he published a book entitled "Back to Work" as a "general accounting of what PWA has done and been during the almost two years of its existence", in which he says at page 130:

"PWA has approved the loans and grants to cities which wish to build transmission and distributing systems so that they can make use of cheap TVA power. Ten million dollars have been earmarked for this purpose, and one city, Knoxville, has been allotted $2,600,000 for the improvement and extension of its own system. Additional appeals for aid have been received from scores of towns and cities whose local governments are wistful for low-cost TVA power, but which are unable to raise enough money to build a distribution system or buy out the existing utility that continues to charge unduly high rates.";

and that said statement is true and correct.

That in said book the Administrator further states at page 134:

[fol. 411] "This is the picture in broad outline of TVA at the present time. Soon, it is to be expected, the idea will be extended to other sections of the country. Moreover, TVA —and this is one of the main reasons for its establishment— will provide a 'yardstick' for the measurement of similar rates in other parts of the Nation, with the result of forcing pretty generally a reduction of private utility charges";

and that said statement is true and correct.

That Henry T. Hunt was Chairman of the Electric Power Board of Review of the Federal Emergency Administration of Public Works throughout the entire existence of said Board; that O. M. Rau was a member and the rate expert of the Electric Power Board of Review of the Federal Emergency Administration of Public Works throughout the entire existence of said Board; that B. W. Toren was an Assistant Finance Director of the Federal Emergency Administration of Public Works; that P. M. Benton was Financial Director of the Federal Emergency Administration of Public Works; That K. S. Wingfield was an employee in the financial division of the Federal Emergency Administration of Public Works; that H. M. Waite was the Deputy Administrator of the Federal Emergency Administration of Public Works; that Horatio B. Hackett is now the Assistant Administrator of the Federal Emergency Administration of Public Works; that Michael W. Strauss is the Assistant to the Administrator and Publicity Director of the Federal Emergency Administration of Public Works; that R. H. Elliott was a Director of the Federal Emergency Administration of Public Works; that Joel David Wolfsohn is the Executive Secretary of the National Power Policy Committee; that Maurice L. Cooke was the Vice Chairman of the National Power Policy Committee and was Chairman of the Mississippi Valley Committee of the Federal Emergency Administration of Public Works.

[fol. 412] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MEMORANDUM DECISION OVERRULING COMPLAINANTS' MOTIONS FOR LEAVE TO TAKE THE DEPOSITION OF HAROLD L. ICKES; FOR AN ORDER REQUIRING DEFENDANTS TO PRODUCE DOCUMENTS, OF, IN THE ALTERNATIVE, FOR AN EXTENSION OF TIME FOR THE TAKING OF TESTIMONY BEFORE THE SPECIAL MASTER; TO COMPEL DEFENDANTS TO PRODUCE DOCUMENTS AND PERMIT INSPECTION THEREOF—Filed September 29, 1937

1. With reference to the question of referring this case to a Master, without deciding whether the statute imposes upon the court the mandatory duty of hearing the testimony, or invests the court with discretion to refer it, the court has determined to hear all further testimony in the case,

because of the grave questions involved and as a matter of public policy. This action will also greatly expedite the final determination of the case by this court.

2. The motion for leave to take the deposition of Secretary Ickes is overruled.

3. The motion for extension of time to retake the deposition of James M. Carmody is overruled.

4. The motion to require the production of maps, documents and data is overruled.

Since the court has decided not to refer the further taking of testimony, it will insist upon most complete cooperation from the attorneys, and will require stipulations in every possible instance.

A per curiam memorandum opinion on the disposition of these motions will be filed herein. Appropriate orders will be drawn and entered.

(S.) Florence E. Allen, United States Circuit Judge.
(S.) John J. Gore, United States District Judge.
(S.) John D. Martin, United States District Judge.

[fol. 413] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER OVERRULING AND DENYING COMPLAINANTS' MOTION FOR LEAVE TO TAKE DEPOSITION OF HAROLD L. ICKES—Filed September 29, 1937

This matter came on to be heard upon the motion filed by the complainants, and upon briefs and argument by counsel, and the Court having considered the same, it is hereby Ordered, Adjudged and Decreed that said motion be, and the same is hereby overruled and denied, to which order of the Court the complainants duly reserved an exception.

(S.)Florence E. Allen, Circuit Judge. (S.) John J. Gore, District Judge. (S.) John D. Martin, District Judge.

At Nashville, Tennessee, this 27th day of September, 1937.

Approved for entry: Charles M. Seymour, Solicitor for Complainants. William C. Fitts, Jr., Solicitor for Defendants.

[fol. 414] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER OVERRULING AND DENYING COMPLAINANTS' MOTION TO COMPEL PRODUCTION OF DOCUMENTS AND PERMIT INSPECTION THEREOF—Filed September 29, 1937

This matter came on to be heard upon the motion filed by the complainants, and upon briefs and argument by counsel, and the Court having considered the same, it is hereby Ordered, Adjudged and Decreed that said motion be and the same is hereby overruled and denied, to which order of the Court the complainants duly reserved an exception.

(S.) Florence E. Allen, Circuit Judge. (S.) John J. Gore, District Judge. (S.) John D. Martin, District Judge.

At Nashville, Tennessee, this 27th day of September, 1937.

Approved for entry: Charles M. Seymour, Solicitors for Complainants. William C. Fitts, Jr., Solicitors for the Defendants.

[fol. 415] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER OVERRULING AND DENYING COMPLAINANTS' APPLICATION FOR AN ORDER REQUIRING DEFENDANTS TO PRODUCE DOCUMENTS OR, IN THE ALTERNATIVE, FOR EXTENSION OF TIME FOR TAKING TESTIMONY BEFORE SPECIAL MASTER—Filed September 29, 1937

This matter came on to be heard upon the motion filed by the complainants, and upon briefs and argument by counsel, and the Court having considered the same, it is hereby Ordered, Adjudged and Decreed that said motion be, and the same is hereby overruled and denied, to which order of the Court the complainants duly reserved an exception.

Florence E. Allen, Circuit Judge. John J. Gore, District Judge. John D. Martin, District Judge.

At Nashville, Tennessee, this 27th day of September, 1937.

Approved for Entry: Charles M. Seymour, Solicitors for Complainants. William C. Fitts, Jr., Solicitors for Defendants.

[fol. 416] IN UNITED STATES DISTRICT COURT

(Caption omitted)

SUPPLEMENT TO BILL OF PARTICULARS—Filed October 21, 1937

Now come the complainants by their solicitors and as a Supplement to the Bill of Particulars hereinbefore filed on August 6th, 1937, state that the defendants, pursuant to a stipulation heretofore made between the parties hereto and filed herein on the 14th day of August, 1937, have either (a) produced and delivered to complainants authenticated copies, or (b) admitted the authenticity of d-*ucm*ents emanating from defendants and submitted by complainants to defendants for such authentication, of a large number of press releases, published articles and published speeches of one or another of the defendants made or published subsequent to the passage of the Tennessee Valley Authority Act of 1933 and prior to the 1st day of October, 1937, in which one or another of defendants have stated or represented to the public that the so-called "yardsticks" of defendant Tennessee Valley Authority were and are fair measures of reasonable and compensatory rates for electric service; that the rates of Tennessee Valley Authority embodied all the charges and to the same degree that a privately owned utility was and is subject to in determining its rates; that the Tennessee Valley Authority rates were lower only because privately owned utilities rates were unfair and unconscionable in that provision was made therein for the payment of dividends on watered stock and to support dizzy towers of inflated capitalization and to pay excessive executive salaries and holding company charges; that the management of privately owned utilities were likened to robber barons that had exploited and levied tribute on the public for years, and defendants have repeatedly exhorted members of the public to support, cooperate with and assist Tennessee Valley Authority in putting an end to such practices of the privately owned utilities companies, all in an effort to carry out the purpose and design set forth in said Bill of Complaint. Such press releases, published speeches and published articles have been produced and authenticated by defendants and complainants allege that such press releases, published articles and published speeches are particular

instances of acts of the character with which defendants are charged in Paragraph XXI of complainants' Bill of Complaint.

Complainants further state that additional instances of acts of the character with which defendants are charged in Paragraph XXI of said Bill of Complaint are statements in the testimony of certain of said defendants given before certain committees of the Congress of the United States from and after the passage of the Tennessee Valley Authority Act of 1933, including several Hearings before the Subcommittee of the Committee on Appropriations of the House of Representatives and of the Senate, Hearings before the Committee on Military Affairs of the House of Representatives, Hearings before the Committee on Interstate Commerce of the House of Representatives, Hearings before the Committee on Rivers and Harbors of the House of Representatives, and Senate Agricultural and Forestry Hearings on the so-called Seven Tennessee Valley Authority Bills, containing representations similar in character to those hereinbefore described, all of which is well known to defendants and that the authenticity of the published re- [fol. 417] ports of each of said Committees has been admitted under the Stipulation of August 14, 1937, hereinbefore referred to.

Baker, Hostetler, Sidlo & Patterson; Trabue, Hume & Armistead; Frantz, McConnell & Seymour, Solicitors for Complainants.

I certify that a copy of the foregoing has been furnished to opposing counsel.

Charles D. Snepp.

[fol. 418] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MEMORANDUM OPINION ON COMPLAINANTS' MOTION TO REQUIRE DEFENDANTS TO PRODUCE DOCUMENTS AND PERMIT INSPECTION THEREOF: FOR AN ORDER REQUIRING DEFENDANTS TO PRODUCE DOCUMENTS, OR, IN THE ALTERNATIVE, FOR AN EXTENSION OF TIME FOR TAKING TESTIMONY BEFORE SPECIAL MASTER: FOR LEAVE TO TAKE THE DEPOSITION OF HAROLD L. ICKES.—Filed November 1, 1937

Before Allen, Circuit Judge, and Gore and Martin, District Judges

Per CURIAM:

This case came on to be heard upon certain motions filed by complainants. We deny the motions described below for the following reasons:

(1) The motion to require production of documents, maps and data is overruled for the reason that no interrogatories were filed, as required by Equity Rule 58.[1] Since the inter-

[1] Rule 58. "The plaintiff at any time after filing the bill and not later than twenty-one days after the joinder of issue, and the defendant at any time after filing his answer and not later than twenty-one days after the joinder of issue, and either party at any time thereafter by leave of the court or judge, may file interrogatories in writing for the discovery by the opposite party or parties of facts and documents material to the support or defense of the cause, with a note at the foot thereof stating which of the interrogatories each of the parties is required to answer. * * *

"Interrogatories shall be answered, and the answers filed in the clerk's office, within fifteen days after they have been served, unless the time be enlarged by the court or judge. Each interrogatory shall be answered separately and fully and the answers shall be in writing, under oath, and signed by the party or corporate officer interrogated. Within ten days after the service of interrogatories, objections to them, or any of them, may be presented to the court or judge, with proof of notice of the purpose so to do, and answers shall be deferred until the objections are determined, which shall

[fol. 419] rogatories were filed, and consequently no answers could be made thereto, the record contains no admission that the Tennessee Valley Authority has possession of the documents sought. Under Equity Rule 58, such an admission is a prerequisite to the issuing of the order to produce. Dixie Drinking Cup Co., Inc., v. Paper Utilities Co., Inc., 5 Fed. (2d) 322 (D.C.); Fidelity & Deposit Co. of Maryland v. Central Bank, 48 Fed. (2d) 477 (C.C.A. 8); Pressed Steel Car Co. — Union Pacific Rd. Co., 241 Fed. 964 (D.C.). An additional reason for this ruling is that this motion "serves the same purpose as that formerly obtainable by bill of discovery" (Keaton v. Kennamer, 42 Fed. (2d) 814, 815). It can not be used for "a mere fishing expedition, nor for impertinent intrusion. The inquiry must be confined to material matters of fact and not extended to a disclosure of evidence or of facts which merely tend to prove ultimate material facts, or to elicit the names of witnesses." Keenan v. Texas Production Co., 84 Fed. (2d) 826 (C.C.A. 10). Cf. Sinclair Refining Co. v. Jenkins Petroleum Process Co., [fol. 420] 289 U. S. 689, 696, 697. The data sought to be produced constitutes evidentiary detail and minutiae; but the disclosure must be of the ultimate facts. Maywood v. Texas Co., 17 Fed. (2d) 490 (D. C.); May v. Midwest Refining Co., 10 Fed. Supp. 927; Day Co. v. Mountain City Mill Co., 225 Fed. 622 (D. C.).

(2) The motion for an order requiring defendants to produce documents, or in the alternative, for extension of time for taking testimony before special master, is also denied. No interrogatories were filed and no answers appear showing that these documents are in the possession of the Tennessee Valley Authority. The motion really seeks to secure certain papers conceded to be in the possession of John M. Carmody, Administrator of Rural Electrification Administration. A subpoena duces tecum was issued July 27, 1937,

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be at as early a time as is practicable. In so far as the objections are sustained, answers shall not be required.

"The court or judge, upon motion and reasonable notice, may make all such orders as may be appropriate to enforce answers to interrogatories or to effect the inspection or production of documents in the possession of either party and containing evidence material to the cause of action or defense of his adversary. * * *"

by the District Court of the District of Columbia, to compel the production by Carmody of numerous letters and papers in his possession as head of the Rural Electrification Administration. It called for all correspondence between the Tennessee Valley Authority, its officers, directors or employees, and Rural Electrification Administration and any of its officers, directors or employees, relating to, discussing or having to do with the making or any of the terms of any contracts or agreements between Rural Electrification Administration and certain co-operatives. Rural Electrification Administration and the co-operatives listed are not parties to this controversy. Carmody, under the advice of counsel, claimed that the subpoena was invalid, asserted his privilege, and refused to produce the documents. Complainants' remedy obviously is in the District Court of the [fol. 421] District of Columbia. The witness is not before this court, and the subpoena was not issued by this court. These matters must be determined in the court from which the subpoena issued. In re Allis, 44 Fed. 216; Crocker-Wheeler Co. v. Bullock, 134 Fed. 241 (D. C.).

(3) The motion for leave to take the deposition of Secretary Harold L. Ickes is refused. The case was set for trial when the motion was filed, and Equity Rule 56[2] governs. Complainants had between January 23, 1936, and August 25, 1937, to take this deposition. The "strong reason" required under Equity Rule 56 for excusing the delay is not set forth. It does not appear that Secretary Ickes was ill on July 28, 1937, at the time when certain depositions were taken by these complainants in Washington, nor does it appear that Secretary Ickes was not then in Washington.

(S.) Florence E. Allen, Circuit Judge. (S.) John J. Gore, District Judge. (S.) John D. Martin, District Judge.

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[2] Rule 56. "After the time has elapsed for taking and filing depositions under these rules, the case shall be placed on the trial calendar. Thereafter no further testimony by deposition shall be taken except for some strong reason shown by affidavit. In every such application the reason why the testimony of the witness cannot be had orally on the trial, and why his deposition has not been before taken, shall be set forth, together with the testimony which it is expected the witness will give."

[fol. 422] IN UNITED STATES DISTRICT COURT

(Caption omitted)

PETITION FOR REHEARING MOTION TO TAKE THE DEPOSITION OF HAROLD L. ICKES—Filed November 12, 1937

The complainants being much aggrieved by the order entered in this cause on September 29, 1937, and the opinion filed on November 1, 1937, denying complainants leave to take the deposition of Harold L. Ickes, respectfully file this their petition to rehear said motion for the following reasons, viz:

(1) The Court has erroneously interpreted the state of the record in holding that complainants had from January 23, 1937, to August 25, 1937, to take the deposition of Harold L. Ickes. The record shows that:

The original bill was filed on May 29, 1936, in the Chancery Court of Knox County, Tennessee, and process was served and returned the same day.

On June 15, 1936, defendants removed the case to this court, and thereafter on July 15, 1936, filed with the Clerk [fol. 423] of this Court the transcript from said Chancery Court.

On August 14, 1936, defendants filed a motion to quash the service of process and dismiss the bill for lack of jurisdiction, which motion was heard orally on September 11th and October 10th, 1936, and on October 19, 1936, the motion was overruled.

On October 20, 1936, defendants filed another motion to dismiss attacking the bill principally on the ground that it failed to state a cause of action, and same was overruled November 9, 1936.

On November 24, 1936, defendants filed their answer, and on December 11, 1936, complainants' motion for a preliminary injunction came on to be heard, and on December 22, 1936, the order granting such injunction was entered and defendants perfected their appeal to the Circuit Court of Appeals for the Sixth Circuit, at Cincinnati. On appeal, defendants assigned as error the Court's actions in overruling the two said motions. At the time this appeal was perfected, the case was set for trial on its merits on March 8, 1937, but since defendants on appeal raised the question of jurisdiction, as well as the points raised by the motion

to dismiss, the trial on the merits was postponed until said Appellate Court considered the questions raised by said two motions, for the reason that if on appeal the Court should be of the opinion that error had been committed in not sustaining the motions, or either of them, the District Court and the parties would not have been put to the time and expense incident to such trial.

On January 19, 1937, a consent order was entered providing that the time allowed for taking depositions under Equity Rule 47 should be computed from March 1, 1937, and not from the date of the filing of the defendants' answer.

The transcript of record on appeal was filed with the Clerk of the United States Circuit Court of Appeals on or about March 6, 1937, and defendants filed a motion to ad-
[fol. 424] vance the hearing in said court, and the appeal was set for argument on April 16, 1937.

On March 18, 1937, another consent order was entered in the District Court, providing that the time for the taking of depositions should be computed from May 1, 1937. On May 18, 1937, the Circuit Court of Appeals decided the questions that had been presented to it on defendants' appeal, and defendants shortly thereafter filed a petition for certiorari in the Supreme Court of the United States. The petition was denied by the Supreme Court of the United States on or about June —, 1937, and the mandate from the Circuit Court of Appeals to the District Court was returned June 14, 1937.

On June 12, 1937, defendants filed a motion to strike portions of the bill of complaint and also a motion for a bill of particulars. Said motions were heard by the District Judge on or about June 18, 1937, and at that time there was discussed in open court by counsel representing both complainants and defendants the question of the appointment of a Master, and it was then agreed in open court between the parties that complainants would have the month of July, 1937, within which to take their depositions, and on July 3, 1937, there was filed in this cause an agreed order appointing Hal H. Clements, Jr., Special Master, for the purpose of taking depositions. Said Hal H. Clements, Jr., was attending a military camp at or near Atlanta, Georgia, and returned therefrom on or about July 17, 1937, and counsel for complainants proceeded on July 20, 1937, with the taking of depositions before the

Special Master in Georgia, Alabama and Tennessee, and on July 28, 1937, with the taking of depositions before the Special Master in Washington, D. C.; that at the time the depositions in Washington, D. C., were taken between the dates of July 28, 1937, and July 31, 1937, counsel for com-
[fol. 425] plainants had an understanding with counsel for defendants that the taking of the deposition of Harold L. Ickes would be deferred, for reasons fully set forth in the affidavit of Raymond T. Jackson filed as Exhibit "B" to the motion. By subsequent agreements with counsel for defendants, the time within which the deposition of Harold L. Ickes might be taken by consent was extended to the 25th day of August, 1937. On August 23, 1937, an effort was made to subpœna said Harold L. Ickes and said subpœna was served on G. G. Madigan, who had been previously designated by Mr. Ickes to accept service of subpœnas directed to Mr. Ickes on matters relating to Public Works Administration, but counsel for complainants were advised that Mr. Ickes had left Washington on August 21, 1937, for a short rest, and his whereabouts could not be ascertained, all as is more fully shown in said affidavit of Raymond T. Jackson.

(2) It further appears from said affidavit that Harold L. Ickes had been ill during the month of July and a considerable part of the month of August, 1937; that he had devoted all of his time which he was physically able to devote to his official duties a short time before the adjournment of Congress in order to dispose of certain necessary matters pertaining to pending litigation which had to be taken care of prior to adjournment of Congress, and that immediately upon Congress' adjournment, Mr. Ickes left Washington for a short rest and period of recuperation. All of the foregoing facts appear at page 7 of the affidavit of Raymond T. Jackson filed in support of said motion and are not denied in the affidavit of Mr. James Lawrence Fly filed in opposition to said motion.

[fol. 426] It is respectfully submitted that the foregoing constitute more than a sufficiently "strong reason" under Equity Rule 56 to warrant the Court in granting said motion for leave to take the deposition of Harold L. Ickes.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour.

[fol. 427] *Duly sworn to by Charles M. Seymour. Jurat omitted in printing.*

We certify that a copy of the foregoing has been furnished to opposing counsel.

Charles M. Seymour.

[fol. 428] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MOTION FOR LEAVE TO TAKE DEPOSITION OF HAROLD L. ICKES—Filed December 6, 1937

Now come the Complainants, by their solicitors, and respectfully move the Court for an order permitting the Complainants to take the deposition of Harold L. Ickes at the earliest practicable date to be used as evidence on behalf of Complainants herein, pursuant to the ruling of this Court, that when a state of facts has developed requiring the renewal of this motion, another motion may be made, (Transcript, p. 1):

"If during the course of this case a new state of facts should develop, permission will be given Complainants to renew the motion."

In compliance with the requirements of Equity Rule 56, Complainants state the following reasons for the renewal of said motion at this time, to wit:

[fol. 429] I. Reasons for Taking Deposition of Harold L. Ickes

The strong reasons requiring the granting of this motion to take the deposition of Harold L. Ickes are based upon the allegations contained in Complainants' Bill, respecting said Harold L. Ickes, the evidence already introduced in this case by Complainants respecting the participation for said Harold L. Ickes in the unlawful plan and conspiracy alleged, the evidence Complainants now have available to offer respecting the participation by said Harold L. Ickes in the unlawful plan and conspiracy, and the statements respect-

ing the participation of said Harold L. Ickes in the unlawful plan and conspiracy already put into this record by the Defendants in Exhibit "K" attached to and made a part of their answer.

A. Allegations in Complainants' Bill:

1. It is alleged in Section XII of Complainants' Bill that a National Power Policy was formulated late in 1932 or early in 1933 in furtherance of which the Tennessee Valley Authority Act was passed and other governmental agencies, among them the Federal Emergency of Public Works, were organized and that such agencies have been and to now are engaged in carrying out various phases of said National Power Policy.

2. It is further alleged in Section XIX of Complainants' Bill that the Defendants have adopted an unlawful plan and have cooperated and threatened to continue to cooperate in the execution thereof with said Harold L. Ickes, as Administrator of the Federal Emergency Administration of Public Works, to carry on a systematic competition with Complainants and to coerce and intimidate Complainants as owners of distribution systems or transmission lines in municipalities or territories in which the Tennessee Valley Authority desires to seize the market, to sell such distribution systems and transmission lines either to the Tennessee Valley Authority or the muncipalities at prices arbitrarily fixed by the Defendants and far below the fair value of the [fol. 430] properties sought to be taken, and that to effectuate such plan the Defendants informed the owners of the properties desired that unless they sell such property at a price arbitrarily fixed by Defendants, either the Tennessee Valley Authority or the respective municipalities would build a duplicate distribution system with federal funds and by such subsidized competition render the property of the recalcitrant companies valueless except for junk, and in order to make such coercion and intimidations effective said Harold L. Ickes authorizes and announces a gift to the municipality of 30% to 45% of the cost of such duplicate system and agrees to furnish the balance of such cost out of federal funds borrowed on the credit of the United States and repayable, if at all, only out of the earnings, if any, of the duplicate plant, or upon condition that the municipality shall agree to use Tennessee Valley Authority power and

will, as soon as legally possible, oust the existing utility from the municipality; that such allotments of gifts and loans are made available if the utility refuses to surrender its property on the Defendants' terms, but if and so long as the utility agreed to meet the Defendants' terms, such allotments are cancelled regardless of the wishes of the municipality or held in abeyance until such time as the so-called sale can be consummated and numerous towns are named in which such allotments have been made.

3. It is further alleged in the Bill that such cooperation and acts on the part of the Defendants and said Harold L. Ickes are a perversion and misuse of the power, if any, vested in said Defendants under and by virtue of the Tennessee Valley Authority Act.

B. Evidence Already Introduced in This Case by Complainants:

1. It is now in evidence in this case that the Public Works Administration made a loan and grant to the city of Memphis, Tennessee, of approximately $9,000,000., which was later reduced to a grant of more than $3,000,000. for the purpose of enabling the City of Memphis to construct a municipal system for the distribution of electricity (Testimony of Mr. Walter Ford, Transcript p. 1757 et seq.)

2. It also appears in evidence that the Public Works Administration made a loan and grant to the City of Knoxville, Tennessee, in the amount of $2,600,000. of which [fol. 431] $600,000. was a grant to enable the City of Knoxville to construct a municipal distribution system, which loan was made in the spring of 1934 and which was held in abeyance pending the negotiations and consummation of the sale of the property of Tennessee Public Service Company to the Tennessee Valley Authority (Testimony of Robert Lamar, Transcript p. 1774-7).

3. It further appears in evidence that the Tennessee Valley Authority has contracts with both the City of Memphis and the City of Knoxville for the sale of Tennessee Valley Authority power to be distributed through a municipal distribution system (Complainants' Exhibit 117 and 118.)

4. It further appears in evidence that a Public Works Administration loan has been made to the City of Chatta-

nooga and that Chattanooga has a contract to purchase Tennessee Valley Authority power (Complainants' Exhibit 129).

5. It further appears that the agreements reached between the Tennessee Valley Authority and the privately owned utilities' companies, whereby the Tennessee Valley Authority would purchase the facilities of the private utilities, was, in reality, an agreement reached under duress (Complainants' Exhibit 119, pp. 162-3).

6. It further appears in evidence that the City of Paris, Tennessee, has received a Public Works Administration loan and grant (Testimony of Frank B. Ostermueller, Transcript, p. 1266) and that a contract exists between the Tennessee Valley Authority and the City of Paris, Tennessee, for the purchase of Tennessee Valley Authority power (Complainants' Exhibit 134).

C. Evidence Complainants Now Have Available to Offer:

1. It will appear from evidence Complainants now have available to offer that Mr. Lilienthal stated to the Military Affairs Committee of Congress in 1935 in answer to a question—"You have frequently told those fellows, have you not, that public funds were available through the Public Works Administration and the Tennessee Valley Authority to aid the City in putting up a plant in competition with them?" Mr. Lilienthal—"It was not necessary to tell them. The availability of Public Works Administration funds for power projects was known to the utility representatives."

[fol. 432] 2. It will further appear from documentary evidence, constituting a part of depositions that have been taken and will be offered by complainants, that the Public Works Administration in considering applications for loans and grants to cities for the construction of electric generating, transmission or distribution systems gave paramount weight to the purposes and desires of the Tennessee Valley Authority in the furtherance of its so-called "yardstick" regulation and to enable TVA to acquire such facilities of privately owned utilities as it desired at its own price.

3. It will further appear that the Public Works Administration has made loans and grants for power projects to the following cities in Alabama, all of which will use Tennessee

Valley Authority power and now have contracts with the Authority for such power; Sheffield, Courtland, Decatur, Hartselle, Muscle Shoals, Russellville, Guntersville, Tarrant City, Bessemer; and the following cities in Tennessee: Memphis, Knoxville, Lewisburg, Columbia, Chattanooga, Newbern, Paris, Lenoir City, Jackson, Fayetteville and Clarksville; and in Mississippi: Starkville, Okolona and Aberdeen.

D. The statements Already Put Into the Record respecting the Participation of said Harold L. Ickes in the Unlawful plan and conspiracy, as Contained in Exhibit "K" to Defendants' Answer:

1. It will appear from evidence that from the stipulation respecting the testimony of said Harold L. Ickes (Exhibit "K" to Defendants' Answer, pp. 683-4) the telegram, quoted in p. 64 of the Complainants' Bill and admitted in Defendants' answer, was sent after a conference between said Ickes and David E. Lilienthal.

2. It will further appear that prior to November 1, 1933, said Lilienthal had conferred with said Ickes and that the latter had expressed a willingness to consider in a cooperative manner applications for loans in the Tennessee Valley Authority area for municipal electric systems where towns had entered into contracts for power with the Tennessee Valley Authority.

[fol. 433] 3. It will further appear that from time to time after January 4, 1934, consideration and actions upon applications for loans and grants from Alabama towns in the area covered by the contract of that date between the Alabama Power Company and the Tennessee Valley Authority were effected by advice from the Tennessee Valley Authority as to the existing status of negotiations for the purchase of such properties.

4. It will further appear that from December, 1934, after the letter of advice from the Tennessee Valley Authority to the cities in Alabama consideration and action upon such applications was expedited.

5. It will further appear that the reference in the Chattanooga Times of November 19, 1934, quoting Mr. Ickes as stating that the power companies have instituted suit and

are using the money of the companies "to go into Court with dummy lawsuits in an effort to stop the inevitable" was a correct quotation and that said Harold L. Ickes regards that part of the Tennessee Valley Authority program relating to the generation, transmission and sale of power as constituting a part of the general policy and program of the National Administration.

II. Reason Why Said Harold L. Ickes Cannot Orally Testify

The reason why said Harold L. Ickes cannot orally testify before this Court is that he resides in Washington, D. C. and is consequently outside of the jurisdiction of this Court and beyond the one hundred mile limit for the service of subpoena from this Court.

III. Reason Why the Deposition of Said Harold L. Ickes Was Not Previously Taken

Though the issues in this case were made up a year ago the Defendants almost simultaneously with the filing of their answer filed an appeal from the order of the District Court granting a preliminary injunction to the Complainants, which was not finally determined until some time in June of [fol. 434] 1937. During this interval by agreement of the parties, which was embodied in a consent order by the Court, the time for taking depositions was extended. Before that time had expired, the District Court made an order appointing a Special Master before whom evidence desired by either of the parties should be taken by deposition. Complainants proceeded to take evidence before such Special Master at the earliest practicable date and continued to take such evidence up to and including the 31st day of July, 1937, at which time, by reason of the understanding between the parties, the Complainants' time to take depositions was to expire. In the meantime and during the month of July, 1937, Complainants reached an agreement with the Defendants that if it became necessary (that is, if the parties could not agree upon a stipulation) to take the deposition of Secretary Ickes, Defendants would consent to have Complainants take such deposition at some date after the 31st of July, 1937.

By subsequent agreements Defendants consented to have the Complainants take such deposition as late as August 25, 1937. Counsel for both parties knew that Secretary Ickes had been ill, that Congress was in session, that extraordinary demands were being made upon Secretary Ickes' time and energy and counsel for Complainants were desirous of reaching a stipulation to obviate the necessity of taking such deposition, if possible. Congress adjourned on Saturday, August 21, 1937, and on Monday, August 23, 1937, counsel for Complainants attempted to have a subpoena served on Secretary Ickes to cause him to appear for such deposition before the Special Master but were informed that he had left Washington for a much needed rest immediately upon the adjournment of Congress and would not [fol. 435] return for a period of from two to three weeks. On the same date, to wit, August 23, 1937, counsel for Complainants tendered to counsel for Defendants a suggested stipulation which, it was hoped, would obviate the necessity of taking such deposition. Such stipulation was refused by counsel for Defendants.

By the time Secretary Ickes returned to Washington the statute providing for this case to be heard by three judges had been passed and signed by the President and the day that counsel for Complainants received notice that the presiding judge of the Circuit Court of Appeals for the Sixth Circuit had designated the judges who should comprise the court before whom this case would be heard, counsel for Complainants filed a motion for leave to take the deposition of Secretary Ickes, which motion was heard at Nashville, Tennessee, by this court on September 27, 1937, and denied. Thereafter counsel for Complainants filed an application for rehearing on said motion which was denied by this Court on November 15, 1937, with leave given, however, to renew the same if during the course of this hearing a new state of facts should develop. A more complete statement of the reasons why Complainants did not proceed to take the deposition of Secretary Ickes prior to August 25, 1937, appears from the affidavit of Raymond T. Jackson, one of counsel for Complainants, attached to and filed with the motion to take such deposition, which was filed in this court on or about September 18, 1937, to which reference is hereby made.

IV. The Testimony Which Said Harold L. Ickes is Expected to Give

The nature, character and substance of the evidence which it is expected said Harold L. Ickes will testify to is as follows:

[fol. 436] A. Said Harold L. Ickes is now and has been since July 12, 1933, the duly appointed, qualified and acting Administrator of the Federal Emergency Administration of Public Works and is now and at all times has been the Chairman of the National Power Policy Committee since that Committee was created in the Public Works Administration by order of the President on July 9, 1934.

B. Prior to November 1, 1933, David E. Lilienthal conferred with said Harold L. Ickes with reference to the making of loans and grants of federal funds through the Public Works Administration to municipalities or other public bodies for the construction of electric distribution systems to use Tennessee Valley Authority power and that said Ickes expressed his willingness to cooperate with the Tennessee Valley Authority where loans and gifts of federal funds through the Public Works Administration would aid or assist the Tennessee Valley Authority in carrying out its power policy by considering in a cooperative manner applications for loans and gifts of federal funds to municipalities which had entered or would enter into contracts with Tennessee Valley Authority for the use and distribution of electricity produced by it.

C. Prior to November 2, 1933, said David E. Lilienthal brought to the attention of said Harold L. Ickes a letter written by Harry Berry, Engineer of the Tennesee Public Works Board, in which Mr. Berry stated to Mr. Lilienthal that it was his understanding that no federal funds would be used for the construction of a duplicate power plant in a municipality; that upon receipt of notice of said letter said Ickes wrote said Berry instructing him that his statement was incorrect.

D. Upon the filing of an application of the City of Knoxville, Tennesee, for a loan and grant said Harold L. Ickes stated on November 29, 1935, that Knoxville would have a good chance of getting such a loan and that "PWA would discuss the Knoxville situation with Tennessee Valley Au-

thority officials because the latter was so deeply concerned with the problem" and that the nature of the concern expressed by Tennessee Valley Authority officials was that Tennessee Valley Authority should secure a market for electricity in Knoxville and the surrounding area; that said Ickes expedited the application of the said City of Knoxville through the Tennessee Public Works Board stating as his reason therefor, among other things, that Knoxville, "was the largest city that had decided to join the Governments' 'yardstick' program in the Valley"; that said application of the City of Knoxville was disapproved by the Tennessee Public Works Board but that said Ickes, upon receipt thereof, approved said application in the amount of $2,600,000, of which $600,000 was a gift and that such ap- [fol. 437] proval was given subsequent to conferences and communications between said David E. Lilienthal and other representatives of the Tennessee Valley Authority; and that subsequent thereto the allotment of said loan and grant was held in abeyance by Public Works Administration until such time as the Tennessee Valley Authority reached an agreement with Tennessee Public Service Company for the purchase of Tennessee Valley Authority of a part of said Company's distribution and transmission properties in and about the City of Knoxville, and thereafter held in abeyance pending the consummation of said contract and is still being held.

E. With respect to cities in North Alabama David E. Lilienthal urged said Harold L. Ickes to expedite the making of loans and grants on said applications and that said applications were expedited; that said Lilienthal on or about March 1934, on account of some uncertainty as to the character and security of the bonds that said Alabama cities were authorized to issue under the statutes of Alabama to secure the loan of public funds from the Public Works Administration, said Lilienthal submitted to said Ickes a plan which said Ickes approved in principle whereby Tennessee Valley Authority would purchase the transmission and distribution properties of the privately-owned utility then serving said towns and the applications of said towns were held in abeyance to assist said Tennessee Valley Authority to consummate such a plan and to compel the municipality to accept said plan of Tennessee Valley Authority rather than to go forward with the construction

of municipal distribution systems and that after conferences between said Ickes and said Lilienthal and in order to compel the City of Florence, Alabama, to accept the plan which the Tennessee Valley Authority desired to consummate, the telegram set forth at p. 64 of Plaintiffs' Bill of Complaint was sent by said Ickes; that when advised by said Tennessee Valley Authority that it was being delayed by litigation in the consummation of said plan to purchase said property the making of Public Works Administration loans and grants to said cities was expedited and that such loans and grants of federal funds was shortly thereafter made.

F. The applications of Bessemer and Tarrant City, Alabama, originally provided for the use of Tennessee Valley Authority power; that after the execution of the contract of January 4, 1934, between Alabama Power Company and the Tennessee Valley Authority said applications were amended to provide for said cities constructing their own generating systems; that said applications were not acted upon by Public Works Administration until such applications were further amended to again provide for the distribution of Tennessee Valley Authority power, all of which was done after consul-ation with and approval of officials of Tennessee Valley Authority; that the Public Works Administration loans and grants that have been made to the [fol. 438] Cities in Mississippi, Tennessee and Alabama for the construction of electric distribution systems in said states have, with a few minor exceptions, been made with the knowledge that said cities propose to distribute power generated and purchased from Tennessee Valley Authority and have been made as a means of assisting said Tennessee Valley Authority either to obtain or to effectuate such contracts or to enable said Tennessee Valley Authority to acquire the distribution and transmission facilities of the privately-owned utility companies in each of said cities.

G. Said Harold L. Ickes, out of the funds of the Federal Emergency Administration of Public Works, has earmarked at least $10,000,000 for the purpose of making loans and grants to cities who desire to purchase Tennessee Valley Authority power and distribute it through municipally-owned distribution systems and that said Ickes has consistently assisted Tennessee Valley Authority to attain its

announced purpose of acquiring a market for the distribution of electric energy generated by it within transmission distance from the electric generating plants of said Authority.

Wherefore, Complainants pray the Court for an order granting said motion and designating a time within which Complainants may proceed to take the deposition of said Harold L. Ickes at Washington, D. C. or at such other place where said witness may be found, before the Special Master, heretofore appointed in this case, or under such other terms and conditions as to this Court may seem just and proper in the premises and as this Court may direct.

Frantz, McConnell & Seymour, Trabue, Hume & Armistead, Baker, Hostetler, Sidlo & Patterson, Counsel for Complainants.

December 6, 1937.

[fol. 439] IN UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT REQUIRED BY EQUITY RULE 56

STATE OF TENNESSEE,
County of Hamilton, ss:

Sidney D. L. Jackson, being first duly sworn, deposes and says:

That he is one of the Counsel for the Complainants in the above entitled action; that he has read the motion to which this affidavit is attached; that said motion is not filed for the purpose of delay; that the time for taking depositions in the above action as fixed by Equity Rule 47 has expired, and that the deposition of Harold L. Ickes is necessary to fully prove Complainants' cause of action herein, as more fully appears from the references hereinabove made in Part I of the attached motion to take said deposition; that the testimony of said Harold L. Ickes cannot be taken orally at the trial for the reasons more fully set forth in Part II of the attached motion; that the reason why the [fol. 440] deposition of said Harold L. Ickes has not been taken previously is accurately set forth in Part III of the attached motion; and that said Harold L. Ickes is expected

by Complainants to testify substantially as set forth in Part IV of the attached motion. Further affiant sayeth naught.
(S.) Sidney D. L. Jackson.

Sworn to and subscribed before me, a Notary Public, on this 6th day of December, 1937. (S.) Dorothy Murphy, Notary Public. (Seal.)

[fol. 441] In United States District Court

(Caption omitted)

Motion of Complainants to Strike and Disregard Briefs Filed by Defendants on January 17, 1938—Filed January 18, 1938

Come the Complainants and move the Court for the reasons stated in the affidavit of William H. Bemis, attached hereto, and made a part hereof, to strike and disregard the three briefs entitled respectively, "Explanatory Comments on Defendants' Requested Findings of Fact", "Explanatory Comments on Complainants' Requested Findings of Fact" and "Supplemental Brief Responsive to Questions of the Court During Closing Argument", which were filed by Defendants on January 17, 1938, or in the alternative, that Complainants be given a reasonable length of time within which to prepare and file reply briefs.

Trabue, Hume and Armistead, Frantz, McConnell & Seymour, Baker, Hostetler, Sidlo & Patterson. (S.) Baker, Hostetler, Sidlo & Patterson, Solicitors for Complainants.

[fol. 442] Affidavit in Support of Motion to Strike and Disregard Briefs Filed by Defendants on January 17, 1938

In the course of the trial of this cause the Court has repeatedly advised Counsel that argument would follow immediately upon the conclusion of the taking of testimony, that all briefs to be filed by either side must be filed with the Court at the time of the argument, that the Court desired both parties to prepare suggested findings of fact supported

by references to the record, and that such suggested findings must also be submitted at the conclusion of the case.

In discussing these matters with the Court, counsel for Complainants have requested and Counsel for the Defendants have vigorously opposed an allowance of time for preparation of oral argument and findings of fact and an allowance of a reasonable time for the preparation and submission of written briefs.

As appears from the record the taking of testimony in this case was concluded at three forty-five o'clock on January 14. The Court convened at 9 o'clock January 15 to hear oral argument. At the conclusion of the argument briefs on both sides were presented and the Court announced that the case was submitted. On the same day both parties filed their proposed findings of fact, the understanding being that such findings might be supplemented on or before January 17.

During the day on January 17 the Defendants filed with the Court certain papers without submission to Counsel for Complainants. During the evening of the same day Counsel for Complainants submitted to each member of the Court and to opposing Counsel, supplemental findings of fact. The papers previously delivered to the Court by Defendants's Counsel were then for the first time delivered to Complainant's Counsel and it was not until after ten o'clock P. M. January 17 (yesterday) that Complainants' Counsel learned of the facts which are the basis of the within motion.

A cursory examination of the papers filed by Defendants discloses that Defendants have filed as purported "explanatory comments", a 72 page fact brief dealing with Complainants requested findings of fact, a 56 page fact brief dealing with Defendants requested findings of fact, and in addition an 18 page supplemental brief on the law.

Since submission of this cause, in reliance upon the announcements made by the Court herein referred to, most of the Counsel, technical and other advisers of the Complainants have returned home.

W. H. Bemis.

Duly sworn to by Wm. H. Bemis. Jurat omitted in printing.

[fol. 443] IN UNITED STATES DISTRICT COURT

(Caption omitted)

COMPLAINANTS' SUGGESTED FINDINGS OF FACT—Filed January 19, 1938

In accordance with Equity Rule 70½, the Court in deciding the above suit in equity, finds the facts as set out herein:

I

(1) Complainants are eighteen privately owned public utility corporations duly qualified to engage as public utilities in the States of Tennessee, Georgia, Mississippi, Alabama, Kentucky, North Carolina, South Carolina, Virginia and West Virginia, and are engaged principally in the business of generating, transmitting and distributing and selling electricity, or distributing and selling electricity, or transmitting and selling electricity as public utilities in said States (Complainants' Ex. 2).

[fol. 444] (2) The defendant, Tennessee Valley Authority, is a body corporate created by an Act of Congress approved May 18, 1933, and has an office in Knoxville, Knox County, Tennessee.

(3) The defendants, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal are severally residents of Knox County, Tennessee, and are the three chief executive officers and constitute the Board of Directors of the Tennessee Valley Authority.

(4) This is an action of a civil nature, in equity, originally filed in the Chancery Court of Knox County, Tennessee, and thereafter duly removed by the defendants to this Court.

(5) This is a suit in equity and involves questions arising under the Constitution and laws of the United States and the amount in controversy exceeds, exclusive of interest and costs, the sum or value of $3,000.00.

[fol. 445] II

(6) The Tennessee Electric Power Company is a public utility corporation organized under the laws of the State of Maryland, is duly qualified to carry on its business as

a public utility in the States of Tennessee and Georgia, and has its principal place of business in the City of Chattanooga, Tennessee (Complainants' Ex. 2). For more than twenty years said Company and its predecessors have been engaged in the electric power business * (166, et seq.) and today it is distributing electricity in 66 counties in Tennessee, 4 counties in Georgia, and 455 communities in Tennessee and Georgia, including the Cities of Chattanooga and Nashville, Tennessee (151-2 and Complainants' Ex. 10). All of the operating territory of the Company, with the exception of a small area North of Nashville, Tennessee, is located within a 100 miles radius of one or more TVA generating plants constructed, under construction or authorized to be constructed (152). Said Company owns and operates 1559 miles of transmission lines and 5226 miles of distribution lines of which 2677 are classified as rural distribution lines (1921, 1340, 1343, and 1364), in said States of Tennessee and Georgia (Complainants' Exs. 10 and 7). It owns generating facilities with a total installed capacity of 244,009 kilowatts and leases generating facilities with a total installed capacity of 6500 kilowatts (Complainants' [fol. 446] Ex. 8). In addition to these facilities the Company is preparing to begin construction of a steam generating plant at Bordeaux, Tennessee, with an initial installed capacity of 25,000 kilowatts and provision for future increase to 150,000 kilowatts. The Company's steam plant at Hale's Bar was constructed to provide for expansion of its present capacity of 40,000 kilowatts to an ultimate capacity of 100,000 kilowatts (161). Said Company also owns hydro sites capable of producing when developed 76,000 kilowatts (161-2) and has interconnections with other utilities, the total capacity of the interconnections being 160,000 KVA (Complainants' Ex. 9). Said Company also owns and operates transportation systems in the Cities of Chattanooga and Nashville, Tennessee; water systems in eleven municipalities; ice plants in seven municipalities; and a telephone system in one municipality (162). For a period of years these businesses have been operated under the same management with the electric operations and as one business, and the severance of one from the other would have an adverse affect upon the Company (163-4).

* Figures in parenthesis not referring to exhibit numbers refer to record pages.

In the year ending September 30, 1937, the Company served 136,470 customers, of which 38,399 were classified as [fol. 447] rural customers (1197), and exclusive of sales to other utilities, sold 767,646,665 KWH, of which 496,923,761 KWH, or 64.7%, represented sales to industrial customers (Complainants' Ex. 10). The Company has issued and outstanding $49,313,300 in bonds; 241,296 shares of $100.00 par value preferred stock, and 425,000 shares of no par common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee (164), and it has 3500 employees (173).

(7) Franklin Power & Light Company is a public utility corporation organized under the laws of the State of Tennessee, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the City of Franklin, Tennessee (Complainants' Ex. 2). Ever since the organization of the company in 1929 it has been engaged in the electric power business, distributing electricity in and around the City of Franklin, Tennessee (278, 279). Its operating territory lies approximately 80 miles from Wilson Dam (279). The company owns and operates a distribution system consisting of 15 miles of line (281). It also owns a steam generating plant with an installed capacity of 1,800 kw. which is maintained as a standby plant for The Tennessee Electric Power Company, from which company the Franklin Power & Light Company purchases its power requirements (280, 281). In the year 1936 the company served 901 customers and sold a total of 3,219,758 kwh (Complainants' Ex. 23). Said company has [fol. 448] issued and outstanding $100,000 in bonds and 1,900 shares of $100 par value stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee (281 and 282 Complainants' Exhibit- 21 and 22).

(8) Memphis Power & Light Company is a public utility corporation organized under the laws of the State of New Jersey, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the City of Memphis, Tennessee (Complainants' Ex. 2). For more than twenty years, said Company and its predecessors have been engaged in the electric power business (328) and it is now distributing electricity in Shelby County, Tennessee, and in thirty-seven towns and

communities therein, including the City of Memphis (Complainants' Ex. 37; 329). The operating territory of the Company is from 74 to 105 miles from Pickwick Dam (330). Said Company owns and operates 319 miles of transmission lines and 905 miles of distribution lines (Complainants' Ex. 38). It owns a steam generating plant with an installed capacity of 54,000 kilowatts (324); has interchange facilities with Arkansas Power & Light Company and Mississippi Power & Light Company (325), and owns a site for the erection of additional generating facilities with an installed capacity of from 20,000 to 30,000 kilowatts (325). It owns and operates a natural gas distribution system throughout its territory from which approximately 37% of the total gross revenues of the Company are derived (326). The gas and electric properties are jointly operated under the same management and a loss of all or a substan-[fol. 449] tial part of its electric business would increase the cost of operating the gas department (326). In the year ending July 30, 1937, the Company served 56,952 customers, and exclusive of sales to other utilities, sold 191,888,000 kilowatt hours, of which 61,841,000 kilowatt hours, or 32.23% represented sales to industrial customers (Complainants' Ex. 38). The Company has issued and outstanding $22,275,000 in bonds; 30,000 shares of no par value $7.00 preferred stock; 32,000 shares of no part value $6.00 preferred stock, and 7200 shares of no par common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee (327).

(9) The Southern Tennessee Power Company is a public utility corporation organized under the laws of the State of Delaware, is duly qualified to carry on its business as a public utility in the States of Alabama and Tennessee, and has its principal place of business in the City of Chattanooga, Tennessee (Complainants' Ex. 2). The company owns and operates a high tension transmission line from Wilson Dam, Alabama, to Iron City, Tennessee, a distance of approximately 15 miles, and is engaged in the business of transmitting electric energy over said transmission line which constitutes a connection between the Alabama Power Company and The Tennessee Electric Power Company (529,530). The company has outstanding a note amounting to $380,000 and ten shares of no par stock (530).

(10) Birmingham Electric Company is a public utility [fol. 450] corporation organized as such under the laws of the State of Alabama and has its principal place of business in the City of Birmingham, Alabama (Complainants' Ex. 2). For many years, said Company and its predecessors have been engaged in the electric power business (318-9), and it is now distributing electricity in the City of Birmingham, Alabama, and the metropolitan district thereof, including the Towns of Bessemer, Jonesboro, Brighton, Lipscomb, Fairfield, Irondale, Homewood and Tarrant City, as well as in Jefferson County, Alabama (Complainants' Ex. 33), all of which territory was set aside to it by order of the Alabama Public Service Commission (Complainants' Ex. 34). The Company's operating territory is located approximately 66 miles from Guntersville Dam (311). Said Company owns and operates 1057.52 miles of distribution pole lines (Complainants' Ex. 35). It purchases at wholesale from the Alabama Power Company the electricity which it distributes (312, 314) and owns a steam generating plant with an installed capacity of 11,300 kilowatts which is used as a standby station (314). It also owns and operates a transportation system throughout its territory which contributes about 33% of the total gross revenues of the Company, and a steam heating system serving a substantial portion of the business district of the City of Birmingham which contributes approximately 1% of the Company's total gross revenues (314-15). These several businesses have for a period of years been jointly operated (315). The [fol. 451] Company served 68,110 customers, and in 1936, exclusive of interdepartmental sales, sold 208,113,400 kilowatt hours, of which 116,429,366 kilowatt hours, or approximately 56% of its total sales represented sales to industrial customers (Complainants' Ex. 35).

(11) The Mississippi Power Company is a public utility corporation organized under the laws of the State of Maine, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the City of Gulfport, Mississippi (Complainants' Ex. 2). For more than twelve years said company and its predecessors have been engaged in the electric power business, (236 and 237) and today it is distributing electricity in 34 counties and in 147 towns and communities in the State of Mississippi (Complainants' Exs. 12 and 15).

Most of the operating territory of the company is located within 250 miles from Pickwick and Guntersville dams, and much of the operating territory lies within 100 and 150 miles from said TVA generating plants (Complainants' Ex. 12). Said Company owns and operates 857.41 pole miles of transmission lines and 1,080.5 pole miles of distribution lines (Complainants' Ex. 15). It owns generating facilities with a total installed capacity of 18,702 kw. and it has subject to lease or contract generating facilities with an installed capacity of 6,450 kw. (Complainants' Ex. 13). The company, however, purchases substantially all its power requirements from the Alabama Power Company (235) at four interchange points having a combined capac- [fol. 452] ity of 66,300 kw. (232). As a part of its business the company owns and operates a transportation system in the City of Hattiesburg, Mississippi, (235), the total gross revenues from which in the year 1936 were less than 1% of the total revenue received by the company from all sources (236). In 1936 the company within a 100 mile radius of Pickwick Dam, served 1,247 customers, sold 2,102-086 kwh. and derived a revenue therefrom of $88,254.39; within a 150 mile radius of said dam it served 6,068 customers, sold 14,816,009 kwh. and derived a revenue therefrom of $484,839.85; within a 250 mile radius of said dam it served 20,772 customers, sold 87,936,552 kwh. and derived a revenue therefrom of $1,768,553.86 (Complainants' Ex. 16). The total kwh. sales to regular customers in that year amounted to 121,160,760 kwh. of which 64,216,059 kwh. or 53% represented sales to industrial customers (Complainants' Ex. 15). The company has issued and outstanding $10,690,500 in first mortgage bonds, 39,092 shares of preferred stock and 450,000 shares of common stock (236), and it has 512 employees (242).

(12) The Appalachian Electric Power Company is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and West Virginia, and has its principal place of business in the City of Roanoke, Virginia (Complainants' Ex. 2). [fol. 453] Said company is engaged in the electric power business and distributes electricity in 29 counties in Virginia, 20 counties in West Virginia and 522 towns and communities in Virginia and West Virginia (Complainants'

Ex. 3, 49 and 61). Most of the operating territory of the company is located within 250 miles of Norris Dam; much of its territory is located within 150 miles of said dam, and some of its territory is located within 100 miles of said dam (Complainants' Ex. 49). Said company owns and operates 1,767.88 pole miles of transmission lines, 4,663.79 pole miles of distribution lines (Complainants' Ex. 58), of which 2,527 miles are classified as rural lines (414-415), and in addition, on August 31, 1937, had 452 miles of rural lines under construction (414-415). The company owns generating facilities with a total installed capacity of 381,-390 kw., and has a purchased capacity of 43,500 kw. (Complainants' Ex. 50). In 1936 within a 100 mile radius of Norris Dam the company served 439 customers, sold 337,-500 kwh., and derived a revenue therefrom of $16,236; within a 150 mile radius of said dam it served 8,171 customers, sold 69,263,102 kwh. and derived a revenue therefrom of $1,312,443; within a 250 mile radius of said dam it served 126,700 customers, sold 1,283,307,996 kwh. and derived a revenue therefrom of $17,690,540 (Complainants' Ex. 55). The total kilowatt hour sales to regular customers in that year amount to 1,351,653,286 kwh., of which -,153,567,845 [fol. 454] kwh., or 85.34% represented sales to industrial customers (Complainants' Ex. 55). The company has issued and outstanding $80,774,000 in bonds, and preferred and common stocks aggregating $53,500,167.27 (399) and has 3366 employees (407).

(13) Carolina Power & Light Company is a public utility corporation organized under the laws of the State of North Carolina, is duly qualified to carry on its business as a public utility in said State and in the State of South Carolina, and has its principal place of business in the City of Raleigh, North Carolina (Complainants' Ex. 2). For more than twenty years, said Company and its predecessors have been engaged in the electric power business (357 and 373). It is now distributing electricity in the States of North and South Carolina and 272 incorporated towns and communities therein (Complainants' Exs. 41 and 47). A portion of the Company's operating territory is located within a radius of 100 miles of Norris and Fowler Bend Dams and Fontana dam site; a part of its territory is located within a radius of 150 miles of Fowler Bend Dam and Fontana dam site, and a part of it is located within a radius of 250 miles of

Fowler Bend Dam and Fontana dam site (Complainants' Ex. 45; 366, 367). Said Company owns and operates 1256 pole miles of transmission lines and 5921 pole miles of distribution lines (Complainants' Ex. 47). It owns generating facilities with a total installed capacity of 249,050 kilowatts (Complainants' Ex. 42) which are capable of being enlarged so as to produce an additional 80,000 kilowatts [fol. 455] (364). It owns a hydro site capable of producing when developed 40,000 kilowatts (364) and has interconnections with other utilities, the total capacity of such interconnections being 384,000 kilowatts (374-6). As a part of its business, the Company owns and operates transportation systems in Raleigh and Asheville (364-5), the gross revenues from which are less than 4% of the total gross revenues of the Company (365). In 1936, the Company served 83,836 customers (Complainants' Ex. 47), and exclusive of sales to other utilities, sold 536,521,801 kilowatt hours (Complainants' Ex. 46). In said year, the Company, within a radius of 100 miles from Norris and Fowler Bend dams and Fontana dam site, sold, exclusive of sales to other utilities, 115,802,557 kilowatt hours, of which 83,553,403, or approximately 61%, represented sales to industrial customers (Complainants' Ex. 46; 367); within a 150 mile radius of Fowler Bend Dam and Fontana dam site, it sold, exclusive of sales to other utilities, 118,167,621 kilowatt hours, of which 85,530,602 kilowatt hours, or approximately 72%, represented sales to industrial customers (Complain- [fol. 456] ants' Ex. 46; 367); and within a 250 mile radius of Fontana Dam site, it sold, exclusive of sales to other utilities, 309,197,905 kilowatt hours (Complainants' Ex. 46). The Company has issued and outstanding $46,000,000 in bonds; 165,162 shares of no par value preferred stock entitled to $6.00 and $7.00 annual dividends, and 2,500,000 shares of no par common stock (365), and had as of August, 1937, 1434 regular employees and 57 temporary employees (377).

(14) Tennessee Public Service Company is a public utility corporation organized under the laws of the state of Maine, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the City of Knoxville, Tennessee (Complainants' Ex. 2). For many years, said Company and its predecessors have been engaged in the electric power busi-

ness (296) and it is now distributing electricity in Knox, Jefferson, Cocke, Sevier, Union and Grainger Counties, Tennessee, and 37 towns and communities therein, including the City of Knoxville (Complainants' Exs. 27 and 28; [fol. 457] 296-7). The entire operating territory of the Company is located within a distance of from 25 to 75 miles of Norris Dam (293). Said Company owns and operates 180.58 miles of transmission lines and 1063.77 miles of distribution lines (Complainants' Ex. 28). It purchases practically all of its power requirements from the complainant, Carolina Power & Light Company, and also owns generating facilities with an installed capacity of 3150 kilowatts (294). Said Company also owns and operates a transportation system in the City of Knoxville, Tennessee, which contributes approximately 21½% of the Company's total gross revenues (295). Both the transportation and electric properties are operated under the same management and as one business (295). In the year ending September 30, 1937, the Company served 30,074 electric customers (294), and exclusive of interdepartmental sales and sales to other utilities, sold 131,404,000 kilowatt hours, of which 73,269,000 kilowatt hours, or 55.76%, represented sales to industrial customers (Complainants' Ex. 28). The Company has issued and outstanding $7,780,000 in bonds; 50,000 shares of no par preferred stock entitled to a $6.00 annual cumulative dividend per share, and 1,000,000 shares of common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee (295-6).

(15) Holston River Electric Company is a public utility corporation organized as such under the laws of the State of Tennessee with its principal place of business in the City [fol. 458] of Knoxville, Tennessee (Complainants' Ex. 2). Said Company is distributing electricity in the incorporated Town of Rogersville, Tennessee, and eight communities in Hawkins and Hamblen Counties, Tennessee, and to rural customers in said counties (Complainants' Exs. 29 and 30). The entire operating territory of the Company is located within 75 miles of Norris Dam (305). Said Company owns and operates 98.54 miles of distribution lines (Complainants' Ex. 30) and purchases at wholesale power which it distributes from the complainant, Tennessee Public

Service Company (306). For the year ending September 30, 1937, the Company sold 1,560,000 kilowatt hours.

(16) The Alabama Power Company is a public utility corporation organized under the laws of the State of Alabama, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the City of Attalla, Alabama (Complainants' Ex. 2). The company is engaged in the electric power business and distributes electricity in 65 of the 67 counties of the State of Alabama (Complainants' Ex. 89) and in 594 communities in the same State (Complainants' Ex. 96). Practically all of the operating territory of the company is located within 250 miles of Guntersville and Wilson Dams; most of the operating territory is located within 150 miles of said dams; and much of the territory is located within 100 miles of said dams (Complainants' Ex. 89). Said company owns and [fol. 459] operates 3,435 circuit miles of transmission lines, 2,810 miles of distribution lines within incorporated municipalities and 4,519 miles of line classified as rural (Complainants' Ex. 96). It owns generating facilities with a total installed capacity of 571,744 kw. (Complainants' Ex. 90) and has made provision for the expansion of its existing plants such that their capacities may be increased by 321,500 kw. (564, 565).

In 1936, exclusive of sales to the Birmingham Electric Company, the company sold within a 100 mile radius of TVA dams constructed or under construction 711,835,625 kilowatt hours and derived a revenue therefrom of $7,384,969.48; within a 150 mile radius of said dams it sold 961,720,184 kilowatt hours and derived a revenue therefrom of $11,147,768.38; and within a 250 mile radius of said dams it sold 1,018,109,064 kilowatt hours and derived a revenue therefrom of $12,346,658.72 (Complainants' Ex. 95). In that year the total kilowatt hour sales, exclusive of sales to utilities, amounted to 1,145,267,755 kilowatt hours, of which 948,565,825 or 82.8% represented sales to industrial customers (Complainants' Ex. 96). The total number of customers served in that year was 123,739 (Complainants' Ex. 96). The company has issued and outstanding $96,771,600 in bonds, 367,178 shares of $5.00, $6.00 and $7.00 preferred stock at a stated value of $35,751,258 and 3,775,000 shares of common stock at a stated value of $48,961,300 all

of which securities issued subsequent to the creation of the Alabama Public Service Commission were issued with its [fol. 460] approval (567), and it has 2,850 employees (575).

(17) The Kentucky and West Virginia Power Company, Inc. is a public utility corporation organized under the laws of the state of Kentucky, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the City of Ashland, Kentucky (Complainants' Ex. 2). Said company is engaged in the electric power business and distributes electricity in 14 counties and in 100 towns and communities in the State of Kentucky (Complainants' Exs. 49 and 62). All of the operating territory of the company is located within 250 miles of Norris Dam; most of its territory is located within 150 miles of said dam and some of its territory is located within 100 miles of said dam (Complainants' Ex. 49). Said company owns and operates 435.53 pole miles of transmission lines, 553.01 pole miles of distribution lines (Complainants' Ex. 59) of which 131 miles are classified as rural distribution lines, (414-415) and in addition, on August 31, 1937, had 31 miles of rural distribution lines under construction (414-415). The Company owns generating facilities with a total installed capacity of 19,500 kw. (Complainants' Ex. 51). In 1936, within a 100 mile radius of Norris Dam the Company served 3,713 customers, sold 30,078,589 kwh. and derived a revenue therefrom of $685,969; within a 150 mile radius of said dam it served 9,919 customers, sold 87,946,055 kwh. and [fol. 461] and derived a revenue therefrom of $1,700,159; within a 250 mile radius of said dam it served 21,170 customers, sold 254,600,861 kwh. and derived a revenue therefrom of $3,314,345. The total kwh. sales to regular customers in that year amounted to 254,600,861, of which 232,243,229 kwh. or 91.32% represented sales to industrial customers (Complainants' Ex. 56). The company has issued and outstanding $8,499,000 in bonds and preferred and common stock aggregating $4,147,525 (399), and has 435 employees (407).

(18) The Kingsport Utilities, Incorporated, is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the City of Kingsport, Tennessee (Complainants' Ex. 2). The company is engaged in the electric

power business and is distributing electricity in the counties of Sullivan and Hawkins in the State of Tennessee (Complainants' Ex. 49). All of the operating territory of the company is located within a 100 mile radius of Norris Dam (Complainants' Ex. 49). Said company owns and operates 5.75 pole miles of transmission line, 133.53 pole miles of distribution lines (Complainants' Ex. 60), of which 49 miles are classified as rural distribution lines (414, 415), and in addition, on August 31, 1937, had 6 miles of rural distribution lines under construction (414, 415). It also owns generating facilities with a total installed capacity of 11,400 [fol. 462] kw. (Complainants' Ex. 52). In the year 1936 the company served 4,358 regular customers and sold 37,468,385 kilowatt hours, of which 30,356,870 kilowatt hours, or 81% represented sales to industrial customers (Complainants' Ex. 57). The company has issued and outstanding $1,044,000 in bonds and $1,000,000 of preferred and common stocks (399) and has 98 employees (407).

(19) The Kentucky-Tennessee Light & Power Company is a public utility corporation organized under the laws of the State of Kentucky, is duly qualified to carry on its business as a public utility in said state and in the State of Tennessee, and has its principal place of business in the City of Bowling Green, Kentucky (Complainants' Ex. 2). The company is engaged in the electric power business and distributes electricity in many counties in Tennessee and Kentucky (Complainants' Ex. 3 and 327). All of the operating territory of the company is within a 250 mile radius, and most of the operating territory is within a 100 mile radius of one or more TVA generating plants constructed, under construction or authorized to be constructed (Complainants' Ex. 327). Said company owns and operates many miles of transmission and distribution lines in the States of Tennessee and Kentucky (Complainants' Exs. 205 and 327).

(20) West Tennessee Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a [fol. 463] public utility in the State of Tennessee, and has its principal place of business in the City of Jackson, Tennessee (Complainants' Ex. 2). For more than thirty years, said Company and its predecessors have been engaged in the electric power business (468) and it is now distributing electricity in nine counties in West Tennessee and twenty-

four incorporated towns and communities, including the City of Jackson, Tennessee (Complainants' Ex. 74). All of the operating territory of the Company is from 40 to 75 miles of Pickwick Dam (Complainants' Ex. 327). Said Company owns and operates 90.6 miles of transmission lines and 193.6 miles of lines classified as rural (1401). It owns generating facilities with a total installed capacity of 5228 kilowatts (Complainants' Ex. 75) and also has interconnections with Memphis Power & Light Company, from whom it purchases power at wholesale (467). It owns and operates natural gas distribution systems in six municipalities; ice plants in two municipalities; water works systems in three municipalities, and a transportation system in the City of Jackson, Tennessee (467). For a period of years, these businesses have been operated under the same management with the electric operations and as one business and are closely intermingled (467-8). For the year ending July 31, 1937, the Company served 10,050 customers, and exclusive of interdepartmental sales, sold 19,322,248 kilowatt hours, of which 8,080,659 kilowatt hours, or 38.74% represented sales to industrial customers (Complainants' Ex. 76).

[fol. 464] (21) Mississippi Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the City of Jackson, Mississippi (Complainants' Ex. 2). For many years, said Company has been engaged in the electric power business (659) and at present is distributing electricity in 40 counties in Mississippi and 312 incorporated towns and communities therein, including the Cities of Vicksburg, Natchez, Jackson and Greeneville (Complainants' Exs. 101 and 104). Most of the operating territory of the Company is located within 250 miles from Pickwick Dam and a substantial portion of its operating territory is within 150 miles of Wheeler and Guntersville Dams (Complainants' Ex. 101; 652-3). Said Company owns and operates 456.8 miles of transmission lines and 2628.2 miles of distribution lines (Complainants' Ex. 104). The Company purchases substantially all of its power requirements from the Louisiana Power & Light Company (655), and also owns generating facilities with an installed capacity of 19,146 kilowatts (Complain-

ants' Ex. 103). As a part of its business, the Company owns and operates transportation systems in the Cities of Jackson, Greeneville, and Vicksburg; natural gas distribution systems in 24 municipalities; ice manufacturing systems in 5 municipalities; water systems in 6 municipalities, and leases and operates water systems in 4 municipalities (656-7). The total gross revenues from such operations in [fol. 465] 1936 were 29% of the total gross revenues received by the Company from all sources (657). All properties of the Company are operated together as a unit, and the destruction of the whole or a substantial part of its electric business would seriously hamper the Company's ability to efficiently operate its other properties (658). In 1936, the Company, within a 150 mile radius of Pickwick Dam, served 7779 customers; sold 18,734,247 kilowatt hours, and derived revenue therefrom of $743,744.92; within a 250 mile radius of said dam, it served 29,454 customers, sold 117,792,338 kilowatt hours, and derived revenue therefrom of $3,063,194.36 (Complainants' Ex. 102). The total kilowatt hour sales to regular customers in that year amounted to 157,608,000 kilowatt hours, of which 87,673,000 kilowatt hours, or 55.6%, represented sales to industrial customers (Complainants' Ex. 104). The Company has issued and outstanding $16,000,000 in bonds; 69,000 shares of no par value first preferred stock entitled to a $6.00 annual cumulative dividend; 35,000 shares of no par value second preferred stock entitled to a $6.00 annual cumulative dividend, and 1,000,000 shares of no par common stock (658).

(22) The East Tennessee Light & Power Company is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee [fol. 466] and North Carolina, and has its principal place of business in the City of Bristol, Tennessee-Virginia (Complainants' Ex. 2). For many years, said Company and its predecessors have been engaged in the electric power business (506) and today it is distributing electricity in Carter, Johnson, Sullivan, Unicoi and Washington Counties, Tennessee; in Scott and Washington Counties, Virginia; in Avery County, North Carolina, and in 32 incorporated towns and communities, including the City of Bristol, Tennessee-Virginia (Complainants' Exs. 82 and 84). All of the operating territory of the Company is within a radius of 135

miles of Norris Dam, the larger part of it being within a radius of 100 to 115 miles of said dam (505). Said Company owns and operates 66.5 miles of transmission lines and 354.4 miles of distribution lines in said States of Tennessee, Virginia and North Carolina (Complainants' Ex. 84). It owns generating facilities with a total installed capacity of 3828 kilowatts (Complainants' Exs. 82 and 83). Said Company also owns a hydro site near Elizabethton, Tennessee (Complainants' Ex. 82; 501) and has interconnections with Appalachian Electric Power Company and Edmondson Electric Company (Complainants' Ex. 82; 501). The Company also owns and operates a gas distribution system in the city of Bristol, Tennessee-Virginia (503), from which operation approximately 10% of the total gross revenue of the Company is derived (503-4). In the year [fol. 467] ending July 31, 1937, the Company served 10,312 customers, of which 1572 were classified as rural customers, and in 1936, sold 22,904,648 kilowatt hours (Complainants' Ex. 84), of which 9,243,729 kilowatt hours, or 40.4%, represented sales to industrial customers (Complainants' Ex. 84; 511). The Company has issued and outstanding $2,731,000 in bonds; 2635 shares of no par preferred stock entitled to a $6.00 annual cumulative dividend, and 35,000 shares of no par common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee (505-6) and it has 204 employees (508).

(23) Tennessee Eastern Electric Company is a public utility corporation organizd under the laws of the State of Massachusetts, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee and North Carolina, and has its principal place of business in the City of Bristol, Tennessee-Virginia (Complainants' Ex. 2). For many years, said Company and its predecessors have been engaged in the electric power business and at present it is distributing electricity in Carter, Greene, Johnson, Unicoi and Washington Counties, Tennessee, and in 57 towns and communities therein, including the Cities of Johnson City and Greeneville, Tennessee (Complainants' Exs. 82 and 85). The operating territory of the Company is located within a radius of from 50 to 100 miles of Norris Dam (505). Said Company owns and operates 65.7 miles [fol. 468] of transmission lines and 442.7 miles of distribution lines (Complainants' Ex. 85). It owns generating fa-

cilities with a total installed capacity of 19,060 kilowatts (Complainants' Exs. 82 and 83) and has done preliminary work at hydro sites which it owns capable of producing when developed in excess of 51,000 kilowatts (Complainants' Ex. 82; 502), and the capacity of its Watauga steam plant is capable of being enlarged (502-3). In the year ending July 31, 1937, the Company served 8642 customers, of which 2304 were classified as rural customers (Complainants' Ex. 85), and in 1936, exclusive of sales to other utilities, sold 24,548,569 kilowatt hours, of which 11,049,650 kilowatt hours, or 45%, represented sales to industrial customers (Complainants' Ex. 85; 511). The Company has issued and outstanding $2,669,500 in bonds; 6000 shares of $100.00 par value preferred stock entitled to an annual $6.00 cumulative dividend; 5105 shares of no par value preferred stock entitled to a $7.00 annual cumulative dividend, and 15,000 shares of no par common stock (506), all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee (506), and it has 125 employees (508).

[fol. 469] III

(24) Installed capacity is not a measure of the dependable capacity available for electric service. In the case of hydro electric plants, the limiting factor is the water available and not the amount of machinery installed. Of the dependable steam and hydro capacity in a low-water year, a reserve is required to take care of various contingencies (2246, 2249, 2287, 2360, 2884, 2888, 2889, 5137, 5150).

[fol. 470] IV

(25) Complainants, and each of them are subject to a special tax to which taxpayers generally are not subject, the tax being upon electrical energy sold for domestic and commercial consumption in an amount equal to 3% of the price for which Complainants' sell the same which is imposed by Section 616 of the Federal Revenue Act of 1932, as amended. Complainants also severally pay large sums of money in the form of general taxes to the Federal Government including Social Security taxes and taxes for unemployment relief imposed by Sections 211 to 219 inclusive of the National Industrial Recovery Act. Complainants severally are subject to and pay special and general taxes levied

upon privately owned utilities by the several States and their political subdivisions in which Complainants severally carry on business or own property.

Following is a table of the taxes paid by each of the Complainant Companies, with the exception of Kentucky-Tennessee Light & Power Company, for the year 1936 with an estimate of the taxes to be paid by each company for the year 1937. The taxes paid by Complainants for the year 1936, exclusive of Kentucky-Tennessee Light & Power Company, averaged in excess of 12.7% of Complainants' gross revenue and for the year 1937, exclusive of Kentucky-Tennessee Light & Power Company, it is estimated that such taxes will be in excess of 14.4% of the total gross revenues [fol. 471] of the companies (Complainants' Exs. 6, 17, 20, 24, 31, 36, 40, 48, 67, 68, 73, 80, 81, 86, 97, and 100).

[fol. 472]

Name of Company	1936	1937 (Est.)
The Tennessee Electric Power Company...	$2,278,880.60	$2,613,895.00
Franklin Power & Light Company.....	5,681.77	.....
Memphis Power & Light Company.....	1,071,794.82	1,321,527.00
Southern Tennessee Power Company.....	5,896.77	5,953.00
Birmingham Electric Company.....	828,953.47	1,009,329.00
Mississippi Power Company.....	396,286.26	437,891.00
Appalachian Electric Power Company.....	2,817,013.07	3,069,047.97
Carolina Power & Light Company.....	1,607,877.58	2,035,440.00
Tennessee Public Service Company.....	471,335.33	590,733.00
Holston River Electric Company.....	5,414.47	5,611.00
Alabama Power Company.....	2,380,556.45	3,126,400.50
Kentucky & West Virginia Power Company, Inc.....	344,104.06	350,919.03
Kingsport Utilities, Incorporated.....	59,697.46	85,437.89
West Tennessee Power & Light Company..	119,670.44	140,122.88
Mississippi Power & Light Company.....	738,463.61	918,832.00
East Tennessee Light & Power Company...	87,431.38	105,687.57
Tennessee Eastern Electric Company.....	130,419.90	190,390.40
	$13,349,477.44	$16,007,217.24

[fol. 473] V

(26) The rates and services of each of the Complainant Companies in the States of Alabama, Tennessee, Kentucky, Virginia, Georgia, West Virginia, North Carolina and South Carolina are regulated by State Commissions in the respective states (173, 174, 299, 308, 316, 331, 377, 408, 470, 511, 512, 1045). There is no State Commission in Mississippi. The rates and services of the Complainant Companies in that State are regulated by municipalities within their corporate limits (242, 663).

(27) The rates charged by the several Complainant Companies in the States of Alabama, Tennessee, Georgia, Vir-

ginia, North Carolina and South Carolina are uniform for the different classes of service throughout their respective operating territories. As between the Complainant Companies operating within a state, there is no requirement of uniformity of rates (174, 177, 178, 377, 517).

[fol. 474] VI

(28) The respective complainants have been issued franchises, licenses, or easements by most but not all of the municipalities and by most but not all of the counties in which they respectively operate electric facilities. Said franchises, licenses, or easements vary in original term and in unexpired term from a few months to more than fifty years, and many are unlimited in term. Most of the said franchises, licenses, or easements purport to be non-exclusive. Most of said franchises, licenses, or easements grant rights not limited within the respective municipalities or counties, but some are limited to particular streets or highways or to portions of the respective counties or municipalities. Some of the franchises, licenses, or easements purport to grant the right to construct and occupy the streets and highways with electrical facilities; some of said franchises, licenses, or easements purport to grant, for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the streets and highways; and some of said franchises, licenses or easements purport to grant the right to occupy the streets and highways with electrical facilities and to engage in the business of selling and distributing electricity within the respective municipalities and counties. The validity of one of the municipal franchises, licenses, or easements claimed by complainants is now being contested in a State court by the municipality concerned (Complainants' Ex. 3).

[fol. 475] VII

(29) The largest hydro electric plant of the Carolina Power and Light Company is the Waterville Plant located in Haywood County, North Carolina on the Big Pigeon River, which was constructed under authority of a license issued to the company by the Federal Power Commission (Complainants' Exs. 43, 44, 42; 344). This plant has an installed capacity of 108,000 kilowatts, which is more than 43% of the Company's total generating capacity (352, Complain-

ants' Ex. 42). The Company's application for this Federal Power Commission license stated that this Plant would be connected to the transmission system of the Company and that the power output generated there would be used in the Company's market in the western portion of North Carolina (345-346).

(30) Four of the six hydro electric generating plants owned and operated by the Alabama Power Company were constructed under authority of Acts of Congress; Lock 12 (Lay Dam) was constructed under authority of a special Act of Congress, approved March 4, 1907, (34 Stat. 1288); Mitchell Dam (Duncan's Riffle), Martin Dam (Cherokee Bluffs) and Jordan Dam (Lock 18) were constructed under licenses granted pursuant to the Federal Water Power Act (41 Stat. 1063); Complainants' Ex. 91). Such dams have a total installed capacity of 332,500 kw. (Complainants' Ex. 90).

The total generation in all plants owned by the Company for the years 1932 to 1936, inclusive, was 7,881,678,312 kilo- [fol. 476] watt hours, of which 7,485,791,438 kilowatt hours or 95 per cent was generated in the hydro electric plants, and 395,706,874 kilowatt hours, or five per cent, generated in steam and other plants (551, 552). The total generation for the five-year period in the hydro electric plants at Lay Dam, Mitchell Dam, Martin Dam, and Jordan Dam was 6,158,950,000 kilowatt hours which was 78.2 per cent of the generation in all plants owned by the Company (552, 553). For this same five-year period, Mitchell Dam supplied 16.2 per cent of the generation in all plants owned by the Company; Martin Dam supplied 17.6 per cent; Jordan Dam 26.4 per cent; and Lay Dam 18 per cent; Mitchell, Martin, and Jordan plants thus supplying a total of 60.2 per cent of such generation (Complainants' Ex. 934).

In the applications to the Federal Power Commission for these licenses it was stated that these projects would be interconnected with the Company's integrated system and would serve the markets in northern, central and other portions of Alabama into which this transmission line system extended. The licenses issued pursuant to these applications required the Company to install certain generating units of specified minimum generating capacities in these projects serving these markets, which generating units were installed by the Company in compliance with the licenses,

and the projects interconnected with the Company's system (Complainants' Exs. 90, 91; 551-565). The licenses for the [fol. 477] construction and operation of the Mitchell Dam and the Jordan Dam projects were issued by the Federal Power Commission on findings of fact that each of the dams was necessary, convenient and best adapted to a comprehensive scheme of development, improvement and utilization of the Coosa River (Complainants' Ex. 91). Both the special act of Congress (34 Stat. 1288), authorizing the construction and operation of the Lock 12 project (Lay Dam), and the licenses granted by the Federal Power Commission, authorizing the construction and operation of the Mitchell Dam (Duncan's Riffle), Jordan Dam (Lock 18), and Martin Dam (Cherokee Bluffs), contained as conditions to the authority granted, requirements that the Company at its own cost should construct certain navigation facilities at those projects and supply electric service for the operation of certain navigation facilities (Complainants' Exs. 91, 92, 93). In the fulfillment of the obligations imposed by these conditions the Company has expended to date several hundred thousand dollars and is obligated in the future to expend an additional substantial sum (Complainants' Ex. 91; 3140, 3141, 3142, 3143).

[fol. 478] VIII A

(1) Prior to the passage of the Tennessee Valley Authority Act on May 18, 1933, the Congress, by the Rivers and Harbors Act of July 3, 1930 (46 Stat. 918, 927-8) had adopted the recommendation of the Chief of Engineers made to the Congress in House Document 328, 71st Congress, 2d Session, which recommended the improvement of the Tennessee River from its mouth to Knoxville, a distance of some 652 miles, so as to create a 9 ft. navigation channel over that entire distance by means of a series of low dams, each of which was to be constructed with locks 110 ft. by 600 ft. at an estimated cost of approximately $75,000,000. (This project is hereafter throughout these findings referred to as "the low dam navigation plan".) This was and still is the existing federal navigation project on the Tennessee River and would be integrated with similar 9 ft. developments on the Ohio and Mississippi Rivers, and on other improved tributaries of the Mississippi, such as the Missouri, Illinois

and Kanawha Rivers (Complainants' Ex. 105, pp. 6-7, 97-101, Complainants' Ex. 105-A, 105-B, 106-A, 107-A, Complainants' Ex. 107, pp. 1032-3; Putnam 1974, Watkins 3512, 3471, Barker 4780).

(2) According to the general practice of the Corps of Engineers, the low dam plan for a 9 ft. navigation channel would have an over-depth of two to three feet throughout, except at the intermediate sill of the lock at Wilson Dam already in existence where there is a controlling depth of [fol. 479] 9 ft. (Putnam 1974, Barker 4780, 4847-9, Watkins 3471).

VIII B

(1) The recommendation of the Chief of Engineers, adopted by Congress in the Rivers and Harbors Act of June 3, 1930, contains the provision that a high power dam might be built by private interests, states or municipalities in lieu of any two or more of the low navigation dams which were recommended, so long as the construction of any such high power dams would not lessen the navigable capacity of the waterway, and with the further provision that if any such high power dams should be built before the low navigation dams (which would be rendered unnecessary by the construction of the high dams), then the United States should contribute to the cost of any such high power dam an amount equal to the estimated cost of the low navigation dams.

There are 149 feasible hydro-electric power sites upon the Tennessee River and its tributaries which, at a cost of approximately $1,200,000,000, could be developed so as to produce approximately 5,000,000 kw. of firm capacity and 25,000,000,000 kw-hrs. of energy annually, half of which would be produced by projects upon the main stream and the remainder by projects upon the tributaries. Prior to the date of the passage of the TVA Act, privately owned power companies or other private interests had acquired or were in the process of acquiring most of the power dam sites upon the main river and private interests had acquired or were acquiring several of the power dam sites upon the [fol. 480] tributaries, but the construction of any such power dam had not been undertaken by any such private interest nor was any such construction immediately in process on May 17, 1933, when the TVA act was passed granting TVA corporate power to construct high dams at any or all of the

149 sites upon the Tennessee River and its tributaries. Immediately upon the organization of the Tennessee Valley Authority, its directors determined to and did thereafter oppose the granting of any licenses by the Federal Power Commission to any privately owned utility interest to construct power dams upon the Tennessee River or any of its tributaries (Complainants' Ex. 105, pp. 2-3, 6-7, 88, 97-101, Complainants' Ex. 105-A, 105-B, 105-C, 105-D, 106-A, 107-A, 701, Complainants' Ex. 107, p. 1032-3, Complainants' Ex. 113, p. 70, Record 1518-24).

VIII C

(1) In the fall of 1933 the TVA assumed the use, control and possession of Wilson Dam and power plant upon the Tennessee River and U. S. Nitrate Plant No. 2 Steam Plant. Wilson Dam and power plant have an installed generating capacity of 184,000 kw. and an ultimate capacity of 444,000 kw. (Defendants' Ex. 153, pp. 919, 971; Defendants' Ex. 154, p. 60; Complainants' Ex. 116, p. 403).

[fol. 481]

VIII D

(1) TVA announced its intention to construct ten dams upon the Tennessee River and its tributaries, in addition to Wilson Dam, in the report to Congress of March 31, 1936, on "The Unified Development of the Tennessee River System", and will have upon completion of the Plan (hereafter referred to as "The Unified Plan"), an initial power installation of 697,000 Kw. and an ultimate power installation of 1,922,000 Kw. with a firm power capacity of 660,000 Kw., and a firm annual energy output of 5,780,000,000 Kw-hrs. and has annually received appropriations from Congress in order to proceed with the construction program more rapidly than would be possible with funds from its earnings or its bonding power (Complainants' Exs. 328 and 116, p. 403, Defendants' Ex. 153, p. 919).

(2) On October 3, 1933, TVA began the construction of Norris Dam and power plant on the Clinch River, a tributary of the Tennessee River, located 79.8 miles above its mouth, and completed such construction in March, 1936, at a total cost of $36,310,370 and began generating power in July, 1936. The dam is 265 feet high; 1,872 feet in length; has a normal reservoir area of 34,200 acres; a reservoir shore line of 705 miles, and has an installed generating ca-

pacity of 100,800 kilowatts (Complainants Ex. 116, p. 403, 434-5, 462-4, Defendants' Ex. 153, pp. 971, 919).

(3) On November 30, 1933, TVA began construction of Wheeler Dam and power plant located 15.5 miles above [fol. 482] Wilson Dam on the Tennessee River and construction was completed in November, 1936, at a total cost of $35,317,964, exclusive of the cost of the lock built by the War Department, at a cost of $1,939,693. Wheeler Dam began to generate power in November, 1936 (Complainants' Ex. 116, p. 437-8, 462-4). The Corps of Engineers in 1932 proposed to construct this dam with a lift of 15 ft. as an integral part of the low dam navigation plan. (Complainants' Ex. 106, p. 1207.) The estimated cost of said dam in its ultimate stage will be $42,817,964, exclusive of the lock built by the War Department (Complainants' Ex. 116, p. 403). The dam is 72 feet in height; 6,335 feet in length; has a normal reservoir area of 64,300 acres; a reservoir shore line of 1,063 miles; has an initial installed generating capacity of 128,000 kilowatts, and an ultimate generating capacity of 256,000 kilowatts (Complainants' Ex. 116, pp. 403, 437-8; Defendants' Ex. 153, pp. 919, 971).

(4) In March, 1935, TVA began construction of the Pickwick Landing Dam and power plant located on the Tennessee River 52.7 miles below Wilson Dam and 100 miles east of Memphis, Tennessee, and the construction will be completed in June, 1938, at an initial cost of $33,199,497 and an estimated ultimate cost of $42,431,497. The dam will be 110 feet in height; 7,715 feet in length; have a normal reservoir area of 41,600 acres; a reservoir shore line of 496 miles; an initial installed generating capacity of 72,000 kilowatts, and an ultimate generating capacity of 216,000 kilowatts (Complainants' Ex. 116, pp. 403, 440; Defendants' Ex. 153, pp. 919, 948, 973).

[fol. 483] (5) On December 4, 1935, TVA began the construction of Guntersville Dam and power plant located on the Tennessee River above Wheeler Dam, near Guntersville, Alabama, and construction is estimated to be completed in December, 1938, at an estimated initial cost of $34,123,660 and an estimated ultimate cost of $38,524,860. The dam will be 89 feet in height; 4,000 feet in length; have a normal reservoir area of 63,300 acres; a reservoir shore

line of 660 miles, with an initial installed generating capacity of 50,000 kilowatts, and an ultimate generating capacity of 100,000 kilowatts (Complainants' Ex. 116, p. 403, 445; Defendants' Ex. 153, pp. 919, 948, 975).

(6) On January 13, 1936, TVA began construction of Chickamauga Dam and power plant on the Tennessee River about six miles upstream from Chattanooga, Tennessee, and it is estimated that construction will be completed in December, 1939, at an initial cost of $40,435,645 and an estimated ultimate cost of $45,333,645. The dam will be 104 feet high; 6,025 feet long; have a normal reservoir area of 32,000 acres; a reservoir shore line of 502 miles; an initial installed generating capacity of 50,000 kilowatts and an ultimate generating capacity of 100,000 kilowatts (Complainants' Ex. 116, pp. 403, 447; Defendants' Ex. 153, pp. 919, 948, 976).

(7) On July 15, 1936, TVA began construction of Fowler Bend Dam and power project located on the Hiwassee River in North Carolina about 75.8 miles above the confluence of said river with the Tennessee River, and it is estimated that construction will be completed in October, [fol. 484] 1940, at an initial cost of $17,296,061 and an estimated ultimate cost of $22,491,561. The dam will be 292 feet high; 1,250 feet long; have a normal reservoir area of 6,240 acres; 150 miles of reservoir shore line, and an ultimate generating capacity of 80,000 kilowatts (Complainants' Ex. 116, pp. 403, 442; Defendants' Ex. 153, pp. 919, 948, 974).

(8) TVA has announced its intention to construct Watts Bar Dam and power plant on the Tennessee River and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been selected and which is located approximately 530 miles above the mouth of said river. Preliminary work has been done and construction is scheduled to begin in the near future. The estimated initial cost of the dam and power plant is $29,200,000 and the estimated ultimate cost is $39,800,000. The dam will be 2,900 feet long and have a normal reservoir area of 42,600 acres and will have an ultimate installed generating capacity of 150,000 kilowatts (Complainants' Exs. 328 and 116, p. 403, 413; Defendants' Ex. 153, pp. 919, 948, 921).

(9) TVA has announced its intention to construct Coulter Shoals Dam and power project on the Tennessee River and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been tentatively selected approximately thirty miles below Knoxville, at which site some preliminary work has been done. The dam will be 2,070 feet long and will have a normal reservoir area of 11,900 acres and the estimated initial cost of such dam and power plant is $25,000,000 and [fol. 485] the estimated ultimate cost is $30,000,000. The ultimate installed generating capacity will be 60,000 kilowatts (Complainants' Exs. 328 and 116, pp. 403, 413; Defendants' Ex. 153, pp. 919, 921, 948).

(10) TVA has announced its intention to construct the Gilbertsville Dam and power plant on the Tennessee River in Kentucky, 22.5 miles above the mouth of said river and Congress has allocated in its appropriations specific funds for preliminary investigation of a site. Preliminary work has been done at the dam site and construction is scheduled to begin within the near future. The dam will be 150 feet in height; 8,300 feet in length, have a normal reservoir area of 160,000 acres, and have an ultimate generating capacity of 192,000 kilowatts. Its estimated initial cost is $95,000,000 and the estimated ultimate cost is $112,000,000 (Complainants' Exs. 328 and 116, pp. 403, 412, 413; Defendants' Ex. 153, pp. 919, 948, 977).

(11) TVA has announced its intention to construct Fontana Dam and power project in North Carolina on the Little Tennessee River, a tributary of the Tennessee River, which will be 450 feet high, 1,750 feet long and the estimated initial cost is $40,000,000 and the estimated ultimate cost is $51,000,000 with an ultimate power installation of 180,000 kilowatts (Defendants' Ex. 153, pp. 919, 948; Complainants' Ex. 116, p. 403, Complainants' Ex. 328, pp. 24-27, 62, 100-105).

(12) TVA has announced its intention to construct and has scheduled for construction, an increase in the height of [fol. 486] Wilson Dam at an estimated cost of $500,000. The estimated cost of the completed development is $57,950,748 (Complainants' Ex. 116, p. 403, Complainants' Ex. 328, p. 25; Defendants' Ex. 153, p. 919).

(13) TVA has announced its intention to increase the height of the Hales Bar Dam, a private dam constructed under Congressional authority by the Chattanooga and Tennessee River Power Company, a predecessor of complainant, The Tennessee Electric Power Company. This increase in height will cost approximately $4,000,000 (Complainants' Ex. 328, p. 25).

(14) The development of firm power by hydro-electric project is controlled by the amount of power that can be produced by the project both at extreme low water and extreme high water (Kurtz, 2105).

(15) The load factor of a public utility system is the ratio of the average demand for power on that system expressed in kws. to the maximum demand for power on that system, and in the Tennessee basin area is about 60% (Kurtz, 2105, 2107).

(16) At 100% annual load factor the amount of firm power that can be produced by the TVA Unified Plan with regulation by the reservoirs on the tributaries is 660,000 Kw. and the amount of firm energy is 5,780,000,000 kw.-hrs., which is more than five times greater than the amount which would be produced by the TVA dams upon the Tennessee River if the tributary dams of Norris, Fowler Bend and Fontana were not constructed (Kurtz, 2117-18. Complainants' Ex. 328, p. 62; Complainants' Ex. 115, p. 279).

[fol. 487] (17) At 60% annual load factor the firm power produced by the TVA Unified Plan, excluding the U. S. Nitrate Plant No. 2 Steam Plant, would be 1,100,000 kws. and the average annual firm energy would be 5,780,000,000 kw.-hrs. per year. The firm power capacity of all the plants included in the TVA Unified Plan, including U. S. Nitrate Plant No. 2 Steam Plant, at 60% annual load factor would be 1,200,000 kws. and the available firm energy would be 6,307,000,000 kw.-hrs. per year (Kurtz, 2118-19, Complainants' Ex. 328).

(18) At 60% load factor in a low water year the total available energy from the plants included in the TVA Unified Plan, including Wilson Dam, would be 7,667,000,000 kw.-hrs. energy, of which 5,780,000,000 would be firm energy, and 1,887,000,000 kw.-hrs. would be secondary energy available less than 75% of the time (Kurtz, 2119-2120).

(19) The total available energy under the TVA Unified Plan in an average water year would be 10,000,000,000 kw.-hrs. per year and the secondary energy 4,220,000,000 kw.-hrs. per year (Kurtz, 2123).

(20) At 100% load factor, the firm capacity of Wilson Dam, excluding United States Nitrate Steam Plant No. 2, before the capacity of Wilson Dam was increased by the TVA dams upon the Tennessee River and its tributaries, was approximately 28,000 kws. and the firm energy was 242,600,000 kw.-hrs. per year. At 60% load factor 145,600,000 kw.-hrs. per year of firm energy would be produced by Wilson Dam power plant. The operation of the tributary reservoirs [fol. 488] under the TVA high dam program solely for regulation of the river will increase the firm power capacity of Wilson Dam at 60% load factor by 151,300 kilowatts per year and the firm energy by 795,200,000 kw.-hrs. per year (Kurtz, 2124, 2125, Putnam 1913).

(21) At 100% load factor the operation of the tributary reservoirs solely for regulation of the river would increase the firm power capacity of Wilson Dam by 79,700 kilowatts, and the firm energy by 698,200,000 kw.-hrs. per year (Kurtz 2126, Bowman, 3888-90, 3910).

[fol. 489] VIII E

(1) The navigation channel which will incidentally result on the Tennessee River from the completion of the TVA Unified Plan will have less capacity than the low dam navigation plan for carrying water borne commerce, and the other minor offsetting advantages and disadvantages of the channel incidentally resulting from the execution of the TVA Unified Plan in comparison with the low dam navigation plan recommended by the Chief of Engineers and adopted by the Congress shows no measurable advantage from the standpoint of navigation in favor of the TVA Unified Plan, and the expenditure of no additional sum of money in the interest of navigation could be justified by reason of any superiority of the navigation channel incidentally resulting from the TVA Unified Plan over the navigation channel which would result from the construction of the low dam plan (Putnam, 1923, 1928-9, 1931, 1947, Kelley 2571-2).

(2) The low dam navigation plan could have been constructed for less than $75,000,000. The estimated cost of the TVA Unified Plan is more than $473,000,000. The additional expendi- of approximately $400,000,000 involved in the TVA Unified Plan is not an expenditure for the benefit of navigation, but for some other purpose (Putnam, 1931, Barker 4796, Complainants' Ex. 105, pp. 4-5, 98, 100).

(3) The completion of either the low dam navigation plan recommended by the Chief of Engineers and adopted by Congress or the TVA Unified Plan would result in slack [fol. 490] water navigation over the entire length of the Tennessee River from its mouth to Knoxville. The extreme low water flow of the Tennessee River is far in excess of the needs of navigation on such a slack water system. Any enrichment of the low water flow by reason of releases from tributary reservoirs would be of no benefit to navigation upon the Tennessee River, and their effect, if any, would be unfavorable to navigation (Putnam 1912, 1952; Kelley 2572, Woodward 4061).

(4) Present and prospective benefits from the construction of the low dam navigation plan would not justify its cost, and much less would such benefits justify the cost of the High Dam TVA Plan. The recommendation of the Chief of Engineers, adopted by the Congress in the Rivers and Harbors Act of July 3, 1930, provided for a nine foot low dam navigation channel on the Tennessee River, but contemplated that it should be constructed gradually over a considerable period of years in order that it might reach economic justification (Putnam, 1931, 1947; Complainants' Ex. 105).

(5) Norris and Hiwassee Dams are obstacles, and Fontana Dam will be an obstacle, to through navigation upon the Clinch, Hiwassee and Little Tennessee Rivers, respectively, and will have no value to navigation upon the Tennessee River (Putnam 1952-5).

(6) Under the low dam program there would be incidentally produced 4400 kw. of firm power and about 5600 kw. of secondary power for the operation of the locks. The firm power available at Wilson Dam before the construction of any of the TVA high dams was about 28,000 kw., and under the TVA high dam program there will be produced

660,000 kw. of firm power from all dams, excluding the [fol. 491] Sheffield steam plant (Putnam, 1913, 1923; Complainants' Exs. 105 and 346, Complainants' Ex. 328, p. 62).

(7) There will be no material difference in the benefits to navigation upon the Tennessee River between the low dam plan and the TVA high dam plan, and there would be no difference in pool fluctuations between the low dam navigation plan and the high dam plan at the four principal terminal sites upon the Tennessee River of Florence, Sheffield, Chattanooga and Knoxville. No additional expenditures over and above the cost of the low dam plan for navigation are justified to improve navigation upon the Tennessee River (Putnam 1931; Kelley, 2571-2; Barker 4852-55; Watkins 3491-4).

(8) The TVA Unified Plan for the development of the Tennessee River is not primarily designed to promote navigation upon the Tennessee River and its tributaries (Putnam, 1955-6).

(9) The TVA high dam plan is not integrated with the navigation developments on the Ohio and Mississippi Rivers for the wide waters in the lakes created by the TVA high dams require a different type of transportation equipment from that commonly used upon the Ohio and Mississippi Rivers (Putnam, 1957; Willson, 2628).

(10) When a private power company builds a dam and reservoir upon a navigable stream under a Federal Power Commission license, all such navigation facilities must be approved by the Chief of Engineers, which approval the TVA has also secured in constructing its main stream dams (Barker, 4793).

[fol. 492] (11) If work had been started in 1933, the low dam plan for navigation upon the Tennessee River could now have been completed, for the amount already expended by TVA for the construction of Wheeler and Norris Dams alone (Barker, 4796).

(12) The operation of Norris Dam and the completed Hiwassee Dam will permit the manipulation of the pools of the main river dams for power purposes and permit daily peaking to meet the utility load curve (Barker, 4800-1).

(13) The practical working capacity, which is 20% of the theoretical capacity, of the Tennessee River for navigation under the low dam plan would be:

(a) For through traffic from Knoxville to the Ohio River 5,960,000 tons per year.

(b) Below Florence 31,540,000 tons per year.

(c) From the head of Wilson lake to the Hales Bar Dam 34,280,000 tons per year.

(d) Above Chattanooga 35,840,000 tons per year. (Putnam 1906-1907.)

(14) The practical working capacity, of the Tennessee River for navigation under the high dam plan is limited:

(a) For through traffic from Knoxville to the Ohio River by the capacity of the locks at Wilson Dam to 5,960,000 tons per year.

(b) Below Florence by the capacity of the lock at Pickwick Landing Dam to 26,280,000 tons per year.

[fol. 493] (c) From the head of Wilson lake to the Hales Bar Dam by the capacity of the lock at Wheeler Dam to 9,520,000 tons per year.

(d) Above Chattanooga by the capacity of the lock at Coulter Shoals to 8,900,000 tons per year (Putnam 1918).

(15) The theoretical capacity of the Tennessee River for navigation under the low dam plan would be:

(a) For through traffic from Knoxville to the Ohio River 29,800,000 tons per year.

(b) Below Florence 157,700,000 tons per year.

(c) From the head of Wilson lake to Hales Bar Dam 171,400,000 tons per year.

(d) Above Chattanooga 179,200,000 tons per year (Putnam 1908).

(16) The theoretical capacity of the Tennessee River for navigation under the high dam plan is limited:

(a) For through traffic from Knoxville to the Ohio River by the capacity of the lock at Wilson Dam to 29,800,000 tons per year.

(b) Below Florence by the capacity of the lock Pickwick Landing Dam to 131,400,000 tons per year.

(c) From the head of Wilson lake to Hales Bar Dam by the capacity of the lock at Wheeler Dam to 47,600,000 tons per year.

(d) Above Chattanooga by the capacity of the lock at Coulter Shoals to 44,500,000 tons per year (Putnam 1919).

[fol. 494] (17) The capacity of the Tennessee River for navigation is smaller under the TVA high dam plan than under the low dam plan (Putnam, 1921, 1906-8, 1918-1919).

(18) Under the low dam plan of navigation the movable dams are lowered when river stages are sufficient to provide project depths without dams, making it unnecessary to use the locks for passing navigation. During those periods, which are as great as 67% of the time, depending upon location, the capacity of the waterway is practically unlimited, for which no allowance has been made in calculating the practical working capacity under the low dam plan (Putnam 1909).

(19) Under the low dam plan at extreme low water the greatest flow of water for navigation would be required at the highest lock, which would be at Colbert Shoals at Riverton, and with the lock used at its theoretical maximum capacity at that point, the flow of water necessary for navigation would be 1,360 cu. ft. per second for leakage, evaporation, and operation of the locks. The extreme low water flow of the Tennessee River at Colbert Shoals at Riverton is 4,350 cu. ft. per second (Putnam, 1910-1911).

(20) The estimate of the Corps of Engineers of the United States Army of the cost of the low dam plan at $74,709,000 is reasonable. The cost of the high dam program, exclusive of the cost of Wilson Dam, as estimated by the Tennessee Valley Authority is $473,649,650 (Putnam, 1912, 1921, Barker, 4796, Compl[illegible]nants' Exhibit 106, pp. 6-7, 98-99).

[fol. 495] (21) The annual estimated maintenance and operating cost of the low dams exclusive of Wilson Dam,

Dam No. 1 and Hales Bar Dam, would be $1,580,000. The annual estimated minimum maintenance and operating cost of the Tennessee Valley Authority's high dam program chargeable to navigation alone, exclusive of Hales Bar Dam, is $994,000 (Putnam, 1913, 1922, Complainants' Exhibit 105, p. 101.)

(22) The Tennessee Valley Authority's Unified Plan for the Development of the Tennessee River includes the construction of seven main river dams and three dams on tributary streams, in addition to Wilson Dam, Dam No. 1 and Hales Bar Dam already in existence. The lift at Gilbertsville Dam will be 68 ft.; at Pickwick Landing Dam 61 ft.; at Wheeler Dam 53 ft.; at Guntersville Dam 45 ft.; at Chickamauga Dam 53 ft.; at Watts Bar Dam 71 ft.; and at Coulter Shoals Dam 71 ft. (Putnam, 1915, Complainants' Ex. 328, Defendants' Exhibit 153, p. 919).

(23) Except for Wilson Dam, Dam No. 1, and Hales Bar Dam already in existence, the dams in the TVA high dam program above Wilson Dam will have locks which are 60′ x 360′, but no provision has been made in the construction of Norris and Hiwassee Dams for the installation of locks or barge lifts, and under the low dam plan all locks would be 110′ x 600′ (Putnam, 1921, 1953, Barker, 4793, Complainants' Exhibits 328 and 116, pp. 433-447.)

(24) Larger tows can pass through the larger low lift locks of the low dam plan with less loss of time than they can through the smaller locks of much higher lift of the [fol. 496] high dam plan (Putnam, 1921, 5939-41, Barker 4827; Complainants Exs. 932 and 935).

(25) Depths in a navigable stream beyond those depths necessary to eliminate bottom friction are of no value to navigation, and when those depths are excessive, they are a hazard to navigation, making it difficult to ground vessels immediately in case of accident and making salvage operations more difficult or impossible (Putnam, 1927).

(26) The width of inland waterways should be limited as the high waves resulting from winds on excessively wide waterways are a hazard to navigation (Putnam, 1924, Willson, 2625-6).

(27) The TVA pools have sufficient depths for extensive widths to allow winds to create waves of 3 feet and higher (Putnam 5849, 5850, 5858).

(28) The approximate length and maximum width of the pools upon the Tennessee River created by the TVA Unified Plan will be:

Dams	Length of Pool	Maximum Width
Gilbertsville	184.2 miles.	6 miles.
Pickwick Landing	50.1 miles.	1½ miles.
Wheeler	74.1 miles.	3½ miles.
Guntersville	82.1 miles.	3 miles.
Chickamauga	59.9 miles.	2½ miles.
Watts Bar	73.4 miles.	1½ miles.
Coulter Shoals	48.8 miles.	½ mile.

(Defendants' Exhibits 55 to 64.)

[fol. 497] (29) The theoretical efficiency for navigation, as compared with a hypothetical perfect waterway, taking into consideration minimum and maximum widths and depths, maximum curvatures and current velocities, elimination of lockages, adequacy of water supply and circuity factor, under the low dam plan is 67.4% and under the TVA high dam plan is 70.6% (Putnam, 1923, 1928, 2017).

(30) The theoretical difference between the efficiency of the low dam and the efficiency of the TVA high dam plan has no practical significance to navigation (Putnam, 1929).

(31) Commerce upon the Tennessee River between 1927 and 1934 averaged 1,750,000 tons per year, for which the average haul was 23 miles, which consisted 82% in the transportation of sand and gravel, 9% in the transportation of various forest products, and 9% in the transportation of iron, steel, lime and cement. Since the creation of TVA, government traffic has constituted a substantial portion of the total traffic, amounting to 52% in 1935 and 54% in 1939 of the total traffic. The average annual value of such cargoes was $11,000,000, on which the average annual savings of water transportation over land transportation was $2,000,000. There have been no significant or substantial movements of commerce upon the tributaries of the Tennessee River (Putnam, 1931-1939, Barker 4771-2, 4764-8, 4835-7, 4843; Alldredge 5050, Defendants' Ex. 153, pp. 938, 1064).

(32) The justifiable capital expenditures for the improvement of navigation upon the Tennessee River for existing [fol. 498] traffic would be $28,600,000, of which $24,600,000

has already been expended for navigation improvements (Putnam, 1940).

(33) The average annual commerce upon the Tennessee River at the end of the 30 year period after the creation of a 9-foot channel is estimated to have increased by 5,000,000 tons, for which the average annual increased transportation savings are estimated at $3,180,000. For the increased traffic and transportation saving, the justifiable investment in navigation improvements would be between $35,600,000 and $48,000,000, depending upon the type of improvement to be made (Putnam, 1945).

(34) The cost of the construction under the low dam program would exceed the justifiable investment for the improvement of navigation upon the Tennessee River for future commerce by $39,400,000 and the cost of the construction of the TVA high dam program, exclusive of the cost of Wilson Dam, exceeds the justifiable investment for the improvement of navigation for future commerce by $425,650,000 (Putnam, 1947).

(35) The TVA high dam program will not reduce the average annual flood damage of $25,150 to navigation upon the Tennessee River because of the compensating elements which are involved (Putnam, 1950-1951).

(36) There is no advantage accruing to navigation upon the Tennessee River by shutting off the flow from Norris Dam entirely on Sundays and Labor Days as was done during August and September, 1936 (Barker 4802-4803, CX 916).

[fol. 499] (37) It would not be practical or feasible to construct a belt coal conveyer to pass coal from barges on the reservoir at Norris Dam to other barges below Norris Dam to be transported upon the Tennessee River (Barker 4804-16, Complainants' Exhibit 933).

[fol. 500] VIII F

(1) The flood damages to navigation on the Tennessee River are negligible in character (do not exceed $25,150 annually), and would not be reduced by the TVA Unified Plan in an amount sufficient to justify any capital expenditure (Putnam 1950-1).

(2) The completion of the TVA Unified Plan would not eliminate any measurable amount of flood damages to navigation on the Mississippi River (Kelley 2555, 2569).

(3) No part of the estimated cost of the TVA Unified Plan may be justified as an expenditure for the protection from or elimination of flood damages to navigation on the Tennessee or Mississippi Rivers (Kelley 2555, 2569; Kurtz 2101, 2110, 2114-16).

(4) Practically all of the property damage from floods in the Tennessee Valley occurs at and above Chattanooga, Tennessee (Kurtz 2058, Complainants' Ex. 349, Watkins 3417, 3421; Complainants' Ex. 105, p. 734).

(5) The greatest practicable protection against flood damage to property and injury or death of persons by floods at and above Chattanooga may be achieved by a system of detention reservoirs for flood protection only located on the tributaries of the Tennessee River and costing approximately $81,000,000. Such a system of detention reservoirs will provide substantially 10 times as much dependable flood control and flood protection at Chattanooga and above as would be achieved by the construction of the TVA Unified Plan (Kurtz 2084-6, 2098; Complainants' Ex. 353 and 355; Bowman 3877-8).

(6) Flood damages in the Tennessee River below Chatta- [fol. 501] nooga are relatively small in amount and, while including some damage to highways and railroads (easily eliminated by relocation), consist largely of damages to farm crops resulting from the overflow of rich valley lands. The construction of the TVA Unified Plan will overflow permanently thousands of acres more of such valley farm land than is now occasionally overflowed by floods. At the present time such occasional overflows generally take place before the crop season and their results are beneficial to the land (Kurtz 2084-6, 2098; Complainants' Ex. 353 and 355; Bowman 3877-8; Complainants' Ex. 105, p. 734, Defendants' Ex. 153, p. 919, 947; Complainants' Ex. 116, p. 403).

(7) The present system of flood protection and flood control on the Mississippi River below Cairo consists of levees, bypasses and channel rectification. This system was originally known as the Jadwin Plan which was adopted by the Congress in 1928 after the great flood of 1927. Since that

time the Jadwin Plan, although not yet completed, has taken care of every flood which has occurred on the lower Mississippi, including the great flood of 1937. Recently General Markham, then Chief of Engineers, recommended certain modifications which included changes in the bypasses and channel rectification which experience had shown was very effective in reducing flood heights within the levees (Kelley 2560-1, 2569).

(8) The construction of the TVA Unified Plan would not avoid the necessity of completing the Jadwin-Markham Plan nor decrease its cost by a single dollar. At most it might in peculiar conditions surrounding a given flood make un- [fol. 502] necessary the use of some of the bypasses. The effect would be uncertain and negligible. The flowage rights in the bypasses or floodways have been, or will be according to the plan, purchased by the government and are in any case flooded only once in 10 or 12 years with relatively small damage (Kelley 2555, 2569).

(9) Evidence in the record and documents, of which the Court may take judicial notice, establish that for a period of over 50 years the Chief of Engineers have held that storage reservoirs on tributary streams are of uncertain, negligible and undependable value for flood protection on the Mississippi and that their value for flood protection, power development and other local uses far exceeds any possible value for flood protection on the Mississippi (Complainants' Ex. 105, p. 3, sec. 12; Defendants' Ex. 32, p. 3, sec. 8).

(10) No substantial part of the estimated cost of the TVA Unified Plan may be properly charged to flood protection on the Mississippi River below Cairo (Kelley, 2555, 2569).

(11) Less than 8% of the total population in towns and cities upon the Tennessee River and its tributaries, which in 1930 was 341,522, is below Chattanooga (Kurtz 2052; Complainants' Ex. 348).

(12) Of the total damage to cities and towns on tributaries of the Tennessee River, both in a very great flood and in the average annual flood, more than 75% occurs on the Emory River, where the estimated average annual damage is $153,700 and the total annual flood damage to all cities and towns on all tributaries of the Tennessee River, includ-

ing the Emory River, is $204,435. The TVA Unified Plan makes no provision for the construction of any dam on the Emory River (Kurtz 2058, 2091; Complainants' Ex. 349; [fol. 503] Kimball 4402).

(13) The estimated average annual damage from all floods to cities and towns upon the Tennessee River and its tributaries is $932,985, of which $923,685 occurs at and above Chattanooga and $9,300 occurs below Chattanooga (Complainants' Ex. 349).

(14) The estimated average annual damage from all floods to railways upon the Tennessee River and its tributaries is $350,118, of which $343,258 occurs at and above Chattanooga and $6,860 occurs below Chattanooga (Complainants' Ex. 349).

(15) The estimated average annual damage from all floods to highways is $158,105, of which $89,110 occurs at and above Chattanooga and $68,995 occurs below Chattanooga (Complainants' Ex. 349).

(16) The estimated average annual damage from all floods to all classes of property on the Tennessee River and its tributaries is $1,441,208, of which $1,356,053 occurs at and above Chattanooga (Complainants' Exhibit 349, Watkins 3417, 3421).

(17) A flood control program to achieve the maximum practical protection upon the Tennessee River and its tributaries should be directed primarily for protection at and above Chattanooga (Kurtz 2062).

(18) The four largest floods upon the Tennessee River have occurred in March and April. If it were necessary to provide a storage for the generation of a certain amount of firm power by the first of March in each year which encroached upon the flood storage, the dependable flood storage available for the floods in March and April would be reduced (Floyd 4447).

[fol. 504] (19) It is not possible to predict on January 15, February 15, March 15 or April 15 of any year whether the rest of the year will be as dry as 1925 or to predict rainfall; and reservoirs cannot be operated upon hindsight (Kimball 4394; Woodward 4116; Floyd 4446).

(20) A storm which would produce the greatest flood to be anticipated at and above Chattanooga would have a total rainfall of 11 inches over the entire drainage area of 21,400 square miles, except upon the Emory River and the upper reaches of the French Broad River where the total rainfall would be 13 inches, would have a 90% run-off during the storm and would last three days (Kurtz 2062-2068).

(21) The maximum practicable protection against flood damages upon the Tennessee River and its tributaries would be secured by the construction upon all main tributaries of the Tennessee River above Chattanooga of a system of 19 detention reservoirs which would be kept empty or dry except during floods and would be located as follows:

(a) 4 on the Hiwassee River;

(b) 4 on the French Broad River and its tributaries;

(c) 5 on the Holston River and its tributaries;

(d) 2 on the Little Tennessee River;

(e) 1 on the Clinch River; and

(f) 3 on the Emory River and its tributaries (Kurtz 2071, 2073; Complainants' Ex. 352).

(22) The system of 19 detention reservoirs would control 16,713 square miles of the total drainage area above Chattanooga of 21,400 square miles, would generate no power and would achieve no other result except flood control protection, [fol. 505] and would in no way be inconsistent or interfere with the low dam plan for navigation upon the Tennessee River (Kurtz 2067, 2074-5; Complainants' [illegible] 353).

(23) The system of 19 detention reservoirs would operate so that while the reservoirs are being filled, a constant flow is discharged through the total area of the openings in the dam and when filled, the opening of the lowest reservoir of each of those principal tributary groups would be maintained at constant and fixed rate of discharge so as to keep the discharge below the reservoir as nearly as possible at bank-full stage. The upper reservoirs on each tributary would have their discharge vary within a considerable range so as to suit conditions obtaining for any particular flood. When these reservoirs collect any flood waters, these waters are released just as soon as it is safe to do so from the standpoint of the streams below (Kurtz 2075-7).

(24) The system of 19 detention reservoirs upon the tributaries of the Tennessee River above Chattanooga would give the maximum practicable protection to life and property from large floods (Kurtz 2081-2).

(25) Under the TVA high dam plan only Fontana Dam on the Little Tennessee River, Norris Dam on the Clinch River, and Fowlers' Bend Dam on the Hiwassee River will provide a certain measure of control of flood waters from 25% of the drainage area above Chattanooga, and the three tributary dams, together with Coulter Shoals, Watts Bar and Chickamauga Dams on the main stream will provide only 620,000 acre feet of dependable flood storage for run-off from the 21,400 square miles in the drainage area above Chattanooga and will permanently flood 110,870 acres. All [fol. 506] the dams in the TVA high dam plan will permanently flood at normal pool level 374,840 acres and the Corps of Engineers of the United States Army has estimated that the total land which would be temporarily flooded by a great flood occurring only every 500 years would be 480,000 acres between Knoxville and the mouth of the river. The proposed system of 19 detention reservoirs upon the tributaries of the Tennessee River would have a dependable flood storage volume of 6,263,700 acre feet, would flood no land permanently, would flood 132,285 acres temporarily at the time of the greatest flood and would provide a large measure of effective control over 78% of the drainage area above Chattanooga (Kurtz 2084-6, 2098; Complainants' Ex. 353 and 355; Bowman 3877-8; Complainants' Ex. 116, p. 403, and Ex. 105, p. 734; Defendants' Ex. 153, 919, 947).

(26) The greatest flood to be anticipated upon the Tennessee River and its tributaries would result in a stage at Knoxville of 68.3 feet with a maximum flow of approximately 620,000 second feet; in a stage at Loudon of 71.5 feet, with a maximum flow of approximately 605,000 second feet; in a stage at Chattanooga of 73 feet with a maximum flow of approximately 680,000 second feet. The previous maximum recorded stage was at Knoxville 44.4 feet; at Loudon 47.0 feet; and at Chattanooga, 57.9 feet (Kurtz 2068; Complainants' Exhibit 350).

(27) Under the TVA high dam plan at the time of the greatest flood, if part of the power storage in the TVA high dam reservoirs were drawn down, the peak of the great

flood of Knoxville of 68.3 feet would not be reduced; at Loudon the peak of the great flood would be reduced from 71.5 feet to 66.2 feet; and at Chattanooga the peak would [fol. 507] be reduced from 73 feet to 67.7 feet; and at Harriman on the Emory River, the peak of the great flood of 63.7 feet would not be reduced. Under the proposed system of 19 dry reservoirs, at the time of the greatest flood, the peak at Knoxville would be reduced to 27.1 feet; at Loudon to 33.9 feet; at Chattanooga 53.9 feet; and at Harriman to 39.8 feet (Kurtz 2089-91, Complainants' Ex. 356, 357 and 358).

(28) The estimated reduction of the maximum flood at Chattanooga of 73.0 feet to 53.9 feet by the system of 19 detention reservoirs would be sufficient to render practicable the construction of levees at Chattanooga for local flood protection. The reduction of the maximum stage of 73.0 feet at Chattanooga to 67.7 feet by the TVA Unified Plan is not sufficient to render practicable the construction of levees at Chattanooga for local flood protection (Kurtz 2095).

(29) The TVA Unified Plan gives no protection on the Emory River where 22 persons were drowned in the flood of March, 1929. The system of 19 detention reservoirs would reduce the maximum flood of 63.7 feet at Harriman on the Emory River to 39.8 feet which is below flood stage (Kurtz 2095-6; Complainants' Ex. 356 and 328).

(30) The Chickamauga Dam is completely drowned out, the top of the gates being under seven to nine feet of water, by the maximum flood to be expected at Chattanooga (Complainants' Ex. 359; Kimball 4339-42).

(31) The operation of Wheeler and Wilson reservoirs during the period of the 1937 flood increased the flood peak at Cairo by releasing 7,000 second feet more than flowed into those reservoirs during that period and was typical of how they will be operated (Woodward 4100, 4108; Floyd 4445).

[fol. 508] (32) The operation of Norris Dam in June of 1936, by increasing the low water flow of the Tennessee River and by the generation of power, was sufficient to double the firm power capacity of the TVA system as it existed at that time (Woodward 4136-8; Complainants' Exhibit 909; Complainants' Ex. 116, p. 515).

(33) The estimated cost of the construction of a system of 19 detention reservoirs solely for flood control purposes is $81,133,600 and the estimated cost of the TVA high dam program, exclusive of Wilson Dam, is $473,650,000. The average annual maintenance cost of the system of 19 dry reservoirs would be $400,000 (Kurtz 2099, 2100, 2103).

(34) The amount of power which can be produced by the plants included in the TVA Unified Plan, over and above the firm power capacity of the Wilson power plant as it was originally constructed, is 1,072,000 kw. at a 60% annual load factor. No firm power of any kind would be produced by the construction of the proposed system of 19 dry reservoirs (Kurtz 2107-8; Complainants' Ex. 361).

(35) Under the TVA high dam program the cost of construction of Norris Dam reservoir and the town of Norris upon the Clinch River was approximately $36,300,000; its dependable flood control storage is 497,000 acre feet; and its dead storage for power purposes is 570,000 acre feet and an additional power storage of 1,500,000 acre feet. Under the proposed system of 19 dry reservoirs, a dam could have been constructed at the site of Norris Dam having a dependable flood control storage of 1,312,000 acre feet, impounding no water permanently for any purposes, and costing $8,136,000 (Kurtz 2101, 2110, 2114, 2116, Complainants' Ex. 362; Defendants' Ex. 153, pp. 919, 969, 971).

[fol. 509] (36) Dead storage concentrates the fall of a stream as a substitute for a natural fall and is always permanently maintained solely for the creation of head for power purposes with no incidental flood control value. The bottom 135 feet at Norris Dam is dead storage with a capacity of 570,000 acre feet. The power storage behind Norris Dam of 1,500,000 acre feet from elevation 955 to 1020 creates a head and storage for power production in the summer and fall and has no incidental dependable flood control value. The Norris Dam from elevation 1020 to 1034 has a dependable flood control storage of 497,000 acre feet, which storage creates no incidental firm power. The dependable flood storage in the pure flood control dam on the Clinch River costing $8,136,000 is 2.6 times as much as the dependable flood control storage in the Norris Dam costing $36,310,000 (Kurtz 2113-2116; Complainants' Ex. 362; Bowman 3878, 3892-3, 3899; Wessenaur 5493).

(37) To increase the flow at Wilson Dam during a dry year from 4,300 second feet to 18,900 second feet, it will be necessary to have 3,200,000 acre feet of storage which could not be retained during March and April of any year in the main stream reservoirs above Wilson Dam without encroaching upon the flood surcharge in those reservoirs and could only be stored in the Norris and Hiwassee reservoir requiring Norris to be maintained at or above elevation 1020 during February, March and April of each year. Early in January, 1937, Norris reservoir was filled to elevation 1010 and remained above that elevation through June, 1937, during which period it reached elevation 1031 and flooded out surrounding highways (Bowman 3882-87); Kimball 4285, 4289-90, 4385, 4392; Woodward 4134, 4160-1).

[fol. 510] (38) Norris Dam, being maintained above elevation 1010 from January to June, 1937, was not operated as a flood control reservoir, since there is nothing in the record to show that it could not have been drawn down to provide flood storage without causing flood damage below.

(39) Since great floods have occurred on headwaters of the Tennessee and nearby rivers during the summer or at any time during the year, the operation of Norris Dam in 1937 was not as a flood control reservoir and the proposed plan of operation of the TVA high dams upon the Tennessee River and its tributaries would not be for flood control but primarily for the purpose of power (Kurtz 2063; Complainants' Ex. 941, 923, 924; Woodward 3136-8; Complainants' Ex. 116, p. 374).

(40) It is customary for power companies to shut down many of their hydro-electric plants on Sundays and holidays when many of the industries served by them are not in operation and from August 23, 1936, through October 4, 1936, the flow from Norris Dam on Sundays and Labor Day was shut off entirely (Complainants' Ex. 916; Barker 4802-3; Woodward 4131-2).

(41) To produce annually 600,000 to 700,000 kw. firm power for use on a utility system without regard to the economics of its production and subject only to the limitation that there should incidentally result a 9-ft. channel for navigation in the Tennessee River from its mouth at Paducah to Knoxville, a plan would be designed to construct exactly the same dams and power plants as are in-

cluded in the TVA Unified Plan (Kurtz 2127; Crane 2307-9; Bowman 3904, 3969, 3970).

[fol. 511] (42) The development of the Tennessee River for the primary purpose of power development will be best achieved by constructing a small number of high dams rather than a large number of low dams, and under the TVA Unified Plan the seven high dams provided for thereunder is the minimum number of dams practicable for the development of the Tennessee River (Crane 2306; Bowman 3967, 3968, 3970).

(43) The primary purpose of the TVA Unified Plan is power development with incidental navigation facilities and incidental flood control of a degree that is inadequate (Kurtz 2129; Crane 2310).

(44) The Mississippi River drains an area of approximately 1,240,000 square miles covering all or part of 31 states and two Canadian Provinces, and of which total area the Tennessee River drains 40,600 square miles (Kelley 2549-50; Complainants' Exhibits 409 and 105, p. 1; Defendants' Ex. 32, p. 1).

(45) A flood stage of 50 ft. or greater at Cairo is considered dangerous and such stages last between 30 and 60 days. The season of large floods upon the lower Mississippi is from the first of January to the first of June, but there have been floods that exceeded the flood stage in every month of the year except August and October. Floods upon the Tennessee River do not last more than two weeks (Kelley 2551-2).

(46) The lower Mississippi Valley from Cairo to the Gulf, has an area of about 50,000 square miles, of which in its original state approximately 30,000 square miles were subject to flood, and which flooded area, upon the completion of the modified Jadwin Plan for the control of floods upon the Mississippi by the construction of levees and by-[fol. 512] pass channels, will be reduced to 10,000 square miles. Channel improvements have increased the capacity of the Mississippi River to approximately 1,900,000 cubic feet per second, and upon the completion of the modified Jadwin Plan the capacity of the lower Mississippi will be 3,000,000 cubic feet per second, the volume of the maximum flood to be anticipated (Kelley 2550-3, 2569).

(47) Flood control projects should be designed for protection at the minimum cost against the maximum floods to be expected (Kelley 2554; Kimball 4313-14).

(48) The modified Jadwin Plan does not include tributary reservoirs as essential or economical for flood control on the lower Mississippi and no storage reservoirs upon tributary streams have been or could be constructed which would be practical and effective for the control of floods upon the lower Mississippi. Storage reservoirs on tributary streams will reduce the maximum outflow but will increase the duration of the flood (Kelley 2560-61).

(49) No expenditures upon the Tennessee River are justified for flood protection upon the lower Mississippi River and the construction of high dams under the TVA Unified Plan will not eliminate the necessity of or decrease the size or cost of the projects necessary for flood protection upon the lower Mississippi River (Kelley 2555, 2569).

(50) There is a conflict in using the same dams for both flood control and power purposes. Flood control reservoirs [fol. 513] should be empty until the flood arrives, then filled to reduce the flood waters, and when the flood has passed, should be emptied in order to be available to catch the next flood. Power reservoirs must be filled as early as practicable to conserve water for low-water periods and to maintain a maximum head in the reservoir for power generation. Filling the reservoir capacity early in the season for power purposes will decrease the capacity of that reservoir for flood control (Kelley 2563-4; Watkins 3331, 3338-9).

(51) Tributary reservoirs cannot be operated simultaneously for local flood protection, which requires the release of flood water immediately after the passing of the local flood danger, and for the reduction of peak stages on a distant river into which the tributary flows, which requires the reservoirs to be kept empty regardless of local flood conditions until a dangerous stage occurs upon the main river (Kelley 2564-5).

(52) Valley storage is the natural storage of the river and has the same effect as detention storage reservoirs, reducing peak stages and discharge below but increasing the duration of the flood. The valley storage of the Tennessee River in the 1926 flood amounted to 8,000,000 acre-

feet and in the largest flood to be anticipated would amount to approximately 14,000,000 acre feet. The construction of the reservoirs under the TVA Unified Plan will destroy a large amount of the valley storage of the Tennessee River. Dead storage furnishes a head for power generation and reduces the available valley storage capacity, which in turn increases flood stages below the reservoir (Kelley 2566, 2568; Watkins 3340-5, 3348-9; Clemens 3645-8, Complainants' Ex. 411; Kimball 4344, 4361-4).

[fol. 514] (53) The controllable storage capacity of a reservoir is variable, as it is dependent upon the stream flow at the time the storage operations begin and it may be reduced to nothing if the dam is completely flooded out (Kelley 2567; Complainants' Ex. 411).

(54) On a large river, such as the Mississippi, it is cheaper and better to make improvements which will open up the natural drainage channels and drain off the water, than it is to try to hold the water back in reservoirs (Kelley 2570).

(55) Since the Corps of Engineers of the U. S. Army took over the exclusive control of the levees and flood protection facilities upon the Mississippi River in 1928 under the Jadwin Plan, every flood, including the 1937 flood, has been successfully handled and the completed Jadwin Plan, as modified by the Markham Plan in the Act of June 15, 1936, would have been sufficient to control the floods upon the Mississippi of 1912, 1913 and 1927 in addition to the flood of 1937 (Okey 4547-4550, 4554-4555; Clemens 3675-6).

(56) The tributary reservoirs under the TVA Unified Plan will greatly increase the firm power produced by the projects upon the Tennessee River (Kelley 2572).

(57) For attaining flood control only without reference to other uses, it would not be necessary to fill the reservoirs partly. The partial filling is not for flood control but is for the benefit of low water regulation. Low water regulation increases firm power (Woodward 4039; Wessenauer 5467).

[fol. 515] VIII G

(1) The primary purpose of the dams constructed by the Tennessee Valley Authority upon the Tennessee River and its tributaries is the generation of power with but incidental navigation facilities and inadequate flood protection (Putnam 1955-6; Kurtz 2129; Kelley 2571-2; Crane 2310).

[fol. 516] A

(1) TVA at the end of the year 1934 owned and operated 157.8 miles of electric transmission lines; at the close of the year 1935, it owned and operated 274.3 miles of such lines; at the end of the year 1936, it owned and operated 1068 miles of such lines, and as of October 15, 1937, owned and operated 1286.9 miles of transmission lines; had 79.1 miles under construction and 176.9 miles authorized by its Board of Directors for construction, or at the close of the year 1937, a total of 1542.9 miles of transmission lines either constructed, under construction or authorized for construction by the Board of Directors (Defendants' Ex. 136). The high tension transmission lines constructed and now being operated by TVA extend across the State of Tennessee, the northwestern portion of the State of Georgia, the northern portion of the State of Alabama, and the northern section of the State of Mississippi (Defendants' Ex. 136-A. Complainants' Exs. 332A and 333A).

(2) At the end of the year 1934, TVA owned and operated eight (8) substations with a total capacity of 9,725 kva.; at the close of the year 1935, it owned and operated fourteen (14) substations with a total capacity of 36,275 kva.; at the close of 1936, it owned and operated forty-seven (47) substations with a total capacity of 175,720 kva., and as of October 15, 1937, owned and operated fifty-five (55) substations with a total capacity of 219,010 kva., had under construction (3) substations with a total capacity of 87,500 kva. and four (4) substations authorized for construction [fol. 517] by its Board of Directors with a total capacity of 39,500 kva., or at the close of the year 1937, sixty-two (62) substations with a total capacity of 346,010 kva. either constructed, under construction or authorized for construction by the Board of Directors (Defendants' Ex. 136).

(3) The Tennessee Valley Authority has expended up to June 30, 1937 for transmission lines a total of $7,924,164; for substations a total of $2,826,756 and for temporary substations a total of $406,208, making a total investment of $11,157,128. TVA's estimated expenditure for additional transmission lines, substations and other miscellaneous system equipment for the fiscal years ending June 30, 1938 and June 30, 1939 amount to $4,700,000 and $5,560,000, respectively (Defendants' Ex. 153, pp. 987 to 991, inclusive). TVA has also acquired and is now operating for stand-by

purposes a steam plant at Tupelo, Mississippi, and a steam plant at Corinth, Mississippi (Karr 5635).

(4) As of October 15, 1937, the total number of rural lines distributing TVA power, exclusive of those of the North Georgia Membership Corporation, was 3086.7, and approximately 490 miles of additional lines were then under construction. Of such total mileage, TVA owned and operated 629.7 miles. Of the total distribution lines, distributing TVA power, only 292 miles were constructed by municipalities or cooperatives. 1,023 miles were constructed a d financed by TVA and 1343 miles were constructed by TVA under contracts with municipalities or cooperatives, (Defendants' Ex. 136, Table E), 1,593 miles having been constructed by TVA during its 1937 fiscal year (Defendants' Ex. 154, p. 94).

[fol. 518] (4¼) Expenditures by TVA for distribution facilities up to June 30, 1936 amounted to $1,809,114. This amount was increased to $2,447,956 by June 30, 1937 and TVA proposes to expend an additional sum of $272,000 for distribution facilities during the fiscal year of 1938 (Defendants Ex 153, page 977).

(4½) As of June 30, 1937, TVA owned and directly operated electric distribution facilities in the Counties of Colbert and Lauderdale, Franklin and Morgan, Alabama, serving 1,774 retail customers, which distribution facilities were located in the rural areas of these counties and in the Towns of Waterloo, Margerum, Barton, Pride Station. Spring Valley, Littleville, Oakland, St. Florian, Green Hill, Center Hill, Killen, Center Star, Elgin, Lexington, Sewell, Anderson, Rogersville and Alexander Cross Roads. (Defendants Exs. 136B, 147). This direct retail service was instituted by TVA on October 20, 1934, in Colbert County and on December 4, 1934 in Lauderdale County, Alabama. As of June 30, 1937, the TVA was serving direct 1,074 retail customers in the Counties of Lincoln, Knox, Roane, Union, and Anderson in the State of Tennessee, which direct retail service was instituted by TVA on October 1, 1935 (Defendants' Ex. 154, p. 24; Complainants' Ex. 326).

[fol. 519] B

(5) On August 25, 1933 TVA adopted and announced the following power policy:

"1. The business of generating and distributing electric power is a public business.

2. Private and public interests in the business of power are of a different kind and quality and should not be confused.

3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant or setting up a competing plant, as circumstances may dictate.

6. The fact that action by the Authority may have an adverse economic effect upon a privately owned utility should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low-cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately owned utility.

7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite regions and to develop its program in those areas before going outside.

[fol. 520] 8. The initial areas selected by the Authority may be roughly described as (a) the region immediately proximate to the route of the transmission line soon to be constructed by the Authority between Muscle Shoals and the site of Norris Dam; (b) the region in proximity to Muscle Shoals, including northern Alabama and northeastern Mississippi; and (c) the region in the proximity of Norris Dam (the new source of power to be constructed by the Authority on the Clinch River in northeast Tennessee).

At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia and North Carolina, and that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size (such as Chattanooga and Knoxville) and, ultimately, at least one city of more than a quarter million, within transmission distance, such as Birmingham, Memphis, Atlanta or Louisville.

While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately owned utilities in the area do not cooperate in the working out of the program.

Nothing in the procedure here adopted is to be construed in any sense a commitment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest require. Where special considerations exist, justifying the Authority's going outside this initial area, the Authority will receive and consider applications based on such special considerations. Among such special considerations would be unreasonably high rates for service and a failure or absence of public regulation to protect the public interest.

9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis.

[fol. 521] 10. Accounting should show detail of costs, and permit a comparison of operations with privately owned plants, to supply a "yardstick" and an incentive to both private and public managers.

11. The accounts and records of the Authority as they pertain to power will always be open to inspection by the public."

This power policy was reported to the Congress in the first Annual Report of TVA (Complainants' Ex. 113, pp. 22-24.)

(6) The establishment of the power policy of the Authority was an effort to establish a yardstick whereby there could be a case of public ownership to develop what reasonable costs of power may be and for that reason it was necessary for the Tennessee Valley Authority to acquire a market area in which to sell that power (Complainants' Ex. 112, p. 267).

[fol. 522] C

(7) Up to the present time, TVA has entered into contracts for the sale of electric power with the following municipalities:

Municipality	Date of Contract		Complainants' Exhibit No.
1. Tupelo, Mississippi	11-13-33		117
2. Knoxville, Tennessee	3- 1-34	(2-19-36) (5-18-36)	118, 125
3. Pulaski, Tennessee	3- 8-34		117
4. Amory, Mississippi	3- 9-34	(10-15-36)	117, 119
5. Russellville, Alabama	3-13-34		126
6. Decatur, Alabama	3-14-34		127
7. Sheffield, Alabama	3-14-34	(3-16-36)	930, 118
8. Florence, Alabama	3-14-34	(7-6-37)	928, 123
9. Tuscumbia, Alabama	3-14-34	(3-8-37)	929, 124
10. Athens, Alabama	4- 6-34		117
11. Dayton, Tennessee	9-12-34		117
12. New Albany, Miss	9-13-34	(3-1-37)	117, 120
13. Muscle Shoals, Ala	1-19-35		117
14. Okolona, Miss	4-23-35	(3-24-37)	117, 121
15. Jackson, Tennessee	10-16-35	(9-1-37)	118, 133
16. Dickson, Tennessee	10-23-35		118
17. Holly Springs, Miss	11-12-35	(2-2-37)	118, 122
18. Memphis, Tennessee	12-23-35		118
19. Bolivar, Tennessee	12-31-35		118
20. Somerville, Tennessee	12-31-35		118
21. Milan, Tennessee	12-31-35		118
22. Guntersville, Ala	5-21-37		128
23. Chattanooga, Tenn	6-17-37		129
24. Middlesboro, Ky	7-29-37	(10-20-37)	130, 131
25. Trenton, Tennessee	8-23-37		132
26. Paris, Tennessee	11- 2-37		134

[fol. 523] (8) Up to the present time the TVA has entered into contracts with the following rural cooperatives, or membership corporations in the states of Mississippi, Alabama, Tennessee and Georgia:

Name	Date of Contract	Complainants' Exhibit No.
1. Alcorn County EPA.....	6- 1-34	117
2. Pontotoc, EMC.....	2-15-35	117, 118
3. Prentiss County EMC.....	6-13-35 (12-1-35)	117, 135
4. Monroe County EMC.....	7-19-35	118
5. Tishomingo County EPA..	7-19-35	118
6. Meigs County EMC.....	10-14-35	118
7. Tombigbee EPA.....	10-19-35	118
8. North Georgia EMC.....	6-15-36	118
9. Cullman County EMC....	8- 4-36	136
10. Gibson County EMC.....	8-13-36	137
11. Middle Tennessee EMC...	8-13-36	138
12. Pickwick EMC.....	8-26-36	139
13. Duck River EMC.....	10-31-36	140
14. Southwest Tennessee EMC.	12- 9-36	141
15. Northeast Miss. EPA.....	3-27-37 (7-27-37)	144, 145
16. Joe Wheeler EMC.....	9-24-37	142
17. Cherokee County EMC....	11- 2-37	143
18. Tippah County EMC.....	11- 5-37	224

(9) The schedule of wholesale and resale rates in all of the contracts between TVA and cooperatives and municipalities are uniform and the rate to be paid by such purchasers is based upon his monthly kilowatt hour consumption, the rate being decreased in specific progressive steps up to 1,000,000 kilowatt hours per month (Schedule A-1 attached to each contract).

[fol. 524] (10) Up to the present time, TVA has entered into contracts to serve directly the following industrial customers:

Name	Contract Date	Term of Contract	Complainants' Exhibit No.
1. Ala. Asphaltic Limestone Co.....	5- 1-36	5 yrs.	146
2. Goodyear Decatur Mills.....	5 -1-36	1 yr.	147
3. L. & N. Railroad Co.....	6-22-36	5 yrs.	147
4. Aluminum Co. of America.....	7-17-36	4 to 6 yrs.	151
* * * *	7-20-37	20 yrs.	152
5. Monsanto Chemical Co.....	5-15-36; 5-16-36 and 6- 2-36	10 yrs.	118
6. Volunteer Portland Cement Co....	8-14-36	10 yrs.	157
7. Rockwood Alabama Stone Co.....	8-25-36	5 yrs.	149
8. Western State Hospital.....	9- 8-36	5 yrs.	
9. Robbins Tire & Rubber Co.....	11- 1-36	5 yrs.	150
10. American Aggregate Corp.....	3- 9-37		153
11. Wade & Richey Mining Co.....	5- 1-37	1 yr.	155
12. War Dept. at Sardis Dam.....	5- 4-37	4 yrs.	159
13. Lacey Asphaltic Limestone Co....	5-13-37	1 yr.	156
14. Victor Chemical Works.....	7- 2-37	20 yrs.	160
15. Electro Mettalurgical Co.....	8-17-37	20 yrs.	161
16. L. N. Gross Company.....			(1399)

(11) All industrial contracts provide for the sale of firm power and for the right of the customer to call for additional power within specified limits upon giving specific notice, and in the cases of Monsanto Chemical Company, Aluminum Company of America, Victor Chemical Works and Electro Metallurgical Company, which provide for secondary power as well as firm power, the contracts contain provision for from 5 to 21 days notice by TVA for interrupting and from 7 to 15 days notice for resuming delivery of such secondary power. Most industrial contracts provide that the point of delivery shall be on the low-tension side of the transformer.

(12) All contracts for the sale of power by TVA to a municipality or a co-operative association expressly reserve in TVA control of resale rates and control of the operation of the distribution facilities owned by the municipality or cooperative association (Complainants' Exs. 117, 118, 119-145, incl., 196, 224, Defendants' Ex. 144).

[fol. 525] (13) All contracts between TVA and municipalities not owning at the time of the contract an electric distribution system contain the following provisions, among others:

(a) That the contract shall continue for a period of twenty years and in some instances 30 years;

(b) That the municipality is to use all reasonable diligence in acquiring by construction or purchase a distribution system;

(c) That TVA will construct and install transmission and transformation facilities;

(d) That the energy supplied the City will be metered at the low tension side of the stepdown transformer of the TVA substations, which point shall be the point of delivery;

(e) That municipality agrees to sell the electricity at the standard or uniform rates prescribed in the contract and not to depart therefrom except by consent of the TVA;

(f) That the revenues derived from the municipal distribution system will be expended only in the following order:

(1) In payment of operating expenses.

(2) In payment of interest, amortization charges or sinking fund payments on bonds applicable to the electric system.

(3) In the establishment of reserves for replacements, new construction, contingencies and working capital.

(4) In paying to the city a return on the investment specified in the contract to be a particular sum which is arrived at by taking the present appraised value of the property, less all outstanding liabilities incurred in the construction or acquisition of the system of not more than 6% per annum, on the particular sum set forth together with an amount stated to be equivalent to the municipal taxes, which is computed in accordance with the schedule of terms and conditions attached to and made a part of said contract.

[fol. 526] (5) All remaining revenues to be devoted to the retirement of electric system bonds so long as any such bonds are outstanding and if not so devoted shall serve as a basis for the reduction or elimination of surcharges and thereafter for the reduction of rates by agreement of the parties.

(g) The recital of standard and uniform rules and regulations governing the municipality's operation of its distribution system, which rules and regulations are expressly agreed to be of the essence of the contract and which cannot

be changed except with the consent of TVA. The following are some of the rules and regulations:

(1) Requirement that municipality procure written service applications from customer before supplying service.

(2) Method of determining classification of customers for service.

(3) Requirement of deposit by customers to guarantee payment of electric bill.

(4) Designation of point of delivery to customer, standards of customer's wiring, right to inspect customer's wiring, payment by customer for installing underground wires, customer's responsibility for municipality's property, and access to customer's premises.

(5) Time and manner of rendering bills to customers and penalty for nonpayment by customer.

(6) Right of municipality to terminate service for violation of its rules and regulations.

(7) Reconnection charge and charges for temporary service.

(8) Resale by customers prohibited.

(9) Rules and regulations required to be made a part of all contracts between the municipality and its customers.

(h) Standard and uniform "terms and conditions" which are of the essence of the contract and which cannot be changed except with the consent of the TVA. Included among the terms and conditions are the following:

[fol. 527] (1) Municipality required to administer electric system as a separate department and maintain a separate fund for its electric revenues and not mingle them with other funds of the municipality.

(2) Municipality required to keep books of account of its electric operations according to the system and in the manner prescribed by TVA.

(3) Municipality required to furnish TVA such financial and operating reports as may be requested.

(4) Municipality required to permit agents of TVA free access to books and records relating to electric operations.

(5) Method of determining "present value" of municipality's electric system and method of determining municipality's initial investment, which is defined as "present value", less all outstanding liabilities incurred in the construction or acquisition of the electric system.

(6) Municipality's return on investment as defined therein limited to 6% per annum.

(7) Manner of computing payments in lieu of municipal taxes on electric operations within the municipal limits.

(8) Requirement that electric department pay for electric services.

(9) Municipality not permitted to withdraw electric department revenues for general funds in excess of allowable rate on investment and municipal tax equivalent, unless municipality's investment reduced to the extent of such excess withdrawals.

(10) Municipal electric department limited to loans to general fund of municipality of one year or less without right of renewal.

(11) Municipality required to publish at the end of each fiscal year a statement of its investment, outstanding loans and advances, and immediately furnish TVA with a copy thereof.

[fol. 528] (12) Municipality during development period permitted to impose surcharge on classes of the customers subject to such surcharge under the standard schedule of resale rates provided for in the contract.

(13) Adjustability of rates at which municipality purchases power from TVA dependent upon cost of living index for the United States as computed by the Department of Labor.

(14) Municipality not permitted to sell electricity for submetering or further resale.

(i) Municipality prohibited from discriminating between members of the same class of customers as provided for in the contract or from rebating or extending concessions to any customer.

(j) Assignment of contract prohibited without consent of TVA.

(k) TVA agrees to enter into negotiations for extension of contract at least two years before its expiration.

(14) All power contracts made by TVA with municipalities then owning an electric distribution system, in addition to the above stated provisions, provide that:

The municipality shall add to the standard TVA resale rates a temporary amortization charge of 1¢ per kilowatt

hour, such charge to be not less than 25¢ or more than $1.00 per customer per month, for the purpose of amortizing the municipality's electric indebtedness, and values the electric system by taking its replacement cost new, less depreciation and the indebtedness applicable to the electric system.

(Complainants' Exs. 118 (contracts with Towns of Bolivar, Somerville, Milan and Dickson, Tennessee; and Holly Springs, Mississippi), 117 (contract Okolona, Mississippi), 132, 122, 120, 119.) The same provision is found in all contracts with cooperatives.

[fol. 529] (15) In some of the power contracts made by TVA with municipalities, it is provided, in addition to the provisions referred to above, that:

(a) TVA will render without compensation such accounting, legal and engineering assistance looking to the acquisition of the municipal distribution system as TVA may deem advisable or helpful (Complainants' Exs. 928, 929, 930).

(b) Municipality agrees to grant a franchise to TVA over its streets and alleys for serving the city with electricity or the areas outside of the corporate limits (Complainants' Exs. 123 and 928).

(c) That the municipality shall be permitted to jointly use TVA poles for its distribution lines (Complainants' Exs. 123 and 928).

(d) TVA will further the economic welfare of the municipality by fostering and promoting the increased use of electricity within the municipality (Complainants' Exs. 117, (Contracts with Pulaski and Dayton, Tennessee; Athens and Muscle Shoals, Alabama; and Amory, Okolona and New Albany, Mississippi) 126, 127, 928, 929).

(16) All power contracts between TVA and cooperatives contain among others, the following provisions:

(a) That the contractual period shall be twenty years.

(b) That the energy supplied will be delivered on the low tension side of the substation or substations which are owned and operated by TVA.

(c) That after payment of operating expenses and certain specified costs and reserves, all remaining income shall

be devoted to reimbursement of membership charges or to reductions in rates.

(d) That the cooperative shall not pledge, mortgage or otherwise alienate, except in the normal course of business, its properties or revenues without the written consent of TVA.

(e) That the cooperative agrees to resell the electricity which it purchases from TVA at the standard or uniform resale rates prescribed in the contract and not to depart therefrom except with the consent of TVA.

[fol. 530] (f) That the cooperative will not serve any nonmember except with the consent of TVA.

(g) That the cooperative extend its memberships without discrimination to any person, corporation, co-partnership, municipality, political body or subdivision within the area of its service; that the minimum installment on memberships shall not be fixed at less than $10.00 without first securing the written consent of TVA.

(h) TVA to render, in some cases without charge, advisory services in personnel and administrative problems; to secure the attendance of its officers at meetings of the corporation, its Board of Directors or Executive Committee; to make available the facilities and services of its personnel division in the selection of employees; and to render professional services at the expense of the cooperative.

(i) That the cooperative will not employ persons deemed by Authority to be unqualified or unnecessary.

(j) That TVA shall have the right to use cooperative's poles and wires for transmission purposes and for service to industrial customers with a demand of 1,000 kw. or more.

(k) That cooperative will file annually with TVA a complete report in the form prescribed by TVA of the results of its operations, the condition of its property, and such other information as TVA may require, as well as such additional reports and information, from time to time, as TVA requests.

(l) That all employees who handle money of the cooperative shall be bonded.

(m) That the contract is not assignable or transferable without the consent of TVA.

(n) For "terms and conditions," which are of the essence of the contract and cannot be modified or changed without the consent of TVA, and which are substantially the same as those provided for in the contracts between TVA and municipalities herein referred to in Finding IX-13 hereof.

(o) For a "schedule of rules and regulations" which are of the essence of the contracts and which cannot be changed or modified except by the consent of TVA. The provisions of the "schedule of rules and regulations" are substantially the same as those provided for in contracts between TVA and municipalities herein referred to at Finding IX-13 hereof.

[fol. 531] (16¼) All of the TVA contracts with municipalities and cooperatives permit the purchaser to increase its demand for electric power upon specified notice and in the majority of such contracts such increases are without limit as to the amount.

(16½) Under the provisions of the several contracts between TVA and the municipalities and cooperative associations, the municipality or cooperative association is a mere bill-collecting agency or instrument through which TVA is engaging and proposes to continue to engage in the local proprietary business of distributing and selling electric power.

[fol. 532] D

(17) Rural cooperative associations have been organized in the states of Alabama, Tennessee, Georgia and Mississippi, for the purposes of distributing TVA power. Seven such corporations have been organized in Alabama (Complainants' Exs. 267 to 274 inclusive), fourteen in Tennessee (3185 and Complainants' Ex. 688), one in Georgia (Complainants' Exs. 381 and 382) and eleven in Mississippi (Complainants' Exs. 943-954, inclusive). All such cooperative associations have been incorporated since May 18, 1933, and have procured franchises in ten counties in Alabama and forty-five counties in Tennessee for the purposes of erecting, constructing, operating and maintaining lines and

distributing and selling electricity therein (Complainants' Exs. 214 to 223 inclusive; and 275 to 320 inclusive).

(18) TVA has promoted the organization of rural cooperatives for the purpose of distributing TVA power, has directed and assisted in their organization and financing, and has controlled their operation. As a part of these activities it has issued minute instructions covering the procedure to be followed, as approved by it, in the organization of new cooperatives, including the forms of agreements to be entered into between the cooperative and its customers (Complainants' Ex. 918). It has directly assisted and advised the organizers of cooperative associations and their officers in all matters relating to the formal organization (Supplement A to December 7 Session, pp. 218-220, 221). It has prepared all contracts between TVA and such cooperatives. (Supplement A to December 7 Session, pp. 218-220, 224, 233). It has made the necessary surveys and studies and has assisted otherwise in the procure-
[fol. 533] ment of loans from REA. (Supplement A to December 7 Session, p. 230). It pays the sum of $15.00 toward the cost of wiring for electricity the houses of its customers and customers of cooperatives served by it if an electric water heater or range is installed, and $30.00 if both appliances are installed (Supplement A to December 7 Session, pages 16 to 21, inclusive, and page 179; Complainants' Ex. 394 to 397 inclusive).

(19) TVA has financed for municipalities and cooperatives a large number of rural distribution lines (Defendants' Ex. 136), and has also loaned funds to cooperatives with which to purchase urban distribution systems including the distribution systems in the towns of Bruce, Caledonia, and Smithville, Mississippi and Gibson, Tennessee, (Complainants' Exs. 181, 592 and 595). The indebtedness owed to TVA on this account amounted to $1,424,665.70 as of June 30, 1936, (Complainants' Ex. 116, page 486), and this indebtedness had increased by June 30, 1937, to the sum of $1,582,412.66 (Defendants' Ex. 154, p. 110) TVA intends to continue this policy (Defendants' Ex. 153, page 978).

(20) The TVA in some instances has constructed distribution systems in advance of the organization of any cooperatives (Complainants' Exs. 530-531, 534, 535, 553). (Watson 6115-6116). In a number of other instances, TVA has con-

structed lines pending their purchase by the cooperatives, agreeing to collect membership fees, to connect service to prospective customers, to render and collect bills and perform other like services including the furnishing of clerical and stenographic service (Complainants' Exs. 176, 177, 178, 179, 180, 588, 596, 599, 601, 610, 626). In a number of in- [fol. 534] stances, TVA has transferred to cooperatives distribution lines and other equipment and has financed and constructed rural lines to be paid for over a 20-year period, and in some instances an unlimited period at 3½ per cent interest, out of the income from the property (Complainants' Exs. 577, 583, 584, 587, 595, 170, 607, 622, 117 (Alcorn County EPA), 181, 175, 173, 618, 605, 609, 593, 592, 1704 and 163).

(21) TVA also supervises the operations of rural cooperative associations by selecting operating employes (Complainants' Ex. 399); by preparing their rules and regulations for operation (Complainants' Ex. 401); by setting up the forms in which the cooperative's books shall be kept (Complainants' Ex. 406); by attending meetings of the directors of the cooperatives (Complainants' Exs. 399, 400, 402, 403, 404, 405) and by having copies of all correspondence of the cooperative sent to the TVA district manager (Complainants' Ex. 400).

(21½) Some if not all of the rural cooperatives are so supported, controlled, and dominated by TVA that their operations are in fact the operations of TVA, and the turning over of the nominal charge of such operations to such cooperative associations is a mere cloak to conceal the vast scale of TVA's direct retail operations.

[fol. 535] A

(1) Adequacy of facilities means the availability in sufficient quantity of distribution, transmission and generation facilities at all times to assure ability to take care of immediate loads and any reasonable expectant increase in load with a sufficient margin so as to assure the supplying of proper service (Sporn 2230).

(2) Prudent utility management requires that a utility shall provide enough surplus capacity to take care of its actual and potential demands in the period of time during which new facilities can be added, and that too great a sur-

plus, resulting in non-productive facilities and higher operating costs, be avoided (Sporn 2231; Moreland 2890; Thomas 5240; Middlemiss 2331).

(3) The present generating facilities of the Complainant Companies are adequate to meet the present loads on their systems and together with the additional capacity scheduled or already under construction will adequately supply their power requirements for at least two or three years in the immediate future (Sporn 2252 and Complainants' Exs. 367 to 370, inclusive; Middlemiss 2335, 2336, 2339 and Complainants' Exs. 371 and 372; Rankin 2401, 2417, 2418 and Complainants' Exs. 374 and 375). A steam generating plant can be added to a system within one to two years, and a hydro plant can be added within two to three years (Sporn 2252; Rankin 2419; Moreland 2890; Thomas 5240).

[fol. 536] (4) The present generating facilities of the public utility companies operating within a 250 mile radius of any of the dams included in the TVA Unified Plan are adequate for the present loads in the territory and together with the additional capacity definitely scheduled or already under construction will be adequate to meet the estimated increased load growth during the years 1938 and 1939 (Moreland 2894 and Complainants' Exs. 501, 502, 503). The utility companies can readily build to meet any requirements subsequent to 1939 unless they are prevented by regulatory authority or by the impairment of their financial status by Federal competition (Moreland 2899, 2900). In fact, in the past, facilities have been constructed to provide for increment expansion (Sporn, 2255-56; Guild 161; Yoder 364; Barry 564-5). Increment expansion is an economic development of facilities and is provided in anticipation of load growth.

(5) The generating facilities of each of the following groups of companies are interconnected and integrated into a single coordinated system or power pool, and such facilities of each group are operated as a unit:

(a) The Appalachian Electric Power Company, Kentucky and West Virginia Power Company, and the Kingsport Utilities, Inc., are integrated into a single system (Sporn 2233, Complainants' Ex. 49) and are also interconnected with a group of affiliated companies in Ohio, In-

diana, and Michigan and with non-affiliated companies in Tennessee and North Carolina (Sporn, 2234).

(b) The Complainants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company and the non-complainants Georgia Power Company, Gulf Power Company and South Carolina Power Company, [fol. 537] together form the integrated system of Commonwealth & Southern Corporation in the South (Middlemiss 2285, 2288, 2337) and also have interconnections with the Carolina Power & Light Company, the Florida Power Corporation, the South Carolina Electric & Gas Company, the Duke Power Company and the Aluminum Company of America (Middlemiss 2289).

(c) The Carolina Power & Light Company, The Tennessee Public Service Company and the Holston River Electric Company (Rankin 2398, 2394).

(d) The Complainants, Memphis Power & Light Company, West Tennessee Power and Light Company, Mississippi Power & Light Company and non-complainants, Louisiana Power & Light Company and Arkansas Power & Light Company (Rankin 2398, 2426, 2394).

(e) The East Tennessee Light & Power Company and Tennessee Eastern Electric Company (Ide 507).

(6) None of the Complainant Companies has ever failed to meet the load requirements of their customers (Middlemiss 2341, Complainants' Exs. 372, 375), nor have they ever refused additional business due to lack of facilities (Sporn 2251).

[fol. 538] B

(7) The Complainant companies serve the electric power requirements of substantially all industrial enterprises doing business in the territories served by them (415-17, 329, 660, 1254, 300, 306, 315, 370, 504, 1031, 1213-4, 1254, 612-13, 1295, 1332, 1348, 1368, 1392, 1396, 1404-5, 1471) with the following exceptions:

(a) Those industries now being served by TVA (1121-1125, 1397-1399).

(b) Those industries which require steam in processing operation and are thus able to produce their own power as

a by-product (329, 415-6, 1214, 1254, 1295, 1332, 1348, 1368, 1393, 1396, 1404-5, 1471).

(c) Those industries such as sawmills and woodworking plants which have waste fuel products and can produce power without fuel cost (1214, 1254, 1295-6, 1332, 1369, 1393, 1394, 1404-5, 1471).

(d) Small and scattered enterprises such as cotton gins, ice plants and flour and feed mills which operate seasonally and which depend upon steam or other mechanical power (1214, 1254, 1295, 1332, 1348-49, 1368, 1405, 1471).

All of these businesses except those being served by TVA have their own power units which would have to be abandoned in order to take central power service (1255, 1296, 1348, 1368, 1405, 1472).

(8) The Complainant Companies serve the electric power requirements of substantially all commercial enterprises doing business in the territory served by them with the exception of a very few scattered rural stores which do not stay open at night (1215, 1255, 1296, 1332, 1350, 1369, 1406, 1473, 329, 300, 370, 660, 504, 415-17, 306, 315).

[fol. 539] (9) The Complainant Companies are now serving, either directly or indirectly, substantially all of the domestic demand within the territory served by them accessible to existing company facilities (1215, 1216, 1255-56, 1297, 1332, 1350, 1369, 1393-4, 1396, 1406, 1474, 427, 454, 660, 300, 306, 315, 329, 370, 504).

(10) In the areas where TVA power is now available for rural distribution, there is no substantial existing domestic demand beyond reach of existing distribution facilities, which, at the present time, comes within the minimum requirements of applicable State regulations or within the recommended minimum requirements of 662 KWH. per month per mile as adopted by TVA in its "Rural Electrification Survey—Neighborhood Plan" (Complainants' Ex. 918; 1217, 1261, 1299, 1333-34, 1351-52, 1396, 1407-8, 1475-6, 1371).

[fol. 540]

C

(10) All of the high dams built and to be built by TVA will be united by heavy-duty transmission lines, extending

from the power dams on the tributaries of the Tennessee, designated as Norris, Hiwassee and Fontana, to the Gilbertsville dam on the main river somewhat above its mouth. This grid system constitutes a power pool, from which at any point, energy can be drawn without reference to the point of generation. The completed power pool under the Unified Plan, will provide 660,000 KW. of firm energy, or 5,780,000,000 kilowatt hours of firm energy per year (Complainants' Ex. 328).

(11) The total amount of electricity generated for public use by public utilities during 1936 in the state of Tennessee was only a little over 1,000,000,000 kilowatt hours (Complainants' Ex. 486). The total generation for public use by public utilities in Tennessee, Alabama, and Mississippi in 1936 was only about 3,700,000,000 kilowatt hours (Complainants' Ex. 486). In 1936 the total generation of electricity for public use by public utilities in the seven states in which any part of the Tennessee River basin lies, that is Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama and Mississippi, was only about 9,300,000,000 kilowatt hours (Complainants' Ex. 486).

(12) The market for electric power, as represented by total sales in the year 1936 to ultimate consumers, directly and indirectly by all public utilities and municipal systems, [fol. 541] other than by TVA and its wholesale contractors, within a 100-mile radius of any of the dams included in the TVA Unified Plan, is 3,661,000,000 kilowatt hours per year, and within a 150 mile radius of any of the dams included in the TVA Unified Plan is, 7,162,000,000 kilowatt hours per year, (Moreland 2861; Complainants' Ex. 499). The territory now being served by each of the complainant companies lies wholly or in large part within such 150 mile radius (Complainants' Ex. 327).

(13) It is technically feasible to transmit power a distance of 250 miles without any relaying or intermediate feeding into the transmission lines, (Sporn 2258), and it is commercially feasible to transmit electric energy from the TVA power pool for distribution in the area served by each of the Complainant companies (Moreland 2865-66).

D

(14) On September 14, 1933, the Tennessee Valley Authority announced its wholesale power rates and approved retail

rates for the sale of electric energy (Complainants' Ex. 113, pp. 35, 36).

(15) The wholesale rates of the Tennessee Valley Authority are substantially lower than the wholesale rates of any of the Complainants (1088).

[fol. 542] (16) The retail rates for every class of service prescribed by TVA and charged by the municipalities and cooperatives purchasing power from the Tennessee Valley Authority are substantially lower than the retail rates of any of the Complainants (1088).

(17) The rates charged by the Tennessee Valley Authority in all classes of service including rural customers, domestic customers and commercial customers, which it serves, are substantially lower than the rates for the same classes of service of any of the Complainants (1088).

(18) The industrial rates charged by the Tennessee Valley Authority are substantially lower than the published rates of any of the Complainants (1094).

(19) Tennessee Valley Authority has published these rates generally and they are well known throughout the Tennessee Valley area (1771-2; 1784-5).

E

(20) The sale of the vast amount of electric energy which will be available for distribution from the TVA power pool, at rates substantially lower in all classes of service than the existing rates of privately-owned electric utilities, including the complainant companies in an area now adequately served by such utilities, where the total consumption is at present exceeded by the quantity of power so to be produced and available for sale over the TVA grid system, will neces-
[fol. 543] sarily regulate and reduce the rates of all of the privately-owned utilities now doing business in such area, including the rates of the complainant companies to a level at least as low if not lower than the rates promulgated by TVA.

(21) Between 12,000 and 15,000 miles of transmission lines would be necessary to market the 7,670,000,000 kilowatt hours of firm and secondary power which would be

produced by the TVA in a normal water year. The total transmission lines of the Complainants is 11,314 miles (Moreland 2868-71; Complainants' Ex. 116, pp. 456-7; Complainants' Ex. 500). Defendant, A. E. Morgan, has estimated that it may require an expenditure of $100,000,000 to complete the proposed transmission and distribution systems of TVA, so that it will be an integrated unit (Complainants' Ex. 109, page 166).

(22) Although the present high tension transmission system so far constructed by TVA is only the beginning of the high tension transmission system which will be necessary to deliver the vast amounts of power which will be available through the TVA power pool, the existing TVA high tension transmission lines have already been extended to all of the large existing load centers in Tennessee, with the exception of Nashville, and upon completion of the proposed transmission line of the TVA to Nashville, the TVA transmission system will completely duplicate the transmission system of The Tennessee Electric Power Company (Miller 1690-1691). This high tension transmission system of TVA interconnects all of the generating facilities of TVA (Miller 1683, Defendants' Ex. 136-A), is designed to serve more loads than are served at present by TVA and [fol. 544] can be readily extended to serve all of the principal load centers in the area served by the Complainant companies (Miller 1680, 1683-4). In the construction of certain of these transmission lines the Authority constructed said lines with an excess capacity of several times its initial operating load in anticipation of future load growth and possible extensions of such lines to other areas (Complainants' Ex. 532). If the existing TVA system had been designed for the purpose of serving small municipalities and rural customers, the engineering economics would have required the design of an entirely different type of system than the one so far constructed (Complainants' Ex. 334).

(23) The operation of the TVA rates in municipalities now being served by Complainant companies, for example, in Memphis and Knoxville, will force such companies to reduce their rates to the same level, which will result in the ultimate bankruptcy of the respective companies (Ford 1759, 1760; Lamar 1790).

F

(24) Prior to the organization of TVA there was no movement in the territories served by the Complainant companies for municipal ownership of electric distribution systems, (Ford 334) and in fact many existing municipally owned distribution systems were acquired by the Complainant companies (Stanley 1046; Complainants' Exs. 14, 186). Since the organization and commencement of operation of the Tennessee Valley Authority, the following cities served by Complainant companies have entered contracts with the TVA:

[fol. 545]

Municipality	How Served	Exhibit Number or Record Reference
Florence, Alabama	Alabama Power Company	Complainants Ex. 191
Sheffield, Ala.	Alabama Power Company	Complainants Ex. 191
Tuscumbia, Ala.	Alabama Power Company	Complainants Ex. 191
Athens, Ala.	Alabama Power Company (Wholesale)	Defendants Ex. 153 p. 995
Tupelo, Miss.	Miss. Power Co. (Wholesale)	Defendants Ex. 153 p. 995
Jackson, Tenn.	West Tenn. Power & Lt. Co.	1410
Decatur, Ala.	Alabama Power Co.	Complainants Ex. 191
Russellville, Ala.	Alabama Power Co.	Complainants Ex. 191
Guntersville, Ala.	Alabama Power Co.	Complainants Ex. 191
Knoxville, Tenn.	Tennessee Public Service Co.	297
Chattanooga, Tenn.	Tennessee Electric Power Co.	151
Memphis Tenn.	Memphis Power & Light Co.	329
Paris, Tenn.	Ky-Tenn. Light & Power Co.	1263, 2157

The business in the City of Memphis represents the major part of the business of the Memphis Power & Light Company (Ford 329) and the business in the city of Knoxville represents 90 per cent of the electric business of the Tennessee Public Service Company (Lamar 297).

In addition, the following municipalities have held elections resulting, in the authorization of a bond issue with which to acquire a municipally owned distribution system for the purpose of distributing TVA power:

Municipality	Present Service
1. Gallatin, Tenn.	Ky.-Tenn. L. & P. Co. (1263)
2. Newbern, Tenn.	Ky.-Tenn. L. & P. Co. (1263)
3. Clarksville, Tenn.	Ky.-Tenn. L. & P. Co. (1263)
4. Starkville, Miss.	Miss. Power Co. (271, 1218)
5. Aberdeen, Miss.	Miss. Power Co. (271, 1218)
6. Columbus, Miss.	Miss. Power Co. (271, 1218)
7. Bessemer, Ala.	Birmingham Elec. Co. (321 and Complainants' Ex. 191)
8. Fairfield, Ala.	Birmingham Elec. Co. (311 and Complainants' Ex. 191)
9. Tarrant City, Ala.	Birmingham Elec. Co. (311 and Complainants' Ex. 191)

[fol. 546]

Municipality	Present Service
10. Hartselle, Ala.	Ala. Power Co. (Complainants' Ex. 191)
11. Courtland, Ala.	Ala. Power Co. (Complainants' Ex. 191)
12. Oneonta, Ala.	Ala. Power Co. (Complainants' Ex. 191)
13. Town Creek, Ala.	Ala. Power Co. (Complainants' Ex. 191)
14. Enterprise, Ala.	Ala. Power Co. (Complainants' Ex. 191)
15. Scottsboro, Ala.	Ala. Power Co. (Complainants' Ex. 191)
16. Albertville, Ala.	Ala. Power Co. (Complainants' Ex. 191)
17. Columbia, Tenn.	The Tenn. Electric Power Co. (Complainants' Ex. 116, Page 536)
18. Henderson, Tenn.	West Tennessee P. & L. Co. (Complainants' Ex. 116, Page 537)
19. Lewisburg, Tenn.	The Tenn. Elec. Power Co. (Complainants' Ex. 335 A)
20. Fayetteville, Tenn.	The Tenn. Elec. Power Co. (Complainants' Ex. 335 A)
21. Etowah, Tenn.	Power sold by The TEP CO. at wholesale (Complainants' Ex. 335 A)

(25) In addition to the municipalities which have held elections to acquire a municipally owned distribution system for the purpose of distributing TVA power, the following cities and towns served by the Complainant companies have officially applied for TVA power, (Complainants' Ex. 116, pp. 537-38):

State and Town	How Served
Alabama:	
Boaz	Ala. Power Co.
Cherokee	Ala. Power Co.
Courtland	Ala. Power Co.
Falkville	Ala. Power Co.
Hartselle	Ala. Power Co.
Huntsville	Ala. Power Co.
Leighton	Ala. Power Co.
Madison	Ala. Power Co. (Compts' Ex. 3)
Moulton	Ala. Power Co.
Red Bay	Ala. Power Co.
Town Creek	Ala. Power Co. (Compts' Ex. 3)
Vina	Ala. Power Co. (Compts' Ex. 3)
Valley Head	Ala. Power Co. (Compts' Ex. 3)

[fol. 547]

State and Town	How Served
Kentucky:	
Trenton	Ky.-Tenn. L. & P. Co.
Mississippi:	
Coffeeville	Mississippi P. & L. Co.
West Point	Mississippi Power Co.
Tennessee:	
Adamsville	The Tenn. Elec. Power Co.
Clinton	The Tenn. Elec. Power Co.
Coal Creek	The Tenn. Elec. Power Co.
Columbia	The Tenn. Elec. Power Co.
Decaturville	The Tenn. Elec. Power Co.
Dresden	Ky.-Tenn. L. & P. Co.
Dyer	Ky.-Tenn. L. & P. Co.
Etowah	Power sold at wholesale to Etowah Power Co. (Complts' Ex. 335 A)
Fayetteville	The Tenn. Elec. Power Co.
Gallatin	Ky.-Tenn. L. & P. Co.
Gleason	Ky.-Tenn. L. & P. Co.
Greenfield	Ky.-Tenn. L. & P. Co.
Humboldt	West Tenn. P. & L. Co.
LaFollette	The Tenn. Elec. Power Co.
Lebanon	The Tenn. Elec. Power Co. sells power at wholesale to municipal system
Lenoir City	The Tenn. Elec. Power Co.
Lewisburg	The Tenn. Elec. Power Co.
Livingston	The Tenn. Elec. Power Co.
Martin	Ky.-Tenn. L. & P. Co.
Murfreesboro	The Tenn. Elec. Power Co.
Obion	Ky.-Tenn. L. & P. Co.
Oliver Springs	The Tenn. Elec. Power Co.
Parsons	The Tenn. Elec. Power Co.
Ripley	West Tenn. P. & L. Co.
Rockwood	The Tenn. Elec. Power Co.
Rogersville	Holston River Elec. Co.
Rutherford	Ky.-Tenn. L. & P. Co.
Savannah	The Tenn. Elec. Power Co.
Sharon	Ky.-Tenn. L. & P. Co.
Winchester	The Tenn. Elec. Power Co.

[fol. 548] (25½) The electric power business is not static. The electric power production in the nation as a whole has followed the trend of industrial activity, reaching a low point in March, 1933 (Complainants' Ex. 99-A). With the business recovery beginning in 1933, electric power produc-

tion increased sharply until the late summer of 1937 (Complainants' Ex. 99-A). The trend of electric power production and sales among the complainant companies has followed the trend in the nation as a whole (Complainants' Exs. 10, 15, 28, 30, 35, 38, 55, 56, 57, 76, 84, 85, 96, 104, 368, 372, 374, 375, 376). During the years 1929 to 1933 the electric power demand of the complainant companies declined (Complainants' Exs. 28, 38, 55, 56) due largely to the reduction in the industrial demand during that period. With the resumption of industrial activity there has been, beginning with 1933 and continuing to the latter part of 1937, a very substantial increase in the electric power demand of the complainant companies (Complainants' Exs. 10, 15, 28, 35, 38, 55, 56, 57, 84, 85, 368, 372, 374, 375, 376). Since September 1937, and prior thereto for certain complainants, there has been a definite decline in the electric power demand of the complainant companies (Rankin—2241, 2244; Barry—636-8; Complainants' Exs. 98, 942).

Over the period of the past eight to twelve years the average increase in electric power demand of the complainant companies has been at a rate of approximately 5% per year (Complainants' Exs. 10, 15, 28, 30, 35, 38, 55, 56, 57, 76, 84, 85, 96, 104, 368, 372, 374, 375, 376), and there has been a corresponding steady increase in their facilities (Complainants' Exs. 368, 372, 374, 375, 376, 501). This normal expectancy of growth and increased business is a valuable right and asset of each of the complainant companies and the loss of such expectancy of growth is a substantial injury to their properties and businesses.

[fol. 549] (26) Of the larger industrial power consumers with which TVA has made contracts the Rockwood, Alabama Stone Company is a former customer of the Alabama Power Company (Stanley 1123).

The Monsanto Chemical Company purchased power requirements for its phosphoric acid operations from the Alabama Power Company, the revenue from which business amounted to $387,000 per year (Stanley 1122). Upon the removal of the phosphoric acid operations of such company to Columbia, Tennessee, The Tennessee Electric Power Company entered into negotiations with said Chemical Company to furnish it with 50,000 kilowatts of power at its Columbia, Tennessee, plant, and after agreeing upon the terms of a proposed contract, Monsanto Chemical Company questioned the financial responsibility of The Tennessee

Electric Power Company because of the competitive operations of TVA and refused to accept an offer to deposit $1,500,000.00 of the first mortgage bonds of The Tennessee Electric Power Company as a guarantee of performance of the contract, for the reason that the securities offered were unsatisfactory, because of the competitive situation created by TVA (Complainants' Ex. 628; Willkie 3120-29).

L. N. Gross Company, in 1936, with the aid of The Tennessee Electric Power Company, located a plant at Fayetteville, Tennessee, and electricity was furnished during the construction period by The Tennessee Electric Power Company. Upon completion of construction, said Power Company, at the request of said L. N. Gross Company, connected electric service after installing a substation of sufficient size [fol. 550] and capacity to accommodate the load. Thereafter, L. N. Gross Company terminated its service and purchased TVA power (1399).

Volunteer Portland Cement Company was the largest industrial customer of Tennessee Public Service Company, from which it received an annual revenue approximating $125,000 (1782). A transmission line with a capacity many times in excess of said Cement Company's requirements and which will be available for service to future loads in that area was constructed by TVA from Norris Dam to said Cement Company's plant, a distance of approximately 20 miles, at an expenditure of $269,000 (Complainants' Ex. 564 and Defendants' Ex. 154, p. 92). On September 14, 1937, TVA assigned said contract to the City of Knoxville (Complainants' Ex. 158), and although TVA will supply power direct to Volunteer Portland Cement Company, said city will pay TVA for the power so delivered at the standard wholesale rates, as provided for in the contract between TVA and the City of Knoxville (Complainants' Ex. 118), and will collect from Volunteer Portland Cement Company at the standard resale rates, as provided in said Complainants' Ex. 118 (1786-87). There has been agitation among other industrial customers of Tennessee Public Service Company for power to be served from the line which the TVA constructed to the premises of Volunteer Portland Cement Company or extensions of it (1787).

[fol. 551] Mississippi Power & Light Company sold electricity to the government engineering project at Sardis, Mississippi, until the transmission line from Pontotoc, Mis-

sissippi, to the project, over which TVA electricity is transmitted, was constructed (655).

(26½) TVA is in active competition with the several complainant companies to obtain not only the industrial business now being served by complainant companies, but also, the business of new industries entering the territory served by them.

[fol. 552] X F

(27) All of the industrial and municipal customers now being served or under contract with TVA could be served by one or another of Complainant Companies (Miller 1690).

(28) All of the rural cooperative systems which have been constructed by TVA and are now distributing TVA power, could be served by one or another of the Complainant Companies without substantial change or addition in their existing transmission or substation facilities (Bonner 1299; Jacobs 1335; Perkins 1352; Watson 1372; Henkle 1477; Ostermueller 1262; Street 1217; Winkler 1408-1409).

X G

(29) The completion of the generating plants called for in the TVA Unified Plan and the marketing of the power generated thereby, will cause substantial damage to all the Complainants (Moreland 2927).

(30) The completion of the generating plants called for in the TVA Unified Plan and the marketing of the power generated thereby will result in three types of displacement of the Complainants' facilities:

(a) Permanent displacement of Complainants' distribution facilities in those areas where TVA power is actually distributed and also permanent displacement of transmission lines and substations immediately supplying such areas (Moreland 2931). For example, in the case of The Tennessee Electric Power Company, over one-third of its total [fol. 553] demand is represented by the City of Chattanooga (Miller 1691); the Company now has five high tension transmission lines serving the Chattanooga area (Miller 1689, 1692), and the loss of the business in Chattanooga will result in the destruction of over one-third of the usefulness of the Company's electric property (Miller 1691-2).

(b) Temporary displacement of Complainants' facilities of other kinds, either rendered temporarily idle or forced to operate at greatly reduced loading, which temporary displacement may be ultimately terminated by future growth of the remaining load of the utility system or may become permanent if TVA continues its expansion in any particular territory (Moreland 2931-2932).

(c) Impairment of the value of existing generating facilities and transmission lines through loss of the market for which they are adapted and were originally designed; and the incurrence of cost of additional transmission facilities which will be required in order to deliver power, from the generating plants whose natural market has so been taken, to the nearest market which may be available (Miller 1728, 1729).

(31) The construction and operation of rural distribution lines under TVA contracts results in substantial damage to the property and business of the Complainant Companies through whose territory such lines have been or may be constructed in the following respects:

(a) When distribution or transmission lines are projected they are constructed with a view of ultimately interconnecting with other existing lines to complete a loop in order to give two-way service and in order to control voltage and continuity of service. Where competitive systems are constructed in the same manner, such interconnections become impossible without extending service over territory already served by the competitive system (Miller 1696, 1702).

(b) The inability to develop normally because of the presence of the duplicating system results in less dependable and more expensive service (Miller 1703, 1704).

[fol. 554] (c) Expansion of both systems is made more expensive through the necessity of making cross-overs and through the necessity of extending lines through areas served by the competitor (Miller 1696, 1703; Bonner 1300; Perkins 1353; Watson 1370).

This damage is accentuated by the fact that in many instances the rural distribution lines of Membership Corporations distributing TVA power have been constructed in the immediate vicinity of the load centers now being served by Complainant Companies (Complainants' Ex. 332-A).

(32) The activities of TVA have already destroyed the credit of those Complainant Companies in whose territory the TVA is now operating (Frothingham 2447), and has substantially impaired the credit of all of the other Complainant Companies with the exception of the Appalachian Electric Power Company (Frothingham 2452-3). This has made it impossible for the companies in this area to take advantage of favorable credit conditions to refund existing indebtedness and thereby lower their fixed charges (Frothingham 2450). It has made it impossible for such companies to obtain new money for purposes of expansion (Frothingham 2446-2449).

[fol. 555]

XI

(1) With the exception of the Franklin Power & Light Company, which was not incorporated until 1929, and the Southern Tennessee Power Company, each of the complainant companies and their predecessors have grown and expanded their systems and organizations to meet the changing and growing economic needs of the territories which they respectively serve. At the time of the organization and commencement of operations of such complainant companies electricity was not generally used for industrial power purposes and it was necessary for the complainant companies to develop the market for the sale of electricity for use as industrial power (Stanley 1014-15). In so doing, through extensive research, sales and promotional activities, particularly in the case of the larger complainant companies, they have over a period of years, stimulated and promoted the industrial development of their respective territories and have assisted in the electrification of industry (Stanley 1015-16, 1022-23).

(2) Such complainant companies have also organized and developed large staffs of trained employes to collect data respecting the industrial advantages of their respective territories, to utilize this information in publicizing and advertising such advantages, and to promote the development of new industries in the areas served by them (Stanley 1017-18). As a result of these activities, such companies have assisted in locating many new industrial plants in the areas which they serve, representing an investment of many millions of dollars and the employment of thousands of [fol. 556] workers (Complainants' Ex. 182). These new

industries now constitute a very substantial part of the industrial power consumption served by such complainant companies (Stanley 1021-2).

(3) Such Complainant companies early began activities to develop and enlarge the residential use of electricity through extensive campaigns, fostering residential electrification and sale of domestic appliances (Stanley 1023-24). These activities have resulted in a large and progressive increase in the sale and use of electric appliances within the area served by such complainant companies (Complainants' Ex. 183). In carrying on this work of promoting domestic use of electricity, such complainant companies have developed and now maintain extensive sales and service departments (Stanley 1026).

(4) Such complainant companies have also made intensive studies of the problems and advantages of rural electrification; have constructed experimental rural lines as early at 1920, and since that time have been engaged in extensive activities in the development of rural electrification (Stanley 1027). These activities include educational programs showing the profitable use of electricity in agriculture, extensive experiments developing new uses of electricity on the farm, and constant investigation of possible rural line extensions into areas not yet served (Stanley 1027-1029 incl.). In carrying out these activities the companies maintain large staffs of agricultural engineers, home economists and salesmen (Stanley 1030, 1026). As a result of these activities a better understanding of the use of electricity on the farm [fol. 557] has been brought about which has resulted in the construction by the companies of thousands of miles of rural lines serving thousands of farmers, and in bringing electric service to hundreds of unserved rural communities (Stanley 1029, 1031, 1042; Complainants' Ex. 184).

(5) In the case of the larger complainant companies, which do not serve exclusively in metropolitan areas, each of such companies maintain a large field organization under the charge of district managers (1020, 1169-70, 1173, 1184, 1185). The field organization under each district manager is departmentalized to correspond with the departments in the central office organization (1185). Each of such district organizations has local offices responsible to the district manager (1185). These local and division

organizations cooperate with the central office organization in the company's activities in their respective territories (1186).

(6) The Complainant Companies as a group have developed to a high degree system planning. This involves an intimate contact and thorough knowledge of the operating history of the power system both physical and economic (2233, 2234), of plans of expansion both immediate and prospective of all major industrial users; of the growth of merchandise sales in domestic and commercial fields; of the expansion of rural service and of experiences gained in the operation and development of production and transmission facilities (Sporn 2238, 2239; Middlemiss 2334).

(7) The rates and services of each of the complainant companies in the states of Alabama, Tennessee, Kentucky, [fol. 558] Georgia, Virginia, West Virginia, North Carolina and South Carolina are regulated by State Commissions in the respective states (173, 174, 299, 308, 316, 331, 377, 408, 470, 511, 512, 1045). There is no State Commission in Mississippi and the rates and services of the complainant companies in that State are regulated by municipalities within their corporate limits (242, 663). The rates charged by the complainant companies have been reduced and changed from time to time by order of the governing State Commission (179, 1046, Complainants' Ex. 11). The rates charged by the several complainant companies in the states of Alabama, Tennessee, Georgia, Virginia, North Carolina and South Carolina are uniform for the different classes of service throughout their respective operating territories under regulations imposed by the various State Commissions (174, 177, 178, 377, 517).

(8) The Public Utilities Commissions in the States of Tennessee, Alabama, West Virginia and Kentucky have adopted regulations applicable to certain of the complainant companies fixing minimum requirements under which said companies may be required to extend their distribution facilities to give service to rural customers, or the Commissions have the power to compel the companies to extend their lines anywhere in the area to take care of any business justifying such extension (428-9, 1039-41, Complainants' Ex. 185).

(9) The Tennessee Valley Authority has not complied with the provisions of state laws applicable to public utility companies engaged in the electric power business, in any of the states where it is now operating and has not submitted to the regulation of the State Commissions in any of such states (Complainants' Exs. 322-5 inclusive).

[fol. 559] (9½) The competitive activities of TVA in making it impossible for the complainant companies to reduce their fixed charges through refinancing, and in making it impossible for them to procure new capital, interferes with and limits the power of the state regulatory bodies to require the complainant companies to reduce their rates and extend or improve their facilities and service.

(10) The carrying out of the Tennessee Valley program to take over the business and markets now served by the complainant companies will necessarily in the case of such complainant companies whose business and markets are so taken, destroy their ability to maintain the organizations which they have developed, their ability to perform the functions which they have heretofore, and which they are now performing, in providing adequate electric power service, and will destroy the ability of the states and political subdivisions in which such complainant companies are now operating, to regulate and control the electric power rates and service in such areas, or to protect the economic needs represented by industrial, commercial and domestic electric consumers who are now being served by such complainant companies.

[fol. 560] The Rural Electrification Administration (REA), the Federal Emergency Administration of Public Works (PWA) and Electric Home and Farm Authority, Inc., and Electric Home and Farm Authority (EHFA) have cooperated with and assisted TVA in the furtherance of its power program.

(a) TVA has a "very cooperative arrangement" with the Rural Electrification Administration (REA) for financing the construction of rural lines for municipalities and cooperatives (Complainants' Exhibit 116, pp. 485 and 614), and among other things representatives of REA have established offices in one of the TVA buildings in Knoxville, Tennessee (Supplement to December 7 session, p.

223); have attended organization meetings of cooperatives with representatives of TVA (Supplement A to December 7, p. 222); have assisted in preparing petitions for incorporation of cooperative associations (Supplement A to December 7 session, p. 221); have prepared by-laws for cooperative associations (Complainants' Exhibit 389); have attended meetings of the Board of Directors of cooperatives and rendered advice concerning availability of REA funds (Complainants' Exhibit 405); and TVA representatives have accompanies representatives of cooperatives to Washington to assist in the preparation of applications to REA for loans (Supplement A to December 7 session, p. 230).

(b) The Federal Emergency Administration of Public Works (PWA) has made contracts or allotments for loans totaling $7,053,575.00 and grants totaling $7,629,383.00 to 23 municipalities in the States of Alabama, Mississippi, and [fol. 561] Tennessee, in which complainant companies serve electricity, for the purpose of constructing a municipal electric distribution system to distribute TVA power in competition with the respective complainant companies serving electricity therein (Complainants' Exhibit 3 and 484).

(c) Many of the PWA applications are in form and substance identical (Complainants' Exs. 419, 420, 421, 423, 426, 430, 433, 436, 439, 442, 444 and 470, 474, 476, 478, 479), and specifically recite in some instances that the distribution system will duplicate and supplant a privately owned distribution system (Complainants' Exs. 421, 426, 430, 436, 439, 442 and 459); some recite that the amount of business contemplated and referred to therein is justified on the low promotional rates of TVA (Complainants' Exs. 419, 421, 426, 430, 436, 439, 442 and 444); some recite that the application is filed in cooperation with TVA to build up greater consumption of electrical energy (Complainants' Exs. 419, 421, 426, 444 and 459); some recite that the application is filed to take advantage of rates offered by TVA (Complainants' Exs. 419, 421, 423, 426, 439, 442, 444 and 459), and with few exceptions all applications state that the electricity to be distributed will be purchased from TVA.

(d) The loan and grant applications of the Cities of Hartselle, Russellville, Guntersville and Tarrant City, Alabama (Complainants' Exs. 430, 436, 439 and 442), severally re-

cite that the city has secured ten year written contracts from practically all electric consumers in the city. The form of contract, which is incorporated in each application, is identical and provides that in consideration of $1 paid [fol. 562] by the Mayor of each City to the signer of the contract and in further consideration of the opportunity to secure lower electric rates, the signer of the contract will purchase his entire requirements of electrical energy from the City for a period of ten (10) years if, as, and when the City has electrical energy for sale, provided, the rates to be charged by the City shall be those prescribed by the Tennessee Valley Authority.

(e) In the Fall of 1933 the TVA Board granted Mr. Lilienthal the right to create a corporation under the laws of the State of Delaware with power to discount commercial paper to be obtained from manufacturers of electrical appliances licensed by the Authority. In December, 1933, Electric Home & Farm Authority, Inc., was created by executive order of the President and was chartered under the laws of Delaware in January, 1934. The directors of TVA were the directors of Electric Home and Farm Authority, Inc., and Mr. Lilienthal was president. That company made a contract with TVA (Ex. 581) as of July 1, 1934, whereby the purchasers of electric energy from the TVA might finance the purchase of electrical appliances through E. H. & F. A. Inc., and the TVA was to collect from such purchasers the monthly payments for such appliances and account therefor to E. H. & F. A., Inc. E. H. & F. A. Inc., was dissolved in August, 1935, and a new corporation, Electric Home & Farm Authority, was organized under the laws of the District of Columbia at or about said date, which new corporation succeeded to all the property, rights and liabilities of the original company, E. H. & F. A. Inc. The contract of July 1, 1934, is still in effect and the present corporation E. H. [fol. 563] & F. A. and Tennessee Valley Authority are still carrying on under said contract (Complainants' Exs. 569, 581, 599, 649).

[fol. 564] IN UNITED STATES DISTRICT COURT

(Caption omitted)

DEFENDANTS' SUGGESTED FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed January 19, 1938

A final decree having been rendered in this cause on ——, ——, this Court now makes findings of fact and conclusions of law, respectively, pursuant to Equity Rule 70½ as follows:

Findings of Fact

Status of Projects of the Tennessee Valley Authority

1. The Tennessee Valley Authority has constructed, or has under construction, or has under investigation for construction a series of high dams and reservoirs, seven on the main stream of the Tennessee River and two on principal tributaries of the Tennessee, the Clinch, and the Hiwassee Rivers (Bowman, 3748-3845; def. exs. 36-53.)*

[fol. 565] Such high dams are the only possible projects to provide a nine-foot navigation channel on the Tennessee River and control destructive floods in the Tennessee and lower Mississippi River basins by means of dams in the Tennessee River system (Watkins, 3278, 3328-3329; Bowman, 3951-3952, 5726; Barker, 4739-4740; Clemens, 3615-3618; Kimball, 4280).

2. These dams when completed will provide a continuous nine-foot navigable channel with adequate overdepths for boats of nine-foot draft over the entire distance from the mouth of the Tennessee at Paducah, Kentucky, to Knoxville, Tennessee, a distance of approximately 650 miles (Putnam, 2014, 2029; Watkins, 3271, 3328-3329; Barker, 4625; def. ex. 98), will substantially alleviate the destructive floods in the Tennessee and Mississippi Valleys (Clemens, 3618; Floyd, 4414-4416; Kimball, 4217-4229), and will also create a substantial amount of water power (Wessenauer, 5454, 5492-5494; Watkins, 3298-3299).

3. Beginning at the mouth of the Tennessee River at Paducah, Kentucky, and extending upstream, the dams under

* Unless otherwise indicated, parenthetical references are to the transcript in this case.

control of the Authority already constructed, or under construction or active investigation for construction are as follows (Bowman, 3748-3845; def. exs. 38-53; comp. ex. 328, pp. 71-96):

Gilbertsville Dam, which is located in Kentucky 22.7 miles from the mouth of the river, and on which preliminary investigations by the Authority are in progress (def. exs. 38, 39; Bowman, 3751).

Pickwick Landing Dam, which is located in Tennessee 206.7 miles from the mouth of the river and which is under construction by the Authority and almost completed (def. exs. 40, 42).

[fol. 566] Wilson Dam, which is located at Muscle Shoals, Alabama, 259.4 miles from the mouth of the river, which was constructed by the United States Army Engineers and transferred to the Authority under the Tennessee Valley Authority Act, and which is now in operation.

Wheeler Dam, which is located in Alabama 15.5 miles above Wilson Dam and 274.9 miles from the mouth of the river (def. ex. 43) and construction of which was commenced by the United States Army Engineers, completed by the Tennessee Valley Authority, and which is now in operation (Bowman, 3971-3972; Putnam, 1969; Crane, 2316).

Guntersville Dam which is located near Guntersville, Alabama, 349 miles from the mouth of the river and which is under construction by the Authority (def. exs. 44, 45, 45-A).

Chickamauga Dam, which is located near Chattanooga, Tennessee, 471 miles from the mouth of the river and which is under construction by the Authority (def. exs. 46, 46-A).

Watts Bar Dam, which is located in Tennessee 529.9 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress (def. ex. 47).

Coulter Shoals Dam, which is located in Tennessee 602 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress (def. ex. 48).

The dams constructed or under construction on tributaries are as follows:

Norris Dam, located in Tennessee on the Clinch River 79.8 miles from the mouth of that river and 647.5 miles from the mouth of the Tennessee River, constructed by

[fol. 567] the Authority, now completed and in operation (def. exs. 49, 51).

Hiwassee Dam, located in North Carolina on the Hiwassee River 75.8 miles from the mouth of that river and 560.3 miles from the mouth of the Tennessee River, under construction by the Authority (def. exs. 50, 52).

The Tennessee Valley Authority has also recommended to the Congress the future construction of a third tributary project at the Fontana Dam site in North Carolina on the Little Tennessee River, but the Congress has appropriated no funds for this purpose, and neither construction nor preliminary investigation or other work is in progress on this project (Bowman, 3752).

4. Each of the dam projects of the Authority is located on a site at or near the site selected by the United States Army Engineers in their comprehensive report on the Tennessee River system set forth in House Document No. 328, Seventy-first Congress, second session (Watkins 3307; Bowman, 3952; Barker, 4624-4625; Crane, 2313, 2314; comp. ex. 105, p. 43, table B). The dams of the Authority are the type of projects described in that report as best adapted for the comprehensive development of the Tennessee River system for navigation, flood control, and conservation of the water-power resources (Watkins, 3296-3299, 3306, 3416, 3517; comp. ex. 105, pp. 4-7, 42). The projects so described in that report were designed primarily for navigation and flood control (Watkins, 3305-3306, 3549). Prior to the passage of the Tennessee Valley Authority Act, the United [fol. 568] States Army Engineers, in fact, had plans for a high dam at the site of the present Wheeler Dam. Their design made provision for intakes for the later installation of power facilities. Prior to passage of the Tennessee Valley Authority Act, they had commenced construction of the lock for this project. The lock and dam as completed by the Authority are substantially similar in design to the project as designed by the Army Engineers (Bowman, 3971-3972; Putnam, 1969; Crane, 2316).

5. Each of the projects of the Authority has all elements of design reasonably required for navigation and flood control in accordance with accepted engineering standards (Watkins, 3307; Bowman, 3951). Each of the projects has been designed to provide storage capacity for a slackwater

pool behind the dam and a substantial additional storage capacity above the slackwater pool level (Bowman, 5699-5700). Each of the main-stream projects is equipped with a lock prescribed and designed by the Corps of Engineers, with space for an additional parallel lock when commerce warrants (Barker, 4630, 4700-4705; def. exs. 111, 112). The locks which are being installed are of sufficient size and capacity to accommodate adequately the traffic which may be expected in the reasonably near future (comp. ex. 105, p. 6; Putnam, 1971-1972, 1995, 2029-2030). To provide effective means for flood control and stream-flow regulation, each of the projects is equipped with large spillway gates, and in addition, the tributary projects are equipped with sluiceways of large capacity (Bowman, 5701-5708, 5771). At [fol. 569] each of the projects facilities have been provided or construction and design are such that facilities may be provided for the generation of power (Bowman, 3748-3845). Each of the projects of the Authority can be operated to secure substantial benefits in the improvement of navigation and the control of destructive floods, and, consistently therewith, the production of electric energy (Watkins, 3298-3299; Wessenauer, 5454, 5492-5494; Crane, 2319-2320; Sargent, 3707-3708, 3726).

6. The following tables set forth the principal engineering features of the projects of the Authority, Lock and Dam No. 1 constructed by and under the control of the War Department, and the privately-owned Hales Bar Dam:

[fol. 570]

(1) Project	(2) Miles above River Mouth	(3) Drainage Area Sq. Mi.	(4) Length of Res. Miles	(5) Elev. Top of Gates	(6) Normal Pool Level	(7) Low Pool Level at Dam	(8) Low Pool Level at Dam Upstr.	(9) Reservoir Volumes acre-feet Total to Top of Gates	(10) Low Water Regulation	(11) Flood Control
Gilbertsville	22.7	40,000	184.0	375	359	350	354	6,150,000	750,000	4,600,000
Pickwick	206.7	32,870	52.7	418	413	408	408	1,032,000	191,000	416,000
Lock & Dam No. 1	256.8			416	416					
Wilson	259.4	30,800	15.5	505.8	505.1	503	503	600,000	43,000	43,000
Wheeler	274.9	29,600	74.1	556	555	548	550	1,100,000	280,000	440,000
Guntersville	349.0	24,300	82.1	595	594	591	593	951,000	62,000	242,000
Hales Bar	431.1	21,800	39.9	629.2	626.2			100,000		
Chickamauga	471.0	20,800	58.9	685.0	682.0	673.5	675	639,000	196,000	325,000
Watts Bar	529.9	17,460	72.1	745	740	736	736	1,132,000	140,000	337,000
Coulter Shoals	602.0	9,600	50.0	815	810	805	805	370,000	60,000	140,000
Norris	79.8 647.5	2,950	71–Cl. 52–Po.	1034	1020	955		2,567,000	1,500,000	2,020,000
Hiwassee	75.8 576.3	977		1526	1526	1415		435,000	362,000	362,000
								Total	4,034,000	8,925,000
								Tributary	1,862,000	2,382,000
								Main River	2,172,000	6,543,000

Col. (7) is the lowest elevation to which the reservoir will usually be drawn for flood control and, at the main-stream dams, is the usual allowable drawdown with normal wet season flow to give the elevation shown in col. (8) at the next dam upstream, resulting in a minimum navigable depth of 9 feet, with 2 feet over-depth. This elevation is sometimes also referred to as "minimum drawdown elevation" or "minimum navigation level" or "maximum drawdown."

Col. (10) is the difference in the volumes for elevations in columns (6) and (8).

Col. (11) is the difference in the volumes for elevations in columns (5) and (7).

Normal pool level in column (6) is an arbitrary level generally defining the maximum level to which the pool will be raised in low-water season except for possibly a temporary rise of one foot above this caused by malarial control fluctuations.

The information shown in this table appears in Defendants' Exhibits 36, 38, 39, 40, 42, 43, 44, 45, 45a, 46, 46a, 47, 48, 50, 51, 52, 53 and 54, and in Complainants' Exhibit 328.

[fol. 571]

Project	Elev. Spillway Crest	Number & Size Spillway Gates	Spillway Disch. Capacity c. f. s.	Elev. Lower Lock Sill	Elev. Upper Lock Sill	Size of Lock Chamber Feet	Power Units Installed or Authorized	Ultimate Power Units Provided For
Gilbertsville	330	24–45 x 40	850,000			110 x 600		6–32,000 KW
Pickwick	378	22–40 x 40	820,000	342.2	398.0	110 x 600	2–36,000 KW	6–36,000 KW
Lock & Dam No. 1	416			394.1	406.6	60 x 300		
						60 x 300	4–20,000 KW	4–20,000 KW*
Wilson	487	58–18 x 38	629,000			60 x 300	4–26,000 KW	14–26,000 KW*
Wheeler	541	60–15 x 40	387,000	491.0	534.0	60 x 360	4–32,000 KW	8–32,000 KW
Guntersville	545	18–40 x 40	625,000	538.0	578.0	60 x 360	3–24,000 KW	4–28,000 KW
Hales Bar	626.2	Flash boards 3 ft. high				60 x 287		
Chickamauga	655	20–40 x 40	600,000	618.2	663.0	60 x 360	3–27,000 KW	4–27,000 KW
Watts Bar	720	21–25 x 40				60 x 360		4–37,500 KW
Coulter Shoals	790	20–25 x 40				60 x 360		3–20,000 KW
Norris	1020	3–14 x 100	205,000				2–50,000 KW	2–50,000 KW
Hiwassee	1503.5	7–23 x 32	130,000				1–60,000 KW	2–60,000 KW

(The information shown in this table appears in defendants' exhibits 39, 42, 43, 45, 46, 47, 48, 51, 52, 116, and 153, except for the lock sill elevations, which appear in the transcript, Barker, 4867–4868, 4871–4873.)

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* Provision for the ultimate installation of all these units was made by the United States Army Engineers in Wilson Dam as originally constructed. The dam as completed by them included the completed power house, with eight generating units installed and provision made for installation of the additional ten generating units (comp. ex. 105 (H. Doc. 328) pp. 36, 88; ex. 116, p. 433).

[fol. 572] 7. The engineers of the Authority in responsible charge have determined, on the basis of a study of all available records (Woodward, 4034; Kimball, 4276, 4279-4280, 4380-4381) upon a method of operation for the Authority's projects which in their opinion is the most effective method of operation for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River Valleys. This is the method of operation which in their opinion is best adapted for the combined purposes of improvement of navigation and the control of destructive floods without reduction in the effectiveness of the Authority's projects for either navigation or flood control (Woodward, 3994, 4007-4008, 4014, 4016-4019, 4039, 4157-4158; Kimball, 4276, 4278-4280, 4381). The general method of operation is set forth in the report of the Board of Directors of the Tennessee Valley Authority entitled, "The Unified Development of the Tennessee River System," pages 18-19, which is complainants' exhibit 528 in this case. Some details of operation have been changed in the past, and according to the Authority's engineers in responsible charge, other changes may be necessary in the future as further investigation and experience may require (Woodward, 4007, 4037; Wessenauer, 5495).

8. The engineers of the Tennessee Valley Authority in responsible charge operate the projects of the Authority substantially as follows: The reservoir levels of the mainstream dams below Chattanooga are held somewhat above low pool level during the flood season and drawn down to or below such level in advance of a flood; those above Chatta-[fol. 573] nooga are to be held at about low pool level during flood season (Woodward, 4014, 4016-4018; Kimball, 4276; Wessenauer, 5446). As the flood season draws to a close, about the beginning of April, reservoir levels on the main stream are allowed to rise (Woodward, 4019; Kimball, 4278). The reservoir levels of the tributary projects are maintained at about low pool level at the beginning of the flood season, and a substantial portion of the storage capacity below so-called normal pool level is gradually filled during and after the flood season. A sufficient capacity is held available at the close of the flood season to control the largest run-off that may be expected at that time (Woodward, 4032-4034; Kimball, 4278-4279; Wessenauer, 5443-5446). The water stored in the reservoirs on the tribu-

taries and the main stream is released during the low-water season to augment the low-water flow (Woodward, 4019, 4022; Barker, 4628; comp. ex. 328. pp. 18-19).

9. The general method of operation set forth in finding 8 conforms to the method of operation for navigation and for flood control contemplated in House Document 328 and House Document 259 (comp. ex. 105, par. 31, pp. 63-64, par. 41, p. 71, par. 46, p. 74, par. 77, p. 95; Clemens, 3629, 3632-3633, 3635-3637) and is reasonably calculated to provide most effectively for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River Valleys without reduction in the effectiveness of the Authority's projects for either flood control or navigation (Woodward, 4014, 4016-4018, 4039, 4157; Kimball, 4276, 4278-4280, 4380-4381; Clemens, 3606, 3615, 3633; Kelly, 2604-[fol. 574] 2606, 2611; Floyd, 4416-4419, 4421-4425, 4441-4442; Sargent, 3695-3697, 3700, 3707-3708; Crane, 2319; Bowman, 3890, 3891, 3899; Barker, 4665; Watkins, 3293-3294, 3298, 3350, 3353-3355).

10. While dams and reservoirs of limited capacity, designed for local flood protection only, should, according to some engineering opinion, be kept empty in advance of floods and emptied immediately after floods, these principles govern the design and method of operation of dams and reservoirs established for local protection alone and do not apply to the projects of the Tennessee Valley Authority, which are designed and operated for the protection of points on the Tennessee, the lower Ohio, and the lower Mississippi, and for navigation, as well as for local flood protection (Watkins, 3293-3294; Kimball, 4379-4380; Woodward, 4021, 4031-4032, 4043; Kelly, 2604-2606, cf. 2602; Floyd, 4424-4425).

Status of Navigation on the Tennessee River

11. The Tennessee River, a navigable river approximately 652 miles long, is formed by the junction of the French Broad River and the Holston River at Knoxville, Tennessee, and enters the Ohio River near Paducah, Kentucky. In its unimproved state there were numerous obstacles to commercial navigation, including shoals and bars, steep slopes, high velocities, and floods in many months of the year, and inadequate depths in a great proportion of

the river (Watkins, 3312-3313; Barker, 4604-4606; def. exs. 93, 94).

[fol. 575] 12. The problem of improving navigation on the Tennessee River has been a matter of national concern for more than a hundred years (Barker, 4588). From 1852 to 1933 Congress authorized and made appropriations for numerous navigation surveys and navigation projects covering all portions of the Tennessee River and certain of its tributaries, at a total expenditure of approximately $18,000,000, exclusive of Wilson Dam (def. ex. 95; Barker, 4605).

13. Prior to the passage of the Tennessee Valley Authority Act, the Tennessee River was not adequately improved for modern commercial navigation except for short stretches behind the Government-owned Dam No. 1 and Wilson Dam, and the privately owned Hales Bar Dam. The controlling depth of the river at that time ranged from 4½ feet in the lower part of the river to 1 foot in the upper section (def. ex. 97; Barker, 4617, 4623).

14. The Tennessee River, as a tributary of the Ohio River is interconnected with the inland waterway system of the Mississippi River, which connects the Gulf and the Great Lakes and taps the territory of about 15 States, including many important traffic-producing industrial, commercial, and agricultural centers, and extends as far east as Pittsburgh, Pennsylvania, as far west as Kansas City, Missouri, and as far north as Minneapolis and St. Paul, Minnesota. Interstate railroads and highways interconnect with the waterway at numerous points, permitting joint land and water transportation (Alldredge, 4951-4961; def. exs. 116, 118, 123; Barker, 4732-4736). There are varied and substantial agricultural, mineral, and forest resources located in the Tennessee Valley within reach of the waterway (Alldredge, [fol. 576] 4966-4977; def. exs. 120, 121, 122). About 18.2 percent of the population of the United States, based on the 1930 census, is located within 25 miles of the banks of this interconnected waterway (Alldredge, 4963-4964; def. ex. 119). This inland waterway system includes 5700 miles of improved waterway of 9-foot depth or over, an additional 3200 miles of 6 to 9-foot depth, and an additional 1000 miles of 4 to 6-foot depth (Barker, 5065; def. ex. 116).

15. The dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will provide a navigation channel throughout the length of the Tennessee River substantially superior to that which could be provided by any alternative method of navigation improvement (Watkins, 3306, 3416, 3517; Barker, 4666; comp. ex. 105, pp. 4-7; Putnam, 1976; Brodie, 4916-4919). They will also provide substantial navigation improvement on a number of the tributaries of the Tennessee River (Barker, 4654) and will provide an increased water supply, which will substantially improve navigation on the Mississippi River in the low-water season (Barker, 4651, 4653-4654; Watkins, 3300-3301, 3554-3555; Brodie, 4910-4912).

16. Each of the dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will result in a substantial improvement for navigation (Bowman, 3770, 3787-3788, 3790-3795, 3801, 3804, 3750; def. exs. 47, 48; Barker, 4651-4654; Putnam, 2012-2015).

[fol. 577] 17. The high-dam projects of the Authority will provide a navigation improvement substantially superior to that which could be provided by the system of low dams set forth in House Document No. 328. The superiority of high dams for navigation was recognized by the Board of Engineers for Rivers and Harbors in House Document No. 328 (Watkins, 3415-3416, 3517; comp. ex. 105, pp. 4-7, 12). The Authority's projects will provide superior channel depths and widths (Watkins, 3271; Barker, 4666-4667, 4709-4715; def. exs. 104, 107, 108), substantially fewer lockages (Barker, 4722-4724; def. exs. 104, 105, 115; Watkins, 3271; Putnam, 1929-1930, 1985-1986), substantially less current velocities (Barker, 4723-4724; def. exs. 104, 106, 115; Watkins, 3273-3274), pool fluctuations (Barker, 4688-4695; def. ex. 110), and interruptions from floods (Barker, 4666-4667, def. ex. 104). The elimination of lockages will substantially reduce the time consumed in lockages (Brodie, 4898-4899; Barker, 4722-4724; Putnam, 1929-1930, 1985-1986; Willson, 2636); the superiority of channel depths and reduction of current velocities will substantially increase the speed of movement and reduce the amount of motive power required (Barker, 4672, 4722-4724; def. ex. 115; Brodie, 4899-4900, 4904-4905; Watkins, 3271-3272); and the wider and

longer pools of the high dams are preferred by the navigator to the narrow, crooked pools of the low dams (Brodie, 4895, 4899-4919; Barker, 4696-4698, 4715-4717; Watkins, 3274-3275, 3505-3506). The reduction in pool fluctuations will greatly encourage the development of terminal facilities necessary to the development of commercial navigation (Brodie, 4905-4906; Barker, 4688-4695; Watkins, 3519-3521). [fol. 578] The advantages of the Authority's projects in these respects will insure a substantially greater efficiency of the navigation channel, substantially greater dependability of service, and may reasonably be expected to attract a substantially greater volume of traffic on the improved river (Brodie, 4914-4915; Watkins, 3326). The high dams will also provide substantial improvement of navigation on the tributaries which would not be provided by the low-dam projects (Barker, 4666-4667; def. ex. 109; Watkins, 3279, 3300). The advantages of high dams cannot be accurately measured in monetary terms (Brodie, 4935-4936; Putnam, 2010-2011). The boats and barges which are now in general use on the interconnected inland waterways of the Mississippi River system will be able to navigate the Tennessee River, where improved by the projects of the Authority, without change of design or extent of loading (Brodie, 4895-4898; Barker, 4715-4717; 4736-4737; 4859-4860).

18. On other tributaries of the Mississippi, the United States Army Engineers are now replacing low dams with high dams, with provision for the development of power (Putnam, 1974-1977; H. Doc. 306, 74th Cong., 1936, p. 2, 1976; Watkins, 3276), and at the time of the creation of the Tennessee Valley Authority they were engaged in the construction of a lock for a high navigation dam at the Wheeler Dam site with provision in their design for the development of power (Bowman, 3971-3972; Putnam, 1969; Crane, 2316).

19. The improved navigation channel provided by the projects of the Authority will cause a very substantial increase and development in waterway traffic between the [fol. 579] Tennessee Valley region and other regions of the United States connected by water, rail, and highway (Barker, 4738; Brodie, 4914; Watkins, 3318, 3322-3323). Despite the numerous obstacles in the past to commercial navigation on the Tennessee River, the traffic on the river over the last forty years has been between one million and

two million tons annually, but due to lack of adequate depths the traffic has consisted largely of short hauls (def. ex. 96; comp. ex. 105; H. Doc. 328, pp. 205-233; Watkins, 1310-1314; Barker, 4617; Putnam, 1931, 1936-1937). It was estimated by the Army Engineers in House Document No. 328 that there would be an increase of traffic of approximately seven million tons per annum at a saving of about ten million dollars annually (or a saving of approximately 25 per cent of the present freight charges) if the Tennessee River were adequately improved for commercial navigation (comp. ex. 105, p. 497; Alldredge, 4999-5011; def. exs. 126, 128). Subsequent studies since the creation of the Tennessee Valley Authority have confirmed the reasonableness and conservative character of this estimate (Alldredge, 4999-5000, 5011, 5012). On the basis of the growth of traffic experienced on the comparable improved waterways of the interconnected Mississippi River system it is reasonable to expect an ever increasing growth in the volume of traffic on the river (Alldredge, 5014; Watkins, 3322-3323).

20. The value of the improvement to navigation provided by the projects of the Authority is not limited to the reduc-[fol. 580] tion in the cost of transportation to shippers, but includes substantial intangible values such as the stimulation of the growth of industry and business and the promotion of the general prosperity of the region within the influence of the improved waterway (Putnam, 2010-2011; Alldredge, 5020; Watkins, 3320).

The Flood Problem on the Tennessee and Mississippi Rivers

21. The recurrent great floods on the Tennessee and Mississippi Rivers have long presented a grave flood menace of national importance. Thousands of miles of interstate railways and highways, and twenty million acres of the richest cotton lands in the United States, the products of which are normally marketed in interstate and foreign commerce, lie within the flood plain of the Mississippi Valley. Located in the path of Mississippi floods also are the important commercial cities of Memphis, Cairo, and New Orleans, and other smaller communities, in which are located large cotton warehousing, compressing, and processing plants, and woodworking plants, engaged in the production, processing, and distribution of goods normally marketed in interstate and foreign commerce. The city of Chattanooga,

which is the principal point of danger on the Tennessee River, is an important center of interstate railways and highways and manufacturing plants, and is a principal center for the distribution throughout the southeastern region of commodities produced in other States (Okey, 4450-4473, 4521-4524; Watkins, 3326-3328; Kimball, 4187-4207; Kurtz, 2041-2062, 2176; comp. ex. 349).

22. The great floods of the past on the Tennessee and Mississippi Rivers have caused and, unless controlled in the future, will cause complete interruption of transporta- [fol. 581] tion on the Mississippi and Tennessee Rivers, and complete interruption of interstate commerce on the railroads and highways, as well as interruption in the production, manufacture, and distribution of products normally marketed in interstate and foreign commerce, and substantial damage to the facilities and properties employed for these purposes (Okey, 4450-4473, 4521-4524; Kurtz, 2051-2062, 2176; Watkins, 3328; comp. ex. 105, pp. 730-734).

23. For the most effective control of destructive floods in the Tennessee River basin, particularly in the critical area at Chattanooga, Tennessee, it is desirable to provide high dams with controlled storage (such as the projects of the Authority) on the main stream of the Tennessee and on the principal tributaries above Chattanooga, including the Clinch and Hiwassee Rivers, in order to supplement local protective works (Kimball, 4210; comp. ex. 328, pp. 19-20).

24. The Ohio River and its tributaries, including the Tennessee River, are the largest contributor- to all Mississippi floods, contributing from 52 per cent to 90 per cent of the floods between Cairo and Helena, Arkansas (Clemens, 3564-3565; Kelly, 2588). The Tennessee River has always made a substantial contribution to all Mississippi floods (Clemens, 3604).

25. The existing flood-protection works on the lower Mississippi River, consisting of levees supplemented by floodways and cut-offs, are inadequate to pass a flood such as is now estimated to be reasonably probable in the future without disastrous overtopping the existing levees (def. ex. 32, pp. 16, 27; Kelly, 2585-2586; Clemens, 3587-3591; Okey, [fol. 582] 4489-4491). Even in lesser floods the existing projects provide adequate protection for only 60 per cent of the alluvial valley, (Okey, 4489) and then only with the

use of the floodways, the use of which it is desirable to eliminate whenever possible (def. ex. 32, p. 8; Clemens, 3580-3583; 3602; Okey, 4555-4557). The levees on the lower Mississippi have reached the practical limits of height (Kelly, 2586-2588; Clemens, 3591; Okey, 4558). Any additional protection against lower-Mississippi floods must be found in part in the provision of reservoirs on the tributaries of the Mississippi to reduce their contribution to Mississippi floods (Kelly, 2585-2586; Clemens, 3591-3592). For the most effective flood control use, reservoirs should be located close to Cairo, which is at the junction of the Ohio and the Mississippi Rivers (def. ex. 32, par. 22; Clemens, 3601-3602; Kelly, 2592-2593).

26. The Tennessee River, being the largest tributary of the Ohio and closer to Cairo and the lower Mississippi than any other major tributary of the Ohio system, is one of the best rivers for reservoirs for flood control on the lower Mississippi (Clemens, 3601-3602; Floyd, 4415). For the most effective reduction of the contribution of the Tennessee River system to Mississippi floods, it is necessary to provide high dams with controlled storage (such as the projects of the Authority) on the mainstream and storage dams on the tributaries, including the Clinch and Hiwassee Rivers (Clemens, 3606-3607; Kimball, 4220).

27. The season of major floods in the Tennessee River basin is limited to the period from approximately the middle [fol. 583] of December to about the first of April. No major flood of record has occurred in the Tennessee basin outside this period; floods occurring outside this flood season are of limited volume and duration, and are local in effect (Kurtz, 2192; Woodward, 4033-4035). The season of major floods on the lower Ohio and lower Mississippi lasts about a month later than the flood season on the Tennessee, (Clemens, 3651) but as the end of the Tennessee flood season approaches, the need for storage capacity to control the contribution of the Tennessee to Ohio and Mississippi floods diminishes (Kimball, 4278).

28. If the projects of the Authority, described in finding 2, had been in operation during past floods since 1897, they could have reduced the height of all major Mississippi floods since that date by two feet or more from Cairo, Illinois, at least to Helena, Arkansas (Kelly, 2595, 2588; Kim-

ball, 4221-4223; Clemens, 3604-3606; Okey, 4561-4562). It is reasonable to expect that these projects will make possible a reduction similar in extent in all probable floods in the future on the lower Mississippi (Kimball, 4222; Clemens, 3606). Such reduction will provide substantial additional flood protection for the lower Mississippi, a substantial safety factor for the levee system, reduce the frequency of the use of floodways and the flooding of backwater areas, and will be of substantial value in the control of destructive floods in the lower Mississippi (Okey, 4506-4513; Kimball, 4222; Clemens, 3604; comp. ex. 328, p. 19).

The projects of the Authority, described in finding 2, if in operation during past floods in the Tennessee River basin, could have eliminated or substantially reduced all [fol. 584] past floods at Chattanooga for which the available records are adequate to make reliable estimates of possible reduction and will reduce or eliminate all moderate floods of the future (Kimball, 4210, 4214; def. ex. 82) and will control the contribution of the Hiwassee and Clinch Rivers to all future floods at Chattanooga (Kimball, 4208). The Authority's projects, in combination with one reservoir on the Little Tennessee, one on the Holston, and one on the French Broad Rivers would sufficiently reduce the magnitude of all probable future floods so as to make feasible the construction of the necessary local protection works by the city of Chattanooga. Such reductions will be of substantial value in the control of floods in the Tennessee Valley (Kimball, 4214; comp. ex. 328; pp. 19-20, 23). There appears to be no system of reservoirs sufficient to eliminate the flood menace in the Tennessee basin except in combination with local protective works (Kimball, 4207-4214, comp. ex. 328, p. 19, cf. Kurtz, 2082; comp. ex. 356).

29. Each of the projects of the Authority is of substantial value for the reduction of destructive flood heights in the Tennessee and Mississippi River basins (Woodward, 4018-4019; Kimball, 4220-4221; Floyd, 4418; Kurtz, 2190-2191; Watkins, 3278-3279, 3300; def. ex. 151-152; Clemens, 3606-3607).

30. The controlled-storage projects of the Authority are the only types of engineering works on the Tennessee River system which will afford effective flood control in both the Tennessee and Mississippi River basins. Automatic uncontrolled detention reservoirs are of uncertain value for

local Tennessee flood control (Kimball, 4262, 4275) and would be of no value for the control of floods on the lower [fol. 585] Mississippi (Kurtz, 2071; Clements, 3617; Kimball, 4255). The so-called natural valley storage in the Tennessee River basin is the space occupied by the flood itself, and the retarding effect of such uncontrolled valley storage may increase the danger of Mississippi floods (Kelly, 2608-2610; Clemens, 3607-3615; Kimball, 4223-4231). The low dams set forth in House Document No. 328 would be of no value in the control of destructive floods either in the Tennessee or Mississippi River basins as was recognized in House Document No. 328 (comp. ex. 105, p. 64; Clemens, 3607).

Necessity for Federal Action

31. Pursuant to congressional authorization, a comprehensive survey of the Tennessee River system with respect to navigation, flood control, and conservation of power resources was undertaken by the Corps of Engineers of the War Department and completed in 1930. This report is contained in House Document No. 328, Seventy-first Congress, second session (comp. ex. 105). The recommendations contained in this report were adopted by Congress in the Rivers and Harbors Act of 1930 and provide for the creation of a nine-foot navigation channel throughout the length of the Tennessee River by a series of low dams to be constructed by the Federal Government or a series of high dams to be constructed by private interests in cooperation with the Federal Government (comp. ex. 105, p. 5). In 1935 the Mississippi River Commission, in a comprehensive report on reservoir projects for Mississippi flood control, set forth in House Document No. 259, Seventy-fourth Congress, first session, recommended that the Federal Government adopt a policy of encouraging the [fol. 586] construction of reservoirs on the tributaries of the Mississippi River for increased flood protection on the lower Mississippi (def. ex. 32, p. 33). In April 1937 the Chief of Engineers, in a report set forth in Committee Document No. 1, Seventy-fifth Congress, first session, recommended the construction by the Federal Government of storage reservoirs on the tributaries of the Mississippi as essential for the control of floods on the lower Mississippi (Kelly, 2585-2586). Neither at the time of the enactment of the Tennessee Valley Authority Act nor since has there

been any reasonable prospect that a comprehensive development of the Tennessee River and its tributaries for the combined purpose of navigation and flood control in the Tennessee and Mississippi River basins could be obtained in any other way except by the construction of high dams by the United States Government or some agency thereof (Watkins, 3284-3287, 3331; Longley, 1195-1196).

Combined Benefits to Navigation and Flood Control from the Tennessee Valley Authority Projects

32. The projects of the Authority will permit the maintenance at all times of the nine-foot channel on the main stream of the Tennessee with sufficient overdepths to accommodate boats of nine-foot draft (Watkins, 3271, 3328-3329; Barker, 4625, def. ex. 98; Putnam, 2014, 2029). The tributary projects on the Clinch and Hiwassee Rivers will also permit the maintenance of slackwater pools in the lower portions of the reservoirs, which is necessary on the Clinch, a navigable tributary, in order to preserve existing navigation and to avoid foreclosing future improvement for navigation (Watkins, 3288; Barker, 4654), and is valuable on both tributaries in order to preserve the life of [fol. 587] the projects by affording capacity for the deposit of silt (Watkins, 3291-3292; Barker, 4652-4653). The projects of the Authority will also provide substantial storage space above slackwater pool level to control in whole or in part the run-off from the drainage area above the dams durin, the flood season (Watkins, 3281, 3303, 3549; Bowman, 5718). Such projects are the only engineering works which can provide effective flood control in conjunction with the continuous maintenance of the nine-foot channel for navigation.

33. The tributary projects of the Authority, by reducing flood flows and increasing low flows, will substantially increase the effectiveness of the high dams on the main stream for the reduction of flood heights on the Mississippi and Tennessee Rivers in combination with the maintenance of a nine-foot navigation channel (Floyd, 4418-4422; Barker, 4800-4801; Kimball, 4208-4209; 4220; Clemens, 3606-3607). These tributary reservoirs will also serve to increase materially the navigable depths in the unimproved portions of the main stream for navigation, will substantially increase the navigable depths in the upper

ends of the navigation pools created by the main-stream projects, and will substantially increase the navigable depths on the lower Mississippi River which increases will be of material benefit to navigation (Barker, 4650-4654; Watkins, 3300-3301, 3554-3555; Brodie, 4910-4912).

34. The low-dam plan recommended in House Document No. 328 as an alternative navigation project would have no flood-control value (comp. ex. 105, p. 64; Clemens, 3607). The low-dam plan in conjunction with detention reservoirs on the tributaries might together accomplish navigation improvement and flood control on the Tennessee River, but this combination would contribute nothing to flood control [fol. 588] in the Mississippi River (Kurtz, 2071), might aggravate flood conditions there (Clemens, 3617; Kimball, 4255), and would provide navigation improvement inferior to that provided by the projects of the Authority (Barker, 4666; Brodie, 4916-4919; Watkins, 3271, 3275).

35. Upon the completion of the construction of the Pickwick Landing project and the Guntersville project, these two projects, in conjunction with the already completed Wheeler Dam and the previously existing Wilson Dam, will provide a nine-foot channel from Pickwick Landing to the vicinity of Chattanooga, a distance of approximately 257 miles (Barker, 4628). The completed Norris Dam is being operated to provide a navigation channel of seven-foot minimum depth in the 207-mile stretch between Pickwick Landing and the mouth of the Tennessee River (Barker, 4628-4629, 4647). This seven-foot depth below Pickwick will be increased to seven and one-half feet upon completion of Hiwassee (Barker, 4628). These projects, together, will provide a commercially feasible navigation channel between Chattanooga, Tennessee, and the inland waterway system (Barker, 4629). For the larger part of each year there will be a through navigation channel of nine-foot depth from Chattanooga to the mouth of the river (Barker, 4629, 4800), and even prior to construction of Gilbertsville, by means of a moderate amount of dredging and releases from other projects of the Authority, it is feasible to provide a permanent nine-foot channel below Pickwick Dam (Putnam, 5888-5891,. Until the Gilbertsville project is constructed, which may not be for many years, it is necessary to store a substantial amount of water in the tributary [fol. 589] reservoirs during the high-water season to pro-

vide the low-water releases required for this improvement to navigation (Barker, 4795).

36. The increase of the low-water flow by means of the storage of water during the high-water season at Norris Dam and the release of such water during the low-water period has increased and will substantially increase the continuous water power available at Wilson Dam and will increase the value of Wilson Dam for all purposes (Wessenauer, 5467; Bowman, 5735; Thomas, 5195-5196).

37. Since completion, Norris Dam has been successfully operated to improve substantially the navigation channel of the Tennessee River between Wilson Dam and its mouth (Woodward, 4009-4011; Barker, 4649), to prevent a probable flood at Chattanooga in the year 1936, and to hold off from the peak of the Mississippi River flood of 1937 approximately 28,000 c.f.s., the Norris Dam storing the entire flow of the Clinch River for six weeks during the 1937 Mississippi flood (Woodward, 4036, 4109; Kimball, 4384; def. ex. 82).

38. The operation of Norris Dam since its completion has also increased the amount of water power available in the low-flow season at the existing Government-owned Wilson Dam (Wessenauer, 5467; Bowman, 5735; def. ex. 142, p. 3), but the operation of holding and releasing waters has been directed primarily to navigation and flood control and the protection of construction works below (Woodward, 4007; 4009-4011; Kimball, 4382-4384). The same is true of Wheeler Dam, which has been operated since its completion in 1936 to maintain a nine-foot navigation channel 74 miles to the site of the Guntersville project and to reduce flood waters and protect construction works at [fol. 590] the Pickwick project (Woodward, 4007-4008, 4017-4019, 4109-4110; Bowman, 3749, 3789-3790; def. ex. 43). Approximately 85 percent of the water released from Norris during the year 1937 was of benefit only to navigation and flood control, and was not required or useful for production of power (Karr, 5522-5523; def. ex. 142, sheet 2, col. 3, sheet 3, last column; Woodward 4075). The temporary storage and releases of water for power-peaking purposes have been at all times subordinated to the requirements of navigation and flood control, and have never been permitted to interfere with or affect the continued

maintenance of the stream flow required for navigation or the storage required for flood control (Woodward, 4095; Barker, 4649-4650; Karr, 5527). Temporary abnormal conditions, such as the necessity of operating for the protection of the Authority's construction works, have materially affected the operation of the Norris and Wheeler projects (Woodward, 4007; Kimball, 4382-4383).

39. The projects of the Authority are designed primarily for the improvement of navigation and the control of destructive flood waters (Bowman, 5689, 5701-5714; Watkins, 3305-3306, 3549). The sequence of development has been determined according to the requirements of navigation and flood control, and not for power (Bowman 3948-3951, 5718-5725; Barker, 4626-4628; Brodie, 4913).

40. The projects of the Authority which are completed and in operation have been and are operated primarily for navigation and flood control, and the responsible officers of the Authority charged with the operation of such projects are required by instructions from the board of directors to [fol. 591] operate them primarily for such purposes (Woodward, 4007; def. ex. 41, 65). These instructions have been uniformly obeyed (Woodward, 3996; Karr, 5506-5507).

Conservation of Water Power

41. The projects of the Tennessee Valley Authority are the only type of dams which will conserve the water resources of the Tennessee River system for navigation, Tennessee and Mississippi flood control, water power, and other beneficial uses (Watkins, 3298, 3299, 3550-3551; cf. Kurtz, 2111, 2131-2132, 2166-2167). The available sites on the Tennessee River system for the construction of dams and reservoirs are strictly limited in number, and those available for flood control coincide in many instances with those required for the regulation of the river for other purposes. The utilization of such sites exclusively for local flood protection would preclude the development of the water resources for any other purposes (comp. ex. 105, p. 64, par. 32; Bowman, 5691; Watkins, 3304-3305). The construction of low dams on the main stream of the Tennessee River for navigation would waste the resources of the river

for any other purpose. It would be physically impossible to provide the high dams on the main stream necessary for the development of flood control and power without the wasteful removal or duplication of such low dams (Bowman, 5693-5699).

42. The construction and operation of the projects of the Authority for navigation and flood control will provide a head for power by concentrating the fall of the river at [fol. 592] certain points on the Tennessee River system, and will substantially augment the minimum flow in low-water season (Watkins, 3299). Water power is a function of head and stream flow (Wessenauer, 5492). The amount of continuous power is determined by the available head and the minimum flow in low-water season. Continuous power is power available 24 hours a day, every day of the year, in every year (Wessenauer, 5460). When operated for the improvement of navigation and the control of destructive floods the dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority will provide, in addition to the benefits to navigation and flood control set forth in previous findings, and without reduction in the effectiveness of these projects for navigation and flood control, a large amount of continuous power (Wessenauer, 5447).

The firm power capacity, as distinguished from the continuous power, is the maximum demand which the system can reliably supply, having regard to the energy available, the generating units installed, the load factor and other characteristics of the system (Wessenauer, 5460). With the complete generating units which have already been installed or are under contract for installation at Norris, Wheeler, Guntersville, Wilson and Pickwick Landing Dams (def. ex. 140), the dams constructed or under construction by the Tennessee Valley Authority will have a firm power capacity of 395,000 kw. (def. ex. 141). Together with the additional generating units at these dams and at Hiwassee and Chickamauga Dams, which have been authorized by the Board of the Tennessee Valley Authority and for which [fol. 593] appropriations have either been made or requested (def. ex. 141), the dams constructed or under construction by the Tennessee Valley Authority will have a firm-power capacity of 570,000 kw. (def. ex. 141).

[fol. 594] Stock Ownership of Complainants

43. The National Power & Light Company, 46.56 percent of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns the following percentages of the total outstanding voting stock of the following complainants (def. ex. 135, stip. Aug. 14):

Birmingham Electric Company	100.00%
Carolina Power & Light Company	93.53%
Holston River Electric Company	100.00%
Memphis Power & Light Company	86.75%
Tennessee Public Service Company	99.31%
West Tennessee Power & Light Company	100.00%

44. The Electric Power & Light Corporation, 46.20 percent of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 94.03 percent of the voting stock of the complainant Mississippi Power & Light Company (def. ex. 135, stip. Aug. 14).

45. The American Gas & Electric Company, 17.51 percent of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 100 percent of the voting stock of the complainant Appalachian Electric Power Company, which in turn owns 100 percent of the voting stock of complainants Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company (def. ex. 135, stip. Aug. 14).

46. During the past five years the Electric Bond & Share Company has voted the following approximate percentages of the total number of shares of voting stock represented at stockholders' meetings:

National Power & Light Company	62%
Electric Power & Light Corporation	77%
American Gas & Electric Company	25%

[fol. 595] Throughout the history of these companies there has been no instance in which there has been any contest over proxies or in which any interests hostile to the managements have organized opposition to the programs or policies of the respective managements or to the election of directors voted for by proxies designated by such managements (def. ex. 135, stip. Aug. 14).

47. The Commonwealth & Southern Corporation owns 91.40 percent of the outstanding voting securities of the Alabama Power Company; 100 percent of the outstanding voting securities of the Georgia Power Company, Mississippi Power Company, and Southern Tennessee Power Company; and 64.43 percent of the outstanding securities of the Tennessee Electric Power Company (def. ex. 135, stip. Aug. 14).

48. All of the common and preferred stocks of the complainant East Tennessee Light & Power Company are owned by the Cities Service Power & Light Company. All of the common stock of the complainant Tennessee Eastern Electric Company is owned by the East Tennessee Light & Power Company (Ide, 518).

Business of Complainants

49. All of the complainants are engaged in the business of generating, transmitting, distributing, and selling electricity as public utility companies, except that the Birmingham Electric Company (Pevear, 314), the Tennessee Public Service Company (Lamar, 294), the Holston River Electric Company (Cannaday, 306), the Franklin Power & Light Company (Howard, 281), the Mississippi Power Company (Sweatt, 264; Barry 576), and the Mississippi Power & Light Company (Sargent, 666), purchase prac- [fol. 596] tically all of their electrical requirements, and except that the Southern Tennessee Power Company neither generates nor sells power but is engaged exclusively in the business of transmitting electric energy (Nelson, 532).

Franchise Situation, Properties in Ceded Area, Indirect Competition, January 4 Contract, Misjoinder, and Damage

50. The respective complainants have been issued franchises, licenses, or easements by most but not all of the municipalities and by most but not all of the counties in which they operate electric facilities. Said franchises, licenses, or easements vary in original term and in unexpired term from a few months to more than fifty years, and many are unlimited in term. Most of the said franchises, licenses, or easements purport to be nonexclusive. Most of said franchises, licenses, or easements grant rights not limited

within the respective municipalities or counties, but some are limited to particular streets or highways or to portions of the respective counties or municipalities. Some of the franchises, licenses, or easements purport to grant the right to construct and operate electrical facilities in the streets and highways; some of said franchises, licenses, or easements purport to grant, for the purpose of conducting an electric business, the right to construct and operate electrical facilities in the streets and highways; some of the said franchises, licenses, or easements purport to grant both the right to construct and operate electrical facilities [fol. 597] in the streets and highways and the right to conduct an electrical business within the respective municipalities and counties. The validity of some of the municipal franchises, licenses, or easements claimed by complainants is now being contested in the State courts by the respective municipalities concerned (comp. ex. 3).

51. The complainant Mississippi Power Company owns no franchises or electrical facilities in 10 counties in northeastern Mississippi. The properties in those counties were sold to the Tennessee Valley Authority under the contract of January 4, 1934, and the area is the ceded area referred to in that contract (Sweatt, 261; def. ex. 143-A).

52. The complainant Alabama Power Company does not own any electrical facilities in 6 counties in northwestern Alabama except 9 municipal distribution systems and a high-tension 110-kv. line which crosses the territory (Barry, 584; comp. ex. 326). Under the contract of January 4, 1934, the complainant Alabama Power Company transferred to the Authority all the high-voltage transmission lines leading from Wilson Dam to the municipalities in the area, with the exception of a single line leading to Decatur, the substations, and all rural lines in the area (Barry, 584).

53. Section 5 in the contract of January 4, 1934, provides that:

Alabama Company covenants and agrees to convey its urban distribution systems in the above named counties in Alabama, said distribution systems being listed in Exhibit B, to the respective municipalities in or adjacent to which such systems are located, together with all franchises, contract rights, and going business thereto appertaining, when

it has agreed with any such municipality on the price to be paid for the same. Alabama Company agrees to make every reasonable effort to come to an early agreement with said municipalities for such sales. In the event that any such municipality is unable to arrive at a satisfactory price [fol. 598] after three months of bona fide negotiation with Alabama Company, or if for some other reason the sale of any such system cannot be consummated, Authority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Alabama Company (def. ex. 143-A).

54. A part of section 4 further provides with reference to the Alabama properties that:

Any conveyance of property shall include not only the physical property, easements and rights-of-way, but shall also include all machinery, equipment, tools and working supplies set forth in the respective exhibits, and all franchises, contracts and going business relating to the use of any of said properties, without extra charge (def. ex. 143-A).

55. With a few minor exceptions (a few small industrial customers in the so-called ceded area in Alabama and approximately 3,000 employees on Government reservations and rural customers in the vicinity of Norris Dam and Wilson Dam), all of the Authority's sales are either at wholesale to municipalities, rural cooperatives, and utilities, or to very large industrial customers purchasing both firm and secondary power in large bulk lots for operations not previously served by any of the complainants (def. exs. 143, 147; Karr, 5539).

56. During the period of the contract of January 4, the Authority sold power under the first proviso of section 7 of the contract to the following municipalities (Karr, 5143; def. ex. 143-A):

Dayton, Tennessee.
Dickson, Tennessee.
Pulaski, Tennessee.
Amory, Mississippi.
Okolona, Mississippi.

57. Under the third proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold [fol. 599] electricity in substantial amounts to the Meigs County Electric Membership Corporation, the Monroe County Electric Power Association, and a number of rural customers served directly by the Authority in Roane County, Tennessee, near Norris Dam (Karr, 5544; def. ex. 143-A).

58. Under the last proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold electricity in substantial amounts to Cullman County Electric Membership Corporation, Duck River Electric Membership Corporation, Middle Tennessee Electric Membership Corporation, North Georgia Electric Membership Corporation, Pickwick Electric Membership Corporation, and in Lincoln County, Tennessee. The total load of these customers during the period of the contract was within the 2,500 kw. maximum amount stipulated in the said proviso (Karr, 5546; def. ex. 143-A).

59. Under the interchange proviso of the contract of January 4, the Alabama Power Company supplied power to the Authority for the construction of Guntersville Dam, and The Tennessee Electric Power Company supplied power to the Authority for the construction of Norris and Chickamauga Dam- (Karr, 5631-5632).

60. The Tennessee Valley Authority is not now constructing and has not authorized the construction of any transmission line, has not sold or authorized the sale of any electricity, and has not entered into or authorized any contracts for the sale of electricity in any part of the territory claimed by the complainants Franklin Power & Light Company (Howard, 285), the Appalachian Electric Power Company (Argabrite, 420-421), the Carolina Power & Light [fol. 600] Company (Yoder, 377), the Holston River Electric Company (Cannaday, 310), the Kingsport Utilities, Inc. (Argabrite, 420-421), the Kentucky & West Virginia Power Company (Argabrite, 420-421), the Tennessee Eastern Electric Company (Ide, 518), the Birmingham Electric Company (def. exs. 137, 143), the East Tennessee Power & Light Company (Ide, 518), and the Mississippi Power & Light Company, except that it has constructed a transmission line at the expense of the War Department connecting

the Authority's lines to the site of Sardis Dam in the claimed territory of the Mississippi Power & Light Company (Sargent, 665; def. exs. 137, 143).

61. The complainant Southern Tennessee Power Company is engaged only as a transmission company transmitting electric energy from Wilson Dam to the Alabama-Tennessee line, thereby connecting Wilson Dam and the transmission system of The Tennessee Electric Power Company. It is not presently engaged either in the generation or distribution and sale of electric energy (Nelson, 532).

Power Customers and Power Contracts of the Authority

62. The Authority, as of December 15, 1937, had contracts to sell power to 9 municipalities located in the ceded area covered by the contract of January 4 with the complainants Alabama Power Company and Mississippi Power Company. Seven of these municipalities are located in the ceded area in Alabama (def. ex. 143; Karr, 5531).

[fol. 601] 63. As of December 15, 1937, the Authority had contracts for the sale of power with 7 rural cooperative corporations and 8 industrial customers located in the ceded area covered by the contract of January 4 with complainants Alabama Power Company and Mississippi Power Company (def. ex. 143; Karr, 5531).

64. The Authority has a contract to sell and is delivering power in bulk lots to the complainant Alabama Power Company on the low side of several substations acquired by the Authority under the January 4 contract, by means of transmission lines also acquired by the Authority under the contract, for service to several urban distribution systems of the company in the area covered by the contract (Barry, 580-581).

65. In addition to the contracts for the sale of power in the ceded area as of December 15, 1937, the Authority had contracts to sell power to 17 municipalities, 12 cooperatives, 3 industrial customers, and 1 utility company, and the requirements of the War Department for the construction of Sardis Dam (def. ex. 143; Karr, 5531).

66. The contracts with municipalities and cooperatives provide for the wholesale delivery of power in bulk lots at a

substation at the city gates in the case of municipalities and at a substation or metering point near the location of their respective operations in the case of co-operatives, the substations and metering equipment to be owned by the Authority. (See def. exh. 143, 144; Karr, 5534; comp. exs. 119-134, 135, 196, 224; sections of contracts entitled "Point of Delivery." Contracts are reprinted in comp. ex. 118 and def. ex. 154).

[fol. 602] 67. The contracts with municipalities and co-operatives provide that all lines and substations from the point of delivery and all electrical equipment except the metering equipment of the Authority located on the municipality's or cooperative's side of such point of delivery shall be furnished and maintained by the municipality or cooperative. (See def. ex. 144; comp. exs. 119-134, 135-145, 196, 224; section in "Terms and Conditions of Contracts" usually entitled "Corporation's Lines and Equipment—Ownership," as on pp. 144, 162, 176, 188, 207, 219, 235, 247, 259 in def. ex. 154).

68. The municipalities purchasing power at wholesale from the Authority own and operate their own distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with municipalities not yet purchasing power contemplate the same type of operations (def. exs. 144, 147; comp. exs. 119-134).

69. The cooperatives purchasing power at wholesale from the Authority own and operate their own rural distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with cooperatives not yet purchasing power contemplate the same type of operation (def. exs. 144, 147; comp. exs. 135-145).

70. All of the Authority's contracts with said municipalities and cooperatives provide for the delivery of power at a voltage of from 2,300 volts upwards. Voltages of this magnitude are not suitable for delivery to the ultimate consumer, except for a few industrial consumers, and the municipality or cooperative which serves these consumers [fol. 603] directly steps down this voltage one or more times after receiving it from the Authority at the point of

delivery before actual delivery to the customer at the usual customer voltages of 115 and 230 volts (def. ex. 144; comp. exs. 119-134, 135-145; Moreland, 2979-2980).

71. All of the Authority's contracts with municipalities and cooperatives for the sale of power provide an arrangement whereby the Authority performs the function of a wholesaler generating and transmitting the power in bulk lots to the purchasing municipality and cooperative, which in turn sells the power to the ultimate consumers, performing all the functions of the distributor. (See def. ex. 144; comp. exs. 119-134, 135-145, 196, 224; for convenience see reprints of contracts in comp. ex. 118 and def. ex. 154).

72. The contracts with municipalities and cooperatives provide only for the sale of firm power (comp. exs. 119-134, 135-144; def. ex. 144).

73. Municipalities and cooperatives under contract to purchase and purchasing power from the Authority assume responsibility for the power at the point of delivery and sell and distribute the power from that point over their own facilities and with their own operating staffs, without any assistance or direction from the Authority (Karr, 5636-5637; Hutchinson, supp. A, 102; Pittman, supp. A, 268-269; all power contracts reprinted in comp. ex. 118 and def. ex. 154). The only assistance rendered by the Authority has been in time of emergency and in such case the Authority has been paid its full cost, including its usual overhead (Karr, 5636-5637, 5665).

[fol. 604] 74. The cooperatives to whom the Authority is under contract to sell power have certificates of incorporation from the authorized officials of the respective States in which they operate showing them to be organized under special acts of the several States in which they operate. These charters show that the corporations are organized by citizens of the respective localities in which the operations of the corporations shall be conducted who were desirous of procuring electric service, and the charter sets out the form of organization, location of the principal office, terms of membership, purposes, powers, and the names of the board of directors for the first year. (See comp. exs. 267-268 for typical Alabama charters; comp. ex. 688 for typical Tennessee charter; 3184-3185).

75. These organizations were brought about upon the initiative of the residents of the various communities who were desirous of procuring electric service, without any solicitation on the part of the Authority or any of its representatives (Cowley, supp. A, 56-57, 59; Hutchinson; supp. A, 103-107; Pittman, supp. A, 255-260).

76. Upon the request of the citizens of the rural areas in which the respective cooperatives are located, the Authority has given advice and assistance to such cooperatives on problems of organization and has given technical advice on methods of conducting surveys and determining the financial feasibility of proposed operations (Hutchinson, supp. A, 110; Pittman, supp. A, 263-264).

77. The Authority, in advising on the financial feasibility of proposed lines, has not substituted its judgment for that of the respective cooperatives. The cooperatives have made [fol. 605] all decisions on line extensions, customers to be served, and all other matters relating to the conduct of their operations (Hutchinson, supp. A, 110; Carmack, supp. A, 114; Pittman, supp. A, 260-262, 269).

78. All contracts between the Authority and the several cooperatives relating either to the construction of lines or to the sale of power have been submitted to and approved by counsel for the respective cooperatives and then considered and finally approved by the board of directors of the respective cooperatives (Carmack, supp. A, 11-12; Pittman, supp. A, 269).

79. While the Authority has in a few instances temporarily operated directly the lines of certain cooperatives under agreements with such cooperatives providing for such operation by the Authority, all of such operating agreements had expired by December 15, 1937, and all lines constructed for cooperatives had been transferred to such cooperatives (Karr, 5540; def. ex. 143, showing dates of power contracts and initial purchases.

80. Upon the transfer of any lines constructed by the Authority for cooperatives or temporarily operated by the Authority for such cooperatives, the Authority has withdrawn completely from any participation in the conduct of the affairs of such cooperatives, except as it has continued

to supply power at wholesale and except as to the enforcement of its rights as a contractor of such of the cooperatives whose lines were financed in whole or in part by the Authority (Hutchinson, supp. A, 102, 110-111; Carmack, supp. A, 14).

81. The power contracts with industrial customers provide in some cases for the delivery of power on the low- [fol. 606] tension side of a substation, to be owned by the Authority, and in other cases on the high-tension side of a substation, to be owned by the industrial customer. In the case of the Electro Metallurgical Company the contract provides that delivery shall be made at the boundary of the Wilson Dam reservation at a high transmission voltage. All the contracts are for sales in bulk lots for use in various industrial processes. (See comp. exs. 55-56, 59-61, 117-118, 146-153; def. ex. 146; for convenience see contracts as reprinted in comp. ex. 118 and def. ex. 154).

82. These industrial contracts provide for the delivery of power at voltages comparable to or higher than the voltages at which delivery is made to municipalities or cooperatives (comp. exs. 55-56, 59-61, 117-118, 146-153; def. exs. 143-146). (For references regarding the voltage for delivery to municipalities and cooperatives see comp. exs. 119-134, 135-145, and particularly the sections in those contracts entitled "Power Supply".) These delivery voltages range as high as 154,000 volts, which is specified for the delivery to the Aluminum Company of America (contract with Aluminum Company of America, cf. def. ex. 154, p. 150; sec. 2 of the contract states the delivery voltage).

83. Except for the industrial customers located in the ceded area covered by the contract of January 4, all of the industrial customers with whom the Authority is under contract to sell power are large electro-chemical and electro-metallurgical companies (contract with Victor Chemical Works, def. ex. 154, which is the annual report of the Tennessee Valley Authority for 1937, and particularly the second "Whereas" clause on p. 303 of that exhibit, and sec. [fol. 607] 11, p. 306; and contract with Monsanto Chemical Co.; see comp. ex. 118, pp. 195-204; Karr, 5562). The Electro Metallurgical Company, which is locating a new plant in the ceded area, is also of this type (contract with

Electro Metallurgical Co., def. ex. 154, which is the annual report of the Tennessee Valley Authority for 1937, p. 315, and see particularly third "Whereas" clause and sec. 11).

84. All of said industrial customers outside the ceded area and the Electro Metallurgical Company constitute new loads in the territory. The loads contracted for have not been previously served by any of the complainant companies (def. ex. 143; 5532, 5535). Under the contracts with the Victor Chemical Works, the Monsanto Chemical Company, and the Electro Metallurgical Company (in the ceded area) these companies undertake to construct new plants and purchase power from the Authority for service to these plants (see contract with Victor Chemical Works, def. ex. 154, p. 302, and particularly sec. 1; see contract with Electro Metallurgical Co., def. ex. 154, p. 315, and particularly sec. 1; and see contract with Monsanto Chemical Co., comp. ex. 118, p. 195, and particularly sec. 1; these exhibits are annual reports of the Authority). The contract with the Aluminum Company of America shows that that company was about to enlarge its facilities and needed additional power to supplement its own generation (see contract in def. ex. 154, p. 309, and particularly the first "Whereas" clause).

85. Complainant companies do not maintain excess capacity and facilities for service to loads of such large and unusual size as that of these electro-chemical and electro-metallurgical customers of the Authority, but constructed facilities for service to these companies as needed (Miller, [fol. 608] 1727).

86. All of said large industrial customers have contracted to purchase large amounts of secondary power as well as firm power (see contracts with Victor Chemical Works and Aluminum Co., def. ex. 154, pp. 302, 309; contract with Monsanto Chemical Co., comp. ex. 118, p. 195; contract with Electro Metallurgical Co., def. ex. 154, pp. 315, 316).

87. Secondary power is that class of power the delivery of which the seller may interrupt during periods which are variously specified in the contract of sale (Moreland, 2849). All of the industrial customers outside of the ceded area have contracted to purchase large amounts of this secondary power which the Authority may, under the contracts, suspend delivery for specified periods of time, such as in event

of low-water flow (Monsanto Chemical Co., comp. ex. 118, p. 196, sec. 4; Aluminum Co., def. ex. 154, p. 309, sec. 2; Victor Chemical Works, def. ex. 154, pp. 302, 304, sec. 5(d); Electro Metallurgical Co., def. ex. 154, pp. 315, 316, sec. 4; Karr, 5561-5562). These sales of secondary power materially increase the Authority's sales of energy during the period that such power is available (Karr, 5564, 5581). These sales of secondary power to large industrial customers will increase the load factor of the Authority's operations during these periods when the power is delivered (Karr, 5581).

88. It is not feasible to sell this secondary power to such large industrial customers through a retailer or an intermediary (Karr, 5562-5563).

[fol. 609] 89. These large manufacturing plants and utility companies, such as the Arkansas Power & Light Company, with whom the Authority also has a contract providing for the sale of secondary power, are the type of customers whose operations are adapted to the use of that type of power (Karr, 5563-5564; Moreland, 2849-2850; def. ex. 154, p. 37).

90. The following contracts provide for the sale of both firm and secondary power for the period of years noted:

(a) Contract between Tennessee Valley Authority and Monsanto Chemical Company, dated May 15, 1936, for 20 years (comp. ex. 118).

(b) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 17, 1936 (comp. ex. 152), as amended by agreement of July 20, 1937, for 10 years (def. ex. 146).

(c) Contract between Tennessee Valley Authority and Arkansas Power & Light Company, dated June 16, 1937, for 5 years, but continuing in effect until cancelled by either party on 30 months' notice (def. ex. 145).

(d) Contract between Tennessee Valley Authority and Victor Chemical Works, dated July 2, 1937, for 20 years (comp. ex. 160).

(e) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 20, 1937, for 20 years, but cancellable by either party at the end of 10 years on 5 years' notice (comp. ex. 151).

(f) Contract between Tennessee Valley Authority and Electro Metallurgical Company, dated August 1, 1937, for 20 years (comp. ex. 161).

91. The maximum amounts of secondary power which the Authority has contracted to sell are as follows:

Monsanto Chemical Company ..... 32,500 kw.
Aluminum Co. of America (July 17, 1936) ..... 40,000 kw.
[fol. 610] Arkansas P. & L. Co. ..... 5,000 to 20,000kw.
(prior to 6-30-38 ..... 10,000 kw.
year ending 6-30-39 ..... 15,000 kw.
year ending 6-30-40 ..... 20,000 kw.
year ending 6-30-41 ..... 15,000 kw.
year ending 6-30-42 ..... 10,000 kw.
thereafter ..... 5,000 kw.)
Victor Chemical Works ..... 16,000 kw.
Aluminum Co. of America (July 20, 1937) ..... 30,000 kw.
Electro Metallurgical Co. ..... 16,000 kw.

(All contracts are reprinted in comp. ex. 118 and def. ex. 154.)

92. The periods in which the Authority is obligated to supply such secondary power and the required notices before interrupting and resuming secondary power deliveries are as follows for the respective contracts above-mentioned:

Contract	Period Authority obligated to supply secondary power	Notice required before interruption of delivery	Notice required before resumption of delivery
Monsanto Chemical Co.	300 days annually	14 days	14 days
Aluminum Co. of America (July 17, 1936)	Not less than 90 days when and if available in judgment of Authority	15 days	15 days
Arkansas P. & L. Co.			
Prior to 7-1-42	300 days annually	15 days	7 days
Beginning 7-1-42	75% of the time	5 days	"Reasonable" time
Victor Chemical Works	9 months annually	14 days	7 days
Aluminum Co. of America (July 20, 1937)	75% of the time in ten years	21 days	7 days
Electro Met. Co.	9 months	14 days	7 days

(Contracts are reprinted in comp. ex. 118 and def. ex. 154.)

93. All of the Authority's contracts contain a force majeure clause which relieves the Authority of any obligation to supply power when prevented by injunctions, strike, riot, invasion, fire, accident, breakdown, act of God, or any other causes beyond the Authority's control. In addition, the force majeure clause in each of the contracts with the

[fol. 611] 4 large industrial contractors and the Arkansas Power & Light Company, except the force majeure clauses in the contract with the Aluminum Company dated July 17, 1936, as amended, and in the contract with the Monsanto Chemical Company, relieves the Authority of obligation to supply power when service is interrupted or suspended by reason of floods or backwater caused by floods. The force majeure clauses apply to both firm and secondary power (Contracts are reprinted in comp. ex. 118 and def. ex. 154).

94. The Authority's contracts with the Aluminum Company and the Arkansas Power & Light Company provide that if an emergency or breakdown should occur on the system of either contracting party, the other party shall stand by and supply the power needed in the emergency to the full extent its facilities enable it to do so (def. ex. 146; comp. ex. 151).

95. All contracts between the Authority and municipalities or cooperatives are for a period of 20 years from the respective dates of execution thereof, except that the contracts with the cities of Florence, Sheffield, and Tuscumbia, Alabama, all of which purchase power at the Wilson Dam reservation, are for a period of 30 years from the respective dates of execution thereof (comp. exs. 119-134, 15-145; contracts reprinted in comp. ex. 118 and def. ex. 154).

96. Substantially all power contracts contain the following provision immediately after the recitals:

Now Therefore, subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto agree as follows [contracts reprinted in comp. ex. 118 and def. ex. 154].

[fol. 612] 97. The following provision:

• • • should [the contracting municipality or cooperative] desire to increase its purchases in excess of — kilowatts, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so.

is contained in each of the contracts specified below, with the number after the name of each purchaser indicating the number of kw. entered in the blank in the clause above.

Municipality or cooperative	Complainants' Exhibit No.
North Georgia Electric Membership Corporation (300)	118
Pickwick Electric Membership Corporation (300)	139
Pontotoc County Electric Membership Corporation (1,000)	118
Joe Wheeler Electric Membership Corporation (1,000)	142
Gibson County Electric Membership Corporation (300)	137
Duck River Electric Membership Corporation (300)	140
Cullman County Electric Membership Corporation (300)	136
Middle Tennessee Electric Membership Corporation (300)	138
City of Jackson, Tennessee (480)	133
City of Tuscumbia, Alabama (3,000)	124
City of Trenton, Tennessee (1,500)	132
City of Sheffield, Alabama (4,500)	118
City of Florence, Alabama (7,500)	123
Northeast Mississippi Electric Membership Corporation (750)	144
Tippah County Electric Membership Corporation (750)	224
City of Amory, Mississippi (6,000)	119
City of Middlesboro, Kentucky (8,000)	130
City of Knoxville, Tennessee (35,000)	125
City of Guntersville, Alabama (3,000)	128

The maximum amount of power each industrial or utility customer may purchase from the Authority is definitely specified in the contract with such customer.

[fol. 613] Power Facilities Used or to be Used in Meeting These Contracts

98. The transfer of the Muscle Shoals properties from the War Department to the Tennessee Valley Authority after the passage of the Tennessee Valley Authority Act included the Wilson Dam and power plant with eight generators having a total installed capacity of 184,000 kw. and the Sheffield steam plant with an installed capacity of

60,000 kw. (comp. ex. 113, p. 24), also 7.8 miles of high-voltage transmission lines leading from Wilson Dam to various points on the Government reservation, including Nitrate Plant No. 2 (def. ex. 136, sheet 4).

99. A single generator at Norris Dam, constructed by the Authority, was put in operation on July 28, 1936; a second generator was put in operation on September 30, 1936. Each of these generators are of 50,000 kw. capacity. A single generating unit at the Wheeler project, constructed by the Authority, was put in operation on November 9, 1936; a second unit was put in operation on April 14, 1937. Each of these units are of 32,000 kw. capacity (def. ex. 149).

100. The failure to generate and sell power available at the Wilson, Norris, and Wheeler Dams, not needed for governmental uses, would result in its complete waste. Substantial amounts of such power have been wasted because of lack of markets in every year since the construction of Wilson Dam (def. ex. 149).

101. Pursuant to the contract of January 4, with the complainants Alabama Power Company and Mississippi Power [fol. 614] Company, the Tennessee Valley Authority purchased certain transmission lines extending from Wilson Dam to the nearby area in northwest Alabama and northeast Mississippi (def. ex. 143-A). The lines, which included auxiliary electrical properties such as substations and rural lines in the area, were located in ten counties in Mississippi and six counties in Alabama (def. ex. 143-A). These sixteen counties are hereinafter referred to as the "ceded area" covered by the contract of January 4. At the time of the transfer of the properties there were approximately 14,200 electric customers in the ceded area (Sweatt, 262; Barry, 612). These customers and all additional customers in the area are now being served by municipalities, cooperatives, and the Alabama Power Company, to whom the Authority sells and delivers power at wholesale for resale in the area (def. ex. 143; Barry, 580-581); except for a few industrial customers and the rural customers, relatively small in number, in the vicinity of Wilson Dam being served by the Authority.

102. The properties in Alabama purchased from the Alabama Power Company, a complainant in this case, included 128 miles of high-voltage transmission lines (def.

ex. 136, stip. 16), 24 substations located along these lines (def. ex. 136, stip. 16), and 203 miles of rural lines. All of the municipal distribution systems belonging to the Alabama Power Company in these 6 counties, some 12 in number, were served from these transmission lines (def. ex. 143-A, sheet 6 of ex. B; Henkle, 1482-1483). They were retained by the Alabama Power Company. Approximately 1000 rural customers were served from the rural lines at the time of transfer (Henkle, 1480; Barry, 587). The in-
[fol. 615] dustrial customers being served from these properties at the time of transfer were 48 in number, with a load of approximately 5000 kilowatts (Henkle, 1480).

103. The properties located in Mississippi were purchased from the Mississippi Power Company, a complainant in this case, and consisted of 87.3 miles of high-voltage transmission lines (def. ex. 136, stip. 16), 7 substations (def. ex. 136, stip. 16), and 167 miles of rural lines (Sweatt, 257; comp. ex. 15). Certain municipal distribution systems and steam and oil-generating plants were included in the purchase from the Mississippi Power Company (def. ex. 143-A). Subsequent to the conveyance of the municipal distribution systems to the Authority in May 1934, these distribution systems were sold to municipalities or cooperative organizations of citizens and farmers formed under the laws of Mississippi (def. ex. 143; Karr, 5538-5539; comp. ex. 117, p. 27; see contracts for power purchase with the following rural associations: Prentiss, Tombigbee, Pontotoc, Tishomingo, and Alcorn Counties, all reprinted in comp. exs. 117 and 118, reciting that certain distribution properties in Mississippi were transferred).

104. All of the properties purchased from the Mississippi Power Company were actually transferred to the Authority on approximately June 1, 1934 (comp. ex. 113, p. 25). All of the properties purchased from the Alabama Power Company were transferred to the Authority in May 1936 (Karr, 5663).

105. The only transmission lines other than those pur-
[fol. 616] chased or constructed by the Tennessee Valley Authority connected with any dam of the Authority are owned by the Alabama Power Company, The Tennessee Electric Power Company, and the Southern Tennessee Power Company, all subsidiaries of the Commonwealth and Southern Corporation (Hapgood, 5313; Miller, 1713-1715).

Subsidiaries of the Commonwealth and Southern Corporation and companies affiliated with the Electric Bond & Share Company own substantially all of the transmission lines and serve substantially all of the existing load centers in the area within a radius of 100 miles from each of the dams now under construction or completed (def. ex. 138; Miller, 1713-1715).

106. Unless the Authority built transmission lines leading from Wilson Dam and the dams it has constructed or has under construction it could sell power only to utility companies, except for industrial customers that might locate at the dams and such municipalities and cooperatives as are located in the immediate neighborhood of the projects. Such sales to customers other than utility companies would be very limited (Thomas, 5180-5182, 5197; Miller, 1723).

107. The Authority has constructed 407.6 miles of high-voltage transmission lines interconnecting the power plants at Wilson Dam and the other dams constructed or under construction (def. ex. 136, stip. 16).

108. Such plant tie-lines can be used to transfer power from one project to another and increase the availability and amount of power at Wilson Dam and on the resulting hydroelectric system (Hapgood, 5319, 5395; Miller 1680-1681).

109. The most economical use of the Authority's dams [fol. 617] for power supply requires interconnecting transmission lines similar to those constructed, under construction, or authorized for construction by the Authority (Hapgood, 5319-5320; Miller, 1680-1681, 1729-1730).

110. Unless these lines had been constructed, the Authority would have been forced to rely for the interconnection of its various projects upon lines belonging to companies in the Commonwealth and Southern system, more particularly the lines of the Alabama Power Company and the Tennessee Electric Power Company. These existing lines of the complainant power companies were inadequate to perform these functions, and there was no existing line connecting Wilson Dam with Pickwick Landing Dam (Hapgood, 5319-5320).

111. In addition to the plant tie-lines and the 216 miles of high-tension lines purchased under the contract of January

4, the Authority has constructed 611.6 miles of transmission lines of a voltage of 22 kw. or over; it was constructing on October 15, 1937, an additional 79.1 miles of such lines; and on that date it had authorized for construction an additional 176.9 miles of such lines (def. ex. 136, stip. 16).

112. These miles of high-voltage transmission lines constructed, under construction, and authorized by the Authority do not constitute duplication of existing transmission facilities in the area, but are useful and valuable additions to those facilities (Hapgood, 5326).

113. In addition to the 31 substations purchased under the contract of January 4 from the complainants, the Authority is constructing, has constructed, or has authorized the construction of some 33 substations along or at the end of the transmission lines it has purchased or con- [fol. 618] structed, and has constructed or is constructing five additional substations at the dams (def. ex. 136, stip. 16). The substations at the dams are used in stepping up the current generated to higher voltages for transmission, and those along the lines are used in stepping the voltages down for delivery to the Authority's wholesale customers (Moreland, 2978-2979).

114. The transmission lines substantially as constructed by the Authority are essential for service to the customers of the Authority now being served or under contract (Miller, 1716-1727; Hapgood, 5323-5324, 5405-5406). Such lines were constructed for service to the customers under contract and not for any strategic purpose of injuring or threatening the complainants (Hapgood, 5323-5324, 5405, 5406).

115. As of October 15, 1937, the Authority owned approximately 421 miles of rural lines, in the vicinity of Wilson Dam or Norris Dam (def. ex. 136, particularly ex. E). It also owned 107 miles of such lines in Lincoln County which, on December 11, 1937, it contracted to sell and transferred to the Lincoln County Electric Membership Corporation (Karr, 5539, 5540; def. ex. 144). Of the 421 miles still retained, 353 miles were constructed by the Authority, and of the 353 miles so constructed, 254 miles were located within the so-called ceded area in Alabama (def. ex. 136, particularly "TVA Direct Operations" under ex. E). The remaining 68 miles owned by the Authority were either pur-

chased from the complainant Alabama Power Company under the contract of January 4 or were purchased from [fol. 619] the complainant The Tennessee Electric Power Company (def. ex. 136, particularly ex. E).

116. In addition to the rural lines which the Authority has purchased or constructed and still retains, it has constructed 1,023 additional miles of such lines and sold them to municipalities or rural cooperatives with whom it was under contract to sell electric energy at wholesale; it constructed an additional 1,343 miles of such lines under construction contracts with municipalities or cooperatives having power-purchase contracts (def. ex. 136, stip. 16).

117. The rural lines constructed by the Authority and sold to the cooperatives were constructed with the Authority's own funds and sold to the respective cooperatives at the actual cost of such lines to the Authority plus its regular overhead charges, under an agreement secured by mortgage or other instrument of security for the repayment to the Authority of the indebtedness out of the proceeds of the electric business of the cooperative (comp. ex. 181; and, for example, see sec. 5 on p. 241 of comp. ex. 118).

118. The remaining rural lines constructed by the Authority for the cooperatives were constructed by the Authority under construction contracts between the Authority and cooperatives under the terms of which the Authority has been repaid its actual construction cost, including the usual overhead (comp. exs. 162-175; for example, see sec. 3 of comp. exs. 163, 167, 169).

119. Some of the respective cooperatives and municipalities purchasing power from the Authority have constructed [fol. 620] many miles of rural line either by contract with an independent contractor or with their own crews without any aid or assistance, financial or otherwise, from the Authority or any other federal agency (def. ex. 136, stip. 16, and particularly column 5 of ex. E).

120. The high-tension transmission lines constructed by the Authority are similar in character and function to the lines purchased by the Authority under the contract of January 4. The substations constructed by the Authority are similar in character and function to the substations purchased by the Authority under the contract of January 4.

The rural lines constructed by the Authority and retained in ownership or sold are similar in function and character to the rural lines acquired by the Authority under the contract of January 4 (def. exs. 136, 136-A, 136-B, 137; stip. 16).

121. The Authority does not own or operate any municipal or urban distribution systems (Karr, 5539; def. ex. 154, p. 19).

Power Sales, Present and Potential

122. During the period from May 18, 1933, to January 1934 and of the contract of January 4, approximately 75 percent of the electricity sold by the Authority was sold to complainant power companies, subsidiaries of the Commonwealth & Southern Corporation, including the complainant Alabama Power Company, complainant Mississippi Power Company, complainant The Tennessee Electric Power Company, and noncomplainant Georgia Power Company. The total of the power so disposed of to these utility companies [fol. 621] since the passage of the Tennessee Valley Authority Act has amounted to 1,216,451,142 kwh. (def. ex. 147). The systems of all of the Commonwealth and Southern companies are interconnected into a single integrated system, and power delivered to one of these companies is merged in the common pool and becomes a joint source of supply (Middlemiss, 2237, 2285).

123. The power sold in the year 1937 was obtained exclusively from the hydroelectric generating facilities of the Authority, either directly or through interchange arrangements with the Commonwealth and Southern companies and the Aluminum Company of America (def. ex. 147, sheets 15-17). The steam plant at Muscle Shoals is not in operation (Karr, 5660).

124. In the calendar year 1937, the Tennessee Valley Authority sold substantial quantities of power to 17 municipalities owning and operating their own municipal distribution systems, 15 rural cooperatives owning and operating their own rural lines, 8 industrial customers, and 2 private utility companies (def. ex. 147, sheets 6-8; for sales to the 2 utility companies, see comp. ex. 375, Rankin, 2427; for date of initial purchase by Arkansas Power & Light Co., see def. ex. 143, sheet 2; for sales to Alabama Power Co. in

1937, see Barry, 580-581). In addition, the Authority sold substantial quantities of power to the Commonwealth and Southern companies in January and February under an extension of the contract of January 4 (def. ex. 147, sheet 7).

125. In addition to these sales under outstanding power contracts, the Authority sold electric energy to residents on 6 Government reservations and to rural residents residing in the vicinity of Wilson and Norris Dams and Lincoln [fol. 622] County, Tennessee (def. ex. 147, sheet 6). On December 11, 1937, the Authority contracted to sell the rural lines in Lincoln County, Tennessee, and the Lincoln County Electric Membership Corporation contracted to buy said lines, and since that date these lines have been operated by the Lincoln County corporation (Karr, 5538-5540; def. ex. 144).

126. As of October 31, 1937, the total of all residents served by the Authority on Government reservations and in the surrounding areas, exclusive of Lincoln County, was 3,228 (def. ex. 147). All of the Authority's remaining sales of electricity for public use were made at wholesale to municipalities and rural cooperatives (def. ex. 147, sheets 6-8). The number of ultimate consumers so served as of October 31, 1937, by said municipalities and cooperatives was approximately 31,900 (def. ex. 147, sheets 7-8).

127. The direct sales to temporary rural customers and employees on Government reservations have been less than 4 percent of the total kw. sa[illegible] each year of the Authority's operations (def. ex. 147).

128. In addition to these sales in 1937, power generated by the Authority has been used in the construction of Chickamauga, Guntersville, Hiwassee, Norris, Pickwick, and Wheeler Dams, for service to the fertilizer works at Muscle Shoals, and for the operation of the navigation locks at the Authority's dams on the main stream of the Tennessee River (def. ex. 147, sheet 6).

129. As of December 15, 1937, of the total number of 18 municipalities receiving wholesale service from the Authority, only 6 previously received service of any kind from any of the complainant companies. Of these, 5 were located in the ceded area covered by the contract of Janu-

[fol. 623] ary 4, 1934. The residents of the city of Jackson, Tennessee, outside the ceded area, were served directly by the complainant West Tennessee Power & Light Company and some of them have stopped taking service from the complainant company and are buying from the city (Winkler, 1410).

130. All of the municipalities purchasing power from the Authority in 1937 owned and operated their own municipal distribution systems for a long time before the passage of the Tennessee Valley Authority Act, with the exception of Florence, Sheffield, and Tuscumbia, Alabama, and the city of Jackson, Tennessee (def. ex. 143, sheet 1). The cities of Florence, Sheffield, and Tuscumbia, Alabama, are located in the ceded area covered by the contract of January 4, and their boundaries adjoin the Wilson Dam reservation (def. ex. 143-A). The residents of these municipalities were previously served by the Alabama Power Company, which was operating distribution systems in those cities without franchises long before the Authority contracted with the municipalities (Hood, 536, 538; def. ex. 143).

131. Except for the cities of Athens, Alabama, Dayton, Tennessee, and Tupelo, Mississippi, all of the municipalities purchasing power at wholesale in 1937 which owned and operated their own distribution systems prior to purchasing from the Authority also owned a generating plant which was used to supply power for such systems (def. ex. 143, sheet 1). The cities of Athens, Alabama, and Tupelo, Mississippi, both located in the ceded area covered by the contract of January 4, purchased their power at wholesale from the Alabama Power Company and the Mississippi Power Company, respectively, while Dayton, Tennessee, purchased its power supply from a local lumber mill (def. ex. 143, sheet 1, footnote # # #).

[fol. 624] 132. Only 2 customers of the total number of 16,108 customers receiving service as of October 31, 1937, from the 15 cooperatives purchasing power at wholesale from the Authority over all the rural lines they operated, whether constructed by them or by the Authority for them, ever received electric service of any kind from any of the complainant companies, except for customers located in the ceded area and served by means of lines sold to the Authority under the contract of January 4 and resold by the

Authority to the cooperatives (Street, 1242; Wisdom, 483, Winkler, 1418; Henkle, 1493; Jacobs, 1338; Bonner, 1308; Perkins, 1355-1358; Watson, 1376, 1391; Ostermuller, 1264).

133. Except for rural customers located in the ceded area on lines purchased from the complainant power companies, none of the rural customers served by the Authority or by municipalities purchasing power at wholesale from the Authority ever received service from any of the complainant companies (Street, 1242; Wisdom, 483; Winkler, 1418; Henkle, 1493; Jacobs, 1338; Bonner, 1308; Perkins, 1355-1358; Watson, 1376, 1391; Ostermuller, 1264).

134. None of the industrial loans which the Authority served in 1937 were previously served by any of the complainant companies except the industrial customers in the ceded area in Alabama whose contracts were assigned to the Authority under the contract of January 4 (def. ex. 143, sheet 2).

135. In addition to the customers served by the Authority as of December 15, 1937, the Authority was as of that date under contract to serve 8 municipalities, 3 rural cooperatives, 2 industrial customers, and the War Department's requirements for the construction of Sardis Dam [fol. 625] (def. ex. 143, sheet 2).

136. Of the municipalities under contract but not yet purchasing as of December 15, 1937, 2 are located in the ceded area in Alabama, 1 is not served by any of the complainants (Middlesboro, Kentucky, served by Kentucky Utilities Company) and 5, including Chattanooga, Tennessee, Knoxville, Tennessee, Memphis, Tennessee, Guntersville, Alabama, and Paris, Tennessee, are now served by the complainants The Tennessee Electric Power Company, Tennessee Public Service Company, Memphis Power & Light Company, Alabama Power Company, and Kentucky-Tennessee Light & Power Company, respectively; that is, these companies presently own and operate urban distribution systems in the 5 municipalities (def. ex. 143, sheet 2). The Authority is under contract to sell power at wholesale to these municipalities as soon as they acquire distribution systems. If the municipalities construct new distribution systems and sell power and the complainants continue to operate their existing distribution systems in these municipalities, it is reasonable to believe that a large num-

ber of customers of complainants will elect to buy from the municipalities.

137. Of the 3 cooperatives under contract but not yet purchasing power as of December 15, 1937, 1 is located within the ceded area in Mississippi. None of the 3 had previously purchased power from any of the complainants (def. ex. 143, sheet 1).

138. Of the 2 industrial customers under contract but not yet purchasing power as of December 15, 1937, 1 is located in the ceded area in Alabama. Neither of the 2 was previously served by any of the complainants (def. ex. 143, sheet 1).

[fol. 626] Reasonableness of Conduct of Authority in Disposition of Surplus Power

139. Under the contract of January 4, as amended and supplemented, the Commonwealth and Southern Corporation, as agent for its subsidiaries Alabama Power Company, The Tennessee Electric Power Company, Mississippi Power Company, and Georgia Power Company, purchased from the Authority power in the aggregate value of $1,814,918.04 (def. ex. 150). In addition thereto the Alabama Power Company had purchased from the Authority prior to January 4, 1934, power in the aggregate value of $479,573.67 (def. ex. 150). The amounts of power delivered by the Authority to the Alabama Power Company and The Tennessee Electric Power Company (for the subsidiaries of the Commonwealth and Southern Corporation above mentioned), from January 4, 1934, to January 1, 1935, and for the calendar years 1935 and 1936, were as follows (def. ex. 150):

Alabama Power Company	1934	110,127,068 kwh.
	1935	164,127,787 kwh.
	1936	344,308,127 kwh.
The Tennessee Electric Power Co.	1934	39,514,200 kwh.
	1935	76,022,503 kwh.
	1936	212,313,103 kwh.

140. In addition to the sales of power under the contract of January 4, the Authority is currently selling power to 2 utility companies under recent contracts, and has practiced no discrimination against complainant utility companies or

other utility companies in the sale of power (def. ex. 145; Barry, 580-581).

141. The so-called power policy of the Authority, dated August 15, 1933, consisting of a joint press release, was [fol. 627] never formally approved by the board of directors of the Authority nor ever put into action or followed (def. ex. 29).

142. The Authority has sold substantial blocks of power to many municipalities which formerly operated their own municipal generating plants, which sales did not involve any displacement of any existing load of the complainant companies (def. ex. 143). The Authority has sold substantial blocks of power to cooperatives for distribution by them in rural areas to rural customers heretofore unserved, which sales did not involve any displacement of any existing load of complainant power companies (Carmack, supp. A, 13; Cowley, supp. A, 59; Hutchinson, supp. A, 107-108; Street, 1242; Wisdom, 483; Winkler, 1418; Henkle, 1493; Jacobs, 1338; Bonner, 1308; Perkins, 1355-1358; Watson, 1376, 1391; Ostermuller, 1264). The Authority has sold substantial blocks of power to industrial concerns who located new plants or enlarged existing plants, which sales did not displace any existing load of complainant power companies (def. ex. 147, sheet 6). The Authority has sold substantial blocks of power to complainant and noncomplainant companies with existing utility networks. In fact, none of the sales of power by the Authority have directly displaced any existing load of complainant companies except in the ceded area covered by the contract of January 4 in which the Authority purchased for valuable considerations the existing facilities from the complainant Alabama Power Company and Mississippi Power Company (def. ex. 143-A). None of the Authority's sales of power to date have indirectly displaced any existing load of the complainants outside the ceded area, except that the complainant West Tennessee [fol. 628] Power & Light Company has lost some customers to the city of Jackson and has lost a load of approximately 50 kw. in the town of Gibson which it sold to the Gibson Power & Light Company; this latter load was lost to the complainant West Tennessee Power & Light Company when the properties in the town of Gibson were sold at auction by

the Gibson Power & Light Company to the Gibson County Electric Membership Corporation (Wisdom, 485).

143. The officials of the Authority have taken the position in correspondence with municipal officials that the question of whether a municipality shall own and operate its own distribution system is one for the sole determination of the municipality (comp. ex. 412; def. exs. 5-9).

144. The Authority does not aid or assist in conducting surveys to determine the economic feasibility of proposed municipal plant operations by municipalities applying for the purchase of power from the Authority (comp. ex. 412).

145. The standard of the Authority in entering into power contracts with municipalities is the financial feasibility of extending wholesale service to such municipalities as apply for wholesale service (comp. ex. 412).

146. The Authority has not confined its power disposition to those municipalities which previously did not own and operate their own municipal distribution systems (def. ex. 143). On the other hand, the Authority has throughout the course of its existence entered into a large number of con- [fol. 629] tracts with municipalities who owned and operated municipal distribution systems before the passage of the Tennessee Valley Authority Act (def. ex. 143). The power contracts between the Authority and municipalities are substantially uniform, and there are no special provisions favoring municipalities who had not previously owned and operated their distribution systems or discriminating against municipalities that did own and operate their municipal distribution systems before the passage of the Tennessee Valley Authority Act (comp. exs. 119-134, 135-145).

147. The contracts for the disposition of power between the Authority and municipalities and cooperatives contain provisions in which the parties agree that certain schedules of rates shall be charged by the wholesale purchaser to persons to whom it resells. These provisions for agreed resale rates are contained in all contracts regardless of whether or not the complainant utility companies own and operate distribution systems in the municipality or area where the purchased power is to be resold (comp. exs. 119-134, 135-145).

148. The Authority has made no effort to regulate the rates of its municipal or cooperative customers and has taken no action regarding such rates other than entering into the initial agreement establishing resale rates.

149. There have been uniform and progressive increases of a substantial character in the amount of wholesale purchases of power made by each municipality which has purchased power from the Authority (def. exs. 147, 154, pp. 20-21).

150. There has been a uniform and progressive increase [fol. 630] in the number of ultimate consumers served by each municipality and cooperative that has purchased power at wholesale from the Authority (def. ex. 147).

151. The amount of power purchased by each of the municipal customers of the Authority in October 1937 was on the average about 100 percent in excess of the respective amounts purchased by the respective municipalities in the initial month of wholesale service by the Tennessee Valley Authority (def. ex. 147). This percentage of increase is in excess of the highest percentage of increase of any of the complainant companies in power sold to regular customers from 1933 to 1936 (def. ex. 2, stip. 11; comp. exs. 10, 15, 23, 28, 30, 35, 38, 46, 55-57, 76, 84, 85, 96, 104). It is greatly in excess of the approximately twenty percent of increase in the national production of electricity for the same period of years (comp. ex. 99, 99-A).

152. The annual average consumption of residential customers of municipalities and cooperatives purchasing power from the Authority generally exceeded the average for the same class of customers of the complainant companies. (For averages of residential customers of wholesale purchasers from TVA, see p. 3 of comp, ex. 919); for averages of residential customers of complainant companies, see comp. ex. 10, 16, 28, 35, 38, 61, 62, 63, 76, 84, 85, 96, 104).

153. The Authority has not induced the breach of any power contract between any complainant and any of its customers.

154. In marketing the power generated at its dams the Authority has not engaged in any solicitation of customers, [fol. 631] coercion, duress, fraud, or misrepresentation in

procuring contracts with municipalities, cooperatives, or other purchasers of power.

155. In marketing the power generated at its dams, the Authority has not acted with any malicious or malevolent motive and has not conspired with municipalities or other prospective purchasers of power.

Extent of Displacement of Existing Utilities Threatened

156. The defendant Authority has no plans and has made no investigations of any substantial character for the construction of any dams in the Tennessee Valley except the 7 high dams on the main stream and Norris and Hiwassee Dams on the tributaries. Other than these projects it has recommended only the construction of the Fontana Dam on the Little Tennessee River (Bowman, 3752). The surveys of the Tennessee River basin and its tributaries conducted by the Corps of Engineers of the United States Army for the War Department and reported in House Document No. 328, 71st Congress, second session, concerned combined public and private projects; the 149 projects so surveyed have not been recommended for construction by the Federal Government (comp. ex. 105, paragraph 33, p. 19 et seq.; 762, 763).

157. It is reasonably estimated that the utilities within ready transmission distance of the Authority's run-of-river plants, constructed or under construction, will require 310,000 kw. of additional capacity in 1939 and 787,500 kw. of [fol. 632] additional capacity in 1943 (Thomas, 5143-5144; def. ex. 133). Of this amount the requirements of the Commonwealth and Southern companies, which are complainants herein, plus the requirements of the noncomplainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company, affiliated and interconnected noncomplainant companies, are 207,000 kw. in 1939 and 559,000 kw. in 1943 (def. ex. 133); and the requirements of the Electric Bond & Share companies who are complainants herein and affiliated noncomplainant companies are 88,200 kw. in 1939 and 190,000 kw. in 1943 (def. ex. 133). The estimated energy requirements for the companies within ready transmission distance of the Authority's run-of-river dams, constructed or under construction, will be over 770,000,000 kwh. in 1939 and over 2,150,000,000 kwh. in 1943 (Thomas,

5157; def. ex. 133). Of these amounts the additional requirements of the Commonwealth and Southern complainant companies and the Georgia Power Company will be over 550,000,000 kwh. in 1939 and 1,600,000,000 kwh. in 1943 (def. ex. 133). The additional energy requirements of the Electric Bond & Share Company and affiliated companies with which they are interconnected will be over 200,000,000 kwh. in 1939 and over 560,000,000 kwh. in 1943 (def. ex. 133).

158. Some of the complainants have added substantially to their generating capacity since 1933 (comp. ex. 502). Some of the complainants are preparing for the construction of additional generating plants of a substantial capacity. The Tennessee Electric Power Company is preparing to construct a steam plant at Nashville with a generating capacity of approximately 25,000 kw. (Middlemiss, 2336). The Appalachian Electric Power Company is constructing a [fol. 633] hydroelectric project on the New River in Virginia with a planned installed capacity of about 75,000 kw. (Argabrite, 426) and has leased 55,500 kw. of power from the Federal Government at navigation projects on the Kanawha River (Argabrite, 425-426). The Arkansas Power & Light Company has contracted to purchase 40,000 kw. from the Authority in the near future (def. ex. 145: Rankin, 2427).

159. There is a steadily increasing demand for electric energy in the area within transmission distance of the Authority's projects constructed, under construction, and investigated for construction (Thomas, 5175-5177; comp. exs. 360, 370, 372, 374-376, 501).

160. There are unserved potential markets for the electric energy which may be generated at the projects of the Authority, not involving any displacement of the existing loads of complainant companies, including new industries and unserved rural areas. The percentage of rural electrification in the States which make up the Tennessee River basin is small. In 1933 it ranged from 0.8 percent in Mississippi to 7.9 percent in Virginia (Hapgood, 5337-5338). In 1936 it ranged from 2 percent in Mississippi to 10.3 percent in Virginia (Hapgood, 5337).

161. There are many unserved rural areas. A great majority of the so-called rural customers on lines of complainants existing in the counties or areas where the lines of the cooperatives have been constructed were in towns of a popu-

lation of 100 or more or within 6 miles of a transmission substation (Hapgood, 5420). There was little area-wide rural electrification. The fact that the lines of the cooperatives extend out from load centers or communities produces [fol. 634] less customer density to the mile (Hapgood, 5420).

162. The growth in demand in terms of the firm peak load of the principal companies operating in territory located within a radius of 250 miles of the dams recommended in the TVA unified plan from 1929 to 1936 was approximately 22 percent, that is, from 2,992,000 kw. in 1929 to 3,652,000 kw. in 1936 (comp. ex. 501, line 13; Moreland, 2902). It is reasonably estimated by experts from both sides that this firm peak load will increase at least an additional 772,000 kw. or 21 percent by 1939 (comp. ex. 501, column 13; Thomas, 5176).

163. By the date the power generating units authorized for the dams of the Authority are installed, it is reasonably estimated by witnesses for both sides that the power demand in the area within transmission distance of the projects of the Authority will be greatly in excess of the present peak load ability of the existing generating plants in the area (comp. ex. 501; def. ex. 133; Thomas, 5157). Unless additional generating capacity is provided by private utilities or at the projects of the Authority, there is likely to be a substantial power shortage.

164. Without subtracting the substantial amounts of power which the Authority has contracted to sell to large industrial customers, the Arkansas Power & Light Company, and municipalities not yet served, the amount of power which will be available at the projects of the Authority with authorized installations of generating capacity is less than the amounts of power necessary to meet the increases in demand in the area served by private utilities within trans- [fol. 635] mission distance predicted for the date when these installations are scheduled for completion (def. ex. 133, 141; comp. ex. 508, 510).

165. For most of the complainants, 1936 represented a new high point in volume of power sales, the increases from 1930 to that year ranging up to more than 50 percent. Since 1933 sales to regular customers have increased even more rapidly, the rates of growth during the latter period ranging up to approximately 75 percent (Tenn. Elec. Power Co., comp. ex.

10; Miss. Power Co., Sweatt, 267; Miss. P. & L. Co., Sargent, 664-665; Tenn. Public Service Co., Lamar, 301-302; West Tenn. P. & L. Co., Wisdom, 472; Memphis P. & L. Co., Ford, 337-338; Ala. P. Co., Barry, 598; Ky. Tenn. L. & P. Co., Ostermuller, 1268).

166. The number of electric customers served has shown a substantial increase for each of the respective complainants, the present number of customers served in 1937 constituting a new high for the said respective complainants (def. ex. 2, stip. 11).

167. Both the gross and the net revenues of the respective complainants in their electric utility operations have increased substantially in the period since the creation of the Tennessee Valley Authority (def. ex. 2, stip. 11).

168. In many cases the gross revenues have reached a new high for the respective companies (def. ex. 2).

169. From 1933 to the middle of 1937 the rate of growth in the consumption of electricity in the 7 States, parts of which compose the Tennessee Valley basin, has been in excess of the national rate (comp. ex. 919; comp. ex. 99). The increase in average annual residential use of customers of many utilities operating in the area from 1933 to 1937 [fol. 636] greatly exceeds the increase in national average annual residential use (def. ex. 154, p. 22 for national rate of increase; see comp. exs. 10, 16, 28, 35, 38, 61, 62, 76, 84, 85, 96, 104, for rates of increase for complainant companies).

Mitigation of Potential Damages

170. The generating and transmission facilities of the complainants Alabama Power Company, Mississippi Power Company, the Tennessee Electric Power Company, and noncomplainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company are interconnected and are operated as an integrated power pool (Middlemiss, 2337; Barry, 610).

Any point on the system of any of said companies may be served with power generated at any other point in said power pool (Middlemiss, 2337, 2285; Thomas, 5141).

171. The facilities of complainants West Tennessee Power & Light Company, Memphis Power & Light Company, and

Mississippi Power & Light Company, and noncomplainants Louisiana Power & Light Company and Arkansas Power & Light Company, both members of the Electric Bond & Share Company system, are interconnected and operated as a common integrated transmission and generating pool (Rankin, 2426).

172. The entire power requirements of the complainant Tennessee Public Service Company are purchased from complainant Carolina Power & Light Company (Lamar, 294). The Carolina Power & Light Company is interconnected with the Appalachian Electric Power Company and [fol. 637] the Duke Power Company (Yoder, 375).

173. The generating and transmission facilities of the Appalachian Electric Power Company, Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company, Inc., are interconnected and operated as an integrated transmission and generating plant system (Argabrite, 398).

174. The generating and transmission facilities devoted to service to the municipalities now served by the respective complainants and under contract to purchase power from the Authority form parts of integrated transmission and generating systems and may be devoted to serving the growth in other loads on the system should there be any loss of load in any given municipality which purchases power from the Authority due to loss of customers to said municipality (Hapgood, 5423).

175. The unserved rural market in the area adjacent to the lines of the respective complainants which can be economically served by the complainants is negligible in amount and the injury to the respective complainants from any extension of rural lines for service to this market by the Authority or municipalities or cooperatives purchasing power at wholesale from the Authority would also be negligible (Ford, 330; Yoder, 370; Argabrite, 415-416; Ide, 504; Sargent, 650; Stanley, 1031; Street, 2215; Ostermuller, 1257; Bonner, 1290; Jacobs, 1334; Perkins, 1352; Watson, 1371; Winkler, 1407-1408).

176. Prior to the completion of generating plants at Norris Dam on July 28, 1936, and Wheeler Dam on November 8, 1936 (def. ex. 150), all power supplied by the Authority [fol. 638] to said companies under the contract of January

4, 1934, was supplied from Wilson Dam. Wilson and Norris Dams are and have been interconnected from and after July 28, 1936. Norris Dam began generating power on July 28, 1936, and Wheeler Dam on November 9, 1936 (def. ex. 150). All power purchased by the Alabama Power Company and The Tennessee Electric Power Company from and after the respective dates of completion of Norris and Wheeler Dams was supplied from an interconnected pool, including the power generated at both of said dams from and after the dates of completion.

177. The months of June through December 1936 were months of subnormally low stream flow in the Tennessee River (Karr, 5565). The purchases of power from the Authority by the Commonwealth and Southern companies in these months were very substantial. During the 7 months these purchases amounted to 552,562,368 kwh. (def. ex. 147), which was slightly more than the total amount of kwh. which could have been generated at Wilson Dam without the benefit of storage releases from Norris Dam. During August, September, and November the purchases by the Commonwealth and Southern companies were substantially greater in proportion to the generating ability of Wilson Dam without benefit of Norris Dam (Karr, 5569); these purchases ranged from 110 percent to 137 percent of the amount of power which could have been generated at Wilson Dam in those months without the benefit of Norris Dam (def. ex. 148). During this 7-month period the sales to the Commonwealth and Southern companies were approximately 92 percent of the amount of power which could be generated at Wilson Dam including the benefit of Norris storage releases (def. ex. 148) and 83.45 percent of the total TVA system sales (def. ex. 148). In August, September, and November [fol. 639] the Commonwealth and Southern companies purchased more power than Wilson Dam generated, including the generation resulting from Norris storage releases, the percentages varying from 101.82 percent in August to 108.51 percent in September (def. ex. 148).

[fol. 640] Supplement on Power Contracts

178. The Authority has contracts with municipalities now purchasing power calling for the availability of 38,380 kilowatts (comp. exs. 119, 123, 122, 133, 120, 134, 118, p. 141; 118, p. 144; 118, p. 189; 118, p. 223; 118, p. 236;

Tupelo, comp. ex. 113; Pulaski, comp. ex. 117; Dayton, comp. ex. 117; Athens, comp. ex. 117).

179. The Authority has contracts with municipalities not yet purchasing power calling for the availability of 135,000 kilowatts (comp. exs. 127, 128, 129, 126, 132, 134; 118, p. 166, 169; Middlesboro, comp. ex. 130).

180. The Authority has contracts with rural cooperatives now purchasing power calling for the availability of 9,300 kilowatts (comp. exs. 136, 135, 138, 139, 140, 141, 142, 196; 118, pp. 205, 218).

181. The Authority has contracts with industrial companies by which it contracts to sell 127,850 kilowatts of firm power (comp. exs. 509, pp. 146, 147, 148, 149, 150, 155).

182. The Authority has contracts with industrial companies and utilities by which it contracts to sell 139,500 kilowatts of secondary or interruptible power (comp. ex. 509).

[fol. 641] Conclusions of Law

1. The Tennessee Valley Authority Act is a valid exercise of the constitutional powers of Congress.

2. All of the acts complained of and established by the evidence in this cause are authorized by the terms of the Tennessee Valley Authority Act, and the portions of the statute granting such authority are within the constitutional powers of Congress.

3. Neither the Tennessee Valley Authority nor any of its directors have exceeded the powers conferred upon them by the Tennessee Valley Authority Act.

4. The Tennessee River from its mouth at or near Paducah, Kentucky, to a point above Knoxville, Tennessee, is in law a navigable interstate waterway of the United States.

5. Under the power to regulate and promote interstate commerce conferred by subsection 3 of section 8 of article 1 of the Constitution of the United States, the Federal Government has the power to improve the navigable character of the Tennessee River by means of the construction of dams and reservoirs upon the main stream of the Tennessee and its tributaries. The selection or determination of the par-

ticular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents.

6. The Federal Government, under the powers delegated to it by the Constitution of the United States, has the power to construct dams and reservoirs upon navigable rivers of the United States and upon tributaries of such navigable [fol. 642] rivers for the purpose of controlling flood waters on such rivers. The selection or determination of the particular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents.

7. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs for the purpose of protecting interstate commerce both upon the navigable waterways and upon the highways and railroads from interruption and interference due to destructive floods.

8. Under the powers delegated to it by the Constitution of the United States, Congress has the power to construct dams and reservoirs for the purpose of protecting the instrumentalities of interstate commerce, including navigable waterways, railroads, highways, and manufacturing establishments engaged in the production of goods moving in interstate commerce from the hazards and interruptions resulting from destructive floods.

9. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs upon the Tennessee River and its tributaries for the purpose of controlling destructive floods in the Tennessee and Mississippi River Valleys.

10. Under the power to regulate and promote interstate commerce, the Federal Government has the constitutional power to construct all dams in the Tennessee River and its tributaries that are reasonably related to the improvement of the navigable character of the Tennessee River or any of its navigable tributaries.

[fol. 643] 11. Under the powers delegated to it by the Constitution of the United States, Congress has the power to authorize the construction of all dams upon the Tennessee River and its tributaries that will in fact contribute to the

control of destructive floods in the Tennessee and Mississippi River Valleys.

12. Under the power to regulate and promote commerce between the several States, Congress has the constitutional power to authorize the construction of each of the dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority upon the main stream of the Tennessee River and its tributaries.

13. By the terms of the Tennessee Valley Authority Act, Congress has created the Tennessee Valley Authority as an agency of the Federal Government, and has expressly authorized this agency to construct each of the dams constructed, under construction, or under investigation for construction on the main stream of the Tennessee River and its tributaries. Congress has from time to time authorized the construction of each individual dam constructed or under construction by appropriate appropriation statutes.

14. The water power created as a result of the construction of the dams authorized by the Tennessee Valley Authority Act is the property of the United States.

15. Congress has the constitutional power to authorize the installation and operation of such generating facilities at the dams authorized by the Tennessee Valley Authority Act as may be necessary to generate electric energy from the water power created by the construction of such dams.

[fol. 644] 16. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to make provision in the dams constructed by it upon the Tennessee River and its tributaries for th necessary facilities for generating electric energy. The statute specifically authorizes the installation and operation of power houses, generators, and other facilities.

17. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is the property of the United States, and may be disposed of by Congress or its authorized agency under subsection 2, section 3, article 4 of the Constitution of the United States.

18. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is lawfully and legally acquired property of the United States

resulting from the exercise of its constitutional powers, and may be used or disposed of in any manner which the Congress, in the exercise of its discretion, may select as the reasonable means of such disposition.

19. The Tennessee Valley Authority Act directs the Tennessee Valley Authority to operate all of the dams constructed by it primarily in the interests of navigation and flood control, but expressly authorizes the said Tennessee Valley Authority to generate electric energy at said dams insofar as this can be done consistent with the interests of navigation and flood control.

20. The method of operation of the dams and reservoirs constructed and under construction which the defendants have followed and propose to follow in the future is authorized by the Tennessee Valley Authority Act.

[fol. 645] 21. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the construction of transmission lines from the dams authorized by the Tennessee Valley Authority Act in order to dispose of the electric energy generated at such dams.

22. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to generate electric energy at all dams authorized by the Tennessee Valley Authority Act, to construct or acquire transmission lines leading from such dams to municipalities, cooperative associations of citizens and farmers not organized for profit, large industrial customers, and other purchasers of power.

23. By the terms of the Tennessee Valley Authority Act, Cangress has authorized the Tennessee Valley Authority to construct or acquire transmission lines leading from each of the dams constructed under the authority of the Tennessee Valley Authority Act to the surrounding market area.

24. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act to wholesale customers under long-term contracts.

25. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act direct to rural customers and inhabitants of small towns and villages, and to industrial customers.

[fol. 646] 26. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to own and operate transmission lines and rural distribution lines for the purpose of transmitting and selling the electric energy generated at said dams.

27. Under the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to enter into contracts with municipalities, cooperative associations of citizens and farmers not organized for profit, and industrial customers for the sale of electric energy generated at the dams constructed by the Tennessee Valley Authority under said act.

28. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to sell electric energy generated at any of the dams constructed under the terms of said act direct to rural customers and inhabitants of small towns and villages.

29. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to own and operate transmission and rural distribution lines for the purpose of transmitting and selling the electric energy generated at any of the dams constructed under the authority of said act.

30. By the terms of the Tennessee Valley Authority Act, Congress has directed the Tennessee Valley Authority to give preference in the sale of power to States, counties, municipalities and cooperative organizations of citizens or farmers not organized for profit. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

[fol. 647] 31. The Tennessee Valley Authority Act authorizes the Authority to construct rural transmission lines for service to farmers or cooperative organizations of citizens

or farmers and to sell such lines to municipalities or such cooperative organizations. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

32. The Tennessee Valley Authority Act authorizes the Authority to sell power direct to industrial customers in order to increase the load factor on the system. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

33. The Tennessee Valley Authority Act authorizes the Board of Directors of the Authority to fix the rates at which the electric energy generated at the dams authorized by the Tennessee Valley Authority Act may be sold. The statute vests discretion in the board in fixing such rates, and the exercise of this discretion is not subject to judicial review. This provision of the statute is a valid exercise of the power of Congress to dispose of property of the United States.

34. Under the constitutional power to dispose of property of the United States, the Government may attach to the sale of its property such conditions as it may deem reasonable to insure the widespread diffusion of the benefits of such property and the avoidance of monopolistic control of such property.

35. Under the power to dispose of property of the United States, Congress has the constitutional power to Authorize the Tennessee Valley Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such power is to be resold to [fol. 648] the ultimate consumers.

36. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such energy is to be resold to the ultimate consumers.

37. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to include in all contracts

for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power.

38. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to include in all contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power.

39. The Tennessee Valley Authority Act does not contain any provisions regulating or attempting to regulate the rates or operations of complainant companies or other private utilities.

40. Sales of power by the Tennessee Valley Authority in accordance with the provisions of the statute at rates fixed and determined by the board of directors do not constitute regulation of the rates or businesses of the complainant companies or other private utilities.

41. The municipalities and cooperatives purchasing power at wholesale from the Authority are subject to regulation by the States.

[fol. 649] 42. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the statutes of the several States in which they are located to purchase said power, to contract with the Authority with respect to the same, and to engage in the business of selling the same at retail.

43. All of the municipalities and cooperatives purchasing power at wholesale from the Authority are authorized by the statutes of the several States in which they are located to enter into contracts with the Authority containing provisions agreeing upon the rates at which such power is to be resold and provisions relating to the bookkeeping and accounting methods to be followed by such purchasers. Under the laws of the several States in which the municipalities and cooperatives are located, such provisions do not constitute any unlawful delegation or abdication of sovereign power by the municipalities or cooperatives.

44. The provisions of the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which the power so purchased from the Authority is to be resold and the provisions relating to the methods of keeping accounts do not constitute any invasion of the reserved powers of the States under the tenth amendment to the Constitution of the United States.

45. The provisions in the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which such power is to be resold do not in law amount to regulation either of the rates of said wholesale purchasers or of the rates of private companies competing with such wholesale purchasers.

[fol. 650] 46. Under the laws of the several States in which the municipalities and cooperatives purchasing power at wholesale from the Authority are located, the rates at which the power purchased from the Authority may be resold by the municipalities and cooperatives remain subject to the police power of the States, if and when the States may elect to exercise such power.

47. The cooperatives purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent corporate entities and not subsidiaries or instrumentalities of the Authority.

48. The municipalities purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent public agencies of said States and are not subsidiaries or instrumentalities of the Authority.

49. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the laws of the several States in which they are located to engage in the business of selling and distributing electric energy at retail and have the legal right to compete with the complainant companies in such business. Any damage or injury resulting or threatened to the complainant companies, or any of them, from such competition is damnum absque injuria and does not give rise to a cause of action on behalf of said companies.

50. None of the complainant companies have or claim any exclusive franchise or right to engage in the business of selling and distributing electricity in the various municipalities and communities in which they operate.

[fol. 651] 51. The sale of electric energy by the Tennessee Valley Authority to municipalities and cooperatives lawfully engaged in the business of selling and distributing said energy at retail does not result in any legal injury to any of the complainant companies and does not invade any legal right of any of said companies.

52. The complainant companies have no standing or right to challenge the right of the municipalities and cooperatives purchasing power at wholesale to engage in the business of selling and distributing electric energy in competition with said companies.

53. The complainant companies have no standing or right to challenge the legal right of the Authority to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

54. The complainant companies have no standing or right to challenge the validity of the contracts under which the Authority is selling or has agreed to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

55. Having failed to prove any damage in fact, actual or threatened, resulting from the sales of power by the Authority direct to rural customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

56. Having failed to proved any damage, actual or threatened, resulting from the sales of power by the Au-
[fol. 652] thority direct to industrial customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

57. The complainant companies have no legal right to be free from competition, and they have no legal standing or

right to challenge the statutory powers of the Authority to generate, transmit, and sell electric energy in competition with them, or some of them.

58. Under the decision of the Supreme Court in the Ashwander case, the right of the Authority to acquire and operate the facilities in Alabama transferred to it under the contract of January 4 is settled and cannot be questioned in this case.

59. Section 7 of the contract of January 4 confers upon the Authority the contractual right to serve municipalities located within the ceded area in Alabama, and the Alabama Power Company, a party to that contract, has no right to question the legal right of the Authority to engage in such service.

60. Section 7 of the contract of January 4 confers upon the Authority the right to sell power to any municipality owning and operating its own distribution system and not purchasing power from the utilities party to that contract, and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company, parties to that contract, have no right to challenge sales to such municipalities by the Authority.

61. Section 7 of the contract of January 4, 1934, confers upon the Authority the right to sell power to any customers [fol. 653] not served by the parties to that contract as of January 4, 1934, up to a maximum aggregate demand of 2500 kw., and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company have no right to challenge sales of power to customers served pursuant to the right so conferred.

62. The mere operation by the respective complainants of utility properties in the area within 250 miles or any other distance of the respective dams of the Authority constructed, under construction, or recommended for construction is not such a common injury as to give rise to a joint cause of action against the Authority on the part of such complainants.

63. There is a fatal misjoinder of parties complainant in this cause and the suit should be dismissed on that ground.

64. The bill of complaint in this cause is fatally multifarious due to the misjoinder of parties and causes of action, which has been made apparent upon the trial, and the suit should be dismissed upon that ground.

Done at Chattanooga, Tennessee, this — day of January, 1938.

—— ——, Circuit Judge. —— ——, District Judge.
—— ——, District Judge.

[fol. 654] IN UNITED STATES DISTRICT COURT

(Caption omitted)

Decided January 21, 1938

Before Allen, Circuit Judge, and Gore and Martin, District Judges

OPINION—Filed January 24, 1938

ALLEN, Circuit Judge.

Complainants have filed a bill in equity praying for relief against the operation of the Tennessee Valley Authority Act of 1933, as amended (48 Stat. 58; 49 Stat. 1075; 16 U.S.C. 831 et seq.). The bill joins as defendants the Tennessee Valley Authority, the agency created by the Congress to carry out the provisions of these statutes, and Arthur E. Morgan, David E. Lilienthal, and Harcourt A. Morgan, who are the chief executive officers of the Authority and constitute its board of directors.

The complainants are nineteen companies generating, transmitting, and distributing power within Tennessee, Alabama, Mississippi, North Carolina, South Carolina, Kentucky, Virginia, West Virginia, and Georgia, one of which, the Georgia Power Company, has been enjoined from participating in this action by the United States District Court for the Northern District of Georgia (Georgia Power Co. v. Tennessee Valley Authority, 17 F. Supp. 769). This decree has been affirmed by the Court of Appeals for the Fifth Circuit (89 F. (2d) 218). For this reason we give no consideration to alleged competition of the Authority with the Georgia Power Company.

The complainants are in general owned by holding companies, as set forth in the findings of fact. They are all taxpayers, citizens of and authorized to do business within the States in which they operate, and none of them claims to operate under any exclusive franchise.

The bill cannot be summarized within the appropriate limits for a trial court's opinion. In addition to its seventy pages of pleading and sixty-five pages of exhibits, it con- [fol. 655] tains within the bill itself much that is argumentative, repetitious, and immaterial to the legal questions presented. It charges coercion, fraud, and conspiracy on the part of the defendants officially and individually. It charges that Secretary Harold L. Ickes, Public Works Administrator, has joined with the Authority in certain coercion and conspiracy against the legal rights of these complainants. The argumentative matter and conclusions which we deem immaterial are so interwoven with allegations bearing upon the legal questions presented that it is impossible to extricate them. The same statement is true of the prayer. Paragraphs h, i, l, o, p and q of the prayer are considered by the court to have no relation to this case under Ashwander v. Tennessee Valley Authority, 297 U.S. 288, which held that such matter presents no justiciable controversy (p. 324). It suffices, therefore, to say that in its essential and material features the bill seeks a decree holding that the Tennessee Valley Authority Act of 1933, as amended, and the acts generally done by the board of directors thereunder and individually violate the Constitution of the United States. It seeks an injunction restraining the defendants, their agents and employees, from carrying out the provisions of the statute with reference to the sale of electric power; from purchasing, constructing, or otherwise acquiring electric generating plants, transmission lines, or distribution lines; or from selling electric energy, except such energy as may be produced at Wilson Dam, "to the extent the production and sale of power at Wilson Dam has been held legal." For practical purposes this bill seeks to enjoin the further construction of TVA dams now in process of construction in the Tennessee Valley, the construction of new dams in such Valley for which specific appropriation has been made by Congress, and the operation for generation and sale of electric power of all TVA dams built and to be built.

[fol. 656] The answer denies the material allegations of the bill. Only one of the affirmative defenses requires special mention. The defendants claim that certain of the complainants are estopped to deny the constitutionality of the TVA statutes because of extensive purchases of power from the Authority. These purchases were made under the contract of January 4, 1934, by which certain complainants contracted with the Authority to transfer to the Authority their plants, lines, equipment, customers, and franchises within certain counties within Mississippi and Alabama for a valuable consideration and upon the condition that the Authority would not operate within those States outside of the counties specified. The properties have been transferred and the contract to date has been fully performed. The court has ruled in favor of the complainants on this contention and has held that the record presents no essential difference from the situation covered by the ruling as to estoppel in the Ashwander case, supra, at 323, and therefore this question will not be discussed.

After a trial which consumed about seven weeks, in which approximately 1,100 exhibits were offered, the material issues in the case as briefed, argued, and outlined in the actual testimony are defined as follows:

(1) Whether the Authority is engaged in acts constituting in law malice, coercion, and duress to the injury of complainants.

(2) Whether the Authority and the individual defendants have conspired with Secretary Ickes and the Public Works Administration to induce municipalities and cooperative associations through loan grant agreements from the Public Works Administration to set up their own distribution systems and to coerce them into executing contracts for purchase of TVA power by threat of denial or cancellation of such PWA loan grants.

(3) Whether the acts of the defendants are authorized by the TVA statutes.

[fol. 657] (4) Whether the act itself is unconstitutional and void, and the acts done under it are illegal because the Congress is not empowered either under the interstate-commerce clause (art. I, sec. 8) or under the national-defense powers (art. I, sec. 8) of the United States Constitution to enact the TVA statutes.

(5) Whether the generation of electricity at the TVA dams is unlawful because it is inconsistent with the regulation of interstate commerce, with flood control, with the improvement of navigation on a navigable river, and with purposes of national defense.

(6) Whether the method of disposition of electric energy authorized by the TVA statutes is appropriate and constitutional under the power to dispose of Government property conferred upon the Congress by section 3 of article IV of the Constitution.

Each of the dams constructed, in process of construction, and proposed for the TVA system, while varying somewhat in use, as hereafter set forth, is a unit of an integrated, multiple-purpose project, the system being designed for coordinated use of the full benefits of the river along the line of navigation, flood control, national defense, and power development. Wherever water falls, power is created, and one of the express purposes of the TVA statutes is that hydroelectric power so created shall be sold to assist in liquidating the cost of the project. This is in line with the general development of the conservation movement from 1908 to the present as it relates to streams. See National Waterways Commission Report, S. Doc. 469, 62d Cong., 2d sess., app. I, pp. 27, 52, 61, 82, 85, 87; Statement of Chairman of Federal Power Commission, H. Doc. 395, 73d Cong., 2d sess., p. 54; Report of National Resources Board, pp. 263, 264. Similar provisions on river projects have been embodied in previous legislation. In 1912 a stat- [fol. 658] ute was enacted authorizing the Secretary of War to provide in navigation dams, in order to make possible the economical future development of water power, such foundations, sluices, and other works as may be considered desirable for the development of such power (37 Stat. 233). The Boulder Dam Project Act of 1928 (45 Stat. 1057) provided for a multiple-purpose project for irrigation, flood control, improvement of navigation, and generation of power. As fully appears from the opinion in Arizona v. California, 283 U. S. 423, navigation on the Colorado River was negligible in comparison with navigation on the Tennessee River on the record in this case. Though navigation on the Colorado River had ceased, the

project of reclaiming its navigability was held by the Supreme Court to establish the constitutionality of the multiple-purpose project, including the generation and sale of power.

TVA Project

Pursuant to the TVA statute as amended and to subsequent related enactments, the Authority has constructed and is planning to construct seven high dams on the main channel of the Tennessee River and certain dams on its tributaries. The Tennessee River is formed by the confluence of the Holston and French Broad Rivers in the east-central part of Tennessee. It flows southwesterly across the eastern part of Tennessee into Alabama, westerly across the northern part of Alabama, northerly between Alabama and Mississippi, and across the western part of Tennessee and Kentucky, and empties into the Ohio River near Paducah, Kentucky. Its length is 652 miles, and its drainage basin is 40,600 square miles. It has eight principal tributaries. The main-stream dams, including Wilson, which was constructed previous to 1933, are as follows:

[fol. 659] (1) Gilbertsville, on which preliminary investigations are in progress, located in Kentucky about 22 miles from the mouth of the river.

(2) Pickwick Landing Dam, under construction and almost completed, located in Tennessee about 206 miles from the river's mouth.

(3) Wilson Dam, now in operation, constructed by United States Army Engineers and transferred to the Authority under the TVA Act, located at Muscle Shoals, Alabama, about 259 miles from the river's mouth.

(4) Wheeler Dam, construction of which was begun by the United States Army Engineers and completed by the Authority, located in Alabama about 15 miles above Wilson Dam and about 275 miles from the river's mouth. This dam is now in operation.

(5) Guntersville Dam, under construction, located near Guntersville, Alabama, 349 miles from the mouth of the river.

(6) Chickamauga Dam, now under construction, located near Chattanooga, Tennessee, 471 miles from the mouth of the river.

(7) Watts Bar Dam, on which preliminary investigations are in progress, located in Tennessee about 530 miles from the mouth of the river.

(8) Coulter Shoals Dam, on which preliminary investigations are in progress, located in Tennessee 602 miles from the river's mouth.

The tributary dams are Norris, completed and in operation, located in Tennessee on the Clinch River about 79 miles from the mouth of the Clinch and about 647 miles from the mouth of the Tennessee, and Hiwassee Dam, now under construction, located in North Carolina on the Hiwassee River about 75 miles from the mouth of that river and about 560 miles from the mouth of the Tennessee River.

A third tributary reservoir, Fontana, on the Little Tennessee River, is recommended by the Authority, but the [fol. 660] Congress has made no specific appropriation for this suggested dam. While Wheeler and Norris are the only dams built by the Authority which are completed and in operation, they coordinate in use with Wilson at Florence, Alabama. They release water to Wilson and thus aid in the generation of power at Wilson. Wilson Dam was built under the war powers of the Congress, as held in Ashwander v. Tennessee Valley Authority, supra. While the validity of Wilson Dam is not and cannot be questioned, its present use in combination with Norris and Wheeler, and its future use in conjunction with Guntersville, Chickamauga and Hiwassee, all of these dams being upstream from Wilson and each being part of an integrated system built for the combined purposes of navigation, flood control, power, and national defense, has immediate bearing on this case.

The importance of the Tennessee drainage basin has been recognized for over a century, and repeated acts of Congress have provided for the canalization of different parts of the river. A canal with locks throughout the length of Muscle Shoals, opened to navigation in 1834, fell into disuse. Another Muscle Shoals canal was completed about 1891. The Rivers and Harbors Act of 1890 provided that the Colbert Shoals section should be improved by a lock and a canal. In 1913 the Hale's Bar lock and dam, completed by private interests, provided a canalization of 33 miles of the river below Chattanooga. The Widow's Bar lock and dam

below Hale's Bar was completed in 1926. Wilson Dam provided a canalized waterway for 15½ miles from Muscle Shoals. Lock No. 1, immediately below Wilson Dam, was completed in 1926.

These projects were, in general, unrelated and uncoordinated. This was the situation when a comprehensive survey of the Tennessee basin was ordered in five successive acts of Congress from 1922 to 1928, resulting in the reports contained in House Document No. 328. This document contained an exhaustive report by the district engineer and [fol. 661] comments thereon, together with recommendations made by the division engineer, the Board of Engineers for Rivers and Harbors, and the chief of engineers. It set forth alternate plans for securing a depth of nine feet in the main stream, that is, an improvement for navigation only, and also a plan for the development of the river and its tributaries for purposes of flood control, navigation, and power. The suggested plan for the improvement of navigation only involved in one of its phases the building of 32 low dams which would provide a nine-foot navigable channel, but would have no value either for flood control or power.

House Document 328

The complainants vigorously assert that House Document No. 328 recommends the low-dam plan, as distinguished from the TVA plan. It is of little assistance in this phase of the controversy to rely only upon the recommendations of the various engineers without studying the text (H. Doc. 328, pp. 1-25). As to the report of the district engineer, of which the chief of engineers said, "There has never been presented to Congress a more thorough and exhaustive study," the Board of Engineers for Rivers and Harbors, in its conclusions on the various projects presented, stated that, "The construction of the storage reservoirs on the tributaries described in this report would have a favorable effect in reducing floods on the Tennessee River and on the lower portions of its tributaries" (p. 23). It declared that, "The improvement of the Tennessee from its mouth to Knoxville by a series of low, movable dams without power development would have practically no effect on floods" (p. 23). It also said, speaking of low-lift dams, that, "Such a waterway would be inferior to the high-dam developments and would not per-

mit the economical development of power" (p. 13). The [fol. 662] board of engineers pointed out that in addition to having no value whatever for flood control, the 32 low dams, though less expensive to construct than the high dams, provided a navigation channel inferior to that of the high-dam plan.

It stated its opinion that the river "has large potential value as a means of transportation and that its improvement to a depth of nine feet would ultimately make it an important feeder to the Ohio-Mississippi system" (p. 20). It concluded that "It is evident that the full utilization of the resources of this river for the public benefit requires its improvement by means of high dams built for the joint development of power and navigation."

These extracts show that consideration of the bare recommendations, apart from the conclusions expressed, is misleading. In the recommendations the division engineer disagreed with the district engineer who drew the report as to his estimate of the amount of benefit to navigation. The board of engineers disagreed on certain points with the division engineer, and the chief of engineers in certain matters disagreed with all of his subordinates. But the projects actually recommended by each of these engineers were not in essential features the same as those embodied in the TVA statutes. They provided for the development of the river by private interests or by a combination of private interests and the Government.

In order to carry out this policy, the Rivers and Harbors Act was passed in 1930 (46 Stat. 918, 927-928), extending to private interests on certain conditions the right to develop the river by a series of high dams in cooperation with the Government. No private interest availed itself of the opportunity, and in 1933 Congress delegated the task to an agency of the Government.

[fol. 663] The program adopted by the Authority, in its main features, and the choice of the sites for the various dams follow the broader multiple-project plan outlined in House Document No. 328 (p. 43), commended by the Board of Engineers for Rivers and Harbors as superior to the low-dam plan. This multiple project contemplated the erection of seven high dams in the main stream (in addition to Wilson, which had already been built) and reservoirs on the tributaries.

Uses of the Dams

The dams on the tributaries, as outlined in House Document No. 328 and as shown in the evidence, are used and to be used for flood control, water regulation, power, and purposes of national defense. Of the completed dams, Norris is so constructed as to be able to retain the entire flood waters of the Clinch in flood season and was, in fact, so operated in 1936 and 1937. In 1936 it averted a probable flood at Chattanooga. It also generates power. Releases of water from Norris in the dry season are now used for regulation of stream flow so as to maintain a seven-foot navigable channel throughout the summer. Similar releases will be necessary until the entire series of main-stream dams as planned has been completed. Wheeler backs the water of the Tennessee into a slackwater pool providing nine-foot navigation to Guntersville. It generates power and has a surcharge usable for flood control. It is uncontradicted that the releases from Norris and Wheeler, and from Hiwassee, Guntersville, and Chickamauga, as planned, create and will create extra head for continuous water power at Wilson and thus aid in the national defense. Cf. Ashwander v. Tennessee Valley Authority, supra.

Of the dams under construction, Guntersville, Chicka- [fol. 664] mauga, and Pickwick Landing are essential to the maintenance of nine-foot navigation. Each of these dams is equipped with electric generators and has a substantial surcharge usable for flood control. Hiwassee, on a tributary, will be used mainly for flood control and power and for aiding Wilson Dam with water releases at dry season. Until the project is completed it will assist in regulating stream flow, thus improving navigation. Gilbertsville, while authorized by Congress, has only been investigated and surveyed. The plans for this dam have necessarily been delayed because of its size and because of the difficulty of locating suitable rock foundation. It is reasonably estimated that Gilbertsville, when completed, will supply over 4,000,000 acre-feet of flood storage, and it is the most important of the series for flood control on the Ohio and the Mississippi. The Tennessee contributes materially to the flood crest on the Ohio at Cairo. Its flood flow is almost double its drainage area in relation to other feeders of the Mississippi because of the high precipitation in the Tennessee Valley, which varies from 47.5 inches per year at

Knoxville to 51.2 at Paducah on the main stream. The Ohio, with its tributaries, including the Tennessee, is the principal feeder to the Mississippi floods. All of the TVA dams, on both the river and the tributaries, are used, so far as constructed, are planned, as shown by the official TVA reports, and are required under the statute to be employed as an integrated, coordinated system for the combined purposes of navigation, flood control, power, and national defense.

Conspiracy, Coercion, and Unlawful Competition

The bill charges a conspiracy to injure or destroy the complainants' business; to compete unlawfully; to breach the complainants' existing contracts with their customers; [fol. 665] to compel and coerce complainants to sell their plants at distress figures. It charges that the TVA has conspired with and practiced coercion upon municipalities and cooperatives to compel them to set up their own distribution systems for the purpose of selling TVA power at retail. If the record had substantiated the allegations of the bill, grave questions would have been presented. But these allegations have not been established. None of the complainants has sold its property, except those covered by the contract of January 4, 1934, a contract entered into at arm's length and not even challenged by complainants as unfair. Since complainants have not sold, they have not been coerced to sell their properties, and the negotiations for sale presented in this record do not evidence acts deemed coercion under settled legal principles. No malice in law is shown on this record. The motive of officials who execute a law is immaterial, even though accompanied by a wrongful purpose. Isbrandtsen-Moller Co. v. United States, 300 U. S. 139, 145.

Unlawful Competition

Neither has unlawful competition been proved. The attempt to show that the Authority has endeavored to persuade complainants' customers to breach their existing contracts for purchase of power from complainants has totally failed. In every case where a customer of the complainants has been lost to the Authority the cause has been, not unlawful competition, but the lawful allurement of substantially lower prices. In every such case the change of relationship has occurred at a time when no contract with any of the complainants was in existence. In fact, it is shown

that the TVA does not serve the complainants' customers with direct service except as to industrials and "ceded areas." Thus the municipalities now served by the TVA [fol. 666] in Tennessee—Dayton, Pulaski, and Dickson—each generated its own power or purchased power at wholesale from a nonutility prior to the time when the TVA started selling them power. The positive statement is made by officers of the Mississippi Power & Light Company, the Franklin Power & Light Company, the Holston River Electric Company, the Birmingham Electric Company, the Carolina Power & Light Company, the Appalachian Electric Power Company, the West Virginia Power Company, the Kingsport Company, the East Tennessee Light & Power Company, the Tennessee Eastern Company, and by the Southern Tennessee Power Company, that the TVA serves neither any of their customers direct, nor any wholesale customer by whom distribution is made to any of these utilities' former customers. The TVA serves certain cities and customers formerly served by the Alabama Power Company, but all of these customers are situated or reside within certain counties called the "ceded area," in which it was contracted in the agreement of January 4, 1934, by the Alabama Power Company, that its lines should be sold to the TVA within that area, and that the TVA should serve within that district and nowhere else in Alabama. The TVA is serving nowhere else in Alabama except within this area. The Mississippi Power Company has made a similar contract with the TVA, and the TVA is not serving outside of the "ceded area" in Mississippi, except to municipalities which previously maintained their own generating and distribution systems. No fraudulent attempt has been made to secure complainants' markets. Whatever compulsion exists is the inevitable compulsion exercised by the fact that a competitor sells at lower rates than complainants. But if the operation of the TVA is legal, the complainants have no legal right not to be subjected to such competition even though it curtail or destroy their business. Alabama Power Co. v. Ickes, 293 U. S. —, decided January 3, 1938.

[fol. 667] Conspiracy with Public Works Administration

The complainants allege that the defendants have conspired with the Public Works Administration to finance the construction of duplicating distribution lines and systems in various municipalities and cooperatives for the purpose

of using TVA power and selling that power at rates so low as to constitute competition destructive to complainants' business. Numerous contracts are introduced in evidence between the Public Works Administration and municipalities and cooperatives providing for the financing of electrical distribution projects. The power is being sold, or is contracted to be sold to these municipalities and cooperatives at wholesale by TVA.

The facts do not establish a conspiracy. It is not questioned that loans were made within the provisions of the Public Works Administration statute. The validity of that statute is not attacked in this proceeding, and we therefore assume that it is valid. The acts done by Secretary Ickes and his subordinates have been done under the purview of the controlling statute. Their acts are presumed to be valid. Where no fraud, malice, or coercion is shown cooperative action by two groups of public officials in administering the provisions of two statutes does not constitute conspiracy. The decisions relied on by complainants with respect to unlawful concert, plan, or design involve a plan either to commit an unlawful act or to commit acts, otherwise lawful, with the intent to violate a statute or commit an unlawful act. Cf. Swift & Co. v. United States, 196 U. S. 375. The acts done by the officials of the Public Works Administration in cooperation with the officials of the TVA, as shown by this record, were done with the intent to carry out the provisions of the Public Works Administration statute; the acts done by the TVA in cooperation with the Public Works Administration were done with the intent to carry out the TVA statute. Intent to execute a valid [fol. 668] and existing law is not evidence of illegality. As to the transactions of the Public Works Administration, no evidence of conspiracy is presented.

Coercion upon Municipalities and Cooperatives

Certain officials and employees of the TVA gave information, counsel, and encouragement to municipalities and cooperatives at the request of such municipalities and cooperatives with respect to the general feasibility of setting up distribution systems for TVA power. The decision on such matters was made by the municipality or cooperative concerned. Under the statutes of Alabama, Tennessee, and Mississippi, hereinafter cited, both municipalities and rural cooperatives are authorized to construct generating plants

and distribution systems for the purpose of creating and distributing electric energy. Georgia has a similar statute concerning cooperatives. These cities and cooperatives were free to obtain information and counsel from any source. In each case the decision of the municipality involved was made either by the citizens at an election, or by its duly elected officers. The decision of the cooperatives involved was made by its lawful representatives. Presentation by the Authority of facts as to TVA rates and contracts for power given to citizens or officers of a city or rural cooperative at their request do not constitute intimidation or coercion.

Damage

The record shows that the sales of every one of these complainants and the proceeds of these sales have reached an all-time high in recent years. Several of the most important complainants recently extended their lines, built new plants, [fol. 669] and acquired new equipment. The Authority concedes that it sells, or intends to sell, power at substantially lower rates—residential, industrial, and rural—than those of the complainants, and that some displacement of service will result. Two hundred and fifty miles is the distance within which electricity can feasibly be transported from each of the dams. As a result of the lower TVA rates, cities which formerly purchased power from some one of the complainants have taken steps to finance the construction of distribution systems, or have negotiated with the power companies to purchase the existing systems of the power companies, in many instances securing financial aid from the Public Works Administration with the express purpose of selling TVA power through the systems thus acquired. The city of Memphis has issued bonds for this purpose, and under the contract which the city has signed with the Authority, the Memphis Power & Light Company will be deprived of its greatest outlet. A similar proposition has been made but not yet carried through in Knoxville. If the arrangement is consummated, the Tennessee Public Service Company and the Carolina Power & Light Company will each be deprived of one of its most profitable customers. A similar situation exists in Chattanooga. The rural cooperatives distribute TVA power, but for the most part they reach areas not formerly served by these complainants. The Monsanto Chemical Company of Alabama discontinued certain of its operations at Anniston, Alabama, heretofore

served by the Alabama Power Company. An affiliated company, Monsanto Chemical Company of Delaware, set up a substitute plant at Columbia, Tennessee, near a source of its raw material, using power purchased from TVA. The Volunteer Portland Cement Company failed to renew its contract with Tennessee Public Service Company and, instead, entered into a contract with the Authority, a contract since assigned to the city of Knoxville.

[fol. 670] In view of the inevitable effect of the lower rates of the TVA within this area and the economic necessity forced upon the complainants of lowering their rates to meet the competitive rates of the Authority, we conclude that the record presents evidence of substantial future damage to these complainants. But such damage constitutes damnum absque injuria unless sales of power by the TVA are unlawful. Alabama Power Co. v. Ickes, supra.

We find in this record no coercion, conspiracy, malice, or fraud on the part of the defendants. None existing, the operation of the Authority is lawful unless (1) the defendants are exceeding their statutory authority, or (2) the statute is unconstitutional.

Compliance with the Statute

Section 9a of the statute reads as follows:

The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this Chapter provided, and thereby so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority.

It is the principal contention of the complainants that this statute is a sham, pretense, and fraud, and these dams as built and planned cannot and will not be operated within

the statute. We therefore consider the actual operation of the dams.

In Water Bulletin No. 1, dated June 30, 1936, adopted by the TVA Board, it was ordered that the reservoirs of the [fol. 671] Authority be operated, "First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Requirements for the control of malaria and temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dam shall be converted into electricity as is feasible."

The complainants contend that this order is a sham, and that none of the dams can be or will be operated in compliance therewith. They direct a particular attack upon Norris, which is now completed and in operation. However, Water Bulletin No. 2, dated June 30, 1936, ordered that until further notice water be released from Norris reservoir so as to maintain, as nearly as may be, a constant flow at Florence, Alabama, of 15,000 c.f.s. The evident purpose was to maintain a constant and sufficient stream flow for Wilson Dam. This and succeeding water bulletins, which are in evidence, outlining the same general policy, have for one of their main purposes the increase of continuous water power at Wilson. Hence, operation of the dams above Wilson is clearly constitutional under the national-defense powers of the Congress.

With reference to the general operation, a resolution of the TVA Board, adopted July 1, 1936, created a committee on water control operations, consisting of the chief water control planning engineer and the chief electrical engineer, which committee was and is authorized to prepare general regulations as to the control of water through the operation of reservoirs. The regulations are transmitted to the general manager in the form of bulletins, and at times of flood or emergency, oral instructions are also given. Woodward, the chief water control planning engineer, testified that he prepares these bulletins and that none is issued without [fol. 672] his approval. He stated that he was guided in his operations by the statute, and that the constant flow of 15,000 c.f.s. was maintained at Florence, Alabama, for the purpose of securing the necessary navigable depth in the river. Karr, electrical engineer at Norris, testified that

if the limited instructions given to him for operation were such that he had either to violate the instructions or to leave a city without power, "someone would have to go without power temporarily." Woodward testified that he permits the use of the water for power, and in special cases, if extra water is wanted, it is given extra consideration. It is uncontroverted that the water control planning engineer is in direct charge of the regulation of water flow, and also that he regulates water flow from Norris primarily for navigation and flood control.

It appears that in actual operation there is a seasonal drawing down of Norris Dam so that extra storage space may be available during the flood season. Norris was actually operated during the flood of 1937 to reduce the crest on the Tennessee River and to reduce the crest on the Ohio at Cairo. The complainants' expert Kurtz was familiar with the fact that Norris was so operated. Power is produced at Norris. The defendants introduced detailed testimony as to the full amount of TVA power presently produced, the available facilities for generation, the possibili for future generation, the present load, and the load now contracted for.

Complainants urge that the estimated future TVA load set forth in the various TVA reports and the load it may reasonably be expected to acquire because of its substantially lower rates will demand that the dams built and to be built be operated in violation of the statute and not (as required in section 9a) in the primary interest of navigation and flood control. But this point is completely refuted by the [fol. 673] numerous TVA contracts which are in evidence and are described in the findings of fact.

These contracts generally contain a clause relieving the Authority of any obligation to supply power when prevented by fire, accident, breakdown, act of God, or any other causes beyond the Authority's control. Substantially all of these contracts contain the following provision: "Subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto agree as follows * * *."

Under the familiar rule, this provision reads the statute, including its mandatory requirement that the dams and reservoirs be operated primarily for flood control and navigation, into every one of these contracts. Under the contracts with the Arkansas Power and Light Company, the Victor Chemical Works, the Aluminum Company of Amer-

ica, dated July 20, 1937, and with the Electro Metallurgical Company, which are contracts both for firm and secondary power, the Authority is expressly relieved of obligation to supply power when service is interrupted or suspended by reason of floods or backwater caused by floods.

Reading these contracts in conjunction with the statute and the general resolution governing water control above described, it is evident that the long-term contracts of the Authority strongly corroborate (1) the sincerity of the resolution and water bulletins establishing the system of water control in the interest of flood control and navigation; (2) the testimony of Woodward and Karr; (3) the uncontradicted facts as to the principles applied in the actual operation of the dams. The overwhelming weight of the testimony supports defendants' contention that the mandatory provision of the statute that navigation and flood control be given primary consideration both at the other dams, built and planned, and at Norris Dam, is at all times scrupulously followed and that the statute is neither violated nor exceeded.

[fol. 674] Constitutionality of TVA Statute Must be Determined

Since no fraud, coercion, conspiracy, or malice is shown, and since the Authority has acted within the provisions of the statute under consideration, unless the statute itself is unconstitutional the dams are lawfully erected, the energy is lawfully created, and the water power is the property of the United States. Ashwander v. Tennessee Valley Authority, supra. It therefore is essential to the decision of the case pleaded in the bill to determine the constitutionality of this statute.

The Statute

The complainants contend that the statute was enacted primarily for power purposes and that flood control, navigation, and national defense are incidental and merely a cloak for the unlawful purpose of permitting the Government to enter the power business. The defendants contend that the statute was passed and that dams were erected and are under construction, or were authorized, for the purpose of combined flood control, navigation, and national defense; and that the installation of generators, the creation of

power, and its sale have been authorized by the Congress as an incident to the exercise of constitutional powers.

National Defense

Article I, section 8, subsection 1 of the Constitution of the United States provides that the Congress shall have power "to provide for the common defense and general welfare of the United States."

In pursuance of this power it may make all laws which shall be necessary and proper for carrying into execution [fol. 675] the national-defense powers. An express purpose of the Tennessee Valley Authority Act is that of maintaining the properties owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of national defense. The amended Tennessee Valley Authority Act, title 16, U.S.C.A., section 831p, provides that

> The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct * * * a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam * * *."

In compliance with this provision, Norris Dam was built and is being operated to create extra head of water power at Wilson Dam. This means that constitutional authority to construct Norris exists, in addition to the congressional power to authorize the construction of this dam under other clauses of the Constitution of the United States.

Navigation and Flood Control

The Constitution of the United States, article I, section 8, provides that the Congress shall have power to regulate interstate commerce. Commerce includes navigation. Gib-

bons v. Ogden, 9 Wheat. 1. Congressional control of navigable waters embraces flood control.

The statute, on its face, repeatedly stresses navigation and flood control. The purpose clause of the act reads:

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said Valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

[fol. 676] The first paragraph of the enactment creates the Authority for the purpose of maintaining and operating properties owned by the United States in the vicinity of Muscle Shoals in the interest of the national defense and "to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River basins." The Board of the Authority is given power (sec. 4 (j)) * * *.

To construct such dams and reservoirs in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams * * * will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basin * * *. Other sections in which the purposes of navigation and flood control are stressed are sections 13, 18, 23, and 26a. The most important section is 9a, heretofore quoted, which governs the operation of any dam or reservoir in the possession and control of the board and requires the board to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. Numerous specific provisions of the statute relate to the generation and sale of electric power for the purpose of assisting in liquidating the cost of these projects, but all of them are limited and controlled by this general provision in section 9a.

Under the statute, therefore, the generation of electric energy is specifically required to be incidental to the exercise

of constitutional powers under the interstate commerce clause, and the operation complies with this requirement. The record shows that the dams are adapted by their construction to combined use for flood control and improved navigation, and to generate electricity. All experts agree that the pondage at each of the dams on the main river and also at the storage dams on the tributaries can be [fol. 677] drawn down, and that space thereby made available is capable of being used to store flood waters in the rainy season. It appears from the uncontroverted testimony that the erection of the main-river dams will create a nine-foot navigable channel. We find from the weight of the evidence that Norris has been used for the purpose of controlling floods. These facts are not controverted except by opinion evidence.

Certain expert witnesses, in answer to hypothetical questions, stated that the dams might be operated for the primary purposes of power. Thousands of pages of testimony and numerous exhibits were introduced to show that Congress might have adopted a better plan than the TVA unified system. Experts equally qualified testified to the contrary.

The court is of opinion that the relative value of these various plans is immaterial since it has been established that the TVA project is reasonably adapted to use for combined flood control, navigation, power, and national defense, and that in actual operation the creation of energy is subordinated to the needs of navigation and flood control.

In short, the contention that the statute and the unified project authorized therein are a sham and pretense is without foundation. It cannot be disputed that the river is navigable and that it occupies a strategic position with relation to floods, both within its own drainage area and on the Ohio-Mississippi. We are not at liberty to conclude that the river is not susceptible of development as an important waterway nor that it cannot be regulated so as to assist substantially in the control of floods in the alluvial valley of the Mississippi, as well as practically eliminating local floods on the Tennessee River. Ashwander v. Tennessee Valley Authority, supra. Norris will create additional power for use for purposes of national defense at Wilson. Hence we are not at liberty to conclude that the

[fol. 678] Congress has not undertaken this specific development for purposes within its constitutional powers nor that the construction of these high dams and reservoirs along the lines proposed is not an appropriate means to accomplish these legitimate ends. Cf. Ashwander v. Tennessee Valley Authority, supra. The dams and their power equipment, both constructed, under construction, and authorized, must be taken to have been authorized, constructed, and planned in the exercise of the constitutional functions of the Government.

Interference with States' Rights

Complainants contend that the TVA statutes constitute an unlawful interference with the police power of the States because they regulate the rates of utilities which, themselves, are subject to State regulation. The statute does not fix nor purport to fix the complainants' rates. But the contention is that the lower rates of the TVA will inevitably force complainants to lower their rates, and also that the TVA in its operations is not subject to the police power of the State.

The Authority operates within four of the nine States in which these complainants do business, namely, Tennessee, Alabama, Mississippi, and Georgia, its contracts with cities and cooperatives in Tennessee, Alabama, and Mississippi being authorized by express legislation. All municipalities in these three States have the statutory power to own and operate electric distribution systems. General Laws of Mississippi (1936) ch. 185; Carmichael Act, Alabama Code sec. 2001 (1) et seq.; Public Acts of Tennessee (1935) ch. 32; Tennessee Code sec. 3708 (1) et seq. In Mississippi, Tennessee, and Alabama municipalities are expressly authorized to contract for TVA power and to make agreements with TVA as to resale rates. Ch. 271, General Laws of Mississippi (1936); ch. 37, Public Acts of Tennessee [fol. 679] (1935), Tennessee Code sec. 3708 (96) et seq.; Alabama Code sec. 687 (62). In Mississippi, Tennessee, and Alabama nonprofit membership corporations, such as rural cooperatives, may operate electric systems, purchase from TVA, and make contracts as to resale rates. This is also true in Georgia, where the North Georgia Membership Corporation is alleged to compete with the Tennessee Electric Power Company. Ch. 184, General Laws of Missis-

sippi (1936); ch. 231, Public Acts of Tennessee (1937), which is an amendment of the Electric Membership Corporation Act of 1935; Alabama Code sec. 687 (18) et seq.; Georgia Laws (1937) p. 644.

The Supreme Court of Alabama has upheld the validity of the Carmichael Act (sec. 2001 (1) et seq., Alabama Code) in Oppenheim v. Florence, 229 Ala. 50, 155 So. 859. The similar act relating to cooperatives was sustained by the Supreme Court of Alabama in Alabama Power Co. v. Cullman County Electric Membership Corp., 174 So. 866. In Tennessee the supreme court has upheld the right of the cities of Memphis and Chattanooga to buy TVA power and to establish their own electric systems under special laws. Memphis Power & Light Co. v. Memphis, December term, 1936; Tennessee Electric Power Co. v. Chattanooga, December term, 1936; Tennessee Public Service Co. v. Knoxville, 170 Tenn. 40.

The actions which the complainants attack are authorized by the States themselves. It is strange doctrine that acts authorized by a sovereign state constitute interference with its sovereign rights because of the fact that they are also authorized by the Federal Government. We think that deliberate cooperation between the State and the United States, authorized in each case both by the State legislature and by the Congress, constitutes no abdication of any state right.

Moreover, no State has intervened as a party in this proceeding to protest that its laws are violated by the TVA, and [fol. 680] no regulatory commission is a party to this action. These complainants are not authorized to object on behalf of the states. Georgia Power Co. v. Tennessee Valley Authority, 14 F. Supp. 673, 676. Questions of the conflict of the TVA statute with the sovereign power of the states are not properly raised until the interested parties are before the court. Georgia Power Co. v. Tennessee Valley Authority, supra. The TVA statutes do not violate either the ninth or the tenth amendment to the Constitution of the United States.

Since the United States has acquired these dam sites legally, the water power, the right to convert it into electric energy, and the energy produced constitute property belonging to the United States (Ashwander v. Tennessee Valley Authority, supra). This electric energy may be rightfully disposed of by the United States, through the

action of the Congress, under section 3 of article IV of the Constitution of the United States (Ashwander v. Tennessee Valley Authority, supra). Since floods frequently recur and the needs of navigation are continuous, hydroelectric power generated at dams which control floods and improve navigation is continuously created, and the Government may adopt any appropriate constitutional means of disposing of the property. It is not limited in such disposition to a few, or to infrequent transactions. This is the inevitable logic of the Ashwander decision, supra at 315, in which every kind of electric facility, many miles of distribution and transmission lines, and continuous and permanent operation were called in question because the contract attacked in that case was the contract of January 4, 1934, in which certain of these complainants, for valuable consideration, ceded sixteen counties to the TVA for electric service.

While the Government in selling its property performs many functions that would be performed in the operation of a private business trading in similar property, inasmuch as the energy sold is created at dams lawfully erected within [fol. 681] the federal power, the Government in performing these functions is not entering into private business. It is merely using an appropriate method of disposing of its property.

The Government may sell land belonging to the United States in competition with a real estate agency, carry parcels in competition with express companies, and manage and control its thousands of square miles of national parks even as a private company. The Government has an equal right to sell hydroelectric power, lawfully created, in competition with a private utility. There is no constitutional authority which denies the Government the right to seek a wider market (Ashwander v. Tennessee Valley Authority, supra), and the transmission and distribution lines erected are a proper facility for conveying the property of the United States to the market. The creation of the Authority is appropriate. The disposition of the energy is continuous and constant, and it is appropriate that a continuing agency be created in order to carry out this legitimate federal function.

We conclude that since none of the complainants claims to operate under an exclusive franchise, no fraud, malice,

coercion, or conspiracy exists; since the Authority is not exceeding its statutory powers and since the statute is constitutional, the competition with these complainants is lawful. It follows that the holding in Alabama Power Co. v. Ickes, supra, recently decided, squarely applies. These complainants have no immunity from lawful competition, even if their business be curtailed or destroyed.

[fol. 682] A decree will be entered denying the injunction sought, dismissing the bill of complainants, and taxing costs against the complainants. Findings of fact and conclusions of law will be filed.

* * * * * * *

(S.) Florence E. Allen, U. S. Circuit Judge. (S.) John J. Gore U. S. District Judge. (S.) John D. Martin, U. S. District Judge.

[File endorsement omitted.]

[fol. 683] In United States District Court

(Caption omitted)

Order Overruling Complainants' Motion to Strike and Disregard Defendants' Briefs—Filed January 24, 1938

The Court having considered complainants' motion to strike from the files the defendants' explanatory comments on complainants' requested findings of fact, defendants' explanatory comments on defendants' requested findings of fact, and the defendants' supplementary brief responsive to questions of the court during closing argument, overrules the motion.

Complainants except to the overruling of their motion to strike.

(S.) Florence E. Allen, U. S. Circuit Judge. (S.) John J. Gore, John D. Martin, U. S. District Judges.

[fol. 684] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER REGARDING SUBMITTED FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed January 24, 1938

This case came on to be heard, upon the motion of counsel for both parties that the court adopt certain proposed findings of fact and conclusions of law, filed in the case. The court has heretofore directed counsel to append to their proposed findings of fact the name of the witness, the page of the record, and the exhibit relied upon as basis of the finding proposed. This has been done by both parties.

The court makes the following findings of fact:

(1) Findings of fact offered by complainants; numbered I (1, 2, 3, 4, 5); II (6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23); III (24); IV (25); V (26, 27); VI (28); VIII-D (2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 20, 21); VIII-E (28, 31, 37); VIII-F (4, 6, 11, 16, 17, 26, 32, 56); IX-A (4-4¼); IX-D (17, 19, 20); X-A (1, 2, 5, 6); X-B (7, 8, 9); X-D (15, 16, 17, 18, 19);

[fol. 685] (2) Findings of fact offered by defendants, numbered 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182.

Complainants except to the adoption, singly and as a series, of every one of the findings of fact proposed by the defendants. The defendants except to the adoption, singly and as a series, of every one of the findings of fact offered by complainants, with the exception of findings of fact numbered 1 to 28, offered by complainants, embodied in pages 1 to 32 of the proposed findings of fact.

[fol. 686] The following requested findings offered by complainants are rejected: VII (29, 30); VII-A (1, 2); VIII-B (1); VIII-C (1); VIII-D (1, 11, 12, 13, 16, 17, 18, 19); VIII-E (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30, 32, 33, 34, 35); VIII-F (1, 2, 3, 5, 7, 8, 9, 10, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57); VIII-G (1); IX-A (1, 2, 3, 4½); IX-B (5, 6); IX-C (7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 16¼, 16½); IX-D (18, 21, 21½); X-A (3, 4); X-B (10); X-C (10, 11, 12, 13); X-D (14); X-E (20, 21, 22, 23); X-F (24, 25, 25½, 26, 26½, 27, 28); X-G (29, 30, 31, 32); XI (1, 2, 3, 4, 5, 6, 7, 8, 9, 9½, 10); XII (a, b, c, d, e);

Finding of fact numbered 28, offered by defendants, is rejected.

Complainants object to the rejections, singly and as a series and considered together with their proposed findings of fact which have been adopted, of every one of their above-listed findings of fact. The defendants except to the rejection of their proposed finding of fact.

[fol. 687] The court amends the following proposed findings of fact, and adopts them, as amended:

(1) Complainants' VIII-E (36) by adding the following sentence thereto: "This method of operation is entirely consistent with the operation of dams primarily for navigation and flood control."

(2) Defendants' proposed finding No. 1, by striking out the second sentence thereof with references appended thereto.

(3) Defendants' proposed findings No. 18, p. 15, amended by inserting the word "certain" before the words "low dams" in the second line thereof.

(4) Defendants' requested finding No. 4, p. 4, is amended by striking out the entire second sentence therein, together with all references to pages and exhibits thereto appended.

(5) Defendants' requested finding No. 31 is amended by striking out the words "now out-moded" in the ninth line; by striking out the words "without adequate overdepth" in the tenth line, beginning at the comma in the thirteenth

line, by striking out the words "but this sum is wholly inadequate to provide a modern fixed dam navigation channel with adequate over-depths (Barker) 4727-4731."

(6) Defendants' requested finding No. 96 is amended to read as follows: With the exception of small industrials in the 'ceded areas,' all power contracts except one contain either the following provision immediately after the recitals: "Now therefore, subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto agree as follows" (contracts re-printed in Comp. Ex. 118, Def. Ex. 154), or an identical provision ex-
[fol. 688] cept that the word "pursuant" is used in the first line above quoted instead of the word "subject."

The court makes the following finding of fact:

Substantial future damage to complainants will result from competition with TVA. This record does not establish that complainants, or any of them, will have their business destroyed by, nor will become bankrupt because of, such competition.

[fol. 689] Gore, J. is of opinion that in addition to the findings of fact filed by complainants, which have been agreed to by all members of the Court, the following should also be adopted:

VII 29 and 30. VIII (a) -1-but omitting the following "This was and still is the existing Federal Navigation Project on the Tennessee River and" and adding, just after the word "and" the word "These." -2-. VIII (b) 1-VIII (c) 1-VIII (d)1-11 (add at the bottom of No. 11, "no appropriation has yet been made by Congress for construction of this dam." -12-13-16-17-18-19.

VIII (e) -2-3-4-5, but add at the end "When the TVA plan is completed:" 6-7-8-9-10-11-12-13-14-15-16-18-20-21-22-23-24-25-26-27-29-30-32-33-34.

VIII (f) 1-2- (It is not proposed by the TVA to improve navigation on the Mississippi River) 5- 7-8 (strike out of No. 8 the words "the effect would be uncertain and negligible") 9-12-13-14-15-18-19-20-21-22-23-24-25-27-28-29-30-31-33-34-35-36-37-38-39-40-41-42-44-45-46-50-51-52- (strike out of No. 52 the words "the construction of the reservoirs un-

der the TVA Unified plan will destroy a large part of the Valley Storage of the Tennessee River basin") 53-55-57-

IX (a) 1-2-3-4½ IX (b) -5- IX (c) 7-8-9-10-11-12-13-14-15-16-16¼-18-19-20-21-

X (a) 3-4- X (b) 10- X (c) 10-11-12-13- X (d) 14- X (e) 21-22- X (f) 24-25-25½-26- (strike out the following in 26 "Mississippi Power & Light Company sold electricity to the Government Engineering project at Sardis, Mississippi, until the transmission line from Pontotoc, Mississippi, to the project over which TVA electricity is transmitted was constructed." 27-28- X (g) 29-30-31-32.

XI 1-2-3-4-5-6-7-8-9-9½-10.

XII (a), (b), (c), (d), (e).

[fol. 690] GORE, J. concurs in the conclusions reached by Judges Allen and Martin in the adoption of the following numbered findings of fact proposed by defendants, with the modifications listed thereon, and thinks all other findings of fact proposed by defendants should be rejected.

1. and strike out the words "such high dams are the only possible projects to provide a 9 ft. navigation channel on the Tennessee River and control destructive floods in the Tennessee and lower Mississippi basin by means of dams in the Tennessee River system."

2. (Strike out the words "With adequate overdepths for boats of 9 ft. drafts.")

(3) (4) (except strike out the words "The dams of the Authority are the type of projects described in that report as best adapted for comprehensive development of the Tennessee River System navigation, flood control and conservation of water power reservoirs") (5) (except to add that the Norris Dam has elements of design reasonably required for navigation from the dam to the mouth of the Clinch River, the flood control storage in the reservoir is very limited.)

7-8-11-12-13-14-16. (Add after the word "navigation" (Except the dams on the tributaries.")

17. That portion of 17 which states that the high dam will provide superior channel depths and width resulting

in fewer lockages resulting in time consumed in lockages, is adopted, but the remainder of 17 is rejected.

20-21-24. (I will adopt that portion of 25 where it is stated by witness Clemens that the levies on the lower Mississippi have reached the particular limits of heights that the proof shows that for the most effective flood control in the Mississippi reservoirs should be located at or near Cairo which is at the junction of the Ohio and Mississippi Rivers.)

26. (I did not understand that Mr. Clemens stated that the most effective means of reducing flood storage in the Mississippi was by a system of high dams "such as the projects of the Authority" on the main streams, and storage dams on the Clinch and Hiawassee Rivers.)

[fol. 691] 27-28 is supported by opinion testimony. Strike out the following "The projects of the authority described in finding 2 if in operation during past floods in the Tennessee River basin, could have eliminated or substantially reduced all past floods at Chattanooga for which the available records are adequate to make reliable estimates of possible reduction and will reduce or eliminate all moderate floods of the future. And the Authority's projects, in combination with one reservoir on the Little Tennessee, one on the Holston, and one on the French Broad Rivers would sufficiently reduce the magnitude of all probable future floods so as to make feasable the construction of the necessary local protection works by the City of Chattanooga. Such reductions will be of substantial value in the control of floods in the Tennessee Valley."

29-31-32. (Erase the words "and is valuable on both tributaries in order to preserve the life of the projects by affording capacity for the deposit of silt," and "the projects of the authority will also provide substantial storage space above slackwater pool level to control in whole or in part the run-off from the drainage area above the dams during the flood season." and "such projects are the only engineering works which can provide effective flood control in conjunction with the continuous maintenance of the nine-foot channel for navigation."

33. (Erase the word "substantially" in the second line and also the words "in combination with the maintenance of a nine-foot navigation channel", and "these tributary

reservoirs will also serve to increase materially the navigable depths in the unimproved portions of the main stream for navigation."

35. In the 7th line between the words "being" and "operated" interline the words "now, but this will not be necessary after the completion of Pickwick and Guntersville Dams."

36-37. (Except eliminate the words "to prevent a probable flood at Chattanooga in the year 1936".

38-40-41. (But erase "the available sites on the Tennessee River System for the construction of dams and reservoirs [fol. 692] are strictly limited in number," and the utilization of such sites exclusively for local flood protection would preclude the development of the water resources for any other purposes."

42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58 - 59 - 60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80- : 62 to 80 inclusive, do not state the full contents of the contracts; the provisions of the contracts are set out in requested findings of complainants, — to —.

81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97. Again defendant's request for finding of fact 95 to 97 inclusive purport to detail a portion of the terms of the contract, but same are given in full, see complainants' requested findings — to —.

98-99-100-101-102-103-104-105-106-107-108-109-110-111-113-114. (Erase "such lines were constructed for service to the customers under contract and not for any strategic purpose of injuring or threatening the complainants." This is a selfserving declaration.)

115-116-117-118-119-120-121-124. Strike out "and 2 private utility companies, see complainant's Ex. 375, Rankin 2427", and also strike the last sentence in this request reading "in addition, the Authority sold substantial quantities of power to the Commonwealth and Southern Companies in January and February under an extension of the contract of January 4, (def. ex. 147, sheet 7".)

125-126-127-128-129-130-131-132-133-134-135-136- 137 - 138-141-142. (Except erase "The Authority has sold substantial

blocks of power to many municipalities which formerly operated their own municipal generating plants.")

147-149-150-151-152-153-156-157-158-159-160-161-162-163. (Add "the proof abundantly shows that complainants have adequate facilities for supplying the needs—have always had adequate facilities and are prepared in the future to install additional facilities necessary to take care of future needs.)

165-166-167-168-170-171-172-173-174-175. (Except erase beginning in line 3, "and the injury to the respective com- [fol. 693] plainants from any extension of rural lines for service to this market the Authority or municipalities or cooperatives purchasing power at wholesale from the Authority would also be negligible.")

176. (Erase the last paragraph which reads: "All power purchased by the Alabama Power Company and the Tennessee Electric Power Company from and after the respective dates of completion of Norris and Wheeler Dams was supplied from an interconnected pool, including the power generated at both of said dams from and after the date of completion.")

178-179-180-181-182.

[fol. 694] Conclusions of Law

The complainants have offered no proposed conclusions of law.

The court adopts the proposed conclusions of law offered by the defendants numbered 1 to 61, inclusive. The court rejects defendants' proposed conclusions numbered 62, 63, and 64.

The court makes the following conclusions of law:

Under the record the complainants have no legal right, within the areas served by them respectively, to exclude lawful competitors from the power markets of the future.

The complainants except to the adoption of each and every conclusion of law listed above, both singly and as a series.

The defendants except to the rejection of their proposed conclusions of law numbered 62, 63, and 64.

Gore, J., thinks the conclusions of law are fully stated in the opinion, therefore there is no reason for adopting the conclusions of law proposed by defendants in connection with their proposed findings of fact.

Florence E. Allen, United States Circuit Judge. John J. Gore, John D. Martin, United States District Judges.

[fol. 695] IN UNITED STATES DISTRICT COURT

(Caption omitted)

FINAL DECREE—Filed January 25, 1938

This suit came on for trial and final hearing before a special three-judge court composed of the Honorable Florence E. Allen, Judge of the United States Circuit Court of Appeals for the Sixth Circuit, the Honorable John J. Gore, Judge of the United States District Court for the Middle District of Tennessee, and the Honorable John D. Martin, Judge of the United States District Court for the Western District of Tennessee, said court having been organized pursuant to the act of August 24, 1937, (Public No. 352, 75th Cong., 1st sess.), and the said three Judges having been duly designated by the Honorable Charles H. Moorman, Senior Circuit Judge of the United States Circuit Court of Appeals for the Sixth Circuit, to hear and determine these cases, the case being heard upon the testimony of the witnesses and all the evidence as reported in the transcript, and the Court, having fully considered the same and the law applicable thereto and being of the opinion that no cause of action has been established and that the suit should be dismissed.

It is Hereby Ordered, Adjudged, and Decreed that the bill of complaint and all amendments thereto be and the same are hereby finally dismissed, and all prayers for relief contained in said bill of complaint, as amended, are denied. The costs of this proceeding are hereby assessed against the complainants, to all of which the complainants duly reserve their exceptions.

Approved for entry.

Florence E. Allen, Circuit Judge. John J. Gore, District Judge. John D. Martin, District Judge.

O. K. as to form. Charles M. Seymour, for Complainants.

[fol. 696] IN UNITED STATES DISTRICT COURT

(Caption omitted)

MOTION TO DISMISS SUIT AS AGAINST GEORGIA POWER COMPANY WITHOUT PREJUDICE—Filed February 7, 1938

Now comes the Georgia Power Company, one of the complainants in the above entitled cause, and moves this

Court to approve and enter the order, draft of which is attached hereto.

Georgia Power Company, by Baker, Hostetler, Sidlo & Patterson, Its Solicitors.

I certify that a copy of this motion has been delivered to opposing counsel.

Charles D. Snepp.

[fol. 697] IN UNITED STATES DISTRICT COURT

(Caption omitted)

GEORGIA POWER COMPANY'S PETITION FOR REHEARING—Filed February 7, 1938

To the said Court:

Your petitioner, the Georgia Power Company, one of the parties named as complainant in the original Bill of Complaint respectfully shows:

1. Pending this cause, and before the hearing on the motion for preliminary injunction, this company was, by the Federal Courts in the Fifth Circuit, enjoined from further prosecuting this cause toward the obtaining of any injunction against the defendant operating in the State of Georgia, as appears by the records and files of this case.

2. At the opening of the final hearing before the three judge court, counsel for complainants stated in behalf of this company that, duly respecting the injunction, this company would take no part as a party complainant in the trial and hearing. This was at all times fully understood by opposing counsel and by all members of the court.

[fol. 698] 3. Repeatedly and continuously during the trial, the court excluded evidence offered by the other complainants if and in so far as it pertained especially to the rights of this company or the damage which would be inflicted upon this company by the acts and conduct of the defendants, all as appears by the report of the proceedings of the trial.

4. In recognition of the fact that this company was not acting and could not act as a party complainant, and in substantial effect was not a party complainant, the court, by the presiding Judge, expressly declared, as

appears by the stenographer's record of the trial on page 1643, "The Georgia Power Company is not a party to this hearing and cannot pray for any relief here."

5. In this situation it became the duty of the court on its own motion to dismiss this company out of the case as a party complainant and not to enter any decree on the merits against this company in a case in which it had not been allowed to be heard.

6. This company and its counsel, appearing at the trial for it only by way of the disclaimer above stated, did not suppose that any decree would be asked or ordered in form which might even seem to be a final adjudication on the merits against this company, and it did not occur to this company or its counsel, when served with a copy of the decree as entered on January 25, that the decree would have that effect or could be so considered.

7. This company and its counsel during the trial, and particularly after the declaration by the court that this company was not a party, had regarded this company as prac- [fol. 699] tically dismissed from the case and had so understood and interpreted the action of the court. This company is informed and believes that counsel for the defendants had the same understanding of the situation.

8. Immediately after January 25 this company's counsel, acting as counsel for the other complainants in examining the matter of proposed appeal, and thinking of the necessity of a severance of this company under the Supreme Court rules on that subject, first observed that the decree did not recite this company's dismissal from the case and might be thought of, by one who had not examined the record, as a decree on the merits against this company,—although this company is not named in the decree as a party complainant whose Bill of Complaint it dismissed. In the decree the complainants are named only as "Tennessee Electric Power Company, et al."

9. This company by its counsel immediately conferred with defendants' counsel and an agreement was reached that an order nunc pro tunc dismissing this company from the case should be entered as of a day before the entry of the final decree. The form of order so agreed upon and of a motion for the entry of the same are hereto attached, marked Exhibits 1 and 2.

10. The motion and order so prepared were, at the request of the presiding Judge, delivered to her residence at Cleveland on the 29th day of January, together with an explanatory letter, dated January 28, and a further explanatory letter dated January 29, copies of which are hereto attached, marked Exhibits 3 and 4 respectively. Duplicates of Exhibits 1, 2 and 3 were mailed to Judge Gore and Judge Martin at their respective addresses.

[fol. 700] 11. This company's counsel have now received, signed by the three judges of the court, a letter, copy of which is hereto attached, marked Exhibit 5.

12. This company is advised and therefore alleges that while the decree as entered on January 25 ought not rightly to be considered as a decree against this company on the merits, but ought to have the effect only of dismissal from the case without prejudice, yet the decree is open to misconstruction in that respect and there is danger that it might be held to be a final decree against this company, although in a case in which it had not been allowed to appear or participate.

13. Such a result would be so far a miscarriage of justice that the decree ought not be allowed to stand in such form as to give possible support to such construction, and therefore the decree should be so modified as expressly to recite either that this company had been dismissed from the case without prejudice to its rights, or that this company is thereby dismissed out of the case without prejudice to its rights.

Your petitioner therefore prays that the decree of January 25, in so far as it may purport to dismiss the Bill of this company on the merits, may be set aside; that this cause in that particular and to that extent be reheard; and that the decree of January 25 be modified and reentered in corrected form so that it may expressly dismiss this company as a party out of the case or so that the dismissal of the Bill as to this company may be without prejudice to its rights in the premises.

And your petitioner will ever pray.

Georgia Power Company, by Baker, Hostetler, Sidlo & Patterson, Arthur C. Denison, of Counsel.

[fol. 701] *Duly sworn to by Wm. H. Bemis. Jurat omitted in printing.*

I, the undersigned, being of counsel for the above-named petitioner, the Georgia Power Company, certify that the foregoing petition is not filed for delay but only in order that justice may be done.

Arthur C. Denison.

[fol. 702] To James Lawrence Fly, Counsel for Defendants:

Please take notice that the foregoing is a copy of the petition for rehearing this day filed by the Georgia Power Company and that the same will be brought on for hearing, not before the court in session in the ordinary way but, in accordance with the previous directions of the three judge court, will be presented by sending full copies thereof to each of the three judges at their respective addresses and that such copies are being this day sent accordingly.

If you desire to be heard in opposition to such petition, you are requested to present such opposition in the same way forthwith and not later than two days after receiving this notice. Lacking such opposition or any extension of time therefor, we suppose the court will be justified in thereupon acting upon the petition.

Dated, Knoxville, Tennessee, February 7th, 1938.

Copy of the foregoing petition for rehearing and above notice has this day been delivered to counsel for defendants.

Charles D. Snepp.

[fol. 703] Exhibit 1 to Petition for Rehearing

(Caption omitted)

Order

It having appeared to the Court upon the trial of this cause that the Georgia Power Company, one of the original complainants, had been enjoined by the United States District Court for the Northern District of Georgia from further participation in this cause seeking the relief sought in the bill of complaint herein, and the Georgia Power Company having not participated in the trial nor offered any evidence herein, and it having been the theory of the trial that in practical effect the Georgia Power Company had ceased

to be a party complainant and that because the Georgia Power Company could not be heard in this cause and no decree could be rendered herein in its favor, that therefore the bill as to the Georgia Power Company should be dismissed without prejudice, but the entry of an order to that effect having been at that time inadvertently omitted,

It is this day ordered, as of the 22nd day of January, 1938, now for then, that the Georgia Power Company be dismissed as a party complainant herein at its cost but without prejudice.

Dated January 29, 1938.

—— ——, United States Circuit Judge. —— ——, ——, —— United States District Judges.

The defendants hereby consent to the making and entry of the foregoing order.

James Lawrence Fly, J. C. S., Solicitors for Defendants.

[fol. 704] RECITAL AS TO EXHIBIT 2

Exhibit "2" is a copy of the motion to dismiss suit as against Georgia Power Company without prejudice and is here omitted to avoid duplication.

[fol. 705] EXHIBIT 3 TO PETITION FOR REHEARING

January 28, 1938.

Honorable Florence E. Allen, Cleveland, Ohio; Honorable John J. Gore, Cookeville, Tennessee; Honorable John D. Martin, Memphis, Tennessee:

In re The Tennessee Electric Power Company et al. v. Tennessee Valley Authority et al.

DEAR JUDGES:

We submit herewith a Motion and a form of proposed Order with reference to the Georgia Power Company. It will be recalled that the status of the Georgia Power Company was the subject of numerous references during the trial of

the above case. In particular, in excluding the testimony of the witness, Charles A. Collier, the Court stated, as appears at page 1643 of the Record:

"The ruling of the Court is that it will not receive the testimony of the witness, Charles A. Collier. The Georgia Power Company is not a party to this hearing and cannot pray for any relief here."

In this situation, there having been no formal Journal Entry dismissing the Georgia Power Company as a party complainant and this having escaped the attention of counsel prior to the entry of the Final Decree, we called Mr. Fitts yesterday and suggested that the oversight be corrected by a nunc pro tunc order to avoid the alternative of asking for a modification of the Decree, which might have the effect of extending the time for appeal. We were advised by Mr. Fitts that he concurred in the suggestion and that we were to feel at liberty to take the matter up with the members of the Court.

We are sending a copy of this letter to Mr. Fly, together [fol. 706] with the enclosures, and have already telephoned the form of the enclosures to Knoxville, so that the form of the proposed Order may be submitted to counsel for the Defendants for approval tomorrow morning. Assuming that counsel agree on the form of the Order, a copy of it with approving signatures will be mailed to each member of the Court tomorrow.

We are bringing the subject to the attention of the Court in this way, before there has been an agreement between counsel respecting the form of the Order, to minimize delay.

Very truly yours, Baker, Hostetler, Sidlo & Patterson, Counsel for Complainants, by W. H. Bemis.

Copy to: James Lawrence Fly, Esq., Tennessee Valley Authority, Knoxville, Tennessee. Frantz, McConnell & Seymour, 700 Burwell Building, Knoxville, Tennessee. Trabue, Hume & Armistead, 7th Floor American Trust Bldg., Nashville, Tennessee.

[fol. 707] EXHIBIT 4 TO PETITION FOR REHEARING

January 29, 1938.

Honorable Florence E. Allen, 3290 Grenway Road, Shaker Heights, Ohio.

In re The Tennessee Electric Power Company et al., v. Tennessee Valley Authority et al.

DEAR JUDGE ALLEN:

I have just been advised by Mr. Snepp that counsel for the Defendants have approved the form of the proposed Order which is enclosed with the change shown by interlineation therein, and that a copy of the Order so changed, with approving acknowledgment by Defendants' counsel, is being mailed today to each member of the Court.

Very truly yours, W. H. Bemis.

S-2G.
Encs.

[fol. 708] EXHIBIT 5 TO PETITION FOR REHEARING

United States Circuit Court of Appeals for the Sixth Circuit, Michigan-Ohio-Kentucky-Tennessee

Chambers of Judge Allen, Cleveland, Ohio

January 31, 1938.

Baker, Hostetler, Sidlo & Patterson, Cleveland, Ohio. Trabue, Hume & Armistead, Nashville, Tennessee. Frantz, McConnell & Seymour, Knoxville, Tennessee. James Lawrence Fly, Esq., Knoxville, Tennessee.

In re Tennessee Electric Power Company vs. T. V. A. Equity, No. 228

DEAR SIRS:

The Court has considered the motion and order submitted in the above cause by the Georgia Power Company on January 29, 1938, asking that the Georgia Power Company be dismissed without prejudice as a party complainant by order entered nunc pro tunc. The decree was filed on January 25, 1938. We note that Mr. Fly has agreed to the entry of the order requested.

The motion is in unusual form. It does not specifically state its object except by reference to the order submitted therewith, and the Court therefore has considered the motion and order together.

A nunc pro tunc entry is an entry made now, of something which was actually previously done, to have effect as of the former date. Its office is not to supply omitted action by the Court, but to supply an omission in the record of action really had, but omitted through inadvertence or mistake. In this case no motion such as the motion now considered was [fol. 709] made prior to the entry of the decree; and the court at no time dismissed the Georgia Power Company as party complainant.

Also, a nunc pro tunc order will not be entered even in an otherwise proper case if the delay in entering it was due to some fault or omission by the party entitled to enter the order. Here, the moving party has caused the delay from which it seeks relief by nunc pro tunc order. The Georgia Power Company at any time before entry of final decree could have moved for dismissal without prejudice, but took no such action.

Counsel are advised that this motion if filed, or a similar motion, if filed in other form, seeking a nunc pro tunc order of dismissal without prejudice on behalf of the Georgia Power Company, will be overruled, upon the following grounds:

(1) that the proposed motion and order are fatally defective because they seek the entry nunc pro tunc of an order never made by the Court; and,

(2) that laches is shown upon the part of the Georgia Power Company, the moving party.

Florence E. Allen, U. S. Circuit Judge. John J. Gore, U. S. District Judge. John D. Martin, U. S. District Judge.

Copy has been delivered to defendants.

(S.) Charles D. Snepp.

[fol. 710] IN UNITED STATES DISTRICT COURT

(Caption omitted)

DEFENDANTS' MOTION FOR FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed February 8, 1938

Now come the defendants and move the Court to adopt, sign, and enter the attached findings of fact and conclusions of law, and the defendants further move that the Court enter an order directing the Clerk of this Court to file and enter the attached findings of fact and conclusions of law under date of January 24, 1938, the date upon which this Court actually approved and adopted these findings and conclusions, as set out in the order of January 24, 1938, previously entered in this cause.

Respectfully submitted, (S.) James Lawrence Fly, John Lord O'Brian, William C. Fitts, Jr., Solicitors for the Defendants.

I hereby certify that I have on this 8th day of February, 1938, delivered a copy of the above motion, together with the attached findings of fact and conclusions of law, to Messrs. Frantz, McConnell & Seymour, solicitors of record for the complainants.

(S.) William C. Fitts, Jr., Solicitor for the Defendants.

(The draft of findings of fact and conclusions of law attached to the motion is the same as the findings of fact and conclusions of law filed by the Court on February 23, 1938, and for brevity is here omitted.)

[fol. 711] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER DISMISSING GEORGIA POWER COMPANY WITHOUT PREJUDICE—Filed February 22, 1938

This cause came on to be heard upon the motion to dismiss complainant the Georgia Power Company from the case without prejudice by nunc pro tunc order of some date prior to the entry of the decree herein.

And it appearing that counsel for defendants consent to the entry of an order dismissing the Georgia Power Company as party complainant in this action without prejudice by nunc pro tunc order;

And it further appearing that said motion and order were on February 7, 1938, filed with the clerk of this court;

The court finds that the omission to mention the Georgia Power Company in the decree and to dismiss it from the case without prejudice was not an inadvertence of the court since at no time during or subsequent to the trial and prior to the decree was any motion filed with the court praying for such dismissal nor was any suggestion made by counsel at any time prior to the decree that the Georgia Power Company be so dismissed;

And the court finds that the inadvertence and laches in this matter are the inadvertence and laches solely of counsel.

And the court being of opinion that the decree should dispose of this question, as well as of all other questions in the case, in accordance with the facts shown by the record and for the purpose of expediting the preparation of the record, sustains such motion.

It is this day ordered as of the twenty-second day of January, 1938, now for then, that the Georgia Power Company be dismissed as a party complainant herein at its costs but without prejudice.

Florence E. Allen, United States Circuit Judge. John J. Gore, John D. Martin, United States District Judges.

[fol. 712] In United States District Court

(Caption omitted)

Order on Findings of Fact and Conclusions of Law—Filed February 23, 1938

The Court having previously on, to wit, January 24, 1938, adopted and entered an order by which the Court adopted as the findings of fact and conclusions of law in this cause certain findings and conclusions which had been proposed by the respective parties by setting out in said order by reference to the numbers appearing in the respective drafts of proposed findings of fact and conclusions of law filed by the respective parties the findings and con-

clusions actually adopted by the Court, and the Court having heretofore suggested to counsel that a complete draft of the findings of fact and conclusions of law actually adopted by the Court should be prepared and filed in this cause as the findings of fact and conclusions of law of the Court, and counsel for the defendants having prepared such a complete draft incorporating therein and setting out in full all of the findings of fact and conclusions of law adopted by the Court in said order of January 24, 1938, together with the separate views of Judge Gore with respect to said findings and conclusions, and the defendants having moved that these findings of fact and conclusions of law be adopted, signed, and entered as the findings of fact and conclusions of law of the Court in this cause, and the Court having considered the same and being of the opinion that the findings of fact and conclusions of law so submitted by the defendants accurately set forth the findings and conclusions adopted by the Court in said order of January 24, 1938, and the Court having heretofore adopted, signed, and entered said findings of fact and conclusions of law as the final findings of fact and conclusions of law of the Court in this cause, it is hereby

Ordered, Adjudged and Decreed that the clerk of this Court be and he is hereby instructed to file and enter these findings of fact and conclusions of law now for then under date of January 24, 1938, the date upon which said findings of fact and conclusions of law were actually adopted by the Court.

(S.) Florence E. Allen, United States Circuit Judge.
(S.) John D. Martin, United States District Judge.
—— ——, United States District Judge.

[fol. 713] In United States District Court

(Caption omitted)

Findings of Fact and Conclusions of Law—Filed February 23, 1938

In accordance with Equity Rule 70½ the Court in deciding the above suit in equity makes findings of fact and conclusions of law respectively as follows:

Findings of Fact

Status of the Parties

1. Complainants are eighteen privately owned public utility corporations duly qualified to engage as public utilities in the States of Tennessee, Georgia, Mississippi, Alabama, Kentucky, North Carolina, South Carolina, Virginia, and West Virginia, and are engaged principally in the business [fol. 714] of generating, transmitting and distributing and selling electricity, or distributing and selling electricity, or transmitting and selling electricity as public utilities in said States.

2. The defendant Tennessee Valley Authority is a body corporate created by an act of Congress approved May 18, 1933, and has an office in Knoxville, Knox County, Tennessee.

3. The defendants Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal are, severally, residents of Knox County, Tennessee, and are the three chief executive officers and constitute the Board of Directors of the Tennessee Valley Authority.

4. This is an action of a civil nature, in equity, originally filed in the Chancery Court of Knox County, Tennessee, and thereafter duly removed by the defendants to this Court.

5. This is a suit in equity and involves questions arising under the Constitution and laws of the United States, and the amount in controversy exceeds, exclusive of interest and costs, the sum or value of $3,000.

6. The Tennessee Electric Power Company is a public utility corporation organized under the laws of the State of Maryland, is duly qualified to carry on its business as a public utility in the States of Tennessee and Georgia, and has its principal place of business in the city of Chattanooga, Tennessee. For more than twenty years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in 66 counties in Tennessee, 4 counties in Georgia, and 455 communities in Tennessee and Georgia, including the cities of Chat- [fol. 715] tanooga and Nashville, Tennessee. All of the operating territory of the company, with the exception of

a small area north of Nashville, Tennessee, is located within a 100-mile radius of one or more TVA generating plants constructed, under construction, or authorized to be constructed. Said company owns and operates 1,559 miles of transmission lines and 5,226 miles of distribution lines, of which 2,677 are classified as rural distribution lines, in said States of Tennessee and Georgia. It owns generating facilities with a total installed capacity of 244,009 kilowatts and leases generating facilities with a total installed capacity of 6,500 kw. In addition to these facilities the company is preparing to begin construction of a steam generating plant at Bordeaux, Tennessee, with an initial installed capacity of 25,000 kw. and provision for future increase to 150,000 kw. The company's steam plant at Hale's Bar was constructed to provide for expansion of its present capacity of 40,000 kw. to an ultimate capacity of 100,000 kw. Said company also owns hydro sites capable of producing, when developed, 76,000 kw. and has interconnections with other utilities, the total capacity of the interconnections being 160,000 kva. Said company also owns and operates transportation systems in the cities of Chattanooga and Nashville, Tennessee, water systems in 11 municipalities, ice plants in 7 municipalities, and a telephone system in one municipality. For a period of years these businesses have been operated under the same management with the electric operations and as one business, and the severance of one from the other would have an adverse effect upon the company.

[fol. 716] In the year ending September 30, 1937, the company served 136,470 customers, of which 38,399 were classified as rural customers, and, exclusive of sales to other utilities, sold 767,646,665 kilowatt hours, of which 496,923,761 kwh., or 64.7% represented sales to industrial customers. The company has issued an outstanding $49,313,300 in bonds, 241,296 shares of $100 par value preferred stock, and 425,000 shares of no par common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee; and it has 3,500 employees.

7. Franklin Power & Light Company is a public utility corporation organized under the laws of the State of Tennessee, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Franklin, Tennessee. Ever since the organization of the

company in 1929 it has been engaged in the electric-power business, distributing electricity in and around the city of Franklin, Tennessee. Its operating territory lies approximately 80 miles from Wilson Dam. The company owns and operates a distribution system consisting of 15 miles of line. It also owns a steam generating plant with an installed capacity of 1,800 kw., which is maintained as a standby plant for The Tennessee Electric Power Company, from which company the Franklin Power & Light Company purchases its power requirements. In the year 1936 the company served 901 customers and sold a total of 3,219,758 kwh. Said company has issued and outstanding $100,000 in bonds and 1,900 shares of $100 par value stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee.

[fol. 717] 8. Memphis Power & Light Company is a public utility corporation organized under the laws of the State of New Jersey, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Memphis, Tennessee. For more than 20 years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in Shelby County, Tennessee, and in 37 towns and communities therein, including the city of Memphis. The operating territory of the company is from 74 to 105 miles from Pickwick Dam. Said company owns and operates 319 miles of transmission lines and 905 miles of distribution lines. It owns a steam generating plant with an installed capacity of 54,000 kw., has interchange facilities with Arkansas Power & Light Company and Mississippi Power & Light Company, and owns a site for the erection of additional generating facilities with an installed capacity of from 20,000 to 30,000 kw. It owns and operates a natural-gas distribution system throughout its territory, from which approximately 37% of the total gross revenues of the company are derived. The gas and electric properties are jointly operated under the same management, and a loss of all or a substantial part of its electric business would increase the cost of operating the gas department. In the year ending July 30, 1937, the company served 56,952 customers and, exclusive of sales to other utilities, sold 191,888,000 kwh., of which 61,841,000 kwh., or 32.23%, represented sales to industrial customers. The company has issued and out-

standing $22,275,000 in bonds, 30,000 shares of no par value [fol. 718] $7 preferred stock, 32,000 shares of no par value $6 preferred stock and 7,200 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee.

9. Southern Tennessee Power Company is a public utility corporation organized under the laws of the State of Delaware, is duly qualified to carry on its business as a public utility in the States of Alabama and Tennessee, and has its principal place of business in the city of Chattanooga, Tennessee. The company owns and operates a high-tension transmission line from Wilson Dam, Alabama, to Iron City, Tennessee, a distance of approximately 15 miles, and is engaged in the business of transmitting electric energy over said transmission line, which constitutes a connection between the Alabama Power Company and the Tennessee Electric Power Company. The company has outstanding a note amounting to $380,000 and 10 shares of no par stock.

10. Birmingham Electric Company is a public utility corporation organized as such under the laws of the State of Alabama and has its principal place of business in the city of Birmingham, Alabama. For many years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in the city of Birmingham, Alabama, and the metropolitan district thereof, including the towns of Bessemer, Jonesboro, Brighton, Lipscomb, Fairfield, Irondale, Homewood and Tarrant City, as well as in Jefferson County, Alabama, all which territory was set aside to it by order of the Alabama Public Service [fol. 719] Commission. The company's operating territory is located approximately 66 miles from Guntersville Dam. Said company owns and operates 1,057.52 miles of distribution pole lines. It purchases at wholesale from the Alabama Power Company the electricity which it distributes and owns a steam generating plant with an installed capacity of 11,300 kw., which is used as a standby station. It also owns and operates a transportation system throughout its territory, which contributes about 33% of the total gross revenues of the company, and a steam heating system serving a substantial portion of the business district of the city of Birmingham, which contributes approximately 1% of the company's total gross revenues. These several businesses have for a period of years been jointly operated. The com-

pany served 68,110 customers, and in 1936, exclusive of interdepartmental sales, sold 208,113,400 kwh., of which 116,429,366 kwh., or approximately 56% of its total sales, represented sales to industrial customers.

11. Mississippi Power Company is a public utility corporation organized under the laws of the State of Maine, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the City of Gulfport, Mississippi. For more than 12 years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in 34 counties and in 147 towns and communities in the State of Mississippi. Most of the operating territory of the company is located within 250 miles from Pickwick and Guntersville Dams, and much of the operating territory lies within 100 and 150 miles from said [fol. 720] TVA generating plants. Said company owns and operates 857.41 pole miles of transmission lines and 1,080.5 pole miles of distribution lines. It owns generating facilities with a total installed capacity of 18,702 kw., and it has, subject to lease or contract, generating facilities with an installed capacity of 6,450 kw. The company, however, purchases substantially all its power requirements from the Alabama Power Company at 4 interchange points having a combined capacity of 66,300 kw. As a part of its business the company owns and operates a transportation system in the city of Hattiesburg, Mississippi, the total gross revenues from which in the year 1936 were less than 1% of the total revenues received by the company from all sources. In 1936 the company, within a 100-mile radius of Pickwick Dam, served 1,247 customers, sold 2,102,086 kwh., and derived a revenue therefrom of $88,254.39; within a 150-mile radius of said dam it served 6,068 customers, sold 14,816,009 kwh., and derived a revenue therefrom of $484,839.85; within a 250-mile radius of said dam it served 20,772 customers, sold 87,936,552 kwh., and derived a revenue therefrom of $1,768,553.86. The total kwh. sales to regular customers in that year amounted to 121,160,760 kwh., of which 64,216,059 kwh., or 53%, represented sales to industrial customers. The company has issued and outstanding $10,690,500 in first mortgage bonds, 39,092 shares of preferred stock, and 450,000 shares of common stock; and it has 512 employees.

12. Appalachian Electric Power Company is a public utility corporation organized under the laws of the state [fol. 721] of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and West Virginia, and has its principal place of business in the city of Roanoke, Virginia. Said company is engaged in the electric-power business and distributes electricity in 29 counties in Virginia, 20 counties in West Virginia, and 522 towns and communities in Virginia and West Virginia. Most of the operating territory of the company is located within 250 miles of Norris Dam; much of its territory is located within 150 miles of said dam, and some of its territory is located within 100 miles of said dam. Said company owns and operates 1,767.88 pole miles of transmission lines, 4,663.79 pole miles of distribution lines, of which 2,527 miles are classified as rural lines, and in addition, on August 31, 1937, had 452 miles of rural lines under construction. The company owns generating facilities with a total installed capacity of 381,390 kw. and has a purchased capacity of 43,500 kw. In 1936 within a 100-mile radius of Norris Dam the company served 439 customers, sold 337,500 kwh., and derived a revenue therefrom of $16,236; within a 150-mile radius of said dam it served 8,171 customers, sold 69,263,102 kwh., and derived a revenue therefrom of $1,312,443; within a 250-mile radius of said dam it served 126,700 customers, sold 1,283,307,996 kwh., and derived a revenue therefrom of $17,690,540. The total kwh. sales to regular customers in that year amounted to 1,351,653,286 kwh., of which 1,153,567,845 kwh., or 85.34%, represented sales to industrial customers. The company has issued and outstanding $80,774,000 in bonds, and preferred and common stock aggregating $53,500,167.27, and has 3,366 employees.

[fol. 722] 13. Carolina Power Co. & Light Company is a public utility corporation organized under the laws of the State of North Carolina, is duly qualified to carry on its business as a public utility in said State and in the State of South Carolina, and has its principal place of business in the city of Raleigh, North Carolina. For more than 20 years said company and its predecessors have been engaged in the electric-power business. It is now distributing electricity in the States of North and South Carolina and 272 incorporated towns and communities therein. A portion of the company's operating territory is located within a

radius of 100 miles of Norris and Fowler Bend Dams and Fontana Dam site, a part of its territory is located within a radius of 150 miles of Fowler Bend Dam and Fontana Dam site, and a part of it is located within a radius of 250 miles of Fowler Bend Dam and Fontana Dam site. Said company owns and operates 1,256 pole miles of transmission lines and 5,921 pole miles of distribution lines. It owns generating facilities with a total installed capacity of 249,050 kw., which are capable of being enlarged so as to produce an additional 80,000 kw. It owns a hydro site capable of producing, when developed, 40,000 kw. and has interconnections with other utilities, the total capacity of such interconnections being 384,000 kw. As a part of its business the company owns and operates transportation systems in Raleigh and Asheville, the gross revenues from which are less than 4% of the total gross revenues of the company. In 1936 the company served 83,836 customers and, exclusive of sales to other utilities, sold 536,521,801 kwh. In said year the company, within a radius of 100 miles from Norris [fol. 723] and Fowler Bend Dams and Fontana Dam site, sold, exclusive of sales to other utilities, 115,802,557 kwh., of which 83,553,403, or approximately 61%, represented sales to industrial customers; within a 150-mile radius of Fowler Bend Dam and Fontana Dam site it sold, exclusive of sales to other utilities, 118,167,621 kwh., of which 85,530,602 kwh., or approximately 72%, represented sales to industrial customers; and within a 250 mile radius of Fontana Dam site it sold, exclusive of sales to other utilities, 309,197,905 kwh. The company has issued and outstanding $46,000,000 in bonds, 165,162 shares of no par value preferred stock entitled to $6 and $7 annual dividends, and 2,500,000 shares of no par common stock, and had as of August 1937, 1,434 regular employees and 57 temporary employees.

14. Tennessee Public Service Company is a public utility corporation organized under the laws of the State of Maine, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Knoxville, Tennessee. For many years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in Knox, Jefferson, Cocke, Sevier, Union, and Grainger Counties, Tennessee, and 37 towns and communities therein, including the city of Knoxville. The entire operating territory of the company is located within a

distance of from 25 to 75 miles of Norris Dam. Said company owns and operates 180.58 miles of transmission lines and 1,063.77 miles of distribution lines. It purchases practically all of its power requirements from the complainant [fol. 724] Carolina Power & Light Company and also owns generating facilities with an installed capacity of 3,150 kw. Said company also owns and operates a transportation system in the city of Knoxville, Tennessee, which contributes approximately 21½% of the company's total gross revenues. Both the transportation and electric properties are operated under the same management and as one business. In the year ending September 30, 1937, the company served 30,074 electric customers and, exclusive of interdepartmental sales and sales to other utilities, sold 131,404,000 kwh., of which 73,269,000 kwh., or 55.76%, represented sales to industrial customers. The company has issued and outstanding $7,780,000 in bonds, 50,000 shares of no par preferred stock entitled to a $6 annual cumulative dividend per share, and 1,000,000 shares of common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee.

15. Holston River Electric Company is a public utility corporation organized as such under the laws of the State of Tennessee with its principal place of business in the city of Knoxville, Tennessee. Said company is distributing electricity in the incorporated town of Rogersville, Tennessee, and 8 communities in Hawkins and Hamblen Counties, Tennessee, and to rural customers in said counties. The entire operating territory of the company is located within 75 miles of Norris Dam. Said company owns and operates 98.54 miles of distribution lines and purchases at wholesale, power, which it distributes, from the complainant Tennessee Public Service Company. For the year ending September 30, 1937, the company sold 1,560,000 kwh.

[fol. 725] 16. Alabama Power Company is a public utility corporation organized under the laws of the State of Alabama, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Attalla, Alabama. The company is engaged in the electric-power business and distributes electricity in 65 of the 67 counties of the State of Alabama and in 594 communities in the same State. Practically all of the operating territory of the company is located within 250 miles of

Guntersville and Wilson Dams; most of the operating territory is located within 150 miles of said dams, and much of the territory is located within 100 miles of said dams. Said company owns and operates 3,435 circuit miles of transmission lines, 2,810 miles of distribution lines within incorporated municipalities, and 4,519 miles of line classified as rural. It owns generating facilities with a total installed capacity of 571,744 kw. and has made provision for the expansion of its existing plants such that their capacities may be increased by 321,500 kw.

In 1936, exclusive of sales to the Birmingham Electric Company, the company sold within a 100-mile radius of TVA dams constructed or under construction 711,835,625 kwh. and derived a revenue therefrom of $7,384,969,48; within a 150-mile radius of said dams it sold 961,720,184 kwh. and derived a revenue therefrom of $11,147,768.38; and within a 250-mile radius of said dams it sold 1,018,-109,064 kwh. and derived a revenue therefrom of $12,346,-658.72. In that year the total kwh. sales, exclusive of sales to utilities, amounted to 1,145,267,755 kwh., of which 948,-565,825, or 82.8%, represented sales to industrial customers. [fol. 726] The total number of customers served in that year was 123,739. The company has issued and outstanding $96,771,600 in bonds, 367,178 shares of $5, $6 and $7 preferred stock at a stated value of $35,751,258, and 3,775,000 shares of common stock at a stated value of $48,961,300, all of which securities issued subsequent to the creation of the Alabama Public Service Commission were issued with its approval; and it has 2,850 employees.

17. Kentucky and West Virginia Power Company, Inc., is a public utility corporation organized under the laws of the State of Kentucky, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Ashland, Kentucky. Said company is engaged in the electric-power business and distributes electricity in 14 counties and in 100 towns and communities in the State of Kentucky. All of the operating territory of the company is located within 250 miles of Norris Dam; most of its territory is located within 150 miles of said dam, and some of its territory is located within 100 miles of said dam. Said company owns and operates 435.53 pole miles of transmission lines, 553.01 pole miles of

distribution lines, of which 131 miles are classified as rural distribution lines, and in addition, on August 31, 1937, had 31 miles of rural distribution lines under construction. The company owns generating facilities with a total installed capacity of 19,500 kw. In 1936 within a 100-mile radius of Norris Dam the company served 3,713 customers, sold 30,078,589 kwh., and derived a revenue therefrom of $685,-969; within a 150-mile radius of said dam it served 9,919 [fol. 727] customers, sold 87,946,055 kwh., and derived a revenue therefrom of $1,700,159; within a 250-mile radius of said dam it served 21,170 customers, sold 254,600,861 kwh., and derived a revenue therefrom of $3,314,345. The total kwh. sales to regular customers in that year amounted to 254,600,861, of which 232,243,229 kwh., or 91.32%, represented sales to industrial customers. The company has issued and outstanding $8,499,000 in bonds, and preferred and common stock aggregating $4,147,525, and has 435 employees.

18. Kingsport Utilities, Inc., is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Kingsport, Tennessee. The company is engaged in the electric-power business and is distributing electricity in the counties of Sullivan and Hawkins in the State of Tennessee. All of the operating territory of the company is located within a 100-mile radius of Norris Dam. Said company owns and operates 5.75 pole miles of transmission line, 133.53 pole miles of distribution lines, of which 49 miles are classified as rural distribution lines, and in addition, on August 31, 1937, had 6 miles of rural distribution lines under construction. It also owns generating facilities with a total installed capacity of 11,400 kw. In the year 1936 the company served 4,358 regular customers and sold 37,468,385 kwh., of which 30,356,870 kwh., or 81%, represented sales to industrial customers. The company has issued and outstanding $1,044,000 in bonds and $1,000,-000 of preferred and common stocks and has 98 employees.

[fol. 728] 19. Kentucky-Tennessee Light & Power Company is a public utility corporation organized under the laws of the State of Kentucky, is duly qualified to carry on its business as a public utility in said State and in the State of Tennessee, and has its principal place of business in the

city of Bowling Green, Kentucky. The company is engaged in the electric-power business and distributes electricity in many counties in Tennessee and Kentucky. All of the operating territory of the company is within a 250-mile radius, and most of the operating territory is within a 100-mile radius, of one or more TVA generating plants constructed, under construction, or authorized to be constructed. Said company owns and operates many miles of transmission and distribution lines in the States of Tennessee and Kentucky.

20. West Tennessee Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Jackson, Tennessee. For more than 30 years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in 9 counties in west Tennessee and 24 incorporated towns and communities, including the city of Jackson, Tennessee. All of the operating territory of the company is from 40 to 75 miles of Pickwick Dam. Said company owns and operates 90.6 miles of transmission lines and 193.6 miles of lines classified as rural. It owns generating facilities with a total installed capacity of 5,228 kw. and also has interconnections with Memphis Power & [fol. 729] Light Company, from whom it purchases power at wholesale. It owns and operates natural-gas distribution systems in 6 municipalities, ice plants in 2 municipalities, waterworks systems in 3 municipalities, and a transportation system in the city of Jackson, Tennessee. For a period of years these businesses have been operated under the same management with the electric operations and as one business and are closely intermingled. For the year ending July 31, 1937, the company served 10,050 customers and, exclusive of interdepartmental sales, sold 19,322,248 kwh., of which 8,080,659 kwh., or 38.74%, represented sales to industrial customers.

21. Mississippi Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the city of Jackson, Mississippi. For many years said company has been engaged in the electric-

power business and at present is distributing electricity in 40 counties in Mississippi and 312 incorporated towns and communities therein, including the cities of Vicksburg, Natchez, Jackson, and Greenville. Most of the operating territory of the company is located within 250 miles from Pickwick Dam, and a substantial portion of its operating territory is within 150 miles of Wheeler and Guntersville Dams. Said company owns and operates 456.8 miles of transmission lines and 2,628.2 miles of distribution lines. The company purchases substantially all of its power requirements from the Louisiana Power & Light Company, [fol. 730] and also owns generating facilities with an installed capacity of 19,146 kw. As a part of its business the company owns and operates transportation systems in the cities of Jackson, Greenville, and Vicksburg; natural-gas distribution systems in 24 municipalities; ice manufacturing systems in 5 municipalities; water systems in 6 municipalities; and leases and operates water systems in 4 municipalities. The total gross revenues from such operations in 1936 were 29% of the total gross revenues received by the company from all sources. All properties of the company are operated together as a unit, and the destruction of the whole or a substantial part of its electric business would seriously hamper the company's ability to efficiently operate its other properties. In 1936 the company, within a 150-mile radius of Pickwick Dam, served 7,779 customers, sold 18,734,247 kwh., and derived revenue therefrom of $743,744.92; within a 250-mile radius of said dam it served 29,454 customers, sold 117,792,338 kwh., and derived revenue therefrom of $3,063,194.36. The total kwh. sales to regular customers in that year amounted to 157,608,000 kwh., of which 87,673,000 kwh., or 55.6%, represented sales to industrial customers. The company has issued and outstanding $16,000,000 in bonds, 69,000 shares of no par value first preferred stock entitled to a $6 annual cumulative dividend, 35,000 shares of no par value second preferred stock entitled to a $6 annual cumulative dividend, and 1,000,000 shares of no par common stock.

22. East Tennessee Light & Power Company is a public utility corporation organized under the laws of the State [fol. 731] of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and North Carolina, and has its principal place of business

in the city of Bristol, Tennessee-Virginia. For many years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in Carter, Johnson, Sullivan, Unicoi and Washington Counties, Tennessee; in Scott and Washington Counties, Virginia; in Avery County, North Carolina; and in 32 incorporated towns and communities, including the city of Bristol, Tennessee-Virginia. All of the operating territory of the company is within a radius of 135 miles of Norris Dam, the larger part of it being within a radius of 100 to 115 miles of said dam. Said company owns and operates 66.5 miles of transmission lines and 354.4 miles of distribution lines in said States of Tennessee, Virginia, and North Carolina. It owns generating facilities with a total installed capacity of 3,828 kw. Said company also owns a hydro site near Elizabethton, Tennessee, and has interconnections with Appalachian Electric Power Company and Edmondson Electric Company. The company also owns and operates a gas distribution system in the city of Bristol, Tennessee-Virginia, from which operation approximately 10% of the total gross revenue of the company is derived. In the year ending July 31, 1937, the company served 10,312 customers, of which 1,572 were classified as rural customers, and in 1936, sold 22,904,648 kwh., of which 9,243,729 kwh., or 40.4%, represented sales to industrial customers. The company has issued and outstanding $2,731,000 in bonds, 2,635 shares of no par preferred stock [fol. 732] entitled to a $6 annual cumulative dividend, and 35,000 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee; and it has 204 employees.

23. Tennessee Eastern Electric Company is a public utility corporation organized under the laws of the State of Massachusetts, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and North Carolina, and has its principal place of business in the city of Bristol, Tennessee-Virginia. For many years said company and its predecessors have been engaged in the electric-power business, and at present it is distributing electricity in Carter, Greene, Johnson, Unicoi, and Washington Counties, Tennessee, and in 57 towns and communities therein, including the cities of Johnson City and Greenville, Tennessee. The operating territory of the company

is located within a radius of from 50 to 100 miles of Norris Dam. Said company owns and operates 65.7 miles of transmission lines and 442.7 miles of distribution lines. It owns generating facilities with a total installed capacity of 19,060 kw. and has done preliminary work at hydro sites which it owns capable of producing, when developed, in excess of 51,000 kw.; and the capacity of its Watauga steam plant is capable of being enlarged. In the year ending July 31, 1937, the company served 8,642 customers, of which 2,304 were classified as rural customers, and in 1936, exclusive of sales to other utilities, sold 24,548,569 kwh., of which 11,049,650 kwh., or 45%, represented sales to industrial customers. The company has issued and outstanding $2,669,500 in bonds, 6,000 shares of $100 par value preferred [fol. 733] stock entitled to an annual $6 cumulative dividend, 5,105 shares of no par value preferred stock entitled to a $7 annual cumulative dividend, and 15,000 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee; and it has 125 employees.

24. Installed capacity is not a measure of the dependable capacity available for electric service. In the case of hydroelectric plants the limiting factor is the water available and not the amount of machinery installed. Of the dependable steam and hydro capacity in a low-water year a reserve is required to take care of various contingencies.

25. Complainants, and each of them, are subject to a special tax to which taxpayers generally are not subject, the tax being upon electrical energy sold for domestic and commercial consumption, in an amount equal to 3% of the price for which complainants sell the same, which is imposed by section 616 of the Federal Revenue Act of 1932, as amended. Complainants also severally pay large sums of money in the form of general taxes to the Federal Government, including Social Security taxes and taxes for unemployment relief imposed by sections 211 to 219 inclusive of the National Industrial Recovery Act. Complainants severally are subject to and pay special and general taxes levied upon privately owned utilities by the several States and their political subdivisions in which complainants severally carry on business or own property.

[fol. 734] Following is a table of the taxes paid by each of the complainant companies, with the exception of Kentucky-

Tennessee Light & Power Company, for the year 1936, with an estimate of the taxes to be paid by each company for the year 1937. The taxes paid by complainants for the year 1936, exclusive of Kentucky-Tennessee Light & Power Company, averaged in excess of 12.7% of complainants' gross revenue, and for the year 1937, exclusive of Kentucky-Tennessee Light & Power Company, it is estimated that such taxes will be in excess of 14.4% of the total gross revenues of the companies.

Name of Company	1936	1937 (Est.)
The Tennessee Electric Power Company...	$2,278,880.60	$2,613,895.00
Franklin Power & Light Company.....	5,681.77	.....
Memphis Power & Light Company.....	1,071,794.82	1,321,527.00
Southern Tennessee Power Company.....	5,896.77	5,953.00
Birmingham Electric Company.....	828,953.47	1,009,329.00
Mississippi Power Company.....	396,286.26	437,891.00
Appalachian Electric Power Company....	2,817,013.07	3,069,047.97
Carolina Power & Light Company.....	1,607,877.58	2,035,440.00
Tennessee Public Service Company.....	471,335.33	590,733.00
Holston River Electric Company.....	5,414.47	5,611.00
Alabama Power Company.....	2,380,556.45	3,126,400.50
Kentucky & West Virginia Power Company, Inc.....	344,104.06	350,919.03
Kingsport Utilities, Incorporated.....	59,697.46	85,437.89
West Tennessee Power & Light Company..	119,670.44	140,122.88
Mississippi Power & Light Company.....	738,463.61	918,832.00
East Tennessee Light & Power Company...	87,431.38	105,687.57
Tennessee Eastern Electric Company.....	130,419.90	190,390.40
	$13,349,477.44	$16,007,217.24

26. The rates and services of each of the complainant companies in the States of Alabama, Tennessee, Kentucky, Virginia, Georgia, West Virginia, North Carolina, and South Carolina are regulated by State commissions in the respective States. There is no State commission in Mis- [fol. 735] sissippi. The rates and services of the complainant companies in that State are regulated by municipalities within their corporate limits.

27. The rates charged by the several complainant companies in the States of Alabama, Tennessee, Georgia, Virginia, North Carolina, and South Carolina are uniform for the different classes of service throughout their respective operating territories. As between the complainant companies operating within a State there is no requirement of uniformity of rates.

28. The respective complainants have been issued franchises, licenses, or easements by most but not all of the municipalities and by most but not all of the counties in

which they respectively operate electric facilities. Said franchises, licenses, or easements vary in original term and in unexpired term from a few months to more than 50 years, and many are unlimited in term. Most of the said franchises, licenses, or easements purport to be nonexclusive. Most of said franchises, licenses, or easements grant rights not limited within the respective municipalities or counties, but some are limited to particular streets or highways or to portions of the respective counties or municipalities. Some of the franchises, licenses, or easements purport to grant the right to construct and occupy the streets and highways with electrical facilities; some of said franchises, licenses, or easements purport to grant, for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the streets and highways; and [fol. 736] some of said franchises, licenses, or easements purport to grant the right to occupy the streets and highways with electrical facilities and to engage in the business of selling and distributing electricity within the respective municipalities and counties. The validity of one of the municipal franchises, licenses, or easements claimed by complainants is now being contested in a State court by the municipality concerned.

[fol. 737] Status of Projects of the Tennessee Valley Authority

29. On October 3, 1933, TVA began the construction of Norris Dam and power plant on the Clinch River, a tributary of the Tennessee River, located 79.8 miles above its mouth, and completed such construction in March 1936, at a total cost of $36,310,370, and began generating power in July 1936. The dam is 265 feet high; 1,872 feet in length; has a normal reservoir area of 34,200 acres; a reservoir shore line of 705 miles; and has an installed generating capacity of 100,800 kw.

30. On November 30, 1933, TVA began construction of Wheeler Dam and power plant located 15.5 miles above Wilson Dam on the Tennessee River, and construction was completed in November 1936, at a total cost of $35,317,964, exclusive of the cost of the lock built by the War Department, at a cost of $1,939,693. Wheeler Dam began to generate power in November 1936. The Corps of Engineers in 1932 proposed to construct this dam with a lift of 15 feet as an integral part of the low-dam navigation plan. The

estimated cost of said dam in its ultimate stage will be $42,817,964, exclusive of the lock built by the War Department. The dam is 72 feet in height; 6,335 feet in length; has a normal reservoir area of 64,300 acres; a reservoir shore line of 1,063 miles; has an initial installed generating capacity of 128,000 kw. and an ultimate generating capacity of 256,000 kw.

31. In March 1935 TVA began construction of the Pickwick Landing Dam and power plant located on the Tennessee River 52.7 miles below Wilson Dam and 100 miles east of Memphis, Tennessee, and the construction will be completed in June 1938, at an initial cost of $33,199,497 and [fol. 738] estimated ultimate cost of $42,431,497. The dam will be 110 feet in height; 7,715 feet in length; have a normal reservoir area of 41,600 acres; a reservoir shore line of 496 miles; an initial installed generating capacity of 72,000 kw. and an ultimate generating capacity of 216,000 kw.

32. On December 4, 1935, TVA began the construction of Guntersville Dam and power plant located on the Tennessee River above Wheeler Dam, near Guntersville, Alabama, and construction is estimated to be completed in December 1938, at an estimated initial cost of $34,123,660 and an estimated ultimate cost of $38,524,860. The dam will be 89 feet in height; 4,000 feet in length; have a normal reservoir area of 63,300 acres; a reservoir shore line of 660 miles, with an initial installed generating capacity of 50,000 kw. and an ultimate generating capacity of 100,000 kw.

33. On January 13, 1936, TVA began construction of Chickamauga Dam and power plant on the Tennessee River about 6 miles upstream from Chattanooga, Tennessee, and it is estimated that construction will be completed in December 1939, at an initial cost of $40,435,645 and an estimated ultimate cost of $45,333,645. The dam will be 104 feet high; 6,025 feet long; have a normal reservoir area of 32,000 acres; a reservoir shore line of 502 miles; an initial installed generating capacity of 50,000 kw. and an ultimate generating capacity of 100,000 kw.

34. On July 15, 1936, TVA began construction of Fowler Bend Dam and power project located on the Hiwassee River [fol. 739] in North Carolina about 75.8 miles above the confluence of said river with the Tennessee River, and it is estimated that construction will be completed in October 1940,

at an initial cost of $17,296,061, and an estimated ultimate cost of $22,491,561. The dam will be 292 feet high; 1,250 feet long; have a normal reservoir area of 6,240 acres; 150 miles of reservoir shore line; and an ultimate generating capacity of 80,000 kw.

35. TVA has announced its intention to construct Watts Bar Dam and power plant on the Tennessee River, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been selected and which is located approximately 530 miles above the mouth of said river. Preliminary work has been done, and construction is scheduled to begin in the near future. The estimated initial cost of the dam and power plant is $29,200,000, and the estimated ultimate cost is $39,800,000. The dam will be 2,900 feet long and have a normal reservoir area of 42,600 acres and will have an ultimate installed generating capacity of 150,000 kw.

36. TVA has announced its intention to construct Coulter Shoals Dam and power project on the Tennessee River, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been tentatively selected approximately 30 miles below Knoxville, at which site some preliminary work has been done. The dam will be 2,070 feet long and will have a normal reservoir area of 11,900 acres, and the estimated initial cost of such dam and power plant is $25,000,000, and the estimated ultimate cost is $30,000,000. The ultimate installed generating capacity will be 60,000 kw.

[fol. 740] 37. TVA has announced its intention to construct the Gilbertsville Dam and power plant on the Tennessee River in Kentucky 22.5 miles above the mouth of said river, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site. Preliminary work has been done at the dam site, and construction is scheduled to begin within the near future. The dam will be 150 feet in height; 8,300 feet in length; have a normal reservoir area of 160,000 acres; and have an ultimate generating capacity of 192,000 kw. Its estimated initial cost is $95,000,000, and the estimated ultimate cost is $112,000,000.

38. The Tennessee Valley Authority has constructed or has under construction or has under investigation for con-

struction a series of high dams and reservoirs, 7 on the main stream of the Tennessee River and 2 on principal tributaries of the Tennessee: the Clinch and the Hiwassee Rivers.

39. These dams, when completed, will provide a continuous 9-foot navigable channel with adequate overdepths for boats of 9-foot draft over the entire distance from the mouth of the Tennessee at Paducah, Kentucky, to Knoxville, Tennessee, a distance of approximately 650 miles; will substantially alleviate the destructive floods in the Tennessee and Mississippi Valleys; and will also create a substantial amount of water power.

40. Beginning at the mouth of the Tennessee River at Paducah, Kentucky, and extending upstream, the dams under control of the Authority already constructed or under construction or active investigation for construction are as follows:

[fol. 741] Gilbertsville Dam, which is located in Kentucky 22.7 miles from the mouth of the river, and on which preliminary investigations by the Authority are in progress.

Pickwick Landing Dam, which is located in Tennessee 206.7 miles from the mouth of the river and which is under construction by the Authority and almost completed.

Wilson Dam, which is located at Muscle Shoals, Alabama, 259.4 miles from the mouth of the river, which was constructed by the United States Army Engineers and transferred to the Authority under the Tennessee Valley Authority Act and which is now in operation.

Wheeler Dam, which is located in Alabama 15.5 miles above Wilson Dam and 274.9 miles from the mouth of the river, and construction of which was commenced by the United States Army Engineers, completed by the Tennessee Valley Authority, and which is now in operation.

Guntersville Dam, which is located near Guntersville, Alabama, 349 miles from the mouth of the river and which is under construction by the Authority.

Chickamauga Dam, which is located near Chattanooga, Tennessee, 471 miles from the mouth of the river and which is under construction by the Authority.

Watts Bar Dam, which is located in Tennessee 529.9 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress.

Coulter Shoals Dam, which is located in Tennessee 602 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress.

[fol. 742] The dams constructed or under construction on tributaries are as follows:

Norris Dam, located in Tennessee on the Clinch River 79.8 miles from the mouth of that river and 647.5 miles from the mouth of the Tennessee River, constructed by the Authority, now completed and in operation.

Hiwassee Dam, located in North Carolina on the Hiwassee River 75.8 miles from the mouth of that river and 560.3 miles from the mouth of the Tennessee River, under construction by the Authority.

The Tennessee Valley Authority has also recommended to the Congress the future construction of a third tributary project at the Fontana Dam site in North Carolina on the Little Tennessee River, but the Congress has appropriated no funds for this purpose, and neither construction nor preliminary investigation or other work is in progress on this project.

41. Each of the dam projects of the Authority is located on a site at or near the site selected by the United States Army Engineers in their comprehensive report on the Tennessee River system, set forth in House Document No. 328, Seventy-first Congress, second session. The projects so described in that report were designed primarily for navigation and flood control. Prior to the passage of the Tennessee Valley Authority Act the United States Army Engineers in fact had plans for a high dam at the site of the present Wheeler Dam. Their design made provision for intakes for the later installation of power facilities. Prior to the passage of the Tennessee Valley Authority Act they had commenced construction of the lock for this project. The lock and dam as completed by the Authority are sub-

[fol. 743] stantially similar in design to the project as designed by the Army Engineers.

42. Each of the projects of the Authority has all elements of design reasonably required for navigation and flood control in accordance with accepted engineering standards. Each of the projects has been designed to provide storage capacity for a slackwater pool behind the dam and a substantial additional storage capacity above the slackwater pool level. Each of the main-stream projects is equipped

with a lock prescribed and designed by the Corps of Engineers, with space for an additional parallel lock when commerce warrants. The locks which are being installed are of sufficient size and capacity to accommodate adequately the traffic which may be expected in the reasonably near future. To provide effective means for flood control and stream-flow regulations, each of the projects is equipped with large spillway gates, and in addition, the tributary projects are equipped with sluiceways of large capacity. At each of the projects facilities have been provided or construction and design are such that facilities may be provided for the generation of power. Each of the projects of the Authority can be operated to secure substantial benefits in the improvement of navigation and the control of destructive floods, and consistently therewith, the production of electric energy.

43. The following tables set forth the principal engineering features of the projects of the Authority, Lock and Dam No. 1 constructed by and under the control of the War Department, and the privately owned Hales Bar Dam:

[fol. 744]

(1) Project	(2) Miles above River Mouth	(3) Drainage Area Sq. Mi.	(4) Length of Res. Miles	(5) Elev. Top of Gates	(6) Normal Pool Level	(7) Low Pool Level at Dam	(8) Low Pool Level at Dam Upstr.	(9) Reservoir Volumes acre-feet Total to Top of Gates	(10) Low Water Regulation	(11) Flood Control
Gilbertsville	22.7	40,000	184.0	375	359	350	354	6,150,000	750,000	4,600,000
Pickwick	206.7	32,870	52.7	418	413	408	408	1,032,000	191,000	416,000
Lock & Dam No. 1	256.8			416	416					
Wilson	259.4	30,800	15.5	505.8	505.1	503	503	600,000	43,000	43,000
Wheeler	274.9	29,600	74.1	556	555	548	550	1,100,000	280,000	440,000
Guntersville	349.0	24,300	82.1	595	594	591	593	951,000	62,000	242,000
Hales Bar	431.1	21,800	39.9	629.2	626.2			100,000		
Chickamauga	471.0	20,800	58.9	685.0	682.0	673.5	675	639,000	196,000	325,000
Watts Bar	529.9	17,460	72.1	745	740	736	736	1,132,000	140,000	337,000
Coulter Shoals	602.0	9,600	56.0	815	810	805	805	370,000	60,000	140,000
Norris	79.8 647.5	2,950	71–Cl. 52–Po.	1034	1020	955		2,567,000	1,500,000	2,020,000
Hiwassee	75.8 576.3	977		1526	1526	1415		435,000	362,000	362,000
							Total		4,034,000	8,925,000
							Tributary		1,862,000	2,382,000
							Main River		2,172,000	6,543,000

Col. (7) is the lowest elevation to which the reservoir will usually be drawn for flood control and, at the main-stream dams, is the usual allowable drawdown with normal wet season flow to give the elevation shown in col. (8) at the next dam upstream, resulting in a minimum navigable depth of 9 feet, with 2 feet over-depth. This elevation is sometimes also referred to as "minimum drawdown elevation" or "minimum navigation level" or "maximum drawdown."

Col. (10) is the difference in the volumes for elevations in columns (6) and (8).

Col. (11) is the difference in the volumes for elevations in columns (5) and (7).

Normal pool level in column (6) is an arbitrary level generally defining the maximum level to which the pool will be raised in low-water season except for possibly a temporary rise of one foot above this caused by malarial control fluctuations.

[fol. 745]

Project	Elev. Spillway Crest	Number & Size Spillway Gates	Spillway Disch. Capacity c. f. s.	Elev. Lower Lock Sill	Elev. Upper Lock Sill	Size of Lock Chamber Feet	Power Units Installed or Authorized	Ultimate Power Units Provided For
Gilbertsville	330	24–45 x 40	850,000			110 x 600		6–32,000 KW
Pickwick	378	22–40 x 40	820,000	342.2	398.0	110 x 600	2–36,000 KW	6–36,000 KW
Lock & Dam No. 1	416			394.1	406.6	60 x 300		
Wilson	487	58–18 x 38	629,000			60 x 300	4–20,000 KW	4–20,000 KW*
						60 x 300	4–26,000 KW	14–26,000 KW*
Wheeler	541	60–15 x 40	687,000	491.0	534.0	60 x 360	4–32,000 KW	8–32,000 KW
Guntersville	545	18–40 x 40	625,000	538.0	578.0	60 x 360	3–24,000 KW	4–28,000 KW
Hales Bar	626.2	Flash boards 3 ft. high				60 x 287		
Chickamauga	655	20–40 x 40	600,000	618.2	663.0	60 x 360	3–27,000 KW	4–27,000 KW
Watts Bar	720	21–25 x 40				60 x 360		4–37,500 KW
Coulter Shoals	790	20–25 x 40				60 x 360		3–20,000 KW
Norris	1020	3–14 x 100	205,000				2–50,000 KW	2–50,000 KW
Hiwassee	1503.5	7–23 x 32	130,000				1–60,000 KW	2–60,000 KW

* Provision for the ultimate installation of all these units was made by the United States Army Engineers in Wilson Dam as originally constructed. The dam as completed by them included the completed power house, with eight generating units installed and provision made for installation of the additional ten generating units

[fol. 746] 44. The engineers of the Authority in responsible charge have determined, on the basis of a study of all available records, upon a method of operation for the Authority's projects which in their opinion is the most effective method of operation for the improvement of navigation and the control of destructive floods on the Tennessee and Mississippi River Valleys. This is a method of operation which in their opinion is best adapted for the combined purposes of improvement of navigation and the control of destructive floods without reduction in the effectiveness of the Authority's projects for either navigation or flood control. The general method of operation is set forth in the report of the Board of Directors of the Tennessee Valley Authority entitled, "The Unified Development of the Tennessee River System," pages 18-19, which is complainants' exhibit 328 in this case. Some details of operation have been changed in the past, and according to the Authority's engineers in responsible charge, other changes may be necessary in the future as further investigations and experience may require.

45. The engineers of the Tennessee Valley Authority in responsible charge operate the projects of the Authority substantially as follows: The reservoir levels of the mainstream dam below Chattanooga are held somewhat above low pool level during the flood season and drawn down to or below such level in advance of a flood; those above Chattanooga are to be held at about low pool level during flood season. As the flood season draws to a close, about the beginning of April, reservoir levels on the main stream [fol. 747] are allowed to rise. The reservoir levels of the tributary projects are maintained at about low pool level at the beginning of the flood season, and a substantial portion of the storage capacity below so-called normal pool level is gradually filled during and after the flood season. A sufficient capacity is held available at the close of the flood season to control the largest run-off that may be expected at that time. The water stored in the reservoirs on the tributaries and the main stream is released during the low-water season to augment the low-water flow.

46. The general method of operation set forth in finding 45 conforms to the method of operation for navigation and for flood control contemplated in House Document No. 328 and House Document No. 259 and is reasonably calculated

to provide most effectively for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River Valleys without reduction in the effectiveness of the Authority's projects for either flood control or navigation.

47. While dams and reservoirs of limited capacity designed for local flood protection only should, according to some engineering opinion, be kept empty in advance of floods and emptied immediately after floods, those principles govern the design and method of operation of dams and reservoirs established for local protection alone and do not apply to the projects of the Tennessee Valley Authority, which are designed and operated for the protection of points on the Tennessee, the lower Ohio, and the lower Mississippi, and for navigation, as well as for local flood protection.

[fol. 748] Status of Navigation on the Tennessee River

48. The Tennessee River, a navigable river approximately 652 miles long, is formed by the junction of the French Broad River and the Holston River at Knoxville, Tennessee, and enters the Ohio River near Paducah, Kentucky. In its unimproved state there were numerous obstacles to commercial navigation, including shoals and bars, steep slopes, high velocities, and floods in many months of the year, and inadequate depths in a great proportion of the river.

49. The problem of improving navigation on the Tennessee River has been a matter of national concern for more than a hundred years. From 1852 to 1933 Congress authorized and made appropriations for numerous navigation surveys and navigation projects covering all portions of the Tennessee River and certain of its tributaries, at a total expenditure of approximately $18,000,000, exclusive of Wilson Dam.

50. Prior to the passage of the Tennessee Valley Authority Act the Tennessee River was not adequately improved for modern commercial navigation except for short stretches behind the Government-owned Dam No. 1 and Wilson Dam, and the privately owned Hales Bar Dam. The controlling depth of the river at that time ranged from

4½ feet in the lower part of the river to 1 foot in the upper section.

51. The Tennessee River, as a tributary of the Ohio River, is interconnected with the inland waterway system of the Mississippi River, which connects the Gulf and the Great Lakes and taps the territory of about 15 States, in- [fol. 749] cluding many important traffic-producing industrial, commercial, and agricultural centers, and extends as far east as Pittsburgh, Pennsylvania, as far west as Kansas City, Missouri, and as far north as Minneapolis and St. Paul, Minnesota. Interstate railroads and highways interconnect with the waterway at numerous points, permitting joint land and water transportation. There are varied and substantial agricultural, mineral, and forest resources located in the Tennessee Valley within reach of the waterway. About 18.2% of the population of the United States, based on the 1930 census, is located within 25 miles of the banks of this interconnected waterway. This inland waterway system includes 5,700 miles of improved waterway of 9-foot depth or over, an additional 3,200 miles of 6- to 9-foot depth, and an additional 1,000 miles of 4- to 6-foot depth.

52. The dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will provide a navigation channel throughout the length of the Tennessee River substantially superior to that which could be provided by any alternative method of navigation improvement. They will also provide substantial navigation improvement on a number of the tributaries of the Tennessee River and will provide an increased water supply, which will substantially improve navigation on the Mississippi River in the low-water season.

53. Each of the dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will result in a substantial improvement for navigation.

[fol. 750] 54. The high-dam projects of the Authority will provide a navigation improvement substantially superior to that which could be provided by the system of low dams set forth in House Document No. 328. The superiority of high dams for navigation was recognized by the Board of Engineers for Rivers and Harbors in House Document No. 328.

The Authority's projects will provide superior channel depths and widths, substantially fewer lockages, substantially less current velocities, pool fluctuations, and interruptions from floods. The elimination of lockages will substantially reduce the time consumed in lockages; the superiority of channel depths and reduction of current velocities will substantially increase the speed of movement and reduce the amount of motive power required; and the wider and longer pools of the high dams are preferred by the navigator to the narrow, crooked pools of the low dams. The reduction in pool fluctuations will greatly encourage the development of terminal facilities necessary to the development of commercial navigation. The advantages of the Authority's projects in these respects will insure a substantially greater efficiency of the navigation channel, substantially greater dependability of service, and may reasonably be expected to attract a substantially greater volume of traffic on the improved river. The high dams will also provide substantial improvement of navigation on the tributaries which would not be provided by the low-dam projects. The advantages of high dams cannot be accurately measured in monetary terms. The boats and barges which are now in general use on the interconnected inland waterways of the Mississippi River system will be able to navigate the Tennessee River where improved by the proj- [fol. 751] ects of the Authority without change of design or extent of loading.

55. On other tributaries of the Mississippi the United States Army Engineers are now replacing certain low dams with high dams, with provision for the development of power, and at the time of the creation of the Tennessee Valley Authority they were engaged in the construction of a lock for a high navigation dam at the Wheeler Dam site, with provision in their design for the development of power.

56. The improved navigation channel provided by the projects of the Authority will cause a very substantial increase and development in waterway traffic between the Tennessee Valley region and other regions of the United States connected by water, rail, and highway. Despite the numerous obstacles in the past to commercial navigation on the Tennessee River, the traffic on the river over the last 40 years has been between 1,000,000 and 2,000,000 tons annually, but due to lack of adequate depths the traffic has

consisted largely of short hauls. It was estimated by the Army Engineers in House Document No. 328 that there would be an increase of traffic of approximately 7,000,000 tons per annum at a saving of about $10,000,000 annually (or a saving of approximately 25% of the present freight charges) if the Tennessee River were adequately improved for commercial navigation. Subsequent studies since the creation of the Tennessee Valley Authority have confirmed the reasonableness and conservative character of this estimate. On the basis of the growth of traffic experienced on the comparable improved waterways of the interconnected Mississippi River system it is reasonable to expect an ever increasing growth in the volume of traffic on the river.

[fol. 752] 57. The value of the improvement to navigation provided by the projects of the Authority is not limited to the reduction in the cost of transportation to shippers, but includes substantial intangible values, such as the stimulation of the growth of industry and business and the promotion of the general prosperity of the region within the influence of the improved waterway.

The Flood Problem on the Tennessee and Mississippi Rivers

58. The recurrent great floods on the Tennessee and Mississippi Rivers have long presented a grave flood menace of national importance. Thousands of miles of interstate railways and highways, and 20,000,000 acres of the richest cotton lands in the United States, the products of which are normally marketed in interstate and foreign commerce, lie within the flood plain of the Mississippi Valley. Located in the path of Mississippi floods also are the important commercial cities of Memphis, Cairo, and New Orleans, and other smaller communities, in which are located large cotton warehousing, compressing, and processing plants, and woodworking plants, engaged in the production, processing, and distribution of goods normally marketed in interstate and foreign commerce. The city of Chattanooga, which is the principal point of danger on the Tennessee River, is an important center of interstate railways and highways and manufacturing plants, and is a principal center for the distribution throughout the southeastern region of commodities produced in other States.

59. The great floods of the past on the Tennessee and Mississippi Rivers have caused and unless controlled in

[fol. 753] the future will cause complete interruption of transportation on the Mississippi and Tennessee Rivers, and complete interruption of interstate commerce on the railroads and highways, as well as interruption in the production, manufacture, and distribution of products normally marketed in interstate and foreign commerce, and substantial damage to the facilities and properties employed for these purposes.

60. For the most effective control of destructive floods in the Tennessee River basin, particularly in the critical area at Chattanooga, Tennessee, it is desirable to provide high dams with controlled storage (such as the projects of the Authority) on the main stream of the Tennessee and on the principal tributaries above Chattanooga, including the Clinch and Hiwassee Rivers, in order to supplement local protective works.

61. The Ohio River and its tributaries, including the Tennessee River, are the largest contributor to all Mississippi floods, contributing from 52% to 90% of the floods between Cairo, Illinois, and Helena, Arkansas. The Tennessee River has always made a substantial contribution to all Mississippi floods.

62. The existing flood-protection works on the lower Mississippi River, consisting of levees supplemented by floodways and cut-offs, are inadequate to pass a flood such as is now estimated to be reasonably probable in the future without disastrous overtopping of the existing levees. Even in lesser floods the existing projects provide adequate protection for only 60% of the alluvial valley, and then only with the use of the floodways, the use of which it is de- [fol. 754] sirable to eliminate whenever possible. The levees on the lower Mississippi have reached the practical limits of height. Any additional protection against lower-Mississippi floods must be found in part in the provision of reservoirs on the tributaries of the Mississippi to reduce their contribution to Mississippi floods. For the most effective flood-control use, reservoirs should be located close to Cairo, which is at the junction of the Ohio and the Mississippi Rivers.

63. The Tennessee River, being the largest tributary of the Ohio and closer to Cairo and the lower Mississippi than any other major tributary of the Ohio system, is one of the

best rivers for reservoirs for flood control on the lower Mississippi. For the most effective reduction of the contribution of the Tennessee River system to Mississippi floods it is necessary to provide high dams with controlled storage (such as the projects of the Authority) on the main stream and storage dams on the tributaries, including the Clinch and Hiwassee Rivers.

64. The season of major floods in the Tennessee River basin is limited to the period from approximately the middle of December to about the first of April. No major flood of record has occurred in the Tennessee basin outside this period; floods occurring outside this flood season are of limited volume and duration, and are local in effect. The season of major floods on the lower Ohio and lower Mississippi lasts about a month later than the flood season on the Tennessee, but as the end of the Tennessee flood season approaches, the need for storage capacity to control the con- [fol. 755] tribution of the Tennessee to Ohio and Mississippi floods diminishes.

65. Each of the projects of the Authority is of substantial value for the reduction of destructive flood heights in the Tennessee and Mississippi River basins.

66. The controlled-storage projects of the Authority are the only types of engineering works on the Tennessee River system which will afford effective flood control in both the Tennessee and Mississippi River basins. Automatic, uncontrolled detention reservoirs are of uncertain value for local Tennessee flood control and would be of no value for the control of floods on the lower Mississippi. The so-called natural valley storage in the Tennessee River basin is the space occupied by the flood itself, and the retarding effect of such uncontrolled valley storage may increase the danger of Mississippi floods. The low dams set forth in House Document No. 328 would be of no value in the control of destructive floods either in the Tennessee or Mississippi River basins, as was recognized in House Document No. 328.

67. Pursuant to congressional authorization a comprehensive survey of the Tennessee River system with respect to navigation, flood control, and conservation of power resources was undertaken by the Corps of Engineers of the War Department and completed in 1930. This report is

contained in House Document No. 328, Seventy-first Congress, second session. The recommendations contained in this report were adopted by Congress in the Rivers and Harbors Act of 1930 and provided for the creation of a 9-foot navigation channel throughout the length of the [fol. 756] Tennessee River by a series of movable low dams to be constructed by the Federal Government or a series of high dams to be constructed by private interests in cooperation with the Federal Government. The preliminary estimate of cost of the low dams was approximately $75,000,000. In 1935 the Mississippi River Commission, in a comprehensive report on reservoir projects for Mississippi flood control, set forth in House Document No. 259, Seventy-fourth Congress, first session, recommended that the Federal Government adopt a policy of encouraging the construction of reservoirs on the tributaries of the Mississippi River for increased flood protection on the lower Mississippi. In April 1937 the Chief of Engineers, in a report set forth in Committee Document No. 1, Seventy-fifth Congress, first session, recommended the construction by the Federal Government of storage reservoirs on the tributaries of the Mississippi as essential for the control of floods on the lower Mississippi. Neither at the time of the enactment of the Tennessee Valley Authority Act nor since has there been any reasonable prospect that a comprehensive development of the Tennessee River and its tributaries for the combined purpose of navigation and flood control in the Tennessee and Mississippi River basins could be obtained in any other way except by the construction of high dams by the United States Government or some agency thereof.

[fol. 757] Combined Benefits to Navigation and Flood Control From the Tennessee Valley Authority Projects

68. The projects of the Authority will permit the maintenance at all times of the 9-foot channel on the main stream of the Tennessee with sufficient overdepths to accommodate boats of 9-foot draft. The tributary projects on the Clinch and Hiwassee Rivers will also permit the maintenance of slackwater pools in the lower portions of the reservoirs, which is necessary on the Clinch, a navigable tributary, in order to preserve existing navigation and to avoid foreclosing future improvement for navigation, and is valuable on both tributaries in order to preserve the life of the projects by affording capacity for the deposit of silt. The proj-

ects of the Authority will also provide substantial storage space above slackwater pool level to control in whole or in part the run-off from the drainage area above the dams during the flood season. Such projects are the only engineering works which can provide effective flood control in conjunction with the continuous maintenance of the 9-foot channel for navigation.

69. The tributary projects of the Authority, by reducing flood flows and increasing low flows, will substantially increase the effectiveness of the high dams on the main stream for the reduction of flood heights on the Mississippi and Tennessee Rivers in combination with the maintenance of a 9-foot navigation channel. These tributary reservoirs will also serve to increase materially the navigable depths in the unimproved portions of the main stream for navigation, will substantially increase the navigable depths in the upper [fol. 758] ends of the navigation pools created by the main-stream projects, and will substantially increase the navigable depths on the lower Mississippi River, which increases will be of material benefit to navigation.

70. The low-dam plan recommended in House Document No. 328 as an alternative navigation project would have no flood-control value. The low-dam plan in conjunction with detention reservoirs on the tributaries might together accomplish navigation improvement and flood control on the Tennessee River, but this combination would contribute nothing to flood control in the Mississippi River, might aggravate flood conditions there, and would provide navigation improvement inferior to that provided by the projects of the Authority.

71. Upon the completion of the construction of the Pickwick Landing project and the Guntersville project, these two projects, in conjunction with the already-completed Wheeler Dam and the previously existing Wilson Dam, will provide a 9-foot channel from Pickwick Landing to the vicinity of Chattanooga, a distance of approximately 257 miles. The completed Norris Dam is being operated to provide a navigation channel of 7-foot minimum depth in the 207-mile stretch between Pickwick Landing and the mouth of the Tennessee River. This 7-foot depth below Pickwick will be increased to 7½ feet upon completion of Hiwassee. These projects together will provide a commercially feasible

navigation channel between Chattanooga, Tennessee, and the inland waterway system. For the larger part of each year there will be a through navigation channel of 9-foot depth from Chattanooga to the mouth of the river, and even prior [fol. 759] to construction of Gilbertsville, by means of a moderate amount of dredging and releases from other projects of the Authority, it is feasible to provide a permanent 9-foot channel below Pickwick Dam. Until the Gilbertsville project is constructed, which may not be for many years, it is necessary to store a substantial amount of water in the tributary reservoirs during the high-water season to provide the low-water releases required for this improvement to navigation.

72. The increase of the low-water flow by means of the storage of water during the high-water season at Norris Dam and the release of such water during the low-water period has increased and will substantially increase the continuous water power available at Wilson Dam and will increase the value of Wilson Dam for all purposes.

73. Since completion, Norris Dam has been successfully operated to improve substantially the navigation channel of the Tennessee River between Wilson Dam and its mouth, to prevent a probable flood at Chattanooga in the year 1936, and to hold off from the peak of the Mississippi River flood of 1937 approximately 28,000 c.f.s., the Norris Dam storing the entire flow of the Clinch River for 6 weeks during the 1937 Mississippi flood.

74. The operation of Norris Dam since its completion has also increased the amount of water power available in the low-flow season at the existing Government-owned Wilson Dam, but the operation of holding and releasing waters has been directed primarily to navigation and flood control and the protection of construction works below. The same is true of Wheeler Dam, which has been operated since its [fol. 760] completion in 1936 to maintain a 9-foot navigation channel 74 miles to the site of the Guntersville project and to reduce flood waters and protect construction works at the Pickwick project. Approximately 85% of the water released from Norris during the year 1937 was of benefit only to navigation and flood control, and was not required or useful for production of power. The temporary storage and releases of water for power-peaking purposes have been at all times

subordinated to the requirements of navigation and flood control, and have never been permitted to interfere with or affect the continued maintenance of the stream flow required for navigation or the storage required for flood control. Temporary abnormal conditions, such as the necessity of operating for the protection of the Authority's construction works, have materially affected the operation of the Norris and Wheeler projects.

75. The projects of the Authority are designed primarily for the improvement of navigation and the control of destructive flood waters. The sequence of development has been determined according to the requirements of navigations have been uniformly obeyed.

76. The projects of the Authority which are completed and in operation have been and are operated primarily for navigation and flood control, and the responsible officers of the Authority charged with the operation of such projects are required by instructions from the board of directors to operate them primarily for such purposes. These instructions have been unformly obeyed.

[fol. 761] 77. The approximate length and maximum width of the pools upon the Tennessee River created by the TVA unified plan will be:

Dams	Length of Pool	Maximum Width
Gilbertsville	184.2 miles	6 miles
Pickwick Landing	50.1 miles	1–1/2 miles
Wheeler	74.1 miles	3–1/2 miles
Guntersville	82.1 miles	3 miles
Chickamauga	59.9 miles	2–1/2 miles
Watts Bar	73.4 miles	1–1/2 miles
Coulter Shoals	48.8 miles	1/2 mile

78. Commerce upon the Tennessee River between 1927 and 1934 averaged 1,750,000 tons per year, for which the average haul was 23 miles, which consisted 82% in the transportation of sand and gravel, 9% in the transportation of various forest products, and 9% in the transportation of iron, steel, lime and cement. Since the creation of TVA Government traffic has constituted a substantial portion of the total traffic, amounting to 52% in 1935 and 54% in 1936 of the total traffic. The average annual value of such cargoes was $11,000,000, on which the average annual sav-

ings of water transportation over land transportation was $2,000,000. There have been no significant or substantial movements of commerce upon the tributaries of the Tennessee River.

79. There is no advantage accruing to navigation upon the Tennessee River by shutting off the flow from Norris Dam [fol. 762] entirely on Sundays and Labor Days as was done during August and September 1936. This method of operation is entirely consistent with the operation of dams primarily for navigation and flood control.

80. It would not be practical or feasible to construct a belt coal conveyer to pass coal from barges on the reservoir at Norris Dam to other barges below Norris Dam to be transported upon the Tennessee River.

81. Practically all of the property damage from floods in the Tennessee Valley occurs at and above Chattanooga, Tennessee.

82. Flood damages in the Tennessee River below Chattanooga are relatively small in amount and, while including some damage to highways and railroads (easily eliminated by relocation), consist largely of damages to farm crops resulting from the overflow of rich valley lands. The construction of the TVA unified plan will overflow permanently thousands of acres more of such valley farm land than is now occasionally overflowed by floods. At the present time such occasional overflows generally take place before the crop season and their results are beneficial to the land.

83. Less than 8% of the total population in towns and cities upon the Tennessee River and its tributaries, which in 1930 was 341,522, is below Chattanooga.

84. The estimated average annual damage from all floods to all classes of property on the Tennessee River and its tributaries is $1,441,208, of which $1,356,053 occurs at and above Chattanooga.

[fol. 763] 85. A flood-control program to achieve the maximum practical protection upon the Tennessee River and its tributaries should be directed primarily for protection at and above Chattanooga.

86. The greatest flood to be anticipated upon the Tennessee River and its tributaries would result in a stage at

Knoxville of 68.3 feet, with a maximum flow of approximately 620,000 second-feet; in a stage at Loudon of 71.5 feet, with a maximum flow of approximately 605,000 second-feet; in a stage at Chattanooga of 73 feet, with a maximum flow of approximately 680,000 second-feet. The previous maximum recorded stage was at Knoxville 44.4 feet; at Loudon 47.0 feet; and at Chattanooga 57.9 feet.

The Conservation of Water Power

87. The development of firm power by hydroelectric project is controlled by the amount of power that can be produced by the project both at extreme low water and extreme high water.

88. The load factor of a public utility system is the ratio of the average demand for power on that system expressed in kw. to the maximum demand for power on that system, and in the Tennessee basin area is about 60%.

89. At 100% load factor the firm capacity of Wilson Dam, excluding United States Nitrate Steam Plant No. 2, before the capacity of Wilson Dam was increased by the TVA dams upon the Tennessee River and its tributaries, was approximately 28,000 kw., and the firm energy was 242,600,000 kwh. per year. At 60% load factor 145,600,000 kwh. per year of firm energy would be produced by Wilson [fol. 764] Dam power plant. The operation of the tributary reservoirs under the TVA high-dam program solely for regulation of the river will increase the firm-power capacity of Wilson Dam at 60% load factor by 151,300 kw. per year and the firm energy by 795,200,000 kwh. per year.

90. At 100% load factor the operation of the tributary reservoirs solely for regulation of the river would increase the firm-power capacity of Wilson Dam by 79,700 kw. and the firm energy by 698,200,000 kwh. per year.

91. The operation of Norris Dam in June of 1936, by increasing the low-water flow of the Tennessee River and by the generation of power, was sufficient to double the firm-power capacity of the TVA system as it existed at that time.

92. The tributary reservoirs under the TVA unified plan will greatly increase the firm power produced by the projects upon the Tennessee River.

93. The projects of the Tennessee Valley Authority are the only type of dams which will conserve the water resources of the Tennessee River system for navigation, Tennessee and Mississippi flood control, water power, and other beneficial uses. The available sites on the Tennessee River system for the construction of dams and reservoirs are strictly limited in number, and those available for flood control coincide in many instances with those required for the regulation of the river for other purposes. The utilization of such sites exclusively for local flood protection would preclude the development of the water resources for [fol. 765] any other purposes. The construction of low dams on the main stream of the Tennessee River for navigation would waste the resources of the river for any other purpose. It would be physically impossible to provide the high dams on the main stream necessary for the development of flood control and power without the wasteful removal or duplication of such low dams.

94. The construction and operation of the projects of the Authority for navigation and flood control will provide a head for power by concentrating the fall of the river at certain points on the Tennessee River system and will substantially augment the minimum flow in low-water season. Water power is a function of head and stream flow. The amount of continuous power is determined by the available head and the minimum flow in low-water season. Continuous power is power available 24 hours a day, every day of the year, in every year. When operated for the improvement of navigation and the control of destructive floods the dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority will provide, in addition to the benefits to navigation and flood control set forth in previous findings and without reduction in the effectiveness of these projects for navigation and flood control, a large amount of continuous power.

The firm-power capacity, as distinguished from the continuous power, is the maximum demand which the system can reliably supply, having regard to the energy available, the generating units installed, the load factor, and other characteristics of the system. With the complete generating [fol. 766] units which have already been installed or are under contract for installation at Norris, Wheeler, Guntersville, Wilson and Pickwick Landing Dams, the dams con-

structed or under construction by the Tennessee Valley Authority will have a firm power capacity of 395,000 kw. Together with the additional generating units at these dams and at Hiwassee and Chickamauga Dams which have been authorized by the Board of the Tennessee Valley Authority and for which appropriations have either been made or requested, the dams constructed or under construction by the Tennessee Valley Authority will have a firm-power capacity of 570,000 kw.

[fol. 767] Stock Ownership, Business, Franchises and Properties of Complainants

95. The National Power & Light Company, 46.56% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns the following percentages of the total outstanding voting stock of the following complainants:

Birmingham Electric Company	100.00%
Carolina Power & Light Company	93.53%
Holston River Electric Company	100.00%
Memphis Power & Light Company	86.75%
Tennessee Public Service Company	99.31%
West Tennessee Power & Light Company	100.00%

96. The Electric Power & Light Corporation, 46.20% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 94.03% of the voting stock of the complainant Mississippi Power & Light Company.

97. The American Gas & Electric Company, 17.51% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 100% of the voting stock of the complainant Appalachian Electric Power Company, which in turn owns 100% of the voting stock of complainants Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company.

98. During the past 5 years the Electric Bond & Share Company has voted the following approximate percentages of the total number of shares of voting stock represented at stockholders' meetings:

National Power & Light Company	62%
Electric Power & Light Corporation	77%
American Gas & Electric Company	25%

[fol. 768] Throughout the history of these companies there has been no instance in which there has been any contest over proxies or in which any interests hostile to the managements have organized opposition to the programs or policies of the respective managements or to the election of directors voted for by proxies designated by such managements.

99. The Commonwealth & Southern Corporation owns 91.40% of the outstanding voting securities of the Alabama Power Company; 100% of the outstanding voting securities of the Georgia Power Company, Mississippi Power Company, and Southern Tennessee Power Company; and 64.43% of the outstanding securities of The Tennessee Electric Power Company.

100. All of the common and preferred stocks of the complainant East Tennessee Light & Power Company are owned by the Cities Service Power & Light Company. All of the common stock of the complainant Tennessee Eastern Electric Company is owned by the East Tennessee Light & Power Company.

101. All of the complainants are engaged in the business of generating, transmitting, distributing, and selling electricity as public utility companies, except that the Birmingham Electric Company, the Tennessee Public Service Company, the Holston River Electric Company, the Franklin Power & Light Company, the Mississippi Power Company, and the Mississippi Power & Light Company purchase practically all of their electrical requirements, and except that the Southern Tennessee Power Company neither generates nor sells power but is engaged exclusively in the business of transmitting electric energy.

[fol. 769] 102. The complainant Mississippi Power Company owns no franchises or electrical facilities in 10 counties in northeastern Mississippi. The properties in these counties were sold to the Tennessee Valley Authority under the contract of January 4, 1934, and the area is the ceded area referred to in that contract.

103. The complainant Alabama Power Company does not own any electrical facilities in 6 counties in northwestern Alabama except 9 municipal distribution systems and a high-tension 110-kv. line which crosses the territory. Un-

der the contract of January 4, 1934, the complainant Alabama Power Company transferred to the Authority all the high-voltage transmission lines leading from Wilson Dam to the municipalities in the area with the exception of a single line leading to Decatur, the substations, and all rural lines in the area.

104. Section 5 in the contract of January 4, 1934, provides that:

Alabama Company covenants and agrees to convey its urban distribution systems in the above named counties in Alabama, said distribution systems being listed in Exhibit B, to the respective municipalities in or adjacent to which such systems are located, together with all franchises, contract rights, and going business thereto appertaining, when it has agreed with any such municipality on the price to be paid for the same. Alabama Company agrees to make every reasonable effort to come to an early agreement with said municipalities for such sales. In the event that any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Alabama Company, or if for some other reason the sale of any such system cannot be consummated, Authority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Alabama Company.

[fol. 770] 105. A part of section 4 further provides with reference to the Alabama properties that:

Any conveyance of property shall include not only the physical property, easements and rights-of-way, but shall also include all machinery, equipment, tools and working supplies set forth in the respective exhibits, and all franchises, contracts and going business relating to the use of any of said properties, without extra charge.

106. With a few minor exceptions (a few small industrial customers in the so-called ceded area in Alabama and approximately 3,000 employees on Government reservations and rural customers in the vicinity of Norris Dam and Wilson Dam), all of the Authority's sales are either at wholesale to municipalities, rural cooperatives, and utilities, or to very large industrial customers purchasing both

firm and secondary power in large bulk lots for operations not previously served by any of the complainants.

107. During the period of the contract of January 4 the Authority sold power under the first proviso of section 7 of the contract to the following municipalities:

Dayton, Tennessee.
Dickson, Tennessee.
Pulaski, Tennessee.
Amory, Mississippi.
Okolona, Mississippi.

108. Under the third proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold electricity in substantial amounts to the Meigs County Electric Membership Corporation, the Monroe County Electric Power Association, and a number of rural customers served directly by the Authority in Roane County, Tennessee, near Norris Dam.

[fol. 771] 109. Under the last proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold electricity in substantial amounts to Cullman County Electric Membership Corporation, Duck River Electric Membership Corporation, Middle Tennessee Electric Membership Corporation, North Georgia Electric Membership Corporation, Pickwick Electric Membership Corporation, and in Lincoln County, Tennessee. The total load of these customers during the period of the contract was within the 2,500-kw maximum amount stipulated in the said proviso.

110. Under the interchange provision of the contract of January 4 the Alabama Power Company supplied power to the Authority for the construction of Guntersville Dam, and the Tennessee Electric Power Company supplied power to the Authority for the construction of Norris and Chickamauga Dams.

111. The Tennessee Valley Authority is not now constructing and has not authorized the construction of any transmission line, has not sold or authorized the sale of any electricity, and has not entered into or authorized any contracts for the sale of electricity in any part of the territory

claimed by the complainants Franklin Power & Light Company, Appalachian Electric Power Company, Carolina Power & Light Company, Holston River Electric Company, Kingsport Utilities, Inc., Kentucky & West Virginia Power Company, Tennessee Eastern Electric Company, Birmingham Electric Company, East Tennessee Power & Light Company, and Mississippi Power & Light Company, except that it has constructed a transmission line at the expense of the [fol. 772] War Department connecting the Authority's lines to the site of Sardis Dam in the claimed territory of the Mississippi Power & Light Company.

112. The complainant Southern Tennessee Power Company is engaged only as a transmission company transmitting electric energy from Wilson Dam to the Alabama-Tennessee line, thereby connecting Wilson Dam and the transmission system of The Tennessee Electric Power Company. It is not presently engaged either in the generation or distribution and sale of electric energy.

113. Adequacy of facilities means the availability in sufficient quantity of distribution, transmission, and generation facilities at all times to assure ability to take care of immediate loads and any reasonable expectant increase in load with a sufficient margin so as to assure the supplying of proper service.

114. Prudent utility management requires that a utility shall provide enough surplus capacity to take care of its actual and potential demands in the period of time during which new facilities can be added and that too great a surplus, resulting in nonproductive facilities and higher operating costs, be avoided.

115. The generating facilities of each of the following groups of companies are interconnected and integrated into a single coordinated system or power pool, and such facilities of each group are operated as a unit:

(a) The Appalachian Electric Power Company, Kentucky and West Virginia Power Company, and the Kingsport Utilities, Inc., are integrated into a single system and are [fol. 773] also interconnected with a group of affiliated companies in Ohio, Indiana, and Michigan and with nonaffiliated companies in Tennessee and North Carolina.

(b) The complainants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company and the noncomplainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company together form the integrated system of Commonwealth & Southern Corporation in the South and also have interconnections with the Carolina Power & Light Company, the Florida Power Corporation, the South Carolina Electric & Gas Company, the Duke Power Company, and the Aluminum Company of America.

(c) The Carolina Power & Light Company, the Tennessee Public Service Company, and the Holston River Electric Company.

(d) The complainants Memphis Power & Light Company, West Tennessee Power & Light Company, Mississippi Power & Light Company and noncomplainants Louisiana Power & Light Company and Arkansas Power & Light Company.

(e) The East Tennessee Light & Power Company and Tennessee Eastern Electric Company.

116. None of the complainant companies has ever failed to meet the load requirements of their customers, nor have they ever refused additional business due to lack of facilities.

117. The complainant companies serve the electric power requirements of substantially all industrial enterprises doing business in the territories served by them, with the following exceptions:

[fol. 774] (a) Those industries now being served by TVA;

(b) Those industries which require steam in processing operation and are thus able to produce their own power as a byproduct;

(c) Those industries, such as sawmills and woodworking plants, which have waste fuel products and can produce power without fuel cost;

(d) Small and scattered enterprises, such as cotton gins, ice plants, and flour and feed mills, which operate seasonally and which depend upon steam or other mechanical power.

All of these businesses except those being served by TVA have their own power units, which would have to be abandoned in order to take central power service.

118. The complainant companies serve the electric power requirements of substantially all commercial enterprises doing business in the territory served by them, with the exception of a very few scattered rural stores which do not stay open at night.

119. The complainant companies are now serving, either directly or indirectly, substantially all of the domestic demand within the territory served by them accessible to existing company facilities.

120. The wholesale rates of the Tennessee Valley Authority are substantially lower than the wholesale rates of any of the complainants.

121. The retail rates for every class of service prescribed by TVA and charged by the municipalities and cooperatives purchasing power from the Tennessee Valley Authority are substantially lower than the retail rates of any of the complainants.

[fol. 775] 122. The rates charged by the Tennessee Valley Authority in all classes of service, including rural customers, domestic customers, and commercial customers which it serves, are substantially lower than the rates for the same classes of service of any of the complainants.

123. The industrial rates charged by the Tennessee Valley Authority are substantially lower than the published rates of any of the complainants.

124. Tennessee Valley Authority has published these rates generally, and they are well known throughout the Tennessee Valley area.

125. Substantial future damage to complainants will result from competition with TVA. This record does not establish that complainants, or any of them, will have their businesses destroyed by, or will become bankrupt because of, such competition.

[fol. 776] Power Customers and Power Contracts of the Authority

126. The Authority as of December 15, 1937, had contracts to sell power to 9 municipalities located in the ceded

area covered by the contract of January 4 with the complainants Alabama Power Company and Mississippi Power Company. Seven of these municipalities are located in the ceded area in Alabama.

127. As of December 15, 1937, the Authority had contracts for the sale of power with 7 rural cooperative corporations and 8 industrial customers located in the ceded area covered by the contract of January 4 with complainants Alabama Power Company and Mississippi Power Company.

128. The Authority has a contract to sell and is delivering power in bulk lots to the complainant Alabama Power Company on the low side of several substations acquired by the Authority under the January 4 contract, by means of transmission lines also acquired by the Authority under the contract, for service to several urban distribution systems of the company in the area covered by the contract.

129. In addition to the contracts for the sale of power in the ceded area, as of December 15, 1937, the Authority had contracts to sell power to 17 municipalities, 12 cooperatives, 3 industrial customers, and one utility company, and the requirements of the War Department for the construction of Sardis Dam.

130. The contracts with municipalities and cooperatives provide for the wholesale delivery of power in bulk lots at a [fol. 777] substation at the city gates in the case of municipalities and at a substation or metering point near the location of their respective operations in the case of cooperatives, the substations and metering equipment to be owned by the Authority.

131. The contracts with municipalities and cooperatives provide that all lines and substations from the point of delivery and all electrical equipment except the metering equipment of the Authority located on the municipality's or cooperative's side of such point of delivery shall be furnished and maintained by the municipality or cooperative.

132. Rural cooperative associations have been organized in the States of Alabama, Tennessee, Georgia, and Mississippi for the purposes of distributing TVA power. Seven such corporations have been organized in Alabama, 14 in Tennessee, one in Georgia, and 11 in Mississippi. All such cooperative associations have been incorporated since May

18, 1933, and have procured franchises in 10 counties in Alabama and 45 counties in Tennessee for the purposes of erecting, constructing, operating, and maintaining lines, and distributing and selling electricity therein.

133. TVA has financed for municipalities and cooperatives a large number of rural distribution lines and has also loaned funds to cooperatives with which to purchase urban distribution systems, including the distribution systems in the towns of Bruce, Caledonia, and Smithville, Mississippi, and Gibson, Tennessee. The indebtedness owed to TVA on this account amounted to $1,424,665.70 as of June 30, 1936, [fol. 778] and this indebtedness had increased by June 30, 1937, to the sum of $1,582,412.66. TVA intends to continue this policy.

134. The TVA in some instances has constructed distribution systems in advance of the organization of any cooperatives. In a number of other instances TVA has constructed lines pending their purchase by the cooperatives, agreeing to collect membership fees, to connect service to prospective customers, to render and collect bills, and perform other like services, including the furnishing of clerical and stenographic service. In a number of instances TVA has transferred to cooperatives distribution lines and other equipment and has financed and constructed rural lines to be paid for over a 20-year period, and in some instances an unlimited period, at 3½% interest, out of the income from the property.

135. The municipalities purchasing power at wholesale from the Authority own and operate their own distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with municipalities not yet purchasing power contemplate the same type of operation.

136. The cooperatives purchasing power at wholesale from the Authority own and operate their own rural distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with cooperatives not yet purchasing power contemplate the same type of operation.

137. All of the Authority's contracts with said municipalities and cooperatives provide for the delivery of power

[fol. 779] at a voltage of from 2,300 volts upwards. Voltages of this magnitude are not suitable for delivery to the ultimate consumer, except for a few industrial consumers, and the municipality or cooperative which serves these consumers directly steps down this voltage one or more times after receiving it from the Authority at the point of delivery before actual delivery to the customer at the usual customer voltages of 115 and 230 volts.

138. All of the Authority's contracts with municipalities and cooperatives for the sale of power provide an arrangement whereby the Authority performs the function of a wholesaler generating and transmitting the power in bulk lots to the purchasing municipality and cooperative, which in turn sells the power to the ultimate consumers, performing all the functions of the distributor.

139. The contracts with municipalities and cooperatives provide only for the sale of firm power.

140. Municipalities and cooperatives under contract to purchase and purchasing power from the Authority assume responsibility for the power at the point of delivery and sell and distribute the power from that point over their own facilities and with their own operating staffs, without any assistance or direction from the Authority. The only assistance rendered by the Authority has been in time of emergency, and in such case the Authority has been paid its full cost, including its usual overhead.

141. The cooperatives to whom the Authority is under contract to sell power have certificates of incorporation [fol. 780] from the authorized officials of the respective States in which they operate showing them to be organized under special acts of the several States in which they operate. These charters show that the corporations are organized by citizens of the respective localities in which the operations of the corporations shall be conducted who were desirous of procuring electric service, and the charter sets out the form of organization, location of the principal office, terms of membership, purposes, powers, and the names of the board of directors for the first year.

142. These organizations were brought about upon the initiative of the residents of the various communities who were desirous of procuring electric service, without any

solicitation on the part of the Authority or any of its representatives.

143. Upon the request of the citizens of the rural areas in which the respective cooperatives are located, the Authority has given advice and assistance to such cooperatives on problems of organization and has given technical advice on methods of conducting surveys and determining the financial feasibility of proposed operations.

144. The Authority, in advising on the financial feasibility of proposed lines, has not substituted its judgment for that of the respective cooperatives. The cooperatives have made all decisions on line extensions, customers to be served, and all other matters relating to the conduct of their operations.

145. All contracts between the Authority and the several cooperatives relating either to the construction of lines or [fol. 781] to the sale of power have been submitted to and approved by counsel for the respective cooperatives and then considered and finally approved by the board of directors of the respective cooperatives.

146. While the Authority has in a few instances temporarily operated directly the lines of certain cooperatives under agreements with such cooperatives providing for such operation by the Authority, all of such operating agreements had expired by December 15, 1937, and all lines constructed for cooperatives had been transferred to such cooperatives.

147. Upon the transfer of any lines constructed by the Authority for cooperatives or temporarily operated by the Authority for such cooperatives, the Authority has withdrawn completely from any participation in the conduct of the affairs of such cooperatives, except as it has continued to supply power at wholesale and except as to the enforcement of its rights as a contractor of such of the cooperatives whose lines were financed in whole or in part by the Authority.

148. The power contracts with industrial customers provide in some cases for the delivery of power on the low-tension side of a substation to be owned by the Authority, and in other cases on the high-tension side of a substation to be owned by the industrial customer. In the case of the

Electric Metallurgical Company the contract provides that delivery shall be made at the boundary of the Wilson Dam reservation at a high transmission voltage. All the contracts are for sales in bulk lots for use in various industrial processes.

[fol. 782] 149. These industrial contracts provide for the delivery of power at voltages comparable to or higher than the voltages at which delivery is made to municipalities or cooperatives. These delivery voltages range as high as 154,000 volts, which is specified for the delivery to the Aluminum Company of America.

150. Except for the industrial customers located in the ceded area covered by the contract of January 4, all of the industrial customers with whom the Authority is under contract to sell power are large electro-chemical and electro-metallurgical companies. The Electro Metallurgical Company, which is locating a new plant in the ceded area, is also of this type.

151. All of said industrial customers outside the ceded area and the Electro Metallurgical Company constitute new loads in the territory. The loads contracted for have not been previously served by any of the complainant companies. Under the contracts with the Victor Chemical Works, the Monsanto Chemical Company, and the Electro Metallurgical Company (in the ceded area) these companies undertake to construct new plants and purchase power from the Authority for service to these plants. The contract with the Aluminum Company of America shows that that company was about to enlarge its facilities and needed additional power to supplement its own generation.

152. Complainant companies do not maintain excess capacity and facilities for service to loads of such large and unusual size as that of these electro-chemical and electro-metallurgical customers of the Authority, but constructed [fol. 783] facilities for service to these companies as needed.

153. All of said large industrial customers have contracted to purchase large amounts of secondary power as well as firm power.

154. Secondary power is that class of power the delivery of which the seller may interrupt during periods which are variously specified in the contract of sale. All of the indus-

trial customers outside of the ceded area have contracted to purchase large amounts of this secondary power of which the Authority may, under the contracts, suspend delivery for specified periods of time, such as in event of low-water flow. These sales of secondary power materially increase the Authority's sales of energy during the period that such power is available. These sales of secondary power to large industrial customers will increase the load factor of the Authority's operations during these periods when the power is delivered.

155. It is not feasible to sell this secondary power to such large industrial customers through a retailer or an intermediary.

156. These large manufacturing plants and utility companies, such as the Arkansas Power & Light Company, with whom the Authority also has a contract providing for the sale of secondary power, are the type of customers whose operations are adapted to the use of that type of power.

157. The following contracts provide for the sale of both firm and secondary power for the period of years noted:

[fol. 784] (a) Contract between Tennessee Valley Authority and Monsanto Chemical Company, dated May 15, 1936, for 20 years.

(b) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 17, 1936, as amended by agreement of July 20, 1937, for 10 years.

(c) Contract between Tennessee Valley Authority and Arkansas Power & Light Company, dated June 16, 1937, for 5 years, but continuing in effect until cancelled by either party on 30 months' notice.

(d) Contract between Tennessee Valley Authority and Victor Chemical Works, dated July 2, 1937, for 20 years.

(e) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 20, 1937, for 20 years, but cancellable by either party at the end of 10 years on 5 years' notice.

(f) Contract between Tennessee Valley Authority and Electro Metallurgical Company, dated August 17, 1937, for 20 years.

158. The maximum amounts of secondary power which the Authority has contracted to sell are as follows:

Monsanto Chemical Company	32,500 kw.
Aluminum Company of America (July 17, 1936)	40,000 kw.
Arkansas Power & Light Company	5,000 to 20,000 kw.
(prior to 6-30-38	10,000 kw.
year ending 6-30-39	15,000 kw.
year ending 6-30-40	20,000 kw.
year ending 6-30-41	15,000 kw.
year ending 6-30-42	10,000 kw.
thereafter	5,000 kw.)
Victor Chemical Works	16,000 kw.
Aluminum Company of America (July 20, 1937)	30,000 kw.
Electro Metallurgical Company	16,000 kw.

159. The periods in which the Authority is obligated to supply such secondary power and the required notices before interrupting and resuming secondary power deliveries are as follows for the respective contracts above mentioned:

[fol. 785]

Contract	Period Authority obligated to supply secondary power	Notice required before interruption of delivery	Notice required before resumption of delivery
Monsanto Chemical Co.	300 days annually	14 days	14 days
Aluminum Co. of America (July 17, 1936)	Not less than 90 days when and if available in judgment of Authority	15 days	15 days
Arkansas P. & L. Co.			
Prior to 7–1–42	300 days annually	15 days	7 days
Beginning 7–1–42	75% of the time	5 days	"Reasonable" time
Victor Chemical Works	9 months annually	14 days	7 days
Aluminum Co. of America (July 20, 1937)	75% of the time in ten years	21 days	7 days
Electro Met. Co.	9 months	14 days	7 days

160. All of the Authority's contracts contain a force majeure clause which relieves the Authority of any obligation to supply power when prevented by injunctions, strike, riot, invasion, fire, accident, breakdown, act of God, or any other causes beyond the Authority's control. In addition the force majeure clause in each of the contracts with the 4 large industrial contractors and the Arkansas Power & Light Company, except the force majeure clauses in the contract with the Aluminum Company dated July 17, 1936,

as amended, and in the contract with the Monsanto Chemical Company, relieves the Authority of obligation to supply power when service is interrupted or suspended by reason of floods or backwater caused by floods. The force majeure clauses apply to both firm and secondary power.

161. The Authority's contracts with the Aluminum Company and the Arkansas Power & Light Company provide that if an emergency or breakdown should occur on the system of either contracting party, the other party shall stand by and supply the power needed in the emergency to [fol. 786] the full extent its facilities enable it to do so.

162. All contracts between the Authority and municipalities or cooperatives are for a period of 20 years from the respective dates of execution thereof, except that the contracts with the cities of Florence, Sheffield, and Tuscumbia, Alabama, all of which purchase power at the Wilson Dam reservation, are for a period of 30 years from the respective dates of execution thereof.

163. With the exception of small industrials in the "ceded areas," all power contracts except one contain either the following provision immediately after the recitals:

Now Therefore, subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto agree as follows:

or an identical provision except that the word "pursuant" is used in the first line above quoted instead of the word "subject."

164. The following provision:

* * * should [the contracting municipality or cooperative] desire to increase its purchases in excess of — kilowatts, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so.

is contained in each of the contracts specified below, with the number after the name of each purchaser indicating the number of kw entered in the blank in the clause above.

Municipality or cooperative	kw.
North Georgia Electric Membership Corporation	300
Pickwick Electric Membership Corporation	300
Pontotoc County Electric Membership Corporation	1,000
Joe Wheeler Electric Membership Corporation	1,000
Gibson County Electric Membership Corporation	300
[fol. 787]	
Duck River Electric Membership Corporation	300
Cullman County Electric Membership Corporation	300
Middle Tennessee Electric Membership Corporation	300
City of Jackson, Tennessee	480
City of Tuscumbia, Alabama	3,000
City of Trenton, Tennessee	1,500
City of Sheffield, Alabama	4,500
City of Florence, Alabama	7,500
Northeast Mississippi Electric Membership Corporation	750
Tippah County Electric Membership Corporation	750
City of Amory, Mississippi	6,000
City of Middlesboro, Kentucky	3,000
City of Knoxville, Tennessee	35,000
City of Guntersville, Alabama	3,000

The maximum amount of power each industrial or utility customer may purchase from the Authority is definitely specified in the contract with such customer.

165. The Authority has contracts with municipalities now purchasing power calling for the availability of 38,380 kw.

166. The Authority has contracts with municipalities not yet purchasing power calling for the availability of 135,000 kw.

167. The Authority has contracts with rural cooperatives now purchasing power calling for the availability of 9,300 kw.

168. The Authority has contracts with industrial companies by which it contracts to sell 127,850 kw. of firm power.

169. The Authority has contracts with industrial companies and utilities by which it contracts to sell 139,500 kw. of secondary or interruptible power.

[fol. 788] Power Facilities Used or to be Used in Meeting These Contracts

170. The transfer of the Muscle Shoals properties from the War Department to the Tennessee Valley Authority after the passage of the Tennessee Valley Authority Act included the Wilson Dam and power plant, with 8 generators having a total installed capacity of 184,000 kw., and the Sheffield steam plant, with an installed capacity of 60,000 kw.; also 7.8 miles of high-voltage transmission lines leading from Wilson Dam to various points on the Government reservation, including Nitrate Plant No. 2.

171. A single generator at Norris Dam, constructed by the Authority, was put in operation on July 28, 1936; a second generator was put in operation on September 30, 1936. Each of these generators are of 50,000-kw. capacity. A single generating unit at the Wheeler project, constructed by the Authority, was put in operation on November 9, 1936; a second unit was put in operation on April 14, 1937. Each of these units is of 32,000-kw. capacity.

172. The failure to generate and sell power available at the Wilson, Norris, and Wheeler Dams not needed for governmental uses would result in its complete waste. Substantial amounts of such power have been wasted because of lack of markets in every year since the construction of Wilson Dam.

173. Pursuant to the contract of January 4, with the complainants Alabama Power Company and Mississippi Power Company the Tennessee Valley Authority purchased certain transmission lines extending from Wilson Dam to the [fol. 789] nearby area in northwest Alabama and northeast Mississippi. The lines, which included auxiliary electrical properties, such as substations and rural lines in the area, were located in 10 counties in Mississippi and 6 counties in Alabama. These 16 counties are hereinafter referred to as the "ceded area" covered by the contract of January 4. At the time of the transfer of the properties there were approximately 14,200 electric customers in the ceded area. These customers and all additional customers in the area are now being served by municipalities, cooperatives, and the Alabama Power Company, to whom the Authority sells and delivers power at wholesale for resale in the area, except for a few industrial customers and the rural customers,

relatively small in number, in the vicinity of Wilson Dam, being served by the Authority.

174. The properties in Alabama purchased from the Alabama Power Company, a complainant in this case, included 128 miles of high-voltage transmission lines, 24 substations located along these lines, and 203 miles of rural lines. All of the municipal distribution systems belonging to the Alabama Power Company in these 6 counties, some 12 in number, were served from these transmission lines. They were retained by the Alabama Power Company. Approximately 1,000 rural customers were served from the rural lines at the time of transfer. The industrial customers being served from these properties at the time of transfer were 48 in number, with a load of approximately 5,000 kw.

175. The properties located in Mississippi were purchased from the Mississippi Power Company, a complainant in this case, and consisted of 87.3 miles of high-voltage transmission lines, 7 substations, and 167 miles of rural [fol. 790] lines. Certain municipal distribution systems and steam and oil generating plants were included in the purchase from the Mississippi Power Company. Subsequent to the conveyance of the municipal distribution systems to the Authority in May 1934, these distribution systems were sold to municipalities or cooperative organizations of citizens and farmers formed under the laws of Mississippi.

176. All of the properties purchased from the Mississippi Power Company were actually transferred to the Authority on approximately June 1, 1934. All of the properties purchased from the Alabama Power Company were transferred to the Authority in May 1936.

177. The only transmission lines, other than those purchased or constructed by the Tennessee Valley Authority, connected with any dam of the Authority are owned by the Alabama Power Company, The Tennessee Electric Power Company, and the Southern Tennessee Power Company, all subsidiaries of the Commonwealth & Southern Corporation. Subsidiaries of the Commonwealth & Southern Corporation and companies affiliated with the Electric Bond & Share Company own substantially all of the transmission lines and serve substantially all of the existing load centers in the area within a radius of 100 miles from each of the dams now under construction or completed.

178. Unless the Authority built transmission lines leading from Wilson Dam and the dams it has constructed or has under construction, it could sell power only to utility companies, except for industrial customers that might locate at the dams and such municipalities and cooperatives as are located in the immediate neighborhood of the projects. Such sales to customers other than utility companies would be very limited.

[fol. 791] 179. The Authority has constructed 407.6 miles of high-voltage transmission lines interconnecting the power plants at Wilson Dam and the other dams constructed or under construction.

180. Such plant tie lines can be used to transfer power from one project to another and increase the availability and amount of power at Wilson Dam and on the resulting hydroelectric system.

181. The most economical use of the Authority's dams for power supply requires interconnecting transmission lines similar to those constructed, under construction, or authorized for construction by the Authority.

182. Unless these lines had been constructed, the Authority would have been forced to rely for the interconnection of its various projects upon lines belonging to companies in the Commonwealth and Southern system, more particularly the lines of the Alabama Power Company and The Tennessee Electric Power Company. These existing lines of the complainant power companies were inadequate to perform these functions, and there was no existing line connecting Wilson Dam with Pickwick Landing Dam.

183. In addition to the plant tie lines and the 216 miles of high-tension lines purchased under the contract of January 4, the Authority has constructed 611.6 miles of transmission lines of a voltage of 22 kw. or over; it was constructing on October 15, 1937, an additional 79.1 miles of such lines; and on that date it had authorized for construction an additional 176.9 miles of such lines.

184. These miles of high-voltage transmission lines constructed, under construction, and authorized by the Author-
[fol. 792] ity do not constitute duplication of existing transmission facilities in the area, but are useful and valuable additions to those facilities.

185. In addition to the 31 substations purchased under the contract of January 4 from the complainants, the Authority is constructing, has constructed, or has authorized the construction of some 33 substations along or at the end of the transmission lines it has purchased or constructed, and has constructed or is constructing five additional substations at the dams. The substations at the dams are used in stepping up the current generated to higher voltages for transmission, and those along the lines are used in stepping the voltages down for delivery to the Authority's wholesale customers.

186. The transmission lines substantially as constructed by the Authority are essential for service to the customers of the Authority now being served or under contract. Such lines were constructed for service to the customers under contract and not for any strategic purpose of injuring or threatening the complainants.

187. As of October 15, 1937, the Authority owned approximately 421 miles of rural lines in the vicinity of Wilson Dam or Norris Dam. It also owned 107 miles of such lines in Lincoln County, which on December 11, 1937, it contracted to sell and transferred to the Lincoln County Electric Membership Corporation. Of the 421 miles still retained, 353 miles were constructed by the Authority, and of the 353 miles so constructed, 254 miles were located within the so-called ceded area in Alabama. The remaining 68 miles owned by the Authority were either purchased from the complainant Alabama Power Company under the contract of January 4 or were purchased from the complainant The Tennessee Electric Power Company.

[fol. 793] 188. In addition to the rural lines which the Authority has purchased or constructed and still retains, it has constructed 1,023 additional miles of such lines and sold them to municipalities or rural cooperatives with whom it was under contract to sell electric energy at wholesale; it constructed an additional 1,343 miles of such lines under construction contracts with municipalities or cooperatives having power-purchase contracts.

189. The rural lines constructed by the Authority and sold to the cooperatives were constructed with the Author-

ity's own funds and sold to the respective cooperatives at the actual cost of such lines to the Authority plus its regular overhead charges, under an agreement secured by mortgage or other instrument of security for the repayment to the Authority of the indebtedness out of the proceeds of the electric business of the cooperative.

190. The remaining rural lines constructed by the Authority for the cooperatives were constructed by the Authority under construction contracts between the Authority and cooperatives, under the terms of which the Authority has been repaid its actual construction cost, including the usual overhead.

191. Some of the respective cooperatives and municipalities purchasing power from the Authority have constructed many miles of rural line either by contract with an independent contractor or with their own crews, without any aid or assistance, financial or otherwise, from the Authority or any other federal agency.

192. The high-tension transmission lines constructed by the Authority are similar in character and function to the [fol. 794] lines purchased by the Authority under the contract of January 4. The substations constructed by the Authority are similar in character and function to the substations purchased by the Authority under the contract of January 4. The rural lines constructed by the Authority and retained in ownership or sold are similar in function and character to the rural lines acquired by the Authority under the contract of January 4.

193. The Authority does not own or operate any municipal or urban distribution systems.

194. As of October 15, 1937, the total number of rural lines distributing TVA power, exclusive of those of the North Georgia Membership Corporation, was 3,086.7, and approximately 490 miles of additional lines were then under construction. Of such total mileage TVA owned and operated 629.7 miles. Of the total distribution lines distributing TVA power only 292 miles were constructed by municipalities or cooperatives. One thousand and twenty-three miles were constructed and financed by TVA, and 1,343 miles were constructed by TVA under contracts with municipalities or cooperatives, 1,593 miles having been constructed by TVA during its 1937 fiscal year.

195. Expenditures by TVA for distribution facilities up to June 30, 1936, amounted to $1,809,114. This amount was increased to $2,447,956 by June 30, 1937, and TVA proposes to expend an additional sum of $272,000 for distribution facilities during the fiscal year of 1938.

[fol. 795] Power Sales, Present and Potential

196. During the period from May 18, 1933, to January, 1934, and of the contract of January 4, approximately 75% of the electricity sold by the Authority was sold to complainant power companies, subsidiaries of the Commonwealth & Southern Corporation, including the complainant Alabama Power Company, complainant Mississippi Power Company, complainant The Tennessee Electric Power Company, and noncomplainant Georgia Power Company. The total of the power so disposed of to these utility companies since the passage of the Tennessee Valley Authority Act has amounted to 1,216,451,142 kwh. The systems of all of the Commonwealth and Southern companies are interconnected into a single integrated system, and power delivered to one of these companies is merged in the common pool and becomes a joint source of supply.

197. The power sold in the year 1937 was obtained exclusively from the hydroelectric generating facilities of the Authority, either directly or through interchange arrangements with the Commonwealth and Southern companies and the Aluminum Company of America. The steam plant at Muscle Shoals is not in operation.

198. In the calendar year 1937 the Tennessee Valley Authority sold substantial quantities of power to 17 municipalities owning and operating their own municipal distribution systems, 15 rural cooperatives owning and operating their own rural lines, 8 industrial customers, and 2 private utility companies. In addition the Authority sold substantial quantities of power to the Commonwealth and Southern companies in January and February under an extension of the contract of January 4.

[fol. 796] 199. In addition to these sales under outstanding power contracts the Authority sold electric energy to residents on 6 Government reservations and to rural residents residing in the vicinity of Wilson and Norris Dams and Lincoln County, Tennessee. On December 11, 1937, the Au-

thority contracted to sell the rural lines in Lincoln County, Tennessee, and the Lincoln County Electric Membership Corporation contracted to buy said lines, and since that date these lines have been operated by the Lincoln County Corporation.

200. As of October 31, 1937, the total of all residents served by the Authority on Government reservations and in the surrounding areas, exclusive of Lincoln County, was 3,228. All of the Authority's remaining sales of electricity for public use were made at wholesale to municipalities and rural cooperatives. The number of ultimate consumers so served as of October 31, 1937, by said municipalities and cooperatives was approximately 31,900.

201. The direct sales to temporary rural customers and employees on Government reservations have been less than 4% of the total kw. sales each year of the Authority's operations.

202. In addition to these sales in 1937, power generated by the Authority has been used in the construction of Chickamauga, Guntersville, Hiwassee, Norris, Pickwick, and Wheeler Dams, for service to the fertilizer works at Muscle Shoals, and for the operation of the navigation locks at the Authority's dams on the main stream of the Tennessee River.

203. As of December 15, 1937, of the total number of 18 municipalities receiving wholesale service from the Author- [fol. 797] ity, only 6 previously received service of any kind from any of the complainant companies. Of these, 5 were located in the ceded area covered by the contract of January 4, 1934. The residents of the city of Jackson, Tennessee, outside the ceded area, were served directly by the complainant West Tennessee Power & Light Company, and some of them have stopped taking service from the complainant company and are buying from the city.

204. All of the municipalities purchasing power from the Authority in 1937 owned and operated their own municipal distribution systems for a long time before the passage of the Tennessee Valley Authority Act, with the exception of Florence, Sheffield, and Tuscumbia, Alabama, and the city of Jackson, Tennessee. The cities of Florence, Sheffield, and Tuscumbia, Alabama, are located in the ceded area

covered by the contract of January 4, and their boundaries adjoin the Wilson Dam reservation. The residents of these municipalities were previously served by the Alabama Power Company, which was operating distribution systems in these cities without franchises long before the Authority contracted with the municipalities.

205. Except for the cities of Athens, Alabama; Dayton, Tennessee; and Tupelo, Mississippi, all of the municipalities purchasing power at wholesale in 1937 which owned and operated their own distribution systems prior to purchasing from the Authority also owned a generating plant which was used to supply power for such systems. The cities of Athens, Alabama, and Tupelo, Mississippi, both located in the ceded area covered by the contract of January 4, purchased their power at wholesale from the Alabama Power Company and the Mississippi Power Company, re- [fol. 798] spectively, while Dayton, Tennessee, purchased its power supply from a local lumber mill.

206. Only 2 customers of the total number of 16,108 customers receiving service as of October 31, 1937, from the 15 cooperatives purchasing power at wholesale from the Authority over all the rural lines they operated, whether constructed by them or by the Authority for them, ever received electric service of any kind from any of the complainant companies, except for customers located in the ceded area and served by means of lines sold to the Authority under the contract of January 4 and resold by the Authority to the cooperatives.

207. Except for rural customers located in the ceded area on lines purchased from the complainant power companies, none of the rural customers served by the Authority or by municipalities purchasing power at wholesale from the Authority ever received service from any of the complainant companies.

208. None of the industrial loads which the Authority served in 1937 were previously served by any of the complainant companies except the industrial customers in the ceded area in Alabama, whose contracts were assigned to the Authority under the contract of January 4.

209. In addition to the customers served by the Authority as of December 15, 1937, the Authority was as of that

date under contract to serve 8 municipalities, 3 rural cooperatives, 2 industrial customers, and the War Department's requirements for the construction of Sardis Dam.

210. Of the municipalities under contract but not yet purchasing as of December 15, 1937, 2 are located in the ceded area in Alabama, 1 is not served by any of the com- [fol. 799] plainants (Middlesboro, Kentucky, served by Kentucky Utilities Company) and 5, including Chattanooga, Tennessee; Knoxville, Tennessee; Memphis, Tennessee; Guntersville, Alabama; and Paris, Tennessee, are now served by the complainants The Tennessee Electric Power Company, Tennessee Public Service Company, Memphis Power & Light Company, Alabama Power Company, and Kentucky-Tennessee Light & Power Company, respectively; that is, these companies presently own and operate urban distribution systems in the 5 municipalities. The Authority is under contract to sell power at wholesale to these municipalities as soon as they acquire distribution systems. If the municipalities construct new distribution systems and sell power and the complainants continue to operate their existing distribution systems in these municipalities, it is reasonable to believe that a large number of customers of complainants will elect to buy from the municipalities.

211. Of the 3 cooperatives under contract but not yet purchasing power as of December 15, 1937, one is located within the ceded area in Mississippi. None of the 3 had previously purchased power from any of the complainants.

212. Of the 2 industrial customers under contract but not yet purchasing power as of December 15, 1937, one is located in the ceded area in Alabama. Neither of the 2 was previously served by any of the complainants.

[fol. 800] Reasonableness of Conduct of Authority in Disposition of Surplus Power

213. Under the contract of January 4, as amended and supplemented, the Commonwealth & Southern Corporation, as agent for its subsidiaries Alabama Power Company, The Tennessee Electric Power Company, Mississippi Power Company, and Georgia Power Company, purchased from the Authority power in the aggregate value of $1,814,-918.04. In addition there to the Alabama Power Company had purchased from the Authority prior to January 4, 1934,

power in the aggregate value of $479,573.67. The amounts of power delivered by the Authority to the Alabama Power Company and The Tennessee Electric Power Company (for the subsidiaries of the Commonwealth & Southern Corporation above mentioned), from January 4, 1934, to January 1, 1935, and for the calendar years 1935 and 1936, were as follows:

Alabama Power Company	1934	110,127,068 kwh.
	1935	164,127,787 kwh.
	1936	344,308,127 kwh.
The Tennessee Electric Power Co.	1934	39,514,200 kwh.
	1935	76,022,503 kwh.
	1936	212,313,103 kwh.

214. In addition to the sales of power under the contract of January 4, the Authority is currently selling power to 2 utility companies under recent contracts and has practiced no discrimination against complainant utility companies or other utility companies in the sale of power.

215. The so-called power policy of the Authority, dated August 15, 1933, consisting of a joint press release, was [fol. 801] never formally approved by the Board of Directors of the Authority nor ever put into action or followed.

216. The Authority has sold substantial blocks of power to many municipalities which formerly operated their own municipal generating plants, which sales did not involve any displacement of any existing load of the complainant companies. The Authority has sold substantial blocks of power to cooperatives for distribution by them in rural areas to rural customers heretofore unserved, which sales did not involve any displacement of any existing load of complainant power companies. The Authority has sold substantial blocks of power to industrial concerns who located new plants or enlarged existing plants, which sales did not displace any existing load of complainant power companies. The Authority has sold substantial blocks of power to complainant and non-complainant companies with existing utility networks. In fact, none of the sales of power by the Authority have directly displaced any existing load of complainant companies except in the ceded area covered by the contract of January 4, in which the Authority purchased, for valuable considerations, the existing

facilities from the complainants Alabama Power Company and Mississippi Power Company. None of the Authority's sales of power to date have indirectly displaced any existing load of the complainants outside the ceded area, except that the complainant West Tennessee Power & Light Company has lost some customers to the city of Jackson and has lost a load of approximately 50 kw. in the town of Gibson which it sold to the Gibson Power & Light Company; this latter load was lost to the complainant West Tennessee Power & Light Company when the properties in the town [fol. 802] of Gibson were sold at auction by the Gibson Power & Light Company to the Gibson County Electric Membership Corporation.

217. The officials of the Authority have taken the position in correspondence with municipal officials that the question of whether a municipality shall own and operate its own distribution system is one for the sole determination of the municipality.

218. The Authority does not aid or assist in conducting surveys to determine the economic feasibility of proposed municipal-plant operations by municipalities applying for the purchase of power from the Authority.

219. The standard of the Authority in entering into power contracts with municipalities is the financial feasibility of extending wholesale service to such municipalities as apply for wholesale service.

220. The Authority has not confined its power disposition to those municipalities which previously did not own and operate their own municipal distribution systems. On the other hand, the Authority has throughout the course of its existence entered into a large number of contracts with municipalities who owned and operated municipal distribution systems before the passage of the Tennessee Valley Authority Act. The power contracts between the Authority and municipalities are substantially uniform, and there are no special provisions favoring municipalities who had not previously owned and operated their distribution systems or discriminating against municipalities that did own and operate their municipal distribution systems before the passage of the Tennessee Valley Authority Act.

[fol. 803] 221. The contracts for the disposition of power between the Authority and municipalities and cooperatives

contain provisions in which the parties agree that certain schedules of rates shall be charged by the wholesale purchaser to persons to whom it resells. These provisions for agreed resale rates are contained in all contracts regardless of whether or not the complainant utility companies own and operate distribution systems in the municipality or area where the purchased power is to be resold.

222. The Authority has made no effort to regulate the rates of its municipal or cooperative customers and has taken no action regarding such rates other than entering into the initial agreement establishing resale rates.

223. There have been uniform and progressive increases of a substantial character in the amount of wholesale purchases of power made by each municipality which has purchased power from the Authority.

224. There has been a uniform and progressive increase in the number of ultimate consumers served by each municipality and cooperative that has purchased power at wholesale from the Authority.

225. The amount of power purchased by each of the municipal customers of the Authority in October 1937 was on the average about 100% in excess of the respective amounts purchased by the respective municipalities in the initial month of wholesale service by the Tennessee Valley Authority. This percentage of increase is in excess of the highest percentage of increase of any of the complainant companies in power sold to regular customers from 1933 to 1936. It is greatly in excess of the approximately 20% of increase in the national production of electricity for the [fol. 804] same period of years.

226. The annual average consumption of residential customers of municipalities and cooperatives purchasing power from the Authority generally exceeded the average for the same class of customers of the complainant companies.

227. The Authority has not induced the breach of any power contract between any complainant and any of its customers.

228. In marketing the power generated at its dams the Authority has not engaged in any solicitation of customers, coercion, duress, fraud, or misrepresentation in procuring

contracts with municipalities, cooperatives, or other purchasers of power.

229. In marketing the power generated at its dams the Authority has not acted with any malicious or malevolent motive and has not conspired with municipalities or other prospective purchasers of power.

Extent of Displacement of Existing Utilities Threatened

230. The defendant Authority has no plans and has made no investigations of any substantial character for the construction of any dams in the Tennessee Valley except the 7 high dams on the main stream and Norris and Hiwassee Dams on the tributaries. Other than these projects it has recommended only the construction of the Fontana Dam on the Little Tennessee River. The surveys of the Tennessee River basin and its tributaries conducted by the Corps of Engineers of the United States Army for the War [fol. 805] Department and reported in House Document No. 328, Seventy-first Congress, second session, concerned combined public and private projects; the 149 projects so surveyed have not been recommended for construction by the Federal Government.

231. It is reasonably estimated that the utilities within ready transmission distance of the Authority's run-of-river plants, constructed or under construction, will require 310,000 kw. of additional capacity in 1939 and 787,500 kw. of additional capacity in 1943. Of this amount the requirements of the Commonwealth and Southern companies which are complainants herein, plus the requirements of the non-complainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company, affiliated and interconnected non-complainant companies, are 207,000 kw. in 1939 and 559,000 kw. in 1943; and the requirements of the Electric Bond and Share companies who are complainants herein and affiliated non-complainant companies are 88,200 kw. in 1939 and 190,000 kw. in 1943. The estimated energy requirements for the companies within ready transmission distance of the Authority's run-of-river dams, constructed or under construction, will be over 770,000,000 kwh. in 1939 and over 2,150,000,000 kwh. in 1943. Of these amounts the additional requirements of the Commonwealth and Southern complainant companies and the Georgia Power Company will be over 550,000,000

kwh. in 1939 and 1,600,000,000 kwh. in 1943. The additional energy requirements of the Electric Bond & Share Company and affiliated companies with which they are interconnected will be over 200,000,000 kwh. in 1939 and over 560,000,000 kwh. in 1943.

232. Some of the complainants have added substantially to their generating capacity since 1933. Some of the com- [fol. 806] plainants are preparing for the construction of additional generating plants of a substantial capacity. The Tennessee Electric Power Company is preparing to construct a steam plant at Nashville with a generating capacity of approximately 25,000 kw. The Appalachian Electric Power Company is constructing a hydroelectric project on the New River in Virginia with a planned installed capacity of about 75,000 kw. and has leased 55,500 kw. of power from the Federal Government at navigation projects on the Kanawha River. The Arkansas Power & Light Company has contracted to purchase 40,000 kw. from the Authority in the near future.

233. There is a steadily increasing demand for electric energy in the area within transmission distance of the Authority's projects constructed, under construction, and investigated for construction.

234. There are unserved potential markets for the electric energy which may be generated at the projects of the Authority, not involving any displacement of the existing loads of complainant companies, including new industries and unserved rural areas. The percentage of rural electrification in the States which make up the Tennessee River basin is small. In 1933 it ranged from 0.8% in Mississippi to 7.9% in Virginia. In 1936 it ranged from 2% in Mississippi to 10.3% in Virginia.

235. There are many unserved rural areas. A great majority of the so-called rural customers on lines of complainants existing in the counties or areas where the lines of the cooperatives have been constructed were in towns of a population of 100 or more, or within 6 miles of a transmission substation. There was little area-wide rural electrification. [fol. 807] The fact that the lines of the cooperatives extend out from load centers or communities produces less customer density to the mile.

236. The growth in demand in terms of the firm peak load of the principal companies operating in territory located within a radius of 250 miles of the dams recommended in the TVA unified plan from 1929 to 1936 was approximately 22%, that is, from 2,992,000 kw. in 1929 to 3,652,000 kw. in 1936. It is reasonably estimated by experts from both sides that this firm peak load will increase at least an additional 772,000 kw. or 21%, by 1939.

237. By the date the power generating units authorized for the dams of the Authority are installed it is reasonably estimated by witnesses for both sides that the power demand in the area within transmission distance of the projects of the Authority will be greatly in excess of the present peak-loan ability of the existing generating plants in the area. Unless additional generating capacity is provided by private utilities or at the projects of the Authority, there is likely to be a substantial power shortage.

238. Without subtracting the substantial amounts of power which the Authority has contracted to sell to large industrial customers, the Arkansas Power & Light Company, and municipalities not yet served, the amount of power which will be available at the projects of the Authority with authorized installations of generating capacity is less than the amounts of power necessary to meet the increases in demand in the area served by private utilities within transmission distance predicted for the date when these installations are scheduled for completion.

[fol. 808] 239. For most of the complainants 1936 represented a new high point in volume of power sales, the increases from 1930 to that year ranging up to more than 50%. Since 1933 sales to regular customers have increased even more rapidly, the rates of growth during the latter period ranging up to approximately 75%.

240. The number of electric customers served has shown a substantial increase for each of the respective complainants, the present number of customers served in 1937 constituting a new high for the said respective complainants.

241. Both the gross and the net revenues of the respective complainants in their electric-utility operations have increased substantially in the period since the creation of the Tennessee Valley Authority.

242. In many cases the gross revenues have reached a new high for the respective companies.

243. From 1933 to the middle of 1937 the rate of growth in the consumption of electricity in the 7 States, parts of which compose the Tennessee Valley basin, has been in excess of the national rate. The increase in average annual residential use of customers of many utilities operating in the area from 1933 to 1937 greatly exceeds the increase in national average annual residential use.

244. The generating and transmission facilities of the complainants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company, and non-complainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company are interconnected and are operated as an integrated power pool. Any point on the system of any of said companies may be [fol. 809] served with power generated at any other point in said power pool.

245. The facilities of complainants West Tennessee Power & Light Company, Memphis Power & Light Company, and Mississippi Power & Light Company, and non-complainants Louisiana Power & Light Company and Arkansas Power & Light Company, both members of the Electric Bond & Share Company system, are interconnected and operated as a common integrated transmission and generating pool.

246. The entire power requirements of the complainant Tennessee Public Service Company are purchased from complainant Carolina Power & Light Company. The Carolina Power & Light Company is interconnected with the Appalachian Electric Power Company and the Duke Power Company.

247. The generating and transmission facilities of the Appalachian Electric Power Company, Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company, Inc., are interconnected and operated as an integrated transmission and generating-plant system.

248. The generating and transmission facilities devoted to service to the municipalities now served by the respective complainants and under contract to purchase power from the Authority form parts of integrated transmission and generating systems and may be devoted to serving the

growth in other loads on the system should there be any loss of load in any given municipality which purchases power from the Authority due to loss of customers to said municipality.

249. The unserved rural market in the area adjacent to the lines of the respective complainants which can be economically served by the complainants is negligible in [fol. 810] amount and the injury to the respective complainants from any extension of rural lines for service to this market by the Authority or municipalities or cooperatives purchasing power at wholesale from the Authority would also be negligible.

250. Prior to the completion of generating plants at Norris Dam on July 28, 1936, and Wheeler Dam on November 8, 1936, all power supplied by the Authority to said companies under the contract of January 4, 1934, was supplied from Wilson Dam. Wilson and Norris Dams are and have been interconnected from and after July 28, 1936. Norris Dam began generating power on July 28, 1936, and Wheeler Dam on November 9, 1936. All power purchased by the Alabama Power Company and The Tennessee Electric Power Company from and after the respective dates of completion of Norris and Wheeler Dams was supplied from an interconnected pool, including the power generated at both of said dams from and after the dates of completion.

251. The months of June through December 1936 were months of subnormally low stream flow in the Tennessee River. The purchases of power from the Authority by the Commonwealth and Southern companies in these months were very substantial. During the 7 months these purchases amounted to 552,562,368 kwh., which was slightly more than the total amount of kwh. which could have been generated at Wilson Dam without the benefit of storage releases from Norris Dam. During August, September, and November the purchases by the Commonwealth and Southern companies were substantially greater in proportion to the generating ability of Wilson Dam without benefit of Norris Dam; those purchases ranged from 110% to 137% of the amount of power which could have been gen- [fol. 811] erated at Wilson Dam in those months without the benefit of Norris Dam. During this 7-month period the sales to the Commonwealth and Southern companies

were approximately 92% of the amount of power which could be generated at Wilson Dam including the benefit of Norris storage releases, and 83.45% of the total TVA system sales. In August, September, and November the Commonwealth and Southern companies purchased more power than Wilson Dam generated, including the generation resulting from Norris storage releases, the percentages varying from 101.82% in August to 108.51% in September.

[fol. 812] Conclusions of Law

1. The Tennessee Valley Authority Act is a valid exercise of the constitutional powers of Congress.

2. All of the acts complained of and established by the evidence in this cause are authorized by the terms of the Tennessee Valley Authority Act, and the portions of the statute granting such authority are within the constitutional powers of Congress.

3. Neither the Tennessee Valley Authority nor any of its directors have exceeded the powers conferred upon them by the Tennessee Valley Authority Act.

4. The Tennessee River from its mouth at or near Paducah, Kentucky, to a point above Knoxville, Tennessee, is in law a navigable interstate waterway of the United States.

5. Under the power to regulate and promote interstate commerce conferred by subsection 3 of section 8 of article one of the Constitution of the United States, the Federal Government has the power to improve the navigable character of the Tennessee River by means of the construction of dams and reservoirs upon the main stream of the Tennessee and its tributaries. The selection or determination of the particular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents.

6. The Federal Government, under the powers delegated to it by the Constitution of the United States, has the power to construct dams and reservoirs upon navigable rivers [fol. 813] of the United States and upon tributaries of such navigable rivers for the purpose of controlling floodwaters on such rivers. The selection or determination of the particular types of dams to be constructed for this purpose is

a matter to be determined by Congress or its authorized agents.

7. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs for the purpose of protecting interstate commerce, both upon the navigable waterways and upon the highways and railroads, from interruption and interference due to destructive floods.

8. Under the powers delegated to it by the Constitution of the United States, Congress has the power to construct dams and reservoirs for the purpose of protecting the instrumentalities of interstate commerce, including navigable waterways, railroads, highways, and manufacturing establishments engaged in the production of goods moving in interstate commerce, from the hazards and interruptions resulting from destructive floods.

9. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs upon the Tennessee River and its tributaries for the purpose of controlling destructive floods in the Tennessee and Mississippi River Valleys.

10. Under the power to regulate and promote interstate commerce, the Federal Government has the constitutional power to construct all dams in the Tennessee River and its tributaries that are reasonably related to the improvement of the navigable character of the Tennessee River or any of its navigable tributaries.

[fol. 814] 11. Under the powers delegated to it by the Constitution of the United States, Congress has the power to authorize the construction of all dams upon the Tennessee River and its tributaries that will in fact contribute to the control of destructive floods in the Tennessee and Mississippi River Valleys.

12. Under the power to regulate and promote commerce between the several States, Congress has the constitutional power to authorize the construction of each of the dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority upon the main stream of the Tennessee River and its tributaries.

13. By the terms of the Tennessee Valley Authority Act, Congress has created the Tennessee Valley Authority as an agency of the Federal Government and has expressly authorized this agency to construct each of the dams constructed, under construction, or under investigation for construction on the main stream of the Tennessee River and its tributaries. Congress has from time to time authorized the construction of each individual dam constructed or under construction by appropriate appropriation statutes.

14. The water power created as a result of the construction of the dams authorized by the Tennessee Valley Authority Act is the property of the United States.

15. Congress has the constitutional power to authorize the installation and operation of such generating facilities at the dams authorized by the Tennessee Valley Authority Act as may be necessary to generate electric energy from the water power created by the construction of such dams.

[fol. 815] 16. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to make provision in the dams constructed by it upon the Tennessee River and its tributaries for the necessary facilities for generating electric energy. The statute specifically authorizes the installation and operation of powerhouses, generators, and other facilities.

17. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is the property of the United States and may be disposed of by Congress or its authorized agency under subsection 2, section 3, article 4 of the Constitution of the United States.

18. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is lawfully and legally acquired property of the United States resulting from the exercise of its constitutional powers and may be used or disposed of in any manner which the Congress, in the exercise of its discretion, may select as the reasonable means of such disposition.

19. The Tennessee Valley Authority Act directs the Tennessee Valley Authority to operate all of the dams constructed by it primarily in the interests of navigation and

flood control, but expressly authorizes the said Tennessee Valley Authority to generate electric energy at said dams insofar as this can be done consistently with the interests of navigation and flood control.

20. The method of operation of the dams and reservoirs constructed and under construction which the defendants [fol. 816] have followed and propose to follow in the future is authorized by the Tennessee Valley Authority Act.

21. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the construction of transmission lines from the dams authorized by the Tennessee Valley Authority Act in order to dispose of the electric energy generated at such dams.

22. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to generate electric energy at all dams authorized by the Tennessee Valley Authority Act; to construct or acquire transmission lines leading from such dams to municipalities, cooperative associations of citizens and farmers not organized for profit, large industrial customers, and other purchasers of power.

23. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to construct or acquire transmission lines leading from each of the dams constructed under the authority of the Tennessee Valley Authority Act to the surrounding market area.

24. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act to wholesale customers under long-term contracts.

[fol. 817] 25. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act direct to rural customers and inhabitants of small towns and villages, and to industrial customers.

26. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to own and operate transmission lines

and rural distribution lines for the purpose of transmitting and selling the electric energy generated at said dams.

27. Under the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to enter into contracts with municipalities, cooperative associations of citizens and farmers not organized for profit, and industrial customers for the sale of electric energy generated at the dams constructed by the Tennessee Valley Authority under said act.

28. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to sell electric energy generated at any of the dams constructed under the terms of said act direct to rural customers and inhabitants of small towns and villages.

29. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to own and operate transmission and rural distribution lines for the purpose of transmitting and selling the electric energy generated at any of the dams constructed under the [fol. 818] authority of said act.

30. By the terms of the Tennessee Valley Authority Act, Congress has directed the Tennessee Valley Authority to give preference in the sale of power to States, counties, municipalities and cooperative organizations of citizens or farmers not organized for profit. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

31. The Tennessee Valley Authority Act authorizes the Authority to construct rural transmission lines for service to farmers or cooperative organizations of citizens or farmers and to sell such lines to municipalities or such cooperative organizations. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

32. The Tennessee Valley Authority Act authorizes the Authority to sell power direct to industrial customers in order to increase the load factor on the system. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

33. The Tennessee Valley Authority Act authorizes the Board of Directors of the Authority to fix the rates at which the electric energy generated at the dams authorized by the Tennessee Valley Authority Act may be sold. The statute vests discretion in the board in fixing such rates, and the exercise of this discretion is not subject to judicial review. This provision of the statute is a valid exercise of the power of Congress to dispose of property of the United States.

[fol. 819] 34. Under the constitutional power to dispose of property of the United States, the Government may attach to the sale of its property such conditions as it may deem reasonable to insure the widespread diffusion of the benefits of such property and the avoidance of monopolistic control of such property.

35. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such power is to be resold to the ultimate consumers.

36. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such energy is to be resold to the ultimate consumers.

37. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to include in all contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power.

38. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to include in all contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting [fol. 820] methods to be followed by the purchasers of such power.

39. The Tennessee Valley Authority Act does not contain any provisions regulating or attempting to regulate the rates or operations of complainant companies or other private utilities.

40. Sales of power by the Tennessee Valley Authority in accordance with the provisions of the statute at rates fixed and determined by the board of directors do not constitute regulation of the rates or businesses of the complainant companies or other private utilities.

41. The municipalities and cooperatives purchasing power at wholesale from the Authority are subject to regulation by the States.

42. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the statutes of the several States in which they are located to purchase said power, to contract with the Authority with respect to the same, and to engage in the business of selling the same at retail.

43. All of the municipalities and cooperatives purchasing power at wholesale from the Authority are authorized by the statutes of the several States in which they are located to enter into contracts with the Authority containing provisions agreeing upon the rates at which such power is to be resold and provisions relating to the bookkeeping and accounting methods to be followed by such purchasers. Under the laws of the several States in which the municipalities and cooperatives are located, such provisions do not constitute any unlawful delegation or abdication of sovereign [fol. 821] power by the municipalities or cooperatives.

44. The provisions of the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which the power so purchased from the Authority is to be resold and the provisions relating to the methods of keeping accounts do not constitute any invasion of the reserved powers of the States under the tenth amendment to the Constitution of the United States.

45. The provisions in the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which such power is to be resold do not in law amount to regulation

either of the rates of said wholesale purchasers or of the rates of private companies competing with such wholesale purchasers.

46. Under the laws of the several States in which the municipalities and cooperatives purchasing power at wholesale from the Authority are located, the rates at which the power purchased from the Authority may be resold by the municipalities and cooperatives remain subject to the police power of the States, if and when the States may elect to exercise such power.

47. The cooperatives purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent corporate entities and not subsidiaries or instrumentalities of the Authority.

[fol. 822] 48. The municipalities purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent public agencies of said States and are not subsidiaries or instrumentalities of the Authority.

49. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the laws of the several States in which they are located to engage in the business of selling and distributing electric energy at retail and have the legal right to compete with the complainant companies in such business. Any damage or injury resulting or threatened to the complainant companies, or any of them, from such competition is damnum absque injuria and does not give rise to a cause of action on behalf of said companies.

50. None of the complainant companies have or claim any exclusive franchise or right to engage in the business of selling and distributing electricity in the various municipalities and communities in which they operate.

51. The sale of electric energy by the Tennessee Valley Authority to municipalities and cooperatives lawfully engaged in the business of selling and distributing said energy at retail does not result in any legal injury to any of the complainant companies and does not invade any legal right of any of said companies.

52. The complainant companies have no standing or right to challenge the right of the municipalities and cooperatives

purchasing power at wholesale to engage in the business of selling and distributing electric energy in competition with said companies.

[fol. 823] 53. The complainant companies have no standing or right to challenge the legal right of the Authority to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

54. The complainant companies have no standing or right to challenge the validity of the contracts under which the Authority is selling or has agreed to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

55. Having failed to prove any damage in fact, actual or threatened, resulting from the sales of power by the Authority direct to rural customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

56. Having failed to prove any damage, actual or threatened, resulting from the sales of power by the Authority direct to industrial customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

57. The complainant companies have no legal right to be free from competition, and they have no legal standing or right to challenge the statutory powers of the Authority to generate, transmit, and sell electric energy in competition with them, or some of them.

[fol. 824] 58. Under the decision of the Supreme Court in the Ashwander case, the right of the Authority to acquire and operate the facilities in Alabama transferred to it under the contract of January 4 is settled and cannot be questioned in this case.

59. Section 7 of the contract of January 4 confers upon the Authority the contractual right to serve municipalities located within the ceded area in Alabama, and the Alabama

Power Company, a party to that contract, has no right to question the legal right of the Authority to engage in such service.

60. Section 7 of the contract of January 4 confers upon the Authority the right to sell power to any municipality owning and operating its own distribution system and not purchasing power from the utilities party to that contract, and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company, parties to that contract, have no right to challenge sales to such municipalities by the Authority.

61. Section 7 of the contract of January 4, 1934, confers upon the Authority the right to sell power to any customers not served by the parties to that contract as of January 4, 1934, up to a maximum aggregate demand of 2,500 kw., and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company have no right to challenge sales of power to customers served pursuant to the right so conferred.

62. Under the record the complainants have no legal right within the areas served by them respectively to exclude lawful competitors from the power markets of the future.

[fol. 825] Gore, J. (dissenting in part), concurs in the following findings of fact made by the Court:

40	97	129	151	175	201	230	168	17	35	92
44	98	130	152	176	202	231	169	18	36	113
45	99	131	153	177	203	232	1	19	37	114
48	100	135	154	178	204	233	2	20	77	115
49	101	136	155	179	205	234	3	21	78	116
50	102	137	156	180	206	235	4	22	79	117
51	103	138	157	181	207	236	5	23	80	118
57	104	139	158	182	208	239	6	24	81	119
58	105	140	159	183	209	240	7	25	82	120
61	106	141	160	185	210	241	8	26	83	121
64	107	142	161	187	211	242	9	27	84	122
65	108	143	162	188	212	244	10	28	85	123
67	109	144	163	189	215	245	11	29	86	124
72	110	145	164	190	221	246	12	30	87	132
74	111	146	170	191	223	247	13	31	88	133
76	112	147	171	192	224	248	14	32	89	134
94	126	148	172	193	225	165	15	33	90	194
95	127	149	173	199	226	166	16	34	91	195
96	128	150	174	200	227	167				

Findings of fact 126 to 131 and 135 to 147 do not state the full contents of the contracts. The provisions of the contracts are set out in dissenting findings 96 to 101, in-

clusive. Findings of fact 162 to 164 purport to detail a portion of the terms of the contracts, but same are given in full in dissenting findings 95 to 101, inclusive.

GORE, J., believes that the following findings of fact made by the Court should be modified to read as follows:

39. These dams when completed will provide a continuous 9-foot navigable channel over the entire distance from the mouth of the Tennessee at Paducah, Kentucky, to Knoxville, Tennessee, a distance of approximately 650 miles, will substantially alleviate the destructive floods in the Tennessee and Mississippi Valleys, and will also create a substantial amount of water power.

[fol. 826] 42. Each of the projects of the Authority has all elements of design reasonably required for navigation and flood control in accordance with accepted engineering standards. Each of the projects has been designed to provide storage capacity for a slackwater pool behind the dam and a substantial additional storage capacity above the slackwater pool level. Each of the main-stream projects is equipped with a lock prescribed and designed by the Corps of Engineers, with space for an additional parallel lock when commerce warrants. The locks which are being installed are of sufficient size and capacity to accommodate adequately the traffic which may be expected in the reasonably near future. To provide effective means for flood control and stream-flow regulation, each of the projects is equipped with large spillway gates, and in addition, the tributary projects are equipped with sluiceways of large capacity. At each of the projects facilities have been provided, or construction and design are such that facilities may be provided, for the generation of power. Each of the projects of the Authority can be operated to secure substantial benefits in the improvement of navigation and the control of destructive floods and, consistently therewith, the production of electric energy. Norris Dam has no elements of design reasonably required for navigation from the dam to the mouth of the Clinch River, and the flood-control storage in the reservoir is very limited.

[fol. 827] 53. Each of the dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will result in a substan-

tial improvement for navigation, except the dams on the tributaries.

54. The Authority's projects will provide superior channel depths and widths and substantially fewer lockages, thus substantially reducing the time consumed in lockages, as compared with the navigation improvement which could be provided by the system of low dams set forth in House Document No. 328.

62. The levees on the lower Mississippi have reached the practical limits of height. For the most effective flood-control use reservoirs should be located close to Cairo, which is at the junction of the Ohio and Mississippi Rivers.

63. The Tennessee River, being the largest tributary of the Ohio and closer to Cairo and the lower Mississippi than any other major tributary of the Ohio system, is one of the best rivers for reservoirs for flood control on the lower Mississippi.

68. The projects of the Authority will permit the maintenance at all times of the 9-foot channel on the main stream of the Tennessee with sufficient overdepths to accommodate boats of 9-foot draft. The tributary projects on the Clinch and Hiwassee Rivers will also permit the maintenance of slackwater pools in the lower portions of the reservoirs, which is necessary on the Clinch, a navigable tributary, in order to preserve existing navigation and to avoid foreclosing future improvement for navigation.

[fol. 828] 69. The tributary projects of the Authority, by reducing flood flows and increasing low flows, will increase the effectiveness of the high dams on the main stream for the reduction of flood heights on the Mississippi and Tennessee Rivers, will substantially increase the navigable depths in the upper ends of the navigation pools created by the main-stream projects, and will substantially increase the navigable depths on the lower Mississippi River, which increases will be of material benefit to navigation.

71. Upon the completion of the construction of the Pickwick Landing project and the Guntersville project, these two projects, in conjunction with the already-completed Wheeler Dam and the previously existing Wilson Dam, will provide a 9-foot channel from Pickwick Landing to the vicinity of Chattanooga, a distance of approximately 257

miles. The completed Norris Dam is being now, but this will not be necessary after the completion of Pickwick and Guntersville Dams, operated to provide a navigation channel of 7-foot minimum depth in the 207-mile stretch between Pickwick Landing and the mouth of the Tennessee River. This 7-foot depth below Pickwick will be increased to 7½ feet upon completion of Hiwassee. These projects together will provide a commercially feasible navigation channel between Chattanooga, Tennessee, and the inland waterway system. For the larger part of each year there will be a through navigation channel of 9-foot depth from Chattanooga to the mouth of the river, and even prior to construction of Gilbertsville, by means of a moderate amount of dredging and releases from other projects of [fol. 829] the Authority, it is feasible to provide a permanent 9-foot channel below Pickwick Dam. Until the Gilbertsville project is constructed, which may not be for many years, it is necessary to store a substantial amount of water in the tributary reservoirs during the high-water season to provide the low-water releases required for this improvement to navigation.

73. Since completion, Norris Dam has been successfully operated to improve substantially the navigation channel of the Tennessee River between Wilson Dam and its mouth and to hold off from the peak of the Mississippi River flood of 1937 approximately 28,000 c.f.s., the Norris Dam storing the entire flow of the Clinch River for six weeks during the 1937 Mississippi flood.

93. The projects of the Tennessee Valley Authority are the only type of dams which will conserve the water resources of the Tennessee River system for navigation, Tennessee and Mississippi flood control, water power, and other beneficial uses; and those available for flood control coincide in many instances with those required for the regulation of the river for other purposes. The construction of low dams on the main stream of the Tennessee River for navigation would waste the resources of the river for any other purpose. It would be physically impossible to provide the high dams on the main stream necessary for the development of flood control and power without the wasteful removal or duplication of such low dams.

[fol. 830] 186. The transmission lines substantially as constructed by the Authority are essential for service to the

customers of the Authority now being served or under contract.

198. In the calendar year 1937 the Tennessee Valley Authority sold substantial quantities of power to 17 municipalities owning and operating their own municipal distribution systems, 15 rural cooperatives owning and operating their own rural lines, and 8 industrial customers.

216. The Authority has sold substantial blocks of power to cooperatives for distribution by them in rural areas to rural customers heretofore unserved, which sales did not involve any displacement of any existing load of complainant power companies. The Authority has sold substantial blocks of power to industrial concerns who located new plants or enlarged existing plants, which sales did not displace any existing load of complainant power companies. The Authority has sold substantial blocks of power to complainant and noncomplainant companies with existing utility networks. In fact, none of the sales of power by the Authority have directly displaced any existing load of complainant companies except in the ceded area covered by the contract of January 4, in which the Authority purchased, for valuable considerations, the existing facilities from the complainants Alabama Power Company and Mississippi Power Company. None of the Authority's sales of power to date have indirectly displaced any existing load of the [fol. 831] complainants outside the ceded area, except that the complainant West Tennessee Power & Light Company has lost some customers to the city of Jackson and has lost a load of approximately 50 kw. in the town of Gibson, which it sold to the Gibson Power & Light Company; this latter load was lost to the complainant West Tennessee Power & Light Company when the properties in the town of Gibson were sold at auction by the Gibson Power & Light Company to the Gibson County Electric Membership Corporation.

237. By the date the power generating units authorized for the dams of the Authority are installed it is reasonably estimated by witnesses for both sides that the power demand in the area within transmission distance of the projects of the Authority will be greatly in excess of the present peak-load ability of the existing generating plants in the area. Unless additional generating capacity is provided by

private utilities or at the projects of the Authority, there is likely to be a substantial power shortage. The proof abundantly shows that complainants have adequate facilities for supplying the needs, have always had adequate facilities, and are prepared in the future to install additional facilities necessary to take care of future needs.

249. The unserved rural market in the area adjacent to the lines of the respective complainants which can be economically served by the complainants is negligible in amount.

250. Prior to the completion of generating plants at Norris Dam on July 28, 1936, and Wheeler Dam on November 8, 1936, all power supplied by the Authority to said com- [fol. 832] panies under the contract of January 4, 1934, was supplied from Wilson Dam. Wilson and Norris Dams are and have been interconnected from and after July 28, 1936. Norris Dam began generating power on July 28, 1936, and Wheeler Dam on November 9, 1936.

GORE, J., rejects all other findings of fact adopted by the Court.

[fol. 833] GORE, J., is of opinion that in addition to the findings of fact adopted by the Court, the following should also be adopted:

1. The largest hydroelectric plant of the Carolina Power & Light Company is the Waterville plant located in Haywood County, North Carolina, on the Big Pigeon River, which was constructed under authority of a license issued to the company by the Federal Power Company. This plant has an installed capacity of 108,000 kw, which is more than 43% of the company's total generating capacity. The company's application for this Federal Power Commission license stated that this plant would be connected to the transmission system of the company and that the power output generated there would be used in the company's market in the western portion of North Carolina.

2. Four of the 6 hydroelectric generating plants owned and operated by the Alabama Power Company were constructed under authority of acts of Congress. Lock 12 (Lay Dam) was constructed under authority of a special act of Congress approved March 4, 1907 (34 Stat. 1288); Mitchell Dam (Duncan's Riffle), Martin Dam (Cherokee

Bluffs), and Jordan Dam (Lock 18) were constructed under licenses granted pursuant to the Federal Water Power Act (41 Stat. 1063). Such dams have a total installed capacity of 332,500 kw.

The total generation in all plants owned by the company for the years 1932 to 1936, inclusive, was 7,881,678,312 kwh. of which 7,485,791,438 kwh. or 95%, was generated in the hydroelectric plants and 395,706,874 kwh., or 5%, generated in steam and other plants. The total generation for the 5-year period in the hydroelectric plants at Lay Dam, [fol. 834] Mitchell Dam, Martin Dam, and Jordan Dam was 6,158,950,000 kwh., which was 78.2% of the generation in all plants owned by the company. For this same 5-year period Mitchell Dam supplies 16.2% of the generation in all plants owned by the company; Martin Dam supplied 17.6%; Jordan Dam 26.4%; and Lay Dam 18%; Mitchell, Martin, and Jordan plants thus supplying a total of 60.2% of such generation.

In the applications to the Federal Power Commission for these licenses it was stated that these projects would be interconnected with the company's integrated system and would serve the markets in northern, central, and other portions of Alabama into which this transmission-line system extended. The licenses issued pursuant to these applications required the company to install certain generating units of specified minimum generating capacities in these projects serving these markets, which generating units were installed by the company in compliance with the licenses, and the projects interconnected with the company's system. The licenses for the construction and operation of the Mitchell Dam and the Jordan Dam projects were issued by the Federal Power Commission on findings of fact that each of the dams was necessary, convenient, and best adapted to a comprehensive scheme of development, improvement, and utilization of the Coosa River. Both the special act of Congress (34 Stat. 1288) authorizing the construction and operation of the Lock 12 project (Lay Dam) and the licenses granted by the Federal Power Commission authorizing the construction and operation of the Mitchell Dam (Duncan's [fol. 835] Riffle), Jordan Dam (Lock 18), and Martin Dam (Cherokee Bluffs) contained as conditions to the authority granted requirements that the company at its own cost should construct certain navigation facilities at those pro-

jects and supply electric service for the operation of certain navigation facilities. In the fulfillment of the obligations imposed by these conditions the company has expended to date several hundred thousand dollars and is obligated in the future to expend an additional substantial sum.

3. Prior to the passage of the Tennessee Valley Authority Act on May 18, 1933, the Congress, by the Rivers and Harbors Act of July 3, 1930 (46 Stat. 918, 927-928), had adopted the recommendation of the Chief of Engineers made to the Congress in House Document No. 328, Seventy-first Congress, second session, which recommended the improvement of the Tennessee River from its mouth to Knoxville, a distance of some 652 miles, so as to create a 9-foot navigation channel over that entire distance by means of a series of low dams, each of which was to be constructed with locks 110 feet by 600 feet, at an estimated cost of approximately $75,000,000. (This project is hereafter throughout these findings referred to as "the low-dam navigation plan.") These would be integrated with similar 9-foot developments on the Ohio and Mississippi Rivers and on other improved tributaries of the Mississippi, such as the Missouri, Illinois, and Kanawha Rivers.

4. According to the general practice of the Corps of Engineers, the low-dam plan for a 9-foot navigation channel would have an overdepth of 2 to 3 feet throughout, except [fol. 836] at the intermediate sill of the lock at Wilson Dam already in existence, where there is a controlling depth of 9 feet.

5. The recommendation of the Chief of Engineers adopted by Congress in the Rivers and Harbors Act of June 3, 1930, contains the provision that a high power dam might be built by private interests, States, or municipalities in lieu of any 2 or more of the low navigation dams which were recommended, so long as the construction of any such high power dams would not lessen the navigable capacity of the waterway, and with the further provision that if any such high power dams should be built before the low navigation dams (which would be rendered unnecessary by the construction of the high dams), then the United States should contribute to the cost of any such high power dam an amount equal to the estimated cost of the low navigation dams.

There are 149 feasible hydroelectric power sites upon the Tennessee River and its tributaries which, at a cost of approximately $1,200,000,000, could be developed so as to produce approximately 5,000,000 kw. of firm capacity and 25,000,000,000 kwh. of energy annually, half of which would be produced by projects upon the main stream and the remainder by projects upon the tributaries. Prior to the date of the passage of the TVA Act privately owned power companies or other private interests had acquired or were in the process of acquiring most of the power-dam sites upon the main river, and private interests had acquired or were acquiring several of the power-dam sites upon the tributaries, but the construction of any such power dam had not been undertaken by any such private interest, nor was any such construction immediately in process on May [fol. 837] 18, 1933, when the TVA Act was passed granting TVA corporate power to construct high dams at any or all of the 149 sites upon the Tennessee River and its tributaries. Immediately upon the organization of the Tennessee Valley Authority its directors determined to and did thereafter oppose the granting of any licenses by the Federal Power Commission to any privately owned utility interest to construct power dams upon the Tennessee River or any of its tributaries.

6. In the fall of 1933 the TVA assumed the use, control, and possession of Wilson Dam and power plant upon the Tennessee River and U. S. Nitrate Plant No. 2 steam plant. Wilson Dam and power plant has an installed generating capacity of 184,000 kw. and an ultimate capacity of 444,000 kw.

7. TVA announced its intention to construct 10 dams upon the Tennessee River and its tributaries, in addition to Wilson Dam, in the report to Congress of March 31, 1936, on "The Unified Development of the Tennessee River System," and will have, upon completion of the plan (hereafter referred to as "the unified plan"), an initial power installation of 697,000 kw. and an ultimate power installation of 1,922,000 kw. with a firm-power capacity of 660,000 kw. and a firm annual energy output of 5,780,000,000 kwh., and has annually received appropriations from Congress in order to proceed with the construction program more rapidly than would be possible with funds from its earnings or its bonding power.

8. TVA has announced its intention to construct Fontana Dam and power project in North Carolina on the Little [fol. 838] Tennessee River, a tributary of the Tennessee River, which will be 450 feet high and 1,750 feet long, and the estimated initial cost is $40,000,000 and the estimated ultimate cost is $51,000,000, with an ultimate power installation of 180,000 kw. No appropriation has yet been made by Congress for the construction of this dam.

9. TVA has announced its intention to construct and has scheduled for construction an increase in the height of Wilson Dam, at an estimated cost of $500,000. The estimated cost of the completed development is $57,950,748.

10. TVA has announced its intention to increase the height of the Hales Bar Dam, a private dam constructed under congressional authority by the Chattanooga and Tennessee River Power Company, a predecessor of complainant, The Tennessee Electric Power Company. This increase in height will cost approximately $4,000,000.

11. At 100% annual load factor the amount of firm power that can be produced by the TVA unified plan with regulation by the reservoirs on the tributaries is 660,000 kw. and the amount of firm energy is 5,780,000,000 kwh., which is more than 5 times greater than the amount which would be produced by the TVA dams upon the Tennessee River if the tributary dams of Norris, Fowler Bend, and Fontana were not constructed.

12. At 60% annual load factor the firm power produced by the TVA unified plan, excluding the U. S. Nitrate Plant No. 2 steam plant, would be 1,100,000 kw., and the average annual firm energy would be 5,780,000,000 kwh. per year. The firm-power capacity of all the plants included in the TVA unified plan, including U. S. Nitrate Plant No. 2 steam [fol. 839] plant, at 60% annual load factor would be 1,200,000 kw., and the available firm energy would be 6,307,000,000 kwh. per year.

13. At 60% load factor in a low-water year the total available energy from the plants included in the TVA unified plan, including Wilson Dam, would be 7,667,000,000 kwh. energy, of which 5,780,000 would be firm energy and 1,887,000,000 kwh. would be secondary energy available less than 75% of the time.

14. The total available energy under the TVA unified plan in an average-water year would be 10,000,000,000 kwh. per year and the secondary energy 4,220,000,000 kwh. per year.

15. The low-dam navigation plan could have been constructed for less than $75,000,000. The estimated cost of the TVA unified plan is more than $473,000,000. The additional expenditure of approximately $400,000,000 involved in the TVA unified plan is not an expenditure for the benefit of navigation, but for some other purpose.

16. The completion of either the low-dam navigation plan recommended by the Chief of Engineers and adopted by Congress or the TVA unified plan would result in slackwater navigation over the entire length of the Tennessee River from its mouth to Knoxville. The extreme low-water flow of the Tennessee River is far in excess of the needs of navigation on such a slackwater system. Any enrichment of the low-water flow by reason of releases from tributary reservoirs would be of no benefit to navigation upon the Tennessee River, and their effect, if any, would be unfavorable to navigation.

[fol. 840] 17. Present and prospective benefits from the construction of the low-dam navigation plan would not justify its cost, and much less would such benefits justify the cost of the high-dam TVA plan. The recommendation of the Chief of Engineers, adopted by the Congress in the Rivers and Harbors Act of July 3, 1930, provided for a 9-foot low-dam navigation channel on the Tennessee River, but contemplated that it should be constructed gradually over a considerable period of years in order that it might reach economic justification.

18. Norris and Hiwassee Dams are obstacles, and Fontana Dam will be an obstacle, to through navigation upon the Clinch, Hiwassee, and Little Tennessee Rivers, respectively, and will have no value to navigation upon the Tennessee River when the TVA plan is completed.

19. Under the low-dam program there would be incidentally produced 4,400 kw. of firm power and about 5,600 kw. of secondary power for the operation of the locks. The firm power available at Wilson Dam before the construction of any of the TVA high dams was about 28,000 kw., and under the TVA high-dam program there will be produced

660,000 kw. of firm power from all dams, excluding the Sheffield steam plant.

20. There will be no material difference in the benefits to navigation upon the Tennessee River between the low-dam plan and the TVA high-dam plan, and there would be no difference in pool fluctuations between the low-dam navigation plan and the high-dam plan at the 4 principal terminal sites upon the Tennessee River of Florence, Sheffield, [fol. 841] Chattanooga, and Knoxville. No additional expenditures over and above the cost of the low-dam plan for navigation are justified to improve navigation upon the Tennessee River.

21. The TVA unified plan for the development of the Tennessee River is not primarily designed to promote navigation upon the Tennessee River and its tributaries.

22. The TVA high-dam plan is not integrated with the navigation developments on the Ohio and Mississippi Rivers, for the wide waters in the lakes created by the TVA high dams require a different type of transportation equipment from that commonly used upon the Ohio and Mississippi Rivers.

23. When a private power company builds a dam and reservoir upon a navigable stream under a Federal Power Commission license all such navigation facilities must be approved by the Chief of Engineers, which approval the TVA has also secured in constructing its main-stream dams.

[fol. 842] 24. If work had been started in 1933 the low-dam plan for navigation upon the Tennessee River could now have been completed for the amount already expended by TVA for the construction of Wheeler and Norris Dams alone.

25. The operation of Norris Dam and the completed Hiwassee Dam will permit the manipulation of the pools of the main-river dams for power purposes and permit daily peaking to meet the utility load curve.

26. The practical working capacity, which is 20% of the theoretical capacity, of the Tennessee River for navigation under the low-dam plan would be:

(a) For through traffic from Knoxville to the Ohio River 5,060,000 tons per year.

(b) Below Florence 31,540,000 tons per year.

(c) From the head of Wilson lake to the Hales Bar Dam 34,280,000 tons per year.

(d) Above Chattanooga 35,840,000 tons per year.

27. The practical working capacity of the Tennessee River for navigation under the high-dam plan is limited:

(a) For through traffic from Knoxville to the Ohio River by the capacity of the locks at Wilson Dam to 5,960,000 tons per year.

(b) Below Florence by the capacity of the lock at Pickwick Landing Dam to 26,280,000 tons per year.

[fol. 843] (c) From the head of Wilson lake to the Hales Bar Dam by the capacity of the lock at Wheeler Dam to 9,520,000 tons per year.

(d) Above Chattanooga by the capacity of the lock at Coulter Shoals to 8,900,000 tons per year.

28. The theoretical capacity of the Tennessee River for navigation under the low-dam plan would be:

(a) For through traffic from Knoxville to the Ohio River 29,800,000 tons per year.

(b) Below Florence 157,700,000 tons per year.

(c) From the head of Wilson lake to Hales Bar Dam 171,400,000 tons per year.

(d) Above Chattanooga 179,200,000 tons per year.

29. The theoretical capacity of the Tennessee River for navigation under the high-dam plan is limited:

(a) For through traffic from Knoxville to the Ohio River by the capacity of the lock at Wilson Dam to 29,800,000 tons per year.

(b) Below Florence by the capacity of the lock at Pickwick Landing Dam to 131,400,000 tons per year.

(c) From the head of Wilson lake to Hales Bar Dam by the capacity of the lock at Wheeler Dam to 47,600,000 tons per year.

(d) Above Chattanooga by the capacity of the lock at Coulter Shoals to 44,500,000 tons per year.

[fol. 844] 30. Under the low-dam plan of navigation the movable dams are lowered when river stages are sufficient to provide project depths without dams, making it unnecessary to use the locks for passing navigation. During those periods, which are as great as 67% of the time, depending upon location, the capacity of the waterway is practically unlimited, for which no allowance has been made in calculating the practical working capacity under the low-dam plan.

31. The estimate of the Corps of Engineers of the United States Army of the cost of the low-dam plan at $74,709,000 is reasonable. The cost of the high-dam program, exclusive of the cost of Wilson Dam, as estimated by the Tennessee Valley Authority, is $473,649,650.

32. The annual estimated maintenance and operating cost of the low dams, exclusive of Wilson Dam, Dam No. 1, and Hales Bar Dam, would be $1,580,000. The annual estimated minimum maintenance and operating cost of the Tennessee Valley Authority's high-dam program chargeable to navigation alone, exclusive of Hales Bar Dam, is $994,000.

33. The Tennessee Valley Authority's unified plan for the development of the Tennessee River includes the construction of 7 main-river dams and 3 dams on tributary streams, in addition to Wilson Dam, Dam No. 1, and Hales Bar Dam already in existence. The lift at Gilbertsville Dam will be 68 feet, at Pickwick Landing Dam 61 feet, at Wheeler Dam 53 feet, at Guntersville Dam 45 feet, at Chickamauga Dam 53 feet, at Watts Bar Dam 71 feet, and at Coulter Shoals Dam 71 feet.

[fol. 845] 34. Except for Wilson Dam, Dam No. 1, and Hales Bar Dam already in existence, the dams in the TVA high-dam program above Wilson Dam will have locks which are 60 feet by 360 feet, but no provision has been made in the construction of Norris and Hiwassee Dams for the installation of locks or barge lifts, and under the low-dam plan all locks would be 110 feet by 600 feet.

35. Larger tows can pass through the larger low-lift locks of the low-dam plan with less loss of time than they can

through the smaller locks of much higher lift of the high-dam plan.

36. Depths in a navigable stream beyond those depths necessary to eliminate bottom friction are of no value to navigation, and when those depths are excessive they are a hazard to navigation, making it difficult to ground vessels immediately in case of accident and making salvage operations more difficult or impossible.

37. The width of inland waterways should be limited, as the high waves resulting from winds on excessively wide waterways are a hazard to navigation.

38. The TVA pools have sufficient depths for extensive widths to allow winds to create waves of 3 feet and higher.

39. The theoretical efficiency for navigation, as compared with a hypothetical perfect waterway, taking into consideration minimum and maximum widths and depths, maximum curvatures and current velocities, elimination of lockages, adequacy of water supply, and circuity factor, under the low-dam plan is 67.4% and under the TVA high-dam plan is 70.6%.

[fol. 846] 40. The theoretical difference between the efficiency of the low-dam and the efficiency of the TVA high-dam plan has no practical significance to navigation.

41. The justifiable capital expenditures for the improvement of na*giv*ation upon the Tennessee River for existing traffic would be $28,600,000, of which $24,600,000 has already been expended for navigation improvements.

42. The average annual commerce upon the Tennessee River at the end of the 30-year period after the creation of a 9-foot channel is estimated to have increased by 5,000,000 tons, for which the average annual increased transportation savings are estimated at $3,180,000. For the increased traffic and transportation saving, the justifiable investment in navigation improvements would be between $35,600,000 and $48,000,000, depending upon the type of improvements to be made.

43. The cost of the construction under the low-dam program would exceed the justifiable investment for the improvement of navigation upon the Tennessee River for future commerce by $39,400,000, and the cost of the con-

struction of the TVA high-dam program, exclusive of the cost of Wilson Dam, exceeds the justifiable investment for the improvement of navigation for future commerce by $425,650,000.

44. The flood damages to navigation on the Tennessee River are negligible in character (do not exceed $25,150 annually) and would not be reduced by the TVA unified plan in an amount sufficient to justify any capital expenditure.

[fol. 847] 45. The completion of the TVA unified plan would not eliminate any measurable amount of flood damages to navigation on the Mississippi River. It is not proposed by the TVA to improve navigation upon the Mississippi River.

46. The greatest practicable protection against flood damage to property, and injury or death of persons by floods at and above Chattanooga may be achieved by a system of detention reservoirs for flood protection only located on the tributaries of the Tennessee River and costing approximately $81,000,000. Such a system of detention reservoirs will provide substantially 10 times as much dependable flood control and flood protection at Chattanooga and above as would be achieved by the construction of the TVA unified plan.

47. The present system of flood protection and flood control on the Mississippi River below Cairo consists of levees, bypasses, and channel rectification. This system was originally known as the Jadwin plan, which was adopted by the Congress in 1928 after the great flood of 1927. Since that time the Jadwin plan, although not yet completed, has taken care of every flood which has occurred on the lower Mississippi, including the great flood of 1937. Recently General Markham, then Chief of Engineers, recommended certain modifications, which included changes in the bypasses and channel rectification which experience had shown was very effective in reducing flood heights within the levees.

48. The construction of the TVA unified plan would not avoid the necessity of completing the Jadwin-Markham plan [fol. 848] or decrease its cost by a single dollar. At most it might in peculiar conditions surrounding a given flood, make unnecessary the use of some of the bypasses. The flowage rights in the bypasses or floodways have been or

will be, according to the plan, purchased by the Government and are, in any case, flooded only once in 10 or 12 years, with relatively small damage.

49. Evidence in the record and documents, of which the Court may take judicial notice, established that for a period of over 50 years the Chief of Engineers has held that storage reservoirs on tributary streams are of uncertain, negligible, and undependable value for flood protection on the Mississippi, and that their value for flood protection, power development, and other local uses far exceeds any possible value for flood protection on the Mississippi.

50. Of the total damage to cities and towns on tributaries of the Tennessee River, both in a very great flood and in the average annual flood, more than 75% occurs on the Emory River, where the estimated average annual damage is $153,700; and the total annual flood damage to all cities and towns on all tributaries of the Tennessee River, including the Emory River, is $204,435. The TVA unified plan makes no provision for the construction of any dam on the Emory River.

51. The estimated average annual damage from all floods to cities and towns upon the Tennessee River and its tributaries is $932,985, of which $923,685 occurs at and above Chattanooga and $9,300 occurs below Chattanooga.

[fol. 849] 52. The estimated average annual damage from all floods to railways upon the Tennessee River and its tributaries is $350,118, of which $343,258 occurs at and above Chattanooga and $6,860 occurs below Chattanooga.

53. The estimated average annual damage from all floods to highways is $158,105, of which $89,110 occurs at and above Chattanooga and $68,995 occurs below Chattanooga.

54. The 4 largest floods upon the Tennessee River have occurred in March and April. If it were necessary to provide a storage for the generation of a certain amount of firm power by the first of March in each year which encroached upon the flood storage, the dependable flood storage available for the floods in March and April would be reduced.

55. It is not possible to predict on January 15, February 15, March 15, or April 15 of any year whether the rest of

the year will be as dry as 1925, or to predict rainfall; and reservoirs cannot be operated upon hindsight.

56. A storm which would produce the greatest flood to be anticipated at and above Chattanooga would have a total rainfall of 11 inches over the entire drainage area of 21,400 square miles, except upon the Emory River and the upper reaches of the French Broad River, where the total rainfall would be 13 inches, would have a 90% run-off during the storm, and would last 3 days.

57. The maximum practicable protection against flood damages upon the Tennessee River and its tributaries would be secured by the construction upon all main tributaries of [fol. 850] the Tennessee River above Chattanooga of a system of 19 detention reservoirs which would be kept empty, or dry, except during floods, and would be located as follows:

(a) 4 on the Hiwassee River;
(b) 4 on the French Broad River and its tributaries;
(c) 5 on the Holston River and its tributaries;
(d) 2 on the Little Tennessee River;
(e) 1 on the Clinch River; and
(f) 3 on the Emory River and its tributaries.

58. The system of 19 detention reservoirs would control 16,713 square miles of the total drainage area above Chattanooga of 21,400 square miles, would generate no power, and would achieve no other result except flood-control protection, and would in no way be inconsistent or interfere with the low-dam plan for navigation upon the Tennessee River.

59. The system of 19 detention reservoirs would operate so that while the reservoirs are being filled a constant flow is discharged through the total area of the openings in the dam and, when filled, the opening of the lowest reservoir of each of those principal tributary groups would be maintained at a constant and fixed rate of discharge, so as to keep the discharge below the reservoir as nearly as possible at bankful stage. The upper reservoirs on each tributary would have their discharge vary within a considerable range so as to suit conditions obtaining for any particular flood. When these reservoirs collect any floodwaters, these waters

are released just as soon as it is safe to do so from the standpoint of the streams below.

[fol. 851] 60. The system of 19 detention reservoirs upon the tributaries of the Tennessee River above Chattanooga would give the maximum practicable protection to life and property from large floods.

61. Under the TVA high-dam plan only Fontana Dam on the Little Tennessee River, Norris Dam on the Clinch River, and Fowler Bend Dam on the Hiwassee River will provide a certain measure of control of floodwaters from 25% of the drainage area above Chattanooga, and the 3 tributary dams, together with Coulter Shoals, Watts Bar, and Chickamauga Dams on the main stream, will provide only 620,000 acre-feet of dependable flood storage for runoff from the 21,400 square miles in the drainage area above Chattanooga, and will permanently flood 110,870 acres. All the dams in the TVA high-dam plan will permanently flood at normal pool level 374,840 acres, and the Corps of Engineers of the United States Army has estimated that the total land which would be temporarily flooded by a great flood occurring only every 500 years would be 480,000 acres between Knoxville and the mouth of the river. The proposed system of 19 detention reservoirs upon the tributaries of the Tennessee River would have a dependable flood-storage volume of 6,263,700 acre-feet, would flood no land permanently, would flood 132,285 acres temporarily at the time of the greatest flood, and would provide a large measure of effective control over 78% of the drainage area above Chattanooga.

62. Under the TVA high-dam plan, at the time of the greatest flood, if part of the power storage in the TVA high-dam reservoirs were drawn down, the peak of the great flood at Knoxville of 68.3 feet would not be reduced; at Loudon the peak of the great flood would be reduced from [fol. 852] 71.5 feet to 66.2 feet; and at Chattanooga the peak would be reduced from 73 feet to 67.7 feet; and at Harriman, on the Emory River, the peak of the great flood of 63.7 feet would not be reduced. Under the proposed system of 19 dry reservoirs, at the time of the greatest flood the peak at Knoxville would be reduced to 27.1 feet; at Loudon to 33.9 feet; at Chattanooga to 53.9 feet; and at Harriman to 39.8 feet.

63. The estimated reduction of the maximum flood at Chattanooga of 73.0 feet to 53.9 feet by the system of 19 detention reservoirs would be sufficient to render practicable the construction of levees at Chattanooga for local flood protection. The reduction of the maximum stage of 73.0 feet at Chattanooga to 67.7 feet by the TVA unified plan is not sufficient to render practicable the construction of levees at Chattanooga for local flood protection.

64. The TVA unified plan gives no protection on the Emory River, where 22 persons were drowned in the flood of March 1929. The system of 19 detention reservoirs would reduce the maximum flood of 63.7 feet at Harriman, on the Emory River, to 39.8 feet, which is below flood stage.

65. The Chickamauga Dam is completely drowned out, the top of the gates being under 7 to 9 feet of water, by the maximum flood to be expected at Chattanooga.

66. The operation of Wheeler and Wilson reservoirs during the period of the 1937 flood increased the flood peak at Cairo by releasing 7,000 second-feet more than flowed into those reservoirs during that period and was typical of how they will be operated.

[fol. 853] 67. The estimated cost of the construction of a system of 19 detention reservoirs solely for flood-control purposes is $81,133,600, and the estimated cost of the TVA high-dam program, exclusive of Wilson Dam, is $473,650,000. The average annual maintenance cost of the system of 19 dry reservoirs would be $400,000.

68. The amount of power which can be produced by the plants included in the TVA unified plan, over and above the firm-power capacity of the Wilson power plant as it was originally constructed, is 1,072,000 kw. at a 60% annual load factor. No firm power of any kind would be produced by the construction of the proposed system of 19 dry reservoirs.

69. Under the TVA high-dam program the cost of construction of Norris Dam reservoir and the town of Norris upon the Clinch River was approximately $36,300,000; its dependable flood-control storage is 497,000 acre-feet; and its dead storage for power purposes is 570,000 acre-feet and an additional power storage of 1,500,000 acre-feet.

Under the proposed system of 19 dry reservoirs a dam could have been constructed at the site of Norris Dam having a dependable flood-control storage of 1,312,000 acre-feet, impounding no water permanently for any purposes, and costing $8,136,000.

70. Dead storage concentrates the fall of a stream as a substitute for a natural fall and is always permanently maintained solely for the creation of head for power purposes, with no incidental flood-control value. The bottom 135 feet at Norris Dam is dead storage with a capacity of 570,000 acre-feet. The power storage behind Norris Dam [fol. 854] of 1,500,000 acre-feet from elevation 955 to 1020 creates a head and storage for power production in the summer and fall and has no incidental dependable flood-control value. The Norris Dam from elevation 1020 to 1034 has a dependable flood-control storage of 497,000 acre-feet, which storage creates no incidental firm power. The dependable flood storage in the pure flood-control dam on the Clinch River, costing $8,136,000, is 2.6 times as much as the dependable flood-control storage in the Norris Dam, costing $36,310,000.

71. To increase the flow at Wilson Dam during a dry year from 4,300 second-feet to 18,900 second-feet it will be necessary to have 3,200,000 acre-feet of storage, which could not be retained during March and April of any year in the main-stream reservoirs above Wilson Dam without encroaching upon the flood surcharge in those reservoirs, and could only be stored in the Norris and Hiwassee reservoirs, requiring Norris to be maintained at or above elevation 1020 during February, March, and April of each year. Early in January 1937, Norris reservoir was filled to elevation 1010 and remained above that elevation through June 1937, during which period it reached elevation 1031 and flooded out surrounding highways.

72. Norris Dam, being maintained above elevation 1010 from January to June 1937, was not operated as a flood-control reservoir, since there is nothing in the record to show that it could not have been drawn down to provide flood storage without causing flood damage below.

73. Since great floods have occurred on headwaters of the Tennessee and nearby rivers during the summer or at any [fol. 855] time during the year, the operation of Norris

Dam in 1937 was not as a flood-control reservoir, and the proposed plan of operation of the TVA high dams upon the Tennessee River and its tributaries would not be for flood control but primarily for the purpose of power.

74. It is customary for power companies to shut down many of their hydroelectric plants on Sundays and holidays, when many of the industries served by them are not in operation, and from August 23, 1936, through October 4, 1936, the flow from Norris Dam on Sundays and Labor Day was shut off entirely.

75. To produce annually 600,000 to 700,000 kw. firm power for use on a utility system, without regard to the economics of its production and subject only to the limitation that there should incidentally result a 9-foot channel for navigation in the Tennessee River from its mouth at Paducah to Knoxville, a plan would be designed to construct exactly the same dams and power plants as are included in the TVA unified plan.

76. The development of the Tennessee River for the primary purpose of power development will be best achieved by constructing a small number of high dams rather than a large number of low dams, and under the TVA unified plan the 7 high dams provided for thereunder are the minimum number of dams practicable for the development of the Tennessee River.

77. The Mississippi River drains an area of approximately 1,240,000 square miles, covering all or part of 31 States and two Canadian provinces, and of which total area the Tennessee River drains 40,600 square miles.

[fol. 856] 78. A flood stage of 50 feet or greater at Cairo is considered dangerous, and such stages last between 30 and 60 days. The season of large floods upon the lower Mississippi is from the first of January to the first of June, but there have been floods that exceeded the flood stage in every month of the year except August and October. Floods upon the Tennessee River do not last more than two weeks.

79. The lower Mississippi Valley, from Cairo to the Gulf, has an area of about 50,000 square miles, of which in its original state approximately 30,000 square miles were subject to flood, and which flooded area, upon the completion of the modified Jadwin plan for the control of floods upon

the Mississippi by the construction of levees and bypass channels, will be reduced to 10,000 square miles. Channel improvements have increased the capacity of the Mississippi River to approximately 1,900,000 cubic feet per second, and upon the completion of the modified Jadwin plan the capacity of the lower Mississippi will be 3,000,000 cubic feet per second, the volume of the maximum flood to be anticipated.

80. There is a conflict in using the same dams for both flood-control and power purposes. Flood-control reservoirs should be empty until the flood arrives, then filled to reduce the floodwaters, and when the flood has passed, should be emptied in order to be available to catch the next flood. Power reservoirs must be filled as early as practicable to conserve water for low-water periods and to maintain a maximum head in the reservoir for power generation. Filling the reservoir capacity early in the season for power purposes will decrease the capacity of that reservoir for flood control.

[fol. 857] 81. Tributary reservoirs cannot be operated simultaneously for local flood protection, which requires the release of floodwater immediately after the passing of the local flood danger, and for the reduction of peak stages on a distant river into which the tributary flows, which requires the reservoirs to be kept empty, regardless of local flood conditions, until a dangerous stage occurs upon the main river.

82. Valley storage is the natural storage of the river and has the same effect as detention storage reservoirs, reducing peak stages and discharge below but increasing the duration of the flood. The valley storage of the Tennessee River in the 1926 flood amounted to 8,000,000 acre-feet, and in the largest flood to be anticipated would amount to approximately 14,000,000 acre-feet. Dead storage furnishes a head for power generation and reduces the available valley storage capacity, which in turn increases flood stages below the reservoir.

83. The controllable storage capacity of a reservoir is variable, as it is dependent upon the stream flow at the time the storage operations begin, and it may be reduced to nothing if the dam is completely flooded out.

84. Since the Corps of Engineers of the United States Army took over the exclusive control of the levees and flood-protection facilities upon the Mississippi River in 1928 under the Jadwin plan, every flood, including the 1937 flood, has been successfully handled, and the completed Jadwin plan, as modified by the Markham plan in the act of June 15, 1936, would have been sufficient to control the floods [fol. 858] upon the Mississippi of 1912, 1913, and 1927, in addition to the flood of 1937.

85. For attaining flood control only without reference to other uses it would not be necessary to fill the reservoirs partly. The partial filling is not for flood control but is for the benefit of low-water regulation. Low-water regulation increases firm power.

86. TVA at the end of the year 1934 owned and operated 157.8 miles of electric transmission lines; at the close of the year 1935 it owned and operated 274.3 miles of such lines; at the end of the year 1936 it owned and operated 1,068 miles of such lines; and as of October 15, 1937, owned and operated 1,286.9 miles of transmission lines; had 79.1 miles under construction and 176.9 miles authorized by its board of directors for construction; or at the close of the year *year* 1937, a total of 1,542.9 miles of transmission lines either constructed, under construction, or authorized for construction by the board of directors. The high-tension transmission lines constructed and now being operated by TVA extend across the State of Tennessee, the northwestern portion of the State of Georgia, the northern portion of the State of Alabama, and the northern section of the State of Mississippi.

87. At the end of the year 1934 TVA owned and operated 8 substations with a total capacity of 9,725 kva.; at the close of the year 1935 it owned and operated 14 substations with a total capacity of 36,275 kva.; at the close of 1936 it owned and operated 47 substations with a total capacity of 175,720 kva.; and as of October 15, 1937, owned and operated 55 substations with a total capacity of 219,010 kva., had under con- [fol. 859] struction 3 substations with a total capacity of 87,500 kva., and 4 substations authorized for construction by its board of directors with a total capacity of 39,500 kva.; or at the close of the year 1937, 62 substations with a total

capacity of 346,010 kva. either constructed, under construction, or authorized for construction by the board of directors.

88. The Tennessee Valley Authority has expended up to June 30, 1937, for transmission lines a total of $7,924,164, for substations a total of $2,826,756, and for temporary substations a total of $406,208, making a total investment of $11,157,128. TVA's estimated expenditures for additional transmission lines, substations, and other miscellaneous system equipment for the fiscal years ending June 30, 1938, and June 30, 1939, amount to $4,700,000 and $5,560,000 respectively. TVA has also acquired and is now operating for standby purposes a steam plant at Tupelo, Mississippi, and a steam plant at Corinth, Mississippi.

89. As of June 30, 1937, TVA owned and directly operated electric distribution facilities in the counties of Colbert and Lauderdale, Franklin and Morgan, Alabama, serving 1,774 retail customers, which distribution facilities were located in the rural areas of these counties and in the towns of Waterloo, Margerum, Barton, Pride Station, Spring Valley, Littleville, Oakland, St. Florian, Green Hill, Center Hill, Killen, Center Star, Elgin, Lexington, Sewell, Anderson, Rogersville, and Alexander Cross Roads. This direct retail service was instituted by TVA on October 20, 1934, in Col- [fol. 860] bert County, and on December 4, 1934, in Lauderdale County, Alabama. As of June 30, 1937, the TVA was serving direct 1,074 retail customers in the counties of Lincoln, Knox, Roane, Union, and Anderson in the State of Tennessee, which direct retail service was instituted by TVA on October 1, 1933.

90. On August 25, 1935, TVA adopted and announced the following power policy:

1. The business of generating and distributing electric power is a public business.

2. Private and public interests in the business of power are of a different kind and quality and should not be confused.

3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant or setting up a competing plant, as circumstances may dictate.

6. The fact that action by the Authority may have an adverse economic effect upon a privately owned utility should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low-cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately owned utility.

[fol. 861] 7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite regions and to develop its program in those areas before going outside.

8. The initial areas selected by the Authority may be roughly described as (a) the region immediately proximate to the route of the transmission line soon to be constructed by the Authority between Muscle Shoals and the site of Norris Dam; (b) the region in proximity to Muscle Shoals, including northern Alabama and northeastern Mississippi; and (c) the region in the proximity of Norris Dam (the new source of power to be constructed by the Authority on the Clinch River in northeast Tennessee).

At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia and North Carolina, and that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size (such as Chattanooga and Knoxville) and, ulti-

mately, at least one city of more than a quarter million, within transmission distance, such as Birmingham, Memphis, Atlanta or Louisville.

While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately owned utilities in the area do not cooperate in the working out of the program.

Nothing in the procedure here adopted is to be construed in any sense a commitment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest require. Where special considerations exist, justifying the Authority's going outside this initial area, the Authority will receive and consider applications based on such special considerations. Among such special considerations would be unreasonably high rates for service and a failure or absence of public regulation to protect the public interest.

[fol. 862] 9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis.

10. Accounting should show detail of costs, and permit a comparison of operations with privately owned plants, to supply a "yardstick" and an incentive to both private and public managers.

11. The accounts and records of the Authority as they pertain to power will always be open to inspection by the public.

This power policy was reported to the Congress in the first annual report of TVA.

[fol. 863] 91. Up to the present time TVA has entered into contracts for the sale of electric power with the following municipalities:

Municipality	Date of Contract
1. Tupelo, Mississippi	11-13-33
2. Knoxville, Tennessee	3- 1-34 (2-19-36) (5-18-36)
3. Pulaski, Tennessee	3- 8-34
4. Amory, Mississippi	3- 9-34 (10-15-36)
5. Russellville, Alabama	3-13-34
6. Decatur, Alabama	3-14-34
7. Sheffield, Alabama	3-14-34 (3-16-36)
8. Florence, Alabama	3-14-34 (7- 6-37)
9. Tuscumbia, Alabama	3-14-34 (3- 6-37)
10. Athens, Alabama	4- 8-34
11. Dayton, Tennessee	9-12-34
12. New Albany, Mississippi	9-13-34 (3- 1-37)
13. Muscle Shoals, Alabama	1-19-35
14. Okolona, Mississippi	4-23-35 (3-24-37)
15. Jackson, Tennessee	10-16-35 (9- 1-37)
16. Dickson, Tennessee	10-23-35
17. Holly Springs, Mississippi	11-12-35 (2- 2-37)
18. Memphis, Tennessee	12-23-35
19. Bolivar, Tennessee	12-31-35
20. Somerville, Tennessee	12-31-35
21. Milan, Tennessee	12-31-35
22. Guntersville, Alabama	5-21-37
23. Chattanooga, Tennessee	6-17-37
24. Middlesboro, Kentucky	7-29-37 (10-20-37)
25. Trenton, Tennessee	8-23-37
26. Paris, Tennessee	11- 2-37

92. Up to the present time the TVA has entered into contracts with the following rural cooperatives, or membership corporations, in the States of Mississippi, Alabama, Tennessee, and Georgia:

Name	Date of Contract
1. Alcorn County EPA	6- 1-34
2. Pontotoc EMC	2-15-35
3. Prentiss County EMC	6-13-35 (12- 1-37)
4. Monroe County EMC	7-19-35
5. Tishomingo County EPA	7-19-35
[fol. 864] 6. Meigs County EMC	10-14-35
7. Tombigbee EPA	10-19-35
8. North Georgia EMC	6-15-36
9. Cullman County EMC	8-14-36 (8- 4-36)
10. Gibson County EMC	8-13-36
11. Middle Tennessee EMC	8-13-36
12. Pickwick EMC	8-26-36
13. Duck River EMC	10-31-36
14. Southwest Tennessee EMC	12- 9-36
15. Northeast Miss. EPA	3-27-37 (7-27-37)
16. Joe Wheeler EMC	9-24-37
17. Cherokee County EMC	11- 2-37
18. Tippah County EMC	11- 5-37

93. The schedule of wholesale and resale rates in all of the contracts between TVA and cooperatives and municipalities are uniform, and the rate to be paid by such purchasers is based upon his monthly kwh. consumption, the rate being decreased in specific progressive steps up to 1,000,000 kwh. per month (Schedule A-1 attached to each contract).

94. Up to the present time TVA has entered into contracts to serve directly the following industrial customers:

Name	Contract Date	Term of Contract
1. Ala. Asphaltic Limestone Co.	5- 1-36	5 yrs.
2. Goodyear Decatur Mills	5- 1-36	1 yr.
3. L. & N. Railroad Company	6-22-36	5 yrs.
4. Aluminum Co. of America	7-17-36	4 to 6 yrs.
" " " "	7-20-37	20 yrs.
5. Monsanto Chemical Co	5-15-36	10 yrs.
	5-16-36 and 6- 2-36	
6. Volunteer Portland Cement Co	8-14-36	10 yrs.
7. Rockwood Alabama Stone Co.	8-25-36	5 yrs.
8. Western State Hospital	9- 8-36	5 yrs.
9. Robbins Tire & Rubber Co.	11- 1-36	5 yrs.
10. American Aggregate Corp.	3- 9-37	
11. Wade & Richey Mining Co.	5- 1-37	1 yr.
12. War Dept. at Sardis Dam	5- 4-37	4 yrs.
[fol. 865]		
13. Lacey Asphaltic Limestone Co.	5-13-37	1 yr.
14. Victor Chemical Works	7- 2-37	20 yrs.
15. Electro Metallurgical Co.	8-17-37	20 yrs.
16. L. N. Gross Company		

95. All industrial contracts provide for the sale of firm power and for the right of the customer to call for additional power within specified limits upon giving specific notice; and in the cases of Monsanto Chemical Company, Aluminum Company of America, Victor Chemical Works, and Electro Metallurgical Company, which provide for secondary power as well as firm power, the contracts contain provision for from 5 to 21 days' notice by TVA for interrupting, and from 7 to 15 days' notice for resuming, delivery of such secondary power. Most industrial contracts provide that the point of delivery shall be on the low-tension side of the transformer.

96. All contracts for the sale of power by TVA to a municipality or a cooperative association expressly reserve in TVA control of resale rates and control of the operation of

the distribution facilities owned by the municipality or cooperative association.

97. All contracts between TVA and municipalities not owning at the time of the contract an electric distribution system contain the following provisions, among others:

(a) That the contract shall continue for a period of 20 years, and in some instances 30 years;

(b) That the municipality is to use all reasonable diligence in acquiring, by construction or purchase, a distribution system;

(c) That TVA will construct and install transmission and transformation facilities;

[fol. 866] (d) That the energy supplied the city will be metered at the low-tension side of the step-down transformer of the TVA substations, which point shall be the point of delivery;

(e) That municipality agrees to sell the electricity at the standard or uniform rates prescribed in the contract and not to depart therefrom except by consent of the TVA;

(f) That the revenues derived from the municipal distribution system will be expended only in the following order:

(1) In payment of operating expenses.

(2) In payment of interest, amortization charges, or sinking-fund payments on bonds applicable to the electric system.

(3) In the establishment of reserves for replacements, new construction, contingencies, and working capital.

(4) In paying to the city a return on the investment specified in the contract, to be a particular sum which is arrived at by taking the present appraised value of the property, less all outstanding liabilities incurred in the construction or acquisition of the system of not more than 6% per annum on the particular sum set forth, together with an amount stated to be equivalent to the municipal taxes, which is computed in accordance with the schedule of terms and conditions attached to and made a part of said contract.

(5) All remaining revenues to be devoted to the retirement of electric-system bonds so long as any such bonds are

outstanding, and if not so devoted shall serve as a basis for the reduction or elimination of surcharges, and thereafter for the reduction of rates by agreement of the parties.

(g) The recital of standard and uniform rules and regulations governing the municipality's operation of its distribution system, which rules and regulations are expressly agreed to be of the essence of the contract and which cannot be changed except with the consent of TVA. The following are some of the rules and regulations:

[fol. 867] (1) Requirement that municipality procure written service applications from customer before supplying service.

(2) Method of determining classification of customers for service.

(3) Requirement of deposit by customers to guarantee payment of electric bill.

(4) Designation of point of delivery to customer, standards of customer's wiring, right to inspect customer's wiring, payment by customer for installing underground wires, customer's responsibility for municipality's property, and access to customer's premises.

(5) Time and manner of rendering bills to customers and penalty for nonpayment by customer.

(6) Right of municipality to terminate service for violation of its rules and regulations.

(7) Reconnection charge and charges for temporary service.

(8) Resale by customers prohibited.

(9) Rules and regulations required to be made a part of all contracts between the municipality and its customers.

(h) Standard and uniform "terms and conditions" which are of the essence of the contract and which cannot be changed except with the consent of the TVA. Included among the terms and conditions are the following:

(1) Municipality required to administer electric system as a separate department and maintain a separate fund for

its electric revenues and not mingle them with other funds of the municipality.

(2) Municipality required to keep books of account of its electric operations according to the system and in the manner prescribed by TVA.

[fol. 868] (3) Municipality required to furnish TVA such financial and operating reports as may be requested.

(4) Municipality required to permit agents of TVA free access to books and records relating to electric operations.

(5) Method of determining "present value" of municipality's electric system and method of determining municipality's initial investment, which is defined as "present value" less all outstanding liabilities incurred in the construction or acquisition of the electric system.

(6) Municipality's return on investment as defined therein limited to 6% per annum.

(7) Manner of computing payments in lieu of municipal taxes on electric operations within the municipal limits.

(8) Requirement that electric department pay for electric services.

(9) Municipality not permitted to withdraw electric-department revenues for general funds in excess of allowable rate on investment and municipal-tax equivalent, unless municipality's investment reduced to the extent of such excess withdrawals.

(10) Municipal electric department limited to loans to general fund of municipality of one year or less without right of removal.

(11) Municipality required to publish at the end of each fiscal year a statement of its investment, outstanding loans and advances, and immediately furnish TVA with a copy thereof.

(12) Municipality during development period permitted to impose surcharge on classes of the customers subject to such surcharge under the standard schedule of resale rates provided for in the contract.

[fol. 869] (13) Adjustability of rates at which municipality purchases power for TVA dependent upon cost of living index for the United States as computed by the Department of Labor.

(14) Municipality not permitted to sell electricity for submetering or further resale.

(i) Municipality prohibited from discriminating between members of the same class of customers as provided for in the contract or from rebating or extending concessions to any customer.

(j) Assignment of contract prohibited without consent of TVA.

(k) TVA agrees to enter into negotiations for extension of contract at least 2 years before its expiration.

98. All power contracts made by TVA with municipalities then owning an electric distribution system, in addition to the above stated provisions, provide that:

The municipality shall add to the standard TVA resale rates a temporary amortization charge of 1¢ per kilowatt hour, such charge to be not less than 25¢ or more than $1.00 per customer per month, for the purpose of amortizing the municipality's electric indebtedness, and values the electric system by taking its replacement cost new, less depreciation and the indebtedness applicable to the electric system.

The same provision is found in all contracts with cooperatives.

99. In some of the power contracts made by TVA with municipalities it is provided, in addition to the provisions referred to above, that:

(a) TVA will render without compensation such accounting, legal, and engineering assistance looking to the acquisition of the municipal distribution system as TVA may deem advisable or helpful.

[fol. 870] (b) Municipality agrees to grant a franchise to TVA over its streets and alleys for serving the city with electricity or the areas outside of the corporate limits.

(c) The municipality shall be permitted to jointly use TVA poles for its distribution lines.

(d) TVA will further the economic welfare of the municipality by fostering and promoting the increased use of electricity within the municipality.

100. All power contracts between TVA and cooperatives contain, among others, the following provisions:

(a) That the contractual period shall be 20 years.

(b) That the energy supplied will be delivered on the low-tension side of the substation or substations which are owned and operated by TVA.

(c) That after payment of operating expenses and certain specified costs and reserves, all remaining income shall be devoted to reimbursement of membership charges or to reductions in rates.

(d) That the cooperative shall not pledge, mortgage, or otherwise alienate, except in the normal course of business, its properties or revenues without the written consent of TVA.

(e) That the cooperative agrees to resell the electricity which it purchases from TVA at the standard or uniform resale rates prescribed in the contract and not to depart therefrom except with the consent of TVA.

(f) That the cooperative will not serve any non-member except with the consent of TVA.

(g) That the cooperative extend its memberships, without discrimination, to any person, corporation, co-partnership, municipality, political body or subdivision within the area of its service; that the minimum installment on memberships shall not be fixed at less than $10 without first securing the written consent of TVA.

[fol. 871] (h) TVA to render, in some cases without charge, advisory services in personnel and administrative problems; to secure the attendance of its officers at meetings of the corporation, its board of directors or executive committee; to make available the facilities and services of its personnel division in the selection of employees; and to render professional services at the expense of the cooperative.

(i) That the cooperative will not employ persons deemed by Authority to be unqualified or unnecessary.

(j) That TVA shall have the right to use cooperative's poles and wires for transmission purposes and for service to industrial customers with a demand of 1,000 kw. or more.

(k) That cooperative will file annually with TVA a complete report in the form prescribed by TVA of the results of its operations, the condition of its property, and such other information as TVA may require, as well as such additional reports and information, from time to time, as TVA requests.

(l) That all employees who handle money of the cooperative shall be bonded.

(m) That the contract is not assignable or transferable without the consent of TVA.

(n) For "terms and conditions," which are of the essence of the contract and cannot be modified or changed without the consent of TVA, and which are substantially the same as those provided for in the contracts between TVA and municipalities herein referred to in finding 97 hereof.

(o) For a "schedule of rules and regulations," which are of the essence of the contracts and which cannot be changed or modified except by the consent of TVA. The provisions of the "schedule of rules and regulations" are substantially the same as those provided for in contracts between TVA and municipalities herein referred to at finding 97 hereof.

[fol. 872] 101. All of the TVA contracts with municipalities and cooperatives permit the purchaser to increase its demand for electric power upon specified notice, and in the majority of such contracts such increases are without limit as to the amount.

102. TVA has promoted the organization of rural cooperatives for the purpose of distributing TVA power, has directed and assisted in their organization and financing, and has controlled their operation. As a part of these activities it has issued minute instructions covering the procedure to be followed, as approved by it, in the organization of new cooperatives, including the forms of agreements to be entered into between the cooperative and its customers. It has directly assisted and advised the or-

ganizers of cooperative associations and their officers in all matters relating to the formal organization. It has prepared all contracts between TVA and such cooperatives. It has made the necessary surveys and studies and has assisted otherwise in the procurement of loans from REA. It pays the sum of $15 toward the cost of wiring for electricity the houses of its customers and customers of cooperatives served by it if an electric water heater or range is installed, and $30 if both appliances are installed.

103. TVA also supervises the operations of rural cooperative associations by selecting operating employees; by preparing their rules and regulations for operation; by setting up the forms in which the cooperative's books shall be kept; by attending meetings of the directors of the cooperatives; and by having copies of all correspondence of the cooperative sent to the TVA district manager.

[fol. 873] 104. The present generating facilities of the complainant companies are adequate to meet the present loads on their systems and, together with the additional capacity scheduled or already under construction, will adequately supply their power requirements for at least 2 or 3 years in the immediate future. A steam generating plant can be added to a system within 1 to 2 years, and a hydro plant can be added within 2 to 3 years.

105. The present generating facilities of the public utility companies operating within a 250-mile radius of any of the dams included in the TVA unified plan are adequate for the present loads in the territory and, together with the additional capacity definitely scheduled or already under construction, will be adequate to meet the estimated increased load growth during the years 1938 and 1939. The utility companies can readily build to meet any requirements subsequent to 1939 unless they are prevented by regulatory authority or by the impairment of their financial status by federal competition. In fact, in the past facilities have been constructed to provide for increment expansion. Increment expansion is an economic development of facilities and is provided in anticipation of load growth.

106. In the areas where TVA power is now available for rural distribution there is no substantial existing domestic demand beyond reach of existing distribution facilities,

which, at the present time, comes within the minimum requirements of applicable State regulations or within the recommended minimum requirements of 662 kwh. per month per mile as adopted by TVA in its "Rural Electrification Survey—Neighborhood Plan."

[fol. 874] 107. All of the high dams built and to be built by TVA will be united by heavy-duty transmission lines extending from the power dams on the tributaries of the Tennessee, designated as Norris, Hiwassee, and Fontana, to the Gilbertsville Dam on the main river somewhat above its mouth. This grid system constitutes a power pool from which at any point energy can be drawn without reference to the point of generation. The completed power pool under the unified plan will provide 660,000 kw. of firm energy, or 5,780,000,000 kwh. of firm energy per year.

108. The total amount of electricity generated for public use by public utilities during 1936 in the State of Tennessee was only a little over 1,000,000,000 kwh. The total generation for public use by public utilities in Tennessee, Alabama, and Mississippi in 1936 was only about 3,700,000,000 kwh. In 1936 the total generation of electricity for public use by public utilities in the 7 States in which any part of the Tennessee River basin lies; that is, Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama, and Mississippi, was only about 9,300,000,000 kwh.

109. The market for electric power, as represented by total sales in the year 1936 to ultimate consumers, directly and indirectly by all public utilities and municipal systems, other than by TVA and its wholesale contractors, within a 100-mile radius of any of the dams included in the TVA unified plan, is 3,661,000,000 kwh. per year, and within a 150-mile radius of any of the dams included in the TVA unified plan, is 7,162,000,000 kwh. per year. The territory now being served by each of the complainant companies lies wholly or in large part within such 150-mile radius.

[fol. 875] 110. It is technically feasible to transmit power a distance of 250 miles without any relaying or intermediate feeding into the transmission lines, and its is commercially feasible to transmit electric energy from the TVA power pool for distribution in the area served by each of the complainant companies.

111. On September 14, 1933, the Tennessee Valley Authority announced its wholesale power rates and approved retail rates for the sale of electric energy.

112. Between 12,000 and 15,000 miles of transmission lines would be necessary to market the 7,670,000,000 kwh. of firm and secondary power which would be produced by the TVA in a normal-water year. The total transmission lines of the complainants are 11,314 miles. Defendant A. E. Morgan has estimated that it may require an expenditure of $100-000,000 to complete the proposed transmission and distribution systems of TVA so that they will be an integrated unit.

113. Although the present high-tension transmission system so far constructed by TVA is only the beginning of the high-tension transmission system which will be necessary to deliver the vast amounts of power which will be available through the TVA power pool, the existing TVA high-tension transmission lines have already been extended to all of the large existing load centers in Tennessee, with the exception of Nashville; and upon completion of the proposed transmission line of the TVA to Nashville, the TVA transmission system will completely duplicate the transmission system of The Tennessee Electric Power Company. This high-tension transmission system of TVA interconnects all [fol. 876] of the generating facilities of TVA, is designed to serve more loads than are served at present by TVA, and can be readily extended to serve all of the principal load centers in the area served by the complainant companies. In the construction of certain of these transmission lines the Authority constructed said lines with an excess capacity of several times its initial operating load in anticipation of future load growth and possible extensions of such lines to other areas. If the existing TVA system had been designed for the purpose of serving small municipalities and rural customers, the engineering economics would have required the design of an entirely different type of system than the one so far constructed.

114. Prior to the organization of TVA there was no movement in the territories served by the complainant companies for municipal ownership of electric distribution systems, and in fact many existing municipally owned distribution systems were acquired by the complainant companies. Since

the organization and commencement of operation of the Tennessee Valley Authority the following cities served by complainant companies have entered contracts with the TVA:

Municipality	How Served
Florence, Alabama	Alabama Power Company
Sheffield, Alabama	Alabama Power Company
Tuscumbia, Alabama	Alabama Power Company
Athens, Alabama	Alabama Power Company (Wholesale)
Tupelo, Mississippi	Miss. Power Co. (Wholesale)
Jackson, Tennessee	West Tenn. Power & Lt. Co.
Decatur, Alabama	Alabama Power Company
Russellville, Alabama	Alabama Power Company
Guntersville, Alabama	Alabama Power Company
Knoxville, Tennessee	Tennessee Public Service Co.
Chattanooga, Tennessee	The Tennessee Electric Power Co.
Memphis, Tennessee	Memphis Power & Light Co.
Paris, Tennessee	Ky.-Tenn. Light & Power Co.

[fol. 877] The business in the City of Memphis represents the major part of the business of the Memphis Power & Light Company, and the business in the city of Knoxville represents 90% of the electric business of the Tennessee Public Service Company.

In addition, the following municipalities have held elections resulting in the authorization of a bond issue with which to acquire a municipally owned distribution system for the purpose of distributing TVA power:

Municipality	Present Service
1. Gallatin, Tenn	Ky.-Tenn. L. & P. Company
2. Newbern, Tenn	Ky.-Tenn. L. & P. Company
3. Clarksville, Tenn	Ky.-Tenn. L. & P. Company
4. Starkville, Miss	Miss. Power Company
5. Aberdeen, Miss	Miss. Power Company
6. Columbus, Miss	Miss. Power Company
7. Bessemer, Ala	Birmingham Electric Co.
8. Fairfield, Ala	Birmingham Electric Co.
9. Tarrant City, Ala	Birmingham Electric Co.
10. Hartselle, Ala	Alabama Power Company
11. Courtland, Ala	Alabama Power Company
12. Oneonta, Ala	Alabama Power Company
13. Town Creek, Ala	Alabama Power Company
14. Enterprise, Ala	Alabama Power Company
15. Scottsboro, Ala	Alabama Power Company
16. Albertville, Ala	Alabama Power Company
17. Columbia, Tenn	The Tenn. Electric Power Co.
18. Henderson, Tenn	West Tennessee P. & L. Co.
19. Lewisburg, Tenn	The Tenn. Elec. Power Co.
20. Fayetteville, Tenn	The Tenn. Elec. Power Co.
21. Etowah, Tenn	Power sold by the TEP Co. at wholesale.

115. In addition to the municipalities which have held elections to acquire a municipally owned distribution system for the purpose of distributing TVA power, the following cities and towns served by the complainant companies have officially applied for TVA power:

[fol. 878]

State and Town	How Served
Alabama:	
Boaz	Alabama Power Company
Cherokee	Alabama Power Company
Courtland	Alabama Power Company
Falkville	Alabama Power Company
Hartselle	Alabama Power Company
Huntsville	Alabama Power Company
Leighton	Alabama Power Company
Madison	Alabama Power Company
Moulton	Alabama Power Company
Red Bay	Alabama Power Company
Town Creek	Alabama Power Company
Vina	Alabama Power Company
Valley Head	Alabama Power Company
Kentucky:	
Trenton	Ky.-Tenn. L. & P. Co.
Mississippi:	
Coffeeville	Mississippi P. & L. Co.
West Point	Mississippi Power Co.
Tennessee:	
Adamsville	The Tennessee Elec. Power Co.
Clinton	The Tennessee Elec. Power Co.
Coal Creek	The Tennessee Elec. Power Co.
Columbia	The Tennessee Elec. Power Co.
Decaturville	The Tennessee Elec. Power Co.
Dresden	Ky.-Tenn. L. & P. Co.
Dyer	Ky.-Tenn. L. & P. Co.
Etowah	Power sold at wholesale to Etowah Power Co.
Fayetteville	The Tennessee Elec. Power Co.
Gallatin	Ky.-Tenn. L. & P. Co.
Gleason	Ky.-Tenn. L. & P. Co.
Greenfield	Ky.-Tenn. L. & P. Co.
Humboldt	West Tenn. P. & L. Co.
LaFollette	The Tenn. Elec. Power Co.
Lebanon	The Tenn. Elec. Power Co. sells power at wholesale to municipal system
Lenoir City	The Tenn. Elec. Power Co.
Lewisburg	The Tenn. Elec. Power Co.
Livingston	The Tenn. Elec. Power Co.

[fol. 879]

Martin	Ky.-Tenn. L. & P. Co.
Murfreesboro	The Tenn. Elec. Power Co.
Obion	Ky.-Tenn. L. & P. Co.
Oliver Springs	The Tenn. Elec. Power Co.
Parsons	The Tenn. Elec. Power Co.
Ripley	West Tenn. P. & L. Co.
Rockwood	The Tenn. Elec. Power Co.
Rogersville	Holston River Elec. Co.
Rutherford	Ky.-Tenn. L. & P. Co.
Savannah	The Tenn. Elec. Power Co.
Sharon	Ky.-Tenn. L. & P. Co.
Winchester	The Tenn. Elec. Power Co.

[fol. 880] 116. The electric-power business is not static. The electric-power production in the Nation as a whole has followed the trend of industrial activity, reaching a low point in March, 1933. With the business recovery beginning in 1933, electric power production increased sharply until the late summer of 1937. The trend of electric-power production and sales among the complainant companies has followed the trend in the Nation as a whole. During the years 1929 to 1933 the electric-power demand of the complainant companies declined, due largely to the reduction in the industrial demand during that period. With the resumption of industrial activity there has been, beginning with 1933 and continuing to the latter part of 1937, a very substantial increase in the electric-power demand of the complainant companies. Since September 1937 and prior thereto, for certain complainants there has been a definite decline in the electric-power demand of the complainant companies.

Over the period of the past 8 to 12 years the average increase in electric-power demand of the complainant companies has been at a rate of approximately 5% per year, and there has been a corresponding steady increase in their facilities. This normal expectancy of growth and increased business is a valuable right and asset of each of the complainant companies, and the loss of such expectancy of growth is a substantial injury to their properties and businesses.

117. Of the larger industrial power consumers with which TVA has made contracts, the Rockwood Alabama Stone Company is a former customer of the Alabama Power Company.

The Monsanto Chemical Company purchased power requirements for its phosphoric-acid operations from the Alabama Power Company, the revenue from which business [fol. 881] amounted to $387,000 per year. Upon the removal of the phosphoric-acid operations of such company to Columbia, Tennessee, The Tennessee Electric Power Company entered into negotiations with said chemical company to furnish it with 50,000 kw. of power at its Columbia, Tennessee, plant, and after agreeing upon the terms of a proposed contract, Monsanto Chemical Company questioned the financial responsibility of The Tennessee Electric Power Company because of the competitive operations of TVA and refused to accept an offer to deposit $1,500,000 of the first mortgage bonds of The Tennessee Electric Power Company as a guarantee of performance of the contract, for the reason that the securities offered were unsatisfactory because the competitive situation created by TVA.

L. N. Gross Company, in 1936, with the aid of the Tennessee Electric Power Company, located a plant at Fayetteville, Tennessee, and electricity was furnished during the construction period by The Tennessee Electric Power Company. Upon completion of construction said power company, at the request of said L. N. Gross Company, connected electric service after installing a substation of sufficient size and capacity to accommodate the load. Thereafter L. N. Gross Company terminated its service and purchased TVA power.

Volunteer Portland Cement Company was the largest industrial customer of Tennessee Public Service Company, from which it received an annual revenue approximating $125,000. A transmission line with a capacity many times in excess of said cement company's requirements, and which will be available for service to future loads in that area, [fol. 882] was constructed by TVA from Norris Dam to said cement company's plant, a distance of approximately 20 miles, at an expenditure of $269,000. On September 14, 1937, TVA assigned said contract to the city of Knoxville, and although TVA will supply power direct to Volunteer Portland Cement Company, said city will pay TVA for the power so delivered at the standard wholesale rates, as provided for in the contract between TVA and the city of Knoxville, and will collect from Volunteer Portland Cement

Company at the standard resale rates, as provided in said complainants' exhibit 118. There has been agitation among other industrial customers of Tennessee Public Service Company for power to be served from the line which the TVA constructed to the premises of Volunteer Portland Cement Company or extensions of it.

118. All of the industrial and municipal customers now being served or under contract with TVA could be served by one or another of complainant companies.

119. All of the rural cooperative systems which have been constructed by TVA and are now distributing TVA power could be served by one or another of the complainant companies without substantial change or addition in their existing transmission or substation facilities.

120. The completion of the generating plants called for in the TVA unified plan and the marketing of the power generated thereby will cause substantial damage to all the complainants.

[fol. 883] 121. The completion of the generating plants called for in the TVA unified plan and the marketing of the power generated thereby will result in 3 types of displacement of the complainants' facilities:

(a) Permanent displacement of complainants' distribution facilities in those areas where TVA power is actually distributed and also permanent displacement of transmission lines and substations immediately supplying such areas. For example, in the case of The Tennessee Electric Power Company, over ⅓ of its total demand is represented by the city of Chattanooga; the company now has 5 high-tension transmission lines serving the Chattanooga area, and the loss of the business in Chattanooga will result in the destruction of over one-third of the usefulness of the company's electric property.

(b) Temporary displacement of complainants' facilities of other kinds, either rendered temporarily idle or forced to operate at greatly reduced loading, which temporary displacement may be ultimately terminated by future growth of the remaining load of the utility system or may become permanent if TVA continues its expansion in any particular territory.

(c) Impairment of the value of existing generating facilities and transmission lines through loss of the market for which they are adapted and were originally designed; and the incurrence of cost of additional transmission facilities which will be required in order to deliver power, from the generating plants whose natural market has so been taken to the nearest market which may be available.

122. The construction and operation of rural distribution lines under TVA contracts results in substantial damage to the property and business of the complainant companies, through whose territory such lines have been or may be constructed in the following respects.

(a) When distribution or transmission lines are projected they are constructed with a view of ultimately interconnecting with other existing lines to complete a loop in order to give two-way service and in order to control voltage and continuity of service. Where competitive systems are constructed in the same manner, such interconnections become impossible without extending service over territory already served by the competitive system.

[fol. 884] (b) The inability to develop normally because of the presence of the duplicating system results in less dependable and more expensive service.

(c) Expansion of both systems is made more expensive through the necessity of making cross-overs and through the necessity of extending lines through areas served by the competitor.

This damage is accentuated by the fact that in many instances the rural distribution lines of membership corporations distributing TVA power have been constructed in the immediate vicinity of the load centers now being served by complainant companies.

123. The activities of TVA have already destroyed the credit of those complainant companies in whose territory the TVA is now operating and has substantially impaired the credit of all of the other complainant companies, with the exception of the Appalachian Electric Power Company. This has made it impossible for the companies in this area

to take advantage of favorable credit conditions to refund existing indebtedness and thereby lower their fixed charges. It has made it impossible for such companies to obtain new money for purposes of expansion.

124. With the exception of the Franklin Power & Light Company, which was not incorporated until 1929, and the Southern Tennessse Power Company, each of the complainant companies and their predecessors have grown and expanded their systems and organizations to meet the changing and growing economic needs of the territories which they respectively serve. At the time of the organization and commencement of operations of such complainant companies electricity was not generally used for industrial power purposes, and it was necessary for the complainant companies to develop the market for the sale of electricity for use as industrial power. In so doing, through extensive research, sales and promotional activities, particularly in the case of the larger complainant companies, they have [fol. 885] over a period of years stimulated and promoted the industrial development of their respective territories and have assisted in the electrification of industry.

125. Such complainant companies have also organized and developed large staffs of trained employes to collect data respecting the industrial advantages of their respective territories, to utilize this information in publicizing and advertising such advantages, and to promote the development of new industries in the areas served by them. As a result of these activities, such companies have assisted in locating many new industrial plants in the areas which they serve, representing an investment of many millions of dollars and the employment of thousands of workers. These new industries now constitute a very substantial part of the industrial power consumption served by such complainant companies.

126. Such complainant companies early began activities to develop and enlarge the residential use of electricity through extensive campaigns, fostering residential electrification and sale of domestic appliances. These activities have resulted in a large and progressive increase in the sale and use of electric appliances within the area served by such complainant companies. In carrying on this work of promoting domestic use of electricity, such complainant

companies have developed and now maintain extensive sales and service departments.

127. Such complainant companies have also made intensive studies of the problems and advantages of rural electrification; have constructed experimental rural lines as early as 1920; and since that time have been engaged in extensive activities in the development of rural electrification. These activities include educational programs showing the profitable use of electricity in agriculture, extensive experi- [fol. 886] ments developing new uses of electricity on the farm, and constant investigation of possible rural line extensions into areas not yet served. In carrying out these activities the companies maintain large staffs of agricultural engineers, home economists, and salesmen. As a result of these activities a better understanding of the use of electricity on the farm has been brought about, which has resulted in the construction by the companies of thousands of miles of rural lines serving thousands of farmers, and in bringing electric service to hundreds of unserved rural communities.

128. In the case of the larger complainant companies, which do not serve exclusively in metropolitan areas, each of such companies maintains a large field organization under the charge of district managers. The field organization under each district manager is departmentalized to correspond with the departments in the central-office organization. Each of such district organizations has local offices responsible to the district manager. These local and division organizations cooperate with the central-office organization in the company's activities in their respective territories.

129. The complainant companies as a group have developed to a high degree system planning. This involves an intimate contact and thorough knowledge of the operating history of the power system, both physical and economic; of plans of expansion both immediate and prospective of all major industrial users; of the growth of merchandise sales in domestic and commercial fields; of the expansion of rural service; and of experiences gained in the operation and development of production and transmission facilities.

[fol. 887] 130. The rates and services of each of the complainant companies in the States of Alabama, Tennessee,

Kentucky, Georgia, Virginia, West Virginia, North Carolina, and South Carolina are regulated by State commissions in the respective States. There is no State Commission in Mississippi, and the rates and services of the complainant companies in that State are regulated by municipalities within their corporate limits. The rates charged by the complainant companies have been reduced and changed from time to time by order of the governing State commission. The rates charged by the several complainant companies in the States of Alabama, Tennessee, Georgia, Virginia, North Carolina, and South Carolina are uniform for the different classes of service throughout their respective operating territories under regulations imposed by the various State commissions.

131. The Public Utilities Commissions in the States of Tennessee, Alabama, West Virginia, and Kentucky have adopted regulations, applicable to certain of the complainant companies, fixing minimum requirements under which said companies may be required to extend their distribution facilities to give service to rural customers, or the commissions have the power to compel the companies to extend their lines anywhere in the area to take care of any business justifying such extension.

132. The Tennessee Valley Authority has not complied with the provisions of State laws applicable to public utility companies engaged in the electric-power business in any of the States where it is now operating and has not submitted to the regulation of the State commissions in any of such States.

[fol. 888] 133. The competitive activities of TVA in making it impossible for the complainant companies to reduce their fixed charges through refinancing and in making it impossible for them to procure new capital interfere with and limit the power of the State regulatory bodies to require the complainant companies to reduce their rates and extend or improve their facilities and service.

134. The carrying out of the Tennessee Valley program to take over the business and markets now served by the complainant companies will necessarily, in the case of such complainant companies whose business and markets are so taken, destroy their ability to maintain the organizations which they have developed, their ability to perform the func-

tions which they have heretofore and which they are now performing in providing adequate electric power service, and will destroy the ability of the States and political subdivisions in which such complainant companies are now operating to regulate and control the electric-power rates and service in such areas or to protect the economic needs represented by industrial, commercial, and domestic electric consumers who are now being served by such complainant companies.

135. The Rural Electrification Administration (REA), the Federal Emergency Administration of Public Works (PWA), and Electric Home and Farm Authority, Inc., and Electric Home and Farm Authority (EHFA) have cooperated with and assisted TVA in the furtherance of its power program.

(a) TVA has a "very cooperative arrangement" with [fol. 889] the Rural Electrification Administration (REA) for financing the construction of rural lines for municipalities and cooperatives; and among other things, representatives of REA have established offices in one of the TVA buildings in Knoxville, Tennessee; have attended organization meetings of cooperatives with representatives of TVA; have assisted in preparing petitions for incorporation of cooperative associations; have prepared by-laws for cooperative associations; have attended meetings of the board of directors of cooperatives and rendered advice concerning availability of REA funds; and TVA representatives have accompanied representatives of cooperatives to Washington to assist in the preparation of applications to REA for loans.

(b) The Federal Emergency Administration of Public Works (PWA) has made contracts or allotments for loans totaling $7,053,575 and grants totaling $7,629,383 to 23 municipalities in the States of Alabama, Mississippi, and Tennessee, in which complainant companies serve electricity, for the purpose of constructing a municipal electric distribution system to distribute TVA power in competition with the respective complainant company serving electricity therein.

(c) Many of the PWA applications are in form and substance identical and specifically recite in some instances [fol. 890] that the distribution system will duplicate and

supplant a privately owned distribution system; some recite that the amount of business contemplated and referred to therein is justified on the low promotional rates of TVA; some recite that the application is filed in cooperation with TVA to build up greater consumption of electrical energy; some recite that the application is filed to take advantage of rates offered by TVA; and with few exceptions all applications state that the electricity to be distributed will be purchased from TVA.

(d) The loan and grant applications of the cities of Hartselle, Russellville, Guntersville, and Tarrant City, Alabama, severally recite that the city has secured 10-year written contracts from practically all electric consumers in the city. The form of contract, which is incorporated in each application, is identical and provides that in consideration of $1 paid by the mayor of each city to the signer of the contract and in further consideration of the opportunity to secure lower electric rates, the signer of the contract will purchase his entire requirements of electrical energy from the city for a period of 10 years if, as, and when the city has electrical energy for sale, provided the rates to be charged by the city shall be those prescribed by the Tennessee Valley Authority.

[fol. 891] (e) In the fall of 1933 the TVA Board granted Mr. Lilienthal the right to create a corporation under the laws of the State of Delaware with power to discount commercial paper to be obtained from manufacturers of electrical appliances licensed by the Authority. In December 1933 Electric Home and Farm Authority, Inc., was created by executive order of the President and was chartered under the laws of Delaware in January 1934. The Directors of TVA were the Directors of Electric Home and Farm Authority, Inc., and Mr. Lilienthal was president. That company made a contract with TVA as of July 1, 1934, whereby the purchasers of electric energy from the TVA might finance the purchase of electrical appliances through E. H. & F. A., Inc., and the TVA was to collect from such purchasers the monthly payments for such appliances and account therefor to E. H. & F. A., Inc. Electric Home and Farm Authority, Inc., was dissolved in August 1935, and a new corporation, Electric Home and Farm Authority, was organized under the laws of the District of Columbia at or about said date, which new corporation succeeded to all

the property, rights, and liabilities of the original company, E. H. & F. A., Inc. The contract of July 1, 1934, is still in effect and the present corporation, E. H. & F. A., and Tennessee Valley Authority are still carrying on under said contract.

136. If the projects of the Authority, described in find- [fol. 892] ing 39, had been in operation during past floods since 1897, they could have reduced the height of all major Mississippi floods since that date by 2 feet or more from Cairo, Illinois, at least to Helena, Arkansas. It is reasonable to expect that these projects will make possible a reduction similar in extent in all probable floods in the future on the lower Mississippi. Such reduction will provide substantial additional flood protection for the lower Mississippi, a substantial safety factor for the levee system, reduce the frequency of the use of floodways and the flooding of backwater areas, and will be of substantial value in the control of destructive floods in the lower Mississippi. There appears to be no system of reservoirs sufficient to eliminate the flood menace in the Tennessee basin except in combination with local protective works.

Gore, J., is further of the opinion that the conclusions of law are fully stated in the opinion and that therefore there is no reason for stating any conclusions of law separately.

(S.) Florence E. Allen, United States Circuit Judge.
(S.) John D. Martin, United States District Judge.
(S.) —— ——, United States District Judge.

[fol. 893] In United States District Court

(Caption omitted)

Notice of Appeal—Filed February 23, 1938

To Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal:

You and each of you are hereby notified that the complainants in the above entitled cause will jointly appeal from the decree of the United States District Court for the Eastern District of Tennessee, Northern Division, entered in said cause the 25th day of January, 1938, to the Supreme

Court of the United States as provided by the applicable statutes of the United States and rules of said Supreme Court.

This 23rd day of February, 1938.

Trabue, Hume & Armistead, Frantz, McConnell & Seymour, Baker, Hostetler, Sidlo & Patterson, Solicitors for Complainants.

The undersigned, being one of the solicitors of record for Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan and David E. Lilienthal, acknowledges services of the foregoing notice this 23rd day of February, 1938.

(S.) William C. Fitts, Jr.

[fol. 894] In United States District Court

(Caption omitted)

Petition for Appeal—Filed February 24, 1938

Now come The Tennessee Electric Power Company, Franklin Power & Light Company, Memphis Power & Light Company, Southern Tennessee Power Company, Birmingham Electric Company, Mississippi Power Company, Appalachian Electric Power Company, Carolina Power & Light Company, Tennessee Public Service Company, Holston River Electric Company, Alabama Power Company, Kentucky & West Virginia Power Company, Inc., Kingsport Utilities, Incorporated, Kentucky-Tennessee Light & Power Co., West Tennessee Power & Light Company, Mississippi Power & Light Company, East Tennessee Light & Power Company, and Tennessee Eastern Electric Company, (the Georgia Power Company, one of the original complainants, having been dismissed without prejudice) and respectfully represent that a final decree of the District Court of the United States for the Eastern District of Tennessee, Northern Division (a three judge court organized pursuant to 28 U. S. C. 380A) was entered in the above entitled cause on the 25th day of January, 1938, denying each and all of petitioners' prayers for relief and dismissing their Bill of Complaint upon the stated ground that "no cause of action has been established and that the suit should be dismissed."

Petitioners appeal from the denial of each of their prayers for relief, as specified in their Bill of Complaint as amended, and appeal from the whole of such decree dismissing their Bill and denying any relief,—all upon the grounds and for the reasons particularly stated in the Assignments of Error presented herewith.

Wherefore, your petitioners, being so aggrieved, respectfully pray that this appeal be allowed; that a proper order [fol. 895] touching the security required of them to be made; that citation be issued according to law, and that a transcript, duly certified, of the record and proceedings upon which such decree was based be sent by the Clerk of the District Court to the Supreme Court of the United States, under the rules of the Supreme Court in such case provided.

Charles C. Trabue, Charles M. Seymour, Raymond T. Jackson, Solicitors for Petitioners. Trabue, Hume & Armistead, Frantz, McConnell & Seymour, Baker, Hostetler, Sidlo & Patterson, of Counsel for Petitioners.

Dated February 24th, 1938.

Appeal allowed and security for costs on appeal fixed in the sum of $500.00.

Florence E. Allen, United States Circuit Judge.

[fol. 896] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ASSIGNMENT OF ERRORS—Filed February 24, 1938

Now come the complainants and assign as errors the action of the District Court in the following particulars:

I

Complainants assign error to rulings made by the District Court in the conduct of the trial upon evidence and upon matters of procedure and practice and allege that said court erred:

1. In denying complainants' motion (filed September 20, 1937) in advance of trial for the production of data showing the design, size and method of operation of the dams and

reservoirs constructed, under construction or to be constructed by Tennessee Valley Authority (hereinafter referred to as TVA) and for the production of other like data and records.

2. In refusing to issue a subpoena duces tecum (Complainants' Exhibit No. 1), at the outset of the trial (a) for the production of corporate minutes of TVA of certain specified dates relating to its operations, plans, activities, objectives and program for the generation, transmission, distribution or sale of electric energy; (b) for the production of all corporate minutes of TVA relating to its power operations, plans, objectives and program, including all consideration of rates, consideration of contracts, consideration of construction, operation, purchase or sale of electric transmission or distribution facilities, and consideration of methods of operations and policies for the conduct of the TVA power business; (c) for the production of certain designated correspondence with municipalities now [fol. 897] being served by complainants and with Federal Emergency Administration of Public Works (hereinafter referred to as PWA) and Rural Electrification Administration (hereinafter referred to as REA) relating to the establishment of public distribution systems to distribute TVA power, the financing of municipal and rural distribution facilities to distribute TVA power, the extension of TVA service and the substitution of such service for existing service by any of the complainants; (d) for the production of TVA books and records relating to TVA activities and expenditures in promoting and advertising said defendants' power business and operations; and (e) for records showing the direction and supervision by TVA of the operation of municipal and cooperative distribution systems through which TVA electricity is distributed.

3. In ruling, in connection with the cross-examination of the complainants' witnesses Guild, Sweatt, Ford, Wisdom, Longley and Scholz, that the Court would permit cross-examination upon matters not connected with the examination in chief of the witness without making the witness as to such matters the witness of the cross-examiner, and in holding that such rule would apply to every witness thereafter called by either of the parties, the effect of which was to prevent complainants from calling any of the defendant directors or any employee of TVA or other hostile witness

as complainants' witness for limited examination on a particular subject or transaction.

4. In excluding from evidence the officially authorized and published statements of the TVA power policy and the TVA [fol. 898] power program issued to the press by TVA August 25, 1933 (Complainants' Exhibit No. 633) by which complainants sought to prove the objects, purposes and plans of TVA, which defendants were and are now executing and threatening to execute, as set forth in the bill of complaint.

5. In refusing to require the defendants to produce (a) certain TVA corporate minutes specified by dates, for the production of which a subpoena had been requested, relating to TVA's power policy and program and relating to its activities and proposed activities in the conduct of its electric operations and business, and (b) all TVA corporate minutes, for the production of which a subpoena had been requested, relating to the subjects specified in this assignment.

6. In excluding from evidence TVA corporate minutes attached to the defendants' answer (Complainants' Exhibits Nos. 701 to 720, inclusive) relating to the manner and extent of TVA's existing and planned power operations, error being assigned separately to the exclusion of each of said exhibits.

7. In ruling that statements of the defendants made before Committees of the Congress and in the First TVA Annual Report (Complainants' Exhibits Nos. 108, 109, 112, 113, 114, 115, 116, 364, 365 and 366) and offered as admissions of defendants were not admissible without offering the entire testimony of said defendants before said Committees and without offering the entire Report, including self-serving statements and declarations dealing with matters not related to or explanatory of such admissions by [fol. 899] which complainants sought to show that the primary purpose and object of the defendants was the construction and operation of a huge electric utility, the acquisition of markets of complainants for TVA power, the fostering of public ownership of electric distribution facilities and the yardstick regulation of rates of privately owned utilities including complainants, error being assigned separately to each of said rulings.

8. In excluding from evidence press releases, (Complainants' Exhibits Nos. 634 and 779 to 902, inclusive) error being assigned separately to the exclusion of each of said exhibits, each of which was officially authorized, issued and published by TVA as a part of and in performance of the public duties claimed by defendants to be imposed by the TVA Act to develop TVA's power business and regulate local electric rates, the authenticity of which was admitted and which were offered by complainants as illustrative of the advertising and publicity carried on by TVA for over four years in promoting its power business and as admissions by the defendants of the truth of the facts stated and showing in substance and being offered to show:

(a) The wholesale, retail and industrial rates adopted and published by TVA applicable to all classes of consumers of TVA power;

(b) The progressive development of the TVA generating, transmission and distribution system;

(c) The intent of TVA to construct and operate a vast Federal electric utility system to serve the markets in which the complainant companies are now serving and offering electric service;

(d) The intent of TVA to regulate the local rates charged [fol. 900] by other electric utilities, including complainants, operating in the area;

(e) The assertions by TVA that its rates include all proper costs and that the rates of its competitors are based upon improper capital write-ups, thereby representing that the rates of complainants are unreasonable;

(f) The assertions by TVA that the rates and practices of existing utilities, including complainants, are unreasonable and unfair, with the necessary and intended effect of destroying the good will of complainants and promoting TVA power business;

(g) The solicitation of business, in areas served by complainants, by advertising the availability of TVA power, by advertising the availability of public funds through PWA, REA and other agencies to finance distribution systems for sale of TVA power, and by advertising the economies and savings to be secured by purchasers of TVA power;

(h) The threat and damage to the complainants and each of them from repeated announcements by defendants of their intended acts; and

(i) The refusal of TVA to submit to State laws or regulations in the conduct of its power business.

9. In excluding from evidence advertising publications widely distributed by TVA (Complainants' Exhibits Nos. 187, 189, 190 and 635) publicizing TVA's power activities, rates, business and plans for extension of its power system, error being assigned separately to the exclusion of each of said exhibits.

10. In excluding statements and admissions made by the defendant Lilienthal appearing in his official capacity as a representative of TVA before the Committee on Interstate and Foreign-Commerce of the House of Representatives, 74th Congress, 1st Session (Complainants' Exhibit No. 364), [fol. 901] relating to the methods and practices of TVA in promoting and advertising its power business, in areas served by complainants, through press releases and other publicity means.

11. In excluding the testimony of the witnesses Stanley, Lamar, Woodall, Burleson, McWhorter, Bass, Armington, Gause, Kittredge, Mastin and Mauldin, all relating to speeches and statements made at meetings by TVA directors or representatives, by which complainants offered to show both the activities of TVA in promoting its power business in areas served by complainants and admission against interest on the part of such representatives with respect to TVA power activities, plans and facilities, error being assigned separately to each of said rulings.

12. In excluding a memorandum (Complainants' Exhibit No. 682) produced by the witness Hobson, General Manager of Electric Home & Farm Authority (hereafter called "EH&FA"), as compiled from the books and records of said EH&FA as of June 30, 1937, showing that TVA on said date was regularly making without charge collections from its electric customers on conditional sales contracts purchased by EH&FA from 42 dealers in 19 towns under the EH&FA financing plan; also in excluding published advertising material and press releases of said EH&FA or its predecessor corporation, Electric Home & Farm Authority, Inc., and correspondence with TVA (Complain-

ants' Exhibits Nos. 648 and 650-681, inclusive), by all of which complainants offered to show the activities of Electric Home & Farm Authority, its said predecessor corporation and TVA, in jointly promoting a market for the sale of electricity by TVA, error being assigned separately to the exclusion of each of said exhibits.

[fol. 902] 13. In excluding testimony of the witnesses Longley and Stanley and tabular comparisons between TVA rates and complainants' rates (Complainants' Exhibits Nos. 192 and 198) by which complainants offered to prove the difference between the rates of complainants and the lower rates established by TVA in the various classes of service and thereby to show the regulation of complainants' rates by TVA and the extent and imminence of damages to complainants' businesses, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

14. In excluding the testimony and tabular exhibits (Complainants' Exhibits Nos. 504, 505 and 506) of the witness Moreland by which complainants offered to prove that the so-called "yardstick rates" promulgated and established by TVA are below actual cost by reason of improper accounting and various subsidies, and that upon completion of the projects included in the current construction program of TVA (the TVA Unified Plan) and their capacity operation at full normal loading, the TVA rates will result in an annual deficit of not less than $9,000,000 and that, taking into account items of expense, such as taxes, which would have to be borne by a privately owned utility, the annual deficit would be much greater, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

15. In refusing to require the defendants to produce under subpoena duly requested (a) TVA corporate minutes of specified dates, relating to consideration, approval or adoption of rates for the sale of electricity, and (b) all TVA [fol. 903] corporate minutes relating to the aforesaid subjects, by all of which complainants expected to show that such rates were not fixed upon the basis of cost.

16. In excluding testimony of the witnesses Stanley, Lefferson, Newton and Moreland by which complainants sought to show that, by reason of the large quantities of power to

be produced and marketed by TVA in relation to the consumption in the territory within which such power must find a market, and by reason of the characteristics and economics of the power business, and by reason of the methods of operation and the schedule of rates adopted by TVA, TVA rates will control, regulate, measure, fix and determine the rates of private utilities including complainants at the level established by TVA, and that such control and regulation will completely supersede and nullify State regulation of all electric power rates, error being assigned separately to each of said rulings.

17. In excluding a memorandum (Complainants' Exhibit No. 339), used by a TVA representative in soliciting the business of the Yates Bleachery Company, showing the amount of annual savings under TVA rates which said Company would secure as against purchasing power from complainant, The Tennessee Electric Power Company.

18. In excluding testimony of the witnesses Newton and Moreland and a tabulation (Complainants' Exhibit No. 514), by which complainants offered to prove the damage from loss of revenue which would result to the several complainants by TVA rate regulation and, more particularly, [fol. 904] that the application of TVA rates to the business of all of the complainants, after making allowance for increased customer consumption resulting from rate reductions, would result in an annual gross revenue loss of $21,000,000 and in addition an increased annual operating cost of $5,000,000, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

19. In excluding the testimony and tabulations (Complainants' Exhibits Nos. 512 and 513) of the witness Moreland, by which complainants sought to prove that great damage will result to complainants from their facilities being rendered idle through the execution of the present TVA program, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

20. In excluding the testimony of the witnesses Robinson and Addinsell and financial charts (Complainants' Exhibits Nos. 487 to 496, inclusive), by which complainants offered to prove that since the creation and the commencement of operations of TVA and as a result thereof the complainants,

with one exception have sustained an impairment of credit possessed by them and have been unable to borrow money or secure new capital upon favorable terms either for the purpose of financing extensions and improvements or for the purpose of refunding; that except for TVA competition such companies would have been able to effect large savings in their fixed charges by refunding operations at lower interest rates; and that ability to secure credit upon reasonable terms is essential to the electric utility business, and that the destruction thereof substantially interferes with State regulation of both rates and service and specifically [fol. 905] prevents State regulatory bodies from reducing rates by reason of savings achieved through refinancing or financing extensions, on favorable terms, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

21. In excluding testimony of the witness Willkie, by which complainants offered to show the nature and extent of the efforts made by some of the complainants to protect their markets and minimize their damages by absorbing the power generated by TVA and to that end offering to purchase such power at rates to be determined by arbitration, or at rates to be fixed by competitive bidding, or, after the promulgation of the TVA wholesale rate, at the rate prescribed by TVA, and to distribute said power widely and pass all resulting savings on to consumers.

22. In excluding testimony of the witness Barry by which complainants offered to show that the acts of the defendants in taking over all or any substantial part of the market for electricity served by complainant Alabama Power Company within a 250, 150 or 100 mile radius of the hydro plants of the TVA in northern Alabama would substantially depress the value at which the United States may acquire Mitchell, Martin and Jordan Dams at the end of the periods specified in the licenses issued to the Alabama Power Company by the Federal Power Commission for the construction of said dams; and in excluding the testimony of the witness Yoder by which complainants offered to show that the acts of the defendants in taking over all or any substantial part of the market for electricity served by complainant Carolina Power & Light Company within a 250, 150 or 100 mile radius of the [fol. 906] hydro plants of TVA in eastern Tennessee and North Carolina would substantially depress the value at

which the United States can acquire the Waterville Dam and hydro plant at the end of the periods specified in the license issued to the Carolina Power & Light Company by the Federal Power Commission for the construction of said project, error being assigned separately to each of said rulings.

23. In excluding Complainants' Exhibits Nos. 629 to 632, inclusive, relating to the cost of navigation facilities required to be provided by the licensee Alabama Power Company at its dams referred to in Assignment 22, supra, error being assigned separately to the exclusion of each of said exhibits.

24. In excluding the testimony of the witness Street and a TVA questionnaire (Complainants' Exhibit No. 204) by which complainants sought to prove that TVA, as one of its activities in soliciting the business of complainants' customers, circularized municipalities, including those served by some of complainants, to secure information respecting consumption of electricity therein, the extent and quality of existing service and other like data, error being assigned separately to said ruling and to the exclusion of said exhibit.

25. In refusing to require TVA to produce, for which a subpoena had been requested (Complainants' Exhibit No. 691) surveys made of the business and customers of any of the complainants by TVA or by any individual, corporation, association or agency, public or private, and furnished to TVA as part of TVA's activities in soliciting business of customers of complainants.

[fol. 907] 26. In excluding from evidence the testimony of the witness Stanley and letters received by complainants from their customers (Complainants' Exhibits Nos. 194, 195, 200, 201, 202 and 212) by which complainants sought to show that the reasons stated by their customers for discontinuing service were to take TVA service at lower rates, to show threats by municipalities now served by complainants to substitute TVA electricity unless rates should be reduced to the level of TVA rates, and to show the adverse effect upon the complainants' customer relations, good will and businesses resulting from the TVA power program and the continuing execution thereof by the defendants, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

27. In refusing to require TVA to produce, for which subpoenas had been requested (Complainants' Exhibits Nos. 690, 691 and 693 to 697, inclusive), its correspondence with municipalities, county agents or with other Federal agencies, having to do with the supplying of TVA electricity in such municipalities or in rural areas and the promotion of the TVA power business, or having to do with the construction or purchase of transmission or distribution facilities for said purposes; or with the securing of loans or grants of Federal funds for said purposes, by which complainants sought to show the aggressive campaign of TVA to extend its power business and to acquire the markets of complainants, and the confederation between TVA and PWA to compel existing utilities, including complainants, to sell their distribution systems at inadequate prices fixed by TVA, error being assigned separately to each of said rulings.

[fol. 908] 28. In refusing to require defendants to produce, for which a subpoena had been requested (Complainants' Exhibit 690), a copy of letter from defendant Lilienthal to Mayor Overton of Memphis in which it was stated that TVA contemplated purchasing certain electric facilities of complainant, Memphis Power & Light Company, including its steam electric generating plant which, the said letter stated, would be used by TVA as a standby plant for the service of Memphis.

29. In excluding the testimony of the witness Woodall and a form of contract (Complainants' Exhibit No. 377) by which complainants sought to prove that TVA representatives have recommended to municipal officials circularization of contracts providing that signers, then customers of complainants, should purchase all their electric requirements for the next ten years at TVA rates as a means of promoting public ownership and the sale of TVA power, error being assigned separately to said ruling and to the exclusion of said exhibit.

30. In excluding the testimony of the witnesses Stanley, Street, Green and Burleson and forms of contracts (Complainants' Exhibits Nos. 193, 197 and 203) by which complainants sought to prove that contracts similar to the contract described in Assignment No. 29 for the purchase of TVA electricity or electricity at TVA rates were circularized in certain municipalities in which complainants ren-

dered service, and had been signed by customers of complainants, error being assigned separately to each of said rulings and to the exclusion of each of said exhibits.

[fol. 909] 31. In excluding letters between TVA and PWA, PWA reports and memoranda in regard to particular PWA electric distribution projects in the TVA area, PWA press releases and other documents (Complainants' Exhibits Nos. 418, 428, 429, 446 to 450, 461 to 466, 469, 480 to 483, and 637 to 647) by which complainants offered to show the National Power Policy of the Federal Government to reduce electric rates and promote public ownership and to show the cooperation between TVA and PWA in furtherance of said National Power Policy and in furtherance of the TVA power business, error being assigned separately to the exclusion of each of said exhibits.

32. In overruling successive motions filed by complainants in advance of trial and during the trial for leave to take the deposition of Harold L. Ickes, Administrator of the PWA, to show the cooperation and concert of action between the defendants and said Ickes as such Administrator in fostering the public ownership of electric distribution systems and in promoting the TVA power business, and further, for the purpose of showing the cooperation of these two agencies in seeking to compel complainant companies to sell their distribution systems at distress prices, error being assigned separately to the ruling on each of said motions.

33. In excluding exhibits to defendants' answer, offered by complainants (Complainants' Exhibits Nos. 770 to 773, inclusive) consisting of correspondence between TVA and PWA, tending to establish the cooperation between PWA [fol. 910] and TVA to acquire the business of complainants for TVA, error being assigned separately to the exclusion of each of said exhibits.

34. In excluding the testimony of the witness Smith by which complainants offered to prove the subsidies extended by TVA to its municipal customers in providing without charge accounting, promotional, advertising and other services and to show further the control and domination by TVA of such municipal operations.

35. In excluding a part of the deposition of the witness Pittman and the entire deposition of the witness Bandy by

which complainants sought to show that rural cooperative associations operating under TVA contracts are dominated, controlled and managed by TVA and are not independent agencies, error being assigned separately to each of said rulings.

36. In excluding the depositions of the witnesses Armington, Gause and Kittredge and a stenographic transcript of the organization meeting (Complainants' Exhibit No. 390) by which complainants offered to prove activities of TVA in instigating, supervising and directing the organization of rural cooperatives to distribute TVA power, including the supplying of forms for making surveys and supervisors to assist with such surveys, and the activities of REA in assisting TVA in the promotion as well as financing of such cooperatives in areas served by complainants, error being assigned separately to each of said rulings and the exclusion of said exhibit.

[fol. 911] 37. In refusing to require TVA to produce, a subpoena for which had been requested, a copy of forms of bulletins, circular letters or instruction or information sheets having to do with the method of operation, rates or policies of any municipality or cooperative association engaged in distributing TVA power, by which complainants expected to prove that TVA initiated, dominated and controlled such cooperatives in the area served by complainants.

38. In refusing to require TVA to produce, a subpoena for which had been requested (Complainants' Exhibit No. 693), its correspondence with REA from 1935 to date having to do with the organization, financing or construction of lines for rural cooperative associations, by which complainants expected to prove that REA and TVA confederated to establish cooperatives with Federal funds in the areas served by complainants in furtherance of the TVA power business.

39. In excluding letters between TVA and REA, REA press releases, and letters and reports between REA and electric membership corporations with reference to specific REA projects in the TVA area (Complainants' Exhibits Nos. 683 to 685, inclusive), by which complainants offered to prove the cooperation between TVA and REA in the promotion of non-profit electric membership corporations

to distribute TVA power, error being assigned separately to the exclusion of each of said exhibits.

[fol. 912] 40. In excluding the testimony of the witness Collier, maps (Complainants' Exhibit Nos. 329, 330, 332, 333 and 335), and a tabular statement (Complainants' Exhibit 331), by which complainants sought to complete their showing of the size and scope of the TVA power system and business, and to show the extent of the existing market in the State of Georgia and the fact that such market is now being adequately served, and that all of the municipal and industrial customers, represented by TVA in its 1937 report to the Appropriations Committee of Congress as prospective TVA customers to be served by a proposed high tension transmission loop from Chattanooga, Tennessee, to Cartersville and Cave Springs, Georgia, have been for many years customers of the Georgia Power Company, a non-complainant, and are now being served by it under unexpired long term contracts, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

41. In excluding the testimony of the witness Eaton and executive messages of the Governor of Tennessee (Complainants' Exhibits Nos. 686 and 687), by which complainants offered to prove that State laws, authorizing the formation of rural cooperative associations, authorizing such associations and municipalities to contract with TVA, authorizing the borrowing of money from PWA and REA for the purpose of engaging in the power business, and other similar laws, were prepared jointly by attorneys representing TVA, PWA and REA, and were sponsored by TVA representatives, in furtherance of the TVA power business in areas served by Complainants, error being assigned separately to each of said rulings and the exclusion of each of said exhibits.

[fol. 913] 42. In refusing to require TVA to produce, a subpœna for which had been requested (Complainants' Exhibit No. 497), a telegram from TVA to the Governor of Alabama dated January, 1935, setting forth verbatim special legislation to be passed in Alabama in the interest of TVA operations in said State.

43. In excluding the testimony of the witness McWhorter and a copy of a resolution of the City of Moulton, Ala-

bama (Complainants' Exhibit No. 498) by which complainants sought to prove TVA's activities in promoting the sale of TVA electricity through cooperatives to customers of complainants, error being assigned separately to said ruling and to the exclusion of said exhibit.

44. In refusing to require defendants to produce, a subpœna for which had been requested (Complainants' Exhibit No. 694), a copy of the public address made by defendant Lilienthal in Knoxville on or about November 17, 1933, or a copy of the report thereof sent to newspapers, in which it was stated that the dams that TVA was then constructing and proposing to construct were power dams and were being built because they would produce electric power.

45. In refusing to require defendants to produce, a subpœna for which had been requested (Complainants' Exhibit No. 692), correspondence in August and September, 1933, between defendants and the Honorable Hugo L. Black, then United States Senator from the State of Alabama, tending to show in connection with other testimony offered by complainants, that the primary purpose of TVA [fol. 914] in the construction of Wheeler and other TVA dams was the generation of electric power.

46. In excluding the statement of Major General Lytle Brown, then Chief of Engineers, United States Army, contained in the report of Hearings before the Military Affairs Committee of the House of Representatives, 72nd Congress, First Session, that the construction of a dam at Cove Creek (site of Norris Dam) would not be justified for navigation or flood control.

47. In refusing to require the production, or permit the use in cross-examination, of a report from the United States Department of the Interior, Bureau of Reclamation, to TVA, under date of November 1, 1935, embodying a study of the economic height of Norris Dam for flood control and power, and stating that such dam, which as actually constructed cost approximately $36,000,000, could be constructed for flood control alone for approximately $7,000,000, and in refusing to permit a copy of such report, although in the possession of TVA, to be filed as an exhibit for identification for the purpose of showing the preju-

dicial character of the Court's ruling, error being assigned separately to each of said rulings.

48. In excluding the testimony of the witnesses Davis, Kenney, Sharp, Alsobrook, Culbert, Kennemer, Chandler, Hennegar, Derrick, Robinson, and Jackson, by which complainants offered to prove that the annual value of agricultural crops on land that will be permanently flooded upon the completion of only the four TVA dams and reservoirs [fol. 915] at Chickamauga, Guntersville, Wheeler and Pickwick which have been built or are now under construction, is approximately twice the average annual damage caused by floods in the entire valley of the Tennessee River and its tributaries, error being assigned separately to each of said rulings.

49. In admitting in evidence over complainants' objections and without opportunity for cross-examination, self-serving declarations by or on behalf of defendants made to the Sub-Committee of the House Committee on Appropriations at its hearing in December, 1937 (Defendants' Exhibit No. 153) relating to navigation and flood control aspects of the TVA proposed dams and TVA's dealings with and treatment of privately owned utilities and methods of acquiring a market for the sale of its electricity.

50. In admitting in evidence, over complainants' objection, certain testimony of defendants' witnesses Okey and Barker, relating to floods and flood control, and Bowman, Woodward, Kimball, Floyd and Alldredge, relating to navigation or commerce, upon which subjects said witnesses were not qualified by training or experience to testify as expert or skilled witnesses, error being assigned separately to each of said rulings.

51. In permitting defendants' witnesses Brodie and Barker, over complainants' objection, to give opinion testimony of the comparative merits of the navigation channel resulting from the completion of the TVA high dam plan and that resulting from the low dam plan based upon an assumption that the low dam plan did not provide for overdepths beyond the nine foot depth, which was contrary [fol. 916] to the evidence concerning said plan and to the evidence of the practice of the Corps of Engineers in making similar stream improvements, error being assigned separately to each of said rulings.

52. In permitting, over objection of complainants, the defendants' witness Sargent to testify in his examination in chief as to the size, design, construction and operation of the Sacandaga Reservoir on Sacandaga River in the State of New York, to show by analogy that the TVA dams could be operated so as to produce power and provide flood control.

53. In refusing to permit complainants to cross-examine the defendants' witness Sargent with reference to the conflict between opinions expressed by him in his testimony and those expressed by defendants' witness Watkins on the same subject, as follows:

"Q. Well, then, you would not agree with Colonel Watkins, that if they were to release that storage in advance of the flood it would be detrimental downstream?

Mr. Fly: I object to cross examining this witness on Colonel Watkins' testimony in the Radford case. I think that is going entirely too far.

Mr. Jackson: That is the testimony in this case.

Judge Allen: The Court sustains the objection upon the ground that the question is personal. The Court will not permit questions to be asked which compare the testimony of various witnesses in the case.

Mr. Jackson: May we have our exception?"

[fol. 917] 54. In refusing to permit complainants to cross-examine defendants' witness Watkins with reference to the conflict between opinions expressed by him and those expressed by General George B. Pillsbury then Assistant Chief of Engineers on the same subject before the Committee on Military Affairs of the House of Representatives, as follows:

"Colonel, I direct your attention to the testimony of General Pillsbury, at the hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, First Session, on page 302 as follows:

Mr. Fly: I object right now. It is just another way of getting hearsay before this Court.

Judge Allen: Just a minute. In what capacity was General Pillsbury appearing?

Mr. R. T. Jackson: He was appearing in his official capacity before the Committee to advise the Congress under

his oath of office, which, as I understand it, makes his statements perfectly competent in any court.

Judge Allen: The objection is sustained. You may have your exception.

Mr. R. T. Jackson: May I complete the sentence or question for the purpose of having the record show what the question is?

Judge Allen: How long is it?

Mr. Jackson: What I want to read is 3½ lines.

Judge Allen: Yes.

Mr. Jackson: Carrying on to the other question: 'General Pillsbury: Yes—Oh yes, high dams'—this is with relation to the Tennessee Valley Authority,—'are very much more costly than the low ones. They are not better for navigation, but the justification for their large expenditure can be found only in the power that they make available.' That is the end of the quotation. And I ask you whether or not you agree with the opinion of General Pillsbury. Now, the Court sustains the objection to that question and I ask that our exception be noted."

55. In refusing to permit complainants to cross-examine the defendants' witness Bowman with reference to the conflict between opinions expressed by him and those expressed by General George B. Pillsbury, then Assistant Chief of Engineers on the same subject given as a witness for the Tennessee Valley Authority in the case of Ashwander v. Tennessee Valley Authority, and refusing to permit the question to appear in the record for the purpose of showing the prejudicial character of the ruling, as follows:

[fol. 918] "Q. You testified as to your knowledge about the difficulties of building high dams after low dams had been constructed. I invite your attention to this statement of General Pillsbury, who is a very eminent navigation engineer, is he not?

A. Yes, sir.

Mr. Fly: I object to any cross-examination on General Pillsbury's statement.

Judge Allen: The objection is sustained. The Court adheres to its ruling in that particular. You may have your exception.

Mr. Jackson: May we have our exception, and may I have my question appear in the record, so that I can show what is sought to be elicited?

Judge Allen: The record may show that Mr. Jackson desired to read from the witness testimony of General Pillsbury——

Mr. Jackson: Who they testified is an eminent navigation engineer.

Judge Allen (continuing): —who is not here and is not a party to this case, and the Court holds this is not competent examination. You may have your exception.

Mr. R. T. Jackson: And we are not permitted to show the statement which we wish to confront the witness with?

Judge Allen: You are not permitted to read into the record the testimony of General Pillsbury in another case, and you have your exception to that statement. The Court is desirous of going forward with this case. We are required by statute to expedite the case. We have made our ruling and it stands."

56. In refusing to permit complainants to cross-examine defendants' witnesses with reference to conflicts between opinions expressed by them and opinions expressed on the same subjects by other defendant witnesses in this case or by witnesses produced by TVA in Ashwander v. Tennessee Valley Authority or by officers of the Corps of Engineers of the United States Army in testifying pursuant to their official duties before Committees of the Congress, as illustrated by assignments 53 to 55, supra.

57. In admitting, over complainants' objection, testimony elicited by defendants upon cross-examination of the witnesses Cowley and Hutchinson at the taking of their depositions and relating to matters outside the scope of their direct examination, to wit, the organization of the Lincoln County Electric Membership Corporation and the Middle Tennessee Electric Membership Corporation, error being [fol. 919] assigned separately to each of said rulings.

58. In permitting defendants' witnesses Woodward, Bowman, Kimball, Wessenauer and Barker to testify over complainants' objections respecting defendants' dam construction program, plans and designs for dams, practices and plans of operations and in receiving in evidence numerous exhibits identified by said witnesses purporting to show such information and data (Defendants' Exhibits Nos. 38 to 40, inclusive, 42 to 48, inclusive, 50, 52, 66, 87, 98 and 139) without any showing or competent proof that such plans,

designs, practices or plans of operation were ever officially adopted, approved or authorized by the board of directors of TVA, although said testimony and data were inconsistent with reports and statements that had been made by TVA or its directors to Congress, error being assigned separately to each of said rulings and the admission of each of said exhibits.

59. In refusing to issue a subpoena duces tecum (Complainants' Exhibit No. 954) or require the production of the TVA budget estimate submitted to the Appropriations Committee of the Congress December 13, 1937, admitted by defendants' witness Bowman and by defendants' counsel to contain data, respecting the design, height and operation of certain of TVA's proposed dams, inconsistent with testimony given by said witness on December 16, 1937.

60. In excluding the budget estimates of TVA (Complainants' Exhibit No. 926) submitted to Congress in December [fol. 920] 1937 stating the height of the TVA dams and area and storage capacity of the TVA reservoirs constructed and proposed to be constructed, by which complainants sought to show conflicts between the data in said report and testimony relating to the same subjects given by defendants' witnesses Bowman and Kimball in this case within a few days of the date said budget estimates were so submitted.

61. In excluding all rebuttal testimony involving any matter of opinion, offered by complainants through the witnesses Knappen, Minser, Justin, Creager and Putnam, to rebut certain opinion testimony given by defendants' witnesses Woodward, Sargent, Clemens, Watkins, Kimball, Wessenauer, Bowman, Okey and Barker, which related solely to matters of defense or had been based in whole or in part upon erroneous assumptions of fact or assumptions of fact at variance with previously published TVA reports and made or assumed for the first time in connection with the testimony of defendants' said witnesses in this case, or had been based upon incomplete and inaccurate technical data or fallacious statements or applications of engineering principles, or involved unfounded and fallacious criticisms of the opinions expressed by complainants' witnesses in chief. The subject matter of rebuttal testimony offered by complainants and excluded appears more

particularly in the following separate assignments of error numbered 61a to 61d, inclusive, error being assigned separately to each of said rulings.

61a. In excluding the testimony of the witness Knappen, offered on rebuttal, by which complainants offered to prove [fol. 921] that the effect of tributary reservoirs is too problematical to be relied upon for the protection of the Mississippi Valley against floods at Cairo and below, that the most feasible method of protecting the Mississippi Valley against floods is by increasing the elevation of the levees and by channel improvements and cutoffs in the Mississippi River, that the projected construction of the dams of the TVA in the manner and to the height testified to by defendants' witnesses and their operation as testified to by such witnesses can not be depended upon to effect any reduction of the flood crest stages at Cairo, or below, in every great flood, and would not average in any event more than nine inches, that seepage through levees will not be diminished in great floods by the reduction of flood stage resulting from the operation of the reservoirs constructed by the TVA and that operation for flood control requires release of flood water at bank full stage as soon as possible, by all of which complainants sought to controvert opinion testimony given by defendants' witnesses.

61b. In excluding the testimony of the witnesses Justin and Creager, offered on rebuttal, by which complainants offered to prove that the practice testified to by TVA witnesses respecting the operation of its reservoirs would result in the operation of such reservoirs primarily for power rather than flood control; that it is contrary to all sound principles of flood control to adopt any other practice than to keep reservoir capacity intended for flood control purposes empty at all times except at times of flood; that the seasonal method of filling identifies the TVA dams as power [fol. 922] dams; and that under sound engineering practice a dam designed for flood control would have a much greater dependable flood storage capacity than is provided at Norris Dam, by all of which complainants sought to controvert opinion testimony offered by defendants' witnesses.

61c. In excluding the testimony of the witness Minser, offered on rebuttal, by which complainants offered to prove that storms might occur in the summer months in the Ten-

nessee Valley area which would produce a rainfall averaging more than eleven inches over an area of 20,000 square miles for a period of from three to five days.

61d. In excluding the testimony of the witness Putnam, offered on rebuttal, by which complainants offered to prove that the criticisms made by defendants' witnesses of the low dam program (recommended by the Chief of Engineers, House Document No. 328, 71st Congress 2nd Session, Complainants' Exhibit 105, and adopted by Congress in the Rivers and Harbors Act of July 3, 1930) for developing navigation on the Tennessee River are unfounded and based upon erroneous assumptions of fact, conclusions and computations; that the opinions given by defendants' witnesses respecting the claimed advantages to navigation of the TVA system of high dams with large lakes and excessive over-depths are unfounded and based upon erroneous assumptions of fact, conclusions and computations; that predictions of prospective traffic on the Tennessee River made by the defendants' witnesses are based upon incorrect data containing duplications; and that no substantial expendi-
[fol. 923] ture over and above the cost of said low dams on the Tennessee River can be justified as being for the benefit of navigation.

62. In denying complainants' motions to strike from the record testimony of defendants' witnesses constituting new matters which the court had denied complainants the right to rebut, which motions were directed to testimony of the revised height of Gilbertsville Dam, the storage capacity of Gilbertsville reservoir and method of operation of TVA reservoirs, which testimony was inconsistent with the defendants' statements to Congress both prior to and during the trial, error being assigned separately to the overruling of each of said motions.

63. In requiring, over complainants' objection, final argument upon the merits, presentation of requested finding of fact, and the filing of final briefs during the day following the conclusion of the taking of testimony.

64. In overruling complainants' motion to strike and disregard three briefs which were filed by defendants two days following the day of final argument without leave of Court and in violation of repeated rulings by the Court respecting the time for filing final briefs.

65. In failing to make findings of fact and conclusions of law thereon as required by equity rule 70½ and enter the same of record at or before the entering of its final decree dismissing the bill of complaint on January 25, 1938.

66. In making and entering, on the day before the final [fol. 924] day for taking appeal from the decree entered herein on January 25, 1938, an order in the form presented by the defendants, revising, rearranging and renumbering the findings of fact adopted by the Court in its order of January 24, 1938, and inserting therein argumentative headings requested by the defendants.

67. In that the foregoing rulings on matters of evidence and matters of procedure deprived complainants of a full and fair trial and constituted a denial to complainants of due process of law as a matter of procedure.

[fol. 925]

II.

Complainants assign error to the Findings of Fact made by the District Court,[1] grouping said Findings for the sake of brevity whenever said Findings contain a common error, but intending that the Assignments of Error shall be considered as applying to each Finding of Fact separately, and complainants allege that said court erred:

A

68. In making its Findings of Fact Nos. 1 to 27, inclusive, and 29 to 42 inclusive, (38 to 64, inclusive, 93 and 94),

[1]Under date of January 24, 1938, the District Court made, entered and filed its purported Findings of Fact and Conclusions of Law by adopting by number, without setting them forth, certain Findings and Conclusions theretofore submitted by the respective parties. Under date of February 23, 1938, the Court purported to make and enter an order re-numbering and re-arranging its Findings of Fact and Conclusions of Law. In the within Assignments of Error the Court's Findings are designated by the numbers of the defendants' proposed Findings, by which the Court adopted and identified said Findings in its said order of January 24, and are also designated by parenthetical references to the new numbers given to said Findings by the Court in its order of February 23, 1938.

in so far and to the extent that said Findings of Fact, or any of them, find or imply that the TVA dams constructed under construction or recommended for construction are designed primarily for, are reasonably related to or are to be operated for, the improvement of navigation and the control of floods upon the Tennessee River or Mississippi River in that each of said Findings, to the extent above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

[fol. 926] 69. In making its Findings of Fact Nos. 15, 16, 17, 33 and 34, (52, 53, 54, 69 and 70), to the effect that the dams constructed, under construction, or authorized for construction or investigation by TVA will provide a navigation channel in the Tennessee River substantially superior to that which could be provided by any alternative method of navigation improvement and will provide substantial navigation improvements on a number of tributaries of said River; that said dams would provide a navigation channel in the Tennessee River substantially superior to the navigation channel which would be provided by the system of low dams recommended by the Chief of Engineers in House Document 328, 71st Congress, 2nd Session (Complainants' Exhibit No. 105), and adopted by Congress in the Rivers and Harbors Act of July 3, 1930; and that said dams would substantially improve navigation on the Mississippi River in the low water season in that each of said Findings, in the respects above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

70. In making its Finding of Fact No. 18, (55), to the effect that the United States Army Engineers are now replacing low dams with high dams with provision for the development of power, in that said Fnding in that respect is not supported by the evidence and is contrary to the clear weight of the evidence.

71. In making its Findings of Fact Nos. 19 and 20, (56 and 57), in so far as said Findings of Fact find or imply that the construction of the TVA high dams on the Tennessee [fol. 927] River or the construction of the TVA tributary

dams are essential to or have any real, substantial or practical relation to the improvement of the Tennessee River for navigation or any of the benefits which might accrue from such improvement of the Tennessee River; in that said Findings in those respects are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

72. In making its Findings of Fact Nos. 2, 5, 23, 26, 29, 30, 32, 33 and 41, (39, 42, 60, 63, 65, 66, 68, 69 and 93), in so far and to the extent that said Findings of Fact or any of them find or imply that the TVA dams will substantially alleviate destructive floods in the Tennessee and Mississippi valleys; that each or any of the projects of TVA is designed for flood control; that reservoirs on the Tennessee River are necessary or effective to provide dependable flood control on the lower Mississippi; and that detention reservoirs on tributaries of the Tennessee River are of uncertain value for local Tennessee flood control, in that each of said Findings is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

73. In making its Finding of Fact No. 39, (75), to the effect that the TVA projects are designed primarily for the improvement of navigation and control of destructive flood waters and not for power, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

[fol. 928] 74. In making its Findings of Fact, Nos. 25 and 31, (62 and 67), in so far and to the extent that said Findings of Fact, or any of them, find or imply that the completion of the flood protection works now under construction and nearing completion on the lower Mississippi River are inadequate to pass the largest estimated probable flood or that the Mississippi River Commission or Chief of Engineers has recommended the construction of reservoirs on the tributaries of the Mississippi River as necessary or dependable for flood protection on the lower Mississippi River, in that each of said Findings is unsupported by the evidence and is contrary to the clear weight of the evidence, error being assigned to the making of each of said Findings.

75. In making its Findings of Fact Nos. 7, 8, 9, 10, 35, 36, 37, 38 and 40, and in supplementing Complainants' Proposed Finding VIII-E-36 (44, 45, 46, 47, 71, 72, 73, 74, 76 and 79), to the effect that the engineers of TVA have determined or prescribed an effective method of operation for the improvement of navigation and the control of destructive floods in the Tennessee or Mississippi River Valleys; that the method of operation contemplating the emptying of the reservoirs in advance and immediately after floods is inapplicable to the reservoirs in the TVA Unified Plan; that the completed Norris Dam has been or is being operated primarily for the purpose of providing a navigable channel in the Tennessee River of any given depth; or for the purpose of providing effective protection to the Tennessee Valley against probable destructive floods; that the proposed plan of operation will increase the value of Wilson Dam for [fol. 929] all purposes; and that the TVA projects which are completed and in operation are operated primarily for flood control, in that said Findings in the respects above stated are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

76. In making its Finding of Fact No. 27, (64), that the season of major floods in the Tennessee River basin is limited to the period from approximately the middle of December to about the first of April, that no major flood of record has occurred in the Tennessee basin outside this period, and that floods occurring outside the said season are of limited volume and duration, in that such Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

77. In making its Findings of Fact Nos. 1, 3, 6, 42 and 156, (38, 40, 43, 94 and 230), in so far and to the extent that said Findings, or any of them, find or imply that the Fontana Dam on the Little Tennessee River is not included in the current construction program of TVA, in that each of said Findings in that respect is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

78. In making its Finding of Fact No. 6, (43), as to the acre feet of flood control which is or will be provided by Gil-

bertsville, Pickwick, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris and Hiwassee Dams, or any of them, in that said Finding in that respect is not supported by the evidence and is contrary to the clear weight of the evidence.

[fol. 930] 79. In making its Findings of Fact Nos. 4, 31 and 34, (41, 67 and 70), in so far and to the extent that said Findings of Fact, or any of them, find or imply that the United States Army Engineers in House Document 328, 71st Congress 2nd Session Complainants' Exhibit No. 105), or otherwise, ever recommended the construction of high dams such as the TVA dams at their present and projected sites, or elsewhere, for the improvement of navigation on the Tennessee River, or reported that dams of such a character would be justified other than for the production of power, that said Army Engineers ever recommended in said House Document 328, or otherwise, the construction of high dams such as TVA is constructing and proposing to construct for flood control, or that the Congress in the Rivers and Harbor Act of 1930 ever adopted any recommendations contained in said House Document 328 other than the recommendations of the Chief of Engineers, or that the Mississippi River Commission or the Corps of Engineers of the War Department ever recommended the construction of dams and reservoirs, such as the TVA dams and reservoirs, as essential, necessary or dependable for the control of floods on the lower Mississippi River, in that said Findings, in the respects above stated, are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

80. In making its Finding of Fact No. 42, (94) in so far as said Finding finds or implies that upon the completion of the now scheduled construction program of TVA, the firm power capacity of the TVA hydro-electric system will be less than 660,000 kw. of continuous firm power, in that said Finding in that respect is not supported by the evidence and [fol. 931] is contrary to the clear weight of the evidence.

81. In making its Finding of Fact No. 61, (112), in so far as said Finding finds or implies that since the expiration of the contract of January 4, 1934, the transmission line owned by the Southern Tennessee Power Company has been used other than as an interconnecting line between the systems

of the Alabama Power Company and The Tennessee Electric Power Company in that said Finding to that extent is not supported by the evidence and is contrary to the clear weight of the evidence.

82. In making its Findings of Fact Nos. 68, 69, 70, 71, 73, 80, 101, 121, 124, 125 and 126, (135, 136, 137, 138, 140, 147, 173, 193, 198, 199, 200), in so far and to the extent that said Findings, or any of them, find or imply that the municipalities and cooperatives which have entered or propose to enter into the business of distributing TVA electric power, can or may carry on said business as an independent enterprise or without assistance or direction on the part of TVA, in that each of said Findings, to the extent above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

83. In making its Findings of Fact Nos. 75, 76, 77, 78 and 74, (142, 143, 144, 145 and 141), in so far and to the extent that said Findings, or any of them, find or imply that cooperative associations which have entered into the business or propose to enter into the business of distributing TVA power were formed upon the initiative of the residents of the various communities in which they are located and are [fol. 932] operated, that such cooperatives were organized without solicitation on the part of TVA, and that, in accepting the terms and conditions under which TVA contracts to sell electric power to such cooperatives, the cooperatives have done anything more than to go through the form of entering into agreements which were dictated, prepared and submitted by TVA, in that each of said Findings, to the extent above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

84. In making its purported Finding of Fact No. 93, (160), in so far and to the extent that said Finding finds as a fact or concludes as a matter of law that any of TVA's contracts for the sale of power reserves to TVA the right to limit or suspend its deliveries of power in order to engage in flood control operations, in that said Finding does not correctly set forth either the provisions of the TVA contracts referred to or the legal effect thereof.

35. In making its Finding of Fact No. 105, (177), that subsidiaries of Commonwealth & Southern Corporation and companies affiliated with the Electric Bond & Share Company own substantially all of the transmission lines and serve substantially all of the existing load centers in the area within a radius of 100 miles from each of the dams now under construction or completed, in that such Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

[fol. 933] 86. In making its Finding of Fact No. 109, (181), that the most economical use of the Authority's Dams for power supply requires interconnecting transmission lines similar to those constructed, under construction or authorized for construction by TVA in that said Finding is contrary to the clear weight of the evidence and in conflict with evidence erroneously excluded.

87. In making its Finding of Fact No. 112, (184), rejected by Judge Gore, that TVA high voltage transmission lines constructed, under construction and authorized by the Authority, do not constitute duplication of existing transmission facilities in the area but are useful and valuable additions to those facilities, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

88. In making its Finding of Fact No. 114, (186), that transmission lines substantially as constructed by TVA are essential for service to the customers now being served or under contract, and that such lines were constructed for service to TVA customers under contract and not for any strategic purpose of injuring or threatening complainants, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

89. In making its Findings of Fact Nos. 118 and 119, (190 and 191), to the extent that said Findings find or imply that advances made by TVA for construction of rural lines under so-called construction contracts between TVA [fol. 934] and cooperatives have been repaid in full and that some of the cooperatives and municipalities purchasing power from TVA have constructed many miles of rural lines without any aid or assistance, financial or otherwise, from TVA or any other Federal agency, in that such Find-

ings are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

90. In making its Findings of Fact No. 120, (192), in so far as said Finding finds that the high tension transmission lines and substations constructed by TVA are similar in character and function to the lines and substations purchased by TVA under the contract of January 4, in that said Finding in those respects is not supported by the evidence and is contrary to the clear weight of the evidence.

91. In making its Findings of Fact Nos. 134 and 142, (208 and 216), to the extent that said Findings find or imply that none of the industrial loads served by TVA in 1937 were previously served by any of the complainants, except the industrial customers in the ceded area in Alabama, and that none of the sales of power by TVA have displaced any existing load of complainants except in the ceded area, in that said Findings in those respects are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

92. In making its Finding of Fact No. 139, (213), in so far as it finds as a fact or concludes as a matter of law that [fol. 935] Commonwealth & Southern Corporation purchased from TVA any power as agent for Alabama Power Company, The Tennessee Electric Power Company, Mississippi Power Company and Georgia Power Company, or any of them, in that said Finding, to the extent specified, erroneously states the provisions of said contract and the legal effect thereof.

93. In making its Finding of Fact No. 140, (214), rejected by Judge Gore, that TVA has practiced no discrimination against complainant utility companies or other utility companies in the sale of power, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

94. In making its Finding of Fact No. 141, (215), that the power policy of TVA dated August 15, 1933, was never formally approved by the Board of Directors of the Authority nor ever put into action or followed, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

95. In making its Findings of Fact Nos. 143, 144 and 145, (217, 218 and 219), all of which were rejected by Judge Gore, in so far and to the extent that said Findings of Fact, or any of them, find or imply that TVA has not officially or otherwise encouraged and promoted public ownership of distribution systems and has not solicited business in municipalities through publicity or otherwise, in that each of said Findings, to the extent above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

[fol. 936] 96. In making its Finding of Fact No. 148, (222), which was rejected by Judge Gore, that TVA has made no effort to regulate the rates of its municipal or cooperative customers and has taken no action regarding such rates other than entering into the initial agreement establishing resale rates, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

97. In making its Findings of Fact Nos. 154 and 155, (228 and 229), rejected by Judge Gore, in so far as said Findings, or either of them, find that in marketing the power generated at its dams TVA has not engaged in any solicitation of customers or misrepresentation in procuring contracts with municipalities, cooperatives, or other purchasers of power, and that TVA has not acted and has not conspired with municipalities or other prospective purchasers of power, in that each of said Findings is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

98. In making its Finding of Fact No. 157, (231), that in 1939 and 1943 utilities within ready transmission distance of TVA's generating facilities will require additional generating capacity as specified therein, and that the several complainants and their affiliated companies will require additional capacity as specified therein, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

99. In making its Findings of Fact Nos. 160 and 161, [fol. 937] (234 and 235), in so far as said Findings find or imply that there are unserved potential markets for the

electric energy which may be generated by TVA, not involving any displacements of the existing loads of complainants, including new industries and unserved rural areas, and that there is little area-wide rural electrification supplied by complainants in the territory served by them, in that each of said Findings, to the extent above stated, is not supported by the evidence and is contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

100. In making its Findings of Fact Nos. 163 and 164, (237 and 238), in so far as said Findings, or either of them, find or imply that there is likely to be a power shortage in the area within transmission distance of the projects of TVA without the generating capacity of the TVA power system, in that said Findings, to that extent, are not supported by the evidence and are contrary to the clear weight of the evidence, error being assigned separately to the making of each of said Findings.

101. In making its Finding of Fact No. 174, (248), that the generating and transmission facilities of the complainants now devoted to service of municipalities may be devoted to serving the growth in other loads should there be any loss of load resulting from the carrying out of existing TVA contracts for supplying electric service in municipalities, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

102. In making its Finding of Fact No. 175, (249), which [fol. 938] was rejected by Judge Gore, that the injury to the complainants resulting from an extension of rural lines by TVA or municipalities or cooperatives using TVA power for the purpose of serving rural areas adjacent to the lines of the complainants would be negligible, in that said Finding is not supported by the evidence and is contrary to the clear weight of the evidence.

103. In making its Finding of Fact, not designated by number in the order of January 24, 1938, (No. 125 in the order of February 23, 1938), in so far as it finds that the record does not establish that complainants, or any of them, will have their business destroyed by, nor will become bankrupt because of TVA competition, in that such Finding is not supported by the evidence and is contrary to the clear

weight of the evidence and in that it is in conflict with evidence erroneously excluded.

B

104. In so far as the Court by its order of January 24, 1938, denied the Findings of Fact submitted by complainants.

105. In failing and refusing to make complainants' requested or proposed Findings of Fact numbered VII (29, 30); VII-A (1, 2); VIII-B (1); VIII-C (1); VIII-D (1, 11, 12, 13, 16, 17, 18, 19); VIII-E (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30, 32, 33, 34, 35); VIII-F (1, 2, 3, 5, 7, 8, 9, 10, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57); VIII-G (1); IX-A (1, 2, 3, 4½); IX-B (5, 6); IX-C (7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 16¼, 16½); IX-D [fol. 939] (18, 21, 21½); X-A (3, 4); X-B (10); X-C (10, 11, 12, 13); X-D (14); X-E (20, 21, 22, 23); X-F (24, 25, 25½, 26, 26½, 27, 28); X-G (29, 30, 31, 32); XI (1, 2, 3, 4, 5, 6, 7, 8, 9, 9½, 10); XII (a, b, c, d, e); all of which were in accordance with the manifest weight of the evidence, error being assigned separately to the refusal to make each of said proposed or requested findings.

105a. In failing and refusing to find in accordance with the manifest weight of the evidence that the completion of the dams and reservoirs on the Tennessee River and its tributaries now constructed, under construction or planned by TVA, together with their appurtenant power houses and generating facilities, interconnected to form a huge power pool, will provide for the TVA power system an initial power installation of 697,000 kilowatts and an ultimate power installation of 1,922,000 kilowatts with a continuous firm power capacity of 660,000 kilowatts, and under the load factor of 60 percent prevailing in the area of present and planned TVA operations, will provide in a dry year a firm power capacity of 1,100,000 kilowatts and an annual firm energy output of 5,780,000,000 kilowatt-hours and 1,887,000,000 kilowatt-hours of secondary energy and will provide, in an average water year, a total available energy of 10,000,000,000 kilowatt-hours; and that the TVA power system will require and include a vast transmission system composed of from 12,000 to 15,000 miles of transmission lines blanketing the entire State of Tennessee and large

parts of the States of Mississippi, Alabama, Georgia, North Carolina, Virginia, West Virginia and Kentucky.

105b. In failing and refusing to find in accordance with the uncontroverted evidence that in 1936 the total amount [fol. 940] of electricity generated by public utilities for public use was only a little over 1,000,000,000 kilowatt-hours in the State of Tennessee, approximately 3,700,000,000 kilowatt-hours in the States of Tennessee, Alabama, and Mississippi, and about 9,300,000,000 kilowatt-hours in the States of Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama and Mississippi being the seven States of which any part lies within the Tennessee River basin.

105c. In failing and refusing to find in accordance with the manifest weight of the evidence that in 1936 the total direct and indirect sales of all privately and publicly owned electric utilities other than TVA within a 100 mile radius of any of the dams presently constructed, under construction or planned by TVA was 3,661,000,000 kilowatt-hours and within a 150 mile radius of said dams 7,162,000,000 kilowatt-hours and that the territory now being served by each of the complainant companies lies wholly or in large part within a 150 mile radius of said TVA dams.

105d. In failing and refusing to make any finding of fact relating to regulation of complainants' rates and in failing and refusing to find in accordance with the clear weight of the evidence that upon the completion and operation of the dams and reservoirs on the Tennessee River and its tributaries now constructed, under construction or planned by TVA, together with their appurtenant power houses, generating facilities and transmission system, there will be regulation by TVA of the rates of all of the privately owned electric utilities now doing business in the area in which said TVA power system will make TVA power available for sale, including the rates of the complainant companies, at a level fixed and determined by TVA.

[fol. 941] III

Complainants assign error to the Conclusions of Law made by the District Court,[1] grouping said Conclusions for

[1] The Court's Conclusions of Law bear the same numbers in the order entered on January 24, 1938 and in the order entered on February 23, 1938, except that the Con-

the sake of brevity when said Conclusions contain a common error, but intending that the Assignments of Error shall be considered as applying to each Conclusion of Law separately, and complainants allege that said court erred:

106. In making its Conclusion of Law No. 1, holding that the Tennessee Valley Authority Act is a valid exercise of the constitutional powers of Congress in that under the facts established in this record (a) said Act is not authorized by any power delegated to the Congress under the Federal Constitution and contravenes the Fifth, Ninth and Tenth Amendments of the Constitution, and (b) said Act delegates legislative power in contravention of Article I, Section 1, Article II, Section 8, Clauses 1, 2 and 18, and Article II, Section 1 of the Constitution of the United States.

107. In making its Conclusions of Law Nos. 2 and 3 holding in substance that the acts of the TVA and its directors complained of and established by the evidence are within the powers conferred upon them by the TVA Act, and that the portions of the statute granting such authority are within the constitutional powers of Congress, in that (a) some of the acts complained of and established by the evidence are not authorized by the terms of the Tennessee Valley Authority Act, and (b) such portions of the statute [fol. 942] as purport to authorize any of said acts are beyond the powers of the Federal Government under the Constitution and prohibited by the Fifth, Ninth and Tenth Amendments thereof, and constitute delegations of legislative power in contravention of Article I, Section 1, Article II, Section 8, Clauses 1, 2 and 18, and Article II, Section 1 of the Constitution of the United States, error being assigned separately to the making of each of said Conclusions.

108. In making its Conclusion of Law No. 13, holding that by the TVA Act Congress has created the TVA as an agency of the Federal Government, has expressly authorized it to construct each of the dams constructed, under construction or under investigation for construction on

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clusion of Law unnumbered in the order of January 24, is No. 62 in the order of February 23 and in these Assignments of Error.

the Tennessee and its tributaries and has from time to time authorized the construction of each dam constructed or under construction by appropriate appropriation statutes, in that Congress has no constitutional power to create TVA or authorize the construction of said dams under the record in this case.

109. In making its Conclusions of Law Nos. 5, 10 and 12, holding that under the power to regulate and promote interstate commerce the Federal Government has the power to improve the navigable character of the Tennessee River by means of the construction of dams and reservoirs upon the Tennessee and its tributaries, to construct all dams in the Tennessee River and its tributaries that are reasonably related to the improvement of the navigable character of the Tennessee or any of its navigable tribu- [fol. 943] taries, to authorize the construction of each of the dams constructed, under construction or under investigation for construction by TVA upon the Tennessee River and its tributaries and that the selection or determination of the particular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents, in that Congress has no constitutional power to construct or to authorize an agency of the Federal Government to construct dams and reservoirs upon a navigable stream or upon its tributaries where the improvement of navigation and the promotion of interstate commerce is merely collateral or incidental to some other object outside the constitutional authority of Congress, or where some separate and distinct project not within the Federal power is inextricably intermingled with the improvement of navigation or interstate commerce, and any attempt so to do, on the part of Congress or on the part of any Federal agency, violates the powers reserved to the people and the States under the Ninth and Tenth Amendments, error being assigned separately to the making of each of said Conclusions.

110. In making its Conclusions of Law, Nos. 6, 7, 8, 9 and 11, in so far as said Conclusions, or any of them, hold that the Federal Government, under the powers delegated to it by the Federal Constitution, has the power to authorize the construction of any of the dams and reservoirs constructed, under construction or planned for construction by TVA for the control of floods on the Tennessee River

or the Mississippi River, in that the power of Congress under the Constitution in the matter of flood control is [fol. 944] limited to the protection of navigable channels and navigation on navigable streams, error being assigned separately to the making of each of said Conclusions.

111. In making its Conclusions of Law Nos. 14, 15, 16 and those parts of Conclusions of Law Nos. 17, 18 and 22 holding that the water power created as a result of the construction of the dams authorized by the TVA Act is the property of the United States and that Congress has the constitutional power to authorize and has authorized the installation and operation of power houses, generators and other ancillary facilities, in that the water power being produced and to be produced at said dams is not incidental to the improvement of the Tennessee River for navigation or to the exercise of any other constitutional power, error being assigned separately to the making of each of said Conclusions.

112. In making those parts of its Conclusions of Law Nos. 17 and 18 holding that electric energy generated at any of the dams authorized by the TVA Act may be disposed of by Congress or its authorized agency in any manner which the Congress, in the exercise of its discretion, may select as the reasonable means of such disposition, in that said electric energy will not be constitutionally produced and title thereto will not vest in the Federal Government, and in that Congress is without power to select a method for the disposition of said electric energy as government property, whether or not lawfully acquired or produced, which invades the reserved rights of the States or takes property without due process of law, in violation [fol. 945] of the Fifth, Ninth or Tenth Amendments of the United States Constitution, error being assigned separately to the making of each of said Conclusions.

113. In making its Conclusions of Law Nos. 19 and 20, holding that the TVA Act directs the TVA to operate all the dams constructed by it primarily in the interests of navigation and flood control, but expressly authorizes TVA to generate electric energy at said dams in so far as this can be done consistently with the interests of navigation and flood control and that the method of operation of the dams, constructed and under construction, followed and

proposed to be followed is authorized by the TVA Act, in that (a) the TVA Act requires TVA so to construct and operate its facilities as to produce the maximum amount of electric power which can be generated, and (b) said TVA Act is unconstitutional for the reasons stated in Assignment No. 106, error being assigned separately to the making of each of said Conclusions.

114. In Making its Conclusions of Law Nos. 21 to 29, inclusive, and 32, holding that under the power to dispose of property of the United States Congress has the constitutional power to authorize, and by the TVA Act has authorized, TVA to construct or acquire transmission lines leading from dams authorized by the TVA Act to municipalities, cooperatives, large industrial customers, other purchasers of power and the surrounding market area, to sell electric energy generated at any of the dams authorized by the TVA Act to wholesale customers under long term contract, or direct to rural customers, inhabitants of small towns and villages and industrial customers [fol. 946] and that Congress has authorized the TVA to own and operate transmission and rural distribution lines to transmit and sell electric energy generated at any of the dams constructed under the authority of the TVA Act, in that, among other things, (a) the Federal Government is without constitutional authority to engage in the purely proprietary, competitive business of transmitting, distributing and selling electricity, (b) the right to dispose of Government property, even where lawfully acquired, is limited by the powers and rights reserved to the States and the people by the Ninth and Tenth Amendments to the Federal Constitution, and (c) any use of the power to dispose of Government property for the purpose or with the direct effect of regulating intrastate electric rates, is unauthorized by the Federal Constitution and in violation of the Fifth, Ninth and Tenth Amendments, error being assigned separately to the making of each of said Conclusions.

115. In making its Conclusion of Law No. 30, holding that Congress has directed TVA by the TVA Act to give preference in the sale of power to States, counties, municipalities and cooperatives, the errors being those specified in Assignment No. 114, supra, and the further error that there is no constitutional authority for the Federal

Government in the disposition of its property, whether validly acquired or otherwise, to favor one group of citizens over any other group of citizens or to regulate the conduct of an intrastate business so that it shall be carried on by public or non-profit corporations or associations.

116. In making its Conclusion of Law No. 31, holding that the TVA Act validly authorizes TVA to construct rural transmission lines for service to farmers or coopera- [fol. 947] tives and to sell such lines to municipalities or such cooperatives, the errors being those specified in Assignments Nos. 114 and 115, supra, and the further error that there is no constitutional power in the Federal Government under the facts of this case to construct electric transmission facilities with the view to selling the same to municipalities or non-profit organizations.

117. In making its Conclusion of Law No. 33, holding that the TVA Act validly authorizes the Board of Directors of TVA to fix the rates at which electric energy generated at the TVA dams may be sold and validly vests discretion in such Board in fixing such rates and that the exercise of such discretion is not subject to judicial review, in that, among other things, (a) said Act, and particularly Sections 9a and 14 thereof, requires that electric energy produced by TVA shall be sold at rates which will make the TVA "power project self-supporting and self-liquidating"; (b) the Federal Government in any event has no constitutional authority to engage in the business of generating, distributing and selling electricity at rates arbitrarily fixed below cost with the purpose or effect of preferring any section of the nation over other sections of the country; (c) the Federal Government in any event has no constitutional authority to engage in the business of offering electricity for sale generally in the several states, or any one of them, at rates substantially lower than existing rates fixed by state regulatory bodies in said states or state or, as in the case of TVA, below the cost of production for the purpose or with the direct effect of regulating local electric rates, including those of complainants and so to do violates the Fifth, Ninth and Tenth Amendments; and (d) the scope of such discretion as resides in Congress in fixing the price at which government [fol. 948] property shall be sold and the scope of any stat-

utory discretion delegated to TVA by the TVA Act is, in any event and particularly under the circumstances of this case, subject to judicial review.

118. In making its Conclusions of Law Nos. 34 to 38, both inclusive, holding that under the power to dispose of property the Government may attach to the sale of its property such conditions as it may deem reasonable to insure the widespread diffusion of the benefits of such property and the avoidance of monopolistic control of such property and that Congress has constitutionally authorized the TVA to include in any contracts for the sale of power generated at any of the TVA dams provisions relating to the rates at which such power is to be resold to ultimate consumers and provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power, in that such provisions and regulations, among other things, are unauthorized by any power granted to the Federal Government under the Constitution of the United States and violate the Fifth, Ninth and Tenth Amendments thereto, error being assigned separately to the making of each of said Conclusions.

119. In making its Conclusions of Law Nos. 39 and 40, holding that the TVA Act does not contain any provisions regulating or attempting to regulate the rates or operations of the complainants or other private utilities, and that sale of power by TVA in accordance with the provisions of the statute at rates fixed and determined by the Board of Directors does not constitute regulation of the rates or businesses of the complainant companies or other private utilities, in that (a) the statutory purpose to regulate local electric rates of existing utilities in the TVA area, including complainants, appears on the face of the statute, and (b) the facts in the record establish that the acts and threatened acts of the defendants will regulate the rates and businesses of the existing utilities, including complainants, all in violation of the Fifth, Ninth and Tenth Amendments to the Federal Constitution, error being assigned separately to the making of each of said Conclusions.

[fol. 949] 120. In making its Conclusions of Law Nos. 42 and 43 holding that the municipalities and cooperatives pur-

chasing power at wholesale from TVA are validly authorized under the statutes of the several states in which they are located, to purchase said power, to contract with TVA with respect to said power, to engage in the business of selling such power at retail, to enter into contracts with TVA containing provisions agreeing upon resale rates of such power and provisions relating to bookkeeping and accounting methods to be followed by such purchasers and that such provisions do not constitute any unlawful delegation or abdication of sovereign power by the municipalities or cooperatives, in that (a) a State, acting either directly or through any agency created by the State, may not validly surrender its police powers to an agency of the Federal Government or by statute, contract or other State action extend the constitutional powers of the Federal Government; and (b) some of the States in which complainants do business and into which TVA threatens immediately to extend its power business do not have statutes of the character described by the Court, error being assigned separately to the making of each of said Conclusions.

121. In making its Conclusions of Law Nos. 41 and 46, holding that the municipalities and cooperatives purchasing power at wholesale from TVA are subject to regulation by the states and that under the laws of the several states in which the municipalities and cooperatives purchasing power at wholesale from TVA are located, the rates at which the power purchased from TVA may be resold by the municipalities and cooperatives remain subject to the police power of the states, if and when the states may elect to [fol. 950] exercise such power, in that, among other things, (a) a State, acting directly or through any agency created by the State, may not surrender its police powers to the Federal Government or, by statute, contract, or any other means, extend the constitutional powers of the Federal Government temporarily, for a period of years, or permanently; (b) TVA, if a valid and existing Federal Agency, is not subject to State police power or State regulation; and (c) in any event, under the facts of this case the states are precluded by economic compulsion from recapturing such state police or other reserve powers now being exercised by TVA, error being assigned separately to the making of each of said Conclusions.

122. In making its Conclusions of Law Nos. 47 and 48, holding that cooperatives and municipalities purchasing power at wholesale from TVA are, under the laws of the several states in which they are located, independent corporate entities or public agencies and not subsidiaries or instrumentalities of TVA, in that, under the facts of this case, said municipalities and cooperatives are mere agencies or instrumentalities of TVA for the distribution of TVA power, error being assigned separately to the making of each of said Conclusions.

123. In making its Conclusion of Law No. 44, holding that the provisions of the contracts between TVA and the municipalities and cooperatives purchasing power at wholesale from it relating to the methods of keeping accounts and the rates at which the power so purchased from TVA is to be resold do not constitute any invasion of the reserved powers of the States under the Tenth Amendment to the Constitution of the United States.

[fol. 951] 124. In making its Conclusion of Law No. 45, holding that the provisions in the contracts between TVA and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which such power is to be resold do not in law amount to regulation either of the rates of said wholesale purchasers or of the rates of private companies competing with such wholesale purchasers, in that on the face of the TVA Act and under the facts of this case, the regulation of resale rates of municipalities and cooperatives purchasing power at wholesale from TVA is an integral part of a statutory and administrative scheme for regulating the rates and service of existing utilities, including complainants, in the TVA area.

125. In making its Conclusions of Law Nos. 49 and 51, holding that the municipalities and cooperatives purchasing power at wholesale from TVA are authorized under the laws of the several states in which they are located to engage in the business of selling and distributing electric energy at retail and have the legal right to compete with the complainants in such business, and that any damage or injury resulting or threatened to the complainants, or any of them, from such competition does not result in any legal injury to, or invade any legal right of, any of complainants

and does not give rise to a cause of action on behalf of complainants, in that (a) the injury to the complainants is the direct result of the unlawful action of the defendants in inducing by subsidies or in otherwise promoting the acquisition and operation of electric distribution facilities on the part of municipalities or cooperatives as a means of acquiring a market or acquiring control of the electric power [fol. 952] business; and (b) the control of resale rates by TVA is part of the statutory and administrative scheme to regulate all local electric rates, including those of complainants, error being assigned separately to the making of each of said Conclusions.

126. In making its Conclusion of Law No. 50, to the extent that said Conclusion holds that none of the complainants have any exclusive franchise in any of the various municipalities and communities in which they operate, in that said Conclusion to that extent is not supported by and is in direct conflict with Findings of Fact adopted by the Court, [complainants' proposed Finding No. VI-28, (No. 28 in the order of February 23, 1938), and defendants' proposed Finding No. 50, (omitted entirely from the order of February 23, 1938)].

127. In making its Conclusion of Law No. 52 in so far as said Conclusion holds that under the facts of this case complainant companies have no standing or right to challenge the right of the municipalities and cooperatives to sell and distribute electric energy produced by TVA in competition with said companies.

128. In making its Conclusions of Law Nos. 53 and 54, holding that the complainants have no standing or right to challenge the legal right of TVA to sell or to challenge the validity of the contracts under which TVA is selling or has agreed to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in competition with complainants, error being assigned separately to the making of each of said Conclusions.

[fol. 953] 129. In making its Conclusions of Law Nos. 55 and 56, holding that complainants have failed to prove any damage in fact, actual or threatened, resulting from sales of power by TVA directly to rural or industrial customers not previously served by any of the complainants, in that said

purported Conclusion is a finding of fact not supported by the evidence and contrary to the clear weight of the evidence, and further holding that complainants have no standing or right to challenge the legal right of TVA to make sales directly to rural or industrial customers not previously served by any of the complainants, in that such sales are an invasion of valuable property rights of complainants in the normal growth and expansion of their businesses and constitute an integral part of the statutory and administrative scheme to regulate the rates of complainants, error being assigned separately to the making of each of said Conclusions.

130. In making its Conclusion of Law No. 57, holding that the complainants have no legal right to be free from competition and have no legal standing or right to challenge the statutory powers of TVA to generate, transmit or sell electric energy in competition with them, or some of them, in that (a) each of complainants has a legal right to be free from the competition of any person, corporation or agency which does not hold a franchise or has not complied with all of the laws of the states regulating the carrying on of such business; (b) TVA has not complied with the laws of the several states regulating the right to engage in the business of generating, transmitting and distributing electricity; and (c) TVA has no right to engage in said business [fol. 954] for the reasons specified in Assignments Nos. 114, 115 and 116.

131. In making its Conclusion of Law No. 58, holding that under the decision of the Supreme Court in the Ashwander case, the right of TVA to acquire and operate the facilities in Alabama transferred to it under the contract of January 4 is settled and cannot be questioned in this case, in that said facilities and their operation have now been incorporated as an integral part of a scheme for the development of a vast federal electric utility and for the regulation of rates and services of existing utilities, including complainants, all of which is unauthorized by any power granted to the Federal Government under the Federal Constitution and is in contravention of the Fifth, Ninth and Tenth Amendments thereto.

132. In making its Conclusion of Law No. 59, holding that Section 7 of the contract of January 4 confers upon TVA

the contractual right to serve municipalities located within the ceded area in Alabama, and that the Alabama Power Company, a party to that contract, has no standing to question the right of TVA to engage in such service, in that (a) Section 7 of said contract in this respect merely provides that the power companies, including Alabama Power Company, will not during the period of the contract sell electric energy to customers not then served by the Alabama Power Company directly or indirectly during the period of the contract; (b) said contract of January 4 has long since expired; and (c) neither the State of Alabama nor [fol. 955] the Alabama Power Company has any power to cede any part of the State of Alabama to the Federal Government or any agency thereof for any purpose.

133. In making its Conclusions of Law Nos. 60 and 61, holding that Section 7 of the contract of January 4 confers upon TVA the right to sell power to any municipality owning and operating its own distribution system and not purchasing power from utilities party to that contract, and to any other customers not served by the parties to that contract as of January 4, 1934, up to a maximum aggregate demand of 2500 kw., and that complainants Alabama Power Company, Mississippi Power Company and The Tennessee Electric Power Company, as parties to said contract, have no right to challenge sales of power by TVA to such municipalities or customers pursuant to the rights so conferred, in that (a) said Section 7 provided in this respect only that during the contract period nothing contained in said contract should be construed to prevent TVA from selling electric energy outside of the designated counties to municipalities not then being served directly or indirectly by the power companies or to customers not then served by the power companies outside of the counties named in the contract up to a total demand of 2500 kw.; (b) said contract of January 4, 1934, has long since expired; and (c) none of the States of Mississippi, Alabama, or Tennessee, or of the power companies named, has any power to authorize, by contract or otherwise, the TVA to engage in the business of distributing electric power in any of said States, error being assigned separately to the making of each of said Conclusions.

[fol. 956] 134. In making its Conclusion of Law, not designated by number in the order of January 24, 1938,

(No. 62 in the order of February 23, 1938), in so far as it holds that under the record the complainants have no legal right within the areas served by them respectively to exclude competition by TVA, the distribution of TVA power, the taking of potential customers, or interference with the normal growth and expansion of the businesses of said complainants.

135. In entering its final Decree, dated January 25, 1938, dismissing the Bill of Complaint and denying all of the prayers for relief contained therein, in that the evidence as a whole failed to support the Findings of Fact made and entered by the Court, the Conclusions of Law drawn therefrom and the Decree based thereon.

Wherefore, complainants pray that the said Decree, entered January 25, 1938, be reversed and for such other and further relief as to the Court may seem just and proper.

Charles C. Trabue, Trabue, Hume & Armistead, Charles M. Seymour, Frantz, McConnell & Seymour, Raymond T. Jackson, Baker, Hostetler, Sidlo & Patterson, Counsel for Complainants.

Dated February 24, 1938.

[fol. 957] In United States District Court

(Caption omitted)

Order Allowing Appeal—Filed February 24, 1938

The complainants in the above entitled cause, and each of them, having prayed for the allowance of an appeal in this cause to the Supreme Court of the United States from the final decree made and entered in the above entitled cause by the District Court of the United States for the Eastern District of Tennessee, Northern Division, on the 25th day of January, 1938, and from each and every part thereof, and having presented their petition for appeal, assignment of errors, prayer for reversal and statement as to jurisdiction pursuant to the statutes and the rules of the Supreme Court of the United States in such case made and provided;

It is now here ordered that an appeal be, and the same is hereby allowed to the Supreme Court of the United States from the District Court of the United States for the Eastern District of Tennessee, Northern Division, in this cause, as provided by law, and it is further ordered that the clerk of the said District Court shall prepare and certify a transcript of the record, proceedings, and judgment in this cause and transmit the same to the Supreme Court of the United States, so that he shall have the same in said court within sixty (60) days of this date.

And it is further ordered that security for costs on appeal be fixed in the sum of $500.00.

Florence E. Allen, U. S. Circuit Judge.

Dated Feb. 24th, 1938.

[fols. 958-960] Bond on appeal for $500.00, approved and filed February 24, 1938, omitted in printing.

[fol. 961] Citation, in usual form, showing service on Wm. C. Fitts and James L. Fly, filed February 24, 1938, omitted in printing.

[fol. 962] IN UNITED STATES DISTRICT COURT

(Caption omitted)

COMPLAINANTS' EXCEPTION TO ORDER ON FINDINGS OF FACT AND CONCLUSIONS OF LAW—Filed March 3, 1938

Come the complainants and except to the Court's order of February 23, 1938, for the following reasons, among others, viz:

(1) Refusing to adopt complainants' draft of findings of fact and conclusions of law in accordance with the Court's order of January 24, 1938, which was prepared and submitted pursuant to the Court's suggestion to counsel.

(2) Adopting the draft of findings of fact and conclusions of law submitted by defendants, revising, rearranging, and renumbering the findings of fact adopted by the Court

in its order of January 24, 1938, and inserting therein argumentative headings requested by the defendants.

(3) Ordering that the findings of fact and conclusions of law, which were filed February 23, 1938, the day before the time for applying for an appeal expired, be entered as of January 24, 1938.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles M. Seymour, Solicitors for Complainants.

[fol. 963] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER FOR TRANSMISSION OF ORIGINAL EXHIBITS—Filed April 4, 1938

The written motion of the Appellants for the transmission of certain original exhibits by the Clerk of the United States District Court for the Northern Division of the Eastern District of Tennessee to the Supreme Court of the United States having come on to be heard,

It is Ordered and Decreed by the Court that the Clerk of this Court, upon request to do so in the Praecipe, may and he hereby is directed to remove from the records and files of this Court and transmit as original to the Supreme Court of the United States in connection with the Appeal heretofore taken, the following maps, charts, documents, etc.:

1. Complainants' Exhibit Nos. 7, 12, 27, 29, 33, 37, 41, 45, 49, 54, 74, 82, 89, 98, 101, 105, 105c, 105d, 106-109 inclusive, 112-116, inclusive, 182, 183, 184, 187, 188, 189, 190, 199, 205-210 inclusive, 266, 320, 321, 326-330 inclusive, 332, 332a, 333a, 334, 335a, 336, 342-346 inclusive, 350, 351, 352, 354, 357, 358, 359, 361, 362, 364, 365, 366, 372, 409-411 inclusive, 485, 487-496 inclusive, 503, 904, 905, 907, 909, 912-915 inclusive 925, 933, 936 and 942.

2. Defendants' Exhibit Nos. 31, 32, 36, 37, 38, 40, 44, 49, 50, 55-64 inclusive, 66, 72-81 inclusive, 83, 86, 87, 89-93 inclusive, 95-101 inclusive, 104, 109, 110, 113, 116, 118-125

inclusive, 130, 132, 136a, 136b, 137, 138, 153, 154, and Exhibit "K" to Defendants' Answer.

Approved for entry.
(S.) Florence E. Allen, U. S. Circuit Judge. ——
——, U. S. District Judge. ——, U. S. District Judge.

O. K. James Lawrence Fly, Solicitor for Appellees.
O. K. Charles D. Snepp, Sol. for Appellants.

[fol. 964] In United States District Court

(Caption omitted)

Notice of Lodgment of Statement of Evidence—Filed April 7, 1938

Notice is hereby given that Complainants and Appellants have prepared and have this day lodged with the Clerk of the United States District Court for the Eastern District of Tennessee, Northern Division, in accordance with Equity Rule 75, a statement of all the evidence taken and given on the trial of the above cause and that on April 18, 1938, at 10:00 o'clock, A. M., in the Federal Building at Knoxville, Tennessee, or at such other time and place as may be fixed by the Court, Complainants and Appellants will ask the Court to approve and allow the statement of evidence so prepared and lodged.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Complainants and Appellants.

Service of the foregoing Notice this 7th day of April, 1938, is hereby admitted and acknowledged.

James Lawrence Fly, Solicitor for Defendants and Appellees.

[fol. 1] IN UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE, NORTHERN DIVISION

In Equity. No. 228

THE TENNESSEE ELECTRIC POWER COMPANY, a Maryland Corporation; Franklin Power & Light Company, a Tennessee Corporation; Memphis Power & Light Company, a New Jersey Corporation; Southern Tennessee Power Company, a Delaware Corporation; Birmingham Electric Company, an Alabama Corporation; Mississippi Power Company, a Maine Corporation; Appalachian Electric Power Company, a Virginia Corporation; Carolina Power & Light Company, a North Carolina Corporation; Tennessee Public Service Company, a Maine Corporation; Holston River Electric Company, a Tennessee Corporation; Alabama Power Company, an Alabama Corporation; Kentucky & West Virginia Power Company, Inc., a Kentucky Corporation; Kingsport Utilities, Incorporated, a Virginia Corporation; Kentucky-Tennessee Light & Power Co., a Kentucky Corporation; West Tennessee Power & Light Company, a Florida Corporation; Mississippi Power and Light Company, a Florida Corporation; East Tennessee Light & Power Company, a Virginia Corporation; Tennessee Eastern Electric Company, a Massachusetts Corporation, Complainants,

v.

TENNESSEE VALLEY AUTHORITY, a Body Corporate, Created by an Act of Congress Approved May 18, 1933; Arthur E. Morgan, Individually and as an Executive Officer and Director of Tennessee Valley Authority; Harcourt A. Morgan, Individually and as an Executive Officer and Director of Tennessee Valley Authority; and David E. Lilienthal, Individually and as an Executive Officer and Director of Tennessee Valley Authority, Defendants.

Statement of Evidence under Equity Rule No. 75

[fol. 2] Now come the complainants in the above entitled cause and, pursuant to Equity Rule No. 75, as last amended, present to the Court this narrative statement of the evidence taken on the trial of said cause.

APPEARANCES

The following appearances were entered: Messrs. Newton D. Baker, Raymond T. Jackson, W. H. Bemis, S. D. L. Jackson, Jr., Chas. M. Seymour, Chas. D. Snepp, Chas. C. Trabue, Warren Daane, Lawrence N. Spears, and Walter Bouldin, as Counsel for Complainants; Messrs. James L. Fly, John Lord O'Brian, William C. Fitts, H. H. Fowler, and Herbert Marks, as Counsel for Defendants.

The Court announced that it had considered the petition for rehearing the motion to take the deposition of Secretary Ickes and had decided to adhere to the decision made by the Court on September 27, 1937, denying complainants' motion to take such deposition. The Court stated further that if, during the course of the case, a new state of facts should develop, permission would be given complainants to renew their original motion. An exception was noted by complainants and granted.

The Court then took under advisement motions made by the defendants to dismiss, such motions having been overruled by the District Court and such decisions having been affirmed by the Circuit Court of Appeals.

Evidence for the Complainants

At the conclusion of the opening statements of counsel, the complainants made application for the issuance of a subpoena duces tecum, addressed to the defendant TVA, to furnish the documents listed therein. Counsel advised the Court that defendants had agreed to furnish copies of all contracts described in paragraph 2 of the subpoena and [fol. 3] the maps of transmission and distribution lines and substations described in paragraphs 8 and 9 of the subpoena, and that therefore such items need not be considered. Thereupon the Court stated, with reference to the remaining items of the subpoena, that it wished to be informed as to the materiality and relevancy of every such item.

"Judge Allen: I wish to call your attention to the statute. I assume that this subpoena is being asked for under Section 647:

'When any party applies'—I shall leave out certain parts of the statute—'applies to any Judge of the United States

Court for a subpoena demanding the witness to appear and testify and to bring with him and to produce any paper or writing or written statement or book, or other document supposed to be in the possession or power of such witness and to be described in the subpoena—'. Now, undoubtedly this subpoena described the various papers—'such Judge, on being satisfied by the affidavit of the person applying or otherwise, that there is reason to believe that such paper, writing, and so forth, is in the possession and power of the witness and that the same if produced would be competent and material evidence for the party applying therefor, may order the subpoena issued.'

We think that we are following the precise terms of the statute in asking for a definite statement as to the materiality and competency and relevancy of each item which you ask to be produced."

The Court then heard argument of counsel directed to complainants' right to require the production of TVA corporate minutes described in paragraph 1 of the subpoena during the course of which counsel for defendants stated:

"Now, we are perfectly willing, and here is where we draw the line, we are perfectly willing to deliver to the complainants every Board resolution that they can call for that authorizes any action on behalf of the Authority.

We say that we have the right to draw the line between resolutions of the Board authorizing corporate actions and resolutions that merely contain references, discussions, arguments, policies and plans. Now, that is our position on the first item involving the resolutions of the Board."

[fol. 4] RULING RE ALLOWANCE OF SUBPŒNA DUCES TECUM

Following the argument of counsel the Court ruled:

"Judge Allen: The Court has considered the question of the allowance of the subpœna duces tecum, so far as argued this morning.

With respect to the items prayed to be produced under paragraph 1 of the application for subpœna duces tecum, it appears that the Congress has limited the power of the Court to issue subpœnas duces tecum to cases in which the evidence sought is competent and material.

The attorneys for the Tennessee Valley Authority have offered to produce copies of all contracts made by the Authority, and of all resolutions enacted by the Authority.

Since the application for subpœna duces tecum is not verified by affidavit as required by Title 28, Section 647, U. S. C., and since the competency and relevancy of the minutes described in paragraph 1 is not otherwise shown, and since counsel for the complainants state that the minutes relate to the pronouncements, policies and program of the Tennessee Valley Authority and its directors, the application for subpœna duces tecum to produce the minutes described in paragraph 1 of the application is denied.

Later some of these minutes may be required, but for the present no evidence of their materiality is produced."

Counsel for complainants excepted to the Court's ruling and to preserve their exception the subpœna theretofore presented to the Court was marked for identification Complainants' Exhibit 1.

"Mr. Fly: May I add, your Honor, that it will be our attitude to enable complainants to get any and everything that pertains to the concrete facts which we feel are within any bounds of reason, at issue here, and we will be glad to confer with them to that end.

Mr. R. T. Jackson: We will of course be glad to confer with counsel for defendants. We, of course, will not be willing to substitute their judgment for the judgment of the Court as to what is competent and relevant.

Mr. S. D. L. Jackson: Do I understand counsel for defendants have offered in addition to the contracts certain resolutions?

Judge Allen: That was the understanding of the entire Court.

[fol. 4a] Mr. Fly: We are willing to give them the resolutions authorizing these contracts, and any other pertinent transactions of a concrete character. I cannot state with any degree of precision now, but I don't think there will be any difficulty on that.

Judge Allen: It was the understanding of the Court that he offered, had offered to tender the resolutions enacted by the Authority. Was that not correct?

Mr. Fly: No, your Honor. We do not endeavor to turn over to them all of the resolutions on any and every sub-

ject, but as to any transaction which could properly be brought in issue here, yes, without limitation as to those resolutions. We can give you all of the resolutions authorizing the contracts, transmission lines, sales and construction contracts and everything of that type.

Judge Allen: The Court would like to have a statement with reference to the relevancy and competency of all the other documents and papers which are prayed to be produced in the other paragraphs of the application for subpœna duces tecum. The Court will not consider the other paragraphs of the application until the memorandum has been received from counsel for the complainants."

(A verified statement as requested by the Court was thereafter submitted to the Court and appears of record as Complainants' Exhibit 111. Also to meet one of the requirements stated by the Court in its ruling covering paragraph 1 of the subpœna counsel for complainants subsequently submitted a verified statement respecting the material called for in said paragraph, which verified statement appears of record as Complainants' Exhibit 110.)

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 2, a stipulation that the respective complainant companies are incorporated as public utility companies and authorized to do business as such in the respective state or states in which they operate; and as Complainants' Exhibit 3, a stipulation relating to the franchises owned and held by the several complainant companies.

[fol. 4b] B. F. MANNING was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 52 years old, reside in Chattanooga, Tennessee, and am Secretary-Treasurer of The Tennessee Electric Power Company. As Secretary of that Company, I have custody and possession of its records, including the franchises of the Company. The Company is now operating in the counties and municipalities in Tennessee and Georgia in which it owns county and municipal franchises as set forth in Complainants' Exhibit 3. All of the franchises obtained since

the organization of the Tennessee Railroad and Public Utilities Commission in 1919 have been approved by that Commission, with the exception of Lynnville, the assignment of which was approved upon its acquisition by The Tennessee Electric Power Company.

The memorandum (offered and received in evidence as Complainants' Exhibit 4) is a list identifying the franchises in question by the name of the county and municipality, and the year or date when such franchises were approved by the Commission.

Some of the franchises held by the Company were originally issued to individuals or corporations other than the Company and title to such franchises was acquired by the Company by assignment. The memorandum (offered and received in evidence as Complainants' Exhibit 5) is a list which shows in the case of each franchise what assignment was made, the name of the transferor, the date of assignment, in the case of county franchises the date of the approval of the Railroad and Public Utilities Commission, and in the case of municipal franchises the date of the [fol. 4c] approval both of the Commission and of the municipality in question.

Exhibit B to Complainants' Exhibit 3 sets forth the names of certain municipalities wherein The Tennessee Electric Power Company does not claim to held any existing unexpired franchises. The list shows in the case of Mount Pleasant, Tennessee, that the franchise expired on July 18, 1936, and in the case of Spring City, Tennessee, that the franchise expired May 4, 1937. All of the other towns listed are incorporated, except Friendsville, Jacksboro, and Ravenscroft. Jasper and Center, although incorporated, have never operated as incorporated cities or elected any officials. With the exception of Mount Pleasant and Spring City, The Tennessee Electric Power Company was, in fact, operating a distribution system in all of these municipalities prior to the incorporation of the respective municipalities, if incorporation has occurred.

The memorandum (offered and received in evidence as Complainants' Exhibit 6) is a statement of taxes paid by The Tennessee Electric Power Company for the years 1932 to 1936, inclusive, and estimated for the year 1937.

(The witness was excused.)

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P.V. 163 17,244 S.C.

Vol. II

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

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VOLUME II.

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., MAY 9, 1938.

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[fol. 5] JOSEPHUS CONN GUILD was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 49 years old and was born and live in Chattanooga. I am President of The Tennessee Electric Power Company. When The Tennessee Electric Power Company was formed in 1922 I was elected a Vice President and served in that capacity until 1926. At that time I was put in charge of the property in Tennessee. In 1927 I was made Vice President and General Manager, and in 1932 I was made President, which office I have held since that time.

The map (offered and received in evidence as Complainants' Exhibit 7) is a map of Tennessee and a part of neighboring states entitled, "The Tennessee Electric Power Company map showing transmission system and connections" and shows the transmission system and connections of The Tennessee Electric Power Company. The distribution systems are not shown, but we have distribution systems in Chattanooga and Nashville and in 455 other communities in the state which cannot be shown on that scale map. The two main load centers of the Company are Chattanooga and Nashville, and there are also load centers, among others, in Murfreesboro, Columbia, Lewisburg, Fayetteville, Lenoir City, Harriman and Coal Creek. The load centers are not designated by any special mark. The colored background of the map indicates the counties where we have franchises in which we serve and in which we hold ourselves out to serve in Tennessee, and includes four counties in Georgia. We serve sixty-six counties in Tennessee and four in Georgia. With the exception of the cross-hatched territory north of Nashville, all of the territory served by The [fol. 6] Tennessee Electric Power Company is within a 100 mile radius of one of the dams already constructed, or to be constructed by the TVA. One hundred miles is not the maximum feasible transmission distance, as you can go 200 or 250 miles, or something of that sort, very easily. I just used 100 miles because I wanted to show how close they were.

The memorandum (offered and received in evidence as Complainants' Exhibit 8) is a list showing the installed

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The memorandum (offered and received in evidence as Complainants' Exhibit 8) is a list showing the installed

capacity of the generating stations of The Tennessee Electric Power Company.

The list (offered and received in evidence as Complainants' Exhibit 9) shows the transmission line interconnections with other companies. The location of these interconnections are shown on the map, Complainants' Exhibit 7. The one with the Aluminum Company of America is indicated at Maryville, Tennessee, just south of Knoxville. The Carolina Power & Light Company interconnection is located in the City of Knoxville, just outside of the city limits of Knoxville. The Kentucky Utilities interconnection is just north of Knoxville, at Pruden, Tennessee. The Alabama Power Company interconnection on this map is the interconnection that runs from Nashville to Centerville, Muscle Shoals and Alabama Power Company. The Georgia Power Company interconnection is indicated at Chattanooga, just south of the center.

The Hales Bar steam plant, which is located seventeen miles from Chattanooga at the site of the hydro plant, was designed so that its generating capacity can be increased [fol. 6-a] very easily to 100,000 kilowatts. It is now 40,000 kilowatts. At the Bordeaux steam plant, near Nashville, we bought the turbine and are now preparing to start construction. That is now designed for 25,000 kilowatts and can be built up to 150,000 kilowatts. The Company also owns water power sites for development when and as business expansion would justify. There is the No. 1 Plant on the Ocoee River now in operation and the No. 2 Plant. We own 3,558 acres of land above the No. 2 Plant where we can build No. 3 Plant on the Ocoee River, which plant will have a capacity of 35,000 kilowatts. Above the Blue Ridge plant on the Toccoa River—the same river is called the Toccoa River in Georgia and the Ocoee River in Tennessee—we own another site where we have 2,206 acres of land. There is 11,000 kilowatts of development that can be placed there. Below the Great Falls plant on the Caney Fork River, we own another dam site and 535 acres of land at that point and can develop a plant of 30,000 kilowatts capacity. The dam sites were procured with a view to development as the Company's business expanded.

[fol. 7] In addition to these electric facilities, the Company owns and operates other utility properties. We operate street car systems in Chattanooga and Nashville and have a bus operation in both towns. We own water plants serving

the municipalities with water in Columbia, Cowan, Harriman, Lexington, Niota, Richard City, Shelbyville, South Pittsburg, Tellico Plains and Winchester, in Tennessee, and Blue Ridge, in Georgia. We also own ice plants in Athens, Carthage, Clinton, Fayetteville, Lenoir City, Pikeville and Shelbyville, in Tennessee. In Blue Ridge, Georgia, we own a small telephone company that is interconnected with the A. T. & T. system.

The relationship between the operation of the electric utility and other utilities owned by The Tennessee Electric Power Company is absolutely intermingled. The financing is the same, the bookkeeping is the same, the men operating the electric part have duties in the transportation part, the ice part and the water part, and it is all one proposition. The financing, management, accounting and various other operations connected with these several kinds of utilities are carried on jointly and the severance of one of those operations from the other would affect the Company adversely financially.

The Tennessee Electric Power Company has outstanding $49,313,300 par value of bonds; 241,296 shares of preferred stock with a par value of $100 (a total par value of $24,129,600), and 425,000 shares of no par value common stock. All of the securities were assumed or issued with the approval of the Railroad and Public Utilities Commission of Tennessee.

The tabulation (offered and received in evidence as Complainants' Exhibit 10) shows the miles of transmission lines, the miles of distribution lines, the installed generating capacity in kilowatts, the number of customers, the total kilo- [fol. 8] watt-hour sales, the total industrial sales, and the percentage of industrial sales to the total sales in kilowatt-hours for the years 1927 through 1936. The last figure is for the year ending September 30, 1937, as we haven't a full year for 1937. It also shows the residential average kilowatt-hour use per customer for the same years, 1927 through 1937, the residential average revenue per customer over the same period, the residential average rate per kilowatt-hour over the same period, and the number of communities served over the same period.

The Tennessee Electric Power Company's predecessor companies started business in Chattanooga as the Brush Electric Company in 1882. The Company started a second electric development in the State at Nashville a few years

later. These were small steam generating companies that were pioneering the development of electricity for lighting and power—mostly lighting in the early days. As time went on, the companies were consolidated, other little companies were started, and they were consolidated and built up until there were consolidations in Nashville and Chattanooga with the railway operations. In 1904 or 1905, the idea of hydro-electric energy was brought into the state and developments were started at that time, which was shortly after Niagara Falls was put in operation. Construction was started on some of this and finally, in about 1912 or 1913, hydro-electric power as such was brought into Tennessee. Since that time there have been further mergers, further consolidations and The Tennessee Electric Power Company itself was formed in June, 1922. This has been a process of connecting independent and separated operations into a unified and integrated system.

This unification has resulted in economies in operation. As the system grew and as the service was extended farther [fol. 9] and farther and the developments of the art and the whole unification of the property continued, it developed greater economies in operation, management and financing. This development in integration of The Tennessee Electric Power Company from the service just in Nashville and in Chattanooga has developed to where we now have reached out and are serving 66 counties in Tennessee and 4 in Georgia. It has enabled us to extend our system and build it up as one cohesive operating unit and also to go out and reach larger territory and serve more people. The Company has always been anxious to go out and serve any new areas and we are pushing forward to serve the whole territory thoroughly and completely.

Except for interruptions caused by lightning or similar causes, the Company has never in its history refused service to any customer. It has never, in the whole history of the Company, from shortage of power or other inadequacy of facilities of any type, refused such service and it has sought the service rather than refused it. It has always solicited business and been able to carry its own load on its own system. That is its present policy.

The Company has used every known form of promoting the use of electricity to increase the business and electrical development of the Company. We have power salesmen and a Power Sales Department. We have lighting salesmen and

a Lighting Sales Department. We have power salesmen that go into people's plants and help them in electrifying their plants. We have an Industrial Department that helps new industries that want to locate in this territory, giving them all the information possible. We have a Merchandising Department which is very active and which promotes the sale and further use of electrical refrigerators, washing machines, ranges, water heaters, and all household electrical [fol. 10] devices. By so doing we increase our business and the customer gets the benefit of electricity. We have an agricultural engineer and an Agricultural Engineering Department, which goes out to the rural areas and promotes the further extension of our rural business.

I believe that the industries of Chattanooga are more thoroughly electrified than any other community of like size in the country. We started in pretty early in pushing the electrification of the manufacturing plants in the City of Chattanooga. That has been going on pretty steadily since the first hydro power came in 1912. You can name on the fingers of one hand the industries that are not electrified in Chattanooga. These various services are available to the customers and prospective customers of the Company. We hold ourselves out to do that and serve everybody.

I believe that The Tennessee Electric Power Company or its predecessor, Tennessee Power Company, was the first company to develop interconnections with other companies. It made an interconnection in 1913 with the high tension line from Parksville and Dalton, Georgia, to the company in Georgia. That was the first interconnection by two companies having no financial connection of any sort, of a major transmission line between the two of them to interchange power. This was the first development in the art of management and distribution of electricity, and that policy of interconnecting has been going on continually. The matter of interconnections involves questions of economy of operation as well as questions of capacity.

The Tennessee Electric Power Company has about 3,500 employees. We have employees that have been with us a great many years. Eight per cent of our employees have been with the Company 25 years or more and thirty-five per cent have been with us ten years or more. We have grown in the later years, so if you take into consideration this increase, the percentage would increase.

[fol. 11] The rates of The Tennessee Electric Power Company are regulated by the Tennessee Railroad and Public Utilities Commission and by the Public Service Commission of the State of Georgia. We do business in Tennessee and in Georgia, so both Commissions regulate our rates. The rates of the Company are uniform throughout Tennessee and the parts we serve in Georgia.

Since 1927 I have been in charge of the management of The Tennessee Electric Power Company and know of my own knowledge whether the rates that we have been charging to the public have been uniform under regulations imposed by the Tennessee Railroad and Public Utilities Commission. The rates which the Company now charges and has been charging in the 66 counties in which it operates in Tennessee for the same class of service is, and for some years has been, uniform under the regulation of the Railroad and Public Utilities Commission of Tennessee. To my knowledge the rates charged by the Company in the 4 counties in which it operates in Georgia have been regulated by the Georgia Commission so as to bring about a uniformity of rates for the same class of service in the 4 counties. I also know from my management of the Company whether or not the rates have been reduced from time to time or changed from time to time by order of the Commission of Tennessee. The list (offered and received in evidence as Complainants' Exhibit 11) is a list of rate reductions made by the Company under the regulation of the State Commissions.

Cross-examination:

In 1932 the Company sold 353,120,939 kilowatt-hours; in 1936, 682,272,122 kilowatt-hours, and for the year ending September 30, 1937, 767,646,665 kilowatt-hours.

With reference to the Coffin Award, I have not the exact [fol. 12] reading off the citation which I have at the office, but I believe it says "For the company that does more for the development", or "does more for the betterment", or something "for the electric industry of the United States". I would have to check on the matter of load increase for the year 1936. We had some increase in use, but I will not say it was a load increase if I do not have the figures.

The common stock of The Tennessee Electric Power Company is owned about 99 percent by The Commonwealth & Southern Corporation. There are 241,000 shares, I believe the figure is, of preferred stock which also has voting rights.

The voting power of the common stock, however, heavily preponderates. Mr. Wendell Willkie is the President of The Commonwealth & Southern Corporation, but he is not an officer of The Tennessee Electric Power Company. Mr. Willkie represents the Company in the course of negotiations, but I would not say frequently. I consult him a very great deal when he undertakes negotiations. He represented the Company in the course of the negotiations of the January 4 contract.

"Mr. Fly:

Q. And he has represented you in various capacities in negotiating with the Tennessee Valley Authority and others, has he not?

A. Yes.

Mr. R. T. Jackson: I object to that as not proper cross examination. It has no relation to the examination in chief.

Mr. Fly: I am trying to establish the executive position of this gentleman as President of The Tennessee Electric Power Company. That has been stressed, and his control and influence over the operations has been stressed.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May I have an exception noted, please?

[fol. 13] By Mr. Fly:

Q. What dividends did your company pay on the common stock in the last four years, Mr. Guild?

A. I would have to look that up. The dividends have not amounted to very much. I will have to check on my records. I cannot tell you right off-hand.

Q. If I suggested that they were $913,000——

A. I will have to look the matter up. I can find it out in two minutes. We have the figures in the court room.

Mr. Jackson: I renew my objection that this is not proper cross-examination. I don't want to interrupt

Judge Gore: You mean, Mr. Jackson, under the Federal rule?

Mr. R. T. Jackson: That is right. It has no relation to the examination in chief.

Judge Gore: Personally, I don't like that rule.

By Mr. Fly:

Q. Will you get that figure, Mr. Guild?

Judge Allen: The Circuit Court has never overruled Judge Gore with reference to that.

A. I will have to get the figure. I think maybe I can get it in the court room, if you will wait until I go and look up the figure, if you desire me to do so.

Mr. R. T. Jackson: May I have an exception noted to the ruling of the Court?

Judge Gore: As a matter of economy of time, Mr. Jackson, don't you think it would be wise to let Mr. Fly go into any matters he wants to bring out from this witness, provided, of course, it is competent, rather than to limit him in cross-examination to what he referred to in the original examination?

Judge Allen: The Court is disposed to exercise considerable latitude in the admission of evidence on behalf of both litigants, Mr. Jackson. I might say, speaking for myself, that there were some questions which you asked, to which an objection was not interposed, and if I had been sitting as I usually sit as a trial Court, I should have myself interposed an objection. But we are disposed to allow very considerable latitude in the examination, and we are disposed to allow latitude in cross-examination, to both your clients and the Authority.

Mr. R. T. Jackson: I assume that would be true. Of course, this, I think, is not proper cross-examination. That is the reason for my objection.

[fol. 14] Judge Allen: The question will be allowed.

The Witness: Shall I proceed and try to find the figures?

Judge Allen: There was a question?

By Mr. Fly:

Q. If you will furnish the figure for the record—I believe it is $913,000—it will be satisfactory to me if you will furnish it to the court reporter later.

Mr. R. T. Jackson: I did not get an opportunity to note my exception. I presume Mr. Guild can give that later."

(Counsel for complainants at a later point submitted to defendants a tabulation of the dividends on the common

stock of The Tennessee Electric Power Company for the four years ending 1936 which had been prepared from the books of the Company, which tabulation was then received in evidence as Defendants' Exhibit 1.)

We have never disposed of any of the related properties of the Company such as the traction, ice and water properties. I am not speaking for the Commonwealth & Southern. I am speaking for The Tennessee Electric Power Company. We have never disposed of any except the water system in Lafollette, where the PWA loaned money to build a competing system, and we had to sell it out for a third of its cost. That is the only system I know of that we have disposed of. They "jewed us down" to $16,000 when it cost about $75,000.

The last hydro plant built in the last few years was built at Blue Ridge, Georgia, in 1931 or 1932. The Company has not undertaken to build any other since that time. There has been a well-known depression. The Company, without qualification, has always been anxious to serve new areas. We have to serve them. A company as vast as ours had to serve them on an economic basis.

[fol. 15] I cannot answer "Yes" or "No" to the question whether the Company is prepared to serve rural areas only in case the Company finds it profitable. In a great many cases we go out and serve rural areas when at the time we serve them they are not profitable, with the hope and with the realization of our expectations of them being profitable, and that has been the history of our rural electrification policy. Possibly the first year it is not profitable, but as it grows and develops it does become profitable. Therefore, the answer is "Yes" and "No". We are not an eleemosynary institution. We have to make a profit eventually.

In a great many cases in the rural communities there is a rural community here and there are rural customers along the line. We build the line and serve the rural customers and the small community. Neither the small community nor the rural customers themselves might be served unless they were lumped together. Maybe my explanation is poor, but perhaps there is a community where we could not build a line to it without picking up the rural customers. The community is not profitable and it will not stand on its own feet. We build the rural line and tie the rural distribu-

tion to the rural community and it does become economically feasible to do that work. So the rural line itself does not always have to be profitable. That is the best explanation I can make. The lines I was referring to just then were not lines leading out for any great distance from a town or urban center, but we have lines leading out from urban centers into the country. Some connect up sma' communities.

I cannot give the percentage of farm electrification in Tennessee without a definition of that term. There are about ten different definitions of a rural customer or a farm customer, and the definition is so widespread that we can go on one definition to about 17,000, I think, or to [fol. 16] 55,000. I haven't any figure eliminating the farms that immediately surround the urban centers. With reference to the Edison Electric Institute figures of farm electrification, showing only 3.6 per cent of the farms in Tennessee with electric service in 1933, I don't know what assumptions were taken as to the farms. You can take the assumptions on those things and figure out various percentages, and I am not familiar with the particular assumption. I do not know whether or not we make reports to the Edison Electric Institute. I do not know that Tennessee ranks 39th of the states in the Union in the percentage of farm electrification.

Referring to Complainants' Exhibit 7, it is not feasible to serve domestic rural consumers off a 120,000 volt line such as that between Great Falls and Coulterville. You don't serve rural customers off high voltage lines. In preparing this map, I did not mean to indicate that we were rendering retail and domestic service everywhere that these lines are spread on the map, but that as far as it was economically possible we were rendering service in the area on that map in pink. That does not mean we serve every customer there. Answering the question, it does not mean that every line on there is a 120,000 volt line. We are serving some rural customers off 13,200, 11,000 and 2300 volt lines. We don't serve them off lines of higher voltage. Also on the map, a whole lot of distribution lines are not indicated.

I haven't with me the figure as to the total amount of power generated in 1936.

By Mr. Fly:

Q. Suppose I give you the figure. I will ask you if this is correct——

A. I would not know, but you can give me the figure. I would not agree it was correct until I checked it.

Mr. Jackson: I understand that all this line of testimony is subject to our objection as not being proper examination, objection, and exception allowed?

Mr. Fly: Your honor, I need not discuss this, but they have gone to great extent into generating capacity and the supply they have available, and that sort of thing, and, of course, if it is going in on direct we must give it a little attention on cross.

Judge Gore: We are overruling your objection.

[fol. 17] Mr. Fly: I preferred not to go into all this junk.

By Mr. Fly:

Q. Mr. Guild, do you have here in the court room your report to the Tennessee Railroad and Public Utilities Commission for 1936?

A. I haven't got it, no, sir. Maybe somebody else has got it. Possibly you have a copy of it.

Judge Allen: Mr. Jackson, the Court would prefer to have a specific objection to every question.

Mr. R. T. Jackson: I just disliked interrupting because I thought the Court had adopted the policy that resulted in my objections being overruled, and I did not like to interrupt.

Judge Martin: That was why I made the comment that I did, that I held the rule that an objection ought to be made and ruled on its form on the question asked. Counsel might assume too much in assuming the Court had excluded and would exclude certain matters which the Court might deem incompetent. Therefore we prefer to have the objection made to any question asked which you deem it important enough to object to for the purpose of the record so that there can be no mistake.

Mr. R. T. Jackson: I appreciate that. I had thought this was a little different in that it was a question of policy as to

whether the examination was to be restricted as to the examination in chief, and, the Court having adopted their rule——

Mr. Fly: I am going into the question of supply and demand, the very same points that he went into.

By Mr. Fly:

Q. Mr. Guild, the figures that I would like to have are your generation for 1936. I think you will find that to be 695,127,900 kilowatt hours.

Mr. R. T. Jackson: I think that if this witness is to supply certain figures, it is sufficient to ask for the figures, and not put counsel's figures in the record.

Mr. Fly: I would not try to lead the witness. I am trying to aid him.

Judge Allen: Let us not have any controversy. The question will be competent if the witness is asked if that is correct.

By Mr. Fly:

Q. I will ask you if that is correct.

Mr. R. T. Jackson: Exception."

[fol. 18] "Judge Allen: Just a moment. Let the witness answer, if that is correct.

Mr. Fly: He says he will need to refer to his figures.

Judge Allen: Let us have the answer.

The Witness: I don't know without checking my own figures.

Judge Allen: All right.

Mr. R. T. Jackson: I understood counsel was asking the witness to get information for him.

Mr. Fly: I was asking the question to refresh his recollection.

Judge Allen: You asked the specific question whether this figure was correct, and the answer is that the witness does not know."

It is possibly true that in 1936 the Company sold far more power than it generated. I am just saying possibly now. I haven't the figures in front of me. I, of course, know that the Company was buying considerable power in 1936, but cannot give the exact figure. I know we bought a large

amount of power in that year, including power from the TVA under the January 4th contract on which I think stipulations have been made, but I cannot check the figures right off the bat.

Since 1933 there have been some improvements with respect to generating capacity made to some of the plants which permit them to carry a load. It is very small. We are now engaged or about to engage in the building of a new steam plant in the neighborhood of Nashville which will have a capacity of 25,000 kilowatts.

[fol. 18a] I know that the Company has a line leading into Chickamauga Dam and a line leading into Norris Dam where we furnished power for construction. The same was done at Chickamauga. We have an interconnection with the Alabama Power Company at Wilson Dam at present and through the cooperation of the Alabama Power Company a connection to Wilson Dam.

The Company does not own Hales Bar Dam. The Government owns it.

The Company's lines extend across the state line into Dade County, Georgia, but do not go very far. That is up on top of the mountain and is contiguous to Chattanooga. In Walker County, Georgia, we go a little further down. In Catoosa County, in general, we go down to about Chickamauga Park. That is ten or twelve miles. The Georgia Power Company serves the territory south of that and I don't intend to indicate we go way down here to LaFayette.

The Tennessee Public Service Company also renders service in the colored area on the map of Tennessee (Complainants' Exhibit 7) in the vicinity of the City of Knoxville. There are also a few municipal plants operating in the general area that is colored on the map.

Examination by the Court:

There is a municipal plant at Lebanon which we supply the power to. They had an old steam plant and we have been selling it power. There is a plant at Cookeville which we supply a portion of the power to. There is a plant at Tullahoma to which we supply all of the power for the municipality and they in turn resell it. These are not all of [fol. 19] the municipal plants in Tennessee. There are very few municipalities, unless they are served by the TVA or ourselves, that generate their own power. I think Cooke-

ville is the only one that does, but I will have to check the matter.

Cross-examination continued:

The Kentucky-Tennessee Light & Power Company does not serve customers in the colored area. It is up in the area above Nashville, around Springfield in Robertson and Montgomery Counties.

The City of Knoxville could not be served with an 11 kv. line. You have to have the carrying capacity of the line of a sufficient size to carry the load. It would take high voltage lines to serve the City of Knoxville, for example, or some sort of generating plant. You wouldn't serve it on an 11 kv. line.

I don't think one line is quite sufficient to serve a City the size of Chattanooga. For instance, coming into Chattanooga there are two 44 kv. lines from Hales Bar, one insulated for 154,000, which is operated at 120,000 volts. There is one 120,000 volt line coming in from the Georgia system, an interconnection, and a 120,000 volt line coming in from the Ocoee plants in Eastern Tennessee and that end of the system. That is what Chattanooga has at present to serve it. I don't say that it is absolutely necessary to have just that set-up, but this is an illustration of what a community of this size has at the present time. It depends on conditions, the capacity and size of the generating plants, as to what you need. You could not serve Chattanooga with one 22,000 volt line, but those lines are capable of being enlarged.

[fol. 20] A 44 kv. line could serve a customer of 10,000 kw. at a distance of fifty miles. That would not be a tight squeeze. It depends on the size of the copper. It is feasible. I shouldn't think that it would do with much less than that.

Some of these municipally owned plants in the colored area on the map were municipally owned prior to the time that the TVA began operations here. Most of those plants were not generating their own power. They were buying their power from us. Lebanon and Tullahoma are examples. I don't know exactly when Cookeville made a contract to purchase part of its supply, but there are possibly more of them that I cannot recall right at present. Springfield is one of them.

Referring to Complainants' Exhibit 8, Ocoee Plant No. 2 was operated during 1937, but I am not able to furnish the number of kilowatt-hours produced during this year. The steam plant at Ocoee No. 1 was operated during 1937 for just a short period, but it was not operated at all in 1934, 1935, or 1936. I haven't figures in my head as to how much energy was generated by the Company at the steam plant at Hales Bar during 1937. I have listed the generating capacity at that plant. We have been running Hales Bar steam plant in 1937, but I am not able to tell the number of kilowatt-hours generated in that plant over any one period. I can get the information, but I just cannot tell you off the bat. It had a very small amount of generation in 1934 and 1935. I will have to check it in regard to 1936. I think we ran it more in 1936 than in some of the other years. I don't know what you mean by relatively small, but will give you all those figures if you would like to have them.

I do not know how much energy was generated in 1934 through 1936 in the Harms hydro plant. Harms is a very small hydro plant in Middle Tennessee. The number of kilowatts it generates is practically nothing and is used for voltage regulation and for breakdown service. I am not attempting to say it is large, but it is a 192 kilowatt [fol. 21] plant and it is running and it performs a function. The Murfreesboro hydro plant runs on the same basis as the other. It helps the voltage conditions out in that end of the country near Walnut Hill. It does not generate many kilowatt-hours. I will admit it is small. I don't know why the Sparta hydro plant should not have been operated in 1936. Sparta ran. It works like the other plants for voltage regulation and makes some current. If anything breaks down on any of the other lines it can supply some of the customers.

We consider the Nashville steam plant capable of generating 48,000 kilowatts. At the Nashville steam plant under certain weather conditions, with the temperature of the water in the river above 80, the amount of generation is cut down slightly. You are going into efficiencies of these operating plants under varying conditions. In the summer time when the water which we use for condensing gets warm, you couldn't get 48, but that is the name plate rating and it can do it and has done it under proper operating conditions.

The Erin steam plant is one of the isolated plants over on the other end of the property. It operates if anything happens to the transmission line, as a standby. All of the plants listed here are capable of producing the amount set out behind them. They can operate and can put out those amounts of current. We didn't put any plants in the list that were junk. I don't mean to indicate that they can put out those amounts of current only if conditions are extremely favorable.

What I mean by voltage regulation is this. If you have some rotating capacity on a transmission line of a comparatively small capacity, you put a little rotating capacity on the other end of it. Even though it does not build up much current, it helps the voltage and boosts it up and keeps it on a proper level. These little plants are useful for that purpose and to put out some power.

[fol. 22] I will be glad to get you the date of the last time the Mascot steam plant was operated since 1934 and not try to tell you from memory exactly when it operated. It has been a good while since Mascot plant has been operated. It has a 750 kilowatt turbine and has not been operated in the last three or four years. The Burns oil engine carried quite a considerable load over there until we completed the transmission line a short time ago. I don't know exactly when Burns was operated, but what I said about the others applies to Burns. If it were not for the Jamestown steam and oil equipment plant, Jamestown would not be able to have any light. It is an isolated plant. It is the only source of power at Jamestown. Jamestown is a steam and fuel plant both. The Oneida plant is operated. If we did not report that as a plant in operation to the Power Commission in 1936, it seems like to me we should. Oneida has no other source of power. If we overlooked it, we made a mistake. It is not connected to our transmission system. At Jamestown it is similarly situated, not connected with the transmission, and so is Byrdstown and Selina.

The TVA is serving the municipalities of Dayton, Pulaski, and Dickson, Tennessee, and perhaps one more. I am not certain that each of them was generating its own power prior to the time the TVA started selling them power.

Redirect examination:

With respect to Complainants' Exhibit 8, setting forth the installed generating capacity, every one of those plants is capable of operating. The contractual arrangements and generating capacities of the plants are and have been sufficient to supply the Company's customers. The Railroad and Public Utilities Commission of the State of Tennessee has approved the construction of the steam plant at Nashville and it has also been approved by the regulatory commission of the State of Georgia.

(The witness was excused.)

[fol. 23] L. P. SWEATT was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 44 years old, reside in Gulfport, Mississippi, and am Vice-President and General Manager of the Mississippi Power Company. (Counsel for Defendants then conceded the qualifications of the witness.)

The map (offered and received in evidence as Complainants' Exhibit 12) shows the State of Mississippi, on which has been superimposed the transmission and distribution system of the Mississippi Power Company. The map correctly shows the location and extent of the lines of the Mississippi Power Company, but does not show the local distribution systems in the communities served by the Company which are indicated by white circles. In the upper right-hand corner is a shaded area surrounded with cross-hatching representing the area within which is located the transmission lines and properties of the TVA that were conveyed to them by the Mississippi Power Company under the contract of January 4, 1934.

With respect to the three arcs on the exhibit numbered in the margin 100, 150 and 200, the arc with the notation "Zone 1" is the area within 100 miles of Pickwick Landing Dam, the arc marked "Zone 2" is within 150 miles of Pickwick Landing Dam, and the arc marked "Zone 3" is

within 250 miles of Pickwick Landing Dam or Guntersville Dam.

The yellow lines which appear on the left-hand side of the map are the transmission and distribution systems of the Mississippi Power & Light Company. In addition to the transmission and distribution facilities owned and operated by the Mississippi Power Company and the Mississippi Power & Light Company in this area, there are 27 [fol. 24] municipally owned electric distribution systems which are shown by green circles. There is also approximately 18 miles of 13.2 kv. system owned by the Tri-County Power Company extending from Houston to Woodland, Mantee, and Montpelier which is served at wholesale by the Mississippi Power Company and is shown in a solid green line. There is also shown in broken green line a proposed system of the Central Electric Power Association which is under construction at the present time and which is to be served wholesale by the Mississippi Power Company. The Mississippi Power Company only serves one municipal operation wholesale and that is West Point.

The Mississippi Power Company has a 44,000 volt interconnection with the system of the Alabama Power Company, just east of Aberdeen, of 2,550 kilowatts capacity. It has a 110 kv. interconnection with the system of the Alabama Power Company east of West Point. That has a capacity of 25,500 kilowatts. It has a 110 kv. interconnection with the system of the Alabama Power Company east of Meridian that has a capacity of 17,000 kilowatts. It has a 110 kv. interconnection just east of Hurley with the system of the Alabama Power Company, that has a capacity of 21,250 kilowatts.

The Company has a 44,000 volt interconnection with the system of the TVA at Okolona. Prior to the expiration of the contract of January 4, 1934, the Mississippi Power Company regularly supplied the TVA system current through this interconnection. Since the expiration of that contract, breakdown service only has been rendered to the TVA at their request.

The Mississippi Power Company has generating facilities whose location is indicated on the map by red squares. The tabulation (offered and received in evidence as Complainants' Exhibit 13) shows the generating plants owned or subject to lease or contract by the Mississippi Power Com- [fol. 25] pany. The three plants under the heading in the

third block of figures, "Customers' Plants", are plants owned by customers but subject to operation on call by the Mississippi Power Company at any time. Referring to the next heading, "Purchased Capacities", under which appears "Goodyear Yellow Pine Lumber Company", the Mississippi Power Company purchased from that company in 1928 the local electric distribution system at Picayune, Mississippi. There was an arrangement under that contract whereby this lumber company would operate their generating plant continuously and furnish all surplus energy to the Mississippi Power Company, and since that date we have taken such energy. This plant has a total installed capacity of 4600 kilowatts.

The combined installed capacity of the generating facilities is a total of 25,152 kilowatts. The major power requirements of the Mississippi Power Company are purchased from the Alabama Power Company at the aforementioned interconnecting points. The three plants at Waynesboro, Lucedale, and Leakville, under the heading "Isolated Plants" are operated continuously and furnish all of the current required in those local municipalities.

The steam plant at Gulfport furnishes the majority of the current for the Company's transmission system on the Gulf Coast of Mississippi. The majority of the current required for the counties of Pearl River, Lamar, and part of Forrest and Stone Counties, is secured from the Goodyear Yellow Pine Company's steam generating plant at Picayune. The plants other than those which I have mentioned are solely reserve standby plants connected to the system of the Company.

In addition to the electric power facilities which I have generally described, the Company owns the motor coach transportation system at Hattiesburg. The total gross [fol. 26] revenue from those bus operations in the year 1936 was approximately $25,000, whereas the total revenue of the Mississippi Power Company from all sources was approximately $3,360,000. The bus operations are under the general supervision of the same officials of the Company and consequently are interdependent.

The Company has outstanding first mortgage bonds of $10,690,500, 39,092 shares of preferred stock and 450,000 shares of common stock.

The Company was organized on November 24, 1924. It actually began operations on January 1, 1925. Prior to

the beginning of the Mississippi Power Company, of the system as it exists today, there was a total of less than 50 miles of transmission and distribution system in the area now served by the Mississippi Power Company. There was no line over 13,200 volts. The service that was rendered was rendered by smaller private companies and municipal operations. There were a great many cities and communities that are now served by the Company that had no service at all. As a matter of fact, only 54 per cent of the cities and communities now served by us had any electric service prior to the time we gave them service.

Prior to the organization and operation of the Mississippi Power Company, there was practically no rural service being rendered, nor were there any interconnected systems for the service of electric customers in that area. These were small locally operated systems with local generating plants.

The Mississippi Power Company has a complete organization, with all of the necessary departments to carry on its business and to expand its business, and to seek more markets. It has sales and promotional organizations consisting of home lighting advisers and commercial and power [fol. 27] salesmen. It has a new industries department that aids communities in locating new industries and expanding existing industries and working for the general industrial and agricultural development of the state.

The tabulation (offered and received in evidence as Complainants' Exhibit 14) shows all of the cities and communities that are now served by Mississippi Power Company, the population of each, with the date they were acquired and whether or not they were purchased or the systems were constructed, and whether or not previously they had full 24-hour service or none or partial, and it shows the top residential rate in effect at the time of acquisition.

Since the Company began operations on January 1, 1925, it has expended for additions and betterments a total of $13,670,416.

The tabulation (offered and received in evidence as Complainants' Exhibit 15) shows by years from the first year of operation, which was 1925, through July 1937, the milage of transmission and distribution lines, the total number of customers served, the kilowatt-hour sales annually to those customers, kilowatt-hour sales to industrial customers from the year 1931 to date, kilowatt-hour use per residential

customer, the average revenue per residential customer, the average rate per residential customer and the total number of towns and communities served.

The tabulation (offered and received in evidence as Complainants' Exhibit 16) shows the number of customers, the total kilowatt-hours sold and the revenue from kilowatt-hour sales in the years 1933 and 1936, within a radius of 100 miles of Pickwick Dam, within a radius of 150 miles of Pickwick Dam and within a radius of 250 miles of Pickwick Dam or Guntersville Dam.

[fol. 28] The Mississippi Power Company has a total of 512 employees at the present time.

Mississippi does not have a State regulatory commission like most other states have, but the municipalities exercise regulatory powers within their territorial limits. The rural communities and counties do not exercise any regulatory powers. Neither the State of Mississippi nor the counties in that State issue franchises for operations in the respective counties. The Company does not have a local franchise in the incorporated towns of Hattiesburg, Columbia and Pass Christian, Mississippi, since these expired a few years ago, but we are operating in those towns under the statewide franchise, that is under our charter and the laws of the State. All of these three towns are outside of the 250 mile area shown by the map.

The tabulation (offered and received in evidence as Complainants' Exhibit 17) shows the various city, county and state and federal taxes paid by the Company by years from 1932 through 1936, the estimated amount for 1937, and the gross revenues for the same years.

The rates of the Mississippi Power Company for different classes of service are uniform. The Mississippi Power Company has never failed or refused to serve any of its customers or failed or refused to serve any electric power demand in the territory where it serves, wherever it has been economically feasible to do so.

(At this point it was stipulated that the record should show that the charter of the Company contains in its purpose clause this provision:

"The improvement and development of water power of rivers and streams for generating and distributing and selling electricity and electro-mechanical power for any

purpose for which electricity or electro-mechanical power is now or may hereafter be used or applied.")

[fol. 29] Cross examination:

Whether or not the Company has any state-wide franchise is more or less a legal question. The State of Mississippi does not issue any certificate of convenience and necessity and there is no Commission in the State of Mississippi. The Company is incorporated in Maine, but it is qualified to do business in the State of Mississippi. I was connected with the Mississippi Power Company on June 1, 1934, and occupied the same position then that I do now.

The properties shown in the block on the upper right hand corner of Complainants' Exhibit 12 are the properties which were sold by the Mississippi Power Company to the TVA. There was a transmission line there extending on the south from near Okolona up to Corinth, near the Tennessee border, and extending from the eastern boundary, practically the State of Alabama, and then over as far as Blue Mountain and Hickory Flat. There were some isolated properties in the group that were not connected to the transmission system.

"Q. Can you give us the total length of line?

Mr. Bemis: Just a minute. Of course we would like to object to this last as not being proper cross-examination and outside the scope of the examination in chief.

Mr. Fitts: The witness described the properties.

Judge Allen: The objection is overruled and the Court will reiterate its position with reference to cross examination. It lies within the discretion of the Court largely as to what evidence will be received on cross examination, and those complainants and the counsel for the TVA will be permitted to cross examine on matters material and relevant.

Mr. Bemis: May we have our exception on the grounds stated, and also on the grounds that the testimony is irrelevant?

Mr. R. T. Jackson: We should like also to have the privilege of submitting decisions of the Sixth Circuit on that point, which we understand to be the other way.

[fol. 30] By Mr. Fitts:

Q. Mr. Sweatt, can you tell me approximately how many miles of line were involved in that transfer?

A. I don't recall.

Mr. Bemis: The same objection and exception."

I do not recall the exact figure as to how many miles of line were involved in that transfer. It is in the tabulation which was submitted as an exhibit. The exhibit shows the transfer in 1934 of 113.3 miles of transmission and 167.11 miles of distribution lines. That is Complainants' Exhibit 15, which is a tabulation showing by years the miles of transmission line, distribution line, numbers of customers, etc., of the Mississippi Power Company, and it also shows a notation on there of the items sold to TVA in the year 1934.

"Q. Thank you. By the way, Mr. Sweatt, when was that transfer completed?

Mr. Bemis: Same objection and exception.

Judge Allen: Overruled.

A. Mr. Fitts, part of that transfer was made on February 7, 1934. At that time we turned over to the TVA the sale of wholesale current to the city of Tupelo and the several large industrial customers that we were serving within the city limits of Tupelo by a local franchise there. The remainder of those properties were transferred to TVA, I think it was, June 1, 1934.

By Mr. Fitts:

Q. Well, it is a fact, is it not, that the contract was completely executed, the properties delivered, and in operation by TVA prior to February, 1936?

Mr. Bemis: Same objection and exception.

Judge Allen: The witness may answer.

By Mr. Fitts:

Q. That is a fact, isn't it?

A. That is a fact.

Q. Now, you have broken down here in the transmission lines and distribution lines; what was the size capacity of the transmission lines?

Mr. Bemis: The same objection.
[fol. 31] Judge Allen: Overruled.
Mr. Bemis: Exception.

By Mr. Fitts:

Q. You don't need to be exact about that, if you can give me an approximation, that is, what was the capacity of the majority of the transmission lines, if you know?
A. I cannot give you that information from memory.
Q. Were those distribution lines, rural lines, or distribution systems in towns in Mississippi?

Mr. Bemis: Same objection.
Judge Allen: Overruled.
Mr. Bemis: Exception.

A. Those lines were both transmission and distribution lines and local distribution lines in towns within that area.

By Mr. Fitts:

Q. In other words, the contract did include what we might call main transmission lines, rural distribution lines, and distribution systems in the towns in the area, is that correct?
A. It included, as a matter of physical——

Mr. Bemis: The same objection.
Judge Allen: Overruled.
Mr. Bemis: Exception.

A. —of physical property within that area.

By Mr. Fitts:

Q. How many counties were included in that?

Judge Allen: May I ask counsel to give counsel an opportunity to make the objection and the Court an opportunity to rule on it?
Mr. Fitts: Yes.

By Mr. Fitts:

Q. How many counties were included in that area?
Mr. R. T. Jackson: We object.
Judge Allen: The objection is overruled.
Mr. R. T. Jackson: May an exception be noted, please?

* * * * * * *

[fol. 32] A. If I remember correctly, there were approximately nine counties in Mississippi included in that area.

By Mr. Fitts:

Q. Did those properties include lines serving the industrial customers?

Mr. Bemis: Same objection.
Judge Allen: The objection is overruled.
Mr. Bemis: And exception.

A. They did.

By Mr. Fitts:

Q. Did they include sub-stations?
A. They did.
Q. Did you give us approximately the total number of customers served by those properties that were transferred?

Mr. Bemis: The same objection.

A. My recollection, Mr. Fitts, is approximately 4200.

Mr. Bemis: Just a minute.

The Witness: Excuse me.
Mr. Bemis: We renew our objection to that question and understand it is overruled.

* * * * * * *

By Mr. Fitts:

Q. Do you know how many industrial customers were included?

Mr. Bemis: Same objection.
Judge Allen: The objection is overruled.
Mr. Bemis: Exception.

A. I could not state even the approximate number of industrial customers in that area."

It is a fact that there was an interconnection with the TVA and there is that interconnection now, and up until the first part of 1937, before the expiration of that contract, we regularly hauled over our system and delivered current at this interchange point to the TVA, but the Mis-

sissippi Power Company itself, to my knowledge, never took any power during that interval from the TVA. Power [fol. 33] may have come to us over the lines of Alabama Power Company, because we have these four interconnection points with the transmission system of the Alabama Power Company, and, of course, they have an interconnection with the TVA, so it would be impossible to say where that current came to us from that system. It is a fact that we get most of our power over the lines of the Alabama Power Company. I know that the Alabama Power Company was operating under an interchange agreement with the TVA. We reported on this interchange and interconnection to the Federal Power Commission. I do not recall, however, that we reported that this power was obtained by us and given back, so to speak, to the lines of the TVA under the terms of this interchange agreement. The interchange agreement was under the terms of the contract of January 4, 1934, between the TVA and the Commonwealth & Southern companies.

If I recall correctly, there were in 1933 five municipally owned distribution plants in the territory of the Company. The TVA is now serving two municipalities in that territory, the municipalities of Okolona and Amory, Mississippi. Neither of these municipalities purchased power from Mississippi Power Company prior to the creation of the TVA. They were operating their own distribution systems and generating their own power. Outside of those two municipalities, the only municipalities being served by TVA are located along the properties that the Company sold to the TVA.

The system peak demand in 1936 and at the present time is greater than it was in 1934. As a matter of fact, it is a new high. The sales of kilowatt-hours in 1936 constituted the highest in the history of the Company, and the Company sold more electricity in 1936 than ever before, [fol. 34] but there are several reasons for that. The residential kilowatt-hour use per customer on the system has increased steadily since the beginning of the Company.

Referring to Complainants' Exhibit 12, the map shows the main transmission and distribution system of the Mississippi Power Company. They are not all of the same voltage, and there is no differentiation on the map between lines of different voltages. By looking at the map you can-

not tell whether you are looking at 110 kv. or 11 kv. One not familiar with the map could not tell whether the lines were capable of serving a municipality or a farmer, or what they were capable of serving, nor what load centers could be served from which line. It is, however, a correct map for the purpose for which we introduced it. As I said at the beginning, it is a skeleton map showing the main transmission and distribution system of the Company, where the lines are and the communities served by the Company. It is not intended to show the capacity of those lines and the amount of power available at different points, which would take a map in considerable detail.

Redirect examination:

There are three towns now served by the Mississippi Power Company that have had elections voting on the subject of the acquisition of municipal plants and systems to receive service from TVA. Those towns are Starkville, Aberdeen and Columbus.

"By Mr. Bemis:

Q. Now, in addition to these three towns, are you able to state how many other towns, if any, within this area which now have their own distribution and generating facilities, within the past three years, voted to enter into contracts with the Tennessee Valley Authority for service?

Mr. Fitts: We object to that question on the ground it is irrelevant and also a repetition.

Judge Allen: Objection sustained.

[fol. 35] Mr. Bemis: If the Court please, I would like to call to the Court's attention that this witness has testified that since 1925 the company has acquired a great many municipal distribution systems and that the development and growth of the company has been in that direction and that these towns are not only customers of the Mississippi Power Company, but it seems to us that it is material to the issues in this case to show not only those instances in which not only existing customers have been taken away, but also the effect upon the future business of the company, and potential customers.

Judge Allen: Objection sustained.

Mr. Bemis: I would like to have an exception, and want to preserve the record. May the witness be permitted to

answer the question, rather than to make the offer to prove?

Judge Allen: The objection is sustained, but the witness can make proof of what he would have testified if allowed to testify.

A. The municipalities of Okolona, Amory, Tupelo and New Albany are now receiving service from TVA. There was an election in Corinth, Mississippi, which was served by the Mississippi Power Company, to acquire the distribution system and take service from the Tennessee Valley Authority."

The growth in number of customers, kilowatt-hour sales and industrial sales from 1925 to 1929, inclusive, is comparable with the growth between 1929 and the period ending July, 1937, as shown by Complainants' Exhibit 15. That is, as to the kilowatt-hour sales. The growth during the period, 1929 through July, 1937, has been accelerated to a considerable extent due to the location of a number of major industries in the territory served by the Company, through the Company's direct efforts and due to very aggressive sales policy seeking the possible markets for power and increased usage on the part of the customers, and the resumption of some industries, due to the indirect efforts at least of the Company, that had been closed down for a considerable period.

The figures on Complainants' Exhibit 15 are correct, which show kilowatt-hour sales in 1925 of 18,952,000, in [fol. 36] 1929 of 92,307,000, and the total at the present time of 121,160,000. The rate of growth for the entire period from 1929 to 1936 has been consistent.

Recross-examination:

The average use per residential customer at the present time is 820 kilowatt-hours, and in 1929, 431 kilowatt-hours per customer. It is just about double now. During the period between 1925 and 1929, the Company acquired quite a number of local municipal systems, private systems, and then we extended our system into communities that had no service before. That was the promotional development.

The municipal elections to which I referred were elections voting on the question of issuing bonds to acquire municipally owned distribution systems and connections in some cases with the TVA. I did not participate in any of

those elections, but I have seen the ballots, and I have seen the advertising, and I have seen the news statements with reference to them and editorials, and, as a matter of fact, the engineers' report in the case of Columbus where the engineers were employed by the City of Columbus to make a report, and this states that current is to be secured from the TVA and that service is to be available at the TVA's resale rates. I do not know whether or not any of those towns have contracts for the purchase of power from the TVA. I do not know whether or not the municipal ownership people lost the election in Jackson, as Jackson is not in my territory. With reference to elections, there have been more won than they have lost.

(The witness was excused.)

[fol. 37] LAURENCE B. HOWARD was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 37 years old, am President of the Franklin Power & Light Company and am practicing law at Nashville. I have been President of the Franklin Power & Light Company since it was organized in June, 1929. The Company sells electric power in Franklin and the suburbs of Franklin, Tennessee. Its principal office is in Franklin, which is about 20 miles south of Nashville and about 80 miles north of Wilson Dam. I had a B.S. from Vanderbilt, 1920, and law degree from Yale, 1923.

The documents (offered and received in evidence as Complainants' Exhibits 18 and 19) are true copies of the orders of the Tennessee Railroad and Public Utilities Commission, one being the approval of the original franchise and the other an approval of the extension of the franchise.

The tabulation (offered and received in evidence as Complainants' Exhibit 20) is a statement of taxes paid by the Franklin Power & Light Company for the years 1932 to 1936, inclusive.

The Company buys its power from The Tennessee Electric Power Company at Franklin. We have a distribution system in the town of Franklin and a steam plant on the

outskirts of Franklin. The steam plant is of 1,800 kw. capacity, and the distribution system is about 12 miles of 2,300 volt wiring and about 3 miles of 11,000 volt wiring.

The Company does not now operate its steam plant. It is there and can be operated at any time and we did operate it up until 1935, and it could be put in operation in about [fol. 38] 4 to 6 hours time. It is kept up and maintained and is in the nature of a standby.

The Company has 1,900 shares of $100 par value capital stock outstanding; in other words, $190,000 capital stock. It was fully paid for in cash and nothing was sold to the Company for it and no payment made for it by services. The document (offered and received in evidence as Complainants' Exhibit 21) is a true copy of the order of the Tennessee Commission approving the Company's original charter and its amended charter and authorizing the issuance of stock by the Company.

The Company has an authorized bond issue, by that I mean authorized by the Utilities Commission, of $100,000. Those bonds were issued to a bank to secure a bank loan which is now in the amount of $71,000. In other words, there is a $100,000 mortgage bond issue and it is pledged on a note of the Company to a bank to secure $71,000. The mortgage covers the entire property of the Company. The mortgage had been approved by the Tennessee Railroad & Public Utilities Commission and also the disposition of the bonds on the bank loan. The document (offered and received in evidence as Complainants' Exhibit 22) is a true copy of the order of the Tennessee Commission just referred to.

The tabulation (offered and received in evidence as Complainants' Exhibit 23) is a statement for the years 1933 to 1936, inclusive, and for the period of 7 months starting January 1, 1937, through July 1, 1937, showing the kilowatt-hour sales, the number of customers and the gross electric revenues for those various periods.

Cross-examination.

At the present time the TVA does not to my knowledge have contracts to sell power to anybody in the territory where my Company is operating. It is not selling in the [fol. 39] territory in which I am operating, and no wholesale purchaser of power from the TVA is selling electricity in the territory in which my Company operates.

(The witness was excused.)

R. W. MATHESON was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 46 years old, reside in Knoxville, Tennessee, and am Secretary and Treasurer of the Tennessee Public Service Company. As such, I have in my custody and control all of the Company's records.

The tabulation (offered and received in evidence as Complainants' Exhibit 24) shows the tax payments of the Tennessee Public Service Company for the period of 1932 to 1936, and an estimate of the year 1937. It also includes the gross revenue of the Company for the same years, and the percentage of taxes to the gross revenue shown on the statement.

The two lists (offered and received in evidence as Complainants' Exhibits 25 and 26) show the consents and approval obtained to the assignments and issuance of franchises owned and held by the Company.

Cross examination:

I haven't got the Tennessee Public Service Company's franchise in the City of Knoxville with me on the stand. It is unlimited as to time. Its validity is more or less of a legal question.

(The witness was excused.)

[fol. 40] R. W. LAMAR was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I am 53 years old, reside in Knoxville, Tennessee, and am Vice President and General Manager of the Tennessee Public Service Company. (Mr. Lamar's qualifications were conceded.)

The nearest TVA generating plant to the territory of the Tennessee Public Service Company is Norris Dam, about 25 miles away. That is the nearest point, and the furthest

point of our territory is probably about 75 miles from Norris Dam.

The map (offered and received in evidence as Complainants' Exhibit 27) shows the transmission lines and many of the distribution lines in the territory in which our Company serves. It is a small scale map and consequently cannot well show the distribution lines in the various towns and cities. However, these distribution centers are indicated by circles on the map. The map in general shows the extent of the territory served by the Tennessee Public Service Company.

The Tennessee Public Service Company purchases practically all of its power requirements from the Carolina Power & Light Company. It does, however, have a small hydro electric generating plant of about 150 kw. capacity near Sevierville. The Company also has a steam generating plant of about 3,000 kw. capacity in Knoxville. The small hydro electric plant of 150 kw. capacity at Sevierville operates whenever there is enough water in the stream on which it is located. The steam plant in Knoxville is kept in readiness as a standby plant in case of emergency. The total number of electric customers served by the Company as of September 30, 1937, was 33,074.

[fol. 41] The Tennessee Public Service Company, in addition to the furnishing of electric energy, operates an urban transportation system in the city of Knoxville and immediate suburbs. That is an integral part of the Company's business. The transportation system and the electric system are operated together as a unit. The transportation system produces about 21½% of the total revenue of the Company's gross revenue. The transportation system has no separate corporate existence and is operated as a department, as a unit, under my supervision.

With respect to the securities of the Company now outstanding, there are $7,780,000 of 5% first mortgage bonds. There is outstanding 50,000 shares of no par value preferred stock which is entitled to a dividend of $6 per share annually before any distribution can be made on the common stock. The preferred stock is cumulative. The Company has one million shares of common stock outstanding. (It was conceded that all of the securities were issued with the approval of the Railroad and Public Utilities Commission of Tennessee.)

I am fairly well familiar with the Company's operations and properties for at least the last 8 years. The Tennessee Public Service Company operates in six counties, beginning with Knox County and extending eastward. In this territory the Company has about 181 miles of transmission lines and 1,064 miles of distribution lines and serves a little over 33,000 customers. The area reached by the existing lines is in the neighborhood of 423 square miles, although that is not all of the territory available for service in its franchise territory. More than 90% of its business comes from the sale of electric service in Knoxville, Tennessee. It also serves in 6 incorporated communi- [fol. 42] ties with a population of about 112,000, and 32 unincorporated communities with a population of about 11,000. The population in what we call the metropolitan area of Knoxville was, according to the 1930 city directory, estimated at about 148,000 people.

We have a New Business Department whose duty it is to endeavor to get more business, to stimulate the use of electricity among existing customers, to point out the advantages of electric service. (At this point the Court stated it would assume that these companies were working for business and that it was unnecessary to go into their promotional activities.)

From November 1, 1930, to September 30, 1937, the Company has spent for net capital additions to its Electric Department $1,032,943.76.

The tabulation (offered and received in evidence as Complainants' Exhibit 28) shows for the years 1927 through the year 1936, inclusive, and for the 12 months ending September 30, 1937, the number of miles of transmission lines by years, distribution lines, the average annual kilowatt-hour use by residential customers, the average annual revenue per residential customer, the average revenue per kilowatt-hour sold to residential customers, the number of towns and communities served and the kilowatt-hours sold to the various main classes of customers and the total kilowatt-hours sold by the Company in those years.

All of the business of the Company is in the State of Tennessee. The Company's business is regulated by the Railroad and Public Utilities Commission of the State of

Tennessee. We have lines and facilities and capacity to serve substantially all, if not all, of the business in the territory in which we serve. There are a few customers which we do not serve. We have never refused service to any customer if it was at all feasible, economically possible to extend such service.

[fol. 43] Cross-examination:

The National Power & Light Company owns all of the common stock of the Tennessee Public Service Company except the qualifying directors' shares. I cannot state whether or not the National Power & Light Company is in turn connected with the Electric Bond and Share Company. About 85% of the preferred stock is owned by the National Power & Light Company, the rest of it is owned by the public.

I believe it is correct that the Company's energy sales, sales in kilowatt-hours, in 1936, was the highest in the history of the Company, but I would like to check that to be sure. For the 12 months ending September 30, 1937, the kilowatt-hours sold are the highest for any 12 months in the Company's history. The Company had more customers in 1937 than it ever had before. In 1936, there was the highest average annual kilowatt-hour consumption per residential customer for any calendar year previous.

The Company does not have any generating facilities, except a standby plant in Knoxville, which is a very small one. It is substantially correct to state that the Company purchases all of its power from the Carolina Power & Light Company. When I spoke of the adequate facilities of the Company, I meant that the Company has a contract to purchase power from that company and can purchase enough from them to serve the territory.

Redirect examination:

I did not mean to say on direct examination that the Company had generating facilities sufficient to supply our entire demands. The maps and data which we have here show that we are really a transmitting and distributing company.

(The witness was excused.)

[fol. 44] PAUL O. CANADAY was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 33 years old, reside in Knoxville, Tennessee, and am President of Holston River Electric Company. (Mr. Canaday's qualifications were conceded.) I have held my present position for approximately two years. The average distance of the territory served by my Company from the nearest generating plant of the TVA is approximately 75 miles.

The map (offered and received in evidence as Complainants' Exhibit 29) shows the transmission and distribution lines of the Company in the territory in which it operates, and indicates the distribution systems by circles in the communities served, with the single exception of one very small community which is not on the map.

The Company has no generating facilities. It has approximately nine miles of high tension transmission lines and approximately 98 miles of distribution lines. The Company purchases all of its power requirements from the Tennessee Public Service Company. The map does not directly show a physical connection for that purpose. It just shows the terminal point of the transmission line on the map.

The tabulation (offered and received in evidence as Complainants' Exhibit 30) shows for the years 1928 through 1936, and for the twelve months period ending September 30, 1937, the number of miles of distribution lines, the average annual kilowatt hours per residential customer, the average annual revenue per residential customer, the aver-
[fol. 45] age revenue per kilowatt hour sold per residential customer, the number of towns and communities served and the kilowatt hours sold to regular customers.

The territory served is largely rural. It has only one incorporated town in the community, about 1,590, I think, according to the 1930 census. There are eight other communities ranging in size from 60 to 1,500, and in my opinion, the facilities are now adequate to serve the community in which we operate.

The tabulation (offered and received in evidence as Complainants' Exhibit 31) shows the tax payments made for the

years 1932 to 1936, inclusive, and an estimate for the year 1937. It also shows the gross revenue of the Company for the years 1932 to 1936, with an estimated figure for 1937.

The list (offered and received in evidence as Complainants' Exhibit 32) shows the approvals obtained to the issuance of franchises owned and held by the Company.

It is a fact that the Company is regulated by the Tennessee Railroad & Public Utilities Commission. The Company does not operate in any territory outside of the State of Tennessee.

Cross-examination:

None of the securities of the Company are held by members of the general public. They are owned by the National Power & Light Company.

The City of Morristown is the largest City in the county in which the Company operates, but we do not serve that City. Morristown owns its own distribution system and generates its own power. The TVA, to my knowledge, does not have any contracts for the sale of power in the territory shown on my map, nor does it to my knowledge now sell nor are there any wholesale customers of the TVA now selling any electric power in this territory.

(The witness was excused.)

[fol. 46] J. S. Pevear was called as a witness on behalf of the Complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I am 60 years old and am President and General Manager of Birmingham Electric Company. I have been engaged in the electric power business since 1901.

The Birmingham Electric Company serves the so-called metropolitan district of Birmingham, about 95½ square miles, including the Cities of Birmingham, Bessemer, Jonesboro, Brighton, Lipscomb, Fairfield, Irondale, and Tarrant City and in the immediate sections of the county. The distance from Birmingham to the nearest TVA dam at Guntersville is approximately 66 miles.

The map (offered and received in evidence as Complainants' Exhibit 33) shows the district served by the Birmingham Electric Company. The heavy lines, both solid black and dotted black, are the 3 phase 2,300 volt circuits. The smaller black lines show the 2,300 volt single phase distribution. It also shows in a general way the various cities that are served. The map correctly shows the lines and facilities indicated thereon, but it does not show all of the lines of the Birmingham Electric Company in this area. With respect to other lines, which are not shown on the map, energy is delivered to us at three different points, at or near the territorial division line, which is shown by the heavy black line, and from those three delivery points we have a very extensive network of 13,200 volt lines which serve directly all of our industrial customers and also feed the substations from which the 2,300 volt circuits run.

There is no other electric utility company operating in [fol. 47] the territory shown on thi map. The Alabama Power Company operates in the territory adjacent to that in which the Birmingham Electric Company operates.

A report and order issued by the Alabama Public Service Commission (offered and received in evidence as Complainants' Exhibit 34) establishes a territorial division between the Alabama Power Company and that of the Birmingham Electric Company.

The Company has 1,050 pole miles of distribution lines and purchases all of its energy, except in the case of a possible emergency. The Company has a stand-by steam station with an installed capacity of 11,300 kilowatts.

In addition to the electric power facilities to which I referred, the Company owns and operates street railway and bus transportation throughout its territory, and a steam heating system serving a very substantial portion of the business district. All of the companies are operated as one, insofar as management and general superintendence, accounting, office building, and it is a joint operation throughout. The electric income at the present time is about 66%, transportation 33%, and steam heating 1%.

The Birmingham Electric Company has never failed to serve any existing customer nor has it ever refused to serve any electric power demand in the area. As a matter of fact, at the present time, I think our service is available to every residential, commercial and industrial consumer in our territory.

The tabulation (offered and received in evidence as Complainants' Exhibit 35) shows by years from 1927 to 1937, inclusive, the pole miles of distribution line, the numbers of customers, the total energy sales, interdepartmental energy, kilowatts used per residential customer; for the years 1932 to 1936, the average annual revenue per residential customer and the average residential rate per kilo-
[fol. 48] watt hour; and the industrial sales in kilowatt hours for 1933 and 1936 and the percentage of such sales to total sales.

At the present time, the Company has 1,482 employes. The rates of the Company are regulated by the Alabama Public Service Commission. The tabulation (offered and received in evidence as Complainants' Exhibit 36) shows all tax payments by the Company for the years 1932 to 1937, inclusive. It also shows the gross operating electric revenue and the gross total operating revenue for the same years.

Referring to the memorandum attached to Complainants' Exhibit 3, showing the list of franchises owned by the Birmingham Electric Company, two of these franchises, Fairfield and Irondale, were granted directly to the Birmingham Electric Company. It was not necessary to obtain the approval of the Alabama Public Service Commission to the granting of these franchises. All of the franchises, other than Fairfield and Irondale, were granted to a predecessor company of the Birmingham Electric Company. I have personal knowledge as to the transfer of these franchises to the Birmingham Electric Company. I was one of the receivers and, as special master, sold the property and am familiar with that transaction. Both properties and franchises were sold to the Birmingham Electric Company, and the transfer of these franchises to the Birmingham Electric Company was approved by the Public Service Commission of Alabama after due notice to all of the communities affected. The date the order was submitted was April 16, 1924. The approval of the municipalities which granted the franchises was not obtained directly. All but three of the franchises were granted to the grantee, its successors and assigns. The three to which I referred were Jonesboro, Brighton, and Bessemer. The City of Birmingham consented to the transfer and assignment of the Birmingham franchise to the Birmingham Electric Company.

[fol. 49] The only municipality in which the Birmingham Electric Company operates, but from which it has obtained no franchise, is the town of Homewood. We have a franchise covering that territory, but we have no franchise from the city. The Birmingham Electric Company's predecessor, The Birmingham Railway Light & Power Company, had been operating for a great many years in that entire territory under a franchise from Jefferson County, and the Company still operates under that franchise. The county franchise is one of those listed in this stipulation.

Cross-examination:

I couldn't say what percentage of the total business of the Company comes from the Birmingham system proper, as we do not segregate it along those lines. I think it is true, however, that the business from the Birmingham part of the system within the city limits is the largest part of the business, but I cannot give any idea as to the approximate percentage of the total.

I am informed that before the City of Birmingham could own or operate a municipal distribution system it would be necessary for the question to be submitted to an election of the voters of the city. I know you did have an election down there and that the proposition was defeated. It has not been put to a vote since that time, which was about October 8 or 9, in 1933.

The people of Bessemer and Tarrant City have had elections in which they voted to own and operate a municipal distribution system. It is my understanding that their right to procure a loan and grant from the PWA is now in litigation in another court.

I don't think I have ever seen any contract between the TVA and either Tarrant City or Bessemer, nor do I know whether or not the TVA has any contract with any munici-[fol. 50] pality or other customer within the area which we claim for our company. I think the closest line of the TVA is 66 miles at Guntersville, and I don't know whether any TVA transmission line is closer. I think that is the closest dam.

Two quarterly dividends on the preferred stock of the Company are at present in arrears.

(The witness was excused.)

WALTER N. FORD was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 46 years old, live in Memphis, Tennessee, and am Vice President of the Memphis Power & Light Company. (The witness' qualifications were then conceded.)

The map (offered and received in evidence as Complainants' Exhibit 37) shows all of the lines of the Company in Shelby County, with the exception of the distribution lines in the various towns and communities shown thereon. The local distribution area in the metropolitan limits of Memphis is shown by black cross-hatching and the distribution areas outside of Memphis are shown in deep yellow circles.

With respect to the generating facilities, the Company has a 54,000 kilowatt steam generating system, that is 54,000 kilowatts as indicated by the manufacturers' plate rating. It is located at Fourth and Broadway, Memphis.

The Company has interchange facilities with the Arkansas Power & Light Company at the Arkansas-Tennessee state line, and with the Mississippi Power and Light Com-
[fol. 51] pany at the Mississippi-Tennessee state line. These facilities terminate at our Memphis substation. Those interchange points are shown on the map, with the Arkansas Power & Light Company in green lines and with the Mississippi Power & Light Company in purple lines.

In addition to the existing generating facilities, the Company purchased a site for additional generating facilities in 1930 and at that time made plans to erect a 20 to 30 thousand kilowatt steam station on that site.

The Company also owns and operates a system for the distribution of natural gas in the territory. The gas and electric business of the Memphis Power & Light Company has been not only operated, but developed, financed and managed as one operating unit, by means of which economics and savings have been made. Approximately 37 percent of the Company's revenues are derived from our gas business and about 63 percent from the electric business. A reduction or total destruction of our electric business could do nothing else but result in a larger cost to our gas department. It is difficult to answer without having the detailed figures whether the gas department in itself

could function under such conditions and we have made no such figures.

The Company now has outstanding $17,000,000 of 5% first mortgage bonds; $5,275,000 of 4½% first mortgage bonds; 30,000 shares of $7 preferred stock, no par value; 32,000 shares of $6 no par value preferred stock; and 7,200 shares of no par value common. The issuance of all of those securities has been approved by the Railroad and Public Utilities Commission of Tennessee. The Company does not operate outside of the State of Tennessee. As of July 1, 1937, there were 1,614 holders of our $7 preferred stock, 2,190 holders of our $6 preferred stock, or a total of 2,723 preferred stockholders. The common stock is practically all owned by the National Power & Light Company.

[fol. 52] The Memphis Power & Light Company was organized in 1922 for the purpose of acquiring and did acquire the electric and gas properties of the Memphis Gas & Electric Company , which was in receivership. Within several years thereafter, we acquired three municipally owned and operated electric systems in the towns of Arlington, Germantown and Collierville. We also acquired three privately owned and operated electric systems of the South Memphis Light & Traction Company, the Binghamton Light & Power Company, and the Millington Light & Water Company. All of these communities were in Shelby County, Tennessee.

The rehabilitation and expansion of the electric properties from 1923 through the year 1936 required capital expenditures of net $11,064,560, and the rehabilitation and expansion of the gas and electric properties over the same period required capital expenditures of net $13,539,045.

The Company serves Shelby County only. That is an area of approximately 801 square miles. The City of Memphis has an area of approximately 48½ square miles. Outside of Memphis there are five incorporated communities and we are serving all of them. There are thirty-six, I believe, unincorporated communities in Shelby County ranging in population from 25 up to 607, and we are serving all but four of such communities. The area outside of these communities is devoted largely to agriculture. We serve substantially all of the industries in our territory whose power requirements can be furnished by a central station, and we serve the electric service requirements of substantially all of the

commercial establishments as well as residential customers in the territory. The territory served by us ranges from 74 to 105 miles from the TVA dam at Pickwick Landing.

[fol. 53] A tabulation (offered and received in evidence as Complainants' Exhibit 38) shows the development of the Company's business and properties from the year 1924 through the twelve months ending July 1937. It shows the miles of transmission and distribution lines, the number of customers served at the end of each period, the total kilowatt-hour sales to all customers, the kilowatt-hour sales to complainants and non-complainant companies, the kilowatt-hour sales to customers in our own territory, the kilowatt-hour sales to industrial customers, the kilowatt-hour sales to residential customers, that is, the per cent of the total territorial sales, the residential kilowatt-hours used per customer, the average annual revenue per residential customer, the average rate per residential customer, and the number of communities served by years.

The Company's rates are regulated by the Railroad and Public Utilities Commission of the state.

The list (offered and received in evidence as Complainants' Exhibit 39) shows the consents and approvals obtained to the issuance of franchises owned and held by the Company.

A tabulation (offered and received in evidence as Complainants' Exhibit 40) shows all classes of taxes paid by the Company for the years 1932 to 1936, inclusive, and the estimated amount of taxes the Company expects to pay in 1937. The exhibit also shows at the bottom the gross revenues of the Company broken down between the different classes of our business and the per cent of the taxes to the gross revenue.

[fol. 54] Cross-examination:

The City of Memphis has recently held a municipal election in which it was determined that the city would either construct or acquire a distribution system. The result of the referendum also gave the city the right to operate an electric distribution system. According to the press, the city has sold $3,000,000 of bonds to be used for that purpose. The bonds were sold on the open market and not to the PWA, but as I understand it, an allotment of $10,000,000 was originally made by the PWA to the City of Memphis, 45 per cent of which was a free gift. Later on I understand that

that was changed to a direct grant or gift of $3,092,000. Litigation was immediately started in the courts and is still pending. There was also litigation over the right of the city in the State Court of Tennessee, but that case has been finally determined.

I have been connected with the Company since the beginning of its business in 1923, but I have been in the utility business in Memphis since 1910. I do not know that there has been a strong movement in Memphis for municipal ownership since around 1914. On the other hand, there has not been, or we would not have been able to acquire these three municipally owned and operated systems that I just testified about in Shelby County. The officials of these three communities were very anxious for us to take over their systems and operate them. There might have been some political movement at that time and again in 1925, in the City of Memphis, to investigate the possibilities of obtaining power from Wilson Dam, but as far as any movement that was backed by the people at that time, I remember nothing of it at all.

I remember that in the terms of the original ordinance granting the franchise to my Company, the terms reserved to the city the right to own and operate its own distribution [fol. 55] system whenever they elected to. The electric franchise expires on November 1, 1952, and the natural gas franchise expires on July 1, 1958. The City of Memphis made what was purported to be an offer to buy a certain part only of our electric system. We did not consider it a fair offer; in fact, we considered that it was a threat to force us to sell our system at distress prices. They only offered to buy a part of the system at a price to be fixed by the Federal Power Commission and, had we accepted such a proposition, we would have had to sign a contract to sell the property, or that part of the property that the city wanted, at any price that might be fixed by the Federal Power Commission. We would have had to sign a contract to sell the property at any price, regardless of what it might be fixed at by the Federal Power Commission. We would have to agree to be bound by the figure that they arrived at in arbitration.

The total kilowatt-hour sales of the Company in 1936 were the highest in our history. It is not true, however, that our peak load was right up to the limit of what we could generate in 1936 and in 1937 to date, because I remember at one particular day during 1937 we pulled 55,000 kilowatts for one

hour. During that hour there were only four turbines on the line, having a capacity according to the name plate rating of 47,500. We have other units in the plant that we could operate. We have two vertical engines that could have been operated and produce at least 4,000 kilowatts additional. It is correct that in the past two years we have been generating and selling more power than ever before.

By Mr. Fitts:

Q. Getting back to this offer for a minute: Isn't it true that that offer was to purchase the whole system within the city limits of Memphis?

A. No sir. Now, let me get that straight, I am going from memory now, but the offer was to purchase our electric facilities.

Mr. R. T. Jackson: May I make one statement at this point?

[fol. 56] Judge Allen: Are you making an objection?

Mr. R. T. Jackson: Yes. I beg your pardon. If your Honor please, I want to make an objection and I want to explain the purpose of the objection if I may. I want to object on the ground that this is not proper cross examination in relation to the examination in chief, and to say that the reason I renewed that objection now, in the face of the decision adopted by the Court is, that it is conceivable that at some later stage of the testimony it might touch some matter we would not want to be foreclosed from presenting our case as we think it should be presented by reason of cross examination of defendants at a time when we think it is not germane to the examination in chief.

Mr. Fitts: I do not see how he is going to be foreclosed in any manner. He has put a witness up to testify about the properties of the company, that the only possible purpose of that is to show that this company is going to be damaged. If the testimony is not for that purpose it clearly is not relevant at all, and it cannot have any purpose. My effort is to show that these people have been faced with a legal competition and with an offer to purchase their properties, that the right of the city to build and operate has been upheld and that the city has offered to buy the property.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: We take exception."

The offer was to purchase our electric system in and adjacent to Memphis, that is the way I remember the wording of the letter, eliminated certain of our transmission system. I suggest that the whole situation would be cleared up by referring to the letter.

The dividends paid by the Company to National Power & Light Company were $100,000 in 1933, nothing in 1934 or 1935, $480,000 in 1936, a total of $580,000 for the years in question.

(The witness was excused.)

W. L. YODER was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

[fol. 57] Direct examination:

I am 43 years old, reside in Raleigh, North Carolina, and am employed by the Carolina Power & Light Company. (The witness' qualifications were conceded.)

The map (offered and received in evidence as Complainants' Exhibit 41) shows the Company's transmission system, its principal distribution systems, its generating facilities and its interconnection with other large utilities. Because of the scale of the map, it is not practical to show the rural distribution systems or the urban distribution systems. The urban distribution systems are indicated by the names and locations of the cities and towns and communities served. The map shows the companies with which the facilities of the Carolina Power & Light Company are connected. They are connected with the facilities of the Tennessee Public Service Company, the Appalachian Electric Power Company, the Virginia Electric Power Company, the Tidewater Power Company, the Lexington Water Power Company, the Duke Power Company and the Carolina Aluminum Company.

The list (offered and received in evidence as Complainants' Exhibit 42) shows the Company's generating plants with the installed kilowatt capacity of each plant. The Waterville hydroelectric plant, located on the Big Pigeon River in Haywood County, North Carolina, was constructed under license from the Federal Water Power Commission.

The document (offered and received in evidence as Complainants' Exhibit 43) is a copy of the license, dated November 23, 1926, granted by the Federal Power Commission to the Carolina Power & Light Company for the construction of this Waterville hydroelectric development, with a copy of the acceptance of the license by the Company attached thereto. The document (offered and received in evidence as Complainants' Exhibit 44) is a copy of amendment No. 1, dated March 21, 1935, to the license, together with a copy of the acceptance of the amendment by the Company. There [fol. 58] have been no subsequent amendments. The application for this Federal water power license defined and described the market intended to be served by this project as the territory in the vicinity of Asheville. The following language in the application is correct:

"The proposed use or market for power to be developed is as follows: The power plant of this project will be connected to the transmission system of the company at or near the power station and will be used in the market of the company in Western North Carolina, including Canton, Clyde, Marshall, Waterville and Asheville."

The territory described is shown on Complainants' Exhibit 41 in the western section of the State of North Carolina, in which is located Asheville, Canton and the towns in that vicinity. The Waterville development that is referred to in the license was put in operation in 1930.

The largest customer served through these hydro facilities is the Tennessee Public Service Company. For the 12 months ending August, 1937, $916,000 was received by the Carolina Power & Light Company for selling power to the Tennessee Public Service Company.

"Q. Assuming that under the terms of the Federal Water Power Act and the terms of the Federal Power Commission license granted, the United States has a legal right to take over such hydro electric development at the end of the license period for the net investment of the company or for the then fair value of the plant, whichever may be lower, what effect, if any, would the taking over by the defendant of all or a substantial market for electricity within the radius of 100 miles of the hydro electric plant of the Tennessee Valley Authority in or near Southwestern North Carolina have upon the value at which the United States would be entitled to take over such development?

Mr. Fitts: We object on the ground the question calls for immaterial and irrelevant evidence; second, on the ground it calls for speculative and remote testimony which is based upon an hypothesis otherwise not shown in the evidence and so far as we know cannot be shown in the evidence, and calls for conclusions of the witness as to what may happen in speculative contingencies.

Judge Allen: The Court sustains the objection.

[fol. 59] Mr. Bemis: Of course, it is understood by the Court that this is a hypothetical question which we expect to connect up. Exception. May we have the witness answer the question for the purposes of the record?

Judge Allen: Suppose you try to connect it up. Wouldn't that be fairer to the Court?

Mr. Bemis: Well, you mean introduce proof as to the facts?

Judge Allen: You said you would connect it up.

Mr. Bemis: You mean to introduce—if the Court please, of course, we cannot develop the whole picture at once. Now, the question as to what may happen in the appropriation of the market involved is a matter which involves proof of a very large scope, and the question is a hypothetical question based upon the assumption that the facts which are premised will be produced.

Mr. Fitts: If I may, I would like to point out to the Court the extent and the type of the collateral inquiry that this very sort of testimony is leading us into. In order to make anything out of their contention, it would be necessary to show the amount of business that will exist at the time that the United States may elect, possibly, contingently may elect, to take over the properties; no showing that there is any such intention. It will be necessary to show the state of the art at that time, just what this particular hydro project is worth at that time. It would be necessary to go into the questions of developing new markets in the area and the possibility of new markets developing to offset anything that may be lost, and so on, and so forth.

Now, I understand that one of the fundamental rules of evidence is that if matter, even though slightly relevant to issues in the case, leads into such complicated collateral inquiries, and if materiality is so slight, that then under what Dean Wigmore calls the Rule of Auxiliary Policy, the Trial Court should exclude any such evidence simply to prevent

the confusion of the issues that are to be determined in the case.

Judge Allen: The objection is sustained.

Mr. Bemis: May we take our exception and make an offer of proof?

A. The value at which the Government would be entitled to take over the plant would be substantially depressed.

By Mr. Bemis:

Q. In your opinion, would the appropriation of the market for which this hydro project is economically useful, have an effect upon the fair value of the property?

[fol. 60] Mr. Fitts: We object to that question upon all the grounds previously stated, and upon the additional ground that it is not shown that the witness is qualified as an expert on the value of hydro electric plants and what affect their value.

Judge Allen: Are you contesting his qualifications?

Mr. Fitts: We never admitted his qualifications as a hydraulic engineer, which I think it would take to present that sort of testimony, or electrical, or any kind you want.

Judge Allen: Objection sustained."

I have been Assistant to the General Manager of the Company since 1931. I studied electrical engineering at the Virginia Military Institute, graduating with the degree of Bachelor of Science in 1915. I came with the Carolina Power & Light Company in 1916 and was assigned to the statistical and rate department. I later became head of this department. In 1931 I was made Assistant to the General Manager, which position I still hold.

(The question was then reread and the objection renewed on the grounds stated to the previous question and on the ground that the witness' qualifications to give this kind of opinion testimony were not sufficiently shown.)

"Judge Allen: The objection is sustained.

Mr. Bemis: Is the objection sustained on the ground that the witness has not satisfied the Court as to his qualifications?

Judge Allen: No; speaking for myself alone, I consider the question objectionable because you practically put the words in the mouth of the witness.

Mr. Bemis: I would be glad to reframe the question so as to avoid the objection of its being leading if I could see in what respect it was leading.

[fol. 60-a] Mr. Fitts: It is based upon an assumption in the first place that has not been established, and, so far as we know, cannot be established.

Judge Allen: The question must be considered in its context.

Q. In your opinion, Mr. Yoder, what, if any, effect would the appropriation of the market for which this hydro project is now being used have upon the value of the hydro generating facilities to which you have referred?

Mr. Fitts: We renew the objection upon the same grounds. The question assumes an appropriation of the entire market, which has not been established. It assumes that that is the only market which this project served, none of it has been established.

Judge Allen: Objection sustained.

[fol. 61] Mr. Bemis: May the witness answer the question? We preserve our exception to the Court's ruling.

A. It would substantially depress the value of the plant.

By Mr. Bemis:

Q. Assuming, Mr. Yoder, that the defendants took over all or a substantial part of the market for electricity within a radius of 150 miles of the hydro-electric plant of the Tennessee Valley Authority in or near southwestern North Carolina, what effect would that have upon the market value at which the United States would be entitled to take over the hydro-electric development at the end of the license period?

Mr. Fitts: We object to that question upon the ground first that it hypothesizes and assumes that the Tennessee Valley Authority is going to take over all or a greater part of the market within a radius of 150 miles which is not proven, and as far as I know which cannot be proven; secondly it asks for the witness' opinion upon the value of a hydro-electric project. We are not satisfied he is qualified to express that opinion. Third, it calls for his legal conclusion as to what a fair value is.

Judge Allen: Objection sustained.

Mr. Bemis: I would like to correct the question to meet the Court's objection. I would like to have market value substituted for value or fair value. I do not assume that affects the Court's ruling.

Judge Allen: No.

Mr. Bemis: We reserve our exception, and the witness may answer.

A. It would depress the value of the plant to a greater extent than if the market was taken within a radius of 100 miles.

* * * * * * *

By Mr. Bemis:

Q. Mr. Yoder, assuming that the defendants take over all or a substantial part of the market for electricity within a radius of 250 miles of the hydro-electric plants of the Tennessee Valley Authority in or near Southwestern North Carolina, what effect would that have upon the market value at which the United States would be entitled to take over such hydro-electric developments at the end of the license period.

Mr. Fitts: We make the same objection interposed to the previous question and add this additional ground, that there is no evidence to show that the United States intends to take the project over.

Judge Allen: Objection sustained.

Mr. Bemis: We may have our exception and the witness' answer.

[fol. 62] A. It would still further depress the market value of the development.

* * * * * * *

Judge Martin: Mr. Bemis, the original question asked, out of which ensued objections and follow up questions assumed certain facts which the Court do not think have been proven in the record, and applying the hypothetical question rule we therefore, on one basis or one ground sustained the objection. Then we sustained further on other grounds. Now, so that you may be advised that that was an important basis of sustaining the objection, if your evidence introduced ultimately in the record will prove all the facts that you

assume in the hypothetical question, then of course you could present the matter to the Court. And if other objections may be deemed competent, so that there shall be no confusion in your mind, that was the point in the Court's ruling on the first question, also other grounds.

* * * * * * *

By Mr. Bemis:

Q. Assuming that the Tennessee Valley Authority should take over all or a substantial part of the market for electricity within a radius of 100 miles of its hydro-electric plant in or near Southwestern North Carolina, to what extent, if it did, would that deprive the Carolina Power Company of the markets which the hydro-electric development for which the Federal Power Commission issued license was constructed and intended to serve?

Mr. Fitts: We renew our objection to that question upon the grounds stated before and upon the additional ground that this project was constructed for the purpose of serving a particular market that may be taken, and for none other, and there is no evidence that shows that in the record.

Judge Allen: Objection sustained.

Mr. Bemis: Exception and the witness will answer, please.

A. It would take away the market for which the plant was constructed."

With respect to the other generating facilities listed in Complainants' Exhibit 42, the possibilities for enlargement are as follows. The Blewett Hydro Electric Plant is capable of being enlarged by 50,000 kilowatts and the Cape Fear Steam Electric Station can be enlarged by 30,000 kilowatts by the addition of a topping turbine. The Company owns the dam site and flowage lands for what is [fol. 63] known as the Buchanan Shoals Development lying in North Carolina between its Tillery and Blewett Hydro Developments. The estimated installed capacity of this development is about 40,000 kilowatts.

In addition to the electric power facilities to which I have referred, the Company owns bus transportation systems in Raleigh, N. C., and Asheville, N. C. These bus systems contribute less than 4% of our gross revenue.

The outstanding securities of the Company are $46,000,000 par value of bonds, 165,162 shares of $6 and $7 non-par preferred stock, and 2,500,000 shares of non-par common stock.

The map (offered and received in evidence as Complainants' Exhibit 45) shows the western part of North Carolina and a part of the eastern sections of North and South Carolina. The territory within a radius of 100 miles of Fontana dam site is designated as Zone 1.

Examination by the Court:

The Fontana dam has not been authorized or built. It has been applied for.

"Mr. Fitts: If I may give the information which is shown in the pleadings, Congress has refused to appropriate the money for the construction of the dam.

Mr. R. T. Jackson: Our testimony will show that it is part of the present recommended construction program of the Tennessee Valley Authority."

[fol. 63a] Direct examination continued:

The map shows the Company's transmission systems in those respective areas, the towns and communities in which the Company has local distribution systems, the lines connecting these local distribution systems to the Company's transmission facilities, the rural lines of the Company and the areas covered, and the locations of Norris dam, Fowler Bend dam and Watts Bar dam. The arcs that appear on the map are drawn with a radius of 100, 150 and 250 miles from Fontana dam site. If you used Norris dam and Fowler Bend dam each as a center for the 100, 150 and 200 mile zones and made the circles from those points, the area shown in the present Zone 1 would be substantially the same as it now is. The principal difference would be in Zone 3, which would embrace slightly less territory. The locations of those points are correctly shown, so it is possible from this map to make a calculation as to the areas which would be embraced in those respective zones if other centers had been used.

"Mr. Fitts: We object to the map in its present form for the reason that it is shown affirmatively that it is incorrect and misleading. The fact that you can re-draw these circles

so as to make it speak the truth, in my opinion does not save the map from the objection of incompetency because it shows a dam on there that not only is not under construction, but that cannot be constructed unless we speculate on what Congress is going to do in the future, because it has already directly refused to permit its construction in its last action. Under those circumstances I think the map ought to be redrawn to speak the truth.

Judge Allen: The Court considers that the map is competent, that it may be received in evidence, but that it is very inaccurate. Speaking for myself alone, when I see "Dam" on a map, I think that there is a dam there, or under construction, or one to be built.

Mr. Jackson: That is unfortunate,——

Judge Allen: It is unfortunate and natural.

[fol. 64] Mr. R. T. Jackson: I don't mean to argue with the Court about that. I just want to make this statement to clarify our position: Our testimony which follows this formal proof, and we necessarily tried to put in as much as we could with these witnesses instead of recalling them, will show exactly what the Tennessee Valley dams are, what are under construction, what have been constructed, and what they have recommended for construction. Our contention is going to be that it is not limited as to what is constructed or under construction, but it extends at least if not beyond to that which we have at least a reasonable apprehension that they are doing to construct. We are suing here for anticipatory relief and not to recover damages for past actions.

Judge Allen: The map may be admitted."

In addition to the lines shown on the map, the Company owns and operates smaller rural lines which are not shown on the scale. The Company operates in its western division, which embraces nearly all of the territory shown in Zone 1, approximately 200 miles of rural lines and in the area within the radius of 250 miles of the Fontana dam site, approximately 1,200 miles of rural lines. The Carolina Power & Light Company now serves all the electric power demands in the service area in which it operates that are economically serviceable.

The tabulation (offered and received in evidence as Complainants' Exhibit 46) shows the annual kilowatt-hour sales for the years 1933 and 1936 of the Carolina Power

& Light Company. The first column shows the total sales, including sales to other companies. The second column shows the total sales of the Company to regular customers in the entire area served. The third column shows the sale to regular customers only in an area within 100 miles of the Fontana dam site. The fourth column shows such sales within an area of 150 miles of the Fontana dam site. The last column shows sales to regular customers only, in an area within 250 miles of the Fontana dam site. In addi- [fol. 64a] tion, sales to all classes of customers are shown for the years 1933 and 1936, sales to industrial customers in an area within 100 miles of the Fontana dam site and the area within 150 miles of the Fontana dam site.

The revenue for the year 1936 in the area within 100 miles of Fontana dam site, from regular customers is $1,591,976, which does not include power sales to the Tennessee Public Service Company which amounted to about $900,000.

The Carolina Power & Light Company was organized in April, 1926, and at that time it served 153 communities, [fol. 65] with a total of 58,541 customers, and had 2,869 miles of transmission and distribution lines. The installed capacity of generators was 88,610 kilowatts. As of the end of the year 1926, the constituent companies of the Carolina Power & Light Company sold 284,133,834 kilowatt-hours. Ten years later, as of the end of the year 1936, the Company served 267 communities, with a total of 83,836 customers and 6,234 miles of transmission and distribution lines. It had an installed generating capacity of 249,050 kilowatts. Sales to regular customers of the Company during the year 1936 were 536,521,801 kilowatt-hours. During the ten year period, the Company extended service to 97 communities which had no previous service, and to a great many other communities having part time service, while that of the Carolina Power & Light Company is continuous and adequate to take care of the demands of any customers for expansion. The Company never has refused to give service to any customer on account of the inadequacy of facilities.

The Company's system is connected with that of the Tennessee Public Service Company on the North Carolina-Tennessee state line, near the Waterville plant, which is just across the line. There are two lines running from this

plant, one of which extends towards Knoxville. The capacity of this interconnection is 50,000 kilowatts. The other line extends towards Kingsport, Tennessee, with a capacity of 60,000 kilowatts.

The Company's facilities are connected with those of the Appalachian Electric Power Company on the North Carolina-Virginia state line, near Danville, Virginia, with a capacity of 40,000 kilowatts.

The Company's facilities are connected with those of the Virginia Electric and Power Company, near Roanoke Rapids and Battleboro, N. C. The capacities of those interconnections are 30,000 kw. and 6,000 kw. respectively.

[fol. 66] The Company's facilities connect with those of the Duke Power Company at a point midway between Raleigh, N. C., and Durham, N. C., with a capacity of 15,000 kw.; at a point near the Narrows substation, near the Baden plant of the Carolina Aluminum Company, with a capacity of 30,000 kw.; near Greenville, S. C., with a capacity of 20,000 kw.; and at the Wateree plant of the Duke Power Company, with a capacity of 28,000 kw. The Company's facilities connect with those of the Tidewater Power Company at Mount Olive, N. C., with a capacity of 1,500 kw.; at Abbottsburg, N. C., with a capacity of 1,500 kw.; and at a second connection at Abbottsburg, with a capacity of 12,000 kw. The Company's facilities connect with those of the Lexington Water Power Company at the Saluda plant of that company, with a capacity of 50,000 kw.; with those of the Carolina Aluminum Company near its Blewett plant, with a capacity of 40,000 kw. All of our interconnection capacities are only approximate. The Company has constructed generating and transmission and distribution facilities to keep ahead of the growth of the market and has endeavored not to over-construct facilities which would result in an increase of the cost of service.

The tabulation (offered and received in evidence as Complainants' Exhibit 47) shows by years, for the period beginning with 1927 and extending through 1936, and also for the year ending July 31, 1937, for the Carolina Power & Light Company, the number of miles of line of 35 kv. and above, miles of line of less than 35 kv., number of customers, residential annual kilowatt-hour use per customer, average annual revenue per residential customer and average rate per kilowatt-hour for residential customers. It

also shows the number of towns and communities served by the Company.

As of August, 1937, we had 1,434 regular employes and 57 temporary employes. The rates of the Company are [fol. 67] regulated in North Carolina by the North Carolina Utilities Commission, and in South Carolina by the South Carolina Public Service Commission. The rates are uniform throughout the territory served for the same class of service.

The tabulation (offered and received in evidence as Complainants' Exhibit 48) shows the tax payments of the Company for the years 1932 to 1936, inclusive, with an estimate for the year 1937. The statement shows, in addition to the amount of taxes paid, the gross electric revenue from the sales of energy, and gross revenues, including non-operating and other income.

Cross-examination:

The TVA does not at the present time have any transmission lines within any of the territory that we claim on these maps, nor does it have any contracts for the sale of power to any customers located within any of that territory. The TVA is not serving nor is any wholesale customer of the TVA serving anywhere within that area.

The gross revenues from the entire business for the year 1936 from electric service were $10,521,730. The revenue from the Knoxville business would be substantially $916,000. We have given considerable study to the Knoxville situation, but I cannot tell you what steps are involved and what would have to be done before we lost our Knoxville business. I do not know whether the City of Knoxville would first have to get itself a distribution system. Knoxville has not yet got its own distribution system. The next thing that would have to be done before we could lose this business would be that the power to the City of Knoxville would have to be supplied from another source. Our loss is contingent upon the happening of these contingencies. We are not exactly assuming that the Tennessee Public [fol. 68] Service Company is going to withdraw from business in Knoxville or lose all of its business to the City distribution system, but we would sustain a loss if the TVA or the City competed with the Tennessee Public Service Company. There is no certainty that we would lose the

entire Knoxville business, but we have been unable to renew our long-term contract with the Tennessee Public Service Company for the sale of power to it on account of the activities of the TVA in Knoxville, so that we are now operating on a ninety-day basis instead of on a long-term contract. Furthermore we have been serving the Tennessee Public Service Company their entire requirements with the exception of what they generated with a small plant. They have in turn been serving the Volunteer Portland Cement Company. They have been advised that they are going to lose that business as of January 12, 1938. The Tennessee Public Service Company is going to lose that, so that we will then lose a certain part of our revenue because of the fact that the Tennessee Public Service Co. will not have to supply the Volunteer Portland Cement Company.

"Q. Now, to sum your testimony up, isn't this correct, the Knoxville business is about 7 percent of your total gross business. There are no lines now in your territory, there are no contracts, no service anywhere within your claimed territory. You are testifying to a possible loss of 7 percent of your total business, and that loss, even you cannot say is a certainty, isn't that true?

Mr. Bemis: We object to that question. The witness has not testified that it represents 7 percent.

Mr. Fitts: I am cross examining. I am asking you whether it is true or not.

Mr. Bemis: It is purely argumentative.

Judge Allen: Objection overruled.

Mr. Bemis: Exception."

I am testifying that sales to the Tennessee Public Service Company were $900,000, which is approximately 8% of the Company's total gross revenue, which, of course, is a substantial amount of money, and that we stand to lose a part [fol. 69] or all of that revenue by reason of the activities of the TVA in Knoxville, Tennessee, at the present time. That is by reason of the City of Knoxville owning and operating its own distribution system and purchasing power at wholesale from the TVA. But I cannot see the difference between our losing the business by reason of Knoxville deciding to operate a plant of their own, assuming that that decision of the City of Knoxville must

have been on account of the availability of the TVA power, and having the TVA itself operate the system in Knoxville. So far as we are concerned, our loss is just as definite. I did not say that TVA is going to operate any system in Knoxville. I said I could not see the difference, so far as our loss is concerned, whether the City of Knoxville decided to operate a distribution system of their own with TVA power or whether the TVA itself operated the distribution system in Knoxville. If we lost this Knoxville contract to supply power to the Tennessee Public Service Company, we would certainly try to find other sources for disposing of that power. It is possible that we might do it.

We have first mortgage bonds outstanding but no second mortgage bonds, but there is a priority between the bonds outstanding. I could not tell you what has been the trend in the list prices of these bonds from 1933 up to the present time, as I do not know. Nor could I tell you whether your figures are right.

It is a difficult question to tell how far our present lines transmit power from our own generating plants. We do own a line that transmits it more than 100 miles from the place where it is generated. We transmit power, we take it from the Appalachian Electric Power Company on the North Carolina-Virginia state line clear across the state. That is not power that we generate ourself, I was just showing the distance. We generate power at our Tillery plant, which is near Rockingham, N. C., and take that power as far north as Henderson, which is about 150 miles. We [fol. 70] generate power at the Blewett hydro-electric station and transmit that power as far south as Manning, S. C., which is a distance of about 170 miles. I think that is about the maximum distance of our own generated power. Those two lines are not the only ones of over 100 miles in length transmitting power from our generating plants. I was just taking the farthest distance away from the plants. The plants are more or less in the center of the system. I was just taking the distance from these plants to the remotest areas of our own system. There are not any of our own generating plants or sources of power along that 150 miles of line. There is other power fed into that line as it goes along, which makes a lot of difference. I don't think we have any lines over 100 miles in length that transmit power from the place where it is generated with-

out any relaying and without having any additional power fed into it. I would not say definitely that we don't have any, because I cannot tell just from looking at the map right off hand. I would say that we have some of such lines over 100 miles in length but not over 150 miles in length.

It makes a difference in the amount of territory whether you take circles of 100, 150, 200 or 250 miles. It also makes a difference in the amount of customers. It does not make a great deal of difference whether you take the Fontana dam or the Hiwassee dam in the number of customers.

With reference to Complainants' Exhibit 46, it is true that we have more customers in the area between 150 miles and 250 miles from Fontana dam than is in the area of 50 miles from Fontana dam. A large part of the business is in the outside belt away from the Fontana dam. If you draw your circle from Norris dam and Fowler Bend dam, you would take in within a 100 mile radius practically the entire western division. You would take in somewhat a less portion of Zone 3 with a 250 mile radius. Our business [fol. 71] is larger in Zone 3 than in Zone 1. We would get considerably less of it in, if we started this from the other place. The maps were drawn by engineers, but I told them what dams to put in and what radii to use. The Fontana dam was put in because it was the nearest one to our territory and showed the most. I did not make any assumptions as to the way in which Norris and Hiwassee dams are going to be operated. It is very evident that there will be sufficient power from these two developments to take care of the load in that territory. I would assume that you would operate in such a way that you could take care of that load, that you want to get it. My assumptions were not based upon any method of operation, because my computations just show in the areas indicated what we have. We are able to serve customers in Zone 3, which is about 200 miles from our Waterville hydro-electric development, with power relayed from Waterville.

Redirect examination:

The nearest point in our system from the three dams or dam sites shown on Complainants' Exhibit 41 is approximately 75 miles. I have seen in the papers that the City of Knoxville has advertised for bids for the construction

of a distribution system in Knoxville. I only know what I read in the papers about it. That is my source of knowledge. I have not received any assurance that the TVA will not sell or distribute power in our territory. It is my understanding that all of these dams which have been referred to in cross examination by counsel for the defendants are to be interconnected and to make up one great system. I also understand that the power from this one pool can be tapped at any point on the system.

[fol. 72] Recross-examination:

The Tennessee Public Service Company owns the transmission line over which the power is sold in the City of Knoxville.

(The witness was excused.)

[fol. 73] N. M. ARGABRITE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live at Pelham Manor, New York, and am 57 years old. I am the Operating Vice President of the Appalachian Electric Power Company, the Kentucky & West Virginia Power Company, Inc., and Kingsport Utilities, Inc. I have been in the electric utility business since 1899, 38 years, and have been with the Appalachian Company since it was organized in 1926.

The map (offered and received in evidence as Complainants' Exhibit 49) shows the facilities of and the territory served by the Appalachian Electric Power Company, the Kentucky & West Virginia Power Company, Inc., and the Kingsport Utilities, Inc. The colored portions of the map show the broad outlines of the territory served by these three companies, except for minor areas served by non-affiliated companies.

The three arcs of circles appearing on the map represent three radii centering at Norris Dam, spanning 100 miles, 150 miles and 250 miles. It is impossible to show all of the lines of those three companies on a map anywhere near as small as this map. I have reference to distribution

lines, and there are farm lines and rural extensions which would not come out on a map like this.

These companies all own generating facilities. The tabulation (offered and received in evidence as Complainants' Exhibit 50) shows the Appalachian Electric Power Company's installed generating capacity, both steam and hydro. It also shows purchased capacity. I might explain that by "purchased capacity" I refer primarily to the output of [fol. 74] the Kanawha Valley Power Company, which is purchased and contracted for by the Appalachian Electric Power Company for the period of the life of its federal license.

The tabulation (offered and received in evidence as Complainants' Exhibit 51) shows the installed steam generating capacity of the Kentucky & West Virginia Power Company, Inc. The tabulation (offered and received in evidence as Complainants' Exhibit 52) shows the installed generating capacity of the Kingsport Utilities, Inc.; and the tabulation (offered and received in evidence as Complainants' Exhibit 53) shows on one sheet, the installed overall generating capacity of all three companies. They are closely interwoven.

None of these three companies owns or operates any properties other than electric properties.

The Appalachian Electric Power Company has outstanding bonds in the amount of $80,774,000, and preferred and common stocks in an aggregate amount of $53,500,167.27. The Kentucky & West Virginia Power Company, Inc. has outstanding bonds in the amount of $8,499,000, and preferred and common stocks in the amount of $4,147,525. The Kingsport Utilities, Inc. has outstanding bonds in the amount of $1,044,000, and preferred and common stocks in the amount of $1,000,000.

The chart (offered and received in evidence as Complainants' Exhibit 54) shows the development of the interconnection and coordination of the properties of the Appalachian Electric Power Company, the Kentucky & West Virginia Power Company, Inc., and the Kingsport Utilities, Inc. It shows by steps the construction of the 132,000 volt integrated transmission network and the interconnections with affiliated and non-affiliated systems. The exhibit [fol. 75] starts in the winter of 1925-26 and closes after 1935. This system as put together was planned in advance.

It was not a thing which just grew. It was planned just the way it came through. Prior to 1925 the getting together of the properties that would be necessary to support an integration of this kind took place. I mean by that, some of the predecessor companies, as well as the Appalachian Company when it was organized in 1926, got ready to develop a full integration and to tie in with neighboring companies and to make available to the communities covered by this wide area modern electric service which was not obtainable by any of them at that time. We started in and first conceived of taking a line from Logan, West Virginia, into Turner, West Virginia, in order to bring a supply quickly into Charleston, West Virginia, which was very short on capacity and on service at that time. That was finished as shown by Step 2 in the spring of 1926. In the spring of 1926 we projected a line into Rutland from Turner to tie in with the Ohio Power Company and work an interchange with that company. Going on to Step 4, in the summer of 1926 we gave relief to the City of Lynchburg, which was growing very rapidly. We started also from Roanoke down to Glen Lynn to tap another source of supply into that territory to relieve both Roanoke and Lynchburg and the territory they were supplying. The further development of the steps is graphically shown in this Exhibit 54 which can be read as you run.

A system that is built and designed to do a certain thing and to meet certain complicated conditions that arise in a great territory of that kind, when it is upset or disturbed by disintegration, falls out of balance very badly. Conditions become badly disturbed, not only from an operating standpoint, but from a financial standpoint.

[fol. 76] The tabulation (offered and received in evidence as Complainants' Exhibit 55) shows the number of customers, sales and revenue of Appalachian Electric Power Company within the zones at varying distances from Norris Dam. On the left is the 100-mile radius, next the 150 and then the 250. On the right hand side of the exhibit is a thing that I believe should be pointed out, and that is on the third column, the second column from the end, there is shown the total sales to regular customers in kilowatt-hours, and the one previous to that is the sales to large light and power customers, or the industrial sales of the Company. I call attention to those figures because of the fact that this power company is primarily an industrial

supplier. It supplies a very, very large industrial area. The tabulations (offered and received in evidence as Complainants' Exhibits 56 and 57) show the same information for the Kentucky & West Virginia Power Company and the Kingsport Utilities, Inc.

The tabulation (offered and received in evidence as Complainants' Exhibit 58) shows the Appalachian Electric Power Company's transmission and distribution lines as of different dates, beginning with 1928 and coming down to July, 1937. It gives the pole miles of lines with voltages ranging from 22 kv. to 132 kv., pole miles of lines below 22 kv., and the total pole miles of lines. There is a summation for the 100-mile zone, for the 150-mile zone, and for the 250-mile zone. The meaning of those zones is indicated by the footnote on the exhibit. The tabulations (offered and received in evidence as Complainants' Exhibits 59 and 60) show the same information for the Kentucky & West Virginia Power Company, Inc. and the Kingsport Utilities, Inc.

The tabulations (offered and received in evidence as [fol. 77] Complainants' Exhibits 61, 62 and 63) show certain data with reference to towns and communities served, average use, etc., for the three companies.

The Appalachian Electric Power Company on August 31, 1937, had 3,366 employees. The Kentucky & West Virginia Power Company, Inc. had 435, and the Kingsport Utilities, Inc. had 98. Out of the Appalachian and Kentucky employees there are 47 men who overlap who work for both companies, back and forth across the boundary line, across the river.

The rates of the Appalachian Electric Power Company are regulated by the State Corporation Commission of Virginia and by the Public Service Commission of West Virginia. The Kentucky & West Virginia Power Company, Inc. operates only in Kentucky and its rates are regulated by the Public Service Commission of the Commonwealth of Kentucky. The rates of the Kingsport Utilities, Inc. are regulated by the Railroad & Public Utilities Commission of Tennessee.

These companies primarily and very largely ask their large power customers to sign only a one-year contract for service, which contract is automatically renewable from year to year unless notice is given 60 days prior to the expiration of a given year. We have some customers that

have been allowed to sign up for a longer period of years, where we have had a heavy investment in getting them. That gives us a guarantee of a certain time in which to absorb the expense, whatever it may be, in getting the service to a particular customer. We have some contracts running around five years, things of that kind, but our wholesale large power business is done on what you might call a "good behavior" basis. In other words, we have always got to serve them upon a basis upon which they are thoroughly satisfied in order to serve them, and not on a binder of a contract. We have never had any trouble in [fol. 78] retailing customers of this character once they are on our lines. Our system is built specifically and especially for that kind of service.

The Appalachian Electric Power Company had completed, up to August 31, 1937, 2,527 miles of rural lines, and had under construction 452 miles. The Kentucky company had completed 131 miles and had under construction 31 miles. The Kingsport Utilities Company had completed 49 miles and had 6 miles under construction.

The map (Complainants' Exhibit 49) shows three zones measured by a radius from Norris Dam. In the territory served by these three companies within a 100-mile radius of Norris Dam, there is a very small amount of load not now served by these companies that could be considered prospective. In the territory served by the Kingsport Company, which is all within the 100-mile zone, there is not more than 100 kw. of prospective unconnected load. There is none that I know of in the territory within the zone served by the other companies. There is, of course, more than 100 kw. of unconnected load. However, the nature of the manufacturing processes makes this load impossible to be connected by a public utility. They manufacture their energy through the process steam that they have to use for other purposes. Most of the Appalachian system is within the 250-mile zone and there is less than 10,000 kw. of load that we consider as prospective. Here again, as pointed out in the case of the territory served by the Kingsport Company, there is considerable additional unconnected load that cannot be considered prospective on account of the conditions under which they operate—chemicals and paper manufacturers and things of that kind, where they use process steam. There is considerable 25-cycle load, railroad electrification, and things of that

kind in the territory, which we do not consider as available [fol. 79] prospective. They cannot be served from a 60-cycle central system to any advantage. There is very little unconnected load in the Kentucky territory in the 250-mile zone. We have a continual inflow of new load coming from the industrial territory right along, and the residential load follows the industrial, of course. It just continues to come. Even if we had these prospects cleaned up, it would continue to come.

The tabulations (offered and received in evidence as Complainants' Exhibits 67, 68 and 69) show the tax payments for the years 1932 to 1937, inclusive,—1937 estimated —for the Appalachian Electric Power Company, Kentucky & West Virginia Power Company, Inc., and Kingsport Utilities, Inc., respectively.

The tabulation (offered and received in evidence as Complainants' Exhibit 70) shows approvals by the Tennessee Commission of franchises owned and held by Kingsport Utilities, Inc. and consent of the City of Kingsport to the assignment of the franchise issued to a predecessor company. The Kentucky Commission came into existence in 1934. No consents were required by any similar body in Kentucky before that time. The Kentucky & West Virginia Power Company, Inc. has one franchise in Leslie County which we obtained since the Kentucky Commission was organized and we have an approval of that franchise. The original franchise at Kingsport was granted before any consents were required by the state regulatory body under the laws of Tennessee.

I believe there are four small municipal plants in the Appalachian territory which are taking service from the Appalachian Company, and I believe there is one that does not take any current from the Appalachian Company. That is the City of Radford, Virginia. The others that are taking current are the towns of Salem—incidentally, in [fol. 80] the town of Salem the Company supplies the power there direct, so it is only partially a municipal proposition—the town of Bedford, where they have a small hydro plant, and where we supplement their supply for them; the City of Martinsville is in the same condition, and the town of Richlands. In Kentucky there is the City of

Olive Hill, which takes its entire output from the Kentucky & West Virginia Power Company, Inc. I think that covers the municipal operations. There are none of them of any great size, however.

[fol. 81] Cross-examination:

The TVA does not, to my knowledge, have any transmission lines within the area that I have described as the area claimed by these three companies. I do not know of any service being rendered either by the TVA or by any wholesale customer of the TVA to anyone within that area. Since the organization of the TVA, the three companies concerning which I testified have been following through their regular process of putting in new generating capacity as fast as it is needed. It is still being added. We added 40,000 kw. at Logan, West Virginia, in 1937, or are in the process of adding.

I did not overlook the municipal plant at Danville, Virginia, that generates its own power. I think that the question asked me was in the territory. I think if you will look at the map you will find that there is a space left vacant for Danville. They generate and distribute their own power, but that is not in the territory that we have colored. The town of Martinsville generates its own power. I guess I did not read that. I had it in front of me. But we are connected with them and supply part of their supply.

In 1935, we leased two licensed Government dam sites, both London and Marmet; 18,000 kilowatts at Marmet and 16,500 at London. Both of those dams were constructed by the United States engineers. It is not quite right to say that this year we have leased an additional 21,000 kilowatts at the dam constructed by the United States engineers at Norfield. It is built by the Kanawha Power Company, the same as the other, and the lease is understood to be coming through. It is true that if we conclude that lease, we will have added approximately 95,000 kw. to our existing power during the last two years. I should also say that this addition represents about one-fourth of our installed capacity. The Company is now constructing a [fol. 82] hydro-electric dam on New River, near Radford, which is within the 250 mile radius. That will be 75,000 kilowatts.

In computing the non-connected load in the area claimed by the three companies I have discussed, I included farms

and small rural communities in the area not now served. I speak of the reasonably prospective load. By that I mean if a man is operating a pulp mill by which he has to use steam in order to do his processing, and that steam is capable of being used to generate energy before going into the process, we do not believe that is a reasonably prospective load. We do not believe a railroad generating power using 25 cycles is a reasonably prospective load. The conversion load in those instances is too great for the railroad. We count every farm that has the apparent ability to pay for the use of electric energy as a part of our reasonably prospective non-connected load. There are such things as farms which we have in the mountains of West Virginia and Virginia, cabins where nobody would ever buy current if it was given them at any price.

It is not true in considering this non-connected prospective load that we first have to figure whether in any given area there is enough demand to justify us in building transmission lines to pay our profit. I will tell you about how those things are done in West Virginia, as an example, and will also tell you how it is in Kentucky. The rural electrification in West Virginia is laid down by the Commission's formula. The formula provides regular ways for prospective users to secure the current. They can come in and apply for service in the area where it is not now served, and if they can comply with the formula, they get the service.

In Kentucky, the entire area shown on this map has been handed over to this company under a certificate of con- [fol. 83] venience and necessity, which subjects us to go anywhere in that area in taking care of the business. We are now calculating on filling up all of the gaps in that area. In estimating the future load, we fully expect the possibility of new industrial customers coming into the region, but have not calculated this expansion in the figures I was using. We are expecting that today, but it may come at a later time.

Our load center which is nearest to the nearest source of TVA power is Kingsport, Tennessee, which is about seventy miles from the TVA power pool, that is, seventy miles from Norris Dam. I have heard most of the testimony here and have heard two or three of these companies say that Norris Dam is the place from which they are drawing their distances. There is some limitation on the base load that can be served from the Norris plant over a transmitting

distance of 100, 150 or 250 miles, but I am not at all sure that the people that are running Norris Dam are cognizant of those things.

Examination by the Court:

The limitation on the base load depends on the formula against which you are working. You have to take into consideration when you push a line out anywhere, first, the law of economics. You have to take into consideration what regulation you can give on long lines, pushing out from anywhere. If you push a line 250 miles, we know from experience you are going to have a tremendous job regulating it at the end of 200 miles unless you have built under extremely extravagant conditions. We know that economic conditions have to be very favorable and you have also to take into consideration the question of load factor to a very considerable degree. The load factor controls that much more than any other factor you can bring into the picture. These things have to be taken into consideration. We know, as far as we are concerned, that we have very [fol. 84] extensive limitations as to how far we can push a line out and get a load, because we have to meet the laws of economics. Particularly on account of the facts and conditions under which we operate, we cannot do things which will not carry from a financial standpoint. As far as profit is concerned, we do not consider that we work for a profit. We consider we work for a return upon the investment in the property.

Cross-examination continued:

It depends very largely upon how you build your pool as to whether all of this territory which has been described, both in my testimony and in the preceding testimony, could be served over lines the distance they will have to go from Norris Dam. If your pool is sufficiently reinforced, and every fifty or sixty miles you have another generating station pumping current back into the Norris section, if you are fortified with sufficient transmission to get it there——

"By Mr. Fitts:

Q. Do you know of any generating station between Norris Dam and the points that have been mentioned in your testimony and the other testimony?

A. I only know that you have a very large pool under calculation and a pool of 660,000 to 1,000,000 kilowatts with no place to go is a very threatening piece of business to look at from our standpoint."

When I talk about a pool, I am talking about interconnection of the dams. I cannot agree that that has nothing to do with the question as to whether or not the base load limitations at Norris are not so great as to make impossible the kind of service that has been testified to here over the area that has been testified to. I cannot agree that you are going to cut Norris Dam off and say what can be delivered from Norris Dam is fundamental. What can be delivered from that pool is the fundamental question.
[fol. 85] It is correct that there is a pool and an interconnection of all of the dams on the main river. There are, of course, limitations as to how far you can transmit power from the Norris generating plant, which is the nearest, without a break and without putting any more power into the line as it goes out at any place along the line. There are very decided limitations, if you are considering service, or if you consider economics. I will not go so far as to say that there are very decided limitations as to the amount of load, because you can pull capacity into Norris from other places. If you put the copper or aluminum up to pull it with, you can get it there.

I think I can give you a quotation with regard to the assumptions I made as to the operation of Norris Dam. In 1935, before the Military Affairs Hearing in Washington, Dr. Morgan, the Chairman of the TVA, made this statement: "Then in the matter of electric power, power transmission is not limited to a given area. Our ordinary distance of transmission is about 200 or 250 miles, yet if there was a demand for power in Pittsburgh, or in Ohio or in Washington, we could transmit that power at the end of our line to another company and they could send it on for another 200 miles, and thereby you can shift your power load and supply it in other places that would be in need of it, and that is an emergency source of power that is very significant." Dr. Morgan has talked quite a little bit in different places, and I have heard him, which gives me the impression that that is the intention, to transmit quite long distances. I would not say that my testimony is based only upon the assertions that I have heard and read.

I don't know how much of the power available at Norris has already been contracted for. I have heard of the contractual relations with the Aluminum Company of America [fol. 86] and the figures on how much of that power they are going to take away. It has not, however, affected my conclusion when we are considering a 660,000 to 1,000,000 kw. capacity. I get that in part from Dr. Morgan and I think some of it from Mr. Lilienthal. I have a clipping here, giving the claimed capacities of these various dams, showing 660,000 kilowatts capacity in dry seasons and 700,000 kilowatts in wet seasons.

If our industrial customers are not satisfied with our service, they could put in their own power plants. There is no doubt that generally some industrials do generate their own power. I would not say, however, that the manufacturers of steam generating equipment and Diesel engines are in competition with us, although if asked to do so, they do supply the means.

I mentioned in my direct testimony that any disturbance in the so-called integrated system would react unfavorably on the entire system. That same unfavorable reaction would occur if a municipality in the area or several municipalities in the area put in their own generating plants and generated their own power and distributed it, rather than if they bought it from somebody else.

The stock and bonds of the Kentucky company and of the Kingsport company are both pledged under the mortgage of the Appalachian Electric Power Company. The Appalachian is the parent of those two companies. I have no knowledge or information concerning the value and list prices of the securities of the Appalachian company. I have not informed myself as to what the securities are selling for or what they are listed at, so that I cannot tell whether or not they are selling for more or are listed at [fol. 87] higher prices now than they were three years ago. I don't suppose I have noticed anything except a quotation of the preferred stock of the Appalachian company in the last two or three years. I have noticed within a year that the Appalachian preferred stock was quoted above par. I could not tell whether or not in 1936 those securities reached a new high during the past seven years, but it would be very strange if they had not. I do not remember any public offering by the Appalachian of any securities within the last five or six years. Since the last offering,

the funds necessary for the capital requirements of the Company, aside from those that are available from revenues, have been obtained by loan from the parent company, the American Gas & Electric Company.

During 1936, the total energy output of these three companies was somewhere in excess of 1,300,000,000 kilowatt-hours. I do not think from memory that it is quite right to state that this is an increase of 80 per cent in the last four years. (After examining papers.) The sales to customers in 1933 were 912,000,000 kilowatt-hours. In 1935, they were 1,154,213,284 kilowatt-hours. In 1936, they were 1,351,653,286 kilowatt-hours and for the seven months ending July 31, 1937, 830,910,109 kilowatt-hours. That is the Appalachian, not the combined figures, but that reflects the others quite closely because of the interconnections.

In 1936, the number of customers was 137,970 for the Appalachian Company, 21,170 for the Kentucky & West Virginia, Company, and 4,358 for the Kingsport company. You cannot compare these figures with 1932 because there have been other properties brought into the Company since that time, which brought in quite a large list of customers. There has not been a large increase in the number of customers since 1932 in the immediate territory [fol. 88] that was served in 1932. There has not been a great number of customers added because of saturation, because we had already got up to a pretty good sized figure. But there has been some increase.

The kilowatt-hour use by residential customers has increased ever since we took these properties and started work on them ten years ago. The average kilowatt-hour consumption per residential customer, in 1932, it was 607, in 1936 it was 761. That is of the Appalachian Electric Power Company. For the Kentucky & West Virginia Company, Inc. it was 498 and 613, and for the Kingsport Utilities, Inc. it was 655 and 914.

Dividends were paid on the stock of the Appalachian Company for 1933, 1934, 1935 and 1936, but I haven't the figures. The preferred stock dividends went to a great many people probably thirty or forty thousand. The common stock dividends were paid to the American Gas & Electric Company, who own all the common stock.

We supply quite a number of small private companies in the territory that I have described here as the territory

of these three companies. These small private companies that we have never taken over, are scattered here and there, little things, nothing large. We supply the Point Pleasant Water & Light Company of West Virginia. The Columbus Railway & Light Company is in the State of Ohio and the Appalachian Company does not supply that. That is the parent company of Point Pleasant Water & Light Company. I have heard of the Floyd Electric Power Company, but cannot place it. I think it is operating in our territory, a little bit of a company up there.

Complainants' Exhibit 50 shows dependable capacity. That is not all the capacity we have. We have several other plants in the system. The report (Complainants' Exhibit 50) shows only dependable plants. The tabulation correctly shows Cabin Creek plant with an installed capacity [fol. 89] of 116,340 kilowatts, every bit of which is dependable capacity. In response to the question whether or not the Company in 1933 reported to the Federal Power Commission that due to limitations of boiler plant capacity the dependable capacity of that unit was only 100,000 kilowatts, I will say that a number of things have been done in that plant which brings that plant to a dependable condition. However, I think if you will want to question me on this, you will get better results from our engineer who will follow me at a later day. I do not know whether that report was made or not. I did not make it.

The installation of the Kenova plant of 40,000 kilowatts is dependable capacity.

"By Mr. Fitts:

Q. I will ask you whether or not it is true in 1933 the Appalachian Power Company reported that the dependable power of that plant was 32,000 kw., because of limitation of boiler plant?

Mr. R. T. Jackson: I object to this question, because counsel is using a report of 1933. If he would use the latest report, then it might be relevant, but to go back four years and use a report when there are intervening reports, it is not.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception."

There were more boilers installed and that plant is able to carry its load. I know of my own knowledge that there

has been a change since the 1933 report. I know nothing about the 1933 report, however.

We have listed the Byllesby plant with a capacity of 21,600 kilowatts.

"By Mr. Fitts:

Q. Do you know whether or not the same report to the Federal Power Commission in 1933 listed the dependable capacity at 11,300 kw., because of limitation of low water flow?

[fol. 90] Mr. R. T. Jackson: The same objection, for the reason that use is being made of a report superseded by some four subsequent reports.

Judge Allen: The objection is overruled for the reason that it goes to the weight rather than the competency. The Court considers the evidence competent.

Mr. R. T. Jackson: May I say in explanation, that if there have been filed with the Federal Power Commission reports since that time showing a changed condition in accordance with the exhibit introduced by the witness——

Judge Allen: It may be brought out.

Mr. R. T. Jackson: It would seem improper to use an earlier one that reflected conditions long superseded.

A. I think both reports are correct. This report is correct and the report you are talking about is correct."

The tabulation correctly lists the Buck generating plant with a capacity of 7,740 kilowatts. That plant was in existence in 1933. I do not know whether or not it was listed in the report to the Federal Power Commission in 1933, but if it was not, it should have been listed. You are dealing with this report of installed capacity, in that report you are talking about an entirely different thing. Dependable capacity is 24 hours a day, 365 days a year. As to whether it is true that the reports to the Federal Power Commission represents dependable capacity and excludes everything that is not dependable, I will have to ask you not to question me about that report to the Federal Power Commission, because I never saw it and know nothing about it. I do not know what my company was asked to report to the Federal Power Commission.

My list includes the Reusens Plant with a capacity of 12,500 kilowatts. That is dependable capacity whenever

there is water for it. I know of my own knowledge that it is dependable when there is enough water to run it. As I [fol. 91] never saw the 1933 report to the Federal Power Commission, I do not know whether it listed the dependable capacity of that plant at only 3,400 kilowatts, because of the low water limitations.

The tabulation shows installed capacity at the Niagara plant of 2,910 kilowatts. That is dependable capacity only when there is water for it. That is not firm power 24 hours a day every day in the year. It is listed here as installed generating plant capacity. As to whether the report to the Federal Power Commission lists the capacity at 1000 kilowatts I will have to say over again that I do not know anything about that report.

We have listed the generating plant of the Kingsport Utilities with installed capacity of 11,440 kilowatts. That is dependable capacity. It is a steam plant. I do not know whether or not the Kingsport Utilities reported to the Federal Power Commission that the boiler capacity of that plant was limited to 6,000 kilowatts, but I do know I have been running 8,000 for the last month. I do not know whether 11,400 was ever run steadily all the time. Kingsport's demand does not run that high. I think it could, if necessary, produce 11,400 kilowatts.

I think the dependable capacity of the Hazard plant of the Kentucky & West Virginia Power Company of 19,500 kilowatts is correct. We have operated it at 18,000, but I do not know for how long a time. I do not know how many days, how many hours it carried that load. It could not carry that indefinitely. As to whether we reported to the Federal Power Commission only 10,000 of this capacity as dependable, due to condensing water, I do not know anything about the report you refer to. I never saw or read the report. Capacity that is only available during certain periods of water flow is not regarded in the utility business [fol. 91a] as dependable. The capacity at these hydro plants is limited like every hydro plant in this country with the exception of Niagara Falls that I ever heard of. All hydro plants are limited. I spoke of the formula adopted by the Commission. I did not omit in computing the nonconnected load in the area that rural area of residents who do not come up to the formula, as there are none who would not come up to the formula. There is not a single prospective customer.

[fol. 92] Redirect examination:

The labels on Complainants' Exhibits 50, 51 and 52 read "Appalachian Electric Power Company, Installed Generating Plants, Capacity as of November 1, 1937". Without regard to their firm power capacity, they are dependable plants in that they may be operated at any time. The matter of firm power capacity and the matter of supervision of generating plants are under the jurisdiction of an engineer in my Company. That does not fall under my immediate jurisdiction and I do not follow that closely.

I stated on cross examination that if one of our customers wasn't satisfied, the customer might install a plant of its own. It might also appeal to the regulatory Commission. Assuming that the rural customers in West Virginia are able to satisfy the minimum requirements prescribed by the regulatory Commission of the State of West Virginia, the Commission could compel us to extend service within the area which I have shown as the area where the Company holds out to give service.

One of the hydro-electric plants on the Kanawha River is the London navigation dam. The power house and the generating facilities are constructed and owned by the Kanawha Valley Power Company, an affiliate. The Kanawha Valley Power Company pays the Government an annual rental for the raw water, or water under pressure, which has incidentally resulted from the construction of the navigation dam. The Kanawha Valley Power Company provides the power house and all facilities for manufacturing that water under pressure into electricity. When I speak of leasing that capacity on the part of the Appalachian Electric Power Company, I refer to a lease by the Appalachian Electric Power Company from the Kanawha Valley Power Company. The situation is exactly the same with reference to the [fol. 93] power house and generating facilities at the Marmet navigation dam, and at the Winfield navigation dam on the Kanawha River. The power house and generating facilities are being constructed at the cost of the Kanawha Valley Power Company, and will be owned by that company. The Kanawha Valley Power Company in each of those plants is a licensee under the Federal Water Power Act.

I do not know much about whether or not the Government has also asked us to lease or build a power house and generating facilities and to lease or purchase water under pres-

sure at the Gallipolis navigation dam on the Ohio River. That would fall to a contract with the Ohio Power Company and not to a contract with the Appalachian Electric Power Company.

We carry on business in the counties of Hawkins and Sullivan in Tennessee. I know it to be a fact that the TVA has a county franchise for the construction, maintenance and operation of electric lines in Sullivan County, Tennessee.

What has been referred to as the Buck plant is sometimes called Byllesby No. 4. They are known as Byllesby No. 2 and No. 4. Byllesby proper is No. 2 and Buck is No. 4.

Recross-examination:

The dams which I mentioned on the Ohio and Kanawha Rivers are navigation dams. They are low head dams, they are not high dams, but they do produce electric energy. They produce electric energy a part of the time, but do not produce it all the time.

Redirect examination:

When I testified on cross examination as to a power pool in connection with Norris Dam and the construction program of the Tennessee Valley Authority, my testimony was based in part upon a table which appears at page 279 of the printed hearings before the Subcommittee of the House [fol. 94] Appropriations Committee in charge of deficiency appropriations on the first deficiency Appropriation Bill for 1936, 74th Congress, Second Session, which table shows at the bottom this statement: "Continuous capacity of integrated system kilowatts 660,000 kw.; annual primary output 5,780,000,000 kilowatt hours; estimated annual gross wholesale power revenue $23,120,000."

(The witness was excused.)

H. R. Bland was called as a witness on behalf of the complainants and, having first been duly sworn, was examined and testified as follows:

Direct examination:

I am 45 years old, reside in Jackson, Tennessee, and am Secretary-Treasurer of the West Tennessee Power &

Light Company. As such, I have custody and control of the corporate records of the Company.

The tabulation (offered and received in evidence as Complainants' Exhibit 71) is a memorandum of franchises granted the West Tennessee Power & Light Company and commission approvals thereof. The tabulation (offered and received in evidence as Complainants' Exhibit 72) is a memorandum of consents of the Tennessee municipalities and orders of approval of the Tennessee Railroad and Public Utilities Commission to assignments of municipal and county franchises to the West Tennessee Power & Light Company.

As Treasurer of the Company, I have charge of the books of account and the payment of bills for the Company including the billing and paying of taxes. The tabulation (offered [fol. 95] and received in evidence as Complainants' Exhibit 73) shows the taxes of all kinds paid by the West Tennessee Power & Light Company for the years 1932 to 1936, inclusive, and our estimate of what the taxes will be for the year 1937. This tabulation also shows the gross revenue of the Company for the years 1932 to 1936, inclusive, with our estimate of what the revenues will be for the year 1937. It also shows the percentage that the taxes bear to the gross revenue for those years and for the estimate for 1937.

(The witness was excused.)

JOHN WISDOM was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live at Jackson, Tennessee, am 56 years old, and am at present General Manager of the West Tennessee Power & Light Company. (Mr. Wisdom's qualifications were then conceded.)

The map (offered and received in evidence as Complainants' Exhibit 74) shows the lines of the West Tennessee Power & Light Company, with the exception of distribution lines, the local distribution systems being indicated by black circles. In addition to the transmission and distribution systems indicated by the map, we have steam plants located at

Jackson, Humboldt, Brownsville and Ripley, and oil engine plants at Henderson and Halls.

The tabulation (offered and received in evidence as Complainants' Exhibit 75) shows the kw. capacity of the installed generators in the six power stations. Combined [fol. 96] installed capacity of the Company's generating facilities is 5,226 kw. We have a connection with the Memphis Power & Light Company for the purchase of current at the Shelby and Tipton County line.

In addition to the electric power facilities which I have described, we operate natural gas distribution systems in six towns, ice plants in two towns, water works plants in three towns, and a street railway in one town. These various utilities have grown up together historically, managed by the same foremen and officers, and they are closely intermingled. There is no corporate separation. They are all departments of the West Tennessee Power & Light Company and constitute one operating organization as far as the general overhead is concerned.

The Company was organized in 1887 as a horse-car line at Jackson. It was later electrified, and at the same time the Company began the sale of power. In later years we purchased various plants around West Tennessee, and in 1928 these plants were thrown together into one company, known as the West Tennessee Power & Light Company. We serve in nine counties in West Tennessee. There are some industries at Jackson and Humboldt. The balance of the territory is largely rural and agricultural. Since July 1, 1928, the Company has spent about $500,000 for construction and expansion of its electrical business and facilities.

The tabulation (offered and received in evidence as Complainants' Exhibit 76) shows, for each of the past ten years, the revenue from residential and farm customers, the energy sales in kilowatt-hours to residential and farm customers, the energy sales in kilowatt-hours to all other customers, the industrial sales in kilowatt-hours, the per cent that the industrial bear to the total kilowatt-hours, the number of customers served, the average revenue per residential and farm customer, and the kilowatt-hours used by the average residential or farm customer. All of our business is conducted [fol. 97] within the State of Tennessee. The business and rates of the Company are regulated by the Tennessee Railroad and Public Utilities Commission. (Counsel for defendants objected to the last column of the tabulation, Com-

plainants' Exhibit 76, containing information as to the rates charged by this complainant, and moved to strike that portion of the exhibit that related to the rates charged, upon the grounds that this data was immaterial and irrelevant in the case. At this point the following occurred):

"Judge Allen: The motion to strike out the itemized information concerning the rates per kilowatt hour is granted.

It is the ruling of the Court that evidence on rates of the Utilities and rates of the Tennessee Valley Authority is immaterial to this controversy. This is not a rate case.

Mr. R. T. Jackson: If your Honor please, I will reserve my remarks until the matter comes up in another connection, and save an exception.

Mr. Seymour: Do I understand the Court to mean that the exhibit is received in all other respects?

Mr. Fitts: Yes, there is no other objection.

Judge Allen: They may be received."

Cross-examination:

None of the securities of my Company are outstanding in the hands of the public at the present time. I do not remember the approximate last date of public offering or issuance of securities to the public. All the funds necessary for the Company's capital requirements are furnished by affiliated companies. The securities of the Company are owned by the National Power & Light Company.

I do not remember the maximum load or peak load of the Company in kilowatts for the year 1937, but it was something like 6,800 kw. That is higher than the loads in kilowatts in previous years. It was the highest in the history [fol. 98] of the Company. I do not recall the approximate figure for the year 1934, but it was somewhere in the neighborhood of 4,300 kilowatts. The energy sales in kilowatt-hours of the Company reached a new high for the twelve months ending July 1937.

The municipalities in the claimed area of my Company which own and operate their own municipal distribution systems are Covington, Somerville, Bolivar, Milan and Trenton. They owned and operated distribution systems before the year 1933. Somerville, Bolivar and Milan have contracts with the TVA. They owned and operated their own distribution systems before TVA was organized and did not purchase any power from my Company. There are

some unserved industrial concerns in the claimed area of my Company. Roughly, we generate about half of the power used on our system and purchase about half from the Memphis Company. We operate in Madison County, and serve somewhere around 500 rural customers in that county.

"Q. Do most of those rural customers reside along main highways upon which your Company's transmission lines run?

A. No, not all of them.

Q. Do substantially all of them?

A. I would not say so, no.

Q. Do most all of them?

A. Well, if you would allow me to describe it in this way—we have lines that go out the main highways with branches off of those lines down the side roads.

Q. You mean drop lines?

A. No, branch lines.

Mr. Seymour: May it please the Court, we desire to except to this type of questioning now, as being beyond the scope of the examination of the witness in chief, and we are expecting to put on a witness who will deal with that subject. [fol. 99] Judge Allen: Upon that question the Court, in order to keep the record clear, wishes to make a further statement. It is, of course, the general rule that the cross examination shall be limited to matters brought out in chief, but there is a very definite qualification to that rule as laid down by the Supreme Court in 174 U. S. and followed by the Federal cases generally. It is that the extent and manner of the cross examination of a witness on matters not brought out in chief lies within the sound discretion of the Court.

Now the Court has deliberately and unanimously decided to permit cross examination in this case, even upon matters not connected with the examination of any witness in chief. This right will be available on equal terms to each litigant. We have made this decision in view of the number of complainants, the number of witnesses, and the fact that the witnesses are drawn from widely scattered points from a number of several states, and we think that we exercise our sound discretion in permitting such a full cross examination of every witness if and when desired. A strict adherence to the rule as stated, without the qualification laid down by the Supreme Court, would compel many witnesses to travel many miles for direct examination, and either to remain here

in Chattanooga in attendance upon the trial for an uncertain number of days, or to come back again for the purpose of examination by opposing counsel.

We believe that this decision which we have arrived at in the interests of economy and of the convenience of all parties and the witnesses, which will be carried out for the equal benefit of every litigant, lies within our sound discretion as defined by the Supreme Court of the United States. An exception, of course, may be taken to this ruling."

There was a hearing before the Railroad and Public Utilities Commission of Tennessee where we made application to build certain rural lines in Madison County. I am familiar with the Commission's order of May 18, 1937. We make reports to the Commission and I would say that the Commission has some general familiarity with the Company's business. I would not agree with a statement by the Commission that most of the rural customers served in Madison County by my Company were served by transmission lines along highways.

[fol. 100] Redirect examination:

Our Company is delivering electricity to the City of Jackson in connection with its municipal business. There is no contract, just a course of month-to-month dealing.

The cooperatives operating in our territory which are purchasing power from the TVA are the Gibson County Electric Membership Corporation and the Southwest Tennessee Electric Membership Corporation. They are operating in our territory and have built a great many rural lines in various counties. The Southwest Cooperative has run lines from the Jackson substation to the west part of Madison County, through Haywood County and into Tipton County. Those lines were built by the TVA. Besides those cooperative lines, the TVA has a transmission line from Pickwick Dam to Jackson. The TVA has a contract with the City of Jackson for the sale of power to be used for its municipal purposes, instead of the City getting that power for that purpose from us, as it now does. The TVA has a contract with the City of Jackson, by which the City will render service in the territory in which we are now serving private customers.

It is not correct to say that we are serving everything in the City of Jackson and that surrounding territory, except that the municipality of Jackson buys power from us at the present time and renders that service for itself for street lighting and its traffic lights. They buy some power from TVA and some from us. They commenced buying power from TVA something like a year ago. Prior to that time, they had their own municipal plant, but we have always rendered some municipal service. They have generated the great majority of the power they used. We only furnished to outlying schools and things that were off their lines.

Prior to the advent of the TVA into our field, there was a privately owned plant at Bells, Tennessee, the Bells Water [fol. 101] & Light Company. Then there was a privately owned plant at Gibson. They did not generate their power, but purchased power from us. Prior to the advent of the TVA, there were no persons or corporations generating power that was sold by them in our territory.

Recross-examination:

One of the two rural corporations which is purchasing at wholesale their electricity from the TVA in our territory is the Southwest Tennessee Electric Membership Corporation. None of the customers now being served by the Southwest Tennessee Corporation previously received service from my Company. All of the customers of that corporation previously were unserved. I understand that about 700 customers are now being served by that Corporation in the three counties. Excluding the area around the town of Gibson, there are not to my knowledge any customers of the Gibson County Electric Membership Corporation which were previously served by my Company. I do not know how many rural customers in our area are now being served by the Gibson County Corporation.

With reference to selling power at wholesale to a privately owned company which was operating in the town of Gibson, there were about a hundred customers there. The load represented approximately 50 kilowatts. At the time we sold power to the Gibson Power & Light Company at the outskirts of the City of Humboldt, and they carried the power to Gibson over their own line about five miles. I know very little about the physical condition of that property in this community, as I have not looked over it in recent years.

The only thing I know about the financial condition of the Gibson Light & Power Company was that they met their light and power bills very promptly. I recall some advertisement of the sale through a trustee of their property in the Town of Gibson and was present at a sale when the property was sold. I did not bid on the property. It was [fol. 102] bought by a Mr. Wright, but I do not remember the sale price.

The City of Jackson has voted bonds to either build or acquire a municipally-owned distribution system. It is my understanding that the City of Jackson intends, under the contract mentioned, to buy power from TVA to be distributed over the system which that City owns in the Town of Jackson, or will own.

I was made Vice President and General Manager of the West Tennessee Power & Light Company when it was organized in 1928, and later became President. The City of Jackson did not, to my knowledge, in 1931 issue bonds for the construction of a municipally-owned distribution system.

(The witness was excused.)

J. C. York was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 47 years old, reside at Bristol, Tennessee, and am employed as Secretary-Treasurer of the East Tennessee Light & Power Company and Tennessee Eastern Electric Company. As Secretary-Treasurer of the two companies, I have custody and control of the corporate records and books.

The tabulation (offered and received in evidence as Complainants' Exhibit 77) is a memorandum of the consents of the Tennessee municipalities and orders of approval of the Tennessee Railroad and Public Utilities Commission to the assignments of municipal and county franchises of the East Tennessee Light & Power Company and the Tennessee [fol. 103] Eastern Electric Company. Item No. 4, referring to the municipality of Butler, does not show any con-

sent to the transfer of Butler Light & Power Company. At the time of the transfer of the Butler Light & Power Company, as well as Roan's Creek Light & Power Company, both companies were being operated by an individual and transfers by them did not require the approval of the Commission. The individual was Chas. E. Ide, Vice President and General Manager of the East Tennessee Light & Power Company. He was operating the Butler Light & Power Company and the Roan's Creek Light & Power Company. The latter is Item No. 8, with reference to Mountain City.

The tabulation (offered and received in evidence as Complainants' Exhibit 78) is a memorandum of the franchises granted the East Tennessee Light & Power Company and the Tennessee Eastern Electric Company and the Commission's approval. The Greenville franchise has not been approved by the Commission but was issued before the approval of the Commission was required, I believe. The Commission was organized in 1919, I believe. The franchise was granted by Greenville in 1912, as shown by the statement. My companies are operating in three states—Virginia, Tennessee and North Carolina. The two exhibits to which I have testified had reference only to the State of Tennessee.

The tabulation (offered and received in evidence as Complainants' Exhibit 79) is a memorandum of the Virginia Highway permits of the East Tennessee Light & Power Company. The State of Virginia in improving the main highways, as well as the secondary highway system, passed a ruling that no telephone or electric light or power company may string wires along or across the main highways, or the secondary system, without a permit from the State Highway Department of Virginia. This is a correct list of those permits. The State of Virginia does not require any consent or approval of franchises issued in that state by municipalities or counties. That is also true in the [fol. 104] State of North Carolina.

The tabulation (offered and received in evidence as Complainants' Exhibit 80) is a tabulation of the tax payments, including Federal, state, county and other taxes of the East Tennessee Light & Power Company for the period 1932 to 1936, inclusive, showing the actual amount of taxes paid for those years, and the estimate for the amount of taxes paid and to be paid for the year 1937. It also shows gross revenues of the Company for each of the years 1932 to

1936, inclusive, with an estimate for 1937, and the percentage of the taxes paid to the gross revenue.

The tabulation (offered and received in evidence as Complainants' Exhibit 81) is a tabulation of the Federal, state, county and other taxes paid by the Tennessee Eastern Electric Company for the years 1932 to 1936, inclusive, and estimated amount of taxes paid and to be paid for 1937. It also includes a statement of the Tennessee Eastern Electric Company's gross revenue, and the last line shows the percentage of taxes to gross revenue.

(The witness was excused.)

CHARLES E. IDE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 45 years old, reside in Bristol, Virginia, and am Vice President and General Manager of the East Tennessee Light & Power Company and the Tennessee Eastern Electric Company. (The witness' qualifications were conceded.)

The map (offered and received in evidence as Complainants' Exhibit 82) shows the general territory served by the [fol. 105] East Tennessee Light & Power Company and the Tennessee Eastern Electric Company, the transmission and distribution lines, generating plants, interchange facilities and proposed hydro plants. The distribution systems in the various towns are not shown in detail, but are indicated by the large orange colored circles. The heavy lines are the high voltage transmission lines of 22,000 volts and above and the lighter lines are the lower voltage, 11,000 volts and under.

In addition to the electric lines indicated, the locations of the generating facilities are also shown on the map, and are indicated by the green circles. There is a small hydro-electric plant near Elk Park, North Carolina; a plant near Maymead, Tennessee; a hydro-electric plant near Elizabethton, Tennessee; another hydro-electric plant on the Nolichucky River below Greeneville, and the steam plant on the Watauga River near Johnson City.

The tabulation (offered and received in evidence as Complainants' Exhibit 83) shows the installed capacities of the various plants owned by the East Tennessee Light & Power Company and the Tennessee Eastern Electric Company.

The East Tennessee Light & Power Company has an interconnection with the Appalachian Electric Power Company at a point just north of Bristol, which is shown by the parallel blue lines. The East Tennessee Light & Power Company also has interconnections with the Edmondson Electric Company at a point northeast of Bristol, which is likewise shown by parallel blue lines.

In addition to the generating facilities and interconnections which I have testified to, the East Tennessee Light & Power Company owns a small power site above the present hydro-electric plant near Elizabethton, which is shown by the brown square. The Tennessee Eastern Electric Company owns a site known as Hemlock at a point near Fordtown, Tennessee, which likewise is shown by a brown [fol. 106] square. The contemplated capacity of this development is 36,000 kilowatts. The Tennessee Eastern Electric Company likewise owns a site known as Kiker on the Nolichucky River below the present development, which has an ultimate capacity of 15,000 kilowatts. There is likewise a site known as the Buckingham site on which some preliminary work has been done and some water rights acquired. Extensive engineering work and core drilling has been done on the Hemlock site. A large part of the flowage lands have been acquired. Some preliminary work has been done on the other sites. The Company has already expended in excess of $850,000 in preliminary engineering work, core drilling and acquisition of property. Some study has just been made of an additional steam unit at the Watauga Steam Plant near Johnson City. There is sufficient water in the river there for condensing purposes and ample land and other facilities for such an extension.

The proposed hydro sites are indicated on the map by brown squares. There is no indication on the map to show any contemplated expansion at Watauga Steam Plant, although the location of that plant is shown by a green circle near Johnson City. There is ample water for condensation purposes, and land and other facilities for such expansion.

In addition to its electric business, the East Tennessee Light & Power Company owns and operates a small gas manufacturing and distributing system in the Cities of Bristol, Virginia, and Bristol, Tennessee. The Tennessee Eastern Electric Company has no non-electric property, and the gas operation which I just mentioned is the only non-electric property of the East Tennessee Light & Power Company. The revenue from the gas operation is less than 10% of the total revenue of the East Tennessee Light & Power Company.

The territory where these two companies operate is [fol. 107] generally mountainous, with a considerable amount of good farm land and diversified industries; a number of small cities and towns; the largest city in the territory would not exceed 30,000 population. We are serving every request for service that the Companies have had in that territory.

The entire property of the Tennessee Eastern Electric Company is within a 100 mile radius of Norris Dam. The lines in Greene County are within a radius of 50 miles of Norris Dam. The property of the East Tennessee Light & Power Company is partially within the 100 mile radius, the bulk of it is within a 115 mile radius, and the entire property is within a 135 mile radius of Norris Dam.

The East Tennessee Light & Power Company has outstanding 5% bonds of $481,000 par value, 6% bonds of $300,000 par value, and 5½% bonds of $1,950,000 par value, making a total bonded indebtedness of that Company of $2,731,000. It likewise has outstanding cumulative no par value preferred stock carrying $6 annual dividend rate of 2,635 shares and 35,000 shares of no par value common stock.

The Tennessee Eastern Electric Company has outstanding 5% bonds in the amount of $1,952,500; 6% bonds in the amount of $717,000; making a total bonded indebtedness for that Company of $2,669,500. It also has outstanding 6,000 shares of 6% cumulative preferred stock of $100 par value. It has outstanding 5,105 shares of cumulative no par value preferred stock carrying a $7 annual dividend rate. It also has outstanding 15,000 shares of no par value common stock. These securities were issued with the approval of the Railroad and Public Utilities Commission of Tennessee.

The development of the business of the Company has consisted primarily of gathering together a number of small operating units and welding them together into one coordinated system. This has required the construction of [fol. 108] many new transmission lines to improve the service to these communities. Having done that, we have proceeded aggressively to promote the business of the Company to the prospective power, commercial and industrial customers, and to extend rural lines in so far as they could economically be extended.

The East Tennessee Light & Power Company is both an operating company and a holding company, in that it owns all the common stock of the Tennessee Eastern Electric Company. The corporate records of the two companies are, of course, kept separate and distinct, but in so far as the actual operation is concerned, they are operated as one integrated system, the same officers, the same engineers, and the same supervisors supervise the operation of both just as though it were one operation.

The East Tennessee Light & Power Company has approximately 204 employes and the Tennessee Eastern Electric Company 125. There are approximately 34 of those who devote their entire time to business development and sales promotion activities.

Since June 1, 1929, to and including June 30, 1937, the construction expenditures of the East Tennessee Light & Power Company have been $684,408. For the same period, the construction expenditures of the Tennessee Eastern Electric Company have been $1,164,852, or a combined total for both Companies of $1,849,260.

The tabulation (offered and received in evidence as Complainants' Exhibit 84) shows for the East Tennessee Light & Power Company the number of miles of transmission lines, miles of distribution lines, total number of customers, number of towns and communities served, the total kilowatt-hours sold to regular customers, the number of urban residential customers, rural residential customers, total residential customers, likewise kilowatt-hours sold per residential customer, urban, rural and total. It [fol. 109] shows also the revenue per residential customer, urban, rural and total, and the average rate paid by the residential customer, and the classifications of urban, rural and total.

"Judge Allen: The Court of its own motion will strike out of this exhibit the figures dealing with the average residential rate.

Mr. Seymour: We note an exception, if your Honor please."

The tabulation (offered and received in evidence as Complainants' Exhibit 85) shows the same information for the Tennessee Eastern Electric Company.

"Judge Allen: The same ruling is made by the Court in reference to Exhibit 85, with reference to the average residential rate being excluded.

Judge Allen: The last three columns and the lower right hand column. It is the ruling of the Court that this evidence is irrelevant.

Mr. Seymour: We so understand and take exception to the action of the Court.

Judge Allen: You may."

With respect to the East Tennessee Light & Power Company for the year 1936, there was a total of 22,904,648 kilowatt-hours sold. 9,243,729 kilowatt-hours, or 40.4 per cent, represent sales of industrial power. We included in industrial power those industrial customers of 50 kilowatts or greater. For the Tennessee Eastern Electric Company for the year 1936, out of 24,548,569 kilowatt-hours, 11,049,650 kilowatt-hours, or 45%, represent sales to the same class of industrial customers.

The East Tennessee Light & Power Company operates in the three states of Tennessee, Virginia and North Carolina. The rates are regulated in Tennessee by the Tennessee Railroad and Public Utilities Commission; in Virginia by the State Corporation Commission; and in North Carolina by the North Carolina Public Utilities Commission. Our rates are uniform for similar services through-
[fol. 110] out the territory we serve in Tennessee and Virginia and there is a slight variation in our rates in North Carolina. The Company's facilities are entirely ample to take care of the requirements of the territory which we are serving. We have refused no requests for any service which could be economically served.

Cross-examination:

The East Tennessee Light & Power Company owns all of the common stock of the Tennessee Eastern Electric

Company. The common stock of the East Tennessee Light & Power Company is owned by the Cities Service Power & Light Company. The preferred stock of the East Tennessee Light & Power Company is also owned by the Cities Service Power & Light Company.

The TVA does not to my knowledge at this time own or operate any transmission line within the claimed territory of the Tennessee Eastern Electric Company or have any contract for the sale of power used wholesale at any point within the claimed territory of that Company. The situation is the same with respect to the East Tennessee Light & Power Company.

It is substantially correct that in 1936 the Tennessee Eastern Electric Company had the largest output in kilowatts in the history of the Company. I do not have any figures as to the output. The figures as to the sales to the regular customers do not show any such increase as 100% since 1933.

It is my recollection that the Tennessee Eastern Electric Company has not paid any dividends on the preferred stock since about 1934.

Complainants' Exhibit 83 is a tabulation of the generating plants of the two companies concerning which I testified, showing the installed capacities, that is the nameplate rating. I do not know what you mean by dependable [fol. 111] capacities. I don't remember the figures that were included in the report to the Federal Power Commission in October 1934.

I believe we made a report to the Federal Power Commission in October 1934, but the photostatic copy which you show me does not bear my signature. This somewhat resembles the report which we made, but it is not my signature on this report. I have signed several reports to the Federal Power Commission, but this is not my signature and these figures in this report do not appear to be photostatic copies of a report which we sent from our office. I don't remember what we reported on with respect to dependable capacities. It is impossible to carry all of those figures in one's head and I do not remember.

With respect to the difference between installed capacities and dependable capacities in hydro plants, it all depends upon the conditions surrounding the operation. When you are operating a water power plant in connection

with a steam plant, there are certain periods, everyone knows, when the water flow of the streams is low. The kilowatt-hours per day that you could take out of that plant is materially reduced, but by carrying your base load on the steam plant and generating fewer kilowatt-hours on your hydro plant, you can carry a larger amount of load with that hydro plant. Unless the exact conditions which are to be met are described and an opportunity is given to have some engineering calculations made, it is impossible to answer the question. I don't recall whether in making the report to the Federal Power Commission we distinguished between installed capacities and dependable capacities. It has been so long since that report has been made, I have no recollection of what was in it. There have been so many different reports made to the Federal Power Commission. With reference to the other signature on that photostat, it is not the signature of R. I. Butterworth, General Superintendent.

[fol. 112] As to whether there are any unserved industrial loads within the claimed territory of these two companies, there are certain industries, such as woodworking plants, which have refuse for use as a fuel, or paper mills, chemical plants, and so forth, who have certain exhaust steam, by-product steam requirements, who generate their own load. There are a few small flour mills that have water wheels to drive them, and perhaps a few small other plants that may for some reason have their own motive power whose load we do not carry. However, we have never refused service to any of these. Our facilities are ample to take care of them. I don't know what the total load is that I have just mentioned. The Veterans' Home at Johnson City has a very old steam plant of their own which furnishes a part of their power to carry that load at the Veterans' Home. A few years ago they signed a contract with the Tennessee Eastern Electric Company whereby a portion of their power requirements have been purchased from our company, and gradually, from time to time, as they change their system from d.c. to a.c. system, they shift that load over on to our facilities.

I stated on direct examination that the rates of the Tennessee Light & Power Company and the Tennessee Eastern Electric Company in the states of Tennessee and Virginia were uniform, and with a slight exception, with a slight

differential, were the same in North Carolina. The rate forms are not the same as other companies operating in Tennessee. The exact identical rate schedules for a certain class of service used by different companies throughout the state are not uniform. The rate schedules, however, are at substantially the same level. In testifying that our rates are uniform, I meant that we have uniform schedules applicable to different classes of service, and that in the area where we are operating, we apply the same schedule to the particular class of service regardless of territorial location within the area.

[fol. 112a] Redirect examination:

Our companies operate in the counties of Sullivan, Washington and Greene in the State of Tennessee. The Tennessee Valley Authority has had issued direct to it franchises to operate in those three counties; to use the highways in the construction of lines, and so forth. It has the usual type of utility franchise.

(The witness was excused.)

[fol. 113] Edward E. Nelson was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 45 years old, reside at Glenn Ridge, New Jersey, and am Assistant Secretary and Treasurer of the Southern Tennessee Power Company. (The witness' qualifications were admitted.)

The Southern Tennessee Power Company owns a high tension transmission line from Wilson Dam, Alabama, to Iron City, Tennessee, a distance of approximately 15 miles, which cost about $500,000 to build. The Company transmits electric energy from Wilson Dam to Iron City, where it delivers it to The Tennessee Electric Power Company. The line also constitutes a connection at Wilson Dam between the Alabama Power Company and The Tennessee Electric Power Company.

The Company has ten shares of stock of no par value, which stands on its books at $10 a share, or $100 total. It has a note outstanding which was originally for $433,500, but which has been reduced by payments to $380,000.

The tabulation (offered and received in evidence as Complainants' Exhibit 86) is a statement of taxes paid by the

Southern Tennessee Power Company for the years 1932 through 1936, and estimated for 1937.

Cross-examination:

All of the stock and notes of the Southern Tennessee Power Company are owned by The Commonwealth & Southern Corporation. There are no securities of this Company outstanding and in the hands of the general public. The Company has not obtained any capital funds since the [fol. 114] construction of the line, which was in 1930.

The Company now owns only the transmission line with usual facilities. The Company does not lease that line to The Tennessee Electric Power Company, but operates it itself. Up to March 1937, the Company purchased power from the Tennessee Valley Authority at Wilson Dam, which it transmitted over its line and sold to The Tennessee Electric Power Company at the actual cost of the power plus the maintenance cost of operating and maintaining the line, which included the taxes and depreciation, and a return of 6% on the capital investment in the property. Since March 1937, The Tennessee Electric Power Company has purchased power directly from the Alabama Power Company, which was transmitted over this line from Wilson Dam to Iron City, and The Tennessee Electric Power Company paid the Southern Tennessee Power Company the cost of maintenance and operating the line, plus a return of 6% on the investment. The Company does not engage in the generation, transmission, distribution or purchase or sale of electric energy, except for the operation of this one transmission line.

The total gross revenue of the Company in 1932 was $195,826; in 1933, it was $231,359; in 1934, it was $231,143; in 1935, it was $289,453; in 1936, it was $436,522. It is now something over $400,000.

(The witness was excused.)

Walter M. Hood was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Birmingham, Alabama, am 51 years old and am Secretary of the Alabama Power Company.

[fol. 115] The list (offered and received in evidence as Complainants' Exhibit 87) shows the assignments of franchises owned and held by the Company which were originally granted to companies or individuals other than the Alabama Power Company. It shows the name of the transferor, the date of the commission order, if any, approving the assignment, and the date of the consent of the municipality, if any, approving the assignment. It also indicates which transfers involved franchises in more than one municipality and which transfers occurred before the creation of the Alabama Public Service Commission. The list does not include all of the franchises. It only includes the franchises which were granted to others than the Company and it includes all of such franchises.

There are 4 municipalities in which we operate without an existing and unexpired franchise. In the City of Sheffield, the franchise of the Alabama Power Company expired in October, 1932, and was not renewed. We also operate in three small towns, Center, Pritchard and Grove Hill, and we were operating in those communities before they were incorporated.

Some of the transmission and distribution lines of the Company outside of municipalities are located on public roads and highways. The tabulation (offered and received in evidence as Complainants' Exhibit 88) is a list of the certificates of convenience and necessity issued by the Alabama Public Service Commission to the Alabama Power Company for extensions and additions to its system, since October 1, 1920 to July 21, 1937. It was prepared under my direction and from copies of the certificates authenticated by the secretary of Public Service Commission.

Cross-examination.

We do not operate in Tuscumbia and Florence now. The franchises in those towns expired at practically the same time.

(The witness was excused.)

[fol. 116] James M. Barry was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 49 years old and am Vice President and General Manager of the Alabama Power Company. I have been

engaged in the electric utility business since my graduation from college in 1910. I studied electrical engineering and graduated from the University of California with a Bachelor of Science degree in the electrical engineering course.

The map (offered and received in evidence as Complainants' Exhibit 89) is of the state of Alabama on which is indicated the electrical transmission and distribution system of the Alabama Power Company, exclusive of the distribution systems in the cities in which we operate, which, because of the scale of the map, could not be shown. The area indicated by the yellow lines on the map are areas in which other utility companies operate. The area up in the northwest corner of the state, marked by the blue cross-hatched line, is the territory in which Alabama Power Company conveyed to the TVA certain transmission and distribution facilities and in which Alabama Power Company agreed not to operate, exclusive of the cities in which we already did business, during the period of the contract of January 4, 1934. We still have high voltage transmission lines through that area in the northwest corner and we still have operations in some of the cities in that area. Those are indicated by green dots.

The red dots show a differentiation between the marking of our distribution systems in the so-called ceded area and in the rest of the territory. The principal transmission [fol. 117] lines of the system are indicated in the light green lines going down to 22,000 volts and in a few cases below 22,000 volts. The rural lines of the Company are indicated in the red dotted lines. The key as to the size of the lines shown by the solid green lines and the two broken dotted lines in the legend in the lower right hand corner is correct.

The map shows the principal interchange points of the Company.

With respect to the areas included within yellow lines served by other companies, the small area in the north central part of the map is the area served by Birmingham Electric Company. That area is specifically marked out by an order of the Alabama Public Service Commission. The other areas are, respectively, the Tuskegee Light & Power Company in the small areas that cover most of Mason County, and the two areas in the south central part of the map that embrace the areas served by the Alabama Water Service Company. The area in the southwest part

of the state along the Mississippi state line is served by a small company with a generating property in Mississippi, called, I believe, the Interstate Power Company. The area in Baldwin County is served generally by the Riviera Utilities Company.

The circles on the map marked 100, 150 and 200 miles are drawn with centers at the Guntersville Dam site, where a dam is now under construction, and from Wilson Dam, where a dam is now owned and operated by TVA, respectively. Wheeler Dam, which is shown just upstream, does not happen to play any part in the drawing of the lines because the circles drawn from Wheeler Dam would fall within the others.

Referring to such map, there is a municipal plant oper- [fol. 118] ated by the City of Cullman in Cullman County, and there is a public plant operated by the City of Dothan in the southeast part of Alabama, and there is a public plant in Baldwin County at Fairhope. Those plants have their own generating facilities. There are other public plants in our area which buy their power from Alabama Power Company, that is: Piedmont, Opelike, Hartford, Sylacauga, Alexander City and LaFayette. There are other public plants that are served in the other areas of other utilities.

The tabulation (offered and received in evidence as Complainants' Exhibit 90) shows the generating plants owned by Alabama Power Company as of October, 1937, giving the installed capacity in kilowatts of each plant. In each instance, the installed capacity is the nameplate capacity. Each of these plants shown on Exhibit 90 is capable of operating whenever it is desired.

Mitchell Dam, Jordan Dam and Martin Dam were constructed under licenses granted by the Federal Power Commission. The hydro-electric dam at Lock 12 is shown on the exhibit as Lay Dam. It was constructed under the authority of a special Act of Congress passed in 1907.

The document (offered and received in evidence as Complainants' Exhibit 91) is a compilation which includes excerpts from the application filed with the Federal Power Commission for a license to construct Jordan Dam, a photostatic copy of the license issued for the construction of Jordan Dam by the Federal Power Commission which is typical of three licenses from the Federal Power Commission, the certificate of the Federal Power Commission

authorizing the license for the project and the commencement of operations, excerpts from the application for Mitchell Dam, excerpts from the application for a license to construct Martin Dam, and excerpts from the licenses for Mitchell and Martin Dams showing the differences between those licenses and the license for Jordan Dam offered as typical.

[fol. 119] The document (offered and received in evidence as Complainants' Exhibit 92) is a copy of an Act of Congress permitting the erection of a dam across Coosa River, Alabama, at the place selected for Lock 12 on said river, approved March 4, 1907.

The document (offered and received in evidence as Complainants' Exhibit 93) is a document giving the approval by the Secretary of War of plans concerning location of the lock at Lock 12, March 3, 1910, and approval by the Secretary of War of supplementary plans for construction of Lock 12, July 8, 1913.

The document (offered and received in evidence as Complainants' Exhibit 94) is a photostat of the approval of the assignment to the Alabama Power Company of the Federal Power Commission licenses for the three dams I have previously described as licensed by the Federal Power Commission.

Each of the projects licensed by the Federal Power Commission has been placed in operation.

The total generation in the plants owned by the Alabama Power Company for the years 1932 to 1936, inclusive, was 7,881,678,312 kilowatt-hours. Of this total, 7,485,971,438 kilowatt-hours were generated at the hydro-electric plants owned by the Company. The generation in the hydro plants for the period was 95% of the total generation in the Company's plants. 82.3% of the total hydro generation was produced in these four plants. It was 6,158,950,000 kilowatt-hours. Expressed as a percentage of the total generation of the plants owned by the Company, the generation in these four plants during that five year period was 78.2%.

I have been with the Alabama Power Company nineteen years and have been identified with the operations of the Company and with the engineering and the construction of the Company and I actually worked on the construction of [fol. 120] Mitchell Dam. All of the hydro-electric plants constructed under license from the Federal Power Commis-

sion were constructed after I came with the Alabama Power Company. I have been familiar with the purpose for which such hydro-electric plants were constructed in the development of the Alabama system, and with the markets which these plants were designed to serve. I am now familiar with the market which these plants serve through the Alabama Power Company system, and know where it is located geographically. During the nineteen years that I have been with the Alabama Power Company, there has been a marked process of development and integration. Among other things, that has involved the purchase and acquisition of plants and connecting the markets up to the transmission system of the Company. I have been familiar with the acquisition of plants during that time in the development of the system.

"Q. Mr. Barry, assuming that under the terms of the Federal Water Power Act, and of the licenses granted by the Federal Power Commission for your hydro-electric developments at Mitchell, Martin and Jordan Dams, the United States has a legal right to take over such hydro-electric developments at the end of the license period for the net investment of the company or for the then fair value of the plant, whichever figure may be lower; what effect, if any, would the taking over by the defendants of all or any substantial part of the market for electricity within a radius of 100 miles of the hydro-electric plants of the Tennessee Valley Authority in Northern Alabama which markets are now and have been served by the Alabama Power Company, have upon the value of the property which the company has in the hydro-electric developments when the United States would be entitled to take over such developments at the end of the license period?

Mr. Fitts: We object to the question on the ground that it calls for irrelevant and immaterial evidence, based upon a hypothesis of facts which are not in evidence, and which, in our opinion, are incapable of proof, and it is further based upon the speculative and remote contingency that the United States may eventually some day want to exercise its power under the Water Power Act to take over the plants."

* * * * * * *

[fol. 121] "Judge Allen: The objection is sustained upon the ground that the question is based upon an assumption of facts not at present shown in the record."

"Mr. R. T. Jackson: May we have our exception noted, and leave to renew the matter later on if the Court should feel that we have a basis for it? Now, may I have the answer of the witness for the record? Will you read that please?

(Question read.)

A. The taking over of such markets would substantially depress the value of the license projects.

Q. Assuming, Mr. Barry, that the defendants take over all or a substantial part of the market for electricity now served by the Alabama Power Company within a radius of 150 miles of the hydro electric plants of the Tennessee Valley Authority in Northern Alabama, what effect would that have upon the value at which the United States would be entitled to take over such plants at the end of the license period?

Mr. R. T. Jackson: I am only trying to complete this. I hate to impose on the Court to do so, but it seems we have to.

Judge Allen: You have to make your record.

Mr. Fitts: We made the same objection upon the same grounds stated to the previous question.

Judge Allen: The same ruling. Objection sustained, and you may be allowed your exception.

Mr. R. T. Jackson: Exception allowed.

Judge Gore: Do you want him to answer that?

Mr. R. T. Jackson: Oh, yes, I do.

A. It would still further depress the value of the license period.

Q. Assuming that the defendants took over all or a substantial part of the market for electricity now served by the Alabama Power Company within a radius of 250 miles of the hydro electric plants of the Tennessee Valley Authority in Northern Alabama, what effect would that have upon the value at which the United States would be entitled to take over such hydro electric developments at the end of the license period.

Mr. Fitts: We make the same objection upon the same ground stated to the other questions.

[fol. 122] Judge Allen: The same ruling, and you may be allowed your exception.

Mr. R. T. Jackson: Exception. And we ask the witness for the answer.

A. It would still further depress such value."

I know of my own knowledge that the Company has made provision for the expansion of its generating facilities shown in Complainants' Exhibit 89, the map of the Alabama system. At Mitchell Dam there is provision for the addition of one 17,500 kw. unit. At Jordan Dam there is provision for one 25,000 kw. unit. At Martin Dam there is provision for one 33,000 kw. unit. At the upper Tallassee hydro plant there is provision for one 16,000 kw. unit. At Gorgas No. 2 steam plant we now have installed one 60,000 kw. unit. The canals and waterways are designed for the ultimate installation of 240,000 kw., so that there is further expansion provision there for three 60,000 kw. units. The foundations are already in place for an additional turbine and two boilers. In addition to these provisions for expansion, studies have been made of the installation of a 50,000 kw. topping unit at our Gorgas No. 1 steam plant. The Gorgas steam plant is located about thirty miles from Birmingham in an air line, in the Warrior coal fields. I should say Birmingham is our largest load center. I should say that the incremental cost of such expansion would be less than independent development per unit of production.

The Company owns a transportation system in Tuscaloosa and a small bus system in Huntsville. It owns a water system in Auburn. It owns a gas distributing system in Phoenix City, and until May of this year, it owned three small ice plants in south Alabama. It disposed of those ice plants in May of this year. Last year the revenue of the non-electric properties represented only 1.1 per cent of the entire revenue of the Alabama Power Company.

[fol. 123] The Alabama Power Company had outstanding as of December 31, 1936, a bonded indebtedness of $96,771,800; 367,178 shares of $5, $6 and $7 preferred stock at a stated value of $35,751,258; and 3,775,000 shares of common stock at a stated value of $48,961,300. These securities were all approved by the Alabama Public Service Commission, except certain issues that were issued prior to the Public Utility Act of 1920. These included $10,221,000 in bonds; $461,500 of par value preferred stock and $18,751,000 of par value common stock. By order of the Public Service Commission in 1921, the common shares of par value were converted into non-par shares, and at the same time an option was given to the par value preferred stock holders to convert into non-par preferred stock, so that in effect

all issues have been approved by the Public Service Commission except the $10,221,000 in bonds.

The tabulation (offered and received in evidence as Complainants' Exhibit 95) shows the annual revenue, kilowatt-hour sales to customers within the state of Alabama, segregated as to areas within 100 miles of TVA dams, 150 miles of TVA dams, and 250 miles of TVA dams, and further segregated so that one tabulation includes the Birmingham Electric Company, a complainant in this case, and the other tabulation excludes the Birmingham Electric Company. The reason for that is that we serve the Birmingham Electric Company demands at wholesale, and did not want to put in anything that favored a duplication. The calculation on the exhibit is made on the basis of the same dams as form the center of the radii drawn on the map, Complainants' Exhibit 89.

The tabulation (offered and received in evidence as Complainants' Exhibit 96) shows certain statistical data pertaining to the operations and facilities of the Alabama [fol. 124] Power Company, arranged by years from the year 1927 to 1936, inclusive, including the following items: Miles of transmission lines, miles of distribution lines, miles of rural lines, number of customers' meters; residential annual kilowatt-hour use per average customer; residential average annual revenue per customer; the number of towns and communities served directly by the Company; the total kilowatt-hour sales of the Company, exclusive of sales to utilities; the total kilowatt hours sold industrial customers and the percent which the industrial sales represent of the total sales, exclusive of sales to utilities. (There was included on Exhibit 96 a column entitled "Residential average rate per kilowatt hour" which was stricken by the Court on its own motion, and exception taken.)

The tabulation (offered and received in evidence as Complainants' Exhibit 97) shows the tax payments of Alabama Power Company for the years 1932 to 1937, inclusive, with the 1937 figures estimated for the full year, by years, showing the segregation of the various taxes which we pay, the total taxes, the total gross revenue of the Company for each of the years in question, with the 1937 figure again estimated, and the percent represented by the ratio of taxes to gross revenue.

As of the end of October, 1937, there were approximately 2,850 employes of the Company.

[fol. 125] Cross-examination:

The common stock of the Alabama Power Company is owned by The Commonwealth & Southern Corporation. The other companies in the Commonwealth & Southern system in the southeastern area are The Tennessee Electric Power Company, the Georgia Power Company, the Alabama Power Company, the Mississippi Power Company, the Gulf Power Company and the South Carolina Power Company. The Alabama Power Company furnishes to the Mississippi Power Company substantially all of the power that it uses. It does not furnish to the Georgia Power Company a greater part of the power that it uses, but a substantial amount of power. The deliveries of power from the Alabama Power Company to The Tennessee Electric Power Company have not been so great as they have been to the other companies. I should say that the Georgia Power Company is perhaps the heavier user.

Referring to the map, Complainants' Exhibit 89, the so-called "ceded area" is the area involved in the contract of January 4, 1934. On the map we show none of the facilities of the TVA. Prior to the January 4, 1934 contract, the point of interchange with the Mississippi Power Company was near the state line in the extreme northwest corner of Alabama. In other words, the power which we furnished to the Mississippi Power Company for use in the area that was afterwards ceded to TVA by this contract was transported across this area to a point in the northeastern corner of Mississippi and there delivered to the Mississippi Power Company, as near as may be to the state line. We are still furnishing power on that line to certain municipalities in that area. We started purchasing that power from the TVA on November 3, 1937. The reason we are purchasing it is that we have sold to the TVA the facilities that formerly served the towns and cities in which we continue to operate in the area. We are still serving these towns in that area, so to speak, over the same facilities which we formerly [fol. 126] owned and conveyed to the TVA and we have a public obligation to serve those cities so that we must buy power now for them. We have generally absorbed into the system the same power, Wilson Dam power, at least, for sale in that area ever since 1925. It is substantially correct to say that the Company has been buying power from the Wilson Dam, from the Government, down to 1933, and

thereafter from the TVA, continually since Wilson Dam was completed. We have bought a certain block of power every year and have used it to replace power that could otherwise have been generated in our steam plants. Payments made by the Alabama Power Company to the Government for power purchased between 1925 and the date when we began purchasing from TVA were of the order of $4,000,000. For power purchased from the TVA for the years 1934, 1935, 1936 and down to February, 1937, the Alabama Power Company paid TVA, according to my figures, $1,134,000.

The properties transferred to the TVA in the so-called ceded area consisted of two primary stations, stepping down the voltage from 110,000 volts to 44,000 volts; they included about 110 miles, according to my recollection, of 44,000 volt lines; they included about 195 or 200 miles of rural lines; and they included the lands and dam-site on which Joe Wheeler Dam is now constructed. I should say the total of my figures was about 350 miles of transmission and distribution lines of various capacities transferred under that contract to the TVA, the biggest mileage being in distribution lines. In addition we transferred the necessary substations which we had there. The TVA is using those in selling us power, and I understand that it is itself distributing in some of the areas over those rural lines we conveyed. The Alabama Power Company today has within [fol. 127] that area no transmission lines except the high tension 100 kv. line which crosses the territory. Over that line we now carry power to Decatur, and the TVA under an interchange gets power at the primary substation at Decatur, and in turn sells the power to us, so we are serving at Decatur over those transmission lines. We serve no customers, with that exception, in that area from that line.

The Alabama Power Company owned the site of the Joe Wheeler Dam, which embraced about 1,649 acres of land. The Company, pursuant to the contract, transferred this property to the Tennessee Valley Authority, and, as a matter of fact, the dam was pretty well built before the conveyance was made. The TVA went right ahead with the construction of the dam. They were not delayed that time. The Company has furnished power by interchange, through a considerable period of time, to the TVA to be used in the construction of the Guntersville Dam, and I remember I had quite an argument about that myself, as to whether that

was properly an interchange or whether that should be a straight purchase of power.

I don't think that the Alabama Power Company interchanged power directly for use in the construction of Pickwick Dam. It may be at some stage of the game that there was, but I simply don't recall that interchange. We are serving some industrial customers in the socalled ceded area today. At the time of the performance of this contract that is in question we transferred to the TVA certain industrial customers. I do not recall what the number of rural customers was that we transferred at that time to the TVA, but I recall that the total customers was something over a thousand altogether.

At the time we transferred those properties to the TVA, the Mississippi Power Company had long since transferred [fol. 128] its system in its ceded area to the TVA. I knew at the time we transferred this mileage of lines to the TVA that the TVA was already operating the properties transferred to it by the Mississippi Power Company.

I don't believe that I know how many or what proportion of the farms in Alabama were without electric service from a central station in 1933. I don't believe I would accept as finally accurate the published estimate or statistics of the Edison Electric Institute to the effect that there were in Alabama only 4.2% of the farms which had electric service from a central station. There are statistics and statistics, and there is nothing so misleading as the statistics on farms. I have no definite opinion as to the number of farms. The question runs to a definition of a farm, and we are actually serving farms within urban areas, according to the Federal definition of a farm. I would not say that prior to 1933 the amount of revenue which my Company received from serving farm areas was a negligible proportion of its whole revenue.

There was an interchange point with the TVA close to Athens, Alabama, which we understand was connected to a line which ran up in the direction of Pulaski, Tennessee. I do not know how long a period we furnished power to the TVA for use in serving Pulaski. I think there was an interconnection there, and I am not certain whether the TVA had its own source in Tennessee or not, or whether it was just a straight interconnection. There was an interchange point at Athens where we did deliver power to the TVA.

Outside of the so-called ceded area in Alabama, I do not know whether the TVA is today actually yet serving any industry in the claimed territory of the Alabama Power Company. It is serving cooperatives outside there, and there [fol. 129] may be industries on them. It is not serving industrial customers so far as I know outside of the ceded area. In addition to the municipalities that are named by me in Alabama outside of the ceded area, which either generate or distribute electric power, I think there are one or two others that operate in the territory of other companies, and also in the area served by the TVA.

The amount of power delivered to the Alabama Power Company by the TVA during the year 1934 was 111,904,431 kilowatt-hours of net energy. In 1935 we purchased in the same way 164,127,787 kilowatt-hours. In 1936 it was 344,308,127 kilowatt-hours. It is substantially correct to say that during those three years, again speaking in very rough and approximate terms, we purchased from the TVA something over 600,000,000 kilowatt-hours. I do not know whether that power which was furnished to us during the year 1936 was generated at Wilson, Norris and Wheeler Dams. So far as I know it was power from Wilson Dam. Our contract was for Wilson Dam power and we had no occasion to make inquiry where it came from. So far as I knew it was Wilson Dam power; I had no occasion to investigate, I never asked any questions where it came from, and I knew nothing to the contrary.

With reference to Exhibit 96, the number of customers that the Alabama Power Company had on January 1, 1933, was 98,350; at the close of 1933, 99,709; at the close of 1934, 107,699; at the close of 1935, 114,187; at the close of 1936, 123,739; and as of September 30, 1937, 134,759. That means taking the number that we started with at 98,000 on January 1, 1933, the number of our customers has increased more than 30% between that date and September 30, 1937. We have done very extensive work in de- [fol. 130] veloping our business during that period and we had a business recovery. During the last nine months alone, we have added on that same basis over 11,000 customers. I haven't checked back the entire history of the Company to find out whether that is the largest proportional increase in any one year in the history of the Company, but I should say no, that during the early 20's we

had as few customers as eighteen or twenty thousand and we built from there up to in the neighborhood of 100,000. That was in the early period of the organization and integration of the Company. We have been in another period of development since 1933. I think we can agree on the fact that the number which we had on September 30, 1937 was the all-time high in the history of the Company.

(At this point counsel for defendants had Stipulation No. 11 marked for identification as Defendants' Exhibit 2 and stated that he desired to ask the witness to read from the table a few figures and shorten the record instead of offering the exhibit at that time.)

Referring to Defendants' Exhibit 2 the gross income of Alabama Power Company increased in 1933 from $9,030,-337.63 to $10,009,399.05, which would be approximately 10%.

The system peak total in 1932 was 389,120 kilowatts and the system peak total in Alabama was 254,372 kilowatts. The system peak total for the period ending September 30, 1937, was 505,900 and the system peak total in Alabama was 343,520. That would be an increase of approximately 35%. The total shown on that same statement for kilowatt-hours sold in the year 1932, exclusive of sales to utilities, is 777,386,001 and the total for kilowatt-hours sold, exclusive of sales to utilities, for the year 1936 is 1,145,267,755. That would show an increase in those four years of approximately 368,000,000 kilowatt-hours. The total kilowatt-hours sold by the Company in 1932, including utilities, was [fol. 131] 1,164,508,112 and for the year 1936 the total of all kilowatt-hours sold by the Company, including utilities, was 1,888,677,560. That would give an increase of something over 600,000,000 kilowatt-hours or between 50 and 60%. In 1932 our average residential consumption was 798 kilowatt-hours per customer and the same item for the year ending June 30, 1937, was 1227. There was a substantial increase in the average. We have been very aggressive in the residential load.

The principal companies referred to in the statement as to power sold to utilities are the Georgia Power Company, the Mississippi Power Company, the Gulf Power Company, The Tennessee Electric Power Company and the Birmingham Electric Company. Those are the principal ones. During the years from January 1, 1933, down

through the calendar year 1936, I would not say that our net earnings had enabled us to pay substantial dividends on the common stock. We have paid very small dividends on our common stock. In 1933 we paid $377,500; in 1934 we paid $377,500; in 1935 we paid $377,500; in 1936 we paid $755,000; and nothing in 1937 down to the present time. A total of $1,887,500.

I think The Tennessee Electric Power Company, as well as the Alabama Power Company, purchased power from Wilson Dam from a point in 1925 down to the beginning of the operation of the TVA in October, 1933. That is an associate company in the Commonwealth & Southern system. I cannot say as to what other purchasers were buying Wilson Dam power from 1933 down to the present time. I think the only large lines connected with Wilson Dam in October 1933 were our lines leading in from the south and The Tennessee Electric Power Company from the north. I cannot say whether that is still a fact. The TVA has done a lot of construction work, and I don't know precisely what they have constructed since. I presume [fol. 132] that Wilson Dam, Norris Dam and Wheeler Dam are now interconnected. The maps that have been published by them indicate that, but I cannot say when they were interconnected. With reference to the question whether we have been regularly delivering portions of the TVA power to the Mississippi Power Company, the Georgia Power Company, and The Tennessee Electric Power Company, I will say the power from Wilson Dam, just like the power from our system, is intermingled in the transmission system of the Alabama Power Company. We have been supplying these companies regularly during all that time from a power pool into which TVA power was moving. As to whether other Commonwealth & Southern Companies also paid for TVA power during the period, I think The Tennessee Electric Power Company also did. The contract of January 4th provides that The Commonwealth & Southern Corporation shall act as the agent for the various companies in the South in making payments. As a matter of mechanics, we pay Commonwealth & Southern and then Commonwealth & Southern pays TVA. It is my understanding that the same would apply to Tennessee Electric Power Company. I think that in addition to the payment made by my Company, there probably were payments for

other power taken by The Tennessee Electric Power Company.

I don't recall right now whether there are any municipalities except Guntersville in the so-called Alabama territory outside of the so-called ceded area with which the TVA has a contract. Nor can I name any rural customers now served by the TVA in the so-called Alabama territory which were previously served by my Company. I understand, however, that in Cullman County some of our customers were taken over by the Cullman County Cooperative now served by TVA.

At the time that the January 4th contract was made, the Alabama Power Company was serving in the so-called [fol. 133] ceded area roughly 10,000 customers. There are no industries of consequence in the territory covered by us that can be served that are not now being served by Alabama Power Company.

I think probably that the rural lines shown on Complainants' Exhibit 89 rather thickly in the upper right hand corner of the map were built since 1933. I never heard the line running across the northeastern corner described as the "Hindenburg line", but I might understand what it meant.

"Q. You said a moment ago, that in all matters relating to the January 4th contract the Commonwealth & Southern Company and, I assume, its officials, acted as agents for your company in carrying on negotiations, is that correct?

Mr. R. T. Jackson: If your Honor please, I would like again to object on the ground of irrelevancy of this line of questioning, and to ask the Counsel for the Tennessee Valley Authority to inform me, with the Court's permission, what the relevancy is in their view of questions with reference to delivery of power and things of that character.

Judge Allen: What do you plan for it, Mr. O'Brian?

Mr. O'Brian: I beg your pardon?

Judge Allen: What do you plan for it, Mr. O'Brian?

Mr. O'Brian: The witness has testified on direct as to their output, and this evidence is offered by the complainants in relation to their claims for damage, I assume, from the Tennessee Valley Authority. I am seeking to establish that with full knowledge of those claims business was transacted freely between these parties during all of this period and they availed themselves of the Tennessee Valley power.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Might I state the ground of my objection, if your Honor please? As I understand the statement that Mr. O'Brian just made it is that with full knowledge of something, I don't know just what, the Alabama Power Company received certain power from Wilson Dam.

Now, the point of my objection is simply this: If that could have any possible relevancy it would have to be upon a theory of estoppel, something of that nature, urged by the defendants.

[fol. 134] Now, I think it has no probative value on that issue in any event, and in the second place the Ashwander Case, which our friends are so fond of referring to, specifically held that there was no estoppel against the Alabama Power Company by reason of the fact that it had purchased power at Wilson Dam from 1925 until 1933 or 1934, whatever is the critical year involved in the Ashwander Case, so that any claim of that kind is foreclosed, and we submit that any testimony upon that point is irrelevant.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May we have an exception noted, if your Honor please.

The Witness: Please read the question.

Q. I really repeated what I understood to be your testimony. You said in matters relating to this contract of January 4th, and its performance, as I understood you, the Commonwealth & Southern acted as agents for the four companies?

A. I referred to the power transactions under the contract.

Q. Yes, that is all I am referring to.

A. Mr. O'Brian — and I ——

Q. That is all I am referring to.

Mr. R. T. Jackson: I object to the question. Whatever the relationship is under the contract appears from the contract itself. I have no objection to the witness stating what has been done, but whether or not there was a legal agency under the contract I think should be established by the contract.

Judge Allen: I might say that the Court considers that this line of testimony has bearing upon the question of adequate service.

We are aware, of course, of the holding of the Supreme Court in the Ashwander Case with reference to estoppel,

and we consider the question competent which was objected to, because it had some bearing upon the question of adequate service.

Mr. R. T. Jackson: My last objection was not meant to renew the other one, but merely as a question of interpretation of the contract, and the agency relations. Is that overruled?

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May our exception be noted, please. [fol. 135] Judge Allen: Yes.

Q. That was your understanding, Mr. Barry, that with reference to power matters they represented your company?

A. With reference to the——

Mr. R. T. Jackson: May we have the same objection and ruling and exception to the repetition of the question?

Mr. O'Brian: The witness forgot the answer, Mr. Jackson, so did I.

Judge Allen: You may answer the question. The objection will be overruled."

With reference to the billing and handling of the electricity, the Commonwealth & Southern Corporation acted as our agent, and we paid the bills to Commonwealth & Southern, and Commonwealth & Southern paid the TVA. The contract was extended for a three months period beginning in November 1936. The transfer of the properties which was made by Alabama Power Company to the TVA was approved by the action of the Alabama Public Service Commission after a hearing.

I don't, by virtue of my position, keep in touch with all of the daily operations of the Alabama Power Company. There is a daily report that comes over my desk, but I don't examine it daily by any means, because I have so many other things to do. As general manager of the Company, I naturally endeavor to keep as close touch as I can with the operations of the Company.

"Q. And I ask you again whether you did not know in August or September, 1936, that Norris and Wilson Dams were inter-connected?

Mr. R. T. Jackson: I object to the question on the ground at this point it really relates solely to alleged estoppel, and is utterly irrelevant.

Judge Allen: Did the witness not answer that question, Mr. O'Brian?

Mr. O'Brian: He did not answer with precision, your Honor.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception noted."

[fol. 136] I know nothing about the operating conditions that obtained on the system of the TVA at that time. Mr. Neeson is the production manager of Alabama Power Company. I believe that in August 1936 he made an inspection of Norris Dam. I don't recall whether he reported it was generating power or not. I do recall, of course, that we received formal notice from the Authority that Norris Dam was completed about August 1, 1936. I don't recall that our production manager reported it was operating or not. I don't remember one way or the other.

Mr. Eberhardt is the operating engineer of the Alabama Power Company. Mr. Duryea is with the engineering staff of the Commonwealth & Southern of New York. Mr. Duryea's office is in Birmingham. The Commonwealth & Southern of New York has offices in our building, in Birmingham. I have not any recollection of these men ever telling me that Norris Dam was operating. I don't remember that they ever told me it was on the line. It was not necessarily their duty to report to me any circumstances of that character if they knew it. Mr. Duryea does not report to me at all. He gives me information, usually, when I ask for it. Mr. Neeson is in general charge of operation of the plants of the Alabama Power Company, labor relations and numerous other conditions. I did not know that if Norris Dam was generating power, the only place that power could go was on the line to Wilson Dam, when it began operating, because I did not know the conditions up in the vicinity of Norris Dam. I knew there was a big tie line, a high power transmission line, between Wilson and Norris that had been constructed. I cannot recall when I first learned that Norris Dam was generating power. Norris Dam was completed in 1936. We got notice about August 1 that the dam was completed. I will not [fol. 137] swear that I did not learn during the year 1936 that Norris Dam was operating. I don't know when I heard it. I will not deny that I did hear it in 1936. I am very vague on Wheler Dam and had no occasion whatever

to investigate the operations of Wheeler Dam. I think the press in 1936 carried items about the completion of Wheeler Dam, but I did not know that in the course of my official duties.

When this contract was extended on November 3, 1936, I know that there were lines connecting Wheeler, Norris, and Wilson Dams together, but I know nothing about the way they were interconnected for the operations of TVA at the time. It was not my duty as general manager of the Alabama Power Company to investigate the operations of the TVA. I know from the maps that there was a line between Norris Dam and Wheeler and Wilson, I believe. I don't know whether the switches were closed or not. I did not know of my own knowledge that in 1936 Norris was generating power. I think the press carried accounts of it, but I did not think anything about it. I was interested, all right, in the TVA operations, but I could be interested and not know that they were generating additional power at two dams. I don't know how much power my Company took in the month of September, 1936, or how much the Commonwealth & Southern took.

I don't think that it would surprise me if in that month the Commonwealth & Southern companies I have named took more power than was generated at Wilson Dam because we know nothing about how the rivers are operated, and it is perfectly possible to manipulate the pool so that large amounts of power could be generated at Wilson Dam. I have no thought on whether it would surprise me or not to hear that the Commonwealth & Southern companies, including my Company, took more power in that one month than Wilson Dam alone could generate for all of its purposes. My Company may have been furnished with a daily [fol. 138] bulletin showing the gauges of the river as issued by the TVA. So far as I am concerned, I have never seen such a report. That may have happened and not come to my personal attention. I don't deny, however, that that was done.

[fol. 139] Redirect examination:

All of the energy that entered the Alabama system at any time from TVA came from the connection between the Alabama system and Wilson Dam. I believe the installation at Wilson Dam is 184,000 kilowatts.

In connection with whether the Commonwealth & Southern Corporation acted as agent for the Alabama Company in making payments to the TVA, information came to me in my official capacity that Mr. Lilienthal wanted to negotiate with Mr. Willkie for all of the companies.

My recollection is that the lands at Wheeler Dam site were conveyed to the United States rather than to TVA.

On cross examination I was asked for some comparisons between gross income of the Alabama Power Company in 1932 and gross income for the year ending September 1, 1937. I think that the period selected for comparative purposes by counsel for defendants, 1932, is generally accepted as the low period of the depression. The gross income of the Alabama Power Company in 1932 was more than $3,000,000 less than it was in 1929. The gross earnings in 1932 were $15,173,317, as compared with $17,433,654 in 1929. I was also asked for comparisons between gross income for 1932 and the year ending September 30, 1937, and stated that there had been a substantial increase in the last period over the corresponding figures for 1932. The electric gross income, which comes before fixed charges, increased from $9,000,000 in 1932 to $10,000,000 in 1936, roughly $1,000,000. The electric revenue of the Company increased. The gross revenue increased from $15,173,317 in 1932 to $18,330,308 in 1936, a $3,000,000 increase in gross revenue and $1,000,000 increase in gross income. Gross income is the same as net operating earnings with the Company, but before bond interest and preferred stock dividends.

[fol. 140] A chart (offered and received in evidence as Complainants' Exhibit 98) shows the weekly territorial loads of Alabama Power Company—when I say "territorial loads" I mean the loads within Alabama, excluding sales to other utilities outside the state of Alabama—for the years 1935, 1936 and 1937. The red line is for the year 1937. The chart shows broadly a distinct downward trend of the load of the Alabama Power Company since the end of March, 1937. For the past several months the load of the Alabama Power Company has been substantially less than the load in 1936. At the last point on the chart for 1937, it is only slightly above the corresponding load for the same period in 1935. It is considerably lower than the load at the end of

the year 1935. There has been no reversal of the trend shown by this chart for the latter half of the year 1937, because this chart takes up to the 10th of November.

The chart (offered and received in evidence as Complainants' Exhibit 99a), taken from The Annalist of October 22, 1937, shows the curve for electric power production from 1931 to October, 1937, inclusive.

Recross-examination:

The basis of the figures shown in Complainants' Exhibit 98 are not in evidence as such, because these are weekly figures, and the figures that are in evidence are yearly figures. Those figures are confined to the State of Alabama and have no relation to sales outside of Alabama. I have no similar chart showing sales outside of the state. Exhibit 98 reflects only the loads consumed within the State of Alabama, the weekly kilowatt-hours, divided by weeks. Complainants' Exhibit 95, headed, "The Annual Revenue in [fol. 141] Kilowatt-hour Sales to Customers within the State", is likewise confined to sales to customers resident within the state or operating within the state and does not include sales to utilities or others outside of the state.

Redirect examination:

Referring to the statement "Exclusive of Magazine Generation until November 8, 1935" on Complainants' Exhibit 98, the Magazine plant of the Alabama Power Company was formerly owned by a wholly-owned subsidiary. It is an 8,000 kilowatt plant located near Mobile. At the end of 1935 it was taken into the Alabama Power Company system and the old company passed out. Any production it had was included from that date on, but would be excluded before, and it would not make any material difference in the chart because it is not large enough in proportion to the total. General business conditions in the territory served by the Alabama Power Company corresponded substantially with the trends of the Alabama Power Company business shown on Complainants' Exhibit 98.

(The witness was excused.)

[fol. 142] Henry B. Sargent was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 32 years old and am Vice President in charge of operations and Secretary of the Mississippi Power & Light Company, Jackson, Mississippi. (The witness' qualifications were conceded.)

The Mississippi Power & Light Company is not required under the laws of Mississippi to obtain county franchises before it may maintain wires and distribute electricity in the areas outside of the incorporated communities.

(Counsel for the complainants thereupon read into the record the following passages from the Certificate of Incorporation of the Mississippi Power & Light Company, which enumerate, among other powers of the Corporation, under Section 2, Sub-section A, "Any and all kinds of plants and systems for the manufacture, production, storage, utilization, purchase, sale, supply, transmission, distribution or disposition of electricity, natural or artificial gas, water or steam, or power produced thereby, or of ice or refrigeration of any and every kind", and, under Subsection C of Section 2: "To purchase, acquire, develop, mine, explore, drill, hold, own and dispose of lands, interest in and rights with respect to lands and waters, and fixed and moveable property.")

In addition to its operations in the incorporated towns where it holds municipal franchises as set forth in the stipulation (Complainants' Exhibit 3), our Company also operates in 188 unincorporated communities within the State of Mississippi, and one corporate community in which we do not have a franchise, namely, Bentonia. We were operating in Bentonia before it was incorporated, which is [fol. 143] the reason why there was no franchise granted, and we have continuously served it.

As Secretary of the Company, I have charge of the payment of taxes of the Company. A tabulation (offered and received in evidence as Complainants' Exhibit 100) shows the taxes paid by the Company, the gross electric operating revenue, the gross revenue and the percentage of taxes to gross revenue, for the years 1932 through 1936, inclusive, and our estimate for the full year 1937.

The map (offered and received in evidence as Complainants' Exhibit 101) shows the State of Mississippi and superimposed thereon the electric lines of the Mississippi Power

& Light Company. The lighter blue lines are those that are over 25 kv. and those in dark blue are those under 25 kv. Also on this map municipal plants are shown in red, the generating plants of the Company are shown in squares, and there are also shown two circles using Pickwick Dam as the center of the radii, of 150 miles and 250 miles. I might add that the 2300 volt distribution lines of Mississippi Power & Light Company are not shown on the map because the scale of the map does not permit. They are indicated on the map by blue circles. We also have a few short rural lines that the scale of the map does not permit being shown. A substantial portion of our territory is also within 150 miles of Wheeler Dam and Guntersville Dam. There are no other private utility companies within the area that our Company serves. There are some municipally-owned plants in the territory shown on this map. They are indicated on the map by red circles.

The tabulation (offered and received in evidence as Complainants' Exhibit 102) shows the number of customers, kilowatt-hour sales, and electric revenue of the Company for the years 1933 to 1936, broken down in Zones 1 and 2. Zone 1 comprises the area enclosed by an arc having a radius of 150 miles of Pickwick Dam and Zone 2 is the area between 150 miles to 250 miles from Pickwick Dam.

[fol. 144] Our Company has interconnections with the lines of several other companies. Our interconnections are 110 kv. and 22 kv. interconnections with lines of the Louisiana Power & Light Company just south of Ozimo; 2300 volt interconnection with the lines of the Louisiana Light & Power Company at the state line just west of Natchez; 110 kv. interconnection with the lines of the Louisiana Light & Power Company west of Vicksburg, Mississippi; a 110 kv. interconnection with the lines of the Arkansas Power & Light Company west of Greenville, Mississippi; 110 kv. interconnection with the lines of the Memphis Power & Light Company north of Wells, Mississippi; a 12 kv. interconnection with the lines of the Memphis Power & Light Company north of Horn Lake, Mississippi, and a 12 kv. interconnection with the Memphis Power & Light Company north of Olive Branch, Mississippi. The Mississippi Power & Light Company has generating facilities. However, it purchases the major part of its requirements from the Louisiana Power & Light Company.

The list (offered and received in evidence as Complainants' Exhibit 103) shows the installed generating capacity of the Company plants. On the list is the location of the plants, the installed kw. capacity divided between steam and Diesel, and the total installed capacity. Four of the plants listed are run continuously, because they serve isolated areas. The generating plants at Natchez, at Liberty, at Carthage and at Mount Olive, are operated continuously to serve the load in those centers. The other plants shown on the exhibit are used only for standby service and are run when and if needed. They are not operated continuously, but are kept in condition so they can be operated when and if needed.

In addition to our electric power facilities, we serve natural gas in 24 communities in the state. We own and operate ice manufacturing systems in 5 cities in the state. We [fol. 145] own and operate a motor coach system in Jackson, Greenville and Vicksburg, Mississippi. We own and operate water works plants and distribution systems in 6 municipalities in the state, and lease and operate waterworks plants and systems in 4 communities in the state.

All of the properties are operated under the same management and same supervision. They are operated as a unit and not as separate corporations. In 1936, 71 per cent of our total gross revenue was derived from the electric business. The taking away or destruction of the whole or a substantial part of the electric business would increase the cost of rendering the service of the departments that were left, because, naturally, it would have to absorb a greater portion of our general overhead and general supervision and management expenses. The probable ultimate effect would be to hamper seriously the rendering of efficient service to them.

The Company has outstanding $16,000,000 of first mortgage, 5% bonds; 69,000 shares of non-par, $6 cumulative first preferred stock; 35,000 shares of $6 cumulative second preferred stock; and 1,000,000 shares of common stock, non-par value.

The Mississippi Power & Light Company, as it now exists, has grown over a period of years through consolidations and extensions of service. During this period it has brought electric service to 192 communities that formerly had no service at all. It has acquired distribution systems and

plants from 44 formerly municipally operated plants. It has brought natural gas service to 22 towns that formerly had no natural gas service whatsoever. It has, during this entire period, extended its service and furnished continuous and uninterrupted service to all of its customers. The territory that it serves is essentially a rural territory. Only one community that our Company serves has a popu- [fol. 146] lation of over 25,000. Two hundred and seventy-three of the 312 communities that are served by the Company have a population of over 1,000, and 111 of the communities that we serve have a population of under 100. Since the very beginning of our Company, we have adopted the policy of having secondary electric lines of a voltage that was low enough to be able reasonably to render service to all customers who applied for it. In explanation of that, I might say that our system consists basically of a trunk transmission system constructed and operated at a voltage of 110,000 volts. All other lines of the Company are less than 25,000 volts, and the majority of them, aside from the 2300 volt distribution lines, operate at 13,000 volts, so that they are available throughout the territory to render service to customers who might apply for it. During this entire period, we have rendered service to everyone who has applied for it, and have extended service to all customers that were economically servable. I do not believe that there is a substantial amount of potential business in the territory that is beyond our ability to serve. I think that our Company now is serving all of the business that is economically servable. We own and operate distribution and transmission lines and stand ready at all times to serve all customers who might apply that are economically servable. There are some industrial loads that exist in our territory that we are not serving, but for the most part they are loads where the customers have process steam that they use in their manufacturing needs or they have refuse fuel that they can use to generate their own power. As far as residential and commercial customers are concerned, I think that we are serving substantially all of such customers in our territory.

The tabulation (offered and received in evidence as Complainants' Exhibit 104) shows various statistics for the Company for the years 1927 through 1936, inclusive, and [fol. 147] also for the period ending August 31, 1937. The items shown are the number of customers as of the close of

each year, the total energy sales, total industrial sales, the per cent such industrial sales bear to total sales, the miles of transmission lines, the miles of distribution lines, the average kilowatt-hour consumption per residential customer, the average revenue per residential customer and the number of communities served with electricity. (At this point the columns on the exhibit involving the Average Rate per kwh. per residential customer, and the average rate per kwh. total sales, were ordered stricken by the Court on its own motion, and exception taken.) From the date of organization of our Company through 1936, our Company has made net additions to the plant amounting to $15,110,-405. Under the state laws of Mississippi, the municipalities have the authority to regulate the rates of utilities within their corporate limits. We are subject to that authority.

Cross-examination:

The Company has some $16,000,000 in bonds outstanding, but I am not familiar with the prices of those bonds in the last three or four years. It sounds reasonable to me that the bonds may have been quoted at $100 during 1936, the highest price in the last six years, but I have not seen the quotation.

Complainants' Exhibit 104 shows the average consumption for residential customers in the twelve months ending August 31, 1937 to be 737 kilowatt-hours. That is the best record in the history of the Company.

I do not know of any contracts of the TVA to sell power to municipalities or other customers in the claimed territory of my Company, but there is a contract that the TVA has with the city of Memphis which will affect the contract under which we sell power to the Memphis Power & Light Company, because if the municipality of Memphis constructs its system and takes the load away from Memphis Power & Light Company, our sale of power to Memphis Power & [fol. 148] Light Company under our contract with them will probably be cancelled. We have a lot of power to sell. Our Company buys the major portion of the power that it sells. We have a firm power contract with the Louisiana Power & Light Company under which they provide us with all of the power that we need, so we have plenty of power to sell. We buy 95% of the power that we sell. There is now being constructed by the TVA a line into the territory that we

serve, to serve a load which we are now serving. The load which we are now serving is the Government Engineer Project about 8 miles east of Sardis, where they are constructing a dam, and the TVA is constructing a line to take that load; when the line is completed, we will no longer serve that load. I think I am pretty familiar with that transaction. I believe the line is the line of the War Department, not of the TVA, but it will be used for receiving TVA power. I do not know that that line of the War Department which is now being constructed to serve its construction needs at the Sardis Dam will have as its point of delivery Pontotoc, Mississippi, in the so-called ceded area in northeast Mississippi.

There still are large rural areas in the territory we claim that had no service in 1933. In answer to the question whether I agree with the statistics of the Edison Electric Institute that in 1933 less than one per cent of the farms of Mississippi had central station service, I think that the figures that the Edison Electric Institute puts out in showing the farms served are accurate, provided that they are properly qualified so that those who look at it know what it means. Now, if an explanation is made as to what a farm consists of, under that statement of statistics that is put out, why, yes. I don't know that I know what the Edison Electric Institute means by "farms", because there are various and sundry definitions of farms.

We did not sell any power to the Memphis Power & Light [fol. 149] Company in 1936. The contract which I referred to is the contract which was negotiated and entered into in June, 1937.

(The witness was excused.)

OFFERS IN EVIDENCE

Thereupon counsel for complainants had marked for identification as Complainants' Exhibit 105, House Document 328, 71st Congress, Second Session, entitled "Tennessee River and tributaries, North Carolina, Tennessee, Alabama and Kentucky, covering navigation, flood control, power development and irrigation, Part 1".

"Mr. Fitts: May it please the Court, if the report is offered merely for the purpose of showing that it is a report

that was made by the Army Engineers to Congress, and that is the report that was before Congress, that that is the information that was before Congress, there is no objection.

However, there is an objection if the report is offered to prove the truth of, or the accuracy of the facts asserted in it, on the ground that as to that it would still be hearsay.

* * * * * * *

Judge Allen: The Court will receive the report in evidence and will give it consideration as it would any report.

Mr. S. D. L. Jackson: At this time I would like to read a few brief paragraphs from this exhibit, from pages 1 to 7, which is the report of the Chief of Engineers.

Mr. R. T. Jackson: May I interrupt one moment? It was our thought, if the Court please, where we offer excerpts specially in this way from any documentary evidence, as to which there might not be sufficient copies of the document, that we would ask the reporter to make for immediate distribution an extra copy, so that those would be delivered to each of the members of the Court for their convenience.

Judge Allen: I think the Court will probably consider the entire report. We would be very glad to have a copy of the excerpts.

Mr. R. T. Jackson: We merely wanted to bring the parts that we offer, of course, what else is offered or considered——

Judge Allen: We would be very glad to have the copy [fol. 150] of the excerpts. Speaking for myself, I shall look at the whole report.

Mr. R. T. Jackson: We offer these parts that we think material."

Counsel for complainants then read and offered in evidence the following excerpts from House Document 328; from the report of the Chief of Engineers, paragraph 8 on page 2, paragraph 10 on page 3, paragraph 16 on pages 4 and 5, paragraph 17 on page 5, paragraph 23 on page 6, and paragraph 24(a) on page 7; from the report of the Board of Engineers which is attached to the report of the Chief of Engineers, the first 6 lines from paragraph 21 on page 16; and from the report of the District Engineer attached to and made a part of the report of the Chief of Engineers, the third paragraph on page 88, paragraph 78 on page 97

and paragraphs 79 and 80 on pages 100 and 101. Counsel for complainants also offered in evidence as Complainants' Exhibit 105(A) the table appearing on pages 98 and 99 of Complainants' Exhibit 105, and as Complainants' Exhibit 105(B) the table appearing on page 100.

"Mr. Fitts: May it please the Court, while I have not made any formal objection, it does seem to me that this fragmentary way of getting in—I realize that the whole report is in evidence and that is why I have not made any formal objection, but I do hope when the time comes to make up a record in this case we will be permitted to put the fragments together, rather than to have them appear segmented like this where they read in a distorted and misleading picture of what both the chief and the district engineer reported. I think it is confusing to have them in the record in that fragmentary way at this time.

Judge Allen: The Counsel for the TVA will have the same right to pick out certain parts of this report that they wish to rely upon as counsel for the complainants, and it may follow immediately after this testimony.

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Judge Allen: The Court thinks it would be of assistance if counsel for the Authority would now read what part the Authority would rely on in document No. 328.

Judge Martin: Of course, what the Court had in mind was to consider the one document in its salient features from both the Complainants' and Defendants' standpoints, and have pointed out to us and read to us such portions as complainants and defendants think pertinent here before we consider some other document.

Mr. S. D. L. Jackson: So long as it clearly appears in the record that that is the defendants' excerpts that they are [fol. 151] calling the Court's attention to and not in any wise connected with the complainants' case, we have no objection. As Mr. Raymond Jackson points out, which is the fact, we have only marked the exhibit for identification and have only offered in evidence the paragraphs which I read.

Judge Allen: The Court will receive the entire report. The Court will take judicial notice of the entire report, and the Court will receive it.

Mr. S. D. L. Jackson: May we have an exception to that? We only desire to offer as part of our case the paragraphs

that were read to the Court, although the entire exhibit was marked as an exhibit for identification."

Counsel for complainants then read from the Rivers and Harbors Act, Public Act No. 520, 71st Congress, approved July 3, 1930, the first paragraph:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That the following works of improvement are hereby adopted and authorized, to be prosecuted under the direction of the Secretary of War and supervision of the Chief of Engineers, in accordance with the plans recommended in the reports hereinafter designated."

Counsel further read from pages 11 and 12 of that Act as follows:

"The project for the permanent improvement of the main stream of the Tennessee River for a navigable depth of nine feet in accordance with the recommendations of the Chief of Engineers in House Document numbered 328 of the Seventy-first Congress, Second Session, is hereby authorized; Provided, That an expenditure of $5,000,000 shall be authorized to be appropriated for the prosecution of work under this project: Provided further, That the Chief of Engineers is hereby directed to ascertain and report to Congress on the first day of the first regular session of the Seventy-Second Congress, advising the prospective cooperation offered by responsible interests under the Federal Water Power Act, in the program of construction recommended by the Chief of Engineers, providing for the nine-foot project by means of high dams."

Counsel for complainants then had marked for identification as Complainants' Exhibit No. 106, Part I of the Annual Report of the Chief of Engineers, U. S. Army, 1932.

[fol. 152] "Mr. S. D. L. Jackson: I want to read in evidence after it is marked one paragraph and offer to the Court a table similar to that other photostat table.

Mr. Fitts: I am assuming that the Court's ruling will be the same here. We object to the fragmentary offer of the report. If any part is in, I think it all ought to be put in, for what it is worth.

Judge Allen: The Court will receive the whole report.

Mr. S. D. L. Jackson: May it be clearly understood that we are only offering the one paragraph and the tables which relate to the Tennessee River. This, of course, takes in every river in the United States.

Mr. R. T. Jackson: May I make one suggestion about that report? That report is the annual report of the Chief of Engineers which refers to all the adopted projects on all the rivers of the United States, and there is, therefore, only one small part which can have any reference to the Tennessee River and its tributaries. For that reason we are offering excerpts.

Judge Allen: The Court will accept the entire report and will consider what part of the report is pertinent and what parts of the various matters contained in this volume are pertinent. The Court will not accept fragments of a report and be bound by those fragments. We will be glad to hear the paragraphs or whatever paragraphs you pick out."

Counsel for complainants then offered in evidence from this report the paragraphs on Page 1206 entitled "Existing Project" which relates to the Tennessee River, and the table on Pages 1207 and 1208 which was marked for identification Complainants' Exhibit 106(A).

Counsel for complainants then had marked for identification as Complainants' Exhibit 107, Part I of the Report of the Chief of Engineers of the United States Army for the year 1936. From that exhibit counsel for complainants offered in evidence the paragraphs appearing on Page 1032 entitled "Existing Project" which relates to the Tennessee River, and the table on Pages 1033 and 1034 which was marked as Complainants' Exhibit 107(A).

"Mr. Fitts: For the purpose of the record, we assume that any part of this report which is relevant in the issues in the case is in evidence.

Mr. S. D. L. Jackson: We have not offered it.

[fol. 153] Judge Allen: That is the ruling of the Court.

Mr. S. D. L. Jackson: May we have an exception? That is part of the defendants' case, as I understand it.

Judge Allen: The Court considers that it can take judicial notice of these reports, of the entire report.

Mr. S. D. L. Jackson: That may be, if your honor please, but we simply are trying to preserve our record and we want the record to show that we offer those parts which we have read.

Judge Allen: That is satisfactory. And the Court wishes the record to show that we can take judicial notice of the entire report, and the Court does not care to be bound by fragmentary parts of the report offered in evidence."

Thereupon counsel for complainants had marked for identification as Complainants' Exhibit 108 the hearings before the Sub-committee of the House Committee on Appropriations in the Fourth Deficiency Appropriations Bill for 1933, Seventy-Third Congress, First Session.

"Mr. Fitts: Are you offering the whole document?

Mr. S. D. L. Jackson: I have not offered any of it yet, Mr. Fitts. I am having it marked as an exhibit for identification at this time.

Mr. Fitts: All right.

Mr. S. D. L. Jackson: The Complainants offer in evidence from this document the portion on page 23, being statements of Dr. Arthur E. Morgan, President, Tennessee Valley Authority, as follows:

Mr. Fitts: May it please the Court, before that is read, I think I have a right to get in the objection which I think is well taken.

I object to the offer of this material in evidence in this case upon the ground that it is immaterial and irrelevant; upon the second ground that it is the individual statement of an individual director, not reflecting any action taken by the corporation as such; that in so far as it is offered to prove the truth of facts stated in it, it is hearsay evidence. This is a hearing before an Appropriations Committee; even testimony in court in another proceeding would not be admissible. This is not an official report to Congress by an official officer acting pursuant to his official duties, not an official record. It is not within any of the recognized excep- [fol. 154] tions to the hearsay rule; it is pure hearsay, an individual's statement, on the same plane as far as I can see, so far as its quality as evidence or proof is concerned, as magazine articles or books or speeches, and expressing individual views.

Mr. S. D. L. Jackson: If the Court please——

Mr. Fitts: And furthermore, and probably more important, it can only go to the question of motives or purpose of the directors of the Authority and cannot go to the question of the existence of statutory or constitutional power to take the action that it challenged in this case."

There followed a long colloquy between court and counsel of both sides and arguments of counsel concerning the admissibility of this evidence.

"Judge Allen: Mr. Jackson, the Court will ask you to indicate what excerpts from this statement of Dr. Morgan you are referring to."

Counsel for complainants then offered and read in evidence the following excerpts from Complainants' Exhibit 108 for identification: On Page 23 beginning with the statement of The Chairman, "Out of this" and concluding with the statement of Dr. Morgan ending "above Muscle Shoals"; on Page 25 the questions of Mr. Collins and the answers of Dr. Morgan thereto; on Page 28 the remarks of Mr. Oliver under the heading of "Transmission Lines" and the replies of Dr. Morgan thereto; on Page 29 the question of Mr. Arnold beginning "Referring to the transmission line" and the reply of Dr. Morgan thereto; on Page 30 beginning with the statement of Dr. Morgan: "And another thing" down to the heading "Transmission Lines and Distributing Systems".

"Mr. S. D. L. Jackson: Now, those are all of the portions out of this exhibit 108 that the complainants desire to offer in evidence.

Judge Allen: The Court has previously held that under the Supreme Court's decision in the Ashwander case, evidence as to motives, declarations, pronouncements, desires, [fol. 155] policies, and the programs is not admissible. The Court adheres to this ruling. This means that the Court considers evidence of speeches, releases to the newspapers, circulars, or statements of a similar character, made by the directors and employees of the Tennessee Valley Authority as incompetent and irrelevant.

Since the reports of sub-committees of Congress, and statements of members in charge of legislation are held competent, the Court rules that this particular exhibit is admissible for whatever weight it may have, because it embodies a statement made by the head of the Authority to the Committee of Congress in charge of the appropriations for the Authority and falls into the classification of a quasi-official report to Congress. The excerpts are admitted.

Mr. S. D. L. Jackson: I understand that these excerpts are admitted. May we have an exception to the first part of your Honor's ruling?

Judge Allen: You may have it.

Mr. S. D. L. Jackson: On that point, if your Honor please, I think your Honor mentioned press releases and things of that character which were not involved in the argument that we made. May we present additional authority to your Honor?

Judge Allen: The Court is desirous of aiding counsel in the presentation of evidence in this case. The petition embodied as exhibits numerous copies of alleged press releases, speeches, statements, circulars and things of that sort. The Court desires to indicate to counsel its ruling with reference to those matters in order that there may be no misunderstanding and no loss of time.

Mr. R. T. Jackson: May we submit our brief on that point, since we had not supposed it would be involved at this time?

Judge Allen: The Court has ruled upon this point at Nashville, the Court ruled again upon the point after the meeting at Nashville, the Court ruled upon this point upon arrival in Chattanooga, and the Court now rules upon this point, and it does so in advance in order that there may be no misunderstanding on the part of counsel and no waste of time to the inconvenience of all concerned, and you may have your exception."

At this time counsel for defendants read the following excerpts from House Document 328, Complainants' Exhibit 105 (which excerpts are set forth in Appendix A following Defendants' Exhibits):

From the report of the Board of Engineers for Rivers and Harbors under the heading "Discussion by the Board of Engineers for Rivers and Harbors, Paragraph 33 on [fol. 156] Page 19 and the last sentence of Paragraph 35 on Page 21; from the report of the Board of Engineers for Rivers and Harbors under the heading "Summary of the report of the District Engineer", Paragraph 5 on Page 10, the first sentence of Paragraph 11 on Page 11, the first two sentences of Paragraph 13 on Page 12, Paragraph 23 on Page 16, and Paragraph 25 on Page 17 including only the description of Cases I, II and III and including only

the figures in the table at the bottom of the page for Knoxville and Chattanooga in Cases I, II and III; from the report of the District Engineer, the sentence from Paragraph 31 on Page 64, reading "The series of low dams for navigation only provide no flood control" and Paragraphs 5, 6 and 7 of Appendix G on Page 496.

Counsel for defendants then read from the Annual Report of the Chief of Engineers for 1936, Complainants' Exhibit 107, the fourth paragraph on Page 1035 (which excerpt is set forth in Appendix B following Defendants' Exhibits).

"Judge Allen: Before ruling upon the application for subpoena duces tecum the Court desires to ask for certain further information from counsel. In the first place, the resolutions which were agreed to be delivered, have they been delivered?

Mr. Fly: They have been delivered, your Honor.

Mr. S. D. L. Jackson: If the Court please, we received about noon on Saturday, I think, a list of something over 100 resolutions.

Mr. Fly: 367.

Mr. S. D. L. Jackson: I received 192, I believe, in the first list, but a great number of those resolutions referred to an exhibit, for instance, the resolution reads, 'resolved that the project or plan or whatever it is, set up in exhibit numbered so and so, and attached to these minutes is hereby approved.'

A number of the exhibits were not attached and did not accompany the resolution, so the resolution is quite unintelligible.

We received more yesterday. We have not fully completed our check of them, but I think we can assure the Court that if that is the material that they are going to [fol. 156a] furnish, and all that they are going to furnish, it does not meet the material that we requested in our subpœna duces tecum.

Judge Allen: Have you received any of the exhibits to which the resolutions refer?

Mr. S. D. L. Jackson: I don't believe so. I have not fully completed my check of this material that came in yesterday. But there were no exhibits attached to the first group of resolutions. Mr. Marks and I have had some conversation and hoped to get together sometime either last

night or today, and we did not make it last night, to try to iron out some of these exhibits.

He has assured me that some of the exhibits are being made up, and copies will be sent over. That is as I understand it,—is that correct, Mr. Marks.

Mr. Fly: May it please the Court, I believe that Mr. Jackson is quite correct, except in so far as he may suggest that we were unwilling to give him the exhibits which are necessary to an understanding of the resolutions.

It is true that some of the resolutions authorize a particular project covered by a particular exhibit. Now, we are prepared to turn those exhibits over to him, and I understand that they will cooperate with us in going over those.

Judge Allen: Have all of the contracts which were agreed to be delivered, have they all been delivered?

Mr. Fly: I think they have all of the contracts. If they have not, if they will inform us, name those that are missing, we will be glad to give them those.

Mr. S. D. L. Jackson: So far as I know now, the only one missing,—and perhaps we have mislaid it since we received it from the TVA,—is the contract with the Gibson County Membership Cooperative Association.

Mr. Fly: We will look that up and give you another copy.

Judge Allen: We are interseted in the question of the Electric Hom and Farm Authority and desire further information concerning that corporation. Is it conceded that that corporation is no longer in existence?

Mr. S. D. L. Jackson: Not exactly that way, if your Honor please. But there is in existence a successor corporation which took over all of the liabilities, rights and assets of the first corporation, I take it, and is carrying on to a large extent the business of the first corporation.

Judge Allen: What is the name of that corporation?

[fol. 156b] Mr. S. D. L. Jackson: Electric Home and Farm Authority, Incorporated, or 'Inc.' The second one was organized, I think, in August of 1935 as a Delaware Corporation, and was the Electric Home and Farm Authority. May I state it is carrying on with the TVA under the same contract that the original corporation made, that the TVA was carrying on under.

Judge Allen: Do you contend that the TVA is selling electric appliances retail, is directly selling electric appliances at retail?

Mr. S. D. L. Jackson: No.

Judge Allen: All right, that answers that question. Do you contend that any of the directors of the new corporation are directors of the TVA?

Mr. S. D. L. Jackson: We don't know. I don't think they are.

Judge Allen: Well, you don't think they are.

Mr. Fly: They are not, your Honor; there is no doubt of that. No one connected with the TVA is a director or employee.

Judge Allen: Now, what exactly and specifically do you contend for the relationship between this new corporation,—not the old one, the new corporation, and the TVA?

Mr. S. D. L. Jackson: This, if your Honor please: The Electric Home and Farm Authority is still engaged in financing the purchase of electric facilities.

Now, in order to state the situation coherently, if I may refer back a moment to the original corporation, that started in the TVA area, it started as an adjunct of TVA. TVA referred to it as an agency to accomplish that particular purpose, namely, to stimulate the sale of electricity consuming appliances, load building. Now that developed first in this area down here, I think originally for TVA itself. Then it embraced, its field was enlarged so that it would do the same thing for private utilities, when the TVA had approved, or EH&FA had approved the rates at which the private utilities were selling current.

Judge Allen: Mr. Jackson, I think every member of the Court, in fact I am sure that every member of the Court has read the exhibits attached to the bill and those exhibits set out what you are now saying. Our question is directed, specifically directed, to what you can prove concerning the connection, actual connection between TVA and this new corporation.

Mr. Jackson: The new E. H. & F. A., we expect to show that it is carrying on the business of the original E. H. & F. A., and so far as the TVA at the present is concerned, it has this contract with TVA, just as it has a contract with [fol. 156c] other utilities whose rates are satisfactory to it, and TVA is now engaged in collecting funds from the

purchasers of electric consuming appliances, and I presume remitting those funds to E. H. & F. A. That is, E. H. & F. A. is still furnishing a financing service to people who buy electric consuming devices, and by whom TVA current is used. I mean TVA current, perhaps purchased through purchasers of wholesale current, which goes out and is consumed. TVA actually collects the funds on the purchaser's light bill and remits to E. H. & F. A. That is our point here, if your Honor please, that TVA has used, and is using E. H. & F. A. even today to promote their electric utility business.

Judge Allen: Do you want to say anything about that, Mr. Fly, before going to other subjects?

Mr. Fly: May it please the Court, I think Mr. Jackson on the whole is correct in his statement. The first corporation was under the control of the directors of the Tennessee Valley Authority before the decision in the Ashwander case, I have forgotten when it was. That corporation was dissolved. That was a Delaware Corporation. The new corporation was organized under the laws of the District of Columbia. The directors of that corporation I believe are all employees of the Reconstruction Finance Corporation. The only business of the E. H. & F. A. is a financing business, assisting purchasers of electric appliances throughout the country. Now, we have no control, there is no interlocking directorate, there are no common employees or anything of that sort. Now, it has these contracts with the various utilities, including these complainants in various areas, and in that way the E. H. & F. A., under the spending power is assisting the purchasers of electric appliances in financing those.

Now, it is true that the Tennessee Valley Authority has a contract with the E. H. & F. A., just as these complainants have. It is not true, of course, that we have any extensive relations with them, because as your Honor knows we have very few direct customers, and most of that was carried on by the wholesale purchasers from TVA who are in the distribution business.

Mr. S. D. L. Jackson: Our point is this, if your Honor please, that E. H. & F. A. is still being used to promote the utility business of TVA, that is, still going on.

Judge Allen: Now, the Court wants to ask questions concerning the request for certain items in this citation for a

subpœna duces tecum. Perhaps there are a number of questions we might want to ask counsel, and counsel might want to look at the subpœna on page 4, the last item on that page. The Court is drawing from complainants, what is the subject and nature of the telegram asked for from Mayor Glenn of Florence, Alabama, addressed to TVA.

Mr. S. D. L. Jackson: Would your Honor give me the date of that?

[fol. 156d] Judge Allen: December 4, 1932 and reply.

Mr. S. D. L. Jackson: Oh, that telegram from Mayor Glenn to the TVA was advising the TVA that the city of Florence had filed an application for a PWA loan with the Alabama State Board of Public Works, I think a few days before, and that they were asking TVA for their assistance and cooperation in getting speed from that loan. Trying first, to get it from the Montgomery office, the State Board, down to Washington, to get further action. The reply to that telegram was a telegram from Mr. Lilienthal assuring them that he would do so. Next is a letter, I believe next in line is the letter of December 7th, is a letter again assuring them that he was actively engaged in trying to speed up that application, and that he, Mr. Lilienthal had an appointment with Secretary Ickes the next day and would discuss that with him among other matters.

Judge Allen: What is the nature of the telegram dated about December 27th to Mayor Glenn?

Mr. S. D. L. Jackson: That is advising Mayor Glenn that his application had been received at Washington office of PWA, that is the Alabama State Board had sent it down to the Washington office.

Judge Allen: And the letter dated January 4, 1934, from Director Lilienthal to Mayor Glenn of Florence, Alabama.

Mr. S. D. L. Jackson: On that question I am not so sure as to just the precise contents of that at this time. I think if your Honor please, that relates to the PWA application of Florence, no doubt about that, and I think that is the one advising that they think they can get that application granted in the near future. I am not quite positive as to my recital of the substance of that.

Judge Allen: Now, the telegram dated on or about January 4, 1934 from director Lilienthal to Sheffield and Tuscumbia, Alabama, stating PWA loans would be released, that refers to loans applied for by those cities?

Mr. S. D. L. Jackson: Yes, your Honor.

Judge Allen: What is the nature of the letter dated on or about March 6, 1934 from Mayor Glenn of Florence, to Director Lilienthal?

Mr. S. D. L. Jackson: That, I think Mayor Glenn of Florence was becoming a bit impatient, and that they were not getting this loan through faster. Now this letter of March 6th and one of March 8th and reply of March 10th and the letter of March 11th are all somewhat general in their nature. I mean, it is Mayor Glenn trying to press the Florence PWA application and trying to get TVA to speed things up down at the PWA just as much as they possibly could.

[fol. 156e] Judge Allen: Now, skipping the next item, what is the nature of the letter dated on or about March 19, 1934?

Mr. S. D. L. Jackson: That is a letter, if the Court please, wherein Mr. Lilienthal advised Mayor Glenn that the things were going along just as fast as they could, that Mr. Lilienthal had hit upon a plan which might circumvent a legal objection that somebody in the legal department of PWA had raised, that these Alabama cities could not—that any bonds that they issued would not be good, so that the PWA could take them under the Act under which PWA was acting, and Mr. Lilienthal at that time advised Mayor Glenn that he had hit upon an idea which might circumvent that idea, and was trying to work it out. I believe he either wrote it from Washington or said he was going to Washington shortly, and try to work that plan out, but he had discussed that plan in part with Secretary Ickes, and Secretary Ickes said he saw no objection in principle to the proposal—I mean to say that proposal was ultimately carried out for fourteen North Alabama towns in July of that year.

Judge Allen: What is the nature of the telegram dated on or about July 9, 1934 from the Mayor of Tuscumbia, Alabama to Director Lilienthal?

Mr. S. D. L. Jackson: June 19th?

Judge Allen: Yes, at the bottom of page 5.

Mr. S. D. L. Jackson: That relates to the application of Tuscumbia for a PWA loan, and at the moment, if your Honor please, I do not recall the precise contents. It is involved with this other situation. I will have a memorandum of that shortly.

Judge Allen: And I suppose the same comment would be true with reference to the first item on page 6, the telegram.

Mr. S. D. L. Jackson: The telegram dated June 20th, 1934?

Judge Allen: Yes.

Mr. S. D. L. Jackson: Yes, I think that a telegram practically identical to that, or that identical telegram was sent to the mayor of those two towns.

Judge Allen: Now, what is the nature of the telegram dated June 21st, 1934, to Mayor Glenn of Florence?

Mr. S. D. L. Jackson: That also deals with the PWA application of Florence. I do not recall the exact substance of that precise telegram. I will have a note of it here in a moment, of what it was.

By that time the city of Florence had indicated that it wanted to build its own distribution system, and Mr. Lilienthal's plan, the one I mentioned to you, and which is hinted [fol. 156f] at in the letter of March 19th was that although these PWA loans would be used, or the applications would be there, and it was a back log, yet the plan he was trying to work out to avoid any legal difficulty about bonds was that TVA would buy the facilities of the Alabama Power Company in these various towns and sell them back to the town, which under the plan of paying for them out of revenue rather than having the towns issue bonds and sell them to PWA, was holding the PWA applications in line as a feature of the bargain.

Judge Allen: Now, what is the nature of the telegram of July 10, 1934?

Mr. S. D. L. Jackson: Well, that telegram is the one in which they said to Mayor Glenn, who by that time had made up his mind that they did not want to buy the property of the Alabama Power Company in Florence, they wanted to build their own plant, and that telegram was the one that said that was inconsistent with the plan TVA had on this thing, and Florence would have to get in line along with these other towns.

And then that is followed up with the letter, or the telegram of July 11th from Mr. Ickes to Florence, which is pleaded in our bill, and admitted in the answer.

Judge Allen: Yes, that is pleaded in the bill. What is the nature of the letter dated October 15, 1934 from Director Lilienthal to Mayor Overton of Memphis?

Mr. S. D. L. Jackson: Our only knowledge of that, if your Honor please, appears from a newspaper report which is to the effect that Mayor Overton of Memphis had been advised by Mr. Lilienthal at some time, I would say within a week or ten days prior to that date, that TVA would, I think, probably give consideration to the purchase of the steam plant at Memphis in the event Memphis contracted with TVA and acquired the distribution facilities of the Memphis Power & Light Company, or else built their own.

Judge Allen: Now, looking down at the bottom of page 6, Mr. Jackson, please, the third item from the bottom, what is the nature of the letter that you claim dated on or about August 13, 1937, from Director Lilienthal to Dempster.

Mr. S. D. L. Jackson: That relates to the City of Knoxville. You see, if I might say, Knoxville had had a PWA loan and grant for a long time. They had tried to work out this plan in 1934 to buy the property of the Tennessee Public Service Company and that had not gone through, and the situation had reached more or less the stage in Knoxville where things were rather dormant.

And that letter, the letter of August 13th, Mr. Lilienthal wrote to Knoxville and wanted to know when they were [fol. 156g] going to act. That is, it simply brought the thing to life after it had been simmering for some little time.

The other two letters relating to Knoxville relate that Knoxville very promptly did act. That is, they had their survey made, and things of that kind.

Judge Allen: Now, the Court understands that the maps and tabulations asked for in paragraphs 8 and 9 on page 8 have been delivered.

Mr. S. D. L. Jackson: We have received them and Mr. —— Mr. Seymour, do you know if the final check has been made on those?

Mr. Seymour: That is the maps of the TVA lines?

Mr. S. D. L. Jackson: Yes.

Mr. Seymour: They are now being corrected for some more or less minor errors that were agreed upon. They are not actually delivered, but we expect to have those completed shortly.

Mr. Marks: I may say I tried to reach counsel for the complainants yesterday on that matter but was unable to.

Mr. Seymour: If the Court please, I think those should be considered out of the thing. We are going to agree on it, it is merely a matter of time, working out the errors.

Judge Martin: That was understood.

Mr. S. D. L. Jackson. Yes.

Judge Allen: That was the understanding, but in our rulings, we wanted to make sure of that.

Mr. S. D. L. Jackson: Yes.

(A brief conference was held by the Court.)

Judge Allen: The Court would like to know whether complainants will offer proof tending to show that the TVA is still employing or contributing to the wages of George Munger as sales manager of the Electric Home and Farm, Incorporated? Is he connected with the new corporation?

Mr. S. D. L. Jackson: If you Honor please, I don't know.

Judge Allen: Then you are not prepared to show that.

Mr. Fly: We can state what the facts, what the situation is. Mr. Munger is a regular employee of the Electric Home and Farm Authority, and the TVA bears no portion of any expense of the EH&FA, including, of course, Mr. Munger's salary.

[fol. 156h] Mr. S. D. L. Jackson: I might say I think that minute relates back to some time in the Spring of 1934.

Mr. Fly: Pardon me, your Honor, I made a misstatement. I understand Mr. Munger is with the Rural Electrification Administration; I am sorry.

At this point the Court announced its ruling upon the application for subpoena duces tecum made by complainants on the second day of trial.

Judge Allen: Judge Gore has previously stated in his ruling on the motion to dismiss the bill that the bill is in some particulars argumentative, and that it contains impertinent matters. The Court of Appeals of the Sixth Circuit in effect sustained the trial court in his ruling upon that question. The other members of this Court are in accord with Judge Gore's view. We do not, therefore, agree with counsel for complainants that every fact or circumstance alleged in the bill, or that every conclusion of fact drawn therefrom, constitute an issue in the case. The scope of the issues and competency, materiality and relevancy of evidence will be decided by the Court under the law applicable to the facts alleged.

RULING UPON APPLICATION FOR SUBPŒNA DUCES TECUM

With reference to the application for subpoena duces tecum. This application prays for the production of very many items of documentary evidence listed by groups in some eight typewritten pages. The Court, so far as possible, will consider these items under their natural classification.

[fol. 157] I

We are informed that copies of all resolutions of the Authority dealing with the sale of electric energy and copies of all contracts for such sale have been given complainants by the Authority. Certain of the requests to produce in paragraph 1 of the application are very broad. They pray for the production of minutes of the Authority which 'discuss' or 'consider' or 'approve' certain action of the Board with reference to the sale of electric power. As to approval officially expressed in resolutions, such papers have been given to complainants. As to documents, papers, et cetera, which merely show consideration, discussion, plan and pronouncement, such items fall within our previous ruling, to which we again adhere. The Court has previously held that under the Supreme Court's decision in Ashwander versus Tennessee Valley Authority, 297 U. S., 288, evidence as to the pronouncements, policies and program of the TVA and its directors, their motives, and desires, does not give rise to a justiciable controversy save as they had fruition in action of a definite and concrete character constituting an actual or threatened interference with complainants' rights, hence evidence upon such subjects is inadmissible. In Isbrandtsen-Moller Co., Inc., versus United States, 300 U. S., 139, 145, the Supreme Court reaffirmed this principle. This ruling necessarily results in a denial of the application for subpoena duces tecum in so far as it relates to all documents of this nature. Evidence of speeches, releases to the papers, circulars, and statements of a similar nature made by the directors or employees of the TVA is incompetent and irrelevant.

II

Certain of the requests call in extremely sweeping terms for communications, reports, etc., which have passed between the TVA and various Government agencies, Federal Emergency Administration of Public Works, Rural Electri-

fication Administration, and National Power Policy Committee. These communications and negotiations have no bearing upon the controversy presented here. The constitutionality of the statute under which these agencies operate is not here contested. If they were attacked before us, the statute requires us to give notice to the Attorney General of the United States. In the absence of any such question, we must assume their validity. The presumption of validity which attaches to the performance of official functions by duly constituted offices of the Government exist here also as to the acts of officials of these Governmental agencies. We have no jurisdiction in this case to question their legality. A double presumption of that va- [fol. 158] lidity thus arises as to the acts of these agencies, Federal Emergency Administration of Public Works, Rural Electrification Administration, and National Power Policy Committee, of which evidence is prayed to be produced. Since the documents in question have bearing, if at all, upon the allegations of conspiracy, and since a conspiracy is an agreement to perform an unlawful act, or an agreement to perform a lawful act in an unlawful manner, these documents are not relevant. The negotiations between the municipalities and the cooperatives and the TVA stand upon the same footing. The contracts themselves are in evidence. Under the state law, so far as appears, the municipalities are authorized to generate and transmit and sell power and to contract for its purchase. The cooperatives may legally purchase power from TVA. Hence no illegal act is involved in the acts with reference to which evidence on this subject is prayed to be produced, and this portion of the application is denied.

III

The Court has heretofore ruled, and now adheres to its ruling, that evidence as to the rates of any litigant has no relevance. It is not a rate proceeding. The prayers to produce certain documents giving information as to rates therefore is denied.

III-A

The request for subpoena duces tecum as to all documents relating to communications between Electric Home and Farm Authority, Inc., and TVA is refused. This corpora-

tion has been dissolved for over two years and counsel for complainants do not state that they can show any control of Electrical Home and Farm Authority as now constituted by TVA.

IV

The application, except as hereinafter stated, must fail because of its sweeping and burdensome character. While certain items are specifically described, these bear upon the question of motive, plan or program, heretofore ruled upon. Most of the requests embodied in these eight typewritten pages are far too sweeping to be regarded as reasonable. The application for subpoena duces tecum in these general requests does not require the production of documents of a limited character, but in a dragnet prayer demands written evidence of negotiations, discussions, reports to TVA from Federal Emergency Administration of Public Works, Rural Electrification Administration, and National Policy Committee, and correspondence between these agencies and TVA and between TVA and numerous municipalities and cooperatives. As heretofore stated in our ruling upon the previous application for subpoena duces tecum, these requests constitute a fishing expedition. It is difficult to see [fol. 159] how the TVA business 'could be carried on after it had been denuded of this mass of material which is not shown to be necessary in the prosecution of this case and is clearly in violation of the general principle of law with regard to the particularity required in the description of documents necessary to a search warrant or subpoena'. Hale versus Henkel, 201 U. S., 43, 76, 77; Federal Trade Commission versus American Tobacco Company, 264 U. S. 298.

V

The application for issuance for subpoena duces tecum for the following documents and papers is allowed:

(1) Minutes of June 26th, 1933, so far as they relate to the opposition of the TVA Board to the granting of further licenses in the Tennessee River Basin.

(2) Minutes of May 20, 1934, relating to the same subject.

(3) Minutes of September 14, 1937, showing assignments of contract with Volunteer Portland Cement Company to the City of Knoxville.

(4) Copy of protest dated on or about August 23, 1933 to Federal Power Commission from TVA Director Lilienthal objecting to the granting of a license to the Southern Industries and Utilities, Inc.

(5) Copy of letter dated on or about May 21, 1934, from TVA to Federal Power Commission.

The application of the issuance for the subpoena duces tecum as to all other documents, papers and material listed in the application, except those as to which the application has been already granted, is denied.

Judge Allen: Counsel for the complainants may have their exception.

Mr. R. T. Jackson: May we ask the Court whether it will be necessary for us to file more limited subpoenas covering only certain parts of the material asked for in the subpoena upon which the Court has just ruled in order to preserve our rights on the record?

We had thought to, but found there was not time in the filing of our brief, to submit at that time several subpoenas which would break up this material and avoid any possible objection on the ground that it was too sweeping and too all-inclusive.

If that is necessary in order to preserve our rights on the record, we would like to have the opportunity of filing sev- [fol. 160] eral subpoenas covering the same ground, segregating the material, and then permitting the record to be made in that way.

Judge Allen: The Court feels that apart from that part of the rulings embodied in paragraph 4 which discusses the question of its sweeping and burdensome character, on the request for items prayed for, that the Court in this ruling has disposed of every item prayed for. That ruling stands.

Mr. R. T. Jackson: I so understand it, your Honor. The only point is in perfecting our record it appeared to me that the point in regard to the sweeping character of the subpoena was also assigned as a sufficient reason, had the Court chosen not to go further.

Hence, if that is true, it would be sufficient on any review, and we would not want to have our record defective in that respect by failing to file in that manner.

Judge Allen: The Court won't indicate to excellent counsel what they shall do.

Mr. R. T. Jackson: We will do that. We merely did not want to burden the Court with further protecting the record.

Mr. S. D. L. Jackson: On the record please show we reserve an exception to the Court's ruling announced from the bench a moment ago to which we were allowed exceptions by the ruling of the Court."

Offers in Evidence

Thereupon two verified statements previously filed with the Court with reference to the relevancy, materiality and competency of the minutes of the TVA, described in Paragraph 1 of the subpoena duces tecum (Complainants' Exhibit 1) and with reference to the relevancy and competency of the documents and papers described in Paragraphs 3 to 16, both inclusive, of said subpoena duces tecum, were offered and received in evidence as Complainants' Exhibits 110 and 111, respectively.

"Mr. R. T. Jackson: I would like also to say one other thing. Several days ago in what I regarded as a collateral matter arising out of the form of an exhibit that had been prepared by one of the company executives there was a reference, or there was included certain data with reference to rates and the court struck that data from the exhibit.

I stated at that time that we did not wish to make any point, or be heard because it was only collaterally men- [fol. 161] tioned, that there were certain aspects in which our opinion rates are material; that in those aspects the case could not be decided without some reference to rates.

That was not any question of the reasonableness or unreasonableness of the plaintiff's rates, but merely a question of showing what the rates of our competitor are, and something of a comparison or differential.

I had understood the Court to say—and then I asked whether when that did become material so we could present the question in the narrower aspect that it is involved in this case, we might have an opportunity to file a brief and be heard. We have prepared the brief, and intended to file it when and as that question arises.

Judge Allen: The Court will consider any authorities submitted on behalf of any ruling. But the Court has ruled upon this question and now adheres to it."

Counsel for complainants then had marked for identification as Complainants' Exhibit 109 the "Extract from Hearings Before the Sub-committee of the House Committee on Appropriations, Seventy-Third Congress, Second Session".

"Mr. S. D. L. Jackson: At this time Complainants offer in evidence from Exhibit No. 109 for identification the following, which appears on page 137.

Mr. Fitts: May it please the Court, I assume that the previous ruling to the effect that the defendants may have the opportunity to offer any other portions that are relevant will obtain.

Judge Gore: From the same documents.

Mr. Fitts: From the same document, yes.

Judge Allen: That is the ruling."

Counsel for complainants then offered and read in evidence from Complainants' Exhibit 109 for identification the following excerpts: On page 137 beginning with "The Chairman. We have an estimate" and concluding with the statement of Dr. Morgan ending "over a considerable range"; on pages 138 and 139 the whole section under the [fol. 162] heading "Reasons for Not Issuing Bonds to Finance Project"; on page 140 from the top of the page to the end of the section entitled "Power Which Can Be Developed at Muscle Shoals"; on page 143 the question of Mr. Oliver beginning "Let the doctor" and Dr. Morgan's reply thereto; on page 144 the question of Mr. Oliver beginning "What other items" and Dr. Morgan's reply thereto, and Mr. Oliver's question beginning "And all of that is very essential" and Dr. Morgan's reply thereto; on page 147 the entire section entitled "Value and Necessity for Building Four Dams"; on page 150 the first two questions and answers under the heading "Navigation Improvements"; on page 151 the first twelve lines under the heading "Number of Dams to be Constructed"; beginning on page 152 with Mr. Bacon's statement "Those six new dams you contemplate" and ending on page 153 with Dr. Morgan's statement "Possibly a million of secondary power"; on page 155 beginning immediately below the table and ending with the statement of Dr. Morgan "We are building the dams"; on page 156 beginning the third line from the top of the page to the heading in the middle of the page; on page 159 beginning with the statement of The Chairman: "Do you contem-

plate buying any hillsides" and ending with the statement of Dr. Morgan on Page 160 "No; not for reforestation alone"; on pages 162 and 163 the entire section under the heading "Purchase of Utilities from Private Companies"; on pages 165 and 166 beginning immediately under the heading "Total Cost of Project" and ending with the statement of Dr. Morgan "We do not know which road we can take"; on page 166 beginning with the statement of The Chairman: "What I am trying to get at is" and concluding with the statement of Dr. Morgan ending "we would have to come to the rescue"; on page 168 the statement of Dr. Morgan beginning "We have made no plans for roads"; on pages [fol. 163] 170 and 171 the entire section under the heading "Breakdown of expenditures for Fiscal Years 1934 and 1935"; on page 172 beginning with the statement of The Chairman: "You have a little organization down there" down to the heading "Basis for Fixing Salaries of Employees".

"Mr. Fly: If your Honor please, these statements cover so many specific subjects, I am not undertaking to object each time he branches off from one to the other. I believe it is inevitable in reading through here, he will touch upon a number of subjects which have been ruled out, and I assume, of course, that we will not waive our objections later, when they follow through with substantial testimony on those same points.

Judge Allen: The Court has already ruled on this subject, that the whole report will be received in evidence with permission to counsel for either to comment on such portions as they desire, but the whole report necessarily is considered in evidence. The Court considers it could take judicial notice of the whole report."

Counsel for complainants then offered and read in evidence from Complainants' Exhibit 109 for identification the following excerpts: On page 174 The Chairman's question "Do you contemplate the employment of salesmen" and Dr. Morgan's reply thereto closing with the words "with the use of electricity"; on page 179 beginning on line 9 with Mr. Bolton's statement "I mean the development" and closing with Dr. Morgan's answer "Yes, sir"; on page 179 the statement of Dr. Morgan beginning "With cheap power"; on page 181 the statement of Dr. Morgan, just above the sub-

head breaking the page and beginning "In the stretch of river"; on page 184 the two questions of Mr. Bolton and Dr. Morgan's replies thereto under the heading "Cost of Norris Dam and Value to Navigation; on page 185 the entire section under the heading "Cost of Aurora Dam", on page 187 the first two questions and answers under the [fol. 164] heading "Market for Power to be Developed"; the question at the bottom of page 187 under the heading "Size of Territory to be Served" and the answer thereto, and the first question and answer on page 188 under the heading "Distance Power can be Transmitted Economically"; beginning on page 192 under the heading "Revenues and Cost of Operation and Maintenance" and continuing through the statement of Dr. Morgan on page 194 ending "we should charge 2/3rds of it to power".

"Judge Allen: The Court thinks that the case will be in better sequence if counsel for the Authority was now permitted to offer whatever they care to from this particular report.

Mr. S. D. L. Jackson: Very well.

Mr. Fly: Of course it does take time to go over quotations and places that it is necessary to get further material to fill them out, and we are not prepared to follow instanter upon his reading from particular documents.

We are, however, prepared now, to do the reading on the document which complainants read from last week, and with the Court's permission we will complete that task at this time.

Mr. S. D. L. Jackson: If the Court please, if I might suggest, unless defendants want to follow immediately and read from the same book, and of course we have certain grounds of objection to their doing that that I would like to state and be heard on at the time, but why they should come in now and read from a book we read from last week, that does not help the orderly presentation of the case, it seems to me, and that should be withheld until the proper time, when they are putting in their case.

Mr. Fly: When the Court closed last week we had had no opportunity to read from this document, as your Honor will recall.

Of course we cannot undertake, after he reads from numerous pages throughout a lengthy document, we cannot undertake to go over the entire document at that time and

get everything to respond to it without a few hours' opportunity to examine it.

Mr. S. D. L. Jackson: Well, then, might I suggest they hold that until they reach their case?

Mr. Fly: No, we want to respond to your case as soon as we can.

[fol. 165] Judge Allen: The Court considers that the application of the Tennessee Valley Authority to be permitted now to read extracts from the reoort from which the complainants read extracts last week is reasonable, and that will be permitted before proceeding further.

Mr. Fly: Thank you.

Mr. S. D. L. Jackson: May we have an exception?

Mr. Fly: Mr. Marks, will you take that up?

Mr. S. D. L. Jackson: And may we point out, if your Honor please, that these portions offered by the defendants here can be nothing more than self-serving.

Complainants, I might say here, are offering, and these extracts have been received in evidence, and we consider that they are admissions against interest on the part of the defendants.

Judge Allen: The Court feels this is admissible in evidence, and it is also considered that the Court can take judicial notice of it. The Court will consider the entire report, and it is for the convenience of the Court that the parts relied upon by respective counsel for the litigants will be considered as nearly in sequence as possible. It is true that as the case closed on Friday the opportunity was not given to read these parts.

Mr. S. D. L. Jackson: That is correct.

Judge Allen: From the report of 1933.

Mr. S. D. L. Jackson: I appreciate that, and I do not want to be obstructive to a procedure which is for the Court's convenience. I merely want to point out that I do not think they have any right to rely upon admissions that they made to Congress which can be only self-serving from their own standpoint. I do not think it has any proper function in evidence.

Judge Allen: The ruling of the Court is the same. It adheres to its ruling upon the question of receiving the entire report in evidence.

Under that ruling counsel for the complainants are enabled to get into this record evidence which the court has indicated it considers irrelevant or immaterial in the application for subpoena duces tecum.

The Court will consider those parts of the report which counsel for the Authority wish to introduce at this time. You may have an exception.

Mr. S. D. L. Jackson: May we have an exception to the Court's ruling, and an exception in the event portions are read here which are not explanatory only of portions [fol. 165a] which were read by us from that document?

Judge Allen: You may have your exception, Mr. Jackson. The Court would remind counsel that they expect to have a specific objection and exception taken to every item to which counsel objects.

Mr. S. D. L. Jackson: Very well.

Judge Allen: The Court would remind counsel that the question of admissibility of these statements made to the Committee on Appropriations of Congress came up, and the Court ruled that it would not receive isolated portions of the report. It ruled that the entire report would be received in evidence, and it is our understanding that counsel for the complainants offered this entire report in evidence.

Mr. S. D. L. Jackson: If the Court please, what we did was to have the entire report marked as an exhibit for identification.

We offered in our case the portions of the report that we read to the Court. We were aware of the Court's ruling about it, and I think we saved an exception to it at the time, and said that what we wanted in our case was the portions which we selected, and which we read to the Court.

In order that there may be no misunderstanding——

Judge Allen: The Court ruled that it would not receive in evidence isolated portions of the report. And it ruled that it would receive the entire report.

This entire report, I understand, for the year 1933, was received in evidence by the Court. That was the ruling of the Court.

Mr. S. D. L. Jackson: If the Court please, it was not offered by us. I appreciate that if the Court can take judicial notice at this time,—and I believe it is a matter of which the Court can take judicial notice——

Judge Allen: The Court considers that you could not pick out a sentence out of a contract, and offer that sentence out of a contract which is before the Court in evidence without offering the contract.

[fol. 165b] The Court has received the entire report, and at this time the Court will hear counsel for the Authority bring out to the Court what portions of the report of 1933 he cares to comment upon.

Mr. S. D. L. Jackson: May we reserve our exception to the Court's ruling?

Mr. Fly: May it please the Court, as I recall our original objection was based upon the point that these extracts or excerpts were incomplete, and were therefore misleading. And I believe it was upon the basis of that that the Court thought it fair to permit the introduction of the entire document, and for each of the parties to direct the attention of the Court to so much of the document as they intended to rely upon.

Now, if there is any doubt as to the complainants' position, if they insist that these partial, incomplete extracts here shall go in, without the entire document being available to go in, I, at this time, move to strike out all of the excerpts which counsel have read from these documents.

[fol. 166] Judge Allen: The motion to strike is sustained. The court will not receive in evidence isolated or garbled portions of a document. The portions or statements made by Dr. Arthur E. Morgan, Chairman of the Tennessee Valley Authority to the Appropriations Sub-Committee of the House Committee on Appropriations, 73rd Congress heretofore read into the record will be stricken.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may have an exception.

Mr. S. D. L. Jackson: Now, not waiving the benefit of our exception to your Honor's ruling, we offer in evidence the entire exhibit, which has been marked, I believe, exhibit 109. Is that correct, Mr. Hale?

Mr. Hale: Yes.

Mr. S. D. L. Jackson: The extract from hearings before Sub-Committee of House Committee on Appropriations for the year 1934, exhibit 109, and let the record show that we read in evidence from that exhibit, and now offer the portions that we read in evidence this morning and the whole document.

* * * * * * *

Judge Allen: The entire document will be received in evidence. The Court upon the application of complainants, the Court reiterates its ruling that isolated or garbled portions of the document will not be received in evidence under the ordinary rules of evidence.

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Mr. Fly: I want to make my position clear, please. This is important. My suggestion was that it is inappropriate to offer this document in evidence as a part of the record of evidence in this cause, as if the Court had ruled that every portion of it were relevant or material to some of the issues.

Now, as I have suggested, we have no objection to the position which the Court has repeatedly announced, that is, this Court will take judicial notice of the entire document, and counsel at any time, in the course of their argument, in the course of their briefs, at any time, may draw the attention of the Court to any portion which they rely upon. But, I do object to their placing in proof of any portion of the document, having it received here as though adjudicated as relevant and material to some issue, and our basis for that is this, the Court can take judicial notice of the entire thing. Under those circumstances, it is improper to accept the document.

[fol. 167] Judge Martin: Don't you understand we merely permitted the reading of certain excerpts by either side. We are ruling the document might go in in its entirety or not at all. But, under the Court's ruling, we are permitting either side, the complainant or the defendant to read such portions as they may desire for our help. That does not mean they are offered in evidence, the whole document is in evidence. Nor, does the reception of the report in evidence mean we admit or hold all of its contents to be relevant to the case.

Mr. Fly: That is the point I wanted to save, your Honor, that is it is put in there for convenience to refer to and is not accepted, is the ultimate ruling of the Court, that any or all portions of it are not here determined to be material and relevant to the issues.

Judge Martin: We understand that.

Judge Allen: The specific ruling before upon this question was that it would be received for whatever weight it might have, whatever materiality and relevancy or competency it might have.

Mr. S. D. L. Jackson. If it please the Court, may I also offer at this time, without waiving the benefit of our exception to the Court's ruling the entire,—out of the exhibit No. 108 for identification we offer now the portion relating to the Tennessee Valley Authority beginning at page 23 and continuing over to page 36.

Mr. Fly: May I inquire of counsel——

Mr. S. D. L. Jackson: Just a moment, please, Mr. Fly,—which is the portion of the pamphlet that has been physically marked Complainants' Exhibit No. 108 that relates to the Tennessee Valley Authority; and may we, at the same time, have the record show that we specifically direct the Court's attention to those portions of that document that we read in evidence here last Friday?

* * * * * * *

Judge Allen: The entire statement will be received in evidence, and counsel for either litigant may call the attention of the Court to whatever portions either counsel may desire.

Mr. Fly: And the point as to materiality and relevancy is saved, your Honor?

Judge Allen: That is the ruling of the Court.

Mr. Fly: Thank you.

Mr. S. D. L. Jackson: Then may the part that was read [fol. 168] last Friday, which under the Court's ruling would be stricken, may that remain in the record, to show the portions of that exhibit to which we specifically direct the attention of the Court, and the same with Exhibit 109, which I offered a moment ago? I take it the other side has the same right.

Judge Allen: The Court will consider that the portions stricken out have been read to the Court and that the Court's attention has been called to those portions by counsel for the complainants. And they will be considered together with other portions of the statement."

Counsel for defendants then read the following excerpts from Complainants' Exhibit 108 (which excerpts are set forth in Appendix C following Defendants' Exhibits):

Beginning with the sentence at the bottom of page 23 "That dam will have one immediate result" and extending through the statement of Dr. Morgan on page 25 ending

"That will afford us a better degree of flood control"; and the first eleven lines on page 26 ending with Dr. Morgan's statement "Yes, sir".

Counsel for defendants then read from Complainants' Exhibit 109 the following excerpts (which excerpts are set forth in Appendix D following Defendants' Exhibits):

On page 162 the statement of Dr. Morgan beginning "You are speaking" and the Chairman's answer thereto; on page 179 the five lines beginning with the question of Mr. Bacon "Could you give us, for the record"; on page 179 beginning with the question of Mr. Bacon "You anticipate" extending through and including the table at the end of page 179 and the top of page 180; on page 180 the first four lines under the heading "Record of Floods on Tennessee River and Tributaries", and the next to the last sentence in the fine print immediately above the table at the bottom of the page; the last sentence in fine print at the top of page 181; on page 184 the first eight lines under the heading "Cost of Norris Dam and Value of Navigation", and the first eight lines under the heading "Cost of Hiwassee Dam"; the last two lines on page 185; and on page 186 the question of Mr. Taber "Is this a storage proposition" and Dr. Morgan's reply thereto.

[fol. 169] Thereupon counsel for complainants had marked for identification as Complainants' Exhibit 112 "Extract from Hearings Before the Sub-Committee of the Committee on Appropriations, United States Senate 73rd Congress, Second Session".

"Mr. S. D. L. Jackson: I might say the extract which has been marked does not contain all of the material that is in that pamphlet, but begins on page 261 of that pamphlet, and at this time we desire to move to be permitted to offer in evidence certain extracts. May I have an exception?

Judge Allen: That will not be received. Under the rulings of the Court isolated and garbled extracts of a document will not be received in evidence by the Court. You may have your exception.

Mr. S. D. L. Jackson: May I have an exception, and then without waiving the benefit of the exception to the Court's ruling, I offer in evidence Complainants' Exhibit No. 112.

Mr. Fly: I understand you are offering the entire document in evidence.

Mr. S. D. L. Jackson: I desire to specifically call the attention of the Court to certain extracts from this document.

Mr. Fly: I assume, of course, the limitations as to the substance of future documents will be applied.

Judge Allen: The document will be received in evidence, and counsel may read such portions as they desire.

Mr. Fly: And again, your Honor, without any ruling on the ultimate materiality or relevancy.

Judge Allen: Ruling the same way."

Counsel for complainants then directed the attention of the Court to the following excerpts from Complainants' Exhibit 112 which had been excluded when offered as excerpts: beginning with the last question of Senator Dickinson on page 262 and extending through Dr. Morgan's answer of "Yes" to Senator Dickinson's question "As a radius" on page 263; on page 265 the first question of Senator Dickinson and Dr. Morgan's reply thereto; beginning on page 266 with Senator Dickinson's question "Well, now, when you extend your sale" extending to the end of page 267; the [fol. 170] last eleven lines on page 269; on page 270 the question of Senator Dickinson "Well in your testimony" and Dr. Morgan's reply thereto; at the bottom of page 270 the question of Senator Hale beginning "But you might at any time" and Dr. Morgan's reply thereto; the statement of Dr. Morgan beginning at the bottom of page 275 and concluding at the top of page 276; beginning with the statement of Senator McKellar on page 280 "Well while we are waiting" and extending through the statement of Dr. Morgan on page 281 ending "and make them into one unit"; and on page 287 the question of Senator Dickinson beginning "And, if it takes $300,000,000" and Dr. Morgan's reply thereto.

Counsel for complainants then had marked for identification as Complainants' Exhibit No. 113 the Annual Report of the Tennessee Valley Authority and Appendixes for the Fiscal Year Ending June 30, 1934.

"Mr. S. D. L. Jackson: I have had it marked for identification.

And from exhibit 113 for identification Complainants offer in evidence the power policy appearing on pages 22, 23 and the first four lines of page 24, the announcement as to rates appearing in the last two sentences of paragraph beginning at the top of page 34, the wholesale power rate sched-

ule, and the standard residential resale rates on pages 35 and 36, and the three paragraphs on page 56 under the heading 'Information'.

Judge Allen: All of these extracts are ruled out under the previous ruling.

Mr. S. D. L. Jackson: May we have an exception to the ruling on each of these extracts separately?

We now offer, without waiving the benefit of our exception, we now offer the entire exhibit in evidence.

Judge Allen: It may be received.

Mr. Fly: And the same ruling as to materiality and relevancy, your Honor?

Judge Allen: It may be received under the same ruling."

Counsel for complainants thereupon called the court's attention to the excerpts from Complainants' Exhibit 113 which [fol. 171] had been excluded when offered as excerpts.

"Mr. Fly: May it please the Court, in view of the volume of this material I should like to suggest that we not build up the record or the evidence here. These documents are all matters of judicial notice and I suggest that Counsel read them to the Court off the record and later he can rely upon those passages or any other passages that may be pertinent.

The usual procedure, I believe, with documents of this character simply is to draw them to the attention of the Court, and off the record later they can be argued for what they are worth, and as to any portions of them.

Judge Allen: The Court suggests to counsel that it might be possible to introduce these documents in evidence and to make abstracts of copies of the excerpts which counsel on both sides desire to have the Court note particularly, and hand them in to the Court.

In other words, it looks to the Court as though quite a good deal of time were going to be expended in reading things which we can read twice or three times as quickly with our eye as we can hear them with our ears.

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Mr. R. T. Jackson: Our view of the question, that is our understanding of it, which is somewhat different, and the Court understands we would like to preserve our understanding on that position,—I don't understand that these matters are necessarily, on questions of motions to plead-

ings,—the Court will sometimes take judicial notice. The question, however, of taking judicial notice of a fact, and the question of whether they take judicial notice of something, or whether something is admissible in evidence, is quite different. If the Court takes judicial notice of the navigability of a river, then that settles it. No evidence could be received one way or the other, the Court says that is a known fact that must control the litigation.

On the other hand there is a great deal of evidence of the character of official reports which, if relevant, may be received by courts. And yet it is not irrebuttable. Other evidence may be offered to rebut the facts or the inferences of fact that would be drawn from those reports.

Now, I don't understand the particular, or proper practice to be that the Court takes judicial notice of those things, so that the litigants complete a trial without knowing whether the Court has got before it these documents, and whether the Court is going to treat them as susceptible of inference of fact; because if so, the litigant might wish to rebut it.

[fol. 172] Now, I don't think that creates any problem here for us, but I do think we have a right to present the excerpts that we think are relevant and material, and while the Court rules that they take judicial notice of these documents, and we necessarily accept that rule here, we think we are entitled to preserve our position and be able to offer such evidence as we think is necessary or pertinent.

Judge Allen: The Court has made two rulings. The Court ruled, not understanding that you were objecting to the document being received upon the ground that we could take judicial notice of it, the Court ruled that we would take judicial notice of it. Then when this controversy arose today the Court ruled that it would not receive isolated portions of such documents. You now have been introducing in evidence the whole document.

Mr. R. T. Jackson: And preserving our record, as I understand it.

Judge Allen: And preserving your record.

Mr. R. T. Jackson: And that is the way we would like to continue to do it, without taking the time of this Court. I think that by marking it and letting them be copied into the record we would do it expeditiously.

Mr. Fly: May it please the Court, I must say one thing, Mr. Jackson has pointed out the reason why the Government is gravely anxious about this matter.

He has just said he wants to know now, as we go along, the facts that are in this record, from which inferences may be drawn, and findings based. And that is the very confusion that is going to arise at the end of this line of so-called testimony.

In fact, when we come to make the findings of fact, the very fact he is willing to state here now, and say he is offering those as evidence, and he is going to rely upon it as evidence, he is going to assume he can draw an inference from it is a warning he is going to assert later that this court has already ruled upon the materiality and relevancy of everything that has been copied down into those notes.

Now, that is a grave anxiety that I have expressed, that by sitting here and having them read in everything on rates, E. H. & F. A., and cost allocations, and whatnot, that is the reason I was so anxious to have the Court understand our position, and to repeatedly get the assurance that the materiality and relevancy were not ruled upon at this time.

Mr. R. T. Jackson: I assume that the situation often occurs in Equity cases, the Court takes certain evidence which it may later say it has concluded on full examination of the case is irrelevant, or something else, and exclude it.

[fol. 173] What we are trying to do, in short, is to get a convenient way that won't take the time of this court to put those excerpts into the record so that the Court will have them and that we, as counsel, will have them, who have not access to those books.

Judge Allen: The Court has heretofore ruled, and adheres to its ruling that in accepting these reports it is not ruling on the competency and materiality or relevancy of evidence. The Court feels that attorneys for the complainants are entitled as a matter of right to make their records. We should like the cooperation of counsel in relieving us of hearing the things that we can read so much faster.

Speaking for myself, I can read about four times as fast as it can be read to me, and I am sure that the other Judges can read faster than that.

It will be a great saving of time if these excerpts can be presented to us without being read to us.

But it must be understood that in each instance where the record shows that extracts have been offered singly, isolated, without the whole document being offered, that

the Court adheres to its ruling. The Court will not receive in evidence any isolated portions of any documents.

Mr. R. T. Jackson: We understand that perfectly, and we are not in any way trying to avoid that ruling.

And, if I may suggest, what we would like to do is this, let the record be made by simply offering the excerpts and having the objection sustained and an exception noted. Then let the whole document be offered, and then let the record show that we indicate that we direct the Court's attention to the following excerpts, and we will mark them on the margin and submit them to the other side, and the reporter can put them in the record.

We would like to have it also understood for purposes of offering the proof, those excerpts are the same excerpts which we have offered from documents, had the Court permitted us to proceed in that way.

Judge Allen: The Court feels it would be an aid to the court if this method were followed in the presentation of the extracts from the reports.

Judge Allen: The Court suggests that counsel, if they desire, could hand us copies marked indicating clearly what points are stressed. We will be very careful to read each page.

[fol. 174] Mr. R. T. Jackson: May I suggest that we will, if the Court prefers we do that, that the copies that we supply the Court, we will mark for instance with red pencil in the margin the parts that we will have tendered in the original to the reporter, and let him have that to copy his excerpts from, and then counsel for the defendants may mark with blue pencil in the margin additional excerpts to which they wish to direct the Court's attention and then we will turn them over after we have made our mark.

Judge Martin: It would save stenographic service too, and time of the counsel and the Court, to do that. If you will just mark them, and identify them, as you say in red and blue, that is the easiest way.

Mr. R. T. Jackson: But we will still have the reporter copy them in showing which is which in the record."

[fol. 175] Counsel for complainants then had marked for identification as Complainants' Exhibit 114 the Hearing Before the Sub-Committee of the House Committee on Appropriations in Charge of Deficiency Appropriations, 74th

Alabama, and later on Gulf Power Company, Florida. In March, 1928, I became manager of sales of Alabama Power Company. In 1930, I was elected Vice President of the Company.

In my capacity as Vice President, in charge of industrial operations, I am familiar with the development of the Company's business, in connection with its industrial operations. [fol. 186] During 1912, the Company was constructing a hydro-electric generating plant on the Coosa River at a site known as Lock 12, but now known as Lay Dam, and had acquired there water power sites for future development. The larger cities and industrial centers of the state were the logical markets for the power we developed. The utility companies serving the larger cities had their own electric generating plants, which for the most part were operated by steam, and the industries were driven by steam engine units, as a source of mechanical power.

Electric meters had not at that time become in general use in our territory, so that it was necessary in our work to convert mechanical power demand into electric power demand. A wholesale power division of the Company was formed, comprised of some of the best engineering talent available, which made studies of the power requirements of the existing industries. They conducted plant tests, to determine the demands for power, its use and its cost, the possibilities of further mechanization, the capital cost of electrification, and other economies which may result from the purchase of power from our system. These studies clearly showed the general economic needs for purchased power by the industrial groups, and reports describing these economies were prepared, submitted and discussed with the various industrial consumers. By the end of 1914, the Company had signed contracts for a total of 28,500 kilowatts of power. Of this amount, however, only about ⅓ was with industrial customers, the remaining part being with utility companies.

The first major group of industries to contract for electric power were the coal and ore mines. Many of these mines found it to their advantage to substitute electric power for the work done by steam engines, mules and men, and electricity was substituted for oil in mines where dangerous gases were present. The next major group of industries was the textiles. At first the mills were hard to convince [fol. 187] of the economies of electric power, for they had

efficient power plants and low production costs. However, as these contracts were signed and experience was had with purchased power, the mills found that their production increased by reason of the fact that power from a large stable system like ours made for consistent speeds and the quality of finished goods was improved. These experiences and the continued program of education and extension of our power lines, which was carried on at the same time, resulted in additional power business. By the end of 1920, the Company had contracted for the delivery of 104,000 kilowatts of power to the larger cities and to industrial areas of central and northern Alabama. Some of these cities were, Birmingham, Montgomery, Anniston, Huntsville, Gadsden, Decatur, Jasper, Talladega, Tuscaloosa, Sylacauga, Selma, Opelika, and other smaller communities.

Having power available to the principal centers of population where there was an existing labor market, the Company commenced to collect factual data pertaining to the natural resources of the state, with the idea of attracting new industries to these larger centers. The facts developed in these studies pertained to the labor market, climatic advantages, fuel supply, water supply power at reasonable rates, and other pertinent data. This information was used later in advertising and exhibits for the purpose of interesting new industries in our state.

In 1922, the Company decided on a broad policy of fostering industrial development, to present the natural resources in the state. Regular advertisements were carried in a number of the leading trade journals. Space was rented at the Textile Show at Boston, the Chemical and Power Show at New York City, and the Chemical and Arts Exhibit at Philadelphia. At one of these exhibits 50,000 cotton bolls were given away as souvenirs.

[fol. 188] The Alabama Power Company maintained an organization for the development of new industries in the state. In 1925, the new industries division of the Company was supplemented with a competent personnel. We began actively calling upon industrial customers in the north central and northern cities. Proposed sites for power plants were requested by these people, and pertinent information was given to them. The work was carried on successively through the years, in cooperation with state agencies, and at present it requires directly four employes in this work.

"Judge Allen: The Court feels that testimony along this line from other witnesses with reference to other companies does not need to be gone into in this manner."

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"Judge Allen: The Court will permit you to develop this case as a typical case. The Court will permit you to develop this case."

The map (offered and received in evidence as Complainants' Exhibit 182) shows the State of Alabama with our major generating plants and transmission lines thereon; and also shows by black dots the location of 204 new industrial customers which have located in the State of Alabama, since 1925. These industries were located in cooperation with civic and other bodies in 81 cities of forty-five counties of the state. Approximately 30,000 employees are represented by these 204 industries. An analysis of the 1936 revenue of the Company indicates that more than 25 per cent of it came from these new industries. The approximate investment in these various plants is $74,000,000.

Throughout the years the Company has maintained a staff of power sales engineers. Today there are eleven such men in our employ. These men advise with our industrial customers with regard to the proper application of power to their business, and are familiar with each department of power uses. They assist in making wiring layouts, in making reports as to the economies of further electrifica-
[fol. 189] tion or mechanization of the plants, and generally assist the customers in the economical use of the service in every way that they can, to the end that the customer may enjoy the maximum benefits of our service at the lowest rates.

As early as 1915, the Company launched activities to develop its residential business by conducting wiring campaigns to induce customers to wire their homes for electricity. Solicitors were employed for the purpose and in many cases the wiring was financed on time-payments by the customer. Campaigns were carried on to improve the type of electric fixtures and to improve lighting in the home. At that time the electrical appliances available were few, such as electric irons and fans. Selling campaigns were conducted on these, and when other minor appliances

were developed, the Company later organized crews and made door to door canvasses with a truck to present these appliances to our customers. Later on, as major appliances were developed, such as refrigerators, electric ranges and electric water heaters, the Company aggressively and actively took up the sale of those appliances. The Company maintains a staff of 23 home lighting people, who do not sell any equipment whatever. They make door to door canvasses of residential customers and explain the benefits which accrue from improved illumination in the home. During last year these representatives made over 40,000 calls on our residence customers.

The chart (offered and received in evidence as Complainants' Exhibit 183) shows by years the gross appliance sales volume of the Alabama Power Company for the ten year period, beginning with the year 1927 and ending with the year 1936. The appliance sales organization of the Alabama Power Company is comprised of 94 employes. In addition to these employes, there are more than 500 employes in the accounting, operating and other departments of the Company who sell appliances on their own time, and who [fol. 190] ordinarily contribute by their sales about 50 per cent of the total gross volume sold by the Company.

In addition to these direct sales by its own employes, the Company since 1923 has cooperated with the independent dealers who sell electric appliances, and for many years these independent dealers have sold the greater part of the refrigeration volume in our state. In 1933, the Company adopted a new scheme of dealer cooperation, particularly with regard to the sale of electric ranges and electric water heaters. This cooperation consists of doing for the dealer on his sales of major appliances the same thing that the Company does for its customers who purchase appliances; viz., we furnish interior wiring, home economists' services to see that the appliances are properly administered, and cooperate generally with these dealers. We have contracts with more than 225 dealers and we have seven dealer representatives employed directly by the Company, who help the dealers with their sales.

The Company constructed its first rural lines in 1920. By the end of 1923, the Company had constructed fourteen rural lines aggregating thirty-nine miles, and selling 240 customers. At this time the Company's transmission lines

Congress, First Session. From that exhibit for identification counsel for complainants offered in evidence the following excerpts: on page 484 the first six lines, and the eleven lines beginning with the statement of the Chairman "I am speaking now of stopping"; on page 525 beginning immediately under the heading "Possibilities of Transmission of Electric Current" and ending with the statement of Dr. Morgan "You could by that kind of substitution get clear up to Cleveland or Detroit"; beginning with the question at the bottom of page 534 "What are you going to do" and ending on page 535 with the statement of Mr. Lilienthal "to the site of Guntersville Dam and Chickamauga Dam."; the sentence of Mr. Lilienthal on page 535 beginning "The other large item"; the complete statement of Mr. Lilienthal beginning at the top of page 536; on page 538 beginning with the heading "Rural Lines for Temporary Operation in Alabama, Mississippi, and Tennessee" and ending with the statement of Mr. Lilienthal "The Authority does own some rural lines; yes, sir."; on page 596 the first five lines under the heading "Amount of Horsepower to be Developed by Norris, Wilson and Wheeler Dams by 1937"; on pages 615 and 616 the entire section under the heading "Power Development, Norris Dam"; on page 617 the entire section under the heading "Power Development, Wheeler Dam"; on page 635 beginning with the heading "New Dams to be Started in 1936" and ending with the statement of Dr. Morgan "That is my judgment, but possibly two."

"Judge Allen: All of these excerpts will be rejected upon the grounds previously stated.

Mr. S. D. L. Jackson: May we have an exception to the ruling, relating to each separate excerpt that is rejected. [fol. 176] Without waiving our exception to the Court's ruling we now offer Complainants' Exhibit No. 114 and specifically direct the Court's attention to the excerpts that I have enumerated and ask that we be permitted to mark those in red pencil in the exhibit, and that the excerpts so marked in red pencil are the same excerpts as I have formerly separately offered, and which have been rejected, and to which we have saved an exception.

Judge Allen: Exhibit 114 will be received in evidence with that understanding.

Mr. Fly: May it please the Court——

Mr. S. D. L. Jackson: Just a moment, Mr. Fly. And may I ask that those excerpts as so marked be then copied in the record at this point, by the reporter.

Judge Allen: Yes.

* * * * * * *

Mr. S. D. L. Jackson: My attention has been called to the fact, if your Honor please, I neglected to mention a table on page 605, which I would like to have treated along with the other excerpts as being first separately offered, refused, and exception, and then offered as a part of exhibit 114, under the same reservations, and in the same manner as the other excerpts that I mentioned.

Judge Allen: That may be done.

Mr. S. D. L. Jackson: And copied into the record."

The excerpts referred to by counsel for complainants from Complainants' Exhibit 114 were thereupon placed in the record.

Counsel for complainants then had marked for identification as Complainants' Exhibit No. 115 the Hearings Before the Sub-Committee of the House Committee on Appropriations in Charge of Deficiency Appropriations, 74th Congress, Second Session. From this exhibit for identification counsel for complainants offered in evidence each of the following excerpts separately: beginning with the heading on page 113 "Estimate Requested for 1937" and extending to the end of the fine print on page 114; begin- [fol. 177] ning on page 114 immediately under the heading "Additional Dams Required to Complete Channel for Knoxville to the Mouth of Tennessee River" and ending with the statement of Dr. Morgan on page 115 "It just represents the length of time"; beginning with the statement of the Chairman on page 121 "Take the dams" and extending through the first two lines on page 122; the table on page 123; on page 275 beginning under the heading "Rural Line Construction" and ending with the statement of Mr. Lilienthal "where there is already an agency on the ground"; the table on page 279; on page 284 beginning with the statement of Mr. Lilienthal "Yes, sir. That is on Schedule I" and extending to the end of the fine print near the bottom of the page; and on page 285 the question of Mr. Taylor beginning "What do you mean by this" and the answer of Mr. Lilienthal thereto.

"Judge Allen: Each excerpt listed is rejected upon the grounds previously stated.

Mr. S. D. L. Jackson: May I have an exception, a separate exception respecting each excerpt, and without waiving the benefit of our exception, we now offer in evidence Complainants' Exhibit 115 and specifically request that we be permitted to direct the Court's attention to each of the excerpts that I have previously mentioned, each of which are marked in red pencil, and I would like the record to show that they are the same excerpts, as were separately offered by the complainants before the Court's ruling?

And I also ask that each of them be physically copied into the record at this point.

Mr. Fly: I understand that this is all subject to the same limitations.

Judge Allen: Subject to the same ruling, Exhibit No. 115 is received."

The excerpts referred to by counsel for complainants from Complainants' Exhibit 115 were thereupon placed in the record.

Counsel for Complainants then had marked for identification as Complainants' Exhibit 116 the Hearings Before the Sub-Committee of the House Committee on Appropria-
[fol. 178] tions, 75th Congress, First Session. From this Exhibit 116 for identification counsel for complainants offered in evidence each of the following excerpts separately: the table on page 403; on page 407 the first question and answer under the heading "Purchase of Generator Equipment"; the table at the bottom of page 452; the "Justification of Estimates" on page 453 down to the subhead "General Equipment and Inventories"; on pages 454 and 455 the entire section under the heading "Transmission Lines and Substations"; on page 460 the six lines under the heading "Power from Wilson, Norris, and Wheeler Dams"; the table on pages 464 and 465; the table on pages 466 and 467; the table at the bottom of page 469; on page 470 the table and the text in fine print under the table; the tables and the explanation thereof beginning under the heading "Present and Proposed Transmission System Investment and Revenues" on page 478 and extending to the end of the fine print at the top of page 485; on page 485 beginning immediately under the heading "Investment in

Distribution Properties—Loans to Rural Cooperatives, etc." and extending through the statement of Mr. Lilienthal, "it is very awkward to have two sets of loans and very expensive"; the first five lines on page 488; the table on page 488 and the explanation thereof beginning with "2. Electricity Operations," on page 490 and extending to the end of that page; the "Memorandum on Firm and Secondary Power Rate Schedule C-1" appearing in fine print on pages 510 and 511; on page 513 beginning immediately under the heading "Available Electric Service in Areas Served by TVA" and extending through the note in fine print by Mr. Lilienthal; and on page 515 the graph entitled "Tennessee Valley Authority System Demand—Generator Installations—Firm Power Capacity".

"Mr. S. D. L. Jackson: We make the offer as to each separately.

Judge Allen: Each and all of these excerpts will be rejected upon the grounds previously stated by the Court.

[fol. 179] Mr. S. D. L. Jackson: May I have an exception to the Court's ruling with respect to each separate excerpt, and that without waiving the benefit of such exception we offer in evidence complainants' exhibit No. 116, and request the right to specifically direct the Court's attention to the particular excerpts formerly offered in evidence, and will mark such excerpts and each of them in the exhibit, and ask that the reporter physically copy them into the record at this point.

Judge Allen: The exhibit No. 116 may be received. It will be marked in red as the others.

Mr. S. D. L. Jackson: That is true, your Honor, we will mark each of the excerpts in red.

Mr. Fly. With the usual limitation, your Honor.

Judge Allen: Yes."

The excerpts referred to by counsel for complainants from Complainants' Exhibit 116 were thereupon placed in the record.

Counsel for complainants then offered in evidence and the court received as Complainants' Exhibit 117 Appendix E of the Annual Report of TVA for the fiscal year ending June 30, 1935 which sets forth the power contracts between TVA and the City of Tupelo, Mississippi, dated November 13, 1933, the Town of Pulaski, Tennessee, dated March 8,

1934, the City of Amory, Mississippi, dated March 9, 1934, the City of Athens, Alabama, dated April 6, 1934, the Alcorn County Electric Power Association, dated June 1, 1934, the City of Dayton, Tennessee, dated September 12, 1934, the City of New Albany, Mississippi, dated September 13, 1934, the City of Muscle Shoals, Alabama, dated January 19, 1935, the Pontotoc County Electric Power Association, dated February 15, 1935, the City of Okolona, Mississippi, dated April 23, 1935 and the Prentiss County Electric Power Association, dated June 13, 1935.

Counsel for complainants then offered in evidence and the court received as Complainants' Exhibit 118 Appendix [fol. 180] A of the Annual Report of TVA for the fiscal year ending June 30, 1936 which sets forth the power contracts entered into between TVA and the Town of Bolivar, Tennessee, dated December 31 1935, the Town of Dickson, Tennessee, dated October 23, 1935, the City of Holly Springs, Mississippi, dated November 12, 1935, the City of Jackson, Tennessee, dated October 16, 1935, the City of Knoxville, Tennessee, dated February 19, 1936, and the Amendment thereto dated May 18, 1936, the City of Memphis, Tennessee, dated November 23, 1935, the Meigs County Electric Membership Corporation, dated October 14, 1935, the City of Milan, Tennessee, dated December 31, 1935, the Monroe County Electric Power Association, dated July 19, 1935, the Monsanto Chemical Company, dated May 15, 1936, and the Amendments thereto dated May 16, 1936 and June 2, 1936, the North Georgia Electric Membership Corporation, dated June 15, 1936, the Pontotoc County Electric Power Association, dated February 12, 1936, the City of Sheffield, Alabama, dated March 16, 1936, the Town of Somerville, Tennessee, dated December 31, 1935, the Tishomingo County Electric Power Association, dated July 19, 1935 and the Tombigbee Electric Power Association, dated October 19, 1935.

Counsel for complainants then offered in evidence and the court received the following documentary exhibits:

Complainants' Exhibit 119, being a power contract between TVA and the City of Amory, Mississippi, dated October 15, 1936.

Complainants' Exhibit 120, being a power contract between TVA and the City of New Albany, Mississippi, dated March 1, 1937.

Complainants' Exhibit 121, being a supplemental contract between TVA and the City of Okolona, Mississippi, dated March 24, 1937.

Complainants' Exhibit 122, being a supplemental contract between TVA and the City of Holly Springs, Mississippi, dated February 2, 1937.

Complainants' Exhibit 123, being a power contract between TVA and the City of Florence, Alabama, dated July 6, 1936.

[fol. 181] Complainants' Exhibit 124, being a power contract between TVA and the City of Tuscumbia, Alabama, dated March 8, 1937.

Complainants' Exhibit 125, being a power contract between TVA and the City of Knoxville, Tennessee, dated March 1, 1934.

Complainants' Exhibit 126, being a power contract between TVA and the City of Russellville, Alabama, dated March 13, 1934.

Complainants' Exhibit 127, being a power contract between TVA and the City of Decatur, Alabama, dated March 14, 1934.

Complainants' Exhibit 128, being a power contract between TVA and the City of Guntersville, Alabama, dated May 21, 1937.

Complainants' Exhibit 129, being a power contract between TVA and the City of Chattanooga, Tennessee, dated June 17, 1937.

Complainants' Exhibit 130, being a power contract between TVA and the City of Middlesborough, Kentucky, dated July 29, 1937.

Complainants' Exhibit 131, being an amendatory contract between TVA and the City of Middlesborough, Kentucky, dated October 20, 1937.

Complainants' Exhibit 132, being a power contract between TVA and the City of Trenton, Tennessee, dated August 23, 1937.

Complainants' Exhibit 133, being a power contract between TVA and the City of Jackson, Tennessee, dated September 1, 1937.

Complainants' Exhibit 134, being a power contract between TVA and the City of Paris, Tennessee, dated November 2, 1937.

Complainants' Exhibit 135, being a power contract between TVA and Prentiss County Electric Power Association, dated December 1, 1936.

Complainants' Exhibit 136, being a power contract between TVA and Cullman County Electric Membership Corporation, dated August 4, 1936.

Complainants' Exhibit 137, being a power contract between TVA and the Gibson County Electric Membership Corporation, dated August 13, 1936.

Complainants' Exhibit 138, being a power contract between TVA and The Middle Tennessee Electric Membership Corporation, dated August 13, 1936.

Complainants' Exhibit 139, being a power contract between TVA and the Pickwick Electric Membership Corporation, dated August 26, 1936.

[fol. 182] Complainants' Exhibit 140, being a power contract between TVA and the Duck River Electric Membership Corporation, dated October 31, 1936.

Complainants' Exhibit 141, being a power contract between TVA and the Southwest Tennessee Electric Membership Corporation, dated December 9, 1936.

Complainants' Exhibit 142, being a power contract between TVA and Joe Wheeler Electric Membership Corporation, dated September 24, 1937.

Complainants' Exhibit 143, being a power contract between TVA and the Cherokee County Electric Membership Corporation, dated November 2, 1937.

Complainants' Exhibit 144, being a power contract between TVA and the Northeast Mississippi Electric Power Association, dated March 26, 1937.

Complainants' Exhibit 145, being a supplemental power contract between TVA and the Northeast Mississippi Electric Power Association, dated July 27, 1937.

Complainants' Exhibit 146, being a power contract between TVA and the Alabama Asphaltic Limestone Company, dated May 1, 1936.

Complainants' Exhibit 147, being a power contract between TVA and the Goodyear Decatur Mills, dated May 1, 1937.

Complainants' Exhibit 148, being a power contract between TVA and the L. & N. Railroad Company, dated June 22, 1936.

Complainants' Exhibit 149, being a power contract between TVA and Rockwood Alabama Stone Company, dated August 25, 1936.

Complainants' Exhibit 150, being a power contract between TVA and Robbins Tire and Rubber Company, dated November 1, 1936.

Complainants' Exhibit 151, being a power contract between TVA and the Aluminum Company of America, dated July 20, 1937.

Complainants' Exhibit 152, being an amendatory contract between TVA and the Aluminum Company of America, dated July 20, 1937.

Complainants' Exhibit 153, being a power contract between TVA and American Aggregates Corporation, dated March 29, 1937.

Complainants' Exhibit 154, being a power contract between TVA and Falkville Milling Company, dated April 1, 1937.

Complainants' Exhibit 155, being a power contract between TVA and Wade & Rickey, dated May 1, 1937.

[fol. 183] Complainants' Exhibit 156, being a power contract between TVA and Lacey Asphaltic Limestone Company, dated May 13, 1937.

Complainants' Exhibit 157, being a power contract between TVA and Volunteer Portland Cement Company, dated August 14, 1936.

Complainants' Exhibit 158, being the assignment to the City of Knoxville, dated September 14, 1937 of the power contract between TVA and Volunteer Portland Cement Company.

Complainants' Exhibit 159, being a power contract between TVA and the United States of America concerning Sardis Dam dated May 14, 1937.

Complainants' Exhibit 160, being a power contract between TVA and Victor Chemical Works, dated July 2, 1937.

Complainants' Exhibit 161, being a power contract between TVA and Electro Metallurgical Co., dated August 17, 1937.

Complainants' Exhibit 162, being a construction contract between TVA and Meigs County Electric Membership Corporation, dated June 29, 1936.

Complainants' Exhibit 163, being a construction contract between TVA and Cullman County Electric Membership Corporation, dated August 4, 1936.

Complainants' Exhibit 164, being a construction contract between TVA and Cullman County Electric Membership Corporation, dated September 19, 1936.

Complainants' Exhibit 165, being an amendment dated February 27, 1937 to the construction contract between TVA and Cullman County Electric Membership Corporation.

Complainants' Exhibit 166, being a construction contract between TVA and the North Georgia Electric Membership Corporation, dated September 4, 1936.

Complainants' Exhibit 167, being a construction contract between TVA and The Middle Tennessee Electric Membership Corporation, dated September 15, 1936.

Complainants' Exhibit 168, being a construction contract between TVA and Southwest Tennessee Electric Membership Corporation, dated December 9, 1936.

Complainants' Exhibit 169, being a construction contract between TVA and the Gibson County Electric Membership Corporation, dated March 30, 1937.

Complainants' Exhibit 170, being a contract for the sale and construction of rural lines between TVA and Joe Wheeler Electric Membership Corporation, dated May 14, 1937.

[fol. 184] Complainants' Exhibit 170-A, being a supplemental contract between TVA and Joe Wheeler Electric Membership Corporation, dated September 24, 1937.

Complainants' Exhibit 171, being a construction contract between TVA and the Monroe County Electric Power Association, dated July 7, 1937.

Complainants' Exhibit 172, being a construction contract between TVA and the Duck River Electric Membership Corporation, dated June 15, 1937.

Complainants' Exhibit 173, being a construction contract between TVA and the Town of Pulaski, Tennessee, dated August 23, 1935.

Complainants' Exhibit 174, being a construction contract between TVA and the City of Dayton, Tennessee, dated January 24, 1936.

Complainants' Exhibit 175, being a construction contract between TVA and the Town of Bolivar, Tennessee, dated September 7, 1937.

Complainants' Exhibit 176, being a contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services, dated October 1, 1935.

Complainants' Exhibit 177, being a contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services.

Complainants' Exhibit 178, being a contract between TVA and Monroe County Electric Power Association for the operation of rural transmission line and collection of bills dated February 1, 1936.

Complainants' Exhibit 179, being an operation contract between TVA and Pickwick Electric Membership Corporation, dated April 21, 1936.

Complainants' Exhibit 180, being an operation contract between TVA and Bedford County Electric Membership Corporation.

Complainants' Exhibit 181, being an agreement for sale and loan between TVA and Gibson County Electric Membership Corporation, dated August 13, 1936.

[fol. 185] WELLS M. STANLEY was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 47 years old and reside in Birmingham, Alabama. I am Vice President in charge of sales of the commercial activities for the Alabama Power Company. I am a high school graduate, but not a college graduate. I was first employed with the electric and railway utility at Huntsville, Alabama, in July, 1909. In December, 1912, I became superintendent for the Etowah Light & Power Company at Attalla, Alabama, which had a small hydro-electric plant on Big Wills Creek, a steam plant for the pumping of the water supply and an electric and water distribution system. In September, 1914, I became local manager of the Alabama Power Company at Huntsville, Alabama. During the World War, I spent two years with the Alabama Power Company in Birmingham, as manager of its local operations, consisting of the railway, gas utility and water properties in the local communities where it operated. In December, 1919, I became division manager for Alabama Power Company at Huntsville, in charge of the Company's Northern Alabama operations. Early in 1925, I was appointed general manager of the Gulf Electric Company,

had been extended to the major load centers of the state, and it then gave consideration to the possibility of extending its lines to some of the rural communities and intermediate areas. About this time some of the major appliances were being developed and it appeared that these appliances, by their use, would tend to increase the sales of electric energy in these areas, and perhaps add to the attractiveness of this business. In 1924, the Company began an extensive program of educational work in the rural communities and among farmers. With respect to rural electrification it enlisted the cooperation of the State [fol. 191] Agricultural Experiment Station, the Alabama Polytechnic Institute, at Auburn, the National Committee on Relation of Electricity to Agriculture, and the Farm Bureau Federation. These agencies assisted in planning projects which the Company built as experimental lines, and committees of farmers assisted us in the development of these studies. One of the most important elements involved in rural electrification is to explain to the farmer how he can make electric service pay its way on the farm.

Some of the more important uses for electricity which were developed in our experiments have been the use of lighting in insect control, and to increase egg production, the use of power for dairy refrigeration, soil heating, potato curing, and miscellaneous other uses. During 1929 the Company, at its expense, made an installation in the Montgomery area of a hay drying outfit, with the idea of stimulating greater hay production, for the effect it would have on the production of live stock and its economic effect in the general area. The experimental and educational work conducted by the Company with these cooperating agencies heretofore mentioned resulted in a better understanding of the use of electricity on the farm, so that by the end of 1936 the Company had carried on an ambitious and extensive program of rural line construction. At that time it had in service a total of 3,561 miles of rural lines, serving 15,600 customers. In connection with this work, we employ 17 agricultural engineers. These men contact the farmers and assist them in making economical and profitable uses of our services, and also give their time to the possibility of extension of rural lines into other areas.

The chart (offered and received in evidence as Complainants' Exhibit 184) shows by years, from 1923 to 1936, the number of miles of rural lines which the Company had in

operation, excluding, however, 232 miles of rural lines [fol. 192] which had been transferred from rural to urban rates and also excluding 212 miles of line which had been transferred to others.

The Alabama Power Company serves substantially all of the rural and residential demand in its territory. I recently made a particular study of the area within the 100 mile zone of the TVA generating plants on the Tennessee River, and excluding the business which is on our existing lines and the seasonal business, such as cotton gins, there is in that area at the present time only 911 kilowatts of industrial and rural power demand.

The Alabama Public Service Commission has regulations dealing with the minimum requirements under which the Company may be compelled to extend service. The rates, rules and regulations of the Alabama Power Company with respect to its rural electrification are prescribed by the Alabama Public Service Commission. The rural rates are some higher than the urban rates. Generally speaking, the Company is required to extend rural lines whenever the prospective customers enter into a five-year contract to take service for a minimum of 7½ kilowatts per mile of rural line constructed.

A copy of regulations of the Alabama Public Service Commission (offered and received in evidence as Complainants' Exhibit 185) sets forth the schedule of regulations applicable to the Alabama Power Company, respecting the [fol. 193] minimum requirements under which the Commission's rules for extension of rural lines apply. The interpretation or construction which the Commission has adopted has no effect upon the Company's right to construct line extensions which do not meet those minimum requirements which are defined in this regulation. That represents the minimum requirements under which the Company may be, upon complaint of a customer or prospective customer, required to extend a suburban line.

Complainants' Exhibit 184 does not include the Company's rural lines that have been changed to urban rates, nor the rural towns and communities served by the Company at its urban rates. In the progressive extension of our business, electric service has been carried to 460 rural communities which had not been previously served with electricity. As of December, 1936, the Company was serv-

ing over 46,000 customers in rural areas as defined by the United States census.

The Company's electric utility business is continually growing, and in every new field, including rural electrification, the Company must take certain chances in the extension of its system if it expects to grow. It cannot wait until the immediate demand for power justifies each and every single extension. If it had pursued that policy in the past, only a fractional part of the existing markets of the Company would be served. The extension of rural lines has certain engineering and other advantages. They frequently form a part of, or make a loop service, thereby creating a second source of power for consumers, or making available to them additional capacities for their use. Where rural lines are extended to remote areas, they contribute to the improvement of economic conditions in those areas, and they add to the business of the adjacent communities. Demands are set up for new appliances and for wiring, and frequently there follows the purchase of water and sewer- [fol. 194] age systems and the installation of other mechanical equipment. There is a further significance of rural electrification to our business. I think that it adds to the responsibility of our men who operate these various districts. I think it brings them in closer touch with the needs and requirements of the farmers, and thereby makes of them better employees for the Company, and enables them to render better service to the public.

It is frequently the case that when the Company extends a line from some town or community which is the focal point for distribution in that area, and constructs that extension, the Company has in mind the ultimate development or further extension of that particular line of construction. It may be that the extension forms a part of the extension to some distinct community. It may be, as I said before, that it forms a part of a loop service to connect up existing lines in the field of service. In every case where an extension is made in a rural line, it takes electric service that much closer to other areas which perhaps in the future will require electric service. By loop service I mean that a given customer may by reason of his ability to take service over two separate lines coming from different directions, enjoy service from either line. If the lines are connected together at the customer, it would be called

a loop service. It improves the service in the area and it makes available in that area greater capacity of electric service for the use of the customers and those who can be served beyond. When these rural line extensions are made, they offer service from a stable electric system at statewide uniform rates which gives to the smallest community the same opportunity to attract new industry, the same opportunity to grow and expand that larger cities, served and connected by the Company's system, enjoy.

The rates of the Alabama Power Company are regulated [fol. 195] by the Alabama Public Service Commission and the rates of the Company are uniform throughout the State in the territory which it serves, for all the classes of service. The rates of the Alabama Power Company from time to time have been changed and reduced by orders of the Alabama Public Service Commission and for the period beginning January 1, 1916 and ending January 1, 1937, there have been 94 changes in the rates of the company, of which 88 represent reductions.

No towns or municipalities in the State of Alabama voted to acquire municipal distribution systems during the fifteen year period from 1915 to 1930. Thirty-three municipalities in this area voted to sell their distribution systems to the Alabama Power Company during that same period.

The tabulation (offered and received in evidence as Complainants' Exhibit 186) shows for the years 1916 to 1930, inclusive, the towns or cities in Alabama which voted to sell their electric systems to Alabama Power Company or its affiliated companies, and the date such municipal electric systems were acquired.

The document (offered in evidence as Complainants' Exhibit 187) is a rotogravure, printing, or pamphlet, circulated probably during the latter part of 1934 to customers of the Alabama Power Company by the original Electric Home & Farm Authority.

"Mr. Fly: We object, your Honor, on the ground it is irrelevant and immaterial.

Judge Allen: The Court adheres to the former ruling in this line of proffered evidence. While the former ruling was made in connection with the application for subpoena duces tecum, the ruling of the Court is applicable here. This company, as it appears by agreement of counsel for both litigants, was dissolved over two years ago. The Court

therefore considers this circular issued by that defunct company as incompetent, irrelevant and immaterial.

[fol. 196] Mr. Bemis: If the Court please, the evidence, as already shown, that this agency at the time this material was circulated was a wholly owned subsidiary of the Tennessee Valley Authority, or had the same directors as the Tennessee Valley Authority, Mr. Lilienthal and the two Mr. Morgans.

Judge Allen: But, you were not able to prove at that time any connection between that company and the present company.

Mr. Bemis: That was not the purpose of this testimony.

Judge Allen: The Court adheres to its original ruling. The Court holds this circular is incompetent, irrelevant and immaterial to the issues in this case, and it will not be received in evidence. You may have your exception.

Mr. Bemis: May we, if the Court please, say for the purpose of the record the purpose for which it is offered.

Judge Allen: You have stated that in your application for subpœna duces tecum.

Judge Martin: I think it is already in the record.

Mr. Bemis: I wish merely to state for the purpose of the record—yes, briefly, of course—that this agency, in accordance with the Tennessee Valley Authority's report to Congress, was organized for the purpose of developing the electric power business which the Tennessee Valley Authority expected to serve, and we show what this agency has done in the way of distributing propaganda for the benefit of the Tennessee Valley Authority, and its power project. This is in the nature, of course, of an advertising circular, and the witness has testified that it was widely distributed in the State of Alabama, and the fact is, I believe it was sent to every fourth customer of the Alabama Power Company as well as other companies.

Mr. Fitts: We object to the statement on the part of counsel going into the record, as his offer to prove.

Mr. Fly: Of course neither he nor the witness can know that.

Judge Allen: The statement of counsel is stricken out of the record. The Court adheres to the original rule. You may have your exception.

Mr. Bemis: Yes, but may I add further the purpose is to show by the offer of further evidence, the continuing ef-

fect of the propaganda of the defendant company, and to preserve our exception to the Court's ruling, if we may."

[fol. 197] The pamphlet (offered and received in evidence as Complainants' Exhibit 188) is issued by the Tennessee Valley Authority, printed by the United States Government Printing Office, and describes certain operations of the Tennessee Valley Authority. This document was distributed in Alabama, as I recall, during 1935. Numerous copies of it were sent to our general office by our managers in the field.

The pamphlet (offered in evidence as Complainants' Exhibit 189) was printed by the United States Government Printing Office, was circulated in the State of Alabama by the Information Division of the Tennessee Valley Authority, Knoxville, Tennessee, and has printed on its cover "TVA Electricity Rates, a statement of facts". I believe that this pamphlet was circulated during the year 1936. It came to our office from numerous of our field managers.

"Mr. Fly: May it please the Court, we object to the introduction of this exhibit. We raise no question as to the authenticity. It appears to have been printed by the Government Printing Office, and therefore we assume that as to authenticity there is no real question. But as to the subject matter being at issue, or relevant in this case, I do raise a question. The subject matter covered by this pamphlet is the rates of the Tennessee Valley Authority. The Court has heretofore ruled that irrelevant, and I therefore object to the exhibit on the ground that it is not relevant, material, or competent, on any issue in the case.

Judge Allen: Counsel for the complainants have heretofore requested the Court's permission to be heard orally upon this question of the competency and materiality and relevancy of rates, as we understand it, both of the Authority and of the Complainant companies. Are you prepared to argue that at this time?"

There followed an argument of counsel in regard to the admissibility of evidence as to rates, during the course of which it was stated by counsel for defendants:

"The Government concedes (1) the wholesale rates of the Tennessee Valley Authority are substantially lower than the wholesale rates of any of the complainants.

(2) The retail rates charged by the municipalities and [fol. 198] cooperatives purchasing power from the Authority are substantially lower than the retail rates of any of the complainants.

(3) The rates charged by the Authority to the rural customers which it serves are substantially lower than the rates for rural service of any of the complainants."

The Court then ruled concerning Complainants' Exhibit 189 for identification as follows:

"Judge Allen: The Court will not receive this pamphlet in evidence. It considers this document incompetent, irrelevant and immaterial.

Mr. Bemis: And we may save our exception?

The Court: In so far as it states the rates of the TVA.

Mr. Bemis: I understand however, the document itself remains, but those parts of it which set forth the rate schedule are excluded.

Mr. Fly: Oh, I objected to the whole. It is a long document, and if we are going to start on the excerpt plan here, it would take some time to go over it. It is in the form of a circular anyway. I think it is wholly incompetent.

Judge Allen: What is in here, Mr. Bemis, what is in this circular except what relates to rates?

Mr. Bemis: Well, if the Court please, it is the same kind of a document as exhibits 187 and 188. It is a piece of advertising, and publicity for the purpose of promoting the power business of the defendants. And we would like to show it for that purpose, and we offer it for the same purpose that we stated we offered 187.

Mr. Fly: 187 was the E. H. F. A., which was ruled out, your Honor. The other, 188, was the statement of Tennessee Valley Authority, concerning the functions of each of the dams, the different functions performed by the Authority, whereas the statement now presented is a detailed discussion of rates and of costs, and of the different items going into them. In just glancing it over I do not see any item in there which does not go to rates and costs and valuations and that sort of thing.

Judge Allen: The entire circular will be excluded. The Court considers that the gist of this circular is rates, and that it falls under the ruling of the Court.

Mr. Bemis: And we may have our exception.

Judge Allen: And you may have your exception.

[fol. 199] Mr. Bemis: And we would like to have the record show that we offer this exhibit both in its entirety, and that we have an exception to the Court's ruling as to that.

Judge Allen: You may have your exception to the ruling, and the Court excludes the entire pamphlet, because the heart of the pamphlet is rates.

Mr. Bemis: And we would like also for the purpose of the record to state that this pamphlet shows on its face that among other things the defendants in this particular piece of publicity attacked the complainants and their business, and that is one of the allegations of the bill of complaint, that they have spread propaganda relating to the complainants, and affecting their good will and business. Among other purposes it is offered for that purpose.

Judge Gore: Where in this does it affect the complainant companies?

Mr. Bemis: Well, I may be mistaken, if your Honor please.

Mr. R. T. Jackson: If the Court please, Government counsel, in answer to a question from the Court read some concession, which I assume to be part of the basis of the Court's ruling. And I would like to inquire of Government counsel whether that concession, using the word "substantial" is understood to mean 30 or 40 per cent, or what it does mean.

Mr. Fly: That means whatever it means in the recognized dictionaries and law books.

Mr. R. T. Jackson: I guess that is nothing.

Judge Allen: Mr. Jackson, the Court has in mind constantly in this case that there are a large number of complainants here; the fact that an attack is made upon the bill upon the ground it was multifarious.

Judge Gore has previously held in this case that the bill is not multifarious upon the ground that while the complainants may be interested in the outcome of the litigation in varying degrees, and the alleged injury threatened to be inflicted may not be uniform, the relief sought by each and all of the complainants is similarly predicated upon the same alleged unlawful and unauthorized acts of defendants. The Circuit Court of Appeals of the Sixth Circuit sustained the district Court in this holding. Now.

unless all of the complainants fall into substantially the same category as to their legal rights, the bill is multifarious and each of the complainants must have its rights adjudicated separately. The Court considers that the concession made protects the complainants and places them in substantially the same category with reference to the question of rates, and therefore the court considers that to pursue this question of rates with reference to the rates of the TVA and the rates of the various, multifarious complainants, would be going into an infinite amount of detail, [fol. 200] whereas the ultimate conclusion would be fairly expressed with reference to these complainants by the concession made that the rates are substantially lower, both wholesale and on resale.

Mr. Jackson: I was only trying to enlighten myself, if your Honor please, and see if we could have something——

Judge Allen: I made that explanation to you because the Court is endeavoring to carry out the holding of the District Court and of the Circuit Court of Appeals, that you all have a common interest, and we are endeavoring not to go into the diversities of the peculiar situations, except in so far as may be competent, material and relevant under this bill in which you allege that you have a common interest. That is the basis of this ruling.

Mr. R. T. Jackson: I understand the Court perfectly. And I am not trying to raise any question about the ruling. I was only trying to get a better understanding myself of the concession, because "substantial" is a rather nebulous word, and it ought to be fairly simple to agree upon 30 or 40 per cent. The other question was whether it was an inadvertance that the counsel said nothing about the industrial rates.

Judge Allen: Is the same concession made concerning industrial rates?

Mr. Fly: May it please the Court, we will concede that the Authority's rates to the industrials are substantially lower than the published rates of the complainants.

Judge Gore: Mr. Bemis, what did you say about this exhibit?

Mr. Bemis: The reference is there to alleged write-ups, and so forth, exposed by the Federal Trade Commission, and other statements with reference to Complainants.

Mr. Fly: Do you want to go into the truth on that, Mr. Bemis? I don't think this Court does.

Judge Allen: The Court adheres to its ruling. The entire document will be excluded.

Mr. Bemis: We preserve our exception."

The pamphlet entitled, "Development of the Tennessee Valley" (offered in evidence as Complainants' Exhibit 190), was issued by the Tennessee Valley Authority and circulated in the territory in which the Alabama Power Company operates in the latter part of 1935 and the early part of 1936.

[fol. 201] "Mr. Fly: What is the purpose, please?

Mr. Bemis: The same purpose that has already been stated with respect to exhibits 187, 188, and 189.

Mr. Fly: This entire circular, your Honor, I have not had time to examine it in detail. I do not recall having seen it before, but I would object to it on the ground it is immaterial and irrelevant. I think it comes within the scope of the Court's previous ruling in that regard.

Mr. Bemis: There is no question about it having been published and distributed by the Tennessee Valley Authority, is there?

Mr. Fly: I do not know. I assume that it was published and distributed, but it comes in the same category as press releases, speeches and circulars, which the Court has already ruled upon.

Mr. Bemis: Well, it is obviously, if the Court please, a piece of advertising which was distributed for the purpose of promoting the electric power business of the defendants.

Mr. Fly: And again, if your Honor please, there is great danger of throwing in documents of this kind without careful scrutiny, or we will get in multitudi-ous subjects the Court has ruled out. This, for example, goes into rates, and I believe goes somewhat into costs, the last two pages seem to get into that field.

Mr. Bemis: In those respects, it states the facts, as you understand them.

Mr. Fly: No, I would not say that it does. I do not know whether it does or not. If we vouched for every piece of reading, which you could produce here, we would find ourselves in a great many different positions.

Mr. Bemis: Of course, that is the very thing we are complaining about, that its advertising is deceiving.

Mr. R. T. Jackson: It states the facts, as given to the public.

Mr. Fly: I do not know.

Judge Allen: What is the number of this proposed exhibit?

Mr. Bemis: Complainants' Exhibit 190.

Judge Allen: The Court considers that this exhibit falls within its previous ruling, and it will be excluded. You may have your exception.

Mr. Bemis: We preserve our exception."

[fol. 202] During the last four and one-half years, 18 municipalities in Alabama have voted to acquire or construct municipal electric systems. The tabulation (offered and received in evidence as Complainants' Exhibit 191) lists the names of the Alabama municipalities voting to acquire electric systems in the years 1933 to 1937, giving the population of the towns and the date of each election. It also shows, by the asterisks following the name of the town, those towns voting to acquire an electric system which were not served directly by the Alabama Power Company. Approximately 47,000,000 kilowatt-hours were sold during the year 1936 to the 13 towns which are now receiving their service direct from the Alabama Power Company. This represented approximately $965,000 in gross revenue to the Alabama Power Company. I would like to say further in connection with the kilowatt-hours mentioned and this revenue, that the period covered for the information given was for the year 1936 for all towns excepting the towns of Florence and Tuscumbia, Alabama, and in the case of those two towns, the information included was given for the last year of operation of those systems by the Alabama Power Company.

"Mr. Bemis: Now, if the Court please, for the purpose of our record, I would like to submit to the witness a couple of questions on the question of rates, if we may."

* * * * * * *

The memorandum (offered in evidence as Complainants' Exhibit 192) prepared by me shows what differentials there are in the rates of the Alabama Power Company and those generally in force in the State of Alabama by or through the Tennessee Valley Authority.

"Judge Allen: Let us see the exhibit. The Court will ask counsel for complainants whether it would answer their

purpose if the record shows that the witness if permitted to answer would have testified that the differential in the rates between the rates of the Tennessee Valley Authority and those of the Alabama Power Company for residential services varied from 25 cents for 15 monthly kilowatt hours, to $1.60 for 500 monthly kilowatt hours; and for commercial service it varied from $1.80 for 50 monthly kilowatt hours to $65.20 for 3000 monthly kilowatt hours; and varied for [fol. 203] rural service from 50 cents for 15 monthly kilowatt hours to $5.47 for 2,000 monthly kilowatt hours; and for industrial service it varied from $160.50 for 30,000 monthly kilowatt hours to $1415.00 for 400,000 kilowatt hours.

Mr. Bemis: If we could also show the percentage of difference, if the Court please, in these various classifications of service.

Judge Allen: And that the percentage varied in residential service from 25 to 18.8 per cent; in commercial service from 41.9 per cent to 61.8 per cent; in rural service from 40 per cent to 14.4 per cent; and in industrial service from 29.9 per cent to 37.2 per cent.

Mr. Bemis: I think that is satisfactory. And for our record, may we have the Court's ruling on that subject, and except, as I understand the exhibit is objected to.

Judge Allen; And excluded under the previous holding of the Court."

* * * * * * *

"Mr. Bemis: Mr. Stanley, assuming that two competitive power systems are operating in the same general area, what in your opinion would be the effect of the promulgation of substantial lower rates by one competitive system upon the rates of the other system, if such other system had uniform rates?

Mr. Fly: I object to that question as immaterial, irrelevant and incompetent.

Judge Allen: Objection sustained.

Mr. Bemis: Of course, if the Court please, I would like to state that the purpose of this testimony is to show both damages and rate regulation. And, may we have our exception?

Judge Allen: You may have your exception.

Mr. Bemis: And the offer to prove that the witness, if permitted to answer, would testify where two competitive power systems are operating in the same general area, the effect of the promulgation of substantially lower rates by one of such competitive systems would inevitably reduce or regulate the rates of the other system to the same level.

Q. To what extent, Mr. Stanley, in your opinion, is this true in the case of industrial consumers served by the system having the higher and uniform rates?

Mr. Fitts: The same objection.

Judge Allen: The same ruling, objection sustained.

Mr. Bemis: Exception, and offer to show that the witness, if permitted to answer, would testify that in view of the competitive conditions affecting industrial operations that irrespective of duplication of service, the reduction of rates [fol. 204] in an area where other businesses are competing of the same or like character, is inevitably to compel a reduction in rates to the same and uniform level.

Q. Mr. Stanley, where two competitive power systems are operating in the same territory without any actual duplication of service, what, in your opinion, would be the effect of the promulgation of substantially lower rates by one of such competitive systems upon the rates of the other system?

Mr. Fly: Objection, irrelevant, incompetent and immaterial.

Judge Allen: The same ruling; objection sustained.

Mr. Bemis: An exception, and an offer to show that even where there is no direct competition or duplication of service, that the inevitable effect of the promulgation of a lower, substantially lower rate in the same area is to compel the reduction of the rates of the company charging the higher rates; that this is due, among other reasons, to the importance of the good will which the company must have on the part of its customers."

In the case of the thirteen municipalities which, as I have testified, have held elections to acquire their own distribution systems to take TVA power, I am able to state the circumstances under which those elections were called.

The document (offered in evidence as Complainants' Exhibit 193) is a photostatic copy of a contingent power con-

tract for residential, commercial and industrial customers, circulated among the customers of the Alabama Power Company at Albertville, Alabama. I saw this contract at a meeting of the Council in Albertville on the night that the election was called, so that the citizens might vote on the question of acquiring a municipal distribution system. I saw the contracts with my own eyes. I saw a stack of contracts signed by our customers purporting to represent 90% of them. The stack of the contingent contracts was at least eight or nine inches high. The Mayor of Albertville made a statement in regard to the number of contracts which had been signed.

[fol. 205] Examination by the Court:

I did not see this contract circulated, but it was not merely reported to me. I saw it presented by a committee of citizens who were our customers at Albertville, Alabama, to the town Council of Albertville, on the night that they requested that an election be called to vote on the question of acquiring a municipal distribution system. I examined the stack of signed contingent power contracts, such as this is a verbatim copy of, and saw that they were signed by our customers. And my estimate is that the number of contracts that were in that stack signed on the Mayor's table that night represented 90 per cent of the Alabama Power Company customers at Albertville.

"Mr. Fly: I will object to it, your Honor, on the ground that it is irrelevant and immaterial and incompetent. It is not shown that the Authority had a thing to do with the meeting, or with the circulation of the contract. It is not shown that the activities of the members of the City Council are in any way binding upon the Authority, and I don't think that it is at all pertinent to go into the activities of the City Council under those conditions, and I further object to it on the ground that this witness has not come anywhere near authenticating this as the contract which he states has been signed by a group of people.

Mr. Bemis: If your Honor please, to keep the record clear I now offer this document as complainants' exhibit No. 193, and we would like to state to the Court that we do not offer this as a contract which was circulated by the defendants in this case. The purpose of this offer is to show two things: It shows on the face of it, and from the

recitals of consideration, that the moving consideration for the election and vote in this case was the lower rates which would be provided through the purchase or acquisition of a distribution system to use Tennessee Valley Authority power. It further shows that the customers of the Alabama Power Company have contracted to buy all of their future requirements for a period of ten years from the municipal plant, at the time when this service is finally provided. And in consequence——

Judge Allen: Where does it show that? Where does this show that?

Mr. Bemis: It is in paragraph 1. The statement is he will purchase his entire requirements of electric energy from the city for a period of ten years, beginning as soon as the service is available.

[fol. 206] Judge Allen: Where does this say anything about purchasing from the Alabama Power Company?

Mr. Bemis: There is nothing in the contract to show that the customer is now purchasing directly from the Alabama Power Company, but the witness has so testified.

Mr. Fly: I think it is perfectly clear, your Honor, he is trying to prove a state of facts here based upon this document which has not and cannot be authenticated, and if it were authenticated it would still be a matter of pure hearsay, and if it were authenticated and were not hearsay, it would involve the activities of the City Council. And certainly they cannot pull themselves out of a situation like that by the statements of the City Council which are brought in here second hand, unless it has some connection with the Authority.

Judge Martin: Mr. Bemis, do I understand that you offer this document with the statement that you intend to show that TVA, the defendant, Tennessee Valley Authority, was in any manner responsible for the circulation of it.

Mr. Bemis: Not directly. We, of course, consider that it shows the effect of TVA activity in this region.

Judge Martin: Well, that is a different matter.

Mr. Bemis: The purpose of this offer——

Judge Martin: I am asking if you are offering this document on the basis of a subsequent showing directly that the TVA was connected with it, directly with the distribution of this proposed contract.

Mr. Bemis: No, it is not claimed, if the Court please, that the Tennessee Valley Authority is directly connected with the distribution.

Judge Allen: Are you making a formal objection?

Mr. Fly: I have, your Honor.

Judge Allen: The objection will be sustained. Mr. Bemis, in order that you may be informed of the basis of the Court's ruling, the Court rules complainants' Exhibit 193 must be excluded. The reason is that you state you can show no direct connection between the Tennessee Valley Authority and this exhibit, and the Court feels that unless such a direct connection is shown that we should not take time to go into some 20 or 18, or whatever it is, municipal elections which are conducted by independent municipal agents.

Mr. Bemis: Of course, it is understood, if the Court please, that we claim that this is the result and the effect produced by the activities of the defendants.

[fol. 207] Judge Allen: We are making this ruling on the basis of your statement as to what you could prove. It may stand, the ruling may stand, and the exhibit is included.

Mr. Bemis: And we are allowed our exception?

Judge Allen: And you are allowed your exception. Let the record show that counsel for the complainants did not claim that this exhibit was circulated by the Tennessee Valley Authority and that he did not expect to show any direct connection between the circulation of this exhibit and the Tennessee Valley Authority. Is that the effect of the statement, the fair effect of the statement?

Mr. Bemis: And may we have the record show that it is the position and contention of the complainants that these contracts were circulated and distributed as a direct result of the invitation of the Tennessee Valley Authority, as will be shown by evidence, as appears from evidence which has already been introduced, and further evidence which will later be introduced, and that this is the direct effect of such solicitation. We claim that as an inference from those facts.

Judge Allen: That is——

Mr. Fly: That is much broader than he stated before.

Judge Allen: That is much broader than you stated it before, Mr. Bemis. Will you try to say what you said before?

Mr. Bemis: We don't claim, if the Court please, that employees of the Tennessee Valley Authority actually distributed these contracts from house to house, and procured the signatures. Now, that is what I intended to say.

Judge Allen: Now we didn't ask about house to house. We asked whether you could show any direct connection between the Authority and the circulation of these contracts. And what is your answer?

Mr. Bemis: And I believe I answered that we were not claiming that the effect was direct, and I meant that in the sense that we are not claiming that we have any proof to show that the Tennessee Valley Authority procured the circulation of these by any direct action, but that this is the result of the invitations which have been given to promote the power business.

Judge Allen: Let the record show that the Court, the three members of the Court understand that counsel for complainants stated that they were unable to show any direct connection between the circulation of these contracts and the Tennessee Valley Authority.

Mr. Bemis: And may I explain what I intended by that statement if the Court please, for the purpose of the record?

Mr. Fly: I think we have had enough explanation.

Judge Allen: The ruling stands and the explanation stands.

Mr. Bemis: And we may have an exception?

Judge Allen: Yes.

[fol. 208] Q. Mr. Stanley, was this same method, or a similar one followed in the instance of the other towns in Alabama which voted to engage in the electric power business?

Mr. Fly: I object to that, unless he shows that he has personal knowledge.

Judge Allen: The objection is sustained.

Mr. Bemis: An exception, and offer to show that the same method was followed in the other municipalities which have voted to acquire distribution facilities for the use of Tennessee Valley Authority power.

Judge Martin: That would not quite cover your record since the objection was based first on lack of personal knowledge on the part of the witness. If you want for the purpose of your record to incorporate into his knowledge of the

other cities, I think you should do so, otherwise I think the exception would not be preserved.

Q. Mr. Stanley, did your knowledge of the facts with reference to the distribution of other similar contracts in these other municipalities come to your attention in your capacity as vice president in charge of the customer relations?

Mr. Fly: That is irrelevant, your Honor. Can't we find out what the witness knows about the particular town and the meeting, and what he saw.

Mr. Bemis: That is the most we can show by the witness. Then if the Court sustains the objection we would like to be allowed our exception, and offer to show that the witness' knowledge in respect to these other twelve municipalities did come to him in the ordinary course of the business as Vice President in charge of customer relations.

The Witness: I think, Mr. Bemis, that it should be said that there were perhaps two or three of the thirteen towns that did not circulate this type of contract. Substantially all of the other towns did circulate it.

Mr. Bemis: May we have the record show the witness' correction of our offer to prove?

Mr. Fly: I object to any suggestion that the witness has stated the same degree of familiarity as to the other towns as regards Albertville."

Examination by the Court:

I did not at any time see anyone circulate any of these contracts. I did not at any time see anyone sign any of these contracts. I saw the contracts in their signed form at [fol. 209] Albertville. I didn't actually see the act of signature when our customers signed these contracts.

Direct examination continued:

Prior to the entrance of the Tennessee Valley Authority into the business of generating and selling electricity our Company did not lose any of its industrial customers or industrial power business to other agencies distributing electric power in the State of Alabama. Since the entrance of the Tennessee Valley Authority into the business of generating and selling electricity, the following industrial power business has been lost by our Company to the Tennessee Valley Authority or other agencies using Tennessee Valley Authority power.

Excluding industrial business lost pursuant to the contract of January 4, 1934, with TVA, the Company has actually lost the sale of power required for the production of phosphoric acid by Monsanto Chemical Company at Anniston, Alabama, amounting to $387,000 based upon the last year of acid production while taking power from our lines. In addition, the company has received written notices from Rockwood Alabama Stone Company, the Aday Quarry near Russellville, Alabama, and the Decatur Iron & Steel Company of Decatur, Alabama, that they are terminating their power contracts. The business of these two industrial customers for the year ending July, 1937, amounted to $9,500.

Examination by the Court:

We had a contract with the Monsanto Chemical Company at Anniston. The contract does not expire until some time in April of next year and provides by its terms for the purchase of power from our Company for the production of phosphoric acid by the electric furnace method.

[fol. 210] Direct examination continued:

The Monsanto Chemical Company has constructed an electric furnace plant at Columbia, Tennessee, for the production of phosphoric acid, and is producing at that point, with power purchased from the Tennessee Valley Authority, phosphoric acid which it previously produced at Anniston, Alabama, with power purchased from our Company.

The letters (offered in evidence as Complainants' Exhibits 194 and 195) are the original letters from two of our industrial power customers, one, the Rockwood Alabama Stone Company, of Russellville, Alabama, for its Aday quarry, and the other from the Decatur Iron & Steel Company, of Decatur, giving to the Company six months notice of termination of their agreements to purchase power from the Company.

"Judge Allen: They will not be received. The Court considers them inadmissible. The persons who wrote them are not here to testify to them. But the Court considers that this witness may testify as to the fact that his company was notified to discontinue the service. You may have your exception.

Mr. Bemis: Yes, Ma'am."

Cross-examination:

Fifty thousand cotton bolls is 50,000 bolls of cotton. I do not know a great deal about cotton. I do not think the value of the souvenirs would have anything to do with the interest that it would create for the purpose of distribution. I think many people in the New England states never saw a boll of cotton on the stalk, and it was quite a novelty for them to see it, and it created interest in the subject. That is the reason we distributed them, not because it cost us a lot of money. I did not mean to make a claim of a great expenditure on behalf of the community. If I made that impression, I would like to correct it.

[fol. 211] "Q. Mr. Stanley, you stated that your company lost a part of the load of the Monsanto Chemical Company at Anniston. With what corporation did your company originally contract to furnish that service.

A. Mr. Fly, I don't know that I can give you the answer specifically to the question as you have asked it for the reason that the company has furnished electric service for the production of phosphoric acid to this particular plant at Anniston——

Q. Tell me whether or not——

A. —but I can tell you the name of the company with whom the present contract was entered into, if that is what you wish to know."

The contract under which service was being rendered by this Company for the production of phosphoric acid at the electric furnace plant at Anniston was a contract between the Alabama Power Company and the Southern Manganese Company, which contract had been transferred to the Monsanto Chemical Company. And during 1935, the Company did furnish the Monsanto Chemical Company electric energy at Anniston under that contract for the production of phosphoric acid. The power contract under discussion was assigned to the Monsanto Chemical Company, a Delaware Corporation, on December 1, 1936. Prior thereto, service to the Monsanto Chemical Company was to the Alabama corporation of the chemical company. If it is true that the TVA contract with Monsanto Chemical Company of Delaware was made on May 15, 1936, then it is a fact that at the time the contract was made with the Delaware corporation our Company was rendering service under a contract with

the Alabama corporation. I do not know the precise stock relationship between the Alabama and the Delaware Monsanto Companies. I did not assume anything in regard to the form of stock control or that those were the same business organizations. We are still serving the plant at Anniston. We did not reduce the power deliveries at Anniston. The Monsanto Chemical Company reduced the take of power at Anniston. We have exercised our right to discontinue the service of "when available" power under the con-
[fol. 212] tract. This was done in July, 1937, and we have done it in previous years. The contract provides for that. The Monsanto Chemical Company would have, I think, liked to have used the power all along. I did not, however, suggest to the Chemical Company that they arrange with the Authority to furnish power which might be in turn transmitted down to fill their needs. I had the negotiations on behalf of the Alabama Power Company with the Monsanto Chemical Company concerning this power contract, and concerning the discontinuance of the "when available" power, which the contract gives the Company the right to discontinue. At no time during my discussions with them was any suggestion made by me as an officer of the Company that any power of the TVA might be transmitted to Anniston for the purpose of operating the electric furnaces there. I do not know what other officers of the Company did in that regard.

Our Company is not in the regular business of supplying industrial plants in Tennessee. I testified that the Monsanto Chemical Company had built an electric furnace plant to produce phosphoric acid at or near Columbia, Tennessee, and that they had contracted with the TVA for power to operate these furnaces, and that the TVA was delivering power to these furnaces. I do not know whether it is a Tennessee corporation of Monsanto or whether it is a Delaware corporation. The new plant is near Columbia, Tennessee. I do not know where the Anniston plant gets its raw materials, its phosphate rock, for the production of phosphoric acid, unless the question is limited to a particular period. I have knowledge of their obtaining phosphate rock from different locations over the years. I am not positive about 1936 or 1937. I do not know it to be a fact that the bulk of it came from the phosphate rock beds in Maury County, Tennessee. Nor do I know it to be a fact that those

phosphate beds contain the best and most ample supply of [fol. 213] phosphate east of the Rocky Mountains. There are also phosphate beds in Florida that are supposed to be of a very large extent and of a very high grade. I do not know the facts, however, with regard to either location.

When I referred to our uniform rates throughout the state under statewide regulation, I did not mean that all of our rates are the same as the various rates of the various companies doing business in the state and applying to the same class of customers. I just had reference to the rates of Alabama Power Company.

I am not very familiar with the communities of Waterloo and St. Florian, in the vicinity of Wilson Dam. I have never been to either of them. I do not recall whether the citizens of Waterloo, with a population of about 500, presented a petition to our Company about 1929, asking for service. It is true that we have not served Waterloo and St. Florian, but I am not aware whether at the present time ninety rural residents of Waterloo and fifty in St. Florian are receiving service.

Referring to Complainants' Exhibit 185, which is the rate schedule of the Alabama Power Company for suburban service, I do not think the proceeding before the Alabama Public Service Commission as to the rate in its present form was a contested one. It is not the schedule which was presented for the Commission's approval. The designation, Alabama Power Company No. 1, is the designation given to the sheets in our published rate books, which are on file with the Commission, after the approval of the rates by the Commission, and they are on file in each of our offices for the inspection of the public.

I would like to answer the question as to who participated in this particular proceeding by giving a brief explanation of the circumstances surrounding that classification in its present form. Originally, the Power Company submitted certain rates for rural or suburban service to the Commis- [fol. 214] sion, with the request that they be approved. They were not approved in the form submitted. Discussions were had, and in some previous cases there were hearings and as a result of those discussions and hearings a rate was promulgated by the Commission and approved by it. Then later there have been certain amendments and changes in the rates. The amendments and changes have been made

and have been approved by the Commission in separate actions, other than the original hearing. I think the Company took the initiative in proposing this rate schedule or a rate schedule of that type. The record, that is the printed material on the schedules, will show whether the matter was brought up as early as September, 1935, and whether this particular schedule was approved December 17, 1936.

We do not always require contracts for minimum consumption of 7½ kilowatts per month per mile, or at least 1½ kilowatts per customer, as a matter of practice. There are exceptions to the rule made by the Company in a number of cases. In my testimony regarding rural communities I was using the Census Bureau's definition of rural communities, and that included towns of less than 2,500 population. In discussing farm electrification, I gave no testimony to the effect that the definition boiled down to a person who owned or farmed at least 3 acres of land and relied upon it as a source of livelihood. I testified, I think, that we had, at the end of last year, 15,600 rural customers. These rural customers are on rural lines, served by those rural or suburban rates that I have just discussed. There are farms covered by the government classification and there are farms that do not conform to that classification. Then there are churches and schools along the route that are just as much an institution as the farms themselves are, and they are all called rural customers according to our classification.

We have been asked by the Edison Electric Institute on several occasions, and we have also been asked by the Fed- [fol. 215] eral Power Commission, to report the proportion of the farms in Alabama which we served on June 1, 1933, referring strictly to farm electrification, as defined by the Census Bureau, but our Company serves about 150,000 square miles of territory in the state of Alabama and we estimate that it will cost us $3,500 to make a farm census in the territory that we serve. We have never felt that the information that will be gained by such a census was worth the cost of that money and therefore we have never made it.

Prior to 1933, we had many comprehensive rural systems, as distinguished from lines between communities where we picked up customers along the way. We were active in our rural electrification for almost ten years before that.

I filed as an exhibit in this case (Complainants' Exhibit 184) a chart showing the number of miles of rural lines that

we had in operation at the end of the various years and I think it speaks for itself. About 50% of our rural lines which were in operation at the end of 1936 were constructed during that year. Immediately prior to 1936 there was a lull in the construction of rural lines in the State of Alabama just as there was a lull in all business.

I do not have the figures with me and cannot tell how many miles of single phase rural line we had at the end of 1933. It is not always true that the single phase lines are commonly used for farm territory as distinguished from the three phase lines which connect the towns and villages. It may be generally so, but not always. The figures that I have available are applicable to the state as a whole. I do not have the breakdown figures with me.

As a matter of geography, the Rockwood Alabama Stone Company is in the ceded area covered by the contract of January 4, 1934, which has since expired. I think it is in Franklin County.

[fol. 216] Examination by the Court:

It falls within the lines that were retained by the Alabama Power Company and not conveyed to the TVA. That is the reason for my hesitancy about describing it as being within the "ceded area."

Cross-examination continued:

I did not assign that contract to the TVA. I do not think it is true that it is served by the very lines we conveyed to the TVA. I am not absolutely positive, but I do not think it is so served.

The Aday quarry, which I mentioned, also belongs to the Rockwood Alabama Stone Company. Taking the geographical limits of the entire "ceded area" as a whole under the contract of January 4, 1934, using the outside of every county as a boundary line, there can be no question but what the Aday quarry of the Rockwood Alabama Stone Company is located within the area. But as I stated, it was not served by the lines conveyed to the TVA. It was served from the lines retained by the Alabama Power Company.

The Decatur Iron & Stone Company is in Morgan County. It is in the city of Decatur, in the "ceded area." I have

not seen any contract between the Decatur Iron & Stone Company and the Tennessee Valley Authority.

Referring to Complainants' Exhibit 191, listing the towns voting to acquire electric systems from 1933 to 1937, there are nine of these towns within the ceded area, and they all held their elections prior to the contract of January 4. I do not recall when the Carmichael Act was passed. I know that the act referred to authorizes municipalities to acquire, construct and operate distribution systems, but I do not remember when it was passed. According to the check I have made, there are six of the towns listed on Exhibit 191 outside the ceded area which are [fol. 217] served directly by the Alabama Power Company, including Guntersville, Oneonta, Enterprise, Scottsboro and Albertville. I do not know it to be a fact that any of the towns other than Guntersville has a contract with the Authority. I never heard of any movement towards public ownership which was in existence at Guntersville prior to the passage of the Tennessee Valley Authority Act.

In Complainants' Exhibit 182 I spoke of 204 industries which had settled in the area of my Company since 1925. I did not bring the figure with me as to the total amount of energy in kilowatt-hours which was sold to those industries in 1936. I had a check made to determine the part of our industrial revenue that the new industries contributed during the year 1936, and I testified that the percentage was over 25% of our total industrial revenue for the year 1936. In estimating the potential demand of 911 kw. within 100 miles of the Authority's dams, I figured on the existing demand and did not consider the possible increase in demand, nor the influx of new industries or operations of that sort. I had our Rural and Towns Division make a survey of the rural revenue. They are experienced agricultural engineers who have been doing that class of work for the Company for years. And I had our power sales engineers do the same with regard to the industrial power loads, and then I took these two surveys, and with my general knowledge of the territory that I have been familiar with for years personally, I made the calculation which I gave yesterday in my testimony.

Redirect examination:

The Monsanto Chemical Company contract, as I recall at the present time, is for 28,500 kilowatts of total load,

of which only 4,000 kilowatts is primary power. By primary power, I mean power that must be kept available [fol. 218] every day during the year for the customer's use. The remaining part of the power is of several different classes and it is available for varying numbers of months during the contract year. Some of it is subject to shut off by the Company on short notice. The curtailment that was made in the power for this customer was made pursuant to the terms of the agreement which both the consumer and the Company understood and I think both of us are satisfied with. That is as to shut offs.

"Q. Now, prior to the time when Monsanto Chemical Company moved its phosphoric acid operations to Tennessee, was there anything said in regard to their reasons for doing so?

Mr. Fly: I move to strike that. There is no evidence in this record that that company moved any operations to Tennessee.

Judge Allen: Objection sustained.

Mr. Bemis: Exception and offer to prove that if the witness were permitted to answer he would testify that the Monsanto Chemical Company did call the Alabama Power Company into a meeting.

Judge Allen: Now, Mr. Bemis, the Court feels that for the benefit of the litigants and for the benefit of the Court, as constituted, that this statement should be made in compliance with the equity rules, and be very simple.

Mr. Bemis: You mean that the counsel should make the statement, but that it be a summary?

Judge Allen: If counsel will not make the statement as indicated by the Court, then the Court will have to make the statement. I want to call attention to both litigants to this situation again, that in this three Judge case, we have a Judge drawn from the United States Circuit Court of Appeals. That Court is compelled for the next session of court to borrow a Judge from somewhere, and perhaps will be compelled again for another, or we don't know how many other sessions of the court to borrow a Judge from somewhere; the Dockets of two District Courts are held in abeyance while this case is proceeding. We think, therefore, that there is a strict public policy, not only in favor of the convenience of the litigants, but in favor of the administration of the courts, of our conducting this

particular case so as to preserve every right of the litigant, but so as to dispose of the case. Now, what you are entitled to under the equity rules is that the Court shall clearly state the nature of the testimony rejected. That [fol. 219] does not require a paragraph, in the opinion of the Court, on either side, it does not require a paragraph.

Mr. Bemis: We will endeavor to cooperate with the Court in that direction.

Mr. Bemis: (Continuing) That the witness would testify if permitted to answer, that the Monsanto Chemical Company did state the reason for moving its phosphoric acid operations, and that the reason given was that it was going to purchase power from the Tennessee Valley Authority, which could be purchased at 1 mill lower than the price at which the Alabama Power Company was selling under this contract.

Judge Allen: The Court wishes the record to show that this evidence is excluded upon the ground that it constitutes hearsay, and that it is incompetent, irrelevant and immaterial under the law applicable to the case.

Mr. Bemis: To which we have reserved an exception.

Mr. Fly: May it please the Court, I just want to state we want the final record, when it is made up, I shall ask the Court to let it appear that I directed attention to the matter that the Monsanto Chemical Company doing business in Alabama and the Monsanto Chemical Company doing business in Tennessee are different corporate entities."

With reference to exceptions made to the minimum requirements of the Alabama Commission, respecting rural line extensions, there have been cases where an amount less than the capacity requirements set out in the schedule have been signed for by the customers, and not more than the capacity requirements set out. I do not mean that we have in any instance violated the minimum requirements as set forth in that regulation. The regulation says that we may make exceptions below the requirements of 7½ kw. per mile. My testimony, as I gave it yesterday, was intended to show that we had done that very thing in certain instances.

At this point complainants moved for an order requiring the defendants to produce all contracts that had not been delivered, whereupon the following occurred:

[fol. 219a] "Mr. Fly: I believe under those circumstances, Mr. Jackson ought to make a showing that we have failed to deliver some of them, before this Court is called upon to make a formal order which challenges the good faith of the Government in a matter of this kind, on which we make every effort to cooperate.

Judge Allen: The Court feels that good faith and cooperation have been shown on both sides. It is the understanding of the Court that the contracts, the amendatory contracts also will be delivered. The Court also knows that there is a vast amount of documentary material to be checked up and delivered.

Now at the present time the Court will make no order but it will demand the cooperation of attorneys on both sides of the case in producing this evidence, and we will assume that the Government will check these documents as fast as possible, as fast as is reasonably possible, and will deliver them all."

(The witness was excused.)

The new contract between TVA and the Alcorn County Electric Power Association dated June 3, 1937, was at this point delivered to complainants by counsel for defendants, and was offered and received in evidence as Complainants' Exhibit 196.

"Judge Allen: Now, in line with what was just stated concerning the public policy of continuing with this case, the Court, in thinking over the possibility of all of the ramifications and evidence, has concluded, in the light of the law of the case, and the holding that the bill is not multifarious, that all of the complainants are in substantially the [fol. 220] same category, and bearing in mind the allegations of the bill, we feel that a fair picture of the whole situation along the lines of the testimony of Mr. Stanley with reference to the Alabama Power Company is presented by the typical case of the large power company, and the typical case of the small power company. Now the Court does not mean by that there won't be an opportunity given to supply testimony to preserve the record, or evidence to preserve the record for each of the companies, but we do

feel that if we can get into this record a typical case of a small power company we can go forward more rapidly.

Mr. Bemis: You mean with a witness that would testify in regard to the organization and activities?

Judge Allen: Yes, the organization, growth, capitalization, activities, rates and so forth, which we have held to be inadmissible, but which you have a right to offer to prove, of a small power company.

Mr. Bemis: Well, I am not too sure that that could be done at this time, if the Court please. We appreciate the Court's suggestion and will follow it. But I do not know that we are prepared to do that at this time.

Judge Allen: Well, then, have you something else, not along that line, with which you could now go forward?

Mr. Bemis: We have other witnesses who we are prepared to call at this time, yes.

Judge Allen: Is it along the line of the testimony, the general line of the testimony of Mr. Stanley? We thought that we were making it plain, we are prepared to hear in detail, with the liberality which the Court has already shown, testimony concerning the growth, capitalization, operation, line of service, and all of the rest of it, of a large power company and a small power company, and to consider those as typical, and to preserve your rights under the record with reference to every one of the complainants.

Mr. R. T. Jackson: If it is appropriate, I would like to state what we had planned to do and our situation, to see whether the Court approves of it.

At the outset I want to say that in offering testimony for the Alabama Power Company through Mr. Stanley, we had not intended to initiate a line of testimony which would take this Court through a repetition of that testimony for each plaintiff in this case. We had intended to offer that as typical to the Court. The Court suggested that that would be sufficient. We then had not intended to go further with the typical testimony of a small company, such as one serving a metropolitan area, because it had seemed to us that [fol. 221] testimony such as that of Mr. Ford for the Memphis Power & Light Company had perhaps adequately covered the field from the point of view of that type of company, which was covered by Mr. Stanley in relation to the Alabama Power Company.

We will, however, be, of course, glad to check that and see whether there is anything else that ought to be brought

out from a small company to make it strictly comparable to what was brought out from the Alabama Power Company, because the Court in suggesting that, must have thought there was something lacking in that respect that we had not realized. Now, if the Court feels that there is, and wants that done, we will be glad to send for persons able to give us that information and have it ready this afternoon. We had not thought of that at all.

Now the other testimony that we had planned to follow along here with is not intended, and in our judgment does not duplicate what Mr. Stanley has given, in any way. We intend to follow out a line of testimony which we think will be illustrative of particular angles of the case, without regard particularly to whether the witness is from one company or another, so long as it had application.

Judge Allen: Did you intend to introduce other testimony with reference to the growth and service of other particular companies?

Mr. R. T. Jackson: Well, not along the same line as Mr. Stanley. If it comes in it would be entirely because it had to be mentioned in connection with some other purpose, as I understand it.

Judge Allen: It is things of that sort that the Court feels are cumulative.

Mr. R. T. Jackson: Well, it is something we want to avoid entirely. We had felt, in view of the Court's statement, they would accept it as typical, and with the lack of objection on the other side, that we would not need to make up any particular record, as the Court suggested. But even so we thought that we might be able to stipulate whatever was needed to make a record, if there is anything for the other companies.

And Mr. Fly has kindly offered to cooperate in that respect.

Judge Martin: Mr. Jackson, if we have checked correctly, complainants have already introduced officials of all the complainant companies except the Georgia Power Company and the Kentucky-Tennessee Light & Power Company.

Mr. R. T. Jackson: Yes, sir.

Judge Martin: And what we are seeking to avoid as Judge Allen has explained for the Court, is an accumulation of testimony.

[fol. 221a] Mr. R. T. Jackson: We can well understand that.

Judge Martin: We don't want multifariousness in the hearing, but to give you a fair presentation, an opportunity for a fair presentation of the propositions on which you rely.

Mr. R. T. Jackson: Yes, sir.

Judge Martin: But to avoid an accumulation of testimony that could not be of any benefit either to the trial court here or to the reviewing court, the Supreme Court of the United States.

Mr. R. T. Jackson: We fully appreciate the Court's suggestion, and the reason back of it, and we have lined up our testimony in an attempt to meet that very situation.

When we proved the properties, and that sort of thing with relation to the companies, it seemed to us necessary to make that sort of proof as to each company in order to show what its property was, but we had no intention of going through each of these companies with proof of this character from here on.

We took this as a typical example, and we will have witnesses from other companies, if the Court will permit us, which will touch upon entirely different phases of testimony which we think is material. And if there is any reference to such things as the Court now has in mind it will be because they illuminate the other field of testimony, and not to supplement what is in on that point.

Mr. Fly: May it please the Court I am a little bit concerned about the reference to the Alabama Power Company as typical. I think it is typical of a great number of companies, and possibly of all of them in a number of respects. And I think that the point here is the question of cumulative evidence rather than of taking facts which may differ from company to company, peculiar facts and saying that they are the same throughout the different companies.

Now, such things as the general form of the organization of these companies, and as to the scope of their lines, and their customers, their growth, and the growth in facilities and service and load, the sales promotion activities, and efforts to develop the industry, and in general their efforts towards rural electrification, things that are more or less formal in character, we think are readily subject to stipulation and I believe we can wash out that entire line by taking a few hours and stipulating what could be presented along those lines, rather than in vacuuo, suggesting one company is wholly typical.

[fol. 221-b] And then that will bring us down then to special conditions that apply to these companies, when they can get down to problems of line duplication, and contracts of the TVA and that sort of thing.

Mr. R. T. Jackson: That is precisely the way we intended to follow this out, if your Honor please, and we are willing to add, if it is necessary to make a typical case, proof as to different classes of companies,—we will survey that.

Judge Allen: The Court appreciates the cooperation of counsel.

We might say we have considered this problem seriously and asked counsel to take the action requested that is to present a typical small company, because we saw material differences in capitalization and the line of service and territory served, and all that sort of thing, but since the testimony offered by Mr. Stanley was to some extent cumulative of testimony already offered, we desired to indicate that cumulative testimony in the future, with due regard to the rights of every litigant, must be avoided.

Mr. R. T. Jackson: We desire to follow that. And we had thought that the witnesses already on the stand had covered the small companies. It may not be, and we will examine that future and supplement it, if it seems necessary, in the case of a typical company."

Hammond Green was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Albertville, Alabama.

I have seen a contract similar to Complainants' Exhibit 193 (excluded) and I have signed such a contract and have it with me. The signature which appears at the bottom of the contract (offered in evidence as Complainants' Exhibit [fol. 222] 197) is my signature. I signed it on August 13 at the request of a committee of the city of Albertville, working on the TVA power plan. After I had signed it, it was turned over to the city, to the mayor, and was produced from a stack of other contracts.

At the present time I am a customer of the Alabama Power Company. The particular contract which I am bringing into court was obtained last night from Mr. Hooper, the mayor of the city of Albertville.

"Mr. Bemis: If the Court please, we offer Complainants' Exhibit No. 197, and reoffer the exhibit which was produced through Mr. Stanley yesterday as Complainants' Exhibit No. 193.

Mr. Fly: We will object, your Honor. I thought I would make the point of my objection on cross examination."

Cross examination:

The name of the man who brought this contract to me and asked me to sign it is at the bottom—H. B. Levy. He operates an oil mill and the electric shop. He is not a member of the City Council. He is just a citizen of the town. He is not an employee of the TVA.

"Mr. Fly: I object to that (Complainants' Exhibit 197) as irrelevant, your Honor, immaterial and incompetent.

Judge Allen: The Court sustains the objection as incompetent, irrelevant and immaterial.

Mr. Bemis: And we may have our exception. That is all, Mr. Green, thank you.

Judge Allen: The same ruling, Mr. Bemis, as to your reoffer of the contingent contract.

Mr. Bemis: Yes, I so understand."

(The witness was excused.)

[fol. 223] James A. Longley was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 51 years of age. I live at Chattanooga. I am Vice President and General Manager of The Tennessee Electric Power Company.

The Tennessee Electric Power Company has a field organization in order to get closer to the problems that arise and occur and prevail within the industry. That organization consists of 1,650 employes and it is divided into six districts. Two of these districts are the metropolitan areas in Chattanooga and Nashville. The other four districts are those which serve what we term the state-wide territory, which is made up of the areas outside of Chattanooga and

Nashville, and consists generally of pretty small towns. In the territory we serve there are only five towns that have populations ranging between 5,000 and 10,000 people. The organization that comprises this field organization is departmentalized. By that I mean that there are salesmen, service men, meter men, cashiers, collectors and other people of that kind. Each district is under the direct supervision of the District Manager, who has general supervision and general control over all of the activities that go on in that district. The needs and the problems of the various phases of our business within that district are given the constant study of the District Manager and his organization. The Company also maintains local offices in some of these districts. I think we have forty-five or forty-seven local offices. Each one of these local offices has a number of employes and they operate within the immediate area of that town, in order to give service and to break up the work, so that it all builds down to the point where it gets its roots right into the soil, [fol. 224] so to speak. These local managers are not responsible immediately to the central office. They are responsible to the local office, to the district manager in all cases.

The Company also maintains a central office organization in Chattanooga. This organization is departmentalized in just about the same manner that the district organization is. Actually, the central organization, while it is responsible for the general economic results of the Company, in effect acts as an adjunct to the field organization. There are, I think, about 300 or 310 employes in this central organization, and those figures I am giving are exclusive of the production and transmission department, which is a separate department. It is also exclusive of the transportation systems in Chattanooga and in Nashville. These men that are in this central organization spend a great deal of their time in going through the field, talking over the problems with the district managers and with the field staff, and it is largely from the messages that they bring back, and their knowledge that they learn from these visits that determine the policy of the Company as a whole, which is established here in Chattanooga, the place where our headquarters are.

"Mr. Bemis: Mr. Fly, can we agree that the history of rural electrification in the case of the Tennessee Electric Power Company is substantially similar to the Alabama

Power Company? That would save us the necessity of going into proof on that subject.

Mr. Fly: We will stipulate, your Honor, that in general it represents about the same situation. We, of course, do not stipulate as to particular lines, and particular situations, but over the general scope we will stipulate it is about the same."

Our Company has a rural plan which has been approved by the Railroad and Public Utilities Commission of the State of Tennessee. The gist of that plan is first that for the service that a customer buys, he pays exactly the same price as though he had bought an equivalent amount of kilo- [fol. 225] watt hours as an urban customer. The second feature is that it provides that the customers served by the rural line shall guarantee to pay collectively minimum bills of $18.00 per month per mile of line. It provides that we are not obligated to serve customers on a rural line where the density is less than 5 customers per mile. These are the essential parts of the plan.

"Q. Mr. Longley, are you able to state the approximate differences between existing rates of your company and those offered generally on the same class of service in Tennessee by or through the Tennessee Valley Authority?

Mr. Fitts: We object to that question.

Judge Allen: The objection is sustained.

Mr. Bemis: Exception, and may the record show that the witness would testify that the Tennessee Valley Authority rates are approximately 31 per cent lower, if applied to the same business of the Tennessee Electric Power Company as a whole. It would also show that the Tennessee Valley Authority rates for residential service are 26.5 per cent lower; its rates for commercial service are 37.5 per cent lower; and its rate for industrial power service is 31.4 per cent lower."

The table (produced by the witness and offered in evidence as Complainants' Exhibit 198) shows the differences between the rates of The Tennessee Electric Power Company and the TVA rates as applied to these various classes of customers assuming loads of typical size, as selected by the Federal Power Commission.

"Mr. Fitts: We do object to it on the ground it is incompetent, irrelevant and immaterial, a comparison of rates.

Judge Allen: The exhibit is excluded upon the same ground as previously made.

Mr. Bemis: And may we have our exception?"

Cross-examination:

The question whether I know what percentage of the farms in the state of Tennessee had electric service on June 1, 1933 is a good deal like asking me how long a road is or [fol. 226] how wide a street is. There are so many definitions for rural organizations, it is almost impossible to answer. I am generally familiar with the Census Bureau definition for farms. Using that definition, I do not know of my own personal knowledge what the percentage of farms is in the state. I have, however, seen some of the figures that have been published. In fact, in the November issue of the Rural Electrification News, there was a table given to show in there that the percentage of farms served was 7.8 per cent, as of a recent date. The figure that I have for June 1, 1933, if it is correct, is 3.6 per cent. I do not have any figure as to the average density of rural lines that were built before 1935. I can not now give you a list of rural lines that have been built by my Company since January 1, 1935, or their average density, but I can have it prepared.

I think it is correct to say that a substantial portion of the service specified as rural service of our Company before 1933, was made from short extensions off of urban systems, or off the lines connecting urban systems. That is, of course, because until you have a number of places where electric service is available, you cannot go into the rural business. Therefore, I think it is a case where you have to have the Christmas tree before you can hang the tinsel.

As I understand the question as to the number of customers previously served by our Company in the rural areas in the Norris area and in the Lincoln County area that are now being served either by the TVA or by cooperatives purchasing power from the TVA, I think there were none. I am quite certain in the Lincoln County area the answer is none. I have the impression there are one or two customers in the Norris area formerly taking our service that now purchase from some source, power now originating from the TVA. I cannot state that as a fact or name any of them.

The Company has not installed any new generating ca- [fol. 227] pacity in the last three or four years, although

we have plans for this new station at Nashville, and the turbine is actually finished and in storage at Schenectady. It has been held up on account of some other matters, so we have not gone ahead with that. We have, however, in the last few years made minor improvements which have added to our capacity. I do not recall off-hand whether we have added about 700 kw. capacity at Selmer, Tennessee, Celina, Tennessee or Jamestown, Tennessee. We have made minor improvements at those places, also at Hales Bar, also at Nashville. The Nashville plant will increase our capacity by 25,000 kw.

I recall appearing before the House Committee on Military Affairs in 1933 and testifying with respect to the development of this river. I do not remember making a specific statement that our Company would not build any dams upon the Tennessee River, and that i ny opinion no private company would build any dams upon the Tennessee River. That is a good long while ago to remember it.

"Q. Let me read it to you and see if you recall it then. This appears on page 178 of the Hearings of the Military Affairs Committee of the House of Representatives in 1933 on Muscle Shoals.

'Mr. Hill: Then, you pretty well agree with him that you would not want to build any more dams on the Tennessee River?

Mr. Longley: I said I would not.

Mr. Hill: Then, if you power people won't develop the Tennessee River, and do not feel that you can do it, about the only people who can do it is the Government, is it not?

Mr. Longley: That is true, yes sir.

Mr. Hill: Then, we are left with the proposition that either the Government has to develop the Tennessee River, or it won't be developed at all?

Mr. Longley: Yes, that is true.

Mr. Hill: You think that is true?

Mr. Longley: Yes, sir.'

[fol. 228] Mr. Bemis: If the Court please, we would like to object to that as irrelevant and immaterial.

Mr. Fitts: The only possible objection is, it is beyond the scope of the direct.

Judge Allen: Objection overruled.

Mr. Bemis: Our objection also goes to the fact it is not proper cross and beyond the scope of the direct.

Judge Allen: The Court has already ruled upon that question, and the objection is overruled.

Mr. Bemis: We may have an exception?

Judge Allen: You may have your exception.

By Mr. Fitts: My question is, do you recall that you did give that testimony at that time?

A. Well, obviously when faced with the evidence, I do not think there can be much question of it, Mr. Fitts. I am rather sure I said it."

Redirect examination:

With respect to my reference to some statistics in regard to the number of farms that were electrified in 1933, there were no definitions as to what constituted farms in those statistics, and it depends on the definition you use as to the percentage. I know in one classification where it eliminates all of the farm dwellings of a value of less than $500, on which basis there is about 17.5 per cent served. In that same connection, I think in the tables that the Edison Institute has prepared, Tennessee ranks 39th; but, when you consider the fact that the average per capita wealth in Tennessee places it as the 39th state, the percentage is not as bad as it appears on the face. On the basis that we used, the definition being all customers outside of the incorporated towns, I have figured that we served as of August 4th, 38,399 rural customers.

Referring to the reports of the Hearings in which my testimony was to the effect that the private utilities did not [fol. 229] want to build any more dams on the Tennessee River, when I made that statement, I had reference to the construction of dams in which the power companies paid the entire cost of construction under the Federal Water Power Act.

(The witness was excused.)

J. L. Street was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 42 years old, reside in Columbus, Mississippi, and have been Division Manager of the Mississippi Power Com-

pany, Columbus Division, for over eleven years. The Columbus Division embraces an area in Northeast Mississippi, comprised of nine counties, Monroe, Chickasaw, Calhoun, Webster, Clay, Lowndes, Oktibbeha, Noxubee and Kemper. As division manager, I have general charge of all activities of the Company in that territory, and am generally familiar with the electric power facilities in that area.

The map (offered and received in evidence as Complainants' Exhibit 199) shows northeast Mississippi, and the electric transmission and distribution facilities located therein. The cross-hatching in the upper righthand corner represents the territory which includes the lines of the Mississippi Power Company which were transferred to the TVA under the contract of January 4, 1934. Prior to the time of that contract, I was district manager in that area as well as the area which now comprises my division. I have seen practically all of the lines which have been constructed either by the TVA or by the rural cooperatives or municipalities from time to time in the course of their construction. The Mississippi Power Company operates approximately 303 miles of transmission lines in the Colum- [fol. 230] bus Division and approximately 330 miles of distribution lines. The green lines in Chickasaw County represent the lines of the Tri-County Power Company, extending out from Houston to Woodland, Manteo and Montpelier; and in Tippah County, in the northern part of the map, represent lines of the Ripley Utility Company, running north from Ripley to the state line into Tennessee above. These are private corporations. The broad lines on the map indicate transmission lines of 50,000 volts and above; the next size, between 15,000 and 50,000 volts; and the smaller lines represent distribution lines of less than 15,000 volts. The broken lines on the map represent lines under construction. I have seen these lines.

The area covered by the Columbus Division, of which I am Division Manager, is essentially agricultural and is composed of a few small communities and about four towns of over 2500 population. We have 62 employees in the Columbus Division, 38 of whom are located in Columbus, and 24 in the local operations throughout the area. The Company is constantly making studies of the territory served by it, and we have made a number of different studies over this entire territory from time to time with ref-

erence to the unattached or potential market of the division.

The unattached industrial power load in the territory is composed chiefly of sawmills, planing mills and other woodworking plants, which use refuse, shavings and other materials of like nature as fuel. They are not considered as potential customers because of the fact that they have their equipment and have this free fuel which they can use. There are four industries in the territory which use steam in the process of manufacturing. In the case of these industries, power can be and is generated more or less as a by-product. They also form a negligible quantity as to potential customers. There are some 30 or 40 cotton gins in the territory, a great many of which are located in rural [fol. 231] areas and have wood as fuel. Some use tractors or other small gasoline engines. The gin business is a load which only operates 2 or 3 months in the year and the extent of the load is dependent upon the crop conditions. The great majority of the industries which I have put in these three classifications are now within reach of the existing Company lines, and we have incidental service to a number of them. For instance, we are serving a portion of the load in all the processing plants. The balance is served by by-product power generated for other purposes. All of these unattached industries to which I have referred have had their own power units for production of mechanical power or electric power for a number of years.

The unattached commercial demand in the territory consists principally of small suburban or rural stores, most of which usually close at dusk, and a small amount of grist mill load scattered throughout the area, which is an intermittent load, generally operated 2 or 3 days a month, and generally using gasoline engines or some other character of power. The unattached domestic demand within reach of the Company's lines is composed chiefly of low rental houses, shacks, Negro cabins and other dwellings of like character. Neither the owners nor the tenants are able or willing to wire for electricity, and are not considered potential customers. There are approximately 2500 of such houses in this district within reach of the distribution lines. That represents approximately 33⅓% of the total houses within reach of the line. In the case of lines in rural areas, the percentage of unserved homes or dwellings within reach of the lines will exceed 50%, approximately 60%.

The character of the unattached domestic demand not now within reach of existing facilities is substantially of the same character as that in the towns and communities [fol. 232] unserved now and within reach of the lines. It is widely scattered and principally composed of very low rental houses, occupied by low income families.

I am familiar with the minimum requirements of the Tennessee Valley Authority Neighborhood Plan, which are approximately 662 kilowatt-hours per mile per month. There is substantially no demand which would meet the requirements of the Tennessee Valley Authority Neighborhood Plan in the area comprising the Columbus Division of the Mississippi Power Company. It is widely scattered and sparsely settled and there are practically no lines of any size or length which would come up to these requirements. All of those distribution lines now distributing TVA power in Chickasaw, Calhoun, Monroe and Lowndes counties, all of which are outside of the area in which the Company's facilities were transferred to the TVA, could be served from the system of the Mississippi Power Company. The system in Monroe County could be served by a substation at the crossing of the Monroe County Association and the Mississippi Power Company line east of Aberdeen. The Okolona system could be served from a substation on the Mississippi Power Company line at Okolona, and the system in Calhoun County could be served by a line extension from Calhoun City north to Pittsboro, possibly six miles.

There are three municipalities in this area comprising my division which have voted to construct their own distribution facilities for the use of TVA power. They are Columbus in Lowndes County, Aberdeen in Monroe County, and Starkeville in Oktibbeha County. We have received communications from those cities complaining as to the Company's rates.

The documents (offered in evidence as Complainants' Exhibit 200) are a file of letters from the City of Columbus to the Company, dated November 24, 1933, July 31, 1937 and November 17, 1937, in connection with the rates charged and sale of the Company's facilities in the city. These [fol. 233] letters are referred to me in the regular routine of business for consideration and comment.

"Mr. Fitts: I would like to finish reading this long letter.

Mr. Bemis: Yes, sir.

Mr. Fitts: To see exactly what is in it. There is no objection.

Judge Allen: What pertinency do you claim for these exhibits?

Mr. Bemis: If the Court please, I think it has pertinency in three or four respects. For one thing it shows that the election to acquire their own distribution system is for the purpose of obtaining the benefit of the rates which have been promulgated by the Tennessee Valley Authority, and not purely because the city otherwise desires to engage in the business of distributing electric power. It shows further the protest of a customer in respect of rates.

Judge Martin: What would be the difference in legal effect in the two situations, Mr. Bemis, the motive of the city, how would it affect the case that we are trying.

Mr. Bemis: Well, I think, if I understand the defendants' position correctly, it is that these municipalities who contract with the Tennessee Valley Authority voluntarily decide to engage in this business. Now, we do not consider that it is voluntary when it is induced by the rate structure which is substantially below the rates at which the complainants can furnish that power.

Mr. Fitts: May it please the Court, may I just state why I did not object to the offer of that letter? It is not on any of the theories,—I don't want to be misunderstood —not on any of the theories that Mr. Bemis has stated, but solely because it occurred to me that if they were offering these letters with some idea that they might be remotely relevant to a showing of injury or damage to the complainant companies, and that alone, without going into any questions as to whether or not the rates were fair or reasonable, or as to what was the inducing cause of a municipality's holding an election, but solely for the purpose of showing an injury to the companies, sufficient to give them a standing in court, it occurred to me that they might be remotely relevant to that issue, and that is the only reason why we did not object.

Judge Allen: The exhibit will not be received in evidence. I might call your attention to a statement by the [fol. 234] Supreme Court, in the opinion which I remember as unanimous, although I haven't the book here. It is a rather pertinent comment: 'The conduct of which the plaintiff complains is not extortion, but on the contrary

charging rates that draw plaintiff's customers away.' That is in the Springfield Gas Case, I think it is 257 U. S. 96.

Mr. Bemis: May we have the record show that our offer is not for the limited purpose mentioned by Mr. Fitts, that we offer this for all purposes, including the purpose of connecting up.

Judge Allen: It is the ruling of the Court that the exhibit is incompetent, irrelevant and immaterial as evidence, and you may have your exception.

Mr. Fitts: That is offered, and I would like to have the record show, in view of the fact his offer is stated as it is stated, we object to the introduction on the grounds stated.

Judge Allen: It is the disposition of the Court to be very liberal in the admission of evidence in this case, which we are sure is competent and relevant and material. It is not the disposition of the Court to pile up immaterial and irrelevant and incompetent evidence in this case, even though it is not objected to by counsel for the Authority.

Mr. Bemis: And we reserve our exception to the Court's ruling."

The documents (offered in evidence as Complainants' Exhibit 201) are a file of the original letters received by the Mississippi Power Company from the city of Aberdeen which came to my attention as District Manager of the Columbus Division.

"Mr. Fitts: We object to this exhibit upon the ground of incompetency, irrelevancy and immateriality, and upon the further ground that there are statements of fact and of reasons given and so forth in here which are pure hearsay, under any view.

Judge Allen: The objection is sustained and you may have your exception.

Mr. Bemis: Yes. Let the record show we reserve our exception."

The document (offered in evidence as Complainants' Exhibit 202) is the original letter received by the Mississippi Power Company from the City of Starkeville which came to my attention as District Manager of the Columbus [fol. 235] Division in which the City of Starkeville is located. Matters respecting the activities in my territory come within my functions and duties in the ordinary course.

"Mr. Fitts: We object to the introduction of this exhibit upon the grounds it is incompetent, irrelevant and immaterial, and further on the ground that it is not sufficiently authenticated, the authority or position of the person writing it is not shown, or that he had any authority to speak for the city.

Judge Allen: The objection is sustained upon the ground that the exhibit is incompetent, irrelevant and immaterial, and for the further reason applying to transactions carried on by municipalities in Mississippi, that is the record shows there is no regulatory commission there, and the city authorities have full power of contract, and the regulation of their own utility operations.

Mr. Bemis: Exception. May I ask just one further question to clear up the point which Mr. Fitts has made the basis of his objection?

Q. Do you know who Joseph S. Rice is?
A. He was the Mayor of Starkeville at that time.

Judge Allen: I didn't get that answer.

The Witness: He was Mayor of Starkeville at the time that letter was written.

Mr. Bemis: I don't understand that the Court's ruling was based upon that question."

The contract (offered in evidence as Complainants' Exhibit 203) is a binder contract to take light and power from the City of Columbus, Mississippi. I am a resident of Columbus, Mississippi. The contract was handed to me in the City Hall by the City Marshal of Columbus, with the request that I sign up for service from the City of Columbus for my residence. I have produced the original which was handed to me. I stated to the Marshal that I would take the matter under advisement and put the contract into my pocket.

"Mr. Fly: May it please the Court, we object to the introduction of this exhibit in evidence upon the ground it is immaterial, irrelevant and incompetent and has no connection shown with the TVA, or with any issues in this [fol. 236] case; and furthermore, that it is clearly an effort to establish the truth of certain inferences from the recitals in this proposed contract, which are clearly hearsay under any rule.

Mr. Bemis: I presume that the Court adheres to the ruling made in the case of other contracts offered?

Judge Allen: The Court adheres to its rulings and the exhibit will be excluded.

Mr. Bemis: And may we have our exception?

Judge Allen: You may.

By Mr. Bemis:

Q. Mr. Street, I hand you what has been marked for identification complainants' exhibit 204, and ask you to state, if you will, what that is?

A. This is a question-aire which was brought to my office by the secretary-treasurer of the City of Columbus, who requested that I supply the information to him for furnishing to the Tennessee Valley Authority in accordance with the request.

Q. And did you assist in the filling out of the blanks of that question-aire?

A. Yes, I secured all the information I could and supplied it to him.

Mr. Fitts: Will you read the preceding question and answer?

(Preceding question and answer read.)

Mr. Fitts: Of course, we move the Court to strike that part of the witness' answer, as to who was calling on him, if it was offered for the purpose of proving that later, as it is hearsay.

Mr. Bemis: Would you agree that this is a copy of the question-aire sent out by the Tennessee Valley Authority to all of the municipalities in this area?

Mr. Fitts: Of course, we cannot agree to it in that form, I know that before I start checking the authenticity of it. I do not know whether it was sent at all.

Mr. Bemis: Such question-aires, I believe, were included in the subpœna.

Mr. Fly: Yes. I will get this straight. I will state this, and we will concede this, because this is a fact that whenever requests or applications were received from municipalities, these blank question-aires were sent out in reply, and in compliance with the request received. They were never sent out except upon such request of the municipality

involved. That is the fact, and that is the fact we are willing to concede.

[fol. 237] Mr. Bemis: Of course, we cannot accept that statement without proof.

Mr. S. D. L. Jackson: We do not know whether they were preceded by a request or not. We do know they were sent out. That statement by Mr. Fitts adds an element on which we have no knowledge, and under the Court's present ruling, we have no way of proving.

Judge Allen: The question immediately before the Court is the motion to strike out the last sentence of the witness' testimony. That motion is sustained upon the ground the statement is purely hearsay.

Mr. Bemis: May we have an exception?

Judge Allen: You may have an exception.

Mr. Bemis: If the Court please, we offer in evidence complainants' exhibit 204.

Mr. Fitts: We object to the exhibit upon the ground it is not shown under what circumstances it was sent out, to whom it was sent out, or the witness has not shown that he knows anything about the question-aire.

Judge Allen: Objection sustained. You may have an exception.

Mr. Bemis: We reserve our exception.

Mr. Bemis: Might I inquire of the Court on what grounds the objection to the last exhibit was sustained, for my own guidance?

Judge Allen: The Court does not consider this admissible evidence. No connection is shown between the Tennessee Valley Authority and this paper. It mentions TVA in the paper, but nothing here to show under what circumstances it was sent out.

Mr. Bemis: We save our exception.

Mr. Fitts: I might say if complainants really want to show the fact here, we will furnish them with all of the applications from all of the municipalities in Mississippi to whom any of these question-aires were sent, if they were sent. We will be glad to do that.

Mr. S. D. L. Jackson: If it please the Court, I might state that is one specific thing mentioned in our subpœna, the question-aire of which this exhibit 204 is a copy, and a list of the people to whom it was sent. We will be very glad to accept this offer at this time to furnish the list of people to whom it was sent.

Mr. Fitts: That was not my offer. My offer is to furnish the applications in response to which this question-aire was sent. My only purpose is to get the facts straight.
[fol. 238] Mr. S. D. L. Jackson: That is our purpose, and if they will give us the list to whom the questionnaire was sent, we will be very glad to accept it."

Cross-examination:

All of the lines that were owned by my Company in the block at the top of the map were conveyed by my Company to the TVA, under the contract of January 4, 1934. That included lines in the counties of Benton, Tippah, Alcorn, Tishomingo, Prentiss, Itawamba, Lee, Pontotoc, and Union. It is not true that the only lines that appear here to be in the territory where my Company has lines, are lines owned and operated by certain municipalities or cooperative associations in the counties of Chickasaw, Monroe and Lowndes. The fact is that the TVA owns a line from Okolona to Amory, a 44,000 volt line. There is also a line from Okolona to Lee County which was transferred by my Company to the TVA. In the area operated in by my Company, the only line operated by the TVA is the 44 kv. line in Monroe County from Okolona to Amory. Rural customers could not be served off of that line. To render that service it would be necessary to build a substation and stepdown the voltage and build other lines.

I can point out on Complainants' Exhibit 199 the exact ownership of each of those lines. The city of Okolona owns the line to Van Fleet, and the lines east from Okolona, the line south down to Gibson and the line west to Buena Vista, down to Carradine. Prior to the creation of the TVA, the city of Okolona owned and operated its own distribution system and generated its own power. It did not purchase power from my Company. The city of Amory owns the line from Amory to Becker. Prior to the creation of the TVA, the city of Amory owned and operated its own distribution system and generated its own power and did not purchase power from my Company. The city of New Albany owns the line from New Albany to Myrtle, and Hickory Flat, Potts Camp, and to Blue Mountain, all this network to Blue Springs and down to Sherman and all of these [fol. 239] rural lines east of Blue Springs. The city of Holly Springs owns the line to Red Banks, Paska, Mount

Pleasant, Michigan City, which is now under construction, and down to Ashland. That is all of the municipally-owned lines, with the exception of a few short lines in the vicinity of Tupelo, which reach out a few miles.

With respect to lines owned and operated by cooperatives, the line in Tishomingo County from Iuka to Tishomingo, Dennis, Belmont to Golden and to the state line, are operated by the Tishomingo County Electric Association. The lines in Alcorn County, radiating north and east to Kendrick, and to the state line; west to Wenasoga; southwest to Kossuth, Biggersville, and Rienzi, and lines from Rienzi down to Thrasher, are operated by the Alcorn County Association. That leaves practically nothing except those main dotted transmission lines.

Our line from Okolona to West Point is a 44,000 volt line. In order to extend service from that line to Buena Vista and Trebloc, and McCandy, in Chickasaw County, we would have to build lines substantially identical with those lines that are shown in red in Chickasaw County, unless those lines were already there. Our line from Okolona to West Point, as it is now constructed, could not be used to serve the territory in the County of Chickasaw that is served by those lines. In order to give any service to those communities in that County, someone would have to build lines of this character shown in red in Chickasaw County. Along our Okolona-West Point line, the line between Prairie and Mulden and Strange is a low-voltage distribution line, of 13,000 volts, which is served from the substation of the 44,000 volt line located at Mulden. The line north from Mulden and Prairie serves the community of Prairie. The line also serves the community of Mulden and serves the rural customers and the community of Strange. That is the kind of [fol. 240] thing we would have to do in order to give service off of any of those 44 kv. lines. The yellow rural lines are from Columbus east to the state line approximately 8 miles, and Columbus northeast some 5 miles, from Columbus to Crawford, Brookville, 25 miles, lines serving Maben and Mathiston and rural customers in this area, in Webster County; a line from Calhoun City to Derma, to Vardaman. That is practically the same kind of line as the line around Birmingham and Guntown and Camp Creek. It is 6600 volts and these are 11,000. There are considerably more low-voltage rural extensions in the area above Chickasaw, Monroe and Calhoun Counties than there are in the area below.

In answer to the question how many of these low-voltage rural extensions in this territory above Chickasaw and Monroe were conveyed by our Company to TVA, the Company conveyed in Tishomingo County the 22,000 volt system from Iuka to Golden, a low-voltage line between Golden and Belmont, and also the line from Paden to Tishomingo. In Alcorn County, the Company conveyed this line east of Corinth for about four or five miles, the line from Corinth to Biggersville, and short extensions in the neighborhood of Biggersville. We had low-voltage lines from Booneville to Wheeler, to Baldwin, to Guntown, to Saltillo, to Tupelo, to Auburn, and a short extension out to Belden, about a mile or two. We had low-voltage lines from Tupelo to Pontotoc, serving the rural customers along that route. We had low-voltage lines from Tupelo, Belden, Shannon, serving the customers in that territory. We had a low-voltage line from Tupelo, north about three or four miles. We had a low-voltage line from Tupelo south to Verona, Shannon and Nettleton, with an extension west of Shannon about a mile or two. We had low-voltage lines from Myrtle to Hickory Flat, Potts Camp, to Blue Mountain. All of that was sold by us to the TVA under the contract of January 4, 1934.

It is my understanding that the line from Pontotoc to [fol. 241] Sardis Dam, going through Lafayette County, is the property of the United States Engineers, built to carry power to be used in the construction of the Sardis Dam. It is a 44,000 volt line. No rural business could be served off of that line without making substantial changes.

The voltage of the line from the state line to Burnsville is 110,000 volts, and the voltage at the present time temporarily from Burnsville to Tupelo is 44,000 volts. However, the line is constructed for 110,000 volts operation. That is what you call a high tension trunk transmission line. You could not serve any customers off of that line without stepping down the voltage and putting in substations and transformers and branch lines. The line from Burnsville to Tupelo through Booneville is a 44,000 volt line. Those two lines are owned by the TVA.

The lines shown on this map which are owned by the TVA, as distinguished from the municipalities, cooperatives and the United States Army, and the voltage of each, are as follows: The 110,000 volt line from the state line to Burnsville, and a 44,000 volt line from Burnsville to Tupelo; the Burnsville-Booneville-Tupelo, 44,000 volt line;

the Burnsville-Iuka-State Line 44,000 volt line; the Burnsville-Corinth 44,000 volt line; the Golden-Fulton 22,000 volt line; the Tupelo-New Albany 44,000 volt line; the Tupelo-Pontotoc 44,000 volt line; the Tupelo-Okolona 44,000 volt line; the Okolona-Amory 44,000 volt line; the New Albany-Ingomar 11,000 volt line, and the Potts Camp-Holly Springs 11,000 volt line. All of the lines shown in red on the map are owned by cooperatives or municipalities who are rendering direct service at retail.

The TVA is not now serving any customers previously served by my Company, either municipalities at wholesale or rural customers direct, within the area claimed by my Company, except customers who are served from facilities that were purchased from us under the contract of January 4, 1934. No municipality or cooperative association which [fol. 242] is purchasing power from the TVA at wholesale is selling power to any customer previously served by us, except customers served from lines conveyed by us under the contract of January 4, 1934. The line of my Company from West Point to Okolona is the line that was used for interchange with the TVA under the contract of January 4, 1934.

The city of Starkville had a city election and voted to acquire and operate its own distribution system. We purchased the plant and distribution system of the city of Starkville from the city. They had previously owned and operated their own system. After we purchased that system, the city had a discussion with some oil manufacturers at one time, before the TVA was created, in regard to going back into the business of owning and operating its own system. I believe they had a lot of lawsuits with our Company. It is not exactly correct to say that when we purchased the system they had previously operated, we got some agreement in the contract or in the conveyance which the courts interpreted as preventing the city from going back into the business. My recollection is there was no agreement in there other than just the purchase of the system from the city. It is a fact that they attempted to go back into the business, before the TVA was in existence, and they are now trying to go back into it again.

I do not know of my personal knowledge whether Starkville, Columbus or Aberdeen has a contract with the TVA for the purchase of power.

I know where the community of Pittsboro is. We had a request for service for Pittsboro from one individual, 8 or 9 years ago, and I do not recall any other requests [fol. 243] since that time. It is now being served by the Pontotoc County Electric Power Association. I would imagine that the Pontotoc Association is serving about 15 or 20 customers there. The Company has not made any survey or study or census of the number of farms in the State of Mississippi not receiving electric service.

Redirect examination:

The Company has made surveys of the entire rural territory, but we have never segregated between any other rural customer and farm service.

(The witness was excused.)

[fol. 244] FRANK B. OSTERMUELLER was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 47 years old, reside at Bowling Green, Kentucky, and am in charge of the industrial development of the Kentucky-Tennessee Light & Power Company. In the course of my duties, I am generally familiar with the electric power facilities in that section of the State of Tennessee where the Company operates its distribution and transmission facilities. My duties call me over the entire territory quite frequently. Our business in Tennessee is handled in districts. In the western part of Tennessee, we have what is known as the West Tennessee District and also the Paris District.

The map (offered and received in evidence as Complainants' Exhibit 205) represents or embraces the counties that are included in our West Tennessee and Paris District- in the western portion of the State of Tennessee. In these districts there are about 150 miles of 33kv. line, and about 50 miles of low voltage, 13,200 and 11,000 voltage lines. Of course, the yellow lines on the map do not show all of the distribution lines as they do not indicate the distribution within the city limits of the towns that we serve in that

territory. The lines in red represent those lines in the territory referred to that are supplying TVA power to the people in that community. All of those lines are owned and operated by the Gibson County Electric Membership Corporation. The map shows a heavy purple line from Jackson to Milan and a dotted line from Milan to Trenton, which are owned by TVA. The lines in red and purple were constructed by the TVA, that is by men and workmen who were using TVA equipment that had TVA licenses. All of the lines have been built since 1935, when I assumed [fol. 245] the responsibility for that particular territory, and my trips were frequent enough for me to see those lines in all stages of completion. The lines in green represent those owned by other utility companies from whom we purchase electricity, or to whom we sell electricity for distribution in this territory. I have reference to an interchange or connection at Fulton. That line belongs to the Kentucky Utilities, and we purchase from them at that point. The green lines from Huntingdon east are lines representing property of the Tennessee Electric Light & Power Company to whom we sell current at the Huntingdon station.

The seven counties shown on this map in the West Tennessee and Paris Districts run from the Mississippi River on the west over toward the Tennessee River on the east. Along the Mississippi River, the territory is mostly of a low land nature, the entire section being agricultural and mostly rural. Along the river in the low lands the principal crop is cotton, and farmed to a great extent by tenant farmers. As we go toward the east, the territory runs into the rolling low hilly country. There are no large cities in the territory at all, the cities of Paris and Dyersburg, each with a population of about 8,000, being the largest. Union City has about 6,000 population and there are a group of cities—Martin, Humboldt, Milan, McKenzie, cities of that nature,—which have 1,000 to 5,000 population. In that entire section of the country there is about 20% negro population.

The organizations that make up the Paris and West Tennessee Districts of the Kentucky-Tennessee Light & Power Company comprise about 35 men. Those organizations are made up of superintendents in practically all of the towns we serve, whose duty it is, in addition to taking care of the mechanical end of the business, to also be on the lookout

for expansion of business. Their reports are turned in to the District Office and checked up by men out of Bowling [fol. 246] Green, whose duty it is to call on these districts regularly, and review and make recommendations on such expansions as seem feasible or possible.

Although we have never made a general unit study of the untouched or potential business in this area or a study of the territory at one time, these men in the field have regularly made studies of their own immediate territory to find out the possibilities. There is an exceptionally small amount of untouched industrial power load in the territory. In Lake County, in Tiptonville, there is a small cotton mill which at the present time uses steam for generating power. It is on our line and we are serving it electricity for smaller uses.

In the territory we have four ice plants which, at the present time, use steam as a means of operating their plants. They are located in various sections of the territory and are also served by our Company lines, but they are small users. There are various flour mills, railroad shops and hamper mills. Those hamper mills use refuse lumber for fuel, which practically eliminates their use of our service. About 75% of them use a small amount of current from us at the present time. The only other industrial load that we may class as such is highly seasonal business, by which I refer to cotton gins which are spread all through the communities in this section, and which is primarily a small business. In most of those cases we have connections serving light to them while they are operating. I would say 75% of those gins buy lights from us. All of these industries to which I am referring use steam and that equipment would have to be replaced before we could sell them energy for their entire use.

There is no untouched commercial load in this area to speak of. The only thing that I could mention in that connection would possibly be crossroad garages, stores, things of that nature, which are few and far between.

[fol. 247] With respect to the untouched domestic demand in this territory within reach of our existing lines, there are approximately 2,000 houses that are not using our service at the present time, even though they are within reasonable distance of existing lines. Most of these homes are small, two and three room cottages, quite a few tenant

shacks out on cotton plantations. In fact, it is a very poor class of people who are not using our service now. In that section we have in round figures about 6,000 customers, and about 2,000 that are not availing themselves of the service. Depending on how you figure, that would either be 25% or 33⅓%. In the rural area, our percentage runs about fifty-fifty, meaning for each customer that we serve there is one that is not availing themselves of that benefit, and in the towns that would run about 75% to 25%—about 75% using current and 25% not.

With respect to unattached houses in this area which are not within reach of any existing distribution lines, there are three counties in the eastern portion of this block that are not receiving TVA power of any kind. We operate in the greater portion of each of these counties, and the existing untouched business in that section is pretty much along the lines of what I have described in this other section. In fact, I doubt whether there is enough business to justify the erection of transmission lines to bring current into that section. In Henry County, which is the northeast portion of the block, we operate in the City of Paris, which has something over 8,000 population. About two years ago the City of Paris had an election authorizing bonds for the purchase or erection of their own distribution system. Within the last thirty days the Administration of the City of Paris has signed a contract with the TVA for service in that community. I understand a 44,000 line will extend from Milan to Paris and serve this business when ready to take service. [fol. 248] If they build that transmission line up in that section, naturally they will be able to place substations under the line and take care of some of the business in that section But as a whole, I would say the domestic business in that section is not very much. It is pretty scattered, because that is a rolling country up through there. I would say it is not any better than the unattached domestic business which is within reach of existing Company lines, but which does not avail itself of service.

I am familiar with the minimum requirements of the Tennessee Valley Rural Cooperative or Neighborhood Plan—662 kilowatt hours per mile per month on lines constructed. From the surveys we have made from time to time there is substantially no unattached domestic business in this territory that could be served under the 662 kilowatt hour requirement.

A good portion of the lines shown in red on this map, Complainants' Exhibit 205, representing the lines owned and served by the Gibson County Cooperative Membership Association, are so located that they could be served from our substations in that particular locality. Of course, there would be a small amount of work necessary, a little line extension, or possibly an increase in some transformer capacity. It would not be a big job to take care of the lines in our territory, as our lines have sufficient carrying capacity. I mean by that that our lines have sufficient unused capacity, so that assuming that we did have the generating capacity we could serve this system of lines from our existing transmission system. In addition to the town of Paris, the town of Newbern in Dyer County in this district had an election last month which authorized a bond issue for the purchase or construction of a municipal system to use TVA power. There are some other towns in the area now being served by the Kentucky-Tennessee Light & Power Company which have voted in favor of acquiring a distribution system to use TVA power, but they are outside of [fol. 249] this district. One of them is Clarksville in Montgomery County, and the other is Gallatin in Sumner County.

Cross-examination:

The smaller lines in red on Complainants' Exhibit 205 indicate the lines owned by the Gibson County Electric Membership Corporation. Outside of the cities such as Trenton and Milan, there are approximately 1,000 customers served by the lines of the Gibson County Corporation. None of those customers were previously served by my Company.

There are quite a number of towns and cities in the claimed territory of my Company shown on Complainants' Exhibit 205 which own and operate their municipal distribution systems. Union City in Obion County, with a population of around 6,000 people, has its own distribution system, generating its own power. In Dyer County, the City of Dyersburg, with somewhat better than 8,000 population, has its own distribution system and generates its own power. The City of Dyersburg does not happen to be shown on this map, but it is about ten miles southwest of Newbern. In Gibson County, Trenton owns its own distribution system. It was and probably still is generating

its own, or some of its own, power, but has a contract for TVA power. The City of Milan had its own generating and distribution system but is now using TVA power. All of these cities owned and operated their own distribution systems and generated their own power and did not purchase power from my Company before TVA.

The City of Paris still owns its own distribution system. We merely have it leased from them. The lease arrangement was entered into eight or nine years ago. I couldn't answer the question whether subsequent to that leasing agreement the City of Paris made any effort to draw out of the arrangement and operate its own system as I have not been up in that territory that long, but since I have [fol. 250] been up there, there has been no such effort. I have been in that section a little over two years. I do not know specifically whether a lawsuit was filed by the City of Paris previous to 1933 to draw out of this leasing arrangement. I know there have been lawsuits, but I don't know what they were all about.

Examination by the Court:

There is a lawsuit pending in the eastern division of the western district of Tennessee, Kentucky-Tennessee Light & Power Co. against the City of Paris, which has been set for trial December 27, 28 and 29, 1937. That case is a case against the PWA grant or loan in connection with the City of Paris.

Cross-examination continued:

I really don't know what our surplus generating capacity is. I know that we have generating power at Mayfield, and we also have an interchange, or purchase contract with the Kentucky Utilities at Fulton. That is all I know about it. I am generally familiar with the Company's sources of power supply, but I am not familiar with any plans it might have to obtain an additional power supply in the future. I have never heard any discussion between, or had any discussion with other officers or employes of my Company with regard to a possible purchase of power from TVA. I am not an officer and I have had no discussion with anyone on that subject. I don't have any figures as to the amounts of sales

in Tennessee in kilowatt hours in recent years since I came to this area. Without giving any detail, I could state that the kilowatt hour sales of the Company have increased as years have gone by. I think it is correct to state that 1936 was the high point for the Company of kilowatt hour sales.

In answer to the question whether Complainants' Exhibit 74, a map of the territory of the West Tennessee Power & Light Company, does not include Gibson and Dyer Counties [fol. 251] and the territory in which are located the towns of Milan, Gibson, Trenton, Dyer and Obion and which are also shown on Complainants' Exhibit 205 as territory claimed by our Company, you will note from our map that the yellow lines representing our distribution system only covers a portion of those Counties. We operate only in the northern half of these three lower Counties.

When speaking of the amount of load within reach of my Company's lines, I regard within reasonable reach as being within anywhere up to 500 feet. In answer to the question whether I would describe the southern and central portions of Gibson County as within reach of our Company's lines, I would not even call that our territory, because that is served by these other communities and the other utilities.

In order to serve the lines of the Gibson County Corporation with the existing lines in our territory, we would have to take the same minor steps that we do to our own distribution. We would have to step it down from 33 kv. to whatever voltage was necessary as we are doing at the present time for our own service in our substations at different points in that territory. We would not have to construct a substation, as we have substations at various points at the present time. It happens that these lines of the Gibson County Electric Membership Corporation are practically up against the towns in which we have substations, so that it would merely mean a matter of connection. Troy, where the lines of the Gibson County Corporation practically encircle the City, is one of such instances.

The red lines on Complainants' Exhibit 205 which represent the lines of the Gibson County Corporation run through the Town of Obion, but not through Troy or any other town. There would have to be a connection made at Troy between our substation and the lines of the Gibson County Corporation, and that connection would be in the form of an additional line which would have to be con-

[fol. 252] structed. I understand that the lines belonging to the TVA between Jackson and Milan and the proposed line or line under construction between Milan and Trenton, are 44 kv. transmission lines. The rural lines that our Company has in this section are mostly small lines running out of the towns in which we operate, and in most cases they would be too small to show on this map, Complainants' Exhibit 205. There are a few that can be seen, coming out of Martin, for instance. We have a total of 71 miles of rural line, most of it in small stretches outside of the cities. I have no knowledge with respect to the Brown Shoe Company near Union City. In answer to the question whether there are any large industrial customers in Clarksville, Tennessee, that we are not now serving, I think we have that territory pretty well covered. We serve such concerns there as the American Tobacco Company and the Dunlap Milling Company.

Aside from the contract between TVA and the City of Paris, I do not know of the existence of any contract between TVA and any other city or town in my territory.

I am not familiar with the capital structure of my Company and do not know whether any of its securities are outstanding in the hands of the public.

Redirect examination:

Clarksville is about 65 miles east of the City of Paris, and it is located in Montgomery County. It is not in the West Tennessee or Paris Districts of the Kentucky-Tennessee Light & Power Company. It was clear to me in my direct testimony about the extent and character of the unattached industrial demand that I was referring to the territory described as the West Tennessee and Paris Districts, and my testimony had reference to those two districts, and the same is true in reference to my testimony as to the unattached commercial and domestic demand.

(The witness was excused.)

[fol. 253] Charles A. Collier was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 49 years old, reside in Atlanta, Georgia, and am Vice President of the Georgia Power Company.

"Mr. Fitts: May it please the Court, I would like to inquire before we waste any more time with this witness, whether or not it is the purpose of the complainants to attempt to elicit from this witness testimony as to the situations in the state of Georgia, as to the territory or claimed territory of the Georgia Power Company? If it is, I think any such testimony is clearly inadmissible in this case. The Georgia Power Company has been enjoined by the District Court in Georgia, which injunction has been affirmed by the Circuit Court of Appeals for the Fifth Circuit from further proceeding in this case, since they already have a case pending in the District Court in Georgia, which fully covers the situation, that was pending at the time this case was filed.

Under those circumstances the Georgia Power Company clearly cannot seek any relief, or produce testimony on its behalf.

In event the purpose is that the other complainants are going to prove what has happened or may happen in the state of Georgia to justify relief in their behalf, although neither of the complainants has a legal interest in what has happened or may happen in the state of Georgia, and no legal right to protest about the same, and whatever happened there is completely outside of the scope of the issues in this case.

Mr. Bemis: If the Court please, this witness is not called to testify in behalf of the Georgia Power Company.

Judge Allen: If you are a resident of the state of Kentucky, or Tennessee, are you in position to question on behalf of the state of Georgia that the state rights of the State of Georgia are being violated?

Mr. Bemis: Well, I think we have a right to consider anything on the question of whether or not the defendants have exceeded the constitutional powers which have been delegated to them by the Federal Government.

[fol. 254] Judge Allen: Just what do you expect to show?

Mr. Bemis: We expect to show what lines have been constructed, what operations have been conducted in the state of Georgia. We would like also to show what business, unattached business there is in the area, because one of the things which we are undertaking to show with respect to all of the area which is within the radius of the Tennessee Valley Authority distribution and transmission system is, the amount of power which can be produced and used. To

do that, we will show the reasonableness of apprehension by the other complainants, as to the sale of power to their own consumers.

Judge Allen: The specific question on which the Court would like to be enlightened on is, how a threat to the Georgia Power Company in Georgia is a threat to you, in Kentucky, Tennessee, Alabama, and so forth? That is the specific question."

(At a subsequent session of the Court the admissibility of the testimony of the witness Collier was argued orally by counsel for complainants and the scope and purpose of the testimony was further explained:)

"Mr. R. T. Jackson: The scope of the testimony which we propose to elicit from Mr. Collier is limited generally to showing the extent of unattached load within the area within reasonable transmission distance of Tennessee Valley Authority dams, generating plants, or other power pool; second, the extent of the attached demand within that same territory; and third, the extent of that part of this unitary single Federal utility of the Tennessee Valley Authority which lies within the state of Georgia. Those are the limits of the testimony in a general way.

The purposes for which we offer this testimony are primarily these: First, on the issue that the plaintiffs are inevitably and necessarily threatened with irreparable damage by the consummation of this plan for a vast Federal electric utility in this area; that such a utility may not be carried to completion as it is now in progress of construction, and the output marketed without displacing in whole or in part the business of these plaintiffs.

The second purpose is to show that this vast Federal utility is of such size that as a necessary result it invades the reserved powers of the states, and the people as it is said in the Ashwander case that the Federal Government may not do under the power to dispose of property.

* * * * * * * *

Judge Allen: The Court has considered this matter since Friday. It has had the benefit of two briefs on be- [fol. 255] half of complainants during that time, one of course, being on the general aspect of the case, but then of some pertinence, at least counsel for the complainants cer-

tainly hope they do, and the Court also think they do. The ruling of the Court is that it will not receive the testimony of the witness Charles A. Collier. The Georgia Power Company is not a party to this hearing and cannot pray for any relief here. The other complainants have not such an interest that they can pray for relief on behalf of the Georgia Power Company, nor that they can seek relief for themselves predicated upon alleged injury to the Georgia Power Company. If the testimony of this witness is to be received, testimony as to damages to other power companies within the 250 mile radius of any of these dams in Kentucky, Arkansas and so forth, should likewise be received, whether or not such companies are parties to the suit. This would result in interminable delay and in the reception of a vast mass of incompetent, irrelevant and immaterial evidence.

This ruling applies not only to the testimony of the witness Collier, but also as to the other operations of the Tennessee Valley Authority in Georgia. You may have your exception.

Mr. R. T. Jackson: And may I make the record clear, may we also have the record show at this point that this evidence is not proffered for the purpose of seeking any relief whatsoever, or any injunction against the operations of the Tennessee Valley Authority in Georgia, anything of that character, but solely upon the grounds, or at least on the question of whether this unified power plan is constitutional.

Judge Allen: You may have your exception.

Mr. R. T. Jackson: And I presume we can make our offer of proof.

Judge Allen: We suggest that counsel dictate to some stenographer what this witness would testify, then the Court will have a clear knowledge of what the witness will show.

Mr. Bemis: I presume the Court would like to have that done then outside of the time the Court is in session, that you would prefer I do that later rather than at this point.

Judge Allen: Yes, let it go in at this point.

Mr. R. T. Jackson: We will have to work pretty hard to work day and night and then dictate our offers to prove.

[fol. 256] Judge Allen: The Court is concerned in not having the record covered with verbatim testimony of the witnesses, when it is not necessary in order to preserve your exception.

Mr. R. T. Jackson: May we have an exception to the ruling of the Court?

Judge Allen: You may. The Court is proceeding now under the Equity rules."

[fol. 257] (At a subsequent session Counsel for complainants submitted the written statement of an offer to prove with respect to the excluded testimony of Mr. Collier and the following occurred:)

"Judge Allen: This was not exactly what the Court meant as to length, Mr. Bemis. Will you let us look it over, please?

Mr. Bemis: Yes.

Judge Allen: Proceed.

Mr. Bemis: The general nature of the testimony expected from the witness Collier, having been generally stated and discussed, and the Court having ruled that none of it should be received, and the complainants' having reserved an exception to the ruling, now present the following statement of the testimony which the witness would give if permitted.

1. The map——

Judge Allen: The Court does not, as it has indicated, the Court does not look with favor upon reading into the record long offers to prove. Under Equity Rule 46 the requirement is that a clear statement shall be given of the nature and character of the testimony relied upon. The Court cannot at this time remake, rewrite the more than three closely written, closely typewritten pages that have been offered here. The Court will do that later.

Mr. Bemis: Well, if the Court please——

Judge Allen: It is our view, stated distinctly, that as in an accident case, if you offer a witness to testify that he saw the accident, and that such and such a thing happened, you don't in your offer to prove give verbatim or in detail the testimony of the witness. You say the witness if permitted to testify would state that he was present at the scene of the accident, and that he saw the automobile strike the woman. Isn't that so?

Mr. Bemis: Yes, if the Court please, but there are a number of exhibits here.

Judge Allen: Yes.

Mr. Bemis: Which are in connection with the offer.

Judge Allen: This Court will consider this offer and will reframe it in accordance with Equity Rule 46, and in the

future the Court will ask counsel on other offers to prove, to make the offer very succinctly in accordance with Equity Rule 46, and we will proceed with the case. Perhaps the Court has not made it plain. It is our deliberate and unanimous opinion to confine this case within practicable limits. [fol. 258] Mr. Bemis: Well, we may have an exception, if the Court please. Now, we have endeavored to confine our offer to prove to as condensed——

Judge Allen: Let's proceed with the case. Another point that the Court would like to make plain to counsel, with great friendliness, is that when the Court has ruled against counsel, we hope to go on with the case. You have your exception, and we shall proceed with the case.

Mr. Bemis: Well, may I do this, if the Court please? The Court has taken, as I understand it, for further consideration, the offer to prove, which is submitted in writing.

Now, that offer to prove has reference to certain exhibits which we wish to make a part of the offer to prove, and for the Court's information I would like to have the Court see what those exhibits are because otherwise the offer which has been submitted would not be self-explanatory.

Judge Allen: All right."

(At a subsequent session, after the Court had examined the written offer of proof, submitted by complainants, of the witness Collier's testimony, the following occurred:)

"Judge Allen: The Court at this time will rule upon the question of the testimony of the witness Collier, which has heretofore been excluded:

Referring to Equity Rule 46, reading a part of it:

'Where evidence is offered and excluded and the party against whom the ruling is made excepts thereto at the time, the Court shall take and report so much thereof, or make such statement respecting it as will clearly show the character of the evidence, the form in which it was offered, the objections made and the rulings and exceptions.'

Now the objections and rulings are no part of the controversy here. The Court requested counsel to make such succinct offer as possible. The Court has examined the offer of proof with reference to the testimony of the witness Collier. That testimony relates to two maps and a table. The Court has struck out of the offer of proof the

description of the maps, because the maps and legends carried therein their own description. The Court will now read that part of the offer of proof which it considers clearly shows the character of evidence, in the form in which it was offered. The form in which it was offered has already appeared in the record.

The Witness Collier, if permitted to testify would state [fol. 259] that the map shown to him and marked for identification complainants' exhibit 329 accurately represents the territory in northwest Georgia known as the Dalton Division of the Georgia Power Company; and the transmission and distribution lines of the Georgia Power Company therein.

The witness if permitted to testify, would further testify that: The map shown to him and marked for identification complainants' exhibit 330, is a map of the State of Georgia showing the transmission and distribution system of the Georgia Power Company and the municipalities in which the Georgia Power Company owns and operates distribution systems.

The witness would further testify that the Georgia Power Company has studied the unattached and potential business in the territory served by it, and that there is no substantial unattached industrial electric power business in the State of Georgia; and no substantial unattached domestic or commercial demand which could be served under the stated minimum requirement of the Tennessee Valley Authority's rural electrification or neighborhood plan, beyond the easy reach of existing company distribution facilities.

The witness would further testify that the tabulation shown him, and which is marked for identification complainants' exhibit 331 accurately shows the Georgia Power Company's number of customers and total kilowatt hour sales within the respective zones referred to therein for the years stated thereon respectively, the figures being taken correctly from the books and records of the company.

The witness would further testify, if permitted to testify, that he has read the testimony of David E. Lilienthal, as found on pages 476 to 483, inclusive, of complainants' exhibit 116, and the table appearing on page 483 of complainants' exhibit 116 which specifies 13 prospective customers to be served by this proposed TVA system; the first 12 are now receiving all of their power requirements from the Georgia Power Company under written contracts, which

have from one to ten years yet to run; the Cave Springs Paper Mill at Cave Springs, Georgia, has been interested by the Georgia Power Company in constructing a plant at that location.

Mr. R. T. Jackson: If your Honor please, we do not want to make any unnecessary objection. May we have the privilege of checking this statement with ours, to see if anything material is omitted and not interpose an objection unless we do?

Judge Allen: You may."

[fol. 260] (Thereafter Counsel for the complainants submitted to the Court the following request for the amplification of the offer to prove as revised by the Court respecting the excluded testimony of the witness Collier):

"It is respectfully suggested that although the offer to prove dictated by the Court in connection with Mr. Collier's testimony is in the main a succinct statement of what Mr. Collier would have testified if he had been permitted to do so, there is, however, certain material information in connection with Complainants' map exhibits 329 and 330, which does not appear on the legends on those exhibits. It is therefore suggested that in order to make the offer to prove complete, the following changes should be made:

1. The first paragraph should be changed to read: 'The witness Collier, if permitted to testify, would state that the map shown to him and marked for identification Complainants' Exhibit 329, accurately represents the territory in Northwest Georgia known as the Dalton Division of the Georgia Power Company, and the transmission and distribution lines therein; that the lines of the North Georgia Electric Membership Corporation shown thereon were constructed by the Tennessee Valley Authority and are now distributing TVA electric energy; and that the lines in green thereon are mainly lines of the Tennessee Electric Power Company.'

2. The second paragraph should end with a semi-colon rather than a period, and the following additional phrases added thereto: 'that the arcs shown thereon are drawn from Chickamauga, Guntersville and Hiwassee Dams as centers; and that the red lines in the northwest corner thereof are proposed TVA transmission lines as shown in the testimony

of David E. Lilienthal on pages 476-483 of Complainants' Exhibit 116.'

3. It is further suggested that the record should indicate that these Exhibits 329, 330 and 331 were excluded and that Complainants excepted to their exclusion."

(At a subsequent session, the Court made the following ruling with reference to the foregoing request:)

"Judge Allen: The Court wishes to take up one or two preliminary matters. The offer to prove made by complainants in connection with Mr. Collier's testimony may be amended as requested by complainants. Let the record show that complainants' exhibits 329, 330 and 331 are excluded and the complainants have excepted to their exclusion. These exhibits are rejected because on their face they show they relate mainly to operations of the Georgia Power Company, which has been enjoined from seeking relief in this case. Let the record also show that maps of the State of Georgia which show operations other than the Georgia Power Company will be received in evidence if otherwise competent, relevant and material."

[fol 261] D. R. Bonner was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I am 35 years old, reside in Harriman, Tennessee, and have been District Manager for the North Tennessee Division of The Tennessee Electric Power Company since July 1, 1935. Prior to that time, I was Local Manager for the Company at Clinton, Tennessee, which is in the same district.

The North Tennessee District is comprised of 16 counties and parts of 4 other counties, extending from near the Kentucky line at Jellico and southwestward to the Tennessee River near Kingston, Tennessee, thence northwestward to the Kentucky line near Westmoreland, Tennessee. From my knowledge of that territory as District Manager, I am familiar with the distribution electric power facilities in the district.

The map (offered and received in evidence as Complainants' Exhibit 206) shows the territory which comprises the North Tennessee District, and the distribution lines and transmission lines located in that district including the transmission and distribution system of The Tennessee Electric Power Company in this area. However, it does not show the entire distribution system of the Company. It does not show a lot of the lateral rural lines, and the distribution systems within the towns which it would be impossible to show on this small a map. The red lines represent lines that were built within this area to distribute TVA power. Practically all of those lines were built since 1935, and they were built by crews using TVA trucks with TVA licenses and, in some instances, the men were wearing TVA identification buttons. The broad purple line represents the transmission line of the TVA from Wilson Dam to Norris Dam. That line was not, as [fol. 262] I understand it, constructed by men using TVA equipment. I have heard that it was constructed by a contractor. The other purple lines in and around Andersonville are the TVA distribution system, and that was built by TVA men. Both the lines shown in red and the lines shown in purple are lines which either transmit or distribute TVA power.

The Tennessee Electric Power Company has in this area approximately 72 miles of 66 kv. line and approximately 27 miles of 44 kv. line. They have under construction at the present time from Sparta to Cookeville a 44 kv. line, which will be underbuilt with a 6900 volt line for serving the rural area along that line. I believe that the total amount of distribution lines in that area is 919 miles of which, leaving out the distribution lines within the incorporated towns, 719 miles are rural lines of 11,000 volts and below. Of course, some of those are transmission lines between communities. Those lines that are colored in green on the map are lines that are owned by someone else other than The Tennessee Electric Power Company, and that are not distributing TVA power.

The lines in the upper lefthand corner of the map are lines that are now under construction by the Tri-County Electric Membership Corporation; and these lines in the eastern section serving Woolridge, I believe, belong to the Kentucky Utilities.

In the northern and eastern section, the geographical character of the territory in my district is very mountainous. I would say that extends from the extreme eastern portion over across the Cumberland Plateau to around and near Cookeville and Sparta, and in that area is located practically all of our industrial consumers. Our industries are made up of textiles, paper manufacturing, plow manufacturing plants located principally around the larger towns of Rockwood, Harriman and Clinton. Then, [fol. 263] up in the eastern section we have our coal mines, large coal mines which are located around Coal Creek in the LaFollette area and around Petros. The balance of that area is very mountainous and has scattered and small communities. The western section of the district is made up primarily of agriculture and, in fact, that section is given over largely to the growing of tobacco in and around Carthage and in the valley of the Cumberland River. The extreme northern section is made up of rolling territory and is still given over to agriculture around Celina and Livingston.

I would say the principal load centers are around Rockwood, Harriman and Clinton. Harriman is a town of around 8,000; Rockwood, rather close to 5,000; Clinton about 3,500. Those are not census figures, but what we consider to be about the size of those towns.

The Company is continually making studies of the potential unattached business in the area. That work is carried on by our 9 local offices in the district under the supervision of the Local Manager. In fact, all of our employees are gathering various information at all times and carry that to the Local Manager, who, in turn, makes a study of it. We have 145 field employees in the district.

From the studies I have made I would describe the character and extent of the unattached industrial business in this area as follows: There are 10 unattached industrial customers that use process steam in their manufacture, and therefore generate their own power. However, 7 of these do take a small amount of power from The Tennessee Electric Power Company, and all of them are along existing Company lines. In addition to that, there is another group of 13, which do not use steam processing. They are made up, I would say, of 3 groups, coal mines, clay manufactur- [fol. 264] ing plants and large saw mills. In the case of coal mines, there are 7 unattached, 2 of which are along

existing Company lines, and one of those is receiving about 50 per cent of its demand from the Company. The others are not along existing Company lines, but in widely scattered territory. Then, we have one clay manufacturing plant which is not on existing Company lines and has been operating intermittently for the last several years. In addition to that, I believe we have 5 saw mills and planing mills which are located in this area. There are 5 of these planing and saw mills and 4 of them are within reach of our existing facilities. Two of them are taking a small amount of power, and all of them have a great amount of refuse which they use to generate their power. All the unattached industrial consumers in this territory have existing plants which it would be necessary for them to scrap or abandon in order to take power from any central station system. I have now described all of the unattached industrial business in this area.

Referring to the extent of the unattached commercial business in my district, which is a very mountainous territory and with widely scattered population, it is made up of just a few scattered country stores and filling stations, non-electric commercial consumers. Of course, in that group is a limited number of small saw mills, grist mills, which operate intermittently and move from place to place.

The unattached domestic demand within reach of the present lines in this district is made up primarily of people in the lower income group and tenants. In the majority of cases, they are not able to take electric service, not able to pay for it, and in lots of instances, they have not even been able to wire their homes. I had a survey made of the unattached houses within reach of existing Company lines, and we did not consider them within reach unless they were within 1,000 feet of a line. Outside of the incorporated towns there were approximately 4,100 unattached homes [fol. 265] within reach of existing Company lines in the area. That represents about 45 per cent of the total business that might be available.

The unattached domestic demand in the district, which is not at the present time within reach of existing distribution lines, is made up of greatly scattered rural dwellings throughout the district and, in the majority of cases, I would say that they are even less able to take power than those that are unattached along the present existing lines. They are made up of scattered, in lots of cases, mountain people,

people of the lower income groups, and in the agricultural sections, some tenants.

I am familiar with the TVA Rural Cooperative or Neighborhood Plan for line construction of 662 kwh. per mile of line per month, and I am familiar with the regulations of the Railroad and Public Utilities Commission in Tennessee affecting rural extensions on the part of The Tennessee Electric Power Company. We made a study of the extent of the unattached domestic demand that could be served within the minimum requirements of the TVA's so-called Neighborhood Plan or under the minimum requirements of The Tennessee Electric Power Company Rural Electrification Plan and, in my opinion, there are approximately 11 projects that might be servable under either of those plans. They are widely scattered throughout the entire district and represent about 60 miles of line. Those extensions to which I refer are not, in the majority of cases, within access or reach of the TVA power in this area. In other words, I would think that it would be necessary to extend the transmission facilities of the TVA to be able to serve all of those extensions.

The distribution lines which have been constructed and are now being served by the TVA in this area could be [fol. 266] served from the power facilities of The Tennessee Electric Power Company. The distribution lines in the Clinton area, Norris Dam and Anderson County, could be served from the distribution system of the Company at Clinton. The lines in Rhea County and Cumberland County of the Meigs County Cooperative could be served either from the Company's distribution system at Crossville or its distribution system at Spring City. In fact, I think we would serve them at both points.

By noticing the map, Complainants' Exhibit 206, you will see that the facilities of the TVA in this district have been extended adjacent to the lines of the Power Company, and therefore, have taken away the potential market for the extension of our lines in that territory. If we were to interconnect our system or extend our distribution lines out to the more remote rural sections, it would be necessary for us, in lots of cases, to parallel the lines distributing TVA power. And for that reason their lines being constructed in those territories do represent an economic block.

"Q. Mr. Bonner, I show you what has been previously offered in evidence as complainants' exhibit 187 and ask you to state whether or not that circular was distributed generally in your territory in the state of Tennessee?

A. Yes, it was.

Mr. Fly: We object to that as irrelevant, your Honor.

Judge Allen: The objection is overruled for the present. Find out how he knows of it.

Mr. Fly: That, if your Honor please, is the excluded exhibit.

Q. Mr. Bonner, do you have any knowledge as to the distribution of the pamphlet which I have just shown you?

A. Yes.

Q. Have you seen this pamphlet in the hands of any of your customers?

A. Yes, we had—I was local manager——

[fol. 267] Judge Allen: Did you see anyone distribute that pamphlet?

The Witness: No ma'am. I received mine through the mail.

Judge Allen: The Court sustains the objection. You may have your exception. There is no direct connection shown between the Authority and the distribution of this pamphlet, and for the time being, the Court will ask that insofar as counsel may, when an objection and exception are made with reference to the same kind of testimony or the same testimony or the same evidence that has already been excluded,—the Court will ask counsel to proceed, because the grounds of the objection and the exception and ruling already appear in the record.

Mr. Bemis: Yes, if the Court please, and I do not intend to duplicate that portion, but there had been no evidence as to its distribution in Tennessee. That was the purpose in this instance.

Judge Allen: You may proceed. The court is endeavoring to help both litigants by excluding cumulative, purely cumulative testimony in this case. We are trying to help both litigants by doing that. So, when the point has been definitely made and definitely ruled on by the Court, and falls definitely within the same legal ruling, it is not necessary to discuss it.

Mr. Bemis: And we may have our exception?

Judge Allen: You may have your exception.

Mr. Bemis: To the Court's ruling. I don't want to disregard the Court's suggestion, but I would like to ask one further question. The witness has said this was received by him in the mail.

Q. Can you state whether or not, Mr. Bonner, that was received in a franked envelope?

A. Yes, it was."

The pamphlet heretofore offered and received in evidence as Complainants' Exhibit 188 is a copy of one I received and I have seen this pamphlet at Norris Dam and also at Wilson Dam.

Examination by the Court:

I did not at any time see this pamphlet, Complainants' Exhibit 188, distributed other than at the points I have mentioned.

[fol. 268] Direct examination continued:

"Q. I show you what has been marked and previously offered as Complainants' Exhibit 189. If the Court please, this is another pamphlet. In this case this pamphlet was excluded. And I ask you to state whether or not you have any knowledge of the distribution of that pamphlet in Tennessee or in your district?

Mr. Fly: We renew our same objections to that as heretofore.

Judge Allen: The exhibit will be excluded, under the ruling heretofore made by the Court, and you may have your exception.

Mr. Bemis: Yes, exception, and I offer to show that if the witness were permitted to answer he would testify that the pamphlet of which complainants' exhibit 189 is a copy was distributed at Wilson and Norris Dams."

[fol. 269] Cross-examination:

I think the distribution lines of the TVA which I spoke about, the small purple lines, are considered low-voltage

lines. I do not know just exactly what voltage. We consider them as 11 kv. lines. I do not know whether it is 11 kv. or 12 kv. or 6.9 kv. or just what, but it is somewhere in the neighborhood of 11 kv. I cannot give just one answer to the question as to how long The Tennessee Electric Power Company had any transmission or distribution lines up in the territory shown on the map around Coal Creek, Petros coal fields, Wartburg and Oakdale. It has been a progressive proposition. The first line was built in this area before I came with the Company, so I do not know just when that was. I came with the Company in 1925 or 1926, but I was not in that territory until around 1930. The lines were there then. I do not know whether or not before 1925 there was a substantial bit of transmission and distribution line in this territory. The first time I was ever in that territory was around 1930, and there was a substantial block of transmission and distribution line in that territory then. In reference to the load that is now being served off of the TVA lines, which I spoke of as being a potential load for The Tennessee Electric Power Company, there was part of that load that was unserved by the Company during the years 1930 to 1935. Before 1935, The Tennessee Electric Power Company was serving a part of the customers that are now receiving power from the small lines in purple on the map. The Glen Alpine to Andersonville line was being served at that time. The Tennessee Electric Power Company sold to the TVA that eight miles of line from Glen Alpine to [fol. 270] Andersonville. I think it is right to say that the only customers that are now being served on those lines, that were being served by The Tennessee Electric Power Company prior to 1935, are customers off the line which The Tennessee Electric Power Company sold to the TVA.

I think the line shown in yellow on the map, running from Oliver Springs down to Robertsville and to Wheat, with an extension from Robertsville back up into the neighborhood of Dossett, was built by The Tennessee Electric Power Company in the latter part of 1936. I believe that the mileage of that line is approximately 16 or 18 miles all told. I do not have the figures with me, but I can check it and give you the exact mileage. It is somewhere in the neighborhood of 15 or 20 miles, I think. I am familiar with the territory. We are serving a very few customers off that line, because at the time we built that line, by word of mouth and through the press it came out that if the

people received service from The Tennessee Electric Power Company, they would not receive any service from the TVA. O course, they wanted to get as cheap electricity as they could, which acted as block to our obtaining those customers. I should say that there were not to exceed 20 customers, which is about one customer per mile, actually receiving service from the Company.

I would not say that we went in and constructed that line without knowing how many customers we would be able to serve off that line, or knowing that the number of customers we would be able to serve were a very few. We made a study of that, and not only that, we contacted consumers and had many consumers signed up who, after it was known the TVA was going to build a parallel line, cancelled their contracts with us. I do not know when I first knew that the farmers in this area, along this line, were making surveys, finding out how much load they could secure along that line if it should be built. It was my understanding that through Mr. Moses of the TVA, the TVA had pretty well covered that whole area of the Com-
[fol. 271] pany in making surveys. I do not think I knew of my own knowledge that there were any surveys being made, but I heard surveys had been made over the entire northern Tennessee district. If I remember correctly, these surveys were being made in the North Tennessee District, pretty well over the whole district before we started to build this line. I cannot answer the question whether this was a long time before this line was built, because I do not know. I cannot answer yes or no to the question whether at any time before we started to construct this line, I knew that surveys had been made. I knew that the people in that area had been discussing power, but I did not know that there had been an actual survey made, and I did not see any stakes that had been driven. I do not know the average customer density along the line running west out of Clinton, northwest to Coal Creek. The suggestion that the density is somewhere in the neighborhood of 21 customers per mile sounds high to me. I would have thought it would have been around 12 to 15 to the mile. You may be right however.

Redirect examination:

There is a purpose in the construction of the line to Oliver Springs other than the rural business which might

be attached. That line was, or it has been our plans for a good long time, to eventually tie the Clinton distribution and the Oliver Springs distribution systems together, and it is so constructed that when and if ever we want to tie those two together, we will only need to add a third wire up to where the route turns off to Dossett, and then construct a short line in between that and the distribution system of Clinton, and tie those two towns together. Tying the two towns together would give Clinton and Oliver Springs two sources of supply, which would tend to help [fol. 272] the voltage, and also eliminate long outages. When one line goes out, it could be supplied from the other direction and the continuity of service maintained. This line to Oliver Springs shown in yellow, that is the line of The Tennessee Electric Power Company, was constructed before the corresponding line adjacent to it shown in purple.

Recross-examination:

I do not remember just how many signed contracts we had on this twenty miles of line that was constructed first, at the time we constructed it. We had a good many, but I do not know just how many. I do not know how many are being served now. I said not over twenty.

I do not remember how long the line has been running from Coal Creek to Clinton, but I think it was constructed either in 1926 or 1927. I am not sure how long the line running from Coalfield into Oliver Springs has been constructed, but I think it was constructed about 1928. We have had in mind the connecting of this load from Oliver Springs to Clinton for about 7 or 8 years. The line from Coalfield into Oliver Springs is a 3-phase line and has always been that way.

(The witness was excused.)

"Mr. Marks: If the Court please, we wondered if we could take a moment at this time to complete the record on complainants' exhibits 114, 115 and 116, which were the reports of the hearings before the Subcommittee of the House Committee on Appropriations, on the appropriation measure for the Tennessee Valley Authority for 1935, 1936 and 1937.

The Complainants have already introduced these reports as a whole in evidence, and in addition have had

copied in the record certain excerpts that they desired to call to the Court's attention.

Since then we have selected certain other excerpts which we think explain those and illuminate those referred to by the complainants.

If there is no objection to my giving the reporter a list of our excerpts, our suggestion is that they be copied in the record for the convenience of the Court, subject to the same reservation on behalf of the complainants that has already been made for the defendants, that at some time con-
[fol. 273] venient to the Court we can argue the question of competence, relevance, and materiality of any of the offered excerpts. And at that time the Court can rule upon all of it.

Judge Allen: Is there any objection?

Mr. S. D. L. Jackson: If your Honor please, just during the recess I received from the defendants a list of the excerpts that they would now expect to have physically copied in the record.

I have not yet completed my check, but as I understand it, they are being offered by the defendants solely to illuminate and explain the excerpts that we were privileged to put into the record the other day.

And in the hasty check I have been able to make, it seems to me they go far beyond that, and I want the opportunity to state on the record, and I think I would like to state on the record at the time and at the place where the excerpt is physically copied into the record the reasons, the objections I have to each of these particular excerpts. I think they go far beyond any explanation of the excerpts read into the record by complainants.

Now, I may be able to complete my check here, so that I could do this possibly a little later, or the first thing tomorrow morning, whichever suits the convenience of both sides and the Court. May I suggest that procedure?

Mr. Fly: We prefer not to argue them piece-meal. I thought the Court might be willing at a convenient time to set aside a brief time when counsel for each side might argue the relevancy and competency of each other's excerpts. The Court did not endeavor to pass upon theirs item by item, and I don't think you will want to do that with ours.

Mr. S. D. L. Jackson: If I may make this suggestion to the Court, we turned over a book which has had the margin

marked in red, with the pages we sought particularly to call the Court's attention, and offer in evidence, as your Honors will recall. I understand these gentlemen have a book here with these passages which they are expecting to——

Mr. Fly: This is the same book.

Mr. S. D. L. Jackson: With your excerpts marked in blue. We have not yet had that book back. If we might have our book back I think we can put all our objections in such shape as to hand to the court more conveniently and not have a long argument.

Judge Allen: Counsel may have the opportunity to check over the excerpts, but the Court wishes to remind counsel that the entire document was received in evidence.

[fol. 274] Mr. S. D. L. Jackson: I recall that.

Judge Allen: That is the ruling of the Court, subject to reservations that counsel for both litigants should have opportunities of arguing questions of competency, materiality and relevancy.

Mr. S. D. L. Jackson: I recall that. I am trying to arrive at a suggestion as to how to most expeditiously do that.

Judge Allen: Counsel may have a reasonable opportunity to check, and expect counsel to report back to the Court when he has checked it."

[fol. 275] William Wallace Jacobs was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 43 years of age, live in Cleveland, Tennessee, and am Manager of the East Tennessee District of The Tennessee Electric Power Company. I have been Manager of that District for 15 years.

The map (offered and received in evidence as Complainants' Exhibit 207) shows the territory of which I am District Manager and the transmission and distribution lines which are located in that district. The lines as indicated on the legend are correctly shown. The yellow lines represent the transmission and distribution lines of The Tennessee Electric Power Company. The purple lines represent the TVA transmission lines and distribution

lines. The small red lines represent lines which distribute TVA power in this area. The red lines with cross-hatching represent a line which was constructed by a construction company in Meigs County, other than the TVA. The red lines which are in cross-hatching in McMinn County, the distribution lines, and those for the City of Dayton were constructed by the TVA. That is all of the lines, except there seems to be a short branch of a line up in Knox County which I understand was constructed by TVA though I did not see the actual construction of the line. The green lines leading from Alcoa all are owned by the Aluminum Company of America. The broad green lines are high tension lines; the small green lines are distribution lines.

I have a total of 130 employes in my field organization in this division. We are constantly making a survey and studies of the unattached loads in the area.

[fol. 276] The East Tennessee District lies between Walden's Ridge on the West and the Appalachian Mountain range on the East. It is primarily an industrial section and has a large diversity of industry. However, in the Sweetwater Valley and along the river the soil is well adapted to general farming, dairying and fruit farming. The principal load centers are all cities running from Cleveland up to Lenoir City, including Maryville, Athens and Sweetwater. Of these cities Cleveland is the largest, with a population of approximately 10,000, and the others range down to Sweetwater with a population of around 2,900.

With respect to the character and extent of the unattached industrial business in this area, there are 10 industries which require process steam. Eight of these are woodworking plants and all of the woodworking plants have sufficient wood refuse to supply their base fuel requirements. There is another group of seven plants, made up chiefly of marble quarries and clay product plants. These plants do not require process steam, but a few of them have had intermittent operations during the past several years. In addition, there are 18 industries which require relatively small amounts of power, two small flour mills, three seasonably operated gins and 13 woodworking plants. The woodworking plants all have sufficient wood refuse to generate their power requirements. All of these plants are within reach or on the existing Company lines. They all have their

own power facilities, mostly steam. However, we do serve 26 in the group with lighting and supplemental power.

The unattached commercial demand in this area is comprised largely of small stores and filling stations which do not stay open at night, and a few intermittently operated grist mills, and so on.

The unattached domestic demand within reach of existing Company lines is composed largely of small dwellings oc- [fol. 277] cupied by people whose incomes are in the lower bracket and who cannot afford electric service.

The unattached domestic demand or potential demand, which is not within reach of the existing Company lines at the present time, is largely small dwellings which are located away from towns, and off the main highways, highly scattered, and most of them are occupied by the people whose incomes are very low, and who probably could not afford electric service if it was made available at the minimum cost. That is true of the unattached homes beyond the reach of any electric facilities in this area.

I am familiar with the minimum requirements of the so-called "Neighborhood Plan" of the TVA—662 kilowatt hours per mile per month. I am also familiar with the minimum requirements of The Tennessee Electric Power Company under its rural electrification program—$18.00 per mile per month. There are approximately 1,000 customers outside the reach of any existing electric facilities in this area which could be served under the minimum requirements of either the TVA so-called neighborhood plan or under the minimum requirements of The Tennessee Electric Power Company rural electrification program. We have a number of these extensions under consideration at the present time. They are not located within reach of extensions which might be made from lines which are now receiving service from the TVA. Approximately 160 miles of line would be required to serve the 1,000 customers to which I refer. I will say most of them are located east of the Company's system between Chattanooga and Knoxville and are some distance from TVA power sources. The Company has considered the extension of those lines and is now negotiating with the people for the extension of those lines. There are some of them we have been working on continuously for some time, and we will continue to do so until we either build the lines to them or give it up. [fol. 278] Assuming that we could use the TVA transmis-

sion line between Athens and Dayton, the distribution lines or system which is shown on the map as now taking TVA power could be served from the system of The Tennessee Electric Power Company. We could connect the company system with the system of these rural cooperatives. At Ooltewah we could connect with the system of the North Georgia Electric Membership Corporation; in the vicinity of Athens and Riceville we could make connection with one of those two points served; and in the northern part of the district around Solvay, the line could be served from a company distribution line around Beaver Ridge.

Cross-examination:

In answer to the question as to what our Company usually does in the way of making surveys and assuring a load before it begins construction of a rural line, the Company has a preliminary survey from which we use to determine the amount of business that can be secured from the line. We try to find out the number of customers we will have along the line. It is generally true that we try to find out whether those residences along the route of the line will buy our power if the line is constructed. I don't know that I try to find out whether the persons residing along the route of our line have signed applications or contracts to buy power from others and become members of rural corporations. As far as I know, we do not.

We have had a transmission line between Athens and Cleveland ever since I became connected with the Company, and I understand many years before then. We did not operate the distribution system in Athens up until about 1924, I believe. I would say that for a great number of years the Comany has had transmission and distribution lines in this territory.

The Meigs County Membership Corporation has approximately 131 miles of lines and around 535 Customers. That figure may vary just a little. In McMinn County there are [fol. 279] two customers who formerly took service from The Tennessee Electric Power Company who discontinued their service with us and took service from the Meigs County Membership Corporation. That is between Athens and Riceville. That is all of the customers of the Meigs County Corporation that I know of which were formerly customers of our company. As to the remaining 500 odd customers,

there was a small distribution system in Decatur which served a few customers right in the town, but they were not served by my Company.

With reference to the transmission line between Dayton and Athens, which is colored purple and is shown by the legend to be a line belonging to the TVA, that line was used to deliver power from my Company's lines in Athens to serve the City of Dayton by an interchange between my Company and the TVA. I don't recall for just what period, but it was used for that purpose. My Company did not have any lines in Meigs County before TVA.

Redirect examination:

The Company has 440 miles of rural lines in this area. There are approximately 1000 rural customers who would represent sufficient density to justify the construction of lines under the minimum requirements either of the TVA or of The Tennessee Electric Power Company. The approximate kilowatt demand which would be represented by that number of customers would be 250 kilowatts.

(The witness was excused.)

CHARLES E. PERKINS was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 43 years old, reside at Columbia, Tennessee, and am Division Manager of the Middle Tennessee District of The Tennessee Electric Power Company.

[fol. 280] The map (offered and received in evidence as Complainants' Exhibit 208) shows the area which comprises the Middle Tennessee Division of The Tennessee Electric Power Company, of which I am Division Manager. I am generally familiar with the electric power facilities which are located in that area. The lines shown on this map correctly represent the transmission and distribution facilities which are located in my Division, with the exception that the distribution lines inside of the city limits and inside of the small towns and also the small lateral extensions off of rural lines are not shown, due to the scale of the map.

In this area the Company at the present time has approximately 823 miles of rural lines, approximately 80 miles of 160,000 volt lines, approximately 353 miles of 44,000 volt lines, and approximately 40 miles of 22 kv. lines. The lines shown in purple, according to the legend, are lines belonging to the TVA, all of which shown in broad lines were constructed after I became Division Manager of the Middle Tennessee Division. The red lines represent lines built by crews using TVA rolling equipment and wearing in some cases emblems showing that they were TVA employes, and with material I have seen shipped in addressed to TVA.

These lines are lines of rural cooperatives, as indicated by the legend, which at the present time are distributing TVA power.

The broken line going northeast out of Columbia represents a proposed line which has been staked out by the TVA between Columbia and Murfreesboro. The broken line going somewhat southwest of Columbia represents the line that has been staked out going down to the Victor Chemical Plant located near Mount Pleasant. The dotted line between Pulaski and Fayetteville represents a line staked out for a 44 kv. line between Pulaski and Fayetteville. The dotted small red lines in the vicinity of Columbia represent lines that have been staked out on the rural cooperative line. I have seen the stakes on all the lines which I have referred to as being staked out.

[fol. 281] The general character of the district comprising the Middle Division of The Tennessee Electric Power Company is varied. The section over on the eastern part of it in Williamson, Maury, Marshall, Moore, Lincoln and Giles Counties, is a blue grass section, well adapted to farming and dairying. It is also an area in which most of the industrial loads of the Company occur and in which the density of population is greatest.

Then there is a section in the middle part of the territory in Dickson, Hickman, Lewis, Lawrence and Wayne Counties, and parts of Perry County, which consists of table land, which is very sparsely settled, which is timbered with scrub oak and pine, and where the soil is not very fertile. Then along the Tennessee River Valley, in the western part of the territory, there are good farm lands and these merge out into hills of a very rough character. Then over in the southwest portion of the map is soil which is very silty, which washes very easily, and which is used mostly for cotton

raising, and which is somewhat lower. The load centers in this area are the towns which are indicated in the eastern portion of the territory, Fayetteville, Lewisburg, Columbia, Mt. Pleasant, Dickson, etc. Columbia, Tennessee, is the largest city, with approximately 10,000 population; Lewisburg has approximately 4,000 and Fayetteville is of like size.

We have 141 field employes in this territory. The Company has made field studies of the unattached business in the area in this Division. The field organization out of the local offices make surveys, and they are assisted in these surveys by the district organization. They are continually making these surveys as to unattached business, and as to the development of the existing business throughout the entire territory.

I am able to state the character and extent of the unattached industrial business in this division. There are four [fol. 282] plants which use process steam. The largest one of these is located at Wrigley, Tennessee, and it is a combination wood alcohol distillation plant and an iron furnace. Their process is such that they are not a power prospect. Then we have two milk plants that take somewhere around a third of their power from The Tennessee Electric Power Company and the rest of it they make themselves, using cast off steam in their process. All of these steam processing enterprises, except the Tennessee Products Plant at Wrigley, are located on our lines. The Tennessee Products Plant is located on a single phase line approximately 12 or 15 miles from a sufficient voltage line to serve it.

Referring to other industrial business there are six flour and feed mills, some of which operate intermittently. All of them have their own plants, which would have to be discarded if they purchased power. Then there are three ice plants, two of them being very small, that make their own power. When I say they make their own power, I do not mean they convert their power to electric power but that they use mechanical power. They are on the lines of The Tennessee Electric Power Company, and they take, in most cases, a small amount of power for lighting. Then the southern tier of counties in this district mostly raises cotton, and there are a large number of cotton gins in that area. According to the best information I have available there are around 80 cotton gins. Of these The Tennessee Electric Power Company is serving 14, 8 others are directly on the

line of The Tennessee Electric Power Company; 13 are from five to nine miles off the company lines; 13 are from ten to fifteen miles off; 16 are on single phase lines; and 16 are on rural lines distributing TVA power, or in the case of the Lincoln County Electric Membership Corporation, directly in the territory of the TVA.

The unattached commercial demand in this area is scattered in nature, being mostly small stores at cross roads that do not stay open at night, a few grist mills that operate [fol. 283] maybe one or two days a week, and then a few sawmills that move from place to place and have refuse fuel for power purposes.

The unattached domestic load, within reaching distance of existing Company lines or existing electric lines in this area, consist of tenants and low income group people who are not able in most cases to wire their homes and take electric service. In my division there are 1200 houses of that character within reach of existing Company lines inside of the city limits of incorporated towns and 2000 on existing rural lines of the Company. It represents about 80% of the attached houses being served in cities and about 70% of them in rural territories.

I am familiar with the minimum requirements of the TVA so-called Neighborhood Plan. I have seen pamphlets describing this plan, requiring 662 kilowatt-hours per mile per month. I am also familiar with the minimum requirements of The Tennessee Electric Power Company rural electrification program. The domestic potential demand or unattached homes outside of the reach of the existing electric power facilities in this area is widely scattered, being mostly away from the large cities and industrial centers, being away from the main paved highways, and being for the most part similar to the unattached business along existing lines. According to information and my knowledge of the territory, there are only eight extensions that might be feasibly handled or might be feasible under either the TVA so-called Neighborhood Plan or the minimum requirements of The Tennessee Electric Power Company rural electrification program. These eight extensions are widely scattered, at various points in the territory, would require approximately 70 miles of line to serve them, and counting all of the houses, both good and bad, would represent around 525 houses.

[fol. 284] Assuming that The Tennessee Electric Power Company has generating capacity for such purposes, the

distribution lines which have been constructed and are being served by the TVA in this area could be served from the transmission or distribution facilities of The Tennessee Electric Power Company. This would in some cases require the construction of substations along the line, or a new line construction. The change, however, would be of a very minor nature.

Referring to Complainants' Exhibit 208, it is noticeable that the lines which are now distributing power from the TVA have been built in most cases very close to the various towns of large population, and that they occupy the highways leading out from those towns. Most of the lines are also in the chief load centers in the district and where the most population is. These lines having been built so close to the towns and also occupying the highways, it would force The Tennessee Electric Power Company to parallel those lines or build through sparse territory to get out beyond to serve additional customers. It also prevents the Company in some cases from looping together its lines for the benefit of interconnections and more dependable service. As such, these lines form what I term an economic block, preventing the Company from expanding its business in a logical manner from time to time.

Cross-examination:

The smaller purple lines described by the legend as lines owned and operated by TVA are what we class as 11,000 volt class of lines. The Lincoln County proposition, which also extends over into Giles County, in the neighborhood of Frankewing and also over a little bit in the bottom or lower part of Giles County, connecting to the Ardmore-Pulaski [fol. 285] line, taking those into consideration, make a total of 170 miles of these lines. About 695 rural customers are being served off of those lines. None of these rural customers to my knowledge were formerly receiving service from The Tennessee Electric Power Company.

It is my understanding that the small lines shown in red in McNairy and Hardin Counties are operated by the Pickwick Electric Membership Corporation. Although I have not seen any deed or transfer, it is my understanding that those lines are owned by that Corporation. About 35 miles of rural lines in McNairy and Hardin Counties are owned by The Tennessee Electric Power Company. I do not know the range of years in which those lines were constructed.

Some of them were constructed before 1933 and some after. In the general conduct of our business, we are always constructing lines from time to time. I do not know the proportion. To the best of my information, in excess of 100 miles of lines belong to the Pickwick Electric Membership Corporation. Around 760 rural customers are being served from these lines. Not any of these customers that I know of now being served from those lines were served by my Company.

The small red lines running down to the lower left hand corner of the map in Maury County have been constructed very recently. I do not know whether the ownership of those lines is vested in the Duck River Electric Membership Corporation to date or not, but it is understood the Duck River Electric Membership Corporation will own them after completion. It is shown on the map to be owned either by a municipality or a cooperative. I supervised the preparation of this map. I think the lines are owned by the Duck River Electric Membership Corporation, as they are working along as the lines are being built. According to the newspaper announcements of the building of these lines in Maury [fol. 286] County, Marshall County, extending a little bit into Hickman County and a little bit into Williamson County, there will be about 155 to 160 miles in those counties. This report also said there would be around 600 customers. To my knowledge there were no customers who stopped buying from us and began buying from the Duck River Corporation. I have been with the Company since 1926. I went to this territory in July, 1935.

"Q. I think you have roughly estimated that about 600 customers were being served by the lines in Lincoln County, about 700 by the Pickwick Electric Membership Corporation, about 643 by the Duck River Corporation. I think you also testified that your company—none of these customers were formerly served by your company. Now, I think you testified also, that these customers represented the potential load. Your testimony is that the load then, this so-called potential load of your company, consisting of these two thousand odd customers, has been unserved for a great number of years, during which time your company has had lines in this general territory.

Mr. Bemis: Of course I object to that. I do not think that correctly summarizes what the witness testified, at all.

The Court: He may answer.

Mr. Bemis: Exception.

Judge Allen: Mr. Perkins, in answering that question, if it does not restate what you stated, you may point that out.

A. Well, I did not give those figures that you used, and the customers served by any of the cooperatives. They are fairly close, however. I did testify that the potential load in this area has been taken away, as my statement was, economically blocked by building of these lines. While the company did have lines in parts of this territory, and as the company business increased——

Mr. Fly: I move to strike out that testimony. The question is whether or not they had served for a number of years.

Judge Allen: Answer the question.

A. Yes."

Redirect examination:

The potential load in an area changes from time to time. I cannot speak generally beyond 1935, but the economic [fol. 287] conditions change, and customers that can be served this year, that can wire their homes and buy appliances necessary for the support of the line extension, may not have been two or three years ago in a position, economically, to have done so. Also in the territory there are additional houses built and population increasing gradually, and added to, so those lines that were not feasible several years ago may be entirely within the bounds of possibility today.

An industrial plant which uses process steam is not a potential electric power customer because steam is necessary in the manufacture of their products, and it is possible to use this steam through some power generating unit first, and then use the exhaust steam in its process, thereby generating the power at a very low cost figure.

(The witness was excused.)

[fol. 288] Clarence Watson was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 46 years old, reside in Murfreesboro, Tennessee, and have been Division Manager of the Cumberland District of The Tennessee Electric Power Company since July 1935. Prior to that I was Division Manager for the Middle Tennessee District. The map (offered and received in evidence as Complainants' Exhibit 209) embraces the territory within the limits of the Cumberland Division, of which I am Division Manager. The lines which appear on this map show the transmission and distribution facilities which are located in that area. There is a total of 865 miles of distribution lines in this area operated by The Tennessee Electric Power Company, 170 miles being within incorporated towns and 695 miles of rural lines and small communities. The Company has 134 miles of 110 kv. high tension transmission lines, 343 miles of 44 kv. lines and 240 miles below 15 kv. lines. All of the lines to which I refer are shown on this map, with the exception of the distribution lines within the city limits and the rural lateral lines.

The lines in purple represent the TVA high tension transmission line passing through this district, extending from Wheeler Dam to Norris Dam. The lines in red represent the distribution lines constructed by construction crews using TVA cars, with TVA licenses and TVA employees, some TVA employees wearing buttons and numbers. All of the lines in red were constructed by the TVA. The lines in Bedford and Franklin Counties are connected with the TVA station in Ardmore, Alabama. The lines in Wilson and Rutherford are connected with the TVA substation near Columbia, these two being interconnected—that is the only source of power.

[fol. 289] The light green lines shown at Tullahoma show the distribution lines in the city of Tullahoma purchasing power from The Tennessee Electric Power Company at wholesale. The light green lines shown at Lebanon show the City of Lebanon purchasing power from The Tennessee Electric Power Company at wholesale.

Examination by the Court:

The white line running from Murfreesboro to Lebanon indicates a highway.

Direct examination continued:

There are 150 field employees in this division. The Company has made studies respecting the unattached business which is located in this area. Each local manager in the district organization is continually making those studies and investigations on the extension of new business and rural lines. The division managers cooperate in those studies. From those studies and investigations I am able to state the character and extent of the unattached industrial business in the territory embraced in my division. We have seven unattached industrial plants, using steam for processing purposes on account of their particular process. Six of these plants are purchasing a small amount of power from The Tennessee Electric Power Company and are located within easy reach of the Company's lines. We also have eleven plants that had their own power units installed several years ago that are still in good efficient operating condition. We are selling a small amount of power to three of these plants. It will be necessary for these plants to abandon or junk their power units in order to purchase power from a central station. We also have five cotton gins, seasonally operated about two or three months in the year. All of these are in easy reach of The Tennessee Electric Power Company lines. These power units to which I [fol. 290] have referred are not in all instances electric power units but some are steam, oil, and gasoline engines which produce mechanical power.

The unattached commercial demand is mostly scattered stores that do not open at night and a small power load of grist mills and saw mills. These saw mills, of course, use sawdust and refuse for fuel, and move around from place to place. That covers most of the commercial demand. In referring to these saw mills, I am referring to those small operations which are itinerant in character.

The unattached domestic potential demand which is at the present time within reach of the existing power facilities in this area is composed mostly of small dwellings occupied by small renters in the lower income class and not financially able to pay their current bills, with service available. We have approximately 2,200 such homes along rural and small community lines and approximately 1,250 within the incorporated towns, or a total of 3,450, within reach of existing service from The Tennessee Electric Power Com-

pany facilities in this area. The percentage of unattached homes is about 30 per cent. The percentage is higher in the rural lines than within the corporate limits of villages, the percentage of unattached homes on the rural lines averaging from 35 to 40 per cent.

Most of the unattached domestic potential demand which is not at the present time within reach of any existing power facilities as now extended, is located away from the larger towns and industrial centers, and also is located away from the main highways, and is located on scattered rural roads. Most of these unattached dwellings are small homes and widely scattered, and are inhabited mostly by tenants and people in the lower income class not financially able to pay their current bills. From the studies and investigations we have made, there are approximately 615 customers in the division outside of the reach of any electric power facili- [fol. 291] ties as now extended, that in my opinion could be served under either the minimum requirements of the TVA's so-called Rural Electrification Plan or under the minimum requirements of The Tennessee Electric Power Company's Rural Electrification Program. They are widely scattered over 14 counties, involve 21 different extensions ranging from one mile to thirteen miles in length, and would necessitate about 95 miles of line. I am, of course, familiar with the minimum requirements of the TVA's so-called "Neighborhood Program" and also with the minimum requirements of the Rural Electrification Plan.

The distribution lines which I have testified about as now receiving service or distributing power received from the TVA could be served from the transmission or distribution facilities of The Tennessee Electric Power Company. The lines in Franklin County could be served from the distribution lines at Winchester, the lines in Bedford County could be served from the distribution lines at Shelbyville, the lines in Rutherford County could be served from the distribution lines at Murfreesboro, and the lines in Wilson County could be served from the distribution lines at Lebanon. There may be one or two short distribution extensions which would have to be made. Other than that, there would be no change in existing facilities.

In answer to the question as to the extent the construction of these distribution facilities which are now distributing TVA power affects the possibilities of future growth

and expansions of the existing facilities of The Tennessee Electric Power Company in this area, I refer to Complainants' Exhibit 209 showing the location of these lines and you will note that most of these lines are built in the vicinity of our larger towns; for instance, Winchester, Shelbyville, Murfreesboro and Lebanon. These lines are built up within easy reach of the city limits of these larger towns and on the roads leading from these towns up to the present existing lines of The Tennessee Electric Power Company, and on most roads cause an economic block prohibiting the Company from expanding or extending its lines in this particular radius for future potential business.

[fol. 292] Cross-examination:

I cannot give you exactly the number of miles of small lines below 15,000 volts in Wilson County which belong to The Tennessee Electric Power Company, as I haven't that separated by counties. The line going out from Lebanon toward Gladeville, which is under 15,000 volts, is about 15 miles in length. But I could only guess as to how many miles of such line there are in Wilson County belonging to the Company. I would guess between 75 and 100 miles. I have been occupying my present position in this district since July 1935. I cannot recall how many miles of similar lines existed in Wilson County belonging to The Tennessee Electric Power Company before the time I came with the Company, but about 25 or 30 miles have been constructed there since 1935.

I would guess that there were about 150 miles of line shown in red in Wilson County. I cannot give you the number of customers served off of those lines by counties. There were about 700 customers being served off of those small red lines by the Middle Tennessee Electric Membership Corporation in Rutherford and Wilson Counties. That does not include Bedford County. None of those 700 customers which I spoke of stopped taking service from the Company to take service from the Middle Tennessee Electric Membership Corporation. The Corporation which owns the lines in red as shown in Bedford County is supposed to be the Duck River Electric Membership Corporation. About 450 customers are being served by the red lines in Bedford County. Those are supposed to be the lines of the Duck River Electric Membership Corporation and

are shown on my map to be the lines of a cooperative. None of our customers in Bedford County stopped service to take service from the Duck River Electric Membership Corporation.

(The witness was excused.)

[fol. 293] PAUL E. SHACKLETT was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 51 years old, live in Chattanooga, and am the Industrial Agent of The Tennessee Electric Power Company. I am generally familiar with the Company's facilities and business in the Chattanooga and Nashville Districts. There is comparatively no unattached industrial power business in the Chattanooga District. There are about 21 plants in Chattanooga to whom we do not supply their power service. There are 8 of these that have wood refuse which they use for fuel in the generation of power or the manufacture of power through mechanical means; there are 8 others that have need for large quantities of process steam; and out of the total there are 3 others that have their own electric power generating units. In my judgment, these three represent potential customers for the future. As a matter of fact, we have been advised by some of them that when it became necessary to spend large capital investments on improvements, or for additional new equipment, they would then be interested in using our service. If we secured these three prospects, the total number of kilowatts that would be connected would be approximately 2,350.

The total number of domestic customers in Chattanooga is 29,365. At the present time, there are approximately 4,000 residences in the Chattanooga District of the Company which for some reason or other do not use our service. Some of these are homes occupied by a group of people with very low incomes. A large percentage are people that rent property from landlords that will not wire the property for service, and a good percentage of them are not occupied at all. Of the total number of houses in Chattanooga, there are about 13 percent which are unattached. All of them

are in very close reach of our services, and could be served by us very easily, both domestically and industrially.
[fol. 294] There is practically no unattached industrial power business in the Nashville District. There are some, like in the Chattanooga District, that we do not serve one hundred percent with service due to some reason or other. There are 20 such plants in Nashville. Three of them use wood refuse for fuel in the manufacture of power through mechanical means or through the generation by steam of electricity. Eleven of them use large quantities of process steam, and these we do not serve one hundred percent. Out of the total, there are 5 in that district that have their own electric generating unit, which, in our judgment, like those in Chattanooga, are potential prospects of ours, because in instances we have been advised that when the time came when it was necessary to spend a great deal of capital on improvements, they would purchase service from the Company. When I say there are 5 which have their own power units, I mean there are 5 which have their own power units, which do not require steam for processing or have refuse fuel which can be used. To some extent, all of the industries which I have mentioned in both Chattanooga and Nashville have their own individual power units, and all of them are now being served to some extent by The Tennessee Electric Power Company. Approximately 1,350 kilowatts would be connected if we secured those 5 industrial enterprises to which I have just referred in the City of Nashville.

The total number of domestic customers in the Nashville District is 42,461. In reference to the character of the unattached domestic demand within reach of the distribution facilities of the Company in the Nashville District, there are, at the present time, approximately 9,000 prospective domestic users, or 22 percent who for some reason or other do not take service from us. In that District, as it is largely in the Chattanooga District, those houses are occupied by people of low incomes and a large percentage of them are rentals from people that will not spend the money to wire their homes. Some of those houses, a good percentage of them, are not occupied at all. The 9,000 odd houses to which I refer are either on existing Company [fol. 295] distribution lines or within reach of existing lines. Both domestic and industrial concerns in the Nash-

ville District are in easy reach of service. I would say, speaking in percentages, that the Company's facilities in the Nashville District are 100 percent adequate to serve the unattached business there.

The Tennessee Electric Power Company did serve the L. N. Gross Company. That Company is a dress manufacturing concern, and recently constructed a building in the city of Fayetteville in the early part of 1937. During the construction period we served the contractor with temporary power service, but before the building was completed we were authorized by Mr. Gross to connect permanent service to the plant, which we did.

In answer to the question how the L. N. Gross Company came to locate its plant in Fayetteville, in the early part of 1936, Mr. L. N. Gross came to Chattanooga and consulted with us as to the possibility of establishing a branch plant in the Tennessee area, a branch of a plant that has been in operation in Cleveland, Ohio, for a good many years. After investigating a number of locations, we succeeded in interesting the City of Fayetteville, and arranged a meeting between the city authorities of Fayetteville and Mr. L. N. Gross. After several meetings were held, which meetings I attended, an agreement was reached and the building was constructed. The TVA is at the present time serving the L. N. Gross Company. At the time this service was connected, the electric power load of the L. N. Gross Company was approximately 75 kilowatts.

"Mr. Bemis: You may examine.

Mr. Fly: No questions.

Mr. Bemis: That is all.

Judge Allen: Just a minute. Did you ever have a contract with the L. N. Gross Company to serve them with electric power?

The Witness: We had a verbal contract, yes.

Judge Allen: Did you have any specific contract, with the terms of the contract set, that is between certain dates for a certain number of years, or anything of that kind?

[fol. 296] The Witness: No, we did not.

Mr. Bemis: Well, I might just ask one other question to clarify the situation."

It was necessary for the Company to construct special facilities to serve this customer. We had to extend our serv-

ice and construct a transformer station of sufficient capacity for the amount of power that they desired to take. The construction of those facilities was authorized by the L. N. Gross Company, with the request that we connect our service as quickly as we possibly could, as they had had a number of delays and were anxious to get the plant in operation. In the ordinary course of our business, it is not customary in all cases to have written contracts where we extend service to industrial customers. Nor is it customary in all cases where we have to construct poles or additional lines and substation facilities.

(The witness was excused.)

CLEM R. WINKLER was called as a witness on behalf of complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 41 years old, reside in Jackson, Tennessee, and am General Sales Manager for the West Tennessee Power & Light Company.

The map (offered and received in evidence as Complainants' Exhibit 210) shows the territory of the West Tennessee Power & Light Company. I am generally familiar with the electric power facilities that are located in that area.

The West Tennessee Power & Light Company has 30 miles of 110 kv. line and 60.6 of 66 kv. line. The Company has 193.6 miles of rural lines of 13 kv. or less located outside of the incorporated towns. The lines shown on the [fol. 297] map in red represent the lines of the Southwest Tennessee Membership Corporation, and in the lower part of Gibson County, the lines belonging to the Gibson County Electric Membership Corporation. The lines shown in red were constructed by the TVA.

"Mr. Fly (interrupting): That is all right.

Mr. Bemis: It is admitted, is it, Mr. Fly, they were all constructed by Tennessee Valley Authority?

Mr. Fly: Yes."

The lines in purple represent the transmission lines of the TVA. This line on the east is a 110 kv. line, which

extends from Pickwick Dam to Jackson. Then there is another line which goes north from Jackson up to Milan and over to Trenton. That is a 44 kv. line, completed to Milan, then incomplete but in process of construction between Milan and Trenton. Then there is a 44 kv. line down to Bolivar and a 12 kv. line from Bolivar to Somerville. The narrow red lines are served from a sub-station located in Jackson, Tennessee, just outside of Jackson. The lines in green represent the line- of the Bells Water & Light Company, which are served wholesale by the West Tennessee Power & Light Company. There are 46 communities having a population of 100 or over in the area served by the West Tennessee Power & Light Company. Twenty-three of these communities are served by my Company directly or indirectly; nine receive power either from membership corporation lines or the TVA direct; and 12 have no service, 2 of them having generating plants of their own. Covington, Tennessee, which is one of the two, has a generating plant and distribution system of its own. Then 2 miles south of Jackson, the Bemis Bag Company has a cotton bag [fol. 298] mill, and they have their own town for their employes. They manufacture electricity for use in their own plant and serve the houses in the town which house the workers in the mill.

The area embraced in the West Tennessee Light & Power Company's service area is highly rural territory, with very few industries, except in Jackson and possibly in Humboldt. It has a very large negro population, the average being 40 percent, and, in one county we have a negro population of 73 percent. The houses are widely scattered. The Company is continually making studies of the unattached business in this area. We have five division offices in the territory, and in addition to their operating duties, the division superintendents assist the sales department in making surveys. These observations or surveys are in turn forwarded into the general office in Jackson. Quite frequently I make trips, or some of the other officials make trips, into the territory to look into the potential demand and in checking the suggestions that have been received from the field. In that way we are able to keep up with the potential business and also with the operating business.

Referring to the unattached industrial power load in the territory of the West Tennessee Light & Power Company,

there are nine plants in Jackson and Humboldt which are unattached. Eight of these plants are woodworking plants and have mechanical power plants and require steam for processing work. In addition to that, they have an enormous amount of fuel which they utilize under their boilers and have no other way to dispose of. The eight woodworking plants are located on our lines and we serve them a small amount of electricity for light and power purposes. The balance of the unattached industrial load is made up of flour and feed mills, ice plants, cotton gins and grist [fol. 299] mills. There are three flour and feed mills located in the territory. To one of these we serve approximately half of its load, which came about when it outgrew its present mechanical power plant. The other two are furnished with a small amount of power and light. There are three ice plants, to one of which we serve quite a large part, supplemental to its mechanical power plants. They buy small amounts of power for lights. These plants do not generate electricity but have steam power plants. Of the 46 cotton gins, which have a highly seasonal load, three are located on our lines, and take a small amount of power for lights. All of these industrial plants have their own power units, all in good shape, which they would have to throw away or junk if they took on our power.

The unattached commercial demand in this territory consists of grocery stores, filling stations and grist mills. The filling stations and grocery stores are hardly ever open at night. The grist mills operate one to two days a week.

With respect to the unattached domestic demand which is at the present time within reach of the existing Company lines, there are approximately 2,300 potential or unattached domestic customers, who are located on Company lines or within 1,000 feet of Company lines. These consist of small rented houses, where the landlords do not feel that they can wire the houses and still be able to collect it in the rent, and probably if the houses were wired, the occupants could not pay for electric service. The number of these unattached customers is about 29 percent of the total number of customers we have.

The potential domestic business in this area which is outside of the reach of the present Company lines, as at present extended, is very widely scattered and consists in

[fol. 300] the main of tenant houses located on large plantations, small one or two room houses, and of people who have a very small cash income and probably would not use electricity if made available to them.

I am familiar with the minimum requirements under the TVA Neighborhood Plan—662 kilowatt hours per mile per month. The Company does not have a published or printed rural electrification plan. We are rather a small company and can keep in pretty close touch with any extensions that might be possible. However, we usually limit those extensions to those lines where we are pretty sure we can get a minimum of $20.00 per month per mile, and the number of customers will run five per mile. There are approximately ten locations or extensions that could be made in this territory under the minimum requirements of the TVA so-called Neighborhood Plan, with a total of 39.2 miles and incorporating approximately 232 customers. The approximate kilowatt demand of that present unserved business would be somewhere around 50 or 60 kilowatts.

These line extensions to which I refer are not line extensions from existing lines of the West Tennessee Power & Light Company. We would have to make, in most of the cases, quite a lengthy run to get them. They are not in reach of any extensions that might be made of the lines that are now using power from the TVA, as the Southwest Tennessee cooperative would have to make considerable extensions to get to those various locations.

The distribution lines which are receiving and distributing TVA power could be served by the West Tennessee Power & Light Company through connections which might be made in its system. The TVA substation in Jackson is approximately 2,000 feet distant from our power plant and the lines radiating from that could be connected up with an extension of approximately 2,000 feet. In Brownsville, our substation is approximately ¾ mile away from the lines and in Covington probably 1,000 feet. Those distances would have to be run in line and then probably installations made to conform to the voltage of those lines.

[fol. 301] The City of Jackson, Tennessee, has entered into contract with the TVA for the purchase and distribution of power. Previously the City of Jackson generated and distributed a part of its power for municipal purposes, and on October 15, 1935, the City entered into a contract

with TVA for the purchase of power for municipal purposes. The date of initial delivery of that power was about July 18, 1936. Then, on September 1, 1937, the City of Jackson entered into another contract with TVA for the purchase of and distribution of TVA power by the City to residents of the City of Jackson, to be distributed to them. Prior to that time, the City did not sell and distribute electricity to domestic customers and prior to such contract with TVA those domestic customers were served by the West Tennessee Power & Light Company. The City of Jackson is now selling and distributing power to former customers of the West Tennessee Light & Power Company. The memorandum (offered in evidence as Complainants Exhibit 211) is a list of customers which we term lost by us to the City of Jackson, who are now being served with TVA power. There are 14 customers on the list. The first one was connected on October 8, 1937. The data on the list is correct to my knowledge. The last column shows the amount formerly paid by these customers to my Company over the 12 months ending September 30, the total being $5,954.26.

"Mr. Fly: If the Court please Complainants' Exhibit 211 for identification, except for the misleading reference there to 'Jackson TVA' Municipal distribution system clearly shows that this is a purported list of customers which the company has lost to the city. And according to the witness' testimony the only possible connection with the Tennessee Valley Authority is that pursuant to contract it sells power at wholesale to the city. I therefore object to the exhibit as incompetent, irrelevant and immaterial."

Examination by the Court:

TVA does not serve any of the customers listed on Exhibit 211. The City of Jackson serves them.

[fol. 302] Direct examination continued:

The City of Jackson, however, does have a contract with the Tennessee Valley Authority to furnish it power for the purpose of distributing to domestic and other customers.

"Mr. Fly: We admit we sell them power at wholesale. There is no question about that. There is no need to have the witness argue this point.

Judge Allen: The objection is sustained, the exhibit is excluded upon the ground that the Tennessee Valley Authority is not shown to sell to these customers. The sale is the act of the municipality of Jackson.

Mr. Bemis: Exception, and may the record show our purpose in offering this evidence is to show the damage which has already accrued, and the threat of future damage to this complainant company."

One of the customers on the list (Complainants' Exhibit 211) is the Thompson Baking Company. The letter dated November 2, 1937 (offered in evidence as Complainants' Exhibit 212) is the original letter which was received by us from the same Company, namely, the Thompson Baking Company.

"Mr. Fly: Are you familiar with the handwriting of Mr. Thompson?

The Witness: Yes sir, I am.

Mr. Fly: Are you willing to swear of your own knowledge that that is his signature?

The Witness: Yes.

Mr. Fly: May it please the Court, we object to this on the ground it is incompetent, irrelevant and immaterial. I believe that exhibits of precisely the same general character, and I might say rather revealing similarity of wording, were offered here a few days ago and excluded, where the customer writes to the power company, and recites certain facts.

Judge Allen: The objection is sustained and the exhibit is excluded. It is true that the Courts in certain cases where a conspiracy in restraint of trade for instance is shown, have admitted evidence in the nature of hearsay, where it is shown to be relevant. Here the evidence proffered is not shown to be relevant and material. The fact, if it be a fact, that the city councils, municipal administrations, cooperatives, private industries or customers are seeking to secure TVA power because it is cheaper than [fol. 303] that distributed by complainants is irrelevant and immaterial under the law applicable to this case. The fact an authorized public agency charges rates that will

draw complainants' customers away does not affect the issues. Springfield Gas Company vs. Springfield, 257 U. S. 66, at 70.

Mr. Bemis: And we may have our exception.

Judge Allen: You may have your exception."

The letter (offered and received in evidence as Complainants' Exhibit 213) is a mimeographed letter under the name of the Tennessee Valley Authority, Department of Electricity, and signed by Earl R. Wall as Division Manager, addressed to applicants for TVA electricity in Madison County, Tennessee. Madison County is in the territory served by my Company. The letter was mailed in a franked envelope, with "Tennessee Valley Authority" in the upper left-hand corner, to Mrs. E. K. Randolph, on the lower Brownsville Road, and handed to me by her son, William Randolph. Mrs. Randolph is not at the present time a customer of the West Tennessee Company. (Counsel for defendants thereupon conceded that this letter was sent out and distributed as indicated on the face of the exhibit.)

Cross-examination:

The towns of Somerville, Bolivar, Milan and Trenton, which are shown on Complainants' Exhibit 210 to be connected to purple lines, which by the legend are described as lines owned and operated by TVA, generated and owned their own distribution systems before 1933. They were not formerly customers of my Company. The transmission lines shown in yellow from Memphis to Ripley and from Ripley to Brownsville, and thence to Jackson and from Jackson to Humboldt, were built in the latter part of 1925. The lines in red in Madison, Haywood and Tipton counties are owned by the Southwest Tennessee Electric Membership Corporation. The line in Gibson County, and [fol. 304] I understand also the line that goes up to Gibson County, is owned by the Gibson County Electric Membership Corporation. In answer to the question whether any of the customers served off of those lines stopped service from our Company to take service from the Southwest Tennessee Corporation or the Gibson County Corporation, the town of Gibson, Tennessee, did so. The town of Gibson was not taking service directly, but the Gibson Power & Light Company which served that town was tak-

ing service wholesale from the West Tennessee Power & Light Company at Humboldt. The transmission line from Humboldt to Gibson was owned by the Gibson Power & Light Company. I am not familiar with the circumstances surrounding the acquisition by the Gibson County Corporation of the lines in the Town of Gibson.

As shown on the map the West Tennessee Power & Light Company has 193.6 miles of 13 kv. or less lines outside of incorporated towns. In answer to the questions whether we call such lines rural transmission or rural distribution lines, they connect towns, and at the same time they serve the customers along the line, and some of them are just lines to rural communities. Some of these lines serve a dual purpose of transmission and distribution. They pick up the towns and communities on the way.

I have been with the West Tennessee Power & Light Company since 1925 and have been located in Jackson. I believe it is correct that in or around 1931 the citizens of Jackson voted to issue bonds to acquire a municipal distribution system. I don't know about the date, but they did vote it, but the bonds were never sold. There was an election back in that time sometime, but I don't know whether it was 1931, and the vote for the bond issue carried. Aside from the wholesale service that my company rendered to the Gibson Power & Light Company, the only customers who stopped service from my Company to take service from the Gibson County Corporation or the Southwest Tennessee Corporation are those that I have mentioned in the City of Jackson; none from the rural cooperative lines.

[fol. 305] The customer that our Company sold power to on a wholesale basis at Humboldt was the Gibson Power & Light Company. I can't answer whether that Company has gone out of business. I don't know whether or not they disposed of their property. I do not know whether they own any property in Gibson now. I do not know it to be a fact that the Gibson Power & Light Company was insolvent and that its properties were sold at public auction. I have no knowledge of that incident. I was here the other day when Mr. Wisdom testified but I don't remember him saying that he attended a public auction at which the properties of the Gibson Power & Light Company were sold, and I did not attend that sale myself.

Redirect examination:

Referring to Complainants' Exhibit 213, which is the form letter addressed to applicants for TVA electricity in Madison County, Tennessee, the rural cooperative which serves customers in Madison County is the Southwest Tennessee Electric Membership Corporation. Mrs. Randolph, from whom I received this form letter, is being served by this Southwest Tennessee Membership Corporation. At the time that the Southwest Tennessee Membership Corporation or the TVA was constructing these lines in Madison County, my Company had some distribution lines approved for construction, a line on the lower Brownsville Road and on that portion of the road where Mrs. Randolph happens to reside, as well as an extension on the Humboldt Road north of Jackson. Those lines were approved for construction and material ordered about December 15, 1936. Because of the weather, and awaiting receipt of material, no actual construction was started. Then on January 1, 1937, we received an order from the Railroad and Public Utilities Commission styled "Docket 2025", making it [fol. 306] necessary for electric light companies, public utilities, to receive permission from the Commission before they could construct any lines of 4,000 volts or higher, or costing more than $5,000. Although these lines were already approved by the officials of the Company and the material ordered, we wanted to cooperate with the Commission, so we filed formal application for the building of these two lines. The line on the Brownsville Road was 3.4 miles long and the line on the Humboldt Road was 4.1 miles long. The lines of the cooperative to which I have referred were constructed between the hearing in February on this line and May 18, when the Company was denied a right to build the line.

Recross-examination:

Complainants' Exhibit 213 does not bear a date. I referred in my testimony to an order by the Public Utilities Commission of Tennessee to utility companies operating in Tennessee, ordering those companies to submit construction projects of a rural character for approval by the Commission before the initiation of construction. I also spoke of the denial by the Tennessee Public Utilities and Railroad Commission of permission to my Company to build a line

on the lower Brownsville Road. I do not have with me a copy of that order denying permission to build the line. I am not familiar with the entire contents of the order but I have read it.

The document (offered and received in evidence as Defendants' Exhibit 3) is a copy of the opinion and order of the Tennessee Railroad and Public Utilities Commission, dated May 18, 1937, under Docket 2030, to which I have referred. It appears to be a correct copy of such opinion and order.

[fol. 307] Redirect examination:

The line of the Southwest Tennessee Cooperative Association had been constructed prior to the time this order dated May 18, 1937 (Defendants' Exhibit 3) was enacted. The construction started immediately after the hearing in February. We did not receive this notice until May. The line was completed before the order denying permission to extend our line had been rendered.

(The witness was excused.)

OFFERS IN EVIDENCE

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibits Nos. 214 to 223, inclusive, copies of franchises issued by the Counties of Colbert (Exhibits Nos. 214 and 215), Franklin (Exhibit No. 216), Lauderdale (Exhibits Nos. 217 and 218), Limestone (Exhibit No. 219), Madison (Exhibit No. 220), Marshall (Exhibit No. 221), Morgan (Exhibits Nos. 222 and 223), of the State of Alabama to TVA granting permission to erect and maintain over and along their public highways and public places facilities for the transmission, distribution and sale of electricity.

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibits Nos. 225 to 264, inclusive, copies of franchises issued by the Counties of Anderson (Exhibit No. 225), Bedford (Exhibit No. 226), Bledsoe (Exhibit No. 227), Campbell (Exhibit No. 228), Claiborne (Exhibit No. 229), Chester (Exhibit No. 230),

Cocke (Exhibit No. 231), Dickson (Exhibit No. 232), Fayette (Exhibit No. 233), Franklin (Exhibit No. 234), Giles (Exhibits Nos. 235 and 236), Grainger (Exhibit No. 237), Greene (Exhibit No. 238), Grundy (Exhibit No. 239), Hamblen (Exhibit No. 240), Hamilton (Exhibit No. 241), [fol. 308] Hancock (Exhibit No. 242), Hardeman (Exhibit No. 243), Hardin (Exhibit No. 244), Hawkins (Exhibit No. 245), Hickman (Exhibit No. 246), Jefferson (Exhibit No. 247), Knox (Exhibit No. 248), Lawrence (Exhibit No. 249), Lincoln (Exhibit No. 250), Loudon (Exhibit No. 251), Madison (Exhibit No. 252), Marshall (Exhibit No. 253), Maury (Exhibit No. 254), McMinn (Exhibit No. 255), McNairy (Exhibit No. 256), Morgan (Exhibit No. 257), Roane (Exhibit No. 258), Scott (Exhibit No. 259), Sequatchie (Exhibit No. 260), Shelby (Exhibit No. 261), Sullivan (Exhibit No. 262), Union (Exhibit No. 263), Washington (Exhibit No. 264), of the State of Tennessee to TVA granting permission to erect and maintain over and along their public highways and public places facilities for the transmission, distribution and sale of electricity.

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit No. 265, a copy of the franchise by the Town of Fayetteville, Tennessee, to TVA, granting permission to erect and maintain over and along its streets and public places facilities for the transmission, distribution and sale of electricity to L. N. Gross Company.

[fol. 309] Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 266 a map of Tennessee showing the counties in the state which as shown by Complainants' Exhibits 225 to 264 have granted electric operating franchises to the TVA.

Counsel for complainants then offered in evidence and the Court received as Complainants' Exhibits 267 to 274 inclusive, copies of the charters of incorporation granted by the State of Alabama to the following cooperatives: Cherokee County Electric Membership Corporation (Exhibit 267), Cullman County Electric Membership Corporation (Exhibit 268), DeKalb County Electric Membership Corporation (Exhibit 269), Franklin County Electric Membership Corporation (Exhibit 270), Guntersville Electric Membership Corporation (Exhibit 271), Marshall County Electric Membership Corporation (Exhibit 272), Joe Wheeler Electric Membership Corporation (Exhibit 273),

Madison County Electric Membership Corporation (Exhibit 274).

The attention of the court was directed to Act No. 45, House 133, Reeder, of the regular session of 1935, of the Legislature of Alabama, and particularly to section 11 of that act, which permits the chartered cooperatives organized under that act, to carry out the powers and duties that would otherwise be granted by the granting of a franchise. That is, it exempts those cooperatives from obtaining franchises.

Counsel for complainants then offered in evidence and the Court received as Complainants' Exhibits 275 to 319 inclusive copies of the following franchises issued by the Counties of the State of Tennessee to the various cooperative associations in that state granting permission to erect and maintain over and along their public highways and public places facilities for the transmission, distribution and sale of electricity:

[fol. 310] Complainants' Exhibit 275, being a franchise issued by Bedford County to Bedford County Electric Membership Corporation.

Complainants' Exhibits 276 and 277, being franchises issued by Bradley County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 278, being a franchise issued by Bradley County to the North Georgia Electric Membership Corporation.

Complainants' Exhibit 279, being a franchise issued by Bradley County to the Bradley County Electric Membership Corporation.

Complainants' Exhibit 280, being a franchise issued by Carroll County to Gibson County Electric Membership Corporation.

Complainants' Exhibit 281, being a franchise issued by Chester County to Madison County Electric Membership Corporation.

Complainants' Exhibit 282, being a franchise issued by Chester County to Pickwick Electric Membership Corporation.

Complainants' Exhibit 283, being a franchise issued by Chester County to West Tennessee Electric Membership Corporation.

Complainants' Exhibit 284, being a franchise issued by Chester County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 285, being a franchise issued by Coffee County to Duck River Electric Membership Corporation.

Complainants' Exhibit 286, being a franchise issued by Crockett County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 287, being a franchise issued by Crockett County to West Tennessee Electric Membership Corporation.

Complainants' Exhibit 288, being a franchise issued by Crockett County to Gibson County Electric Membership Corporation.

Complainants' Exhibit 289, being a franchise issued by Cumberland County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 290, being a franchise issued by Dyer County to Gibson County Electric Membership Corporation.

[fol. 311] Complainants' Exhibit 291, being a franchise issued by Franklin County to Duck River Electric Membership Corporation.

Complainants' Exhibit 292, being a franchise issued by Gibson County to Gibson County Electric Membership Corporation.

Complainants' Exhibits 293 and 294, being franchises issued by Gibson County to West Tennessee Electric Membership Corporation.

Complainants' Exhibit 295, being a franchise issued by Giles County to Duck River Electric Membership Corporation.

Complainants' Exhibit 296, being a franchise issued by Hamilton County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 297, being a franchise issued by Hamilton County to North Georgia Electric Membership Corporation.

Complainants' Exhibit 298, being a franchise issued by Haywood County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 299, being a franchise issued by Hickman County to Duck River Electric Membership Corporation.

Complainants' Exhibit 300, being a franchise issued by Lauderdale County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 301, being franchises issued by Madison County to Gibson County Electric Membership Corporation, Madison County Electric Membership Corporation, West Tennessee Electric Membership Corporation, and Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 302, being a franchise issued by Marshall County to Duck River Electric Membership Corporation.

Complainants' Exhibit 303, being a franchise issued by Maury County to Duck River Electric Membership Corporation.

Complainants' Exhibit 304, being a franchise issued by McMinn County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 305, being a franchise issued by Meigs County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 306, being a franchise issued by Moore County to Duck River Electric Membership Corporation.

[fol. 312] Complainants' Exhibit 307, being a franchise issued by Obion County to Gibson County Electric Membership Corporation.

Complainants' Exhibit 308, being a franchise issued by Obion County to West Tennessee Electric Membership Corporation.

Complainants' Exhibit 309, being franchises issued by Rhea County to "An Association that May Be Set Up to Distribute This (TVA) Power" and to Meigs County Electric Membership Corporation.

Complainants' Exhibit 310, being a franchise issued by Roane County to Meigs County Electric Membership Corporation.

Complainants' Exhibit 311, being a franchise issued by Rutherford County to Duck River Electric Membership Corporation.

Complainants' Exhibit 312, being a franchise issued by Rutherford County to Middle Tennessee Electric Membership Corporation.

Complainants' Exhibit 313, being a franchise issued by Rutherford County to Bedford County Electric Membership Corporation.

Complainants' Exhibit 314, being a franchise issued by Shelby County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 315, being a franchise issued by Smith County to Middle Tennessee Electric Membership Corporation.

Complainants' Exhibit 316, being a franchise issued by Tipton County to Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 317, being a franchise issued by Trousdale County to Middle Tennessee Electric Membership Corporation.

Complainants' Exhibit 318, being a franchise issued by Williamson County to Duck River Electric Membership Corporation.

Complainants' Exhibit 319, being a franchise issued by Wilson County to Middle Tennessee Electric Membership Corporation.

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 320 a map of Tennessee showing the counties in the state which as shown by Complainants' Exhibits 235 to 319 have granted one or more franchises to one or more cooperative associations.

[fol. 313] Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 321 a map of Tennessee showing in red the counties which have granted electric operating franchises to TVA, showing in green the counties which have granted electric operating franchises to electric membership corporations, and showing in purple counties which have granted electric operating franchises to both TVA an electric membership corporations.

"Mr. Fly: I think that I might be permitted to observe that those maps (referring to Complainants' Exhibits 266, 320 and 321) of course do not purport to show the actual operations, and they do not purport to show lines, and as a

matter of fact, the Authority has transmission lines, I think, in about half of those counties, and the only direct operations that are covered, are those that have heretofore been pointed out to the Court. I merely want to make the point the maps indicate franchises and do not indicate these lines.

Mr. S. D. L. Jackson: I think the legend on the map is clearly explanatory of that."

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibits 322 to 325 inclusive, authenticated and exemplified certificates of the Secretaries of State of Tennessee (Exhibit 322), Georgia (Exhibit 323), Mississippi (Exhibit 324), and Alabama (Exhibit 325), that TVA has not taken the steps prescribed by the respective state statutes for foreign corporations to engage in business in the State and that TVA has not designated an agent for service of process within said respective states. (Counsel for defendants conceded that TVA had not qualified to do business in these four states.)

[fol. 314] W. E. Wilkerson was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am sixty-one years old and reside in Chattanooga, Tennessee. I am a lawyer and have been a city commissioner of the City of Chattanooga. I was elected February 8, 1933, and my term expired, I think, April 15, 1935. During the time I was in office, the City of Chattanooga had an engineering firm, known as Scofield Engineering Company, make a survey and report with regard to whether or not it would be feasible for the city to go into the electric light and power business.

I went to Knoxville with Mayor Bass, Commissioner Eugene Bryan, Commissioner James A. Cash, Commissioner Zack Taylor, and City Attorney J. O. Anderson, and had a conference and negotiations with the TVA. We talked to Mr. Lilienthal concerning the feasibility of putting in

a municipal distribution system, and the probable cost, and the probable income from the system after it had been installed. All of these gentlemen were present with Mr. Lilienthal, and I think Mr. V. D. L. Robinson was present most of the time. As we discussed the matter, the question came up about what percentage of the electrical business in Chattanooga and vicinity we would have to have in order to break even on the investment as then estimated. Mr. Lilienthal said it would take from 50 to 75 per cent of the business in competition with The Tennessee Electric Power Company to break even.

In that conversation Mr. Lilienthal, after stating that it would take from 50 to 75 per cent of the electric business in Chattanooga and vicinity to break even, was asked how [fol. 315] long it would take to get that much of the business, if the municipality put in a distribution system. He said it would take from four to five years. I asked him myself how the city would survive pending this losing period. And Mr. Lilienthal replied, "Tax hell out of them," or words to that purport.

I ask him if that could be done, and he stated that the Supreme Court of the United States had just recently held in the Seattle-Puget Sound case that a municipality could tax a public service corporation, although doing business in competition with it. In this conversation, Mr. Lilienthal said something about the City of Chattanooga being essential to the success of his program or plan of the TVA. Mayor Bass said to him, "You may not want us as a customer," and Mr. Lilienthal said that Chattanooga was one of the key cities and very important that the TVA get it, get a contract with it.

Cross-examination:

Mayor Bass made the arrangements about us going to Knoxville to have this conference with Mr. Lilienthal. I am not sure that the city at that time had made a formal application for a contract with the TVA. There was a great deal of agitation in Chattanooga and vicinity at that time in favor of TVA power and light, and the Mayor and the other commissioners were very solicitous about doing what the people wanted, and went up there to talk to Mr. Lilienthal about the feasibility of a municipal distribution plant for Chattanooga. We did not go up there to get a contract,

because we knew we could get that, but as to the practicability of putting in a system.

The negotiations for the contract continued over a period of time. There was the usual delay in doing business with any Federal agency in my experience. It would go on for months, and nothing be said about it. I don't believe the [fol. 316] contracts were actually signed for some time after that, I think a year or two. In answer to the question whether I know that the City Council and Electric Power Board had applied for that contract long before they got it, the matter of making actual application for the contract was handled through the mayor, and I am not personally familiar with just exactly when that was done. I do not know when the contract was finally executed. I think it is right to say that the contract was not signed until within the last 12 months. That is my hearsay information. This conference I mentioned took place on a warm day in the spring, summer or perhaps fall of 1934. I was a member of the Board of Commissioners in October, 1933.

The document (offered and received in evidence as Defendants' Exhibit 4) is a copy of a Resolution of the Board of Commissioners of the City of Chattanooga, adopted under date of October 24, 1933, and is I presume, an accurate copy of the Minutes.

The letter (offered and received in evidence as Defendants' Exhibit 5) dated October 3, 1933, and addressed to the Tennessee Valley Authority, attention Mr. Lilienthal, appears to bear the signature of Mayor Bass. I am well acquainted with Mayor Bass and in my opinion the signature on this letter is his signature. (Defendants' Exhibit 6, being a carbon copy of a letter, dated October 9, 1933, addressed to Mayor Bass in answer to his letter, Defendants' Exhibit 5, was offered and received in evidence without objection.) This is the first time I ever saw this exchange of letters.

Redirect examination:

I am not so definite about the dates but the negotiations which we had in Knoxville with Mr. Lilienthal were probably in April, 1934. I am sure it was 1934 and it was probably April.

(The witness was excused.)

[fol. 317] J. O. HENKLE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 48 years old and reside in Huntsville, Alabama. I am manager of the northern division of the Alabama Power Company.

The map (offered and received in evidence as Complainants' Exhibit 326) shows the territory of which I am division manager. The area marked off with cross-hatching is included in the territory of which I am division manager. It is the area within which certain lines were conveyed to the TVA by the Alabama Power Company. We have some operations in that territory, including urban distribution systems and some transmission lines which are under my direction. I am generally familiar with the electric power facilities which are located in this territory. This map shows the main distribution and transmission lines in the territory, but it does not show the urban distribution systems, or some short rural tap lines, as it would be impossible to show those on a map of this size.

The lines in yellow on this map represent the transmission and distribution lines of the Alabama Power Company. In this area at the present time the Company owns and operates 375 miles of transmission lines of voltages of 154, 110 and 44 kv., 1700 miles of distribution lines of voltage of less than 13,000 volts, and 1038 miles of rural lines.

The lines in red on this map represent distribution lines receiving service from the TVA and they were constructed by the TVA. The lines shown in red with cross-hatching represent the lines acquired by the TVA under the January 4, 1934 contract and it is my understanding that they have subsequently been transferred by the TVA to some rural cooperative or municipality.

[fol. 318] The lines in purple represent the lines, transmission and distribution system, of the TVA. The broken line through Jackson County represents a line that, according to my best knowledge, will be constructed between Guntersville Dam and Chickamauga Dam. To the best of my knowledge, it has been surveyed, but I do not think it is under actual construction.

With reference to the general character of the area which comprises my district, this territory is, I would say, largely a farming area. The principal towns in the area are Decatur, Huntsville and Florence—Decatur having a population of about 16,000, Huntsville a population of about 12,000, and Florence a population of about 12,000. In the vicinity of these towns and of some of the smaller towns, there are a number of industries, principally textile mills. In the eastern part of this territory, the land is somewhat hilly, more so in northwest Jackson County. Further west the land becomes rolling, and then again somewhat hilly in the western part, mostly in Colbert and Franklin Counties. I would say that the richest farm lands in the state are the bottom lands along the Tennessee River. That is the most highly developed agricultural section.

Our operations in the so-called ceded area are indicated on the map by filled-out yellow circles, and by yellow lines to indicate transmission and distribution lines. The town of Guntersville is located in Marshall County. That is one of the municipalities which has elected to acquire its own distribution system and transmit or distribute TVA power. Substantially all of the materials required for building that distribution system are on hand in the town of Guntersville, and work was actually started on the construction of the system. At the present time, however, the Alabama Power Company is still serving all of the customers in the town of Guntersville.

[fol. 319] The Alabama Power Company maintains 226 field employes under my direction as division manager in this territory. We have made continual studies of the unattached business of all kinds in this territory. It is a specific duty of the managers of the nineteen local offices in this territory, with their assistants, to continually canvass the unserved business in these areas and report such findings to the division office.

The character and extent of the unattached electric industrial power business in this district is as follows: There are three industries which use steam for processing purposes. The largest of these is a mill in Huntsville, Alabama, that at present purchases from my Company about 2/3 of its power for use in the mill, and uses about 1/3 of by-process steam power at the present time. However, as this mill is being re-conditioned, electric service is being

installed. The other two are cottonseed oil mills that use steam for processing, and they also use Alabama Power Company's service for lighting and for some auxiliary power. Then there are thirteen cotton gins, all scattered throughout the area, that have their own power units in the form of steam or oil, or farm tractors for operation. Of course, this is a seasonal load and operated intermittently, depending on the cotton crop. Then there are seven saw mills or wood working plants in the area which have fuel as a by-product in the form of sawdust or wood slabs, which makes their fuel cost very low, or probably no cost, and these plants have their own units. And there are two small ice plants using oil engines. All of these last-mentioned plants, except two, use Alabama Power Company's service for lighting and miscellaneous power service. All of the industries mentioned are on our existing lines and could be readily served at any time if they desired to abandon their present power units, which are of some value to them, and [fol. 320] it is doubtful if they would consider abandoning these units at this time.

There is no substantial unattached commercial demand in the territory. There are, of course, some stores and filling stations located in remote sections at cross-roads, and probably a few scattered grist mills that operate only about one day per week, and take in toll about one-eighth of the grain that is ground as payment for the service. They use second-hand gasoline engines for power and some discarded automobile engines, some farm tractors, most any kind of equipment.

The unattached domestic demand within reach of existing Company lines in this territory is of a very low income group of homes, and most of them are tenant homes or negro homes. In the case of tenants, of course, the landlords will not wire them for service, and I would say in most cases the people just cannot afford electric service, under the minimum requirements of the Alabama Power Company, which are $1.25 for rural and $1.00 for urban service. These amounts would provide lighting service for the people. There are about 3500 unserved houses in this territory within reach of existing Company lines, and I might say that only about 50% of the homes on existing lines are present customers. I am referring to lines outside of the corporate limits of towns in this territory.

The unattached potential domestic demand beyond the reach of existing Company lines as now extended, is very scattered. In fact, nearly all of the communities in this territory where there is a concentration of more than four or five or six houses now have service available. This potential unattached demand is of the lowest economic class, and would generally fall in the same group as those homes along the existing lines which do not now take service even though it is available.

[fol. 321] I am familiar with the minimum requirements of the TVA rural cooperative or neighborhood plan. Under that plan there must be 662 kilowatt-hours contract demand per mile of line. From my knowledge of the territory and the studies or surveys which have been made by the Company there is no unattached domestic demand now existing in this area which at the present time can be served under that plan. I am familiar with the minimum requirements of the Alabama Power Company and there is no unattached domestic demand that could be served under those minimum requirements at the present time.

Referring to the map, Complainants' Exhibit 326, those lines in Cullman County, to my knowledge, are operated by the Cullman County Electric Membership Corporation. That system of lines could be served by the existing facilities of the Alabama Power Company in the area. I would call attention to the yellow lines in Cullman County, which are the Alabama Power Company lines, and the construction of these lines of the same type and voltage of the Cullman County Electric Membership Corporation lines, which lines could be served directly from the Company's existing lines in this territory by merely inter-connecting the lines. The green line in the upper lefthand corner of the map, to my knowledge, is owned by the Southern Tennessee Power Company.

The city of Sheffield is shown on the map a little southwest of Wilson Dam, and is the center group of this cross-section just west of the dam. Its name however does not appear on the map. The Company is rendering service to the city of Sheffield at the present time. However, the city of Sheffield is now constructing an electric distribution system and they are serving some business with power from the TVA, and as the distribution system of Sheffield is being constructed as the city's work progresses, the Alabama

Power Company's system is being torn down. The distribution system of the Alabama Power Company in Shef-
[fol. 322] field was not conveyed to the TVA or to the city of Sheffield. The population of the city of Sheffield is about 6000. The franchise of the Alabama Power Company in the city of Sheffield expired in 1932, prior to the construction of the city's system.

Cross-examination:

It is true that at the time the city of Sheffield began to construct its own distribution system, the Alabama Power Company was simply in the city of Sheffield under an expired franchise, but we offered to sell our system to the city of Sheffield for about $180,000 and to accept in payment the City's 4% bonds and they declined that offer and issued $294,000 worth of 4½% bonds.

I am generally familiar with the properties that were conveyed by my Company to the TVA under the contract of January 4, 1934. Those properties were located in the Counties of Colbert, Lauderdale, Lawrence, Limestone, Morgan, the north half of Franklin and just a little segment in the northeast corner of Cullman. I can not tell you the area in square miles that was covered by the lines that were conveyed under that contract as I do not have that information. I would say that the total population of that area was about 215,000, to the best of my knowledge. The total number of customers that were served by the lines that were conveyed by the Company to the TVA was approximately 1000. I think there were about 48 industrial customers who were served by those properties. The industrial load transferred was approximately 5000 kw.

It is my understanding that the contracts for industrial service in that area were assigned to the TVA under the contract of January 4, 1934. About 130 miles of 22 kv. or over transmission lines were conveyed under that contract. About 200 miles of rural lines were conveyed under that
[fol. 323] same contract. Those rural lines were serving both rural business and some small towns or communities. They were serving Rogersville, which is an incorporated town. Some substations were transferred under the terms of that contract. I don't know the number of substations transferred, but I guess they are shown in the contract.

The Alabama Power Company is now serving the towns of Leighton, Cherokee, Town Creek, Courtland, Hartselle, Falkville, and Moulton within the ceded area; also Sheffield, Russellville, Decatur, and Austinville. We are serving Cherokee, Town Creek and Courtland from the substations transferred to the TVA under the January 4, 1934 contract. We are not using the substations that we conveyed to the TVA in order to serve those towns, but the service is being rendered through those substations.

I believe that the TVA has transferred the lines acquired under the contract of January 4, other than the main trunk transmission lines connecting the dams, to some county corporations. I have no direct knowledge of it, but I understand that to be a fact. I believe it is correct that there are no transmission lines outside of the ceded area owned and operated by the TVA except the main trunk transmission lines connecting the dams.

I know there have been some additions to the rural lines that were conveyed within the ceded area. The total number of miles of rural lines now in that area is about 935, to my best knowledge. The number of miles conveyed under the contract of January 4, 1934, was about 200. The total number of customers served from those rural lines now in existence in the ceded area is about 4100. The total number of customers served by the lines conveyed under the contract of January 4, 1934, was about 1000.

[fol. 324] To my best knowledge, the lines shown in red in Cullman County and the eastern part of Winston belong to the Cullman County Electric Membership Corporation. I don't know exactly how many miles of rural lines my Company owned and operated in Cullman County prior to 1935 but we had the lines that came into Hulaco and into Baileytown up in the northeastern part of Cullman County. That line went up to Holly Pond prior to 1935. It is correct that the rest of it as shown on the map has been built since 1935, but I would like to say that all of that territory was surveyed and lines projected for that section in 1928 or 1929, and the depression came along and held up that program until the depression was ending, at which time we resumed that program and were able to go ahead and get some of the business.

Prior to 1935, the line coming down into Cullman County from Eva and Vinemont came up to as far as Vinemont,

and then as I recall extended south from Vinemont for a short distance. Not all of that extension that is now shown on the map was there before. A short part of the extensions branching off from that line just above Vinemont, one of them branching off towards the west and the other towards the east, was constructed prior to 1935. I would say about one-fourth of that line, as near as I can tell from the map, but I would like to say this, that that business was signed by the Alabama Power Company and the line was under construction, and the TVA with their full crews came into the territory and started to parallel that line and in some cases interfered with the construction of that line. And I would like to say further that the closest source of power to those lines that the TVA was constructing to block that construction of our line was about 12 miles.

Referring to the line in the southern part of Cullman County to White City, not any of that line was constructed [fol. 325] prior to 1935, but the line south of there to Hanceville and all that section, and east of Hanceville over to Steppville, which is shown by a small circle, had been constructed. Not all of the extensions that appear on the map east of Hanceville were constructed prior to 1935, but we had a short line running out of Steppville, which is the second circle east of Hanceville, probably three-fourths of a mile. A short line of a mile and a half out of Hanceville north in Cullman was in operation in 1935. I couldn't except by scaling the map give the total number of miles of rural lines that the Company had in Cullman County prior to 1935. I wouldn't say that 38 miles would be somewhere near right. I don't know whether we had more than 38 or not, and I wouldn't know unless I scaled the map. As I recall, there were in the neighborhood of about 120 customers which we were serving off of those lines in Cullman County prior to 1935. I do not know of any such rural customers that were located in towns of a population of more than 200 except Hanceville.

I do not know the total number of miles that we have built in Cullman County since 1935. I would not say that the figure of 85 miles built since 1935 seems right. I would not like to say unless I knew definitely whether it is that many or more than that. In Cullman County we have built more miles of lines since 1935 than we have built in all of the other years we have been in existence. It is true that

since 1935 we have extended our lines into areas where we have never had lines before, but I would say that our system was in those locations, that all business came to a standstill about 1930, and that it was impossible to get any rural business during the period of the depression. This is a small county. The average number of customers that we have on these new extensions in Cullman County, the ones we have made since 1935, is, according to my best knowledge around 5 per mile. I can give the figures as to density and can not give any figure as to number of miles or number of customers, for the simple reason that the density [fol. 326] figures are figures that are average for our system in that area and practically all our system. I could give you the number of miles and number of customers if I had time to check the figures. In answer to the question whether the density would be just slightly over three customers to the mile on those new extensions, I would say that the density is greater than on the TVA lines in that County.

According to my best knowledge, the Cullman County Electric Membership Corporation has 240 miles of lines in operation in Cullman County. The number of customers served by that cooperative is about 865. According to my best knowledge, there are three customers that are now being served by the Cullman County Electric Membership Corporation that were formerly served by my Company in that area. I would call a customer a premises which is connected to our lines and where one family moved out and another moves in immediately. It is true that there are different people. It is true that there are not the same people in any instance who were formerly served by our Company but I would like to say that one of them is a director of the Cullman County Electric Membership Corporation.

Before my Company undertook these new extensions in Cullman County, we did not make any study or investigation to see how many of the customers along the route that we were proposing to go had already signed applications with the Cullman County Electric Membership Corporation. We were not interested. We were interested in getting them to sign our contracts. In answer to the question [fol. 327] whether we did not care whether prospective customers were already signed up with someone else just so

we knew we were going to build a line, I think I would agree that what we were interested in was to get the new customers signed.

I do not know how many people along these extensions built since 1935 signed contracts before we built the lines. We could produce some signed contracts that we procured along these new extensions before they were built, but I do not know how many. I have none with me. In answer to the question whether I can name any customer we signed, I do not remember the list of customers, because those lists came to me and I did not scrutinize them carefully enough to remember the names of the customers.

The communities marked on the map of this area in Cullman County, West Point, Jones Chapel, Logan, Crane Hill, Trade, did not have any electric service prior to 1935. None of the line down in the southern part of the County, running to Arkadelphia, was constructed prior to 1935. Judging from the scale of the map, I would say that line is about 12 miles long. I do not know how many customers we have along it.

Redirect examination:

Referring to the line extensions in Cullman County which I testified were constructed since 1935, there were requests for those line extensions prior to the construction of such lines.

(The witness was excused.)

[fol. 328] Herbert J. Scholz was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 45 years old. I reside in Birmingham, Alabama, and for the past 6 years have been in charge of the southern engineering staff of The Commonwealth & Southern Corporation of New York. I graduated in 1915 from Leland Stanford University in electrical engineering, and except for a period of 15 months while in the military service, I have been continuously associated with the business of power generation, transmission and distribution of electrical energy.

The map (offered and received in evidence as Complainants' Exhibit 327) shows within a radius of 100, 150 and 250 miles of any TVA dam now constructed, or which it has under construction, or which it has authorized or recommended for construction, the transmission and distribution lines of the complainant companies other than the distribution lines located within communities or municipalities, or which are so short that the scale of the map would not permit them being shown. The lines of the complainant companies, except for the Kentucky-Tennessee Light & Power Company, were taken from several smaller maps filed in this Court as Complainants' Exhibits 7, 12, 27, 29, 33, 37, 41, 49, 74, 82, 89 and 101, and were transposed to this large map. The map also shows the principal transmission lines of private utility companies, not complainants, located in this area.

In accordance with the legend, the lines of the smallest [fol. 329] width represent lines below 15 kv.; the lines having intermediate widths are lines between 15 and 50 kv.; and the lines of the broadest width are lines of 50 kv. and above. The map correctly shows the lines as they are shown on the smaller maps that I have referred to as exhibits heretofore filed in this case, except for the difference in scale. The voltage and transmission lines of the Kentucky-Tennessee Electric Power Company have been indicated on this map as number 11. There are no other lines of the Kentucky-Tennessee Electric Power Company except those which are in communities and municipalities. The lines in communities and municipalities are too small to show on a map of this scale. The map correctly shows, so far as I am able to state, the location and voltage of the principal transmission lines of non-complainant companies within the 250 mile area. The non-complainant company lines are all located in areas which have no colored background in Arkansas, Missouri, Illinois, parts of Indiana, Ohio and Kentucky and in the southeast, North Carolina, South Carolina and parts of Georgia.

The boundary outline of the colored background, in so far as the Alabama Power Company, The Tennessee Electric Power Company, the Appalachian Electric Power, the Kentucky & West Virginia Power Company, and the Kingsport Utilities Company, Inc., was taken from the smaller maps filed in this Court as Complainants' Exhibits 7, 49

and 89. As regards the other complainant companies, the colored background has been placed to show the ownership of lines. That is to say, as to the companies other than those I pointed out, the maps filed as exhibits do not have this colored background, but I have placed it on there in [fol. 330] making this map. The purpose was to show ownership of the lines, and to be consistent I merely outlined the boundary, and colored the background which covered the lines of that particular company in one color.

Cross-examination:

The purpose of showing the tinting was to indicate the ownership of the lines. The ownership of lines could be represented possibly in other ways. With reference to showing ownership by coloring the lines themselves it would take a great number of colors to do that and from a map-making standpoint it would still be difficult to use changes in colors in the different areas, because of the color of the present lines being in blue, this being a white print; or if it were a blue print, with white lines, it would be difficult to merely trace over the lines sufficiently to show that. However, it would be feasible to make a map coloring the transmission lines.

"Mr. Fly: If your Honor please, I will object to that map, on the ground that it is unnecessarily and prejudicially misleading. This is a system that these complainants have insisted upon adopting from the very outset of this case, and by adopting a solid color scheme, covering general areas, regardless of what the type of line was, and type of service and availability is, they carry forward there the impression that all of those territories are territories that are peculiarly under the domain of those particular companies.

Now I don't think that we ought to perpetuate in the record any such misleading and prejudicial exhibits. Now then they have had ample notice of that, and I think it is time that we were getting a fair method of setting forth those lines."

[fol. 331] Examination by the Court:

The dams are not shown on this map but their location would be represented by striking radii from the arcs of these circles 150, 250 or 100 miles, which would intersect

at the dam location. I was not here the other day when the court commented on a map which referred to a dam recommended for construction. Fontana Dam is the only dam which has not been authorized by Congress which would have any bearing on the circles.

Cross-examination continued:

I have not indicated the location of any of the dams as such except it could be derived by striking the radii from the arcs of the circles.

"Mr. Fly: May it please the court, following through on your Honor's question about the dams, the witness has testified Fontana Dam has been used as a center. The dams themselves are not shown on there, and as the witness has testified, the only way to find what dams are concerned, and therefore to arrive at some idea as to when this sort of thing would be possible from the standpoint of construction, whether or not the dam is built, whether or not the dam is under construction, whether or not it is authorized, there is no way to spot those on there in relation to this work except by taking the 250 mile radius and working back from the circumference.

And I think also the fact that after a week's notice they have brought Fontana Dam in here again also makes the map both misleading and prejudicial, and upon all of those grounds, including the improper coloring of the background, I object.

Judge Allen: Mr. Fly, is there any other dam except Fontana Dam which is recommended by the TVA Board but not authorized by Congress?

Mr. Fly: I don't believe that any other dam is recommended and not authorized, your Honor, and as a matter of fact there is no pending recommendation to Congress on the Fontana Dam. It was, a year or two ago it was recommended but was rejected at that time. And it has not been recommended since.

Judge Allen: The objection of the Authority to the use of the distinctive colors on this map, for the purpose of indicating territory through which certain transmission [fol. 331a] and distribution lines of various companies past, is overruled.

The Authority has the right to cross examine on those points, and bring out the facts. The Court considers that

the map in its present condition is incorrect and misleading. It refers to dams but it does not include the dams. And also, the Court, in accordance with its previous ruling, under which it admitted an exhibit which it deemed incorrect and inaccurate, the Court rules that the dam which has been recommended but not authorized by Congress should not be included."

[fol. 332] (At a subsequent session of the Court the witness H. J. Scholz was recalled.)

Direct examination (continued):

Under my direction we have added to the map (Complainants' Exhibit 327) the following dams and dam sites indicated on the map as follows: "Gilbertsville Dam, Pickwick Landing Dam, Wilson Dam, Wheeler Dam, Guntersville Dam, Chickamauga Dam, site of Watts Bar Dam, site of Coulter Shoals Dam, Norris Dam, Hiwassee Dam, site of Fontana Dam recommended." The word "recommended" is also added after the site of Watts Bar Dam and likewise after Coulter Shoals. In addition to that, we have added notes to the arcs of the circles to show which particular dam that arc has reference to. In addition to that, there was some error in showing coloring south of Chattanooga in the northern part of Georgia, and we have restricted the colored area in that locality to around the lines owned by The Tennessee Electric Power Company in Georgia. Outside of that, it is identical with the way it was presented originally. We eliminated some of that pink area from the northwest corner of Georgia under instructions from our attorneys to the effect that it was to be made to conform to the testimony of Mr. Guild.

Cross examination:

So far as the wording on the map is concerned there is no distinction between Watts Bar, Coulter Shoals and Fontana. They are all marked "Site of —— Dam, recommended". So far as the map is concerned, we have placed [fol. 333] them in the same status. (The Court suggested that the words "No specific Congressional Appropriation yet made" be added under Fontana. This correction being made the map, Complainants' Exhibit 327 for identification, was received in evidence.)

I have not shown the generating plants and substations on Complainants' Exhibit 327 and I have not shown any difference between the various transmission lines of 50 kv. and above. In accordance with the legend, we divide the voltage classes into three classes, and there was no distinction made trying to classify any further the lines of 50 kv. and above. The practical difference between a line of 66 kv. and 154 kv. is in carrying capacity, depending upon the conditions, length of line, power factors, etc. Assuming the same conditions the carrying capacity of a transmission line increases as the square of the voltage, so that the carrying capacity of a 110 kv. line would be in the order of four times as great as the 66 kv. line. Similarly, the capacity of a 154 kv. line is about 6 times that of a 66 kv. line.

The TVA lines are not indicated on the map. They were not intended to be. We have shown the dams, however, and the lines of all of the companies, including the Complainants, that reach the dam sites. The line which runs from Arlington, near Knoxville, to the vicinity of Norris Dam, is owned by The Tennessee Electric Power Company. There are no other lines in that same proximity in the vicinity of Norris Dam, to the best of my knowledge, other than Government lines. The lines that are shown on the map in the vicinity of Chickamauga, but not connected to Chickamauga, are those of The Tennessee Electric Power Company. No other private utilities that I know of have any lines in that immediate vicinity. I understood at one time The Tennessee Electric Power Company had a connection at Chickamauga Dam site for construction purposes. [fol. 334] But whether that is actually there now, I couldn't say. There are no private utilities other than Alabama Power Company, to my knowledge, that have any transmission lines leading from the vicinity of Guntersville. I don't believe there are any lines of private utilities leading from Wheeler Dam. The only lines that are in that vicinity, other than those of the TVA, are lines that were previously owned by the Alabama Power Company. The Alabama Power Company has a connection to Wilson Dam. The Southern Tennessee Power Company also has a connection at Wilson Dam. It is another subsidiary of The Commonwealth & Southern Corporation. The function that that Company has been preforming has been to own a little stretch of transmission line leading from the Wilson Dam

into the territory of The Tennessee Electric Power Company. I do not know of any other function that it performs other than to own and operate that one line. There are no lines of any other private utility in the vicinity of Wilson Dam.

The closest line of a private utility in the general vicinity of Pickwick Landing Dam would be that of The Tennessee Electric Power Company extending southwest from a point to Centreville, or near Columbia, that line that extends to the southwest, the nearest line.

The first interconnection between the Alabama Power Company and the Mississippi Power Company is one of 44 kv. on the West Point-Aberdeen-Sulligent line. That is the northernmost line running east and west across the boundary. The next one is the 110,000 volt interconnection at the state line, being an east and west line extending from [fol. 335] the vicinity of Birmingham, actually at Gorgas Steam Plant, to West Point, Mississippi. The next interconnection between the Mississippi and Alabama companies is at the state line between Demopolis, Alabama, and Meridian, an east and west line between those two stations or cities. There is another interconnection at the state line, at the extreme southern part of the territory at the state line, an east and west line between Mobile and Gulfport, Mississippi. The Mississippi Power Company has been taking a substantial part of their power requirements from the Alabama Power Company over those lines. It has been doing that for several years and is now doing that.

In the northeastern part of the state of Alabama at a point north of Bridgeport, there is a 44 kv. interconnection between the Alabama Power Company and The Tennessee Electric Power Company. Outside of that, there is no direct interconnection that I can think of at the moment between the Alabama Power Company and The Tennessee Electric Power Company. At the present time, the function of the line belonging to the Southern Tennessee Power Company is to connect through other facilities the Alabama Power Company and The Tennessee Electric Power Company. To the best of my knowledge, that is the only function that it performs at the present time. The line is the equivalent of 250,000 circular mills copper, and part of the section is equivalent to 3.0 copper. In terms of kilowatts it is a 154 kv. line.

I think there has been power transferred in recent years between the Alabama Power Company and The Tennessee Electric Power Company, but I am not qualified to answer whether it was chiefly from the Alabama Power Company to The Tennessee Electric Power Company.

[fol. 336] By Mr. Fly:

"Q. You do know that The Tennessee Electric Power Company, particularly in low water seasons, is in need of power and it relies upon the Alabama Power Company to get the power over those lines, don't you?

Mr. Seymour: Just a moment before you answer that.

Mr. Fly: Are you objecting?

Mr. Seymour: I want to object if you will give me the opportunity. If the Court please I would like to recall to counsel the fact that we are taking the position that this is outside of the appropriate scope of the direct examination of the witness and going into matters that it is evident he does not know anything about. We are perfectly willing, if the Court please, that he be examined about things, this map, and the testimony, that it is evident he could give, and about which it is proper to go into the record. This is purely argumentative.

Mr. Fly: This is not argumentative. I want to know whether over that line——

Judge Allen: Let the Court make a statement. In addition to the reasons heretofore given for extending the scope of cross examination, acting deliberately and unanimously, taken after a very careful consideration, the Court now is certain that so far from abusing its discretion, it was compelled by the circumstances of the case to allow cross examination beyond the scope of examination in chief.

We are bearing in mind this fact, that if cross examination were limited, as it is strictly limited under the general Federal rule, without opportunity for further cross examination, as held in Davis vs. Koblentz, 174 U. S., the Court considers if the witness had been held to strictly or so strict a cross examination, and then having to be recalled for matters, that this case, which it seems should be terminated by Easter certainly would have lasted until June. At least we feel a substantial gain in time has been made by refusing to abide by our federal rule.

There is another point on which the Court desires to take counsel into its confidence, that is we do not think this is an ordinary case where counsel on either side are uncertain as to what will be testified. The facts in this case have been subject to judicial scrutiny, almost every fact, frequently. They have been repeatedly in the State courts, in the different states, repeatedly in the federal courts in the different states. The result is that counsel for neither litigant can conscientiously say they do not know what will be [fol. 337] brought out on the other side. Therefore they are not subject to surprise which is the real reason for the rule on cross examination both in the State courts and the Federal courts. We feel that the facts have been so sifted, that the prejudice which might result in the ordinary case does not exist here, and we want counsel to understand that.

Mr. R. T. Jackson: May I make an objection for the record, if your Honor please? We object to this question because it has no relation to examination in chief, and wish to state the reason we make the objection, in view of what we recognize to be the ruling of the Court. We recognize that the court may exercise wide discretion over the order of procedure and that sort of thing, in the mechanics of the trial for the convenience of the Court as well as of the parties. But we do not understand that that includes any infringement of the substantial rights of the parties under these rules of examination and cross examination.

And our understanding of the rule is when a party goes into other phases on cross examination, he makes the witness his witness. He is not permitted to ask leading questions, and the other side has the right to cross examine on those points. But, while the Court may hold that the witness may be examined by the other side, if they want to use him for some other particular matter while he is on the stand, and put in a part of their case somewhat out of order, we do not understand that includes relieving the adversary of his usual obligation that he makes the party his witness, and is required to abide by the rules that the Courts follow, that the witness is his witness and his adversary has the right of cross examination.

Judge Allen: As we understand the rule we are following here, the rule was laid down in Davis vs. Koblentz.

Mr. Jackson: May we now note objections to the rule of the Court that counsel for the defendant is entitled to the privilege of taking such matters outside of the direct, with-

out making the witness his own witness and giving us the right of cross examination.

Judge Allen: You may have the exception."

There is doubt in my mind that The Tennessee Electric Power Company, particularly in low water seasons, is in need of power and relies upon the Alabama Power Company to get the power over those lines.

[fol. 338] "Q. You know Mr. Guild testified that he bought substantial blocks of power through that line leading to Wilson Dam, don't you?

Mr. Seymour: We object to that for the same reason.
Judge Allen: Overruled.
Mr. Seymour: Exception.

A. It may be that substantial quantities of power may have gone over the line, but I do not think it is a fact that that would necessarily be the dry season. You made the statement."

In balancing the amount of power The Tennessee Electric Power Company delivers to the Alabama Power Company against the amount of power it gets through that line from the Alabama Power Company, I would say that in the final balance The Tennessee Electric Power Company is the purchaser.

"Q. Are you familiar with the amount of power that those Commonwealth & Southern Companies have taken through this line shown on your map, from the TVA dams as shown on the map.

Mr. Seymour: Objection for the reason just stated.
Judge Allen: He may answer.
Mr. Seymour: Exception.

A. I am not familiar with the amount of power that has been taken.

By Mr. Fly:

Q. Do you know it has been a substantial block over a period of years?

Mr. R. T. Jackson: Permit me again——
Mr. Fly: Let the witness answer. Don't interrupt the witness.

Judge Allen: He may answer.
Mr. Fly: Do not interrupt the witness.
Judge Allen: Do not have argument between counsel. Make your objection and let the Court rule.
Mr. R. T. Jackson: May I state my exception to the refusal of the Court to permit me to state the ground?
[fol. 339] Mr. Fly: Will you answer?

A. In the quantity."

I am familar by general knowledge with the connections of transmission lines between the various dams shown on the map.

"Q. And you are aware of the fact, are you not, that the Norris and Wheeler dams are interconnected with Wilson Dam?

Mr. Seymour: Objection to the question.
Judge Allen: He may answer it.
Mr. Seymour: Exception to the ruling.

A. By hearsay, yes; not by actual knowledge."

I cannot say when I first heard that. I could not tell you who told me. I think where I heard it probably was in the press. In answer to the question whether I saw the announcements when Norris started operation and all that sort of thing, I would say from general knowledge, yes.

I did not, to my knowledge, talk about that matter to Mr. Duryea, nor did I have any communication with Mr. Neeson, of the Alabama Power Company, or Mr. Miller, of The Tennessee Electric Power Company. I am the head of the Southern Engineering branch of The Commonwealth & Southern Corporation and am in close touch with those gentlemen on certain matters. Depending upon what the problem is, I am in close touch with those gentlemen in important matters involving the transmission system in the Commonwealth & Southern area. I am primarily handling engineering matters. I have no recollection that Mr. Neeson, of the Alabama Power Company and Mr. Miller, of The Tennessee Electric Power Company, inspected Norris Dam when it began operation about the first of August, 1936. I have no recollection that I heard from those gentlemen or from anyone else at that time that they did inspect that dam [fol. 340] and power plant then. No one told me that there

was any inspection being made. I have heard since that people have visited Norris Dam.

By Mr. Fly:

"Q. And you have heard that those engineers of those two companies were appointed as a Committee for the Commonwealth & Southern System to inspect that dam at that time, were they not?

Mr. Seymour: We object to that question.
Judge Allen: Objection overruled.
Mr. Seymour: Exception.

A. I was not informed about that point.

Judge Gore: Mr. Fly, do I understand you are trying to show the Wilson Dam and Norris Dam, and Wheeler Dam are connected by transmission lines; is that it?

Mr. Fly: I am trying to show, of course, what everybody here knows as a matter of fact, that Norris, Wheeler and Wilson are interconnected, and that those dams were put into operation beginning in July, around the first of August, 1936, and that they had no possible outlet for the power except to go on to the system feeding out through Wilson Dam, and that all of that power was in one common pool. And eventually I will put in the documentary evidence from these gentlemen which will prove that they knew that the power was going into that pool and coming out to them. I think that every witness who gets on this stand, every qualified engineer in this field, ought to meet that issue squarely and testify to it. I think that their knowledge of it is so extensive they ought to meet it squarely. In fact, I think counsel ought to stipulate.

Judge Gore: What I have in mind is this a physical connection, visible to the eye, or to be seen? Gentlemen, it looks like those transmission lines, if they are connected, that matter could be stipulated. Then the other matter concerns what I have got in mind now, because I could go there, I could see the lines if it is a physical connection.

Mr. R. T. Jackson: We raise no question, in fact we expect to prove the dams are interconnected by transmission lines with the other dams.

Mr. Fly: And that they are in one pool.

[fol. 341] Mr. R. T. Jackson: That they are now, and are all going to be in one pool, and also as I stated before, it is

just the beginning of your big grid system. It is one pool of power. We are ready to stipulate we have proved in the record by Mr. Barry that there has been a connection since before TVA was formed, with Wilson Dam and the Alabama Power Company system, and that the only power the Alabama system ever received, to go out through its system, to the Commonwealth & Southern companies was through the connection at Wilson Dam.

Q. Did Mr. Willkie ever tell you that he understood that Norris and Wheeler Dams were placing power on the lines leading to Wilson Dam, and connecting with the lines of the Commonwealth & Southern Corporation.

Mr. Seymour: Objection made to that question for the reason just stated above.

Judge Allen: Objection overruled. You may have your exception.

Mr. Seymour: Exception.

A. I have no such recollection, Mr. Fly.

By Mr. Fly:

Q. Did Judge Weadock ever tell you?

Mr. Seymour: Objection.

Judge Allen: Did anyone ever tell you anything about that?

A. I have no such recollection of anyone telling me that."

I do not have the figures for the total installed capacity connected with the transmission lines of the southern Commonwealth & Southern companies, as of January 1, 1937, but I can secure them.

By Mr. Fly:

"Q. With the Court's permission I will ask the witness to verify these figures: Installed hydro capacity, southern branch of Commonwealth & Southern as of January 1, 1937, 833,016 kilowatts; dependable hydro capacity for the same system 529,370 kilowatts."

[fol. 342] (The following testimony of the witness was subsequently incorporated in the record as a part of the cross-examination:)

The figure of 833,016 kilowatts mentioned by Mr. Fly is not the installed hydro capacity of the southern properties of The Commonwealth & Southern Corporation as of January 1, 1937, but was reported to Federal Power Commission as the hydro plant capability at the time of the 1936 system peak (kilowatt).

The sum of the installed hydro capacities in kilowatt name plate rating, reported by the operating companies comprising the Southern group of the Commonwealth & Southern Corporation, in column 3, page 6, as of December 31, 1936, in their statement on the production, transmission, and utilization of electric energy for the years 1934, 1935, and 1936 is 867,717 kilowatts.

The figure of 529,370 kilowatts mentioned by Mr. Fly as being the dependable hydro-capacity, agrees with the figure in the supplementary statement accompanying the above mentioned statements of the individual companies, on page 9, paragraph 4, in accordance with the Federal Power Commission's definition of the term, and with stipulated conditions as set forth in their questionnaire, and as qualified by the explanatory note of the reporting company referring to page 9, item (a).

[fol. 343] Redirect examination:

The map, Complainants' Exhibit 327, was not prepared or made for the purpose of showing the generating stations and substations. It was made purely to show, as appears by the subject of the title, transmission and distribution lines, the ownership of those lines, and voltages of the three different types of lines. The map did not purport to show the connections of certain lines with TVA dams or Government dams, but to show conditions within certain radial distances from those dams as focal points. The map was not intended to show physical connection with the Government dams and there is no symbol to indicate any physical connection at that place. It was made to show the lines of the private utility companies and of the location of the TVA dams or dam sites if they happened to fall inside of the line representing a line of a private utility. There is no symbol on the map to show any interconnection with any other companies. There is merely a continuation of the line into a different colored area.

(The witness was excused.)

[fol. 344] OFFERS IN EVIDENCE

The Court having theretofore directed the defendants to produce certain specified minutes and copies of certain specified communications described in paragraphs 1 and 7 of the subpoena duces tecum (Complainants' Exhibit 1), and the defendants having submitted to the complainants copies of the minutes and letters as so directed, counsel for the complainants thereupon offered and read all of the material furnished by the defendants as aforesaid, being as follows:

That part of the minutes of the meeting of June 26, 1933 of the Board of Directors of TVA which relates to the opposition of said Board to the granting of further licenses in the Tennessee River Basin:

"The Board directed counsel to formally request the Federal Power Commission, on behalf of the Corporation, not to grant further licenses in the Tennessee River Basin, and authorized counsel to file appearances and take appropriate action to oppose the granting of such further licenses."

That part of the minutes of the meeting of May 20, 1934 of the Board of Directors of TVA which relates to the granting of further licenses in the Tennessee River Basin:

"Chairman Arthur E. Morgan was authorized to forward to the Federal Power Commission a letter stating reasons why the application of the Southern Industries & Utilities Company for a license to construct a dam on the lower Tennessee River should be rejected. A true copy of the letter, labeled exhibit 5-20-34a, is attached to these minutes and made a part hereof."

A copy of the letter referred to in the foregoing resolution and conceded by counsel for defendants to have been sent to the Federal Power Commission over the signature of Dr. A. E. Morgan as Chairman of the Board:

"Washington, May 21, 1934.

Federal Power Commission, Washington, D. C.

GENTLEMEN:

Our Board has given careful and extended consideration to the Southern Industries & Utilities Company's proposal

for building a dam on the lower Tennessee River. We regret that owing to pressure of official duties we are unable to personally appear before your Commission in this matter.

In support of its former objection to the proposal of the applicant, the Tennessee Valley Authority presents the fol- [fol. 345] lowing reasons why the application of this company for license should be rejected.

When Congress passed the Tennessee Valley Act of 1933, it placed on the Tennessee Valley Authority the responsibility of an orderly and proper development of the Tennessee River for power, flood control and navigation. The Authority is carrying out this development as rapidly as is consistent with the public interest. Toward this end, it has well under way the construction of Norris Dam and Wheeler Dam, at an estimated cost of $73,000,000, and it has a corps of engineers making surveys and plans for developing additional storage and run of river projects, including that of the Aurora or lower Tennessee. Developments of this site by private enterprise therefore would be contrary to the intention of Congress as expressed in the Tennessee Valley Act, and contrary to the policy and program of the Authority.

The proposal of the applicant that the Federal Government pay the cost of the navigation benefits, estimated to cost $14,000,000, and that the applicant pay the cost of the power feature, estimated to cost $10,000,000 by the applicant, does not fairly represent the respective interests of the applicant and the Government in the situation. The amount of firm power available at the Aurora site will depend to a large extent on the regulating effect of Norris and other storage reservoirs, which represent a large investment and which will probably more than double the ultimate value of the power possibilities at Aurora. This investment by the Government in storage reservoirs will set the Government's interest in the Aurora project at much more than 60 per cent—perhaps nearer 80 per cent. Inasmuch as the Government will have this large proportion of the investment, there seems to be no good reason for it to give over the ownership or operation of the power feature to a private agency. In addition to the proposed investment of about $35,000,000 in the Norris project, the Tennessee Valley Authority is making plans for early construction of two other storage reservoir projects estimated to cost over $40,000,000,

and has made a request for an appropriation towards this construction. Additional future storage projects are contemplated. All of these storage reservoirs will operate to increase the primary power at the run of river plants, including that to be built at Pickwick Landing, for which the Authority is now making plans. The applicant's proposed dam will decrease the power head at Pickwick Landing by 11 feet from that proposed by the Tennessee Valley Authority, making this amount of head unavailable for the primary power afforded at this point by the storage at Norris and other storage reservoirs.

The applicant bases its plans on the assumption that 60 per cent of the cost of the project will be borne by the [fol. 346] Federal Government. No such appropriation has been made. Since Congress has already appropriated funds to the Tennessee Valley Authority for the unified development of the Tennessee River Basin, ir—a typographical error, I think it means 'it' — it becomed questionable whether the applicant can consistently expect an appropriation of Federal funds for the use of a private agency for development of the lower Tennessee.

An essential feature of the program of unified development by the Tennessee Valley Authority is the interconnection of the various power units to permit economical production and operation. Thus at times when most of the power at Aurora is drowned out by high water, this deficiency can be supplied from Wilson and Wheeler Dams, and other dams to be built on the lower Tennessee, where the excess flow at such times would provide an abundance of power. A unified system will best permit such coordinated control and operation. Such coordinated control and operation of the Tennessee River system as a single unit is essential to the most economical production and use of hydro-electric power from the river. The rates at which water will be stored and released in the various reservoirs in the branch streams should be determined by the coordinated needs at the power plants on the main river. If any power plant on the main river is left out of this control, the value of the public investment in the upper storage reservoirs would be reduced, and the cost of power would be correspondingly increased.

The Tennessee Valley Authority now has an organization of experienced engineers and designers actually at work on plans and designs; it has an efficient construction force

actually engaged in dam construction; it has construction plant and equipment especially designed for dam construction; and it is equipped for the expeditious and economical planning and execution of this kind of construction. The applicant is not so equipped. One of the first steps towards building a dam on the lower Tennessee may be the building of a transmission line from Muscle Shoals for a power supply during construction, and for an interconnecting line. This would also supply power for other purposes. An actual power supply in the vicinity of the Aurora site would therefore be achieved more quickly under the general program.

The advantages claimed by the applicant for early construction of a dam on the lower Tennessee will obtain most fully if it is constructed and operated by the Tennessee Valley Authority, and in that case the benefits will be more wide-spread and more complete, and will better serve the public welfare.

For these and other reasons, we request that this application for license be rejected.

Sincerely yours, Tennessee Valley Authority, By Chairman of the Board."

[fol. 347] A copy of the protest filed by TVA with the Federal Power Commission on or about May 25, 1934, in opposition to Project No. 920 Aurora Dam Site, and which counsel for defendants conceded went out over the signature of Mr. Lilienthal as General Counsel for TVA:

"Protest of the Tennessee Valley Authority.

The Tennessee Valley Authority (created under the terms of the Tennessee Valley Authority Act, approved May 18, 1933, as found in 48 U. S. Statutes at Large, p. 58, Chap. 12-A, Title 16, U.S.C.A.) now appears before the Honorable The Federal Power Commission and protests against the granting of any license to the Southern Industries and Utilities, Inc., and respectfully shows.

(1) The protestant's address is New Sprankle Building, Knoxville, Tennessee.

(2) Protestant objects to and protests against the granting of any license to the Southern Industries and Utilities for the construction of a power dam or other hydro-electric project called in this record the Aurora Dam,

to be located at or near Shannon Landing, on the Tennessee River in the States of Tennessee and Kentucky.

(3) Protestant is interested in this project because under the terms of the Tennessee Valley Authority Act of 1933 Protestant is charged with the duty of controlling the destructive flood waters of the Tennessee River basin, of improving navigation on the Tennessee River, and of bringing about the maximum generation of electric power consistent with flood control and navigation; because protestant in the course of the performance of these duties has under consideration and is planning to construct dams at various sites on the Tennessee River with the operation and construction of which the proposed dam at Shannon Landing would seriously conflict; and because protestant, pursuant to its statutory and public duty, plans to develop and improve the Tennessee River in its entirety.

(4) Protestant desires to become a party to this proceeding.

(5) The grounds upon which Protestant objects are:

'(a) The applicant, Southern Industries and Utilities, Inc., is without requisite financial responsibility, and if a license were issued to the Southern Industries and Utilities the improvement of the river by the protestant or anyone else would necessarily be delayed thereby.

[fol. 348] (b) The proposed development by the Southern Industries and Utilities, Inc., is not consistent with the most comprehensive scheme of development for the Tennessee River and therefore the scheme should not be adopted by the Commission nor approval of the project be given.'

The proposed development by the Southern Industries and Utilities will drown out eleven feet of the usable head of the high dam which, under the plan of the Army Engineers as shown in House Document 328, is proposed at Pickwick Landing. Protestant plans to construct a dam at the Pickwick Landing site, and the construction by the applicant of the dam at Shannon Landing would therefore directly affect the power development of the protestant.

The location of the applicant's dam at Shannon Landing would necessitate the construction of an additional low navigation dam at Aurora Landing with appurtenant

lockage facilities, which would be an unnecessary inconvenience to navigation.

By the construction of the dam at Shannon Landing instead of Aurora Landing, approximately eight feet of usable head of water will be lost irretrievably because it would not be economically feasible to construct an additional power dam below the Shannon Landing site to take advantage of this eight feet of head.

Inasmuch as the Federal Government through protestant already has under construction a power dam at Norris and the Wheeler Dam just above Muscle Shoals, and inasmuch as the United States through protestant owns and operates the Wilson Dam and proposes to construct and operate a dam at Pickwick Landing, and proposes to construct other storage dams on the headwaters of the Tennessee River, no scheme is comprehensive which would give an independent ownership to the dam at Shannon proposed to be built by the applicant. The dam at Shannon will produce very little power, on account of reduction of head, during high water periods, and at the same time the protestant's Norris, Wheeler and Wilson Dams would be producing at their maximum rates and would be able, through interchange of power to make up for the deficiency caused by the drowning out of the dam on the lower Tennessee. A unified ownership and operation with Norris, Wilson and Wheeler Dams, of any dam to be constructed at or near Aurora Landing is therefore essential to a comprehensive scheme of development and necessary to eliminate the construction of a costly steam plant which would otherwise be required to develop any substantial amount of prime power.

(c) The United States Government itself should develop the project, and this Commission should decline to grant a license to the Southern Industries and Utilities or to any other private corporation.

[fol. 349] The United States Government has as above recited already under construction a storage dam at Norris, a run-of-the-river dam at Wheeler, and has already built and is now operating the Wilson dam. The United States, through protestant is planning the construction and operation of additional storage and run-of-the-river dams, and further private ownership and operation of dams on the Tennessee is inconsistent with the evident intention of the

Federal Government to undertake itself the development of the Tennessee River.

The Tennessee Valley Authority is developing a large amount of storage at Norris and will, in the future will develop other storage dams. This storage will be released in such manner that the generating plants at these dams and at the interconnected run-of-the-river plants will develop constant power. The plant proposed by the applicant would receive variable flow during the low water season and being isolated from the system would not receive support from the other generating plants.

The Federal Government's present large investment, running into many millions of dollars, in the Norris storage reservoir dam and the proposed additional storage reservoir dams to be built, is economically justified on the basis that the United States will own and operate as many run-of-the-river plants below the storage dams as may be built on the river, in order to reap the maximum advantage of the storage dam investment.

Independent ownership of the Shannon Landing dam will lead to complicated questions of headwater benefits claims of the United States against the applicant, and may lead to claims for damages by the applicant against the United States by reason of the effect upon applicant of variations in stream flow caused by the policy of the United States to produce a uniform output of power rather than a uniform stream flow.

(6) This protest will be supported by evidence, both oral and documentary and in behalf of the protest the following witnesses will appear to testify:

Carl A. Bock, James S. Bowman.

(7) A copy of this protest has been served upon the applicant the Southern Industries and Utilities, Inc.

Wherefore, protestant prays that it be made a party to this proceeding and that no license be issued to Southern Industries and Utilities, Inc.

Tennessee Valley Authority, By —— ——."

[fol. 350] That part of the minutes of the December 14, 1937 meeting of the Board of Directors of TVA which relates to the assignment to the City of Knoxville of TVA's contract with the Volunteer Portland Cement Company:

"Resolved, that the Board of Directors hereby approves the assignment (Exhibit 9-14-37h) to the City of Knoxville, Tennessee, of all the Authority's rights, title and interest in and to the power contract with the Volunteer Portland Cement Company dated August 14, 1936.

Further Resolved, that Arthur E. Morgan is hereby authorized and directed to sign the instrument for and on behalf of the Authority."

Counsel for defendants then requested that certain excerpts from Complainants' Exhibits 114, 115 and 116 be transcribed in the record.

"Judge Allen: The Court will not receive in evidence isolated and garbled portions of a document. The Court has received the entire statements and reports in question, and the Court will permit counsel for the Authority to call the Court's attention to whatever they wish in those statements and reports. The Court feels that it could if it cared to, read the entire statement in the report.

Mr. S. D. L. Jackson: May we have our exception, and also, if your Honor please we do not think the excerpts that we offered were garbled. We think they were accurate. I mean truly reflective of what the witness said, in those hearings.

Judge Allen: They were only parts.

Mr. S. D. L. Jackson: We did not distort the meaning of his answer.

Judge Allen: They were only part of the statement of a report.

Mr. S. D. L. Jackson: That is true, they don't purport to be his entire testimony.

Judge Allen: You may have your exception.

Mr. S. D. L. Jackson: Thank you.

Judge Allen: And the Court adheres to its ruling.

Mr. S. D. L. Jackson: Very well, then, if we may state our objections, if we may state the grounds of them to the reporter, so that they may be transcribed into the record, then we won't take any of the time of the Court in doing it. [fol. 351] Judge Martin: Haven't you stated those grounds, yesterday? Are there any new grounds that have not been stated?

Mr. S. D. L. Jackson: Yes, I think there is one new ground that has not been stated; that certain of these ex-

tracts that our friends now want to call the Court's attention to in those books are merely self-serving declarations.

Judge Martin: That was stated.

Mr. S. D. L. Jackson: And for the further reason that they go beyond any explanation or clarification of any extract that we called the Court's attention to, but they are something entirely independent, evidentiary matters, going to matters, going to matters of defense as I see it.

Judge Allen: Your statement now goes into the record, your further objection?

Mr. S. D. L. Jackson: Very well. That would be the substance of it, and I would like the record to show that we make those objections to each extract separately."

Thereupon at the request of counsel for the defendants the following excerpts from Complainants' Exhibit 114 (which excerpts are set forth in Appendix F following Defendants' Exhibits), from Complainants' Exhibit 115 (which excerpts are set forth in Appendix G following Defendants' Exhibits), and from Complainants' Exhibit 116 (which excerpts are set forth in Appendix H following Defendants' Exhibits) were copied into the record for the attention of the Court:

From Complainants' Exhibit 114: beginning with the last statement of Dr. Arthur E. Morgan on page 468 and extending to the bottom of page 469; the table on page 474; the table on page 475; the chart on page 477; beginning on page 480 immediately under the heading "General Investigations of Water Resources" and ending with the statement of Dr. Morgan on page 481 "We are working in very close cooperation with them"; beginning on page 482 with the statement of the Chairman "This is what is in my mind" and extending through the statement of Dr. Morgan on the top of page 483; on page 485 the first eight lines under the heading "Additional Dams Necessary for 9-foot Channel and for Flood Control"; on page 495 beginning with the statement of Dr. Morgan "Yes, it is this" and extending to the bottom of the page; beginning on page 518 immediately under the heading "Transportation Investigations" and extending through the statement of Dr. Morgan on page 519 ending "That is all we are trying to do"; beginning on page 523 with the question of the Chairman "You refer to four dams" and extending to the head-

ing on page 524 "Main River Dam Projects"; on page 535 beginning with the statement of Mr. Lilienthal "About 98 per cent" and extending to the bottom of the page; on page 538 the five lines beginning with the statement of Mr. Lilienthal "This is new construction"; on page 540 be-
[fol. 352] ginning with Mr. Thurston's question "Section 23 (3)" and ending with the statement of Dr. Morgan "or are we going to use it?"; on page 616 the last statement of Dr. Morgan under the heading "Power Development, Wilson Dam" and on pages 616 and 617 the entire section under the heading "Navigation"; on page 626 beginning immediately under the heading "Flood Damages in the Tennessee River Basin" and extending through the statement of Dr. Morgan on page 627 ending "to add to its flood storage"; on page 631 the section under the heading "Total Reservoir Storage Of Water at Four Dams" and the first seventeen lines under the heading "Navigation to Knoxville, Tenn."; beginning with the last two sentences on page 635 and extending to the heading on page 636 "Cash Disbursements".

From Complainants' Exhibit 115: on page 115 beginning immediately under the heading "Exploring Work for Gilbertsville Dam" and extending to the end of the page; on page 124 the first question and answer at the top of the page; one page 125 beginning with Dr. Morgan's statement "Yes, sir; the output" and extending through the following two questions and answers; beginning on page 126 with the statement of Dr. Morgan "The only way to get at that" and extending through the first thirteen lines on page 127; beginning on page 127 with the question of Mr. Bacon "You say that half" and extending through the sentence of Dr. Morgan on page 129 ending "what expenditure would be justified by flood control and by navigation"; beginning on page 129 immediately under the heading "Ohio River Largest Contributor to Flood Waters of Mississippi" and ending with the sentence of Dr. Morgan on page 131 ending "a flood came along that tore the levees to pieces"; the entire section under the heading "Value of Dams In Reducing Flood Hazard" beginning on page 131 and ending on page 133; on page 133 the question of Mr. Cannon beginning "You speak of a storage dam" and Dr. Morgan's answer thereto; on page 135 the entire page; on page 136 beginning immediately under the heading "Gil-

bertsville Dam" and ending with Dr. Morgan's sentence "You would not be saving that for power"; the entire section under the heading "Present and Prospective Improvements in Navigation" beginning on page 138 and ending on page 140; on page 195 the answer of Dr. Morgan beginning "There is a silting problem there"; the first ten lines of page 196; on page 205 the question of Mr. Taber beginning "It is a question of adding" and Dr. Morgan's reply thereto; the entire section under the heading "Purpose of Guntersville Dam" beginning on page 211 and ending on page 212; on page 226 beginning with the question of the Chairman "Is it for navigation alone" and extending to the end of the page; on page 235 the entire page.

From Complainants' Exhibit 116: on page 341, lines [fol. 353] 7 to 18 inclusive; beginning immediately under the heading on page 341 "General Planning of Tennessee Valley Authority System" and extending to the end of the first paragraph on page 342; on page 360 the question and answer under the heading "Projects Primarily for Flood Control"; beginning on page 367 under the heading "Navigation on Tennessee River" and extending to the last sentence on page 369; on page 374 the statement of Dr. Morgan beginning "The operation of Norris Dam" and ending "no excessive floods later than that"; on page 375 beginning with the statement of Dr. Morgan "Yes. I am speaking in general terms." and the two succeeding questions and answers; beginning on page 376 with the statement of Dr. Morgan "We have made a report" and extending to the end of the fine print on page 378; the tables and the explanation thereof on pages 399, 400, 401 and the first two lines on page 402; beginning on page 411 under the heading "Justification of Estimates" and extending to the end of the first paragraph on page 414; on page 416 beginning immediately under the heading "Investigations, Gilbertsville Dam" and extending to the end of the page; on page 419 beginning with the paragraph starting "Take flood control" and ending with the statement of Dr. Morgan "is admitted today as necessary"; on page 425 the first two questions and answers under the heading "Ultimate Limit of Program"; beginning on page 451 with the paragraph "I would like to refresh" and extending through the paragraph on page 452 ending "subsidiary purpose in tying of the dams together"; beginning on page 498 with the paragraph "The need for power"

and extending through the first two lines at the top of page 499; beginning on page 529 under the heading "Efforts of Cities and Tennessee Valley Authority to Purchase Distribution Systems" and extending through the first eleven lines on page 530; the table on pages 537-8.

At this point counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 328 a copy of the report made by the TVA to Congress, entitled "The Unified Development of the Tennessee River System, Tennessee Valley Authority, March 1936", which was attached as Exhibit A to the answer of the defendants in this case.

"Mr. R. T. Jackson: There has already been offered in evidence as complainants' exhibit 105, House document 328, 71st Congress, Second Session, which the Court will recall has the report upon the Tennessee River and its tributaries. The Court will also recall there is what is known as volume 2 of that report, which consists only of maps, a part of which were published, and of course, all of which were in the published volume, a part of which were not published as disclosed in the volume of the report. At [fol. 354] this time I would like to offer in evidence as exhibit 105-C, plate 7, and exhibit 105-D, plate 8, from the maps that are in volume 2. I will say that the purpose, largely, in offering them is for the information of the Court, and that I think that they clarify the situation,

Judge Allen: The Court considers that this entire volume 2 is in evidence, just as volume 1 is.

In other words, the Court will consider anything in this volume which pertains to these contracts as a part of the report.

Mr. R. T. Jackson: May I make this statement? We have no objection about that. The only thing that occurs to us is that there are 600 maps. We only see two that are material, and if the other side sees any more that are material, we would think they might offer them, and we would not have to print 598 more.

Judge Allen: We expect the aid of counsel on each side in picking out the maps, but the Court receives in evidence the entire report.

Mr. R. T. Jackson: I will ask to have these marked here, and I will offer exhibits 105-C and 105-D, plates 7 and 8.

Judge Allen: They are rejected when considered as excerpts only. The entire report is received in evidence. You may have your exception.

Mr. R. T. Jackson: We will note our exception on the ground that the only report, in our view, that is material, —that is, the only maps that are material are those offered.

Judge Allen: Let the record show that the entire volume 2 entitled, "Tennessee River and Tributaries, North Carolina, Tennessee, Alabama and Kentucky" printed by the United States Government printing office in 1930, embodying a letter from the Secretary of War transmitting a report from the Chief of Engineer- on the Tennessee River and tributaries, North Carolina, Tennessee, Alabama and Kentucky, covering navigation, flood control, power development and irrigation is received in evidence, and that this volume 2 includes plates 7 and 8, heretofore offered in evidence and rejected upon the ground that they are excerpts only.

Mr. Seymour: Note an exception."

[fol. 355] Joe W. Anderson was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 48 years old and reside in Chattanooga, Tennessee. I have been City Attorney of Chattanooga since April 1931, and am still City Attorney. I remember the occasion when the City Commission of Chattanooga, together with myself, went to Knoxville to have a conversation with the TVA about the feasibility of having electric power in Chattanooga.

I cannot recall all of the questions that we had under consideration. I remember one of the questions discussed was the feasibility of having the survey made by engineers. That was discussed I believe first. Then another question was the acquiring of the existing distribution system in Chattanooga. Some members of the Board suggested that we might, if we could not purchase it, acquire it by condemnation. I had advised against that, and stated we would have to have special legislative authority to do that,

and also that it would take two or three years. Mr. Lilienthal agreed with me on that. He said it would take nearer ten years than three years. Then the question came up about operating a competitive system, and I don't remember what led up to it. Then the question came up about the City's right to tax a private utility in the event they did have a competitive system. Just what was said prior to the time that came up I don't recall, but Mr. Lilienthal and I discussed the Washington case that had been decided a short time before that. I had read, I think, some two or [fol. 356] three weeks probably before that, either an advance sheet or a daily abstract, where the Supreme Court upheld the right of Seattle, Washington, to tax a private utility which was in competition with it. Just what was said prior to the time that discussion came up I don't remember. Mr. Lilienthal brought up the Puget Sound case as authority for the proposal that the City had the right to tax a private utility and at the same time operate a utility business of its own in competition.

It was discussed as I stated a while ago. I believe Mayor Bass and Commissioner Wilkerson were discussing that question and they called me in and asked me if I was familiar with that case. I don't remember the name of the complainant. It was the Seattle, Washington, case, though, that had been decided by the Supreme Court of the United States a short time before that. Mr. Lilienthal and Mr. V. D. L. Robinson were the only two representatives of the TVA that we talked to about this question.

Cross-examination:

At that time we didn't have the right to own and operate a distribution system. We had filed an application for a contract conditioned on our getting authority and having an investigation made. We did not have authority at that time to issue the necessary bonds. The 1931 Legislature has placed a limitation of 11% on the total assessed value with reference to the issuance of bonds. The Railroad and Public Utilities Commission assessed the property for The Tennessee Electric Power Company properties, but what I have reference to was the 11% of the assessed value [fol. 357] of all property of the City when it comes to issuing bonds. The act I referred to though was the one that limited the City in the issuance of bonds to 11% of the

assessed value of all real estate in the City. That was the 1931 amendment to the Charter that was repealed in 1935. The Railroad and Public Utilities Commission fixes the valuation of all utility property. The tax rate is fixed by the City and is uniform as to all property in the City.

Redirect examination:

The Tennessee Legislature at the last session passed a tax that applied to utilities of 3% of the gross revenue for the state purposes only. The City gets no part of that.

(The witness was excused.)

E. D. Bass was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 64 years old and reside at the Patten Hotel in Chattanooga, Tennessee. I am Mayor of Chattanooga and have been for ten and one-half years and am still Mayor.

I remember the occasion when I, together with the other Commissioners, went to Knoxville to have a conference with Mr. Lilienthal as representing the TVA about the feasibility of Chattanooga getting into the power business. Prior to 1935, responsibility for public power in Chattanooga was with the City Commission and the Mayor. In [fol. 358] 1935, the Legislature created a Public Power Board, and since that time we have had no direct responsibility on that question. Therefore, there may be some details in the way of dates and other things that I am not able to recall prior to that time. I have not had any reason to burden my memory with those things since.

I was present at the conference with Mr. Lilienthal in April 1934. I had made an engagement with Mr. Lilienthal to bring the City Commission up and discuss the feasibility and probability of TVA power for Chattanooga. In other words, the purpose of the visit was to secure information for us, as much as possible, as much as anything else. In the course of the conversation, many points were raised. Among them I remember one statement that Mr. Lilienthal made that competing systems were undesirable and indi-

cated that it would be better if we could acquire the local distribution system. In connection with that question, or that statement, some member of the party raised the question that perhaps the local company would not sell to us. Then he called our attention to the Seattle case, a recent decision of the Supreme Court which, as I remember, he said authorized us to levy a tax on private utilities. I think I had some conversation with Mr. Lilienthal prior to that time about Chattanooga getting TVA power, when he came to Chattanooga and made a speech before the Rotary Club. The date of that speech was probably Sept. 29, 1933. I couldn't tell you who was present on that occasion. As I remember it, I met Mr. Lilienthal in his room at the Patten Hotel. We had some discussion as to when power would be available and he did tell me, as I remember now, it would be available in eight or ten months, or something like that, I don't know.

[fol. 359] I have met Mr. Llewellyn Evans, who is an engineer representing TVA. He represented TVA at a conference of the City Commission of Chattanooga with regard to a power study.

Examination by the Court:

Mr. Evans is Chief Electrical Engineer of TVA.

"Judge Allen: Is that conceded?

Mr. Fly: We concede his position, but not the relevancy of his statements to these gentlemen. I don't see how that would bind the Board."

Direct examination continued:

Mr. Evans appeared before the Commission with regard to the power study on December 5, 1933, and in the course of that conversation I said to him, "We have no charter authority to go into the power business."

"Q. And he replied, 'Your charter is deficient in that respect. Well, what you need is a good lawyer?'

Judge Allen: Objection sustained.

Mr. Fly: Oh, I object to that.

Judge Allen (continuing): To that question; both to the form of it, and the Court adheres to the position which it has heretofore taken, that conversations and statements by

employees of the Authority are not relevant and material. The Court has permitted testimony with reference to statements by Mr. Lilienthal because of his position in the Authority; it has allowed evidence of statements of Dr. Morgan. The Court does not intend to extend that to its employees.

Mr. Spears: If your Honor please, I want to state the purpose of this and note our objection. Our purpose of proving this is to show that in the course of their business of disposing of their power these men were sent here as their representatives, and they are bound by any statements they make in the course of that business.

[fol. 360] Judge Allen: The objection is sustained upon the ground that the evidence sought to be adduced is immaterial and irrelevant. The Court will state to counsel for the complainants that they must bear the burdens of their situation in this case as all parties who seek benefits must bear corresponding burdens. The complainants have linked themselves together in large numbers to try a case based upon the existence of a common legal right. If we pursue the possible ramifications into the detail of evidence which could be offered here, this case will run into an undescribed amount of time. The Supreme Court of the United States would rightly criticize both counsel and the Court for permitting such a mass of irrelevant and incompetent testimony to be introduced. The Court has heretofore held that some of the evidence sought to be produced in this case is immaterial and irrelevant because of the fact that you are seeking relief here based upon your common legal right. Now, the details we consider lead us into multifariousness. The Court adheres to its ruling.

Mr. Spears: Note an exception please. I would like for the record to show that the witness, if permitted to testify, would state that on that occasion Mr. Llewellyn Evans, Chief Engineer of The Tennessee Valley Authority, in response to a question from the witness, stated,—to a statement by the witness that: 'We have no charter authority to go into the power business,' said 'Your charter is deficient in that respect. Well, what you need is a good lawyer.' and we note an exception."

Cross-examination:

The documents (offered and received in evidence as Defendants' Exhibits 7, 8 and 9) are respectively a letter

dated Oct. 24, 1933 to TVA, attention Mr. Lilienthal, a letter dated March 19, 1934, to TVA, attention Mr. Lilienthal, and a latter dated March 26, 1934, to Mr. Robinson, Administrative Assistant to Mr. Lilienthal, all of which were written and sent by me as indicated.

(The witness was excused.)

[fol. 361] Counsel for defendants then requested that the following excerpt from Complainants' Exhibit 112 (which excerpt is set forth in Appendix E following Defendants' Exhibits) be copied in the record for the attention of the Court:

On p. 272 the statement of Dr. Morgan beginning "The people of the community."

"Mr. S. D. L. Jackson: Complainants object on the grounds previously stated to the introduction of excerpts by the defendants at this time, but make no objection to the fact that the excerpt was not called to the Court's attention when the other excerpts from similar exhibits were copied into the record previously."

The excerpt referred to was thereupon copied in the record.

[fol. 362] George R. Parker was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 38 years old, reside in Chattanooga and am employed by The Tennessee Electric Power Company in the engineering department. Among my duties I have general charge and supervision of the map-making department of The Tennessee Electric Power Company.

The map (offered in evidence as Complainants' Exhibit No. 332) shows the transmission and rural distribution lines in the area penetrated by TVA as of November 1, 1937. It shows the lines of the TVA, the lines of cooperatives and municipalities that are distributing TVA power, the lines of complainant companies, and other lines in the area covered by the map. This map, with a few exceptions, was

prepared from Complainants' Exhibits numbered 7, 27, 37, 101, 199, 205, 206, 207, 208, 209, 210 and 326. There are certain lines shown on this map as proposed lines, which do not appear on those particular exhibits. I was not referring to those broken red lines in Cherokee County, Alabama but rather to the purple transmission lines, for instance, the line around Memphis and other places. Neither do those particular broken red lines appear on any of the exhibits that I have mentioned.

The broken purple lines represent, as shown by the legend, lines "Under construction or proposed". To the extent that they have been staked out, it is my information that the line from Pulaski to Fayetteville, the one from Columbia, Tennessee, going southwest to Mount Pleasant, the line from Columbia, Tennessee, to Murfreesboro and the line from Norris Dam to Knoxville are under construction. As to every one of the broken lines, except for those that are [fol. 363] shown on the exhibits I referred to, I have taken the information from Mr. Lilienthal's testimony in the hearings before the sub-committee of the House of Representatives on the Second Deficiency Aprpopriation Bill for 1937. (Complainants' Exhibit 116.)

(Counsel for complainants stated that they expected to show by another witness the correctness of the lines shown on Exhibit 332 in Cherokee County, Alabama, and subject to such further proof offered the map in evidence.)

"Judge Allen: The Court will rule upon the admissibility of the map when the proof is made concerning it."

Cross-examination:

The source of my testimony regarding the lines from Memphis to Covington, Tennessee and to Jackson, Tennessee was Mr. Lilienthal's testimony in the Hearing before the Sub-Committee of the Committee on Appropriations (Complainants' Exhibit 116). It was listed in a table that was a part of his testimony. I don't know whether that line has been authorized for construction. All the information I have is that it was listed in a table submitted by Mr. Lilienthal and funds for its construction were requested. I don't know whether the line was authorized by the Board of Directors of the TVA. The line from Nashville to Columbia is in the same category as the other.

Examination by the Court:

I mean by "in the same category" that funds for its construction were requested in the hearings by Mr. Lilienthal.

Cross-examination continued:

I knew that the Appropriations Committee cut down on the funds that were allowed and did not allow all of the funds that were requested.

[fol. 364] The dotted purple line running from Columbia down to Wilson Dam is in the same category as the line from Nashville to Columbia. I do not know it to be a fact that the TVA has actually abandoned any prospect of that line.

I know the status of the line running from Wilson Dam in Alabama to Tupelo in Mississippi. In these same hearings in a table on page 457, I believe it is, it was shown that $48,000 had been spent for surveys and right-of-ways for that line. It was not mentioned in that table that that line had been long since definitely abandoned, whereas certain other lines which had been abandoned were mentioned. I do not know whether that line from Wilson Dam to Tupelo has been abandoned, nor do I know whether any construction has been done on it. I think that it is not actually under construction.

In answer to the question where I got the word "penetrated" in the legend, that title is the same title used on a map that was used in a hearing for preliminary injunction. I do not know that that was suggested other than from the map. It was taken from the map. I did not talk to anyone about that wording. I did not select that wording myself. I took it from that map.

"Mr. Fly: Your Honor, I do not know how many other inaccuracies and misleading representations are on the map. It would be impossible for us to know in a few minutes notice, but I think there is certainly ample demonstration of the gross inaccuracy of it, and we therefore object to it, and of course, when a more accurate map is presented we would like to have a few minutes to look it over and examine the more accurate map at the time it is submitted.

Mr. R. T. Jackson: I object to counsel's statement as to misleading statements, a statement of which he is very fond, but one with which I am not accustomed in the trial of cases.

May I move to strike it out, and to state this. On this map we have shown the latest public information or official in-[fol. 365] formation with reference to the proposed lines we could get, statements before the Committee by the directors. If there has been any change subsequent to that time, the defendants when they come to offer their proof can prove it. But it has no bearing upon our right to show that.

Judge Allen: With reference to the testimony, with reference to this map, complainants' exhibit 332, what is the distance between Nashville and Columbia on this line that you testified has been proposed to be built by Mr. Lilienthal, what is the mileage?

The Witness: What is the mileage? That is approximately 40 miles.

Judge Allen: And you gave the same testimony with reference to the line from Columbia, Tennessee, to Wilson Dam in Alabama, didn't you?

The Witness: Yes.

Judge Allen: What is that mileage?

The Witness: I would say around 60 miles.

Judge Allen: And the same testimony with reference to the line from Wilson Dam to Tupelo, Mississippi, is that right?

The Witness: Yes.

Q. What is that mileage?

A. That appears to be 50 or 60 miles.

Mr. Fly: And the line near Memphis, your Honor, Memphis, Covington, Jackson.

Judge Allen: What is the mileage of that line, Memphis, Covington, Jackson?

The Witness: That appears to be about 70 or 80 miles.

By Mr. Fly:

Q. Those are all heavy lines, are they not?

A. Yes, that is shown in the high voltage classification.

Judge Allen: The Court will rule upon the admissibility of this exhibit when all of the testimony has been properly presented."

(The witness was excused.)

[fol. 366] M. B. PENN was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I am 35 years old, reside in Birmingham, Alabama, and work for the Alabama Power Company. I am familiar with the electric transmission and distribution facilities in the area of the location of the broken red lines in Cherokee County, Alabama, shown on Complainants' Exhibit 332 for identification. There is a rural cooperative association known as the Cherokee County Electric Membership Corporation in existence and they are now constructing lines in Cherokee County. The lines in the northern part of the county are constructed and those in the southern part are now under construction. The lines shown in Cherokee County by broken red lines have been surveyed and staked out and I have seen the stakes. This map correctly shows the location of those various lines to which I have referred.

Cross-examination:

A private contractor is building those lines in Cherokee County.

(The witness was excused.)

"Mr. Fly: I, of course, object to the map (Complainants' Exhibit 332), your Honor, on the ground previously stated. I think the map, our friends have all of the lines that have been definitely planned, all of the contracts and the Board resolutions, definitely authorizing the lines, and the witness has testified he has known some of those lines have been abandoned. There are numerous mileages of important lines which are clearly misleading, and with all deference to my friend, there is not a bit of proof that those lines are proceeding. In fact, there is proof to show that other alternative, other than those lines, and on the whole we consider that map based upon that sort of hearsay testi- [fol. 366a] mony, and having established on the face of it that many inaccuracies right off hand, gravely prejudicial. We will be glad to cooperate with counsel and give them the precise records on these things, which will show exactly where the lines are, show not only where they are constructed, but where they are authorized. In the meanwhile we object to this exhibit.

Mr. Bemis: If the Court please, we do not understand the facts stated by Mr. Fly in the way he states them. For one thing, this map does bring together in one exhibit all data which has been offered by numerous smaller maps, so that the Court can conveniently see what all those various other maps show. The only additional data which appears on the map are the lines which the witness testified he took from reports which have been made to Congress.

Judge Allen: How much mileage do you estimate that to be?

Mr. Bemis: If the Court please, there is a scale of the mileage shown.

Judge Allen: I am asking for information, whether it covers all of these broken purple lines or only those testified to, what is your understanding?

Mr. Bemis: My understanding is that the broken purple lines are lines which the Tennessee Valley Authority asked for appropriation to construct in the last appropriation hearing.

Judge Allen: And that that applies to all of the broken purple lines shown on the exhibit?

The Witness: Some of those lines I testified to have been actually staked out, and some under construction.

Mr. Fly: I do not think there is any question about that particular line being under construction.

Mr. Bemis: Is not it true, Mr. Fly, that all of the purple lines are lines which are shown in the 1937 appropriation hearing, as lines for which the Tennessee Valley Authority requested funds to build?

Mr. Fly: It is my understanding at that time Mr. Lilienthal testified, and presented these lines as probable lines that would be built. It is my further understanding the records of the Committee show that the Appropriations Committee did not recommend, and the Congress did not appropriate money for those lines. And it is my understanding further, and it is the witness' understanding, a [fol. 366b] number of lines have been definitely abandoned.

It is also my understanding that counsel have a complete record of all Board resolutions authorizing lines. They have a complete map and they do not challenge the accuracy of it, showing every line constructed, every mile of line under construction, and every mile of line authorized. And this witness does not come in here and state he has been

over these lines, and knows this is accurate. This witness does not come in and state these lines are authorized for construction, either by the Congress or by the Board. He merely says I read Mr. Lilienthal's testimony and these are the lines that at that time he might have recommended building. I see no reason why we should clutter up the record with lines of that character. The true record, which is in the possession of the gentleman now, showing that those lines won't be built, at least showing the lines have not been authorized by any authoritative source.

Mr. Seymour: May it please the Court, with reference to the statement of defendants' counsel that we have the map. As the court knows, I have been undertaking to work with the other side, and we have received the maps. But the maps have been in controversy, we have pointed out to the gentlemen errors on the maps. They have taken them back on three occasions to make corrections and I think they returned them to us and we are checking. While I personally do not know there are any errors made on the map, we are checking for the purpose of determining. We do not want the record to show we have a map we are not recognizing. We are going to accept it as quickly as the map makers say it is correct.

Mr. Fly: I am happy to accept that.

Mr. R. T. Jackson: May I say something about the preparation of the map and the appropriations. I think their map as I understand, is of a definite date, showing actual construction.

Mr. Fly: No.

Mr. R. T. Jackson: Lines authorized for construction on that date by a proper resolution, of specific lines. We are dealing not merely with what is accomplished, but what is expected. The facts are in the 1937 hearing Mr. Lilienthal stated to the Committee, as the basis of informing them what appropriations might be made, that first about $8,000,000 of transmission lines were proposed. Proposed for the coming year. Then they refused, and reduced that to about $5,000,000. They asked the right to use that to build any lines they saw fit, or acquire them. Of course, they had the earnings to do it with. And when it came to the appropria-
[fol. 366c] tion act, the appropriation act says, 'For the purpose of carrying out the provisions of this act', and so forth. Then: 'For the purpose of construction or purchase of transmission lines and other facilities'. There was, of

course, no restriction by congress as to the transmission lines. It is a blanket appropriation. They are entitled to use for the construction or purchase of transmission lines. Certainly the best evidence we can bring before the Court is the last official statement of a managing official before the Congress. If they have changed their plans, they could easily prove that and put in their evidence.

Mr. Fly: Yes, but in the meanwhile, knowing quite well that map is inaccurate, as the witnesses have testified, they want to create a false record in filing the map, knowing full well the Court would not include this Georgia part of the map. That is the question presented in this Court.

Mr. Fly: Now certainly when an individual director goes before the Appropriations Committee he is going to ask for plenty of money. I hope he does; otherwise he is going to come out of there disappointed.

Mr. R. T. Jackson: Let's have no misunderstanding——

Mr. Fly (continuing): But the mere fact that at one time Mr. Lilienthal suggested the possibility or the propriety of these lines does not now give us any authoritative substitute for concrete plans.

Now, the Committee has cut down the appropriations, now the Authority has proceeded for months since that time, for a number of months, certain of the lines have been abandoned, and every line where there is any authorization, where there is any concrete plan to go ahead, every one of those lines is set forth in the information given to these gentlemen.

Judge Allen: Mr. Jackson, If I said to you, 'I hand you a map,' and I say 'This is a map of the transmission and rural distribution lines in this territory,' what would that mean?

Mr. R. T. Jackson: It would mean to me what was constructed, but that is not what we did here, and not what the witness said.

Judge Allen: Isn't that what you did here, assuming or bearing in mind the small words of the writing? But the print, the large print says, the thing that hits the eye says, 'Transmission and Rural Distribution lines,' and that [fol. 366d] means to one who has to read as he runs, as some will have to do when they go through this case, that means those lines consisting of transmission and rural distribution lines, just as you now said.

Mr. R. T. Jackson: It doesn't seem so to me, when they are put in broken lines, and the legend explains what the broken lines are.

Judge Allen: The legend is small, and the broken lines do not differentiate, as they say, 'under construction or proposed.' There is no differentiation between those under construction and those proposed.

Mr. R. T. Jackson: So far as that is concerned, we are perfectly glad to do that. The difficulty in a cumulative case is the carrying forward of every item of evidence that has come out.

Judge Allen: Now the Court does not mean with reference to a map that is wilfully misleading, but we all do know that the large letters meet our eye first, and make the impression. That is why I asked you what I would mean if I hand you a map and said, 'This is transmission and rural distribution lines.' You said it would mean existing lines.

Mr. R. T. Jackson: Maybe if that is all you said, and that is all that is said on that map, I might think the same thing, but that is not the same situation.

Mr. Fly: You can fish out the other from the fine print.

Mr. R. T. Jackson: Here are these lines right on this list here. If we cannot rely on the statement of the director of the Tennessee Valley Authority solemnly made to the Congress of the United States in the discharge of his duty, as to what they proposed to do, I don't know what we can rely on. And I think that we are entitled to show in an injunction suit not merely what has already been done, but what is proposed to be done. And that is much more definite and concrete evidence of what is proposed to be done than is usually available in an injunction suit. Now, if there is any correction to be made these gentlemen can make it, but they cannot object to our testimony by counsel coming in and testifying before the Court he is going to prove something else.

[fol. 366e] Mr. Fly: All that is proved here is that Mr. Lilienthal recommended that appropriations at that particular time, that appropriations might be made for these lines. I have not checked that, but for the purpose of this argument I assume that the witness is correct in making that assertion.

There is no effort here, and complainants have wilfully avoided the effort to get the actual lines, and get those that

were actually under construction or actually authorized. I don't think that under the pretense of following something that an individual director recommended at one time, under that pretense they should get in a map here which purports on its face to be the authorized concrete plan of the Tennessee Valley Authority.

Mr. R. T. Jackson: I want to invite the attention of the Court to the fact that on page 469 of these hearings which are in evidence there is a table, and it shows at the bottom of the page, second column, estimated cost fiscal year 1938, it is headed 'present and proposed transmission system investment and revenues, summary,' and it shows an item of $8,507,400.00.

Now then there is less adjustments and transfers to future years' program, and there is an item of $3,800,000 under that.

That left four million seven, which was the amount appropriated with the right to use other funds.

And those proposed lines are the identical proposed lines as I understand it, that are included in this item of eight million dollars, and which are listed as incidentals, total either for 1938 construction or future years, and that is to some extent explained later by Mr. Lilienthal, where he says they ought to have some leeway as to which lines they build first, because they might be held up here or there.

And then the appropriation, as I read to your honors, is simply a blanket appropriation, and so far as transmission lines is concerned, says 'For the Construction or Purchase of Transmission Lines and other Facilities.'

Judge Allen: What was the name of the witness who testified with reference to these lines, proposed lines?

Mr. Bemis: Mr. Parker is the witness who produced the map as having been made under his direction.

Judge Allen: The map, exhibit No. 332, is rejected because the Court considers it inaccurate and misleading. As indicated the Court will reject all evidence with respect to the [fol. 366f] operations in Georgia. This map, of course, is subject to that criticism, but that ruling has been very recently made, so we understand, of course that this map was made before that ruling.

Discussing the map otherwise than with reference to the operation in Georgia, this map purports to present transmission and rural distribution lines in the areas penetrated

by the TVA as of November 1, 1937, this legend being carried in large capitals.

Actually it is a map of existing and proposed transmission and rural distribution lines in this territory. The legend in small letters shows that some of the lines are only proposed, but there is no differentiation of color between the lines under construction and those only proposed. Both are represented by broken lines, and both are imperfect. The inaccuracy, on a preliminary examination of the witness George Parker, is shown to cover over 200 miles of proposed line.

Mr. Bemis: Now, if the Court please, we would like to have the record show, if we may, that this map is first offered just as it stands, with the lines in the State of Georgia shown, and we understand, consistently with the Court's previous ruling, that the map as so offered, the objection is sustained, on the ground that the lines in Georgia are irrelevant and immaterial to the issues in this case.

And we reserve our exception to the Court's rejection of the map on that ground.

Mr. Fly: The map has not been cut to pieces yet, and I don't think that counsel can make a synthetic offer of it in pieces.

Mr. Bemis: May I make my statement?

Mr. Fly: I object to that manner of offer.

Judge Allen: You may have your exception to the Court's ruling with reference to the map showing the operations in the State of Georgia of the Tennessee Valley Authority.

Mr. Bemis: As I understand it, the Court's ruling respecting the showing of lines in Georgia is that the lines in Georgia in that territory, are not material to any of the issues in this lawsuit.

Now, we would like to have the record show that the map is also offered as it stands, but with it understood that the map is not offered for the purpose of showing in this second offer the lines as constructed in Georgia, but for the [fol. 366g] purpose of showing the other lines outside of that territory; our position being that since the lines in Georgia are merely immaterial, that they cannot for that purpose be misleading.

Judge Allen: As a matter of fact the Court of its own motion was preparing to strike out that part of the map which related to Georgia before the other controversy arose.

Mr. Bemis: Yes, we wish, however, to make it clear in the record, we are offering it as an exhibit, with the lines shown in Georgia disregarded or stricken out, and we understand that the Court's ruling is that the objection to the map so considered is sustained, to which we reserve our exception.

Now, without waiving our exception may we present to the Court another map at a later time with corrections as the Court has indicated to meet the objections which the Court finds?

Judge Allen: The Court will be glad to see such a map.

[fol. 367] (Complainants subsequently offered and the Court received in evidence the map, Complainants' Exhibit 332-A. Such new exhibit does not show TVA lines either constructed or proposed in the State of Georgia; the legend indicates in large letters that the lines shown are constructed, under construction and proposed; and it differentiates by color between TVA lines under construction and lines proposed by TVA. Corresponding changes are made in the legend appearing on Complainants' Exhibit 332-A which conform to the testimony of the witnesses George R. Parker and M. B. Penn and conform to the ruling of the Court in excluding Complainants' Exhibit 332.)

O. J. Miller was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 46 years old, live in Chattanooga and have been manager of the Production and Transmission Department for The Tennessee Electric Power Company for 10 years. I had my high school education at New Lyme Institute. I graduated at Hiram College in 1913. I graduated from the Engineering course in Ohio State University in 1916. I was with E. W. Clark & Company at Columbus from 1916 to 1920. I have been on statistical work, load forecast, economics of hydro and steam generation, cost and design of generating plants and locks. From 1920 to 1924, I was engineer for The Tennessee Power Company on estimates and investigations of line extensions into new

territory and estimates and locations of hydro and steam plants and developments, plans for transmission lines. [fol. 368] From 1924 to 1927, I was superintendent of production for The Tennessee Electric Power Company. From 1927 to date, I have been manager of the production and transmission department of The Tennessee Electric Power Company. I am generally familiar with the existing transmission system of the TVA as it has so far been extended. I am familiar with the principal load centers in the area accessible to this system.

The map (offered in evidence as Complainants' Exhibit 333) shows the TVA transmission system and its relation to the load centers in the general area where the transmission lines extend. The main existing load centers are Knoxville, Chattanooga, Birmingham, Nashville and Memphis; and the remaining load centers are scattered throughout the area. The exhibit shows the area in which the TVA dams and transmission lines are located, together with the principal load centers in the area within 100 miles of any of the TVA dams. The yellow circles show the loads of the complainant companies.

"Judge Allen: Mr. Miller, the Court has excluded testimony with reference to the Georgia Power Company. The Court of its own motion strikes out of the map that part relating to portions in Georgia, to which you may have your exception.

Mr. Bemis: We save our exception."

The red circles show the loads served by the TVA. The transmission lines are transmission lines of the TVA. The yellow circles with red outlines are the locations where elections have been held and a vote indicated that the people wanted to obtain a system for distributing TVA power. One square inch of area on the map in the circles indicates 100,000,000 kilowatt hours a year power consumption. The location of these various load centers are correctly shown on this map. They have been shown, concentrated for distribution purposes. The loads may be [fol. 369] located somewhat outside the circles, but the circles indicate the load centers and the size of the loads.

There are two basic engineering principles that a transmission system must meet. One, that the transmission system must give adequate service to the load. The other,

that it must permit flexible operation of the generating plants. In order to give adequate service to the load, transmission lines must extend from generating centers to load centers. There must be a sufficient number of transmission lines to give reasonably good service with a reasonable amount of equipment out of service. It must be sufficient to take care of not only present loads but a reasonable amount of future loads, and must be adaptable for extension to other load areas.

In order to satisfy the requirements of the flexibility of generating plants, it must recognize the different design of the plants, such as storage plant at Norris Dam, which may be shut down several hours of the day or several days or weeks of the year, so that its generation would vary from zero to full load. You must also take into consideration the fluctuations of the run of river plants, which will go from zero, or their minimum generating conditions under flood or low water conditions, to plant capacity. It also must be suitable to take care of the load when plant equipment is out of service from inspection, or repairs, or accidents.

The TVA transmission lines as shown on this exhibit are adequate both to suit and serve a great many of the load centers in the area shown. I make this statement after considering their lines and load centers in the light of the general principles involved in line design. They run from generating centers to load centers, as is shown by the line which runs from the generating center at Wilson and [fol. 370] Wheeler Dams to Watts Bar, where it finds its way over into the load center at Chattanooga; by the line from Watts Bar to Chattanooga, where it finds its way into the load center at Knoxville; by the line from Watts Bar to Knoxville, to Norris and from Norris via Knoxville to the Aluminum Company at Maryville; by the line leaving Wheeler Dam, running to Monsanto Chemical Company; by the line from Wilson Dam through Pickwick Dam into Memphis; and by the line from Pickwick Dam into Jackson. All of these are lines from generating centers to load centers. These lines are also adaptable for duplicate service to the large load areas which they cover. The contemplated line which they have in mind from Guntersville Dam to Chickamauga Dam, would serve as a duplicate supply to the Chattanooga load, the line from Norris to Knoxville carries a duplicate supply from Knoxville, and

the line from Jackson to Memphis would serve as a duplicate supply to both Memphis and Jackson.

As to the adequacy of the lines from capacity standpoint, I wish to say that the lines from Wheeler Dam to Watts Bar, Watts Bar to Chickamauga, Watts Bar to Norris, Norris to Maryville, from Wheeler to Knoxville, and from Pickwick to Memphis are all 154,000 volts, which is as high voltage as any lines built in the south. They are constructed of 636,000 circular mills aluminum conductor, which is the largest conductor used any place on any length of transmission lines in the south. So that all these lines are large power carrying lines. They also provide the requirements of fluctuation between generating centers, particularly for the line from Guntersville Dam to Chickamauga Dam. When completed, they will not only have one supply between most of the generating centers, they will have a duplicate supply, so they are adequate from this viewpoint.

[fol. 371] If I were to design a system to serve the existing loads in this area which are shown or illustrated on this exhibit, I would make no changes in the lines already constructed. I would add to these lines as requirements were needed for service to the loads which I would serve. This system is adapted to serve the other loads shown on this map exhibit.

The load at Nashville could readily be served by an extension of the line from Wheeler to Columbia and into Nashville, and a duplicate supply could be obtained at this location by its line from Gilbertsville Dam through Clarksville to Nashville. For a third source, if it was needed, it would readily be obtained by a line from Pickwick or Wheeler or Wilson. Another supply for the town of Memphis could be readily obtained by one line from Gilbertsville to Memphis. Also, the system lends itself to flexible extension to the south by lines from Wheeler Dam to Guntersville, and the load centers at Birmingham, Gadsden and Anniston.

The electric loads that are now being served by the TVA are shown on this map with red circles. If I were to design a system to serve the present loads of the TVA I would not design such a system as is shown on this exhibit, as built. I would design a completely different type of system.

I have prepared a study showing the kind of system which in my opinion would be appropriate to serve such loads.

The map (offered and received in evidence as Complainants' Exhibit 334) shows a design of a transmission system to serve the existing TVA loads. Those red circles are in the same location and of the same size as the red circles which appeared on the previous Exhibit 333. In answer to the question as to what engineering advantages there may be in the transmission system shown on this exhibit 334, this system as designed is a lower voltage system than that [fol. 372] which has been built, and the low voltage system is much more flexible to design and construct, easier to operate and maintain, and recognized by all the electric industry as the method of picking up rather small scattered loads. The system as laid out on this exhibit shows a 110,000 volt line from Norris Dam to the Aluminum Company of America load at Maryville, which line is extended at the same voltage through Dayton to Chickamauga, and a 44,000 volt line from Chickamauga Dam to serve the TVA load in North Georgia. There is a 110,000 volt line originating at Wilson Dam, running to the Monsanto Chemical Company; another 110,000 volt line originating at Wilson Dam, running to Wheeler Dam, and extending to Decatur; and another 110,000 volt line originating at Wilson Dam and running to Pickwick Dam, and is extended from there to Tupelo. The remainder of the lines are 44,000 volt lines. This system is very flexible for expanding or extending for other similar loads. This system being built of lower voltage lines is considerably less expensive to construct, as well as to operate, than the system which has been constructed. This will give as adequate service to the present TVA loads as the other system. The other system involves around 50% more miles than this system.

The map (offered in evidence as Complainants' Exhibit 335) shows the transmission lines of the complainant companies and the load centers of the complainant companies and TVA within 100 miles radius of TVA dams.

"Judge Allen: The Court at this time will make the same ruling with reference to the operation in Georgia, and you may have your exception.

Mr. Bemis: I would assume perhaps that question would arise when these are formally offered. They are all subject to that same question.

[fol. 373] Judge Allen: The Court simply wants to indicate to counsel and to the witness that we do not care to

hear any testimony on that subject, before we rule on it.

Mr. Bemis: I so understand, and we may have our exception?

Judge Allen: You may have your exception."

These load centers which are shown on Complainants' Exhibit 335 are identical to the load centers shown on Complainants' Exhibit 333.

I will illustrate by a few locations how these present load centers are being served by the high tension transmission system which is shown on Complainants' Exhibit 335. Knoxville, for instance, is being supplied by a 110,000 volt line from the Waterville generating station in North Carolina and by two 110,000 volt lines from the Ocoee, Hales Bar and Great Falls generating systems to the south. The load at Knoxville could be carried over any one of these three lines. Chattanooga is supplied by five transmission lines, one from the Ocoee generating center of 110,000 volts, one from the Hales Bar generating center of 110,000 volts, two from the Hales Bar generating center of 44,000 volts, and one 110,000 volt line from the Georgia Power Company system. Nashville is supplied by two high tension lines and a steam plant. The smaller load centers are shown in that area of The Tennessee Electric Power Company and are largely served by two lines, any one of which is capable of supplying their load center. The loads indicated by the red circles appearing in Mississippi are supplied by lines purchased by TVA from the Mississippi Power Company and, of course, there are no lines in that area now owned by the Mississippi Power Company which could serve those loads. The same is true of the loads now being supplied [fol. 374] by the TVA in North Alabama. But the loads in Tennessee could all be supplied from existing high tension systems, with the possible exception of the Monsanto load, where additional strengthening of the system would be required.

The existing transmission system of the TVA, as shown by Complainants' Exhibit 333, duplicates the existing transmission system in this area, as shown by Complainants' Exhibit 335, to the extent that it is able to carry the load centers supplied by the existing transmission system. Whenever lines are built into the Nashville load center by the TVA, they will at that time completely duplicate all of the

high tension system of The Tennessee Electric Power Company.

Assuming that the city of Chattanooga acquires a distribution system to serve the load indicated on Complainants' Exhibit 335, it would have the following effect upon the usefulness of the existing facilities, other than distribution facilities, now owned and operated by The Tennessee Electric Power Company. The load supplied to Chattanooga constitutes about one-third of the load of The Tennessee Electric Power Company. The service to Chattanooga is somewhat better than the ordinary service on The Tennessee Electric Power Company system, because it is one of the large load centers, so that perhaps more than one-third of the system of The Tennessee Electric Power Company is used for the service to the Chattanooga load. The facilities which would actually be rendered useless if the city of Chattanooga acquired a distribution system would be the transmission lines from the Ocoee generating centers into Chattanooga, the transmission line from Hales Bar generating center to College Junction, the 110,000 as well as two 44,000 volt lines, from Hales Bar generating system into Chattanooga, and the 110,000 volt line con- [fol. 375] necting with the Georgia Power Company, together with the Ridgedale sub-station, Valdeau sub-station and Carter Street sub-station at Chattanooga, a portion of the high tension sub-station at the Ocoee generating plants and all of the high tension sub-station at Hales Bar. There would also be some question as to the usefulness of a great deal of the other high tension transmission facilities of the Company. For instance, in that there would be no large load between the Ocoee generating station and the Great Falls generating center, the line connecting these two generating systems would be of questionable value. In that there would be no large load on the location at Chattanooga, the two 110,000 volt lines between the Ocoee generating system and Knoxville would be of questionable value. There would be a similar effect upon the transmission facilities in the event these other cities which are indicated should acquire a distribution system to use TVA power. They would all present different problems.

The map (offered and received in evidence as Complainants' Exhibit 336) shows the lines of The Tennessee Electric Power Company by five year intervals from 1917 to date, 1917 being shown in the upper left hand corner. The

insert below that is 1922, the lower left hand corner shows the lines as of 1927, the upper right hand corner showing the lines as of 1932, and the one immediately below that shows the lines as of 1937. This shows the electric lines of the Company, irrespective of voltage. That is, there is no distinction made in the voltages on the lines as shown. The engineering principles involved in the building of extensions into new territory as shown by this series of maps which appear on this exhibit are as follows: The transmission line is first extended to a load center. From this load center lines radiating out are constructed as customers are [fol. 376] obtained to justify the extensions. Extensions then are made into adjoining communities. Due to the load in the adjoining community, at the time the service is extended, the voltage of the line may be operated at less than that for which it was built, and as the load builds, and the service becomes more important, the voltage of the line is raised to that for which it was built. As the service grows more, or as demands are more for better service, the load grows, that line is extended until it connects with some other line to form a loop, or duplicate service to the area served. There are many problems which the engineer keeps in mind as these lines are built into new territory; the type of country over which the line is built, the right of way difficulties, exposure, the availability of customers along the line. But the most important feature facing the engineer is economics. The territory must be entered at the lowest possible expense and still with facilities that can be expanded to take care of the ultimate load in the area, and form a link in the ultimate development of the system.

This may be illustrated by an example. Prior to 1922, there was a 44,000 volt line built from Estill Springs through Tullahoma, Shelbyville, to the town of Lewisburg. Between 1922 and 1927, this line was extended to Fayetteville, and on to Petersburg, or Lynchburg. Due to the fact that the loads at Fayetteville and Lynchburg were not very big at the time, the line from Lewisburg to Fayetteville, while built for 44,000 volts, was operated at 22,000 volts. Between 1927 and 1932, the load in this area grew and service required improvements so that the line from Lewisburg to Fayetteville, up to Lynchburg, was raised to 44,000 volts, the voltage for which the line was built, and a new line built from Lynchburg back to Estill Springs, which closed the [fol. 377] loop and provided two way service to all of the

customers, which improved their continuity of service as well as their voltage. It facilitated maintenance of the line and would help take care of the overload conditions. These engineering advantages of loop construction which I have just explained apply both to transmission and distribution lines.

From an engineering point of view this process of line extensions and construction of loops is affected as follows by the construction of lines of another system in the same territory. If another system exists in the territory, there are many things which will upset the natural development of a system to form a correlated unit. It may take customers along a line between the ends of the two lines, which are needed to justify the closure of a loop. It might occupy a right of way that is needed for that loop, and for instance, highways in that section of the country are usually occupied on one side by telephone lines. If one system has the other side of the highway, the other system must necessarily get private rights of way, which increases the cost, so that the existence of two systems in the same area greatly retards the development of either system, in a correlated unit.

This may be illustrated by referring to Complainants' Exhibits 208 and 209, one of which represents the Middle Tennessee division and the other the Cumberland division of The Tennessee Electric Power Company. One of the greatest effects of two duplicating systems in the same territory, is to prevent either system from expanding in a normal way. As illustrated on Exhibit 208, it will be observed that there was a line constructed out of Lawrenceburg toward Wales. This line was constructed to be operated later as a tie between two loads, now supplied by [fol. 378] 44,000 volts, in order to improve the service and voltage of all the customers on both lines. It was built for 44,000 volts, but is now operated part way at 2,300 volts and 6,900 volts. It so happens that the system that is distributing TVA power is now occupying the area between the end of this line and the point of closure at Wales. By occupying this territory, it has taken the available customers in the territory which are needed to justify the closure, and it is also occupying one side of the highway, the other side of the highway being occupied by a telephone line, which is the usual thing in this section of the country,

so that in order to close the loop now it would be necessary to get a private right of way which would still further increase the cost of closing the loop. These are typical problems that you get into in developing a system where there is another competing system.

There are physical obstacles presented where there are two systems operating in the same general area. It will be noted from the inspection of these two exhibits that lines distributing TVA power are adjacent to and surrounding the load centers of The Tennessee Electric Power Company. This is shown at Shelbyville, Murfreesboro, Lewisburg, Columbia and other locations. The physical difficulty is to extend lines out of these load centers. It is necessary, of course, to cross the lines of the other system. We have already a great many physical crossings, such as telephone lines and railroads, all of which bring up a number of problems. There is considerable additional expense in making these crossings and while it is not a great deal for any one crossing, yet a multiplicity of crossings, as will be evidenced from a great number of extensions, would really amount to quite an item.

[fol. 379] Where there are two competing systems, there are, of course, duplicate transmission and distribution facilities. This, of course, increases the cost of serving the customers in the area. The cost is further increased by the operation and maintenance, because of the duplication of operation and maintenance forces. Neither system can develop as it normally would in a correlated unit, due to the interference of the other system, so that the final result is higher costs and poorer service.

[fol. 380] Cross-examination:

With reference to Complainants' Exhibit 333 headed "TVA Transmission Lines and Principal Load Centers", the dotted line from Memphis, Tennessee, through to Jackson, Tennessee, is one of the lines mentioned in the Second Deficiency Appropriation Bill for 1937. I am not aware whether that line is under construction or not. I have not seen it under construction, nor have I seen the line laid out or staked out. I know nothing except from the description given in the Hearings on the Appropriation Bill. I connected up the towns the best I could from the description in the Hearings. I have had no knowledge of any abandonment of the line.

I understood the original purpose for the proposed line from Wilson Dam to Columbia and I know that purpose no longer exists. I understand there were surveys made of it and other things, but I do not understand it is under construction today.

I do not know whether the line from Columbia to Nashville is under construction either. I have not seen it staked out. In answer to whether I am aware that that line was originally contemplated as a means of delivering power to the Tennessee Electric Power Co. at Nashville, I have no idea of the purpose of the line, other than what was stated in the Hearings on the Deficiency Appropriation Bill by the witness before the Committee. I do not know it to be a fact that the proposed transaction was discussed by representatives of the TVA and of The Tennessee Electric Power Company. I did not hear anything about the sale of TVA power to The Tennessee Electric Power Company, nor anything about a contract. I am manager of the Production and Transmission Department. Production refers to generation. I usually know when my Company starts negotiations for an important contract for a supply of [fol. 381] power. I heard of a discussion in relation to a contract for the purchase of power by The Tennessee Electric Power Company from the TVA at the time and prior to the time that we had any intention of building a steam plant at Nashville, but that was just a discussion and nothing final was ever arrived at. It was probably prior to the time we decided to build the steam plant that that line was proposed.

I have not seen any line under construction between Wilson Dam, Alabama, and Tupelo, Mississippi, as indicated by the dotted line on Exhibit 333. I don't know whether that line is under construction or whether it is now planned for construction.

It is my understanding that the loads illustrated on the map, Complainants' Exhibit 333, in form and color of cherries at Russellville, Alabama, Courtland, Alabama, Decatur, Alabama, and Hartselle, Alabama, are served by the TVA. In answer to whether I know as a matter of fact that the Alabama Power Company owns the distribution system in every one of those towns, I understand that they do not have any way of serving the distribution systems except through TVA lines. The TVA is delivering power wholesale to Alabama Power Company and Alabama

Power Company itself owns and operates the municipal distribution systems.

I have listed on this exhibit Watts Bar Dam as recommended, Coulter Shoals Dam as recommended, and Fontana Dam as recommended. I have put a red circle around the City of Bessemer, Alabama. I do not know whether or not the TVA has a contract to furnish power to the City of Bessemer, but this legend does not so state. I know that the TVA has no lines in the vicinity of Bessemer. I am not certain whether the same is true as regards Aberdeen in Mississippi.

[fol. 382] In using the red circle system on Complainants' Exhibits 333, 334 and 335 to indicate the cities that have voted to obtain distribution systems and distribute TVA power, I have not provided any means of distinguishing as to whether or not the TVA has contracts with those cities.

Referring again to Exhibit 333, in addition to the generating plants constructed or under construction from which TVA transmission lines now extend at Pickwick, Wilson, Wheeler, Guntersville, Chichamauga and Norris, the Hiwassee Dam is also under construction. The TVA does not have transmission lines from Hiwassee Dam connecting with the system.

Without taking the time to check I wouldn't know definitely but I think it is substantially correct to say that all of the load centers within 100 miles of Pickwick Dam, except the towns of Martin and Paris and except the present load carried by the TVA, are now presently served by the Commonwealth & Southern or the Electric Bond & Share companies. Taking the 100-mile radius from Wilson, Wheeler and Guntersville Dams, all of the load centers there which are not being now served by the TVA are being served by the Electric Bond & Share or the Commonwealth & Southern companies. That is the way I understand it as to all of the important load centers within 100 miles of Wilson, Wheeler and Guntersville Dams.

With the exception of the loads shown at Hazard and Kingsport, and except for four of the small towns in East Tennessee (Greeneville, Erwin, Johnson City and Morristown), the same is true regarding the area within 100 miles of the Norris Dam. The same is true regarding the

area within 100 miles of Chickamauga Dam. I have shown substantially all of the important load centers on the map. That was my purpose in making the map.

In devising the suggested system to serve the load of the TVA—Exhibit 334—I considered the existing loads [fol. 383] carried by the TVA. In answer to whether I did not provide for outstanding contracts the performance of which has not yet begun and for increased load under the same contracts, I considered increased loads in the load areas. I did consider growth of the loads and communities in which service was given. My statement was that if it was going to serve a great many of the contracts, the other system, or the system as the TVA has built it is the system that you would normally build. In answer to whether the requirements under existing contracts would require any increase or supplement, and by existing contracts, the requirements of customers who are now being served, would require any supplementary line or added capacity, the system is designed just to take care of the existing loads. I don't know just what is meant by "requirements of service now being served." My answer to the statement that some of the large industrial customers now taking service might well take two or three times as much power as they are actually taking now, would be that if those customers, or any other contracts were added, you would have to go back to the system which you have already designed and built. My design in Exhibit 334 was just laid out for the load that is presently being carried. I might explain that the size of the red circles, the area represented in these red circles, was the estimate of the loads, as was testified before the Deficiency Bill Appropriation Committee, the second one, for 1937, checked with the last report which I had of the figures of the TVA operating department. The amount of the load which was calculated for Monsanto on Exhibit 334 was 25,000 kilowatts on a fairly good load factor. I don't remember the amount of the load factor but I think it was approximately 93%. Assuming the load is 50,000 kilowatts this system as shown on Exhibit 334 would not be adequate to render reliable service; it would have to be increased to serve an increased load like that.

[fol. 384] In answer to what load I assumed was going to the Aluminum Company, the present contract serving that industrial consumer is what is known as "when, as and if" contract. I assumed that they would use the

amount of that contract, which is 20,000 kilowatts for a 6-months period to supplement their hydro generation, which to my knowledge I know drops off in the summer time, the low water period, and they need to supplement that during that period, so this is only a 6-months duty on that 20,000, as stipulated in the present agreement. That figure represents 20,000 kilowatts for six months. I have not calculated any continuous or firm power at all. The first contract, and the one they are working under now, has no firm power in it. In answer to whether, assuming the ultimate load to the Aluminum Company is 112,000 kilowatts the design of system on Exhibit 334 is adequate to render reliable service to that load, if that contract is extended or any other contract in that system is taken on, it would be necessary to build the system which the TVA has designed and built. If the ultimate load were in the neighborhood of 112,000 kilowatts you have to have substantially the type of system which the TVA has designed and built, and if you wanted to get additional power to this large industrial customer, it would be necessary to build a lot more line than what I have shown on here.

There is no power being generated at Chickamauga Dam now. I don't know how long it will be before power is generated there but it will not be for some time. As to whether I have assumed a seasonal operation of Norris so that for substantial periods of time there will be no power production at Norris, I would not know just how you would operate at Norris. But if operated like we would operate it, there would be a lot of power available during the whole year. But if it was operated to draw out Norris to supplement Wilson in the summer time, naturally that would be [fol. 385] the time when the greatest amount of power would come out of Norris. I do not know it to be a fact that if Norris Dam is operated for flood control purposes, it must be shut down entirely at times. In answer to whether I assumed on direct examination there would be a seasonal operation at Norris and whether I assumed there was firm power there, it is hard for me to say how anybody would operate a dam of that kind. I have not assumed any firm power there of any great size. There might be some small capacity there which would be firm. If the firm requirements at the Aluminum Company were hooked up with Norris Dam, and if we assumed Norris Dam is not to be operated continuously, and with Chickamauga under con-

struction, the system would not give a firm supply to the Aluminum Company of America.

Under the design of my system on Exhibit 334, I have no idea how the government will dispose of power from Hiwassee Dam, and I have made no plan as to Guntersville Dam. The same is true of Gilbertsville. I have no idea what they have in mind. With respect to Watts Bar and Coulter Shoals, I have only taken care of their present load requirements. I do not know it to be a fact that as a practical matter, if the power is not transmitted from such dams as Hiwassee, Guntersville, Watts Bar and Coulter Shoals, it could only be consumed by the complainant companies. Large industrial plants could locate at the dams and use it there. Except for that sort of load, the only substantial markets in the surrounding territory would be these complainant companies.

I have not designed a system to dispose of substantially all the power from the Wilson, Wheeler and Pickwick areas. Whether or not I would serve by means of a single line a heavy load such as that at Monsanto would depend on the customer's requirements. If the requirements were such that I could not on a single line, I would have to build two lines.

[fol. 386] I know that there is a contract for the TVA to deliver a substantial amount of power to the Arkansas Power & Light Company, to be delivered in the vicinity of Memphis. I have made no provision on my design, Exhibit 334, for that commitment to the Arkansas Power & Light Company, as that is not a present load. I would guess that the peak demand at Memphis of the Memphis Power & Light Company would be in the neighborhood of 45,000 to 50,000 kilowatts. I do not know how much power the TVA is obligated to deliver to the Arkansas Power & Light Company. If we assume that the Arkansas Power & Light Company may require a total of 40,000 kilowatts I would not think that one line from Pickwick would be adequate to serve the requirements in the Memphis area, including that load of the Arkansas Company. As to whether I think the present lines of the company are adequate for that purpose, I understand the present companies are serving the load now. I don't think there are any facilities at Memphis to deliver 40,000 by the private utilities into Arkansas, but I am not sufficiently acquainted with the situation to be sure about it.

If an additional load of around 82,000 kilowatts were brought into The Tennessee Electric Power Company's system in the neghborhood of Columbia, around Monsanto and Victor Chemical Company, it would require considerable new facilities, because that is an unusual amount of load to bring into any system. Probably it would require some additional generating capacity and transmitting facilities, because we do not try and keep a reserve adequate for taking care of any such large blocks. But those facilities usually could be added by the time that the load is ready.

The question whether, if the transmission lines of The Tennessee Electric Power Company leading from Ocoee and Hales Bar were not useful for the purpose of serving the City of Chattanooga, they would have any use in serving [fol. 387] other parts of the interconnected system of The Tennessee Electric Power Company, is a question as to whether they would be needed for the loads in other parts of the system, and my answer would be "no." The new steam plant generating facilities at Nashville are a long distance from the location of Hales Bar. Power could be transmitted from Hales Bar to Nashville, but we already have a generating plant on that line closer to Nashville than Hales Bar. In answer to whether, if we had that capacity at Hales Bar and it were idle we would not build a steam plant at Nashville, the steam plant at Nashville is wholly different. I am assuming that even if Hales Bar were idle, we would go ahead and build the steam plant or else additional lines into Nashville. It is needed at Nashville because we haven't got the transmission facilities for getting additional power into Nashville so that the plant would be needed at Nashville for Nashville service. Those sources are also interconnected with the Alabama system.

My proposed system on Exhibit 334 is the proper kind of system for the load that is shown. If I was trying to make maximum use of the dams and take on and build a load as the utility companies would build it, and take on the load in the area, I would build a system connecting dams substantially as the TVA has build it.

I do not know what per cent of the total load of the southern Commonwealth & Southern companies is represented by the City of Chattanooga, but I could figure it out. I am unable to say whether it is about 6 per cent. I don't

have any figures to verify the statement that the firm capacity of The Tennessee Electric Power Company system in October 1934 was 170,000 kilowatts but it sounds rather low.

[fol. 388] "Mr. Fly: I only voice, and I wish to do so very briefly, objections to proposed exhibits 333 and 335.

I am not sure that I can touch upon every inaccuracy in 333, but I shall endeavor to list the outstanding items.

In the first place, that is the one headed 'TVA transmission lines', etc. In the first place, the Georgia facilities, territory is covered.

And in the second place, the line from Memphis to Jackson in West Tennessee, is a line which has been abandoned. The witness, of course, is very uncertain about that.

The line from Nashville to Columbia, and the line from Columbia to Wilson, the witness is also uncertain about that. He does not know anything of any construction, and he has reason to believe there will be no construction.

The witness also leaves the line from Wilson Dam to Tupelo in about the same status.

Now, I won't argue those points, because they are the very same points that came up yesterday on the other exhibits. I certainly think, if we have to receive a map here that the witness says is only something that was at one time proposed, that should be sharply distinguished from a line which is not only proposed and recommended, but a line which has been definitely authorized in some way. We make no distinction between a line which has been authorized and a line which is under construction, they can be drawn together. We do not want to draw any fine lines there, or ask the Court to do so. But these other lines, where the Court believes they are not only actually not under construction, but no plan for them, I think they should be sharply distinguished.

Now, as a further objection to 333 and the same objection applies to 335, the legend indicates that the areas in red are served by the TVA. That includes a number of municipalities which the record shows, for example, over in Mississippi, and other places, where the municipalities own their own distribution systems. And this exhibit 333 goes so far as to indicate service by the TVA in the very distribution systems owned by the complainant Alabama Power Company.

Moreover, there is no distinction between a town like Bessemer, where we are not within 100 miles of the town, and have no contract, and a town where there is a contract for wholesale service.

[fol. 388a] The further point is made that Watts Bar, Coulter Shoals and Fontana Dam sites are placed on here with the same wording, and the witness has drawn the 100 mile circle from the mythical Fontana Dam.

I make no objection to 334.

335, has that one major oft repeated objection, it has the same confusion regarding the areas in red which purport to be served by the TVA and the same objection as to Fontana.

Now, I know the Court has had too much legal argument on these points, and I am not going to make a legal argument. I do want to make one practical observation.

This record is being piled up, it is just literally full of detailed maps, exhibits, charts, sketches and what not. Now, counsel have repeatedly said, and the Court has very properly been sympathetic with that attitude,—well, you can always point out the inaccuracies here, that goes to the weight of the thing, and if that line is uncertain you can point that out. Now, as a practical matter, I want to tell this Court, nobody—it is a matter of awfully grave concern to us, if these misleading maps go into the record, nobody in God's world will ever be able to take the time before the Supreme Court of the United States and say, operation in that town is not authorized, that town is in a different status, that should be out, so on and so on. We would not have any time to argue the case if we did have to, and we hope not to be left in such a burdensome state.

Mr. Bemis: May I ask a few questions on redirect examination with reference to the objections that have been made to it."

Redirect examination:

(On motion of defendants the testimony in the following paragraph was subsequently ordered stricken by the Court):

Referring to Complainants' Exhibit 333 and the broken line from Columbia to Nashville, I testified at the hearing before the Railroad and Public Utilities Commission of

Tennessee in connection with the application to construct a steam plant in Nashville. Mr. Muir, an engineer of TVA, appeared there and took the witness stand and testified to the effect that the proposed TVA line would be extended from Columbia to the Nashville area.
[fol. 389] My memory is that he said the line was going to be built regardless of whether a steam plant should be built by The Tennessee Electric Power Company in Nashville.

Those broken lines shown on Exhibit 333 were taken from the TVA Hearings on the Second Deficiency Appropriation Bill for 1937.

I know of my own knowledge that elections were held to acquire distribution facilities to use TVA power in those cities in Tennessee shown on Exhibit 333 with circles with red borders. The map does not purport to include all of the municipalities which may have held such elections. There may be some omitted. As a matter of fact, I notice that Etowah has been omitted and possibly there are others. The purpose of this is not to give exhaustive information in that respect, but to indicate the principal load centers where that has been true. (It was then conceded by counsel for defendants that there had been an election in the case of the City of Bessemer, Alabama.)

I didn't intend to leave the impression on cross examination that certain of the loads which I pointed out were being served by the Electric Bond & Share Company. It is the operating companies, Memphis, Knoxville and Carolina Light & Power, and also the West Tennessee. The Franklin Power & Light Company load is included as a part of the Nashville load center since it is served wholesale by The Tennessee Electric Power Company.

Referring to the red circles in northern Alabama, those are loads which the TVA is now carrying, irrespective of who is rendering the distribution service. That is true, not only there, but other locations. In other words, this exhibit is not intended to show who is rendering the distribution service, but who is supplying the electricity which is represented by those loads. The statements which I [fol. 389a] made on direct examination with reference to the red circles and the service to these particular loads are also applicable to Complainants' Exhibit 335.

The Arkansas Power & Light Company is not a complainant company. I was asked on cross-examination about

the Monsanto load and whether or not the transmission facilities of The Tennessee Electric Power Company would be adequate to serve that load. As to whether or not it is a fact that when any large load of this size and character is developed in a new area, it is not necessary to construct additional transmission facilities and strengthen existing lines in order to give service, in nearly all cases the system is not built to take on large loads in just any location, particularly the size of this. The system has to be strengthened wherever that load decides to locate.

The Chattanooga load as shown on Exhibit 335 is about one-third of the entire load of The Tennessee Electric Power Company.

Mr. Bemis: I think that is all. I don't know whether Mr. Fly has any further questions.

Mr. Fly: Yes, I do.

Mr. Bemis: With reference to the admissibility of these documents.

Mr. Fly: No, I am through with that.

Mr. Bemis: Does the Court wish to hear us as to the defendants' position?

Judge Allen: The Court is ready to rule.

Mr. Fly: I do have some other questions that bear upon one of the lines, but I don't think it is essential to the Court's ruling on the maps.

Judge Allen: The Court will proceed to rule upon the admission of exhibits 333, 334, and 335.

Mr. Bemis: Before the Court rules, may I make this statement, that these exhibits are offered in connection with the testimony of Mr. Miller and for the purpose of illustrating that testimony?

[fol. 389b] Judge Allen: Exhibit 334 is received in evidence.

The Court considers that the objection goes to the weight and not to the contents.

Mr. Bemis: I didn't understand that there was any objection to 334, if the Court please.

Mr. Fly: No, I had no objection to that, your Honor. I criticized it in great detail on cross examination, but I did not object to it.

Judge Allen: An objection was made yesterday and the Court bore that in mind.

Mr. Fly: I am sorry.

Judge Allen: We were notified that there would be strenuous objection to that.

With reference to exhibits 333 and 335, both of these exhibits are rejected. The Court bears in mind the fact that counsel prepared these exhibits prior to the Court's ruling with reference to the Georgia Power Company. The Court considers that the question of the Georgia Power Company is a question sui generis.

Here is a complainant who has been enjoined by a court of competent jurisdiction from seeking any relief in this case against these defendants. We think that the question of this operation necessarily stands in a class by itself. Since the Georgia Power Company is not permitted to be a party to these proceedings without violating an order of a Federal District Court which has been affirmed by the Fifth Circuit, necessarily the operation in Georgia has no relevance and no materiality here.

For that reason, the Court of its own motion will hear no testimony with reference to the operation in Georgia and will not admit any map showing the operation in Georgia.

The exhibit No. 333 is also objectionable because of the fact that the legend relates to the Georgia Power Company.

The Court has a further objection to both of these exhibits. It considers them inaccurate and misleading. The Court uses the term 'Misleading' not in the sense of a wilful misleading. There are a vast number of exhibits in this case, and from time to time the Court has ordered changes in the exhibits, and sometimes counsel have been compelled to paste legends upon exhibits already offered, and at times that has resulted in confusion. The Court is aware of that.

However, the Court considers that these exhibits are misleading in this way: The principal legend says 'TVA [fol. 389c] Transmission lines and principal load centers.' That is the principal exhibit is TVA transmission lines and their relation to principal load centers.

TVA Transmission lines in the mind of the ordinary person means existing transmission lines.

The legends in small letters, not nearly so evident to the eye as that which states 'TVA Transmission lines,' does show that certain of these lines are completed. It does not distinguish or differentiate between those completed lines and the lines under construction or proposed.

The Court thinks that the main legend of the map should indicate with reference to transmission lines of either litigant whether they are in existence, whether they are under construction or whether they are proposed. In other words, it should not indicate, if some of the lines are only proposed, that they are in existence.

The Court also thinks that in order for such a map to be accurate and not to mislead that there should be a differentiation between those lines under construction and those proposed, a visual differentiation. The Court considers that complainants are entitled to show that lines are proposed; but that the map should indicate on its face what lines are proposed, and what are under construction.

Therefore, exhibits 333 and 335 are rejected.

The Court at this time wishes to state to counsel on both sides that we expect exhibits which are rejected to be segregated in the record and to be incorporated in the record by themselves, under one classification, for the convenience both of this Court and of the Supreme Court of the United States.

You may have your exception.

Mr. Bemis: Note an exception to each of these rulings, and we would like to reserve the permission to make such corrections as it is possible to make, and then re-offer these exhibits, if we may. I would like to explain to the Court that the preparation of exhibits of this character involves a great deal of work."

[fol. 390] (Complainants subsequently offered and the Court received in evidence the maps, Complainants' Exhibits 333-A and 335-A. Such new exhibits do not show the load centers in the State of Georgia or TVA lines either constructed or proposed in the State of Georgia; they differentiate by color between TVA lines under construction and lines proposed by TVA; the legend shows in large letters that the map includes lines completed, under construction and proposed; and in illustrating the loads being served by TVA a distinction is drawn in color between loads served by TVA direct, loads served by TVA by sale to municipalities and cooperatives, and loads served by TVA by sale to the Alabama Power Company. Corresponding changes are made in the legends appearing on Complainants' Exhibits

333-A and 335-A which conform to the testimony of the witness O. J. Miller and conform to the ruling of the Court in excluding Complainants' Exhibits 333 and 335.)

Recross-examination:

When I referred on re-direct examination to the Electric Bond & Share companies, I meant the operating companies. I do not know the relationship between the operating companies and the Electric Bond & Share, but I do know there is a relationship.

The loads of Hazard and Kingsport are served by the Kingsport Utilities and the Kentucky & West Virginia utility companies. I understand that they are subsidiaries of the Appalachian Power Company.

It has been a long time since I reviewed the testimony [fol. 391] of Mr. Muir before the Railroad and Public Utilities Commission at Nashville. I am not able to state just how he came there or whom he said he came there to represent. I do not remember that he said that he came at the request of the Commission to testify concerning comparative costs. I just cannot remember. I would not say that he claimed to be representing the TVA.

I believe that both alternative delivery points, one at Nashville and one at Columbia, were mentioned in various discussions in regard to the sale of power by the TVA to the Company.

By Mr. Fly:

"Q. And you are not positive, are you, Mr. Miller, that Mr. Muir stated the Authority intended to build that line to Nashville, regardless of the transaction engaged in?

A. My memory is that the statement he made——

Q. Well, let me ask you if this is not the nearest thing to that which you heard at that proceeding:

'Q. That is the substation you were talking about?

A. Yes, sir.

Q. You said you were going to build that substation with a line from Columbia up here, a 154,000 volt line?

A. I said we could build a 154,000 volt line from Columbia to Nashville for $445,000. That does not include the substation.'

Q. I will ask you, as a matter of fact, if that is not what you heard, and if that is not all Mr. Muir said regarding the plans of the Tennessee Valley Authority to build the line?

Mr. R. T. Jackson: I object.

Judge Allen: He may answer.

Mr. R. T. Jackson: May I ask to have the witness informed as to who is meant by "we"? It is a question picked out of a transcript, and does not reveal who is meant by "we", the Tennessee Valley Authority or who.

Q. I will ask you if that was not all he said about building that line, regardless of the discussion?

A. Mr. Fly, my memory is definitely—I do not know about those specific statements there, but it is definite that he left the impression with me that he was going to build that line regardless.

[fol. 392] Q. Would you like to look over this transcript to refresh your recollection as to whether he said anything like that?

A. It would take a long time to read that.

Q. You are not prepared to testify he stated that?

A. I said that was my impression.

Mr. Fly: If it please the Court, I move to strike out all of the witness' testimony regarding the capacity in which Mr. Muir testified, and regarding the entire incident of his testimony before the Commission.

Judge Allen: The Court at this time sustains the motion of Authority upon the ground that the witness has testified to an impression. The witness testified despite the fact that the testimony or statement read from the transcript as it was given by Mr. Muir, he states that it is his impression that Mr. Muir made the statement testified to. The Court is not going to clutter this record with impressions. You may have your exception.

Mr. R. T. Jackson: May we have an opportunity to examine the transcript?

Judge Allen: The motion of Authority is sustained as to striking out the testimony of this witness with reference to statements made by Mr. Muir.

Mr. Bemis: And we take our exception."

(The witness was excused.)

[fol. 393] Later on the same day O. J. Miller was recalled as a witness on behalf of the complainants and, having previously been duly sworn as a witness on behalf of the complainants, was examined and testified further, as follows:

Direct examination:

By Mr. Bemis:

"Q. Mr. Miller, you testified this morning respecting your recollection of certain statements made by a witness, E. J. Muir in a proceeding before the Railroad and Public Utilities Commission, and I am now reading from Docket No. 2060 in that proceeding, which copy of the record was produced by counsel for defendants. And I will ask you to state whether or not this refreshes your recollection.

In the last appropriations hearings in Congress, they appropriated money to start Gilbertsville Dam.

And then the question:

'Yes, sir.

A. It will be necessary for the Authority to get power to Gilbertsville Dam for construction purposes. The most likely manner or route to get to Gilbertsville is right by Nashville, consequently, it would be unfair to Nashville to allocate the entire cost of this transmission line to service to Nashville.

Q. You do not mean to tell this Commission that the Tennessee Valley Authority has any intention whatsoever of building a construction line from anywhere, from a dam now finished, to Gilbertsville, for construction purposes only?

A. Yes, sir.'

Does that refresh your recollection as to what was said by Mr. Muir in his testimony before the Railroad and Public Utilities Commission?

A. It does."

The testimony just read is in accordance with my recollection. At the time Mr. Muir testified, counsel for TVA was present.

The notice (offered in evidence as Complainants' Exhibit 337) is a notice of the Railroad and Public Utilities Com-
[fol. 394] mission hearing at which Mr. Muir testified and is

addressed to counsel for TVA as well as The Tennessee Electric Power Company. (Counsel for TVA conceded that such notice was received by them.)

"Judge Allen: Apart from offering this particular exhibit in evidence, what do you now ask the Court to do?

Mr. Bemis: We have offered this testimony of the witness to corroborate and confirm the statement which he made on the witness stand this morning with reference to the construction of the line to Nashville that is shown on one of these maps.

Judge Allen: And it was stricken out by the Court upon the ground that the witness had an impression?

Mr. Bemis: That is correct.

Judge Allen: And the Court does not feel that this extract which was read here adds very much to the tenuousness of the impression. The ruling of the Court will stand. You may have your exception.

Mr. Bemis: And we may have our exception.

Judge Allen: Yes.

Mr. S. D. L. Jackson: Let the record show we are re-offering all of that testimony.

Judge Allen: The Exhibit No. 337 is rejected. The Court understood from the statement of counsel that counsel for the complainants were asking the Court to reverse its position that it took this morning with reference to striking out the testimony this morning.

Mr. Fitts: I think that is correct.

Judge Allen: The Court adheres to its position upon the grounds stated.

Mr. Bemis: We save our exception to that."

(The witness was excused.)

WALTER N. FORD, having been previously sworn as a witness on behalf of the complainants, was recalled as a witness and was examined and testified further as follows:

[fol. 395] Direct examination:

I have been with the Memphis Power & Light Company for some years and for some years have been its Vice President. Prior to 1933, the relations of that Company with customers and municipalities in that area were most satisfac-

tory. Prior to 1933, there was no movement for municipal operation of public utilities in our territory. In my previous testimony I stated that shortly after 1923 the Company acquired the municipally-owned electric systems in Arlington, Germantown and Clairfield, and that the officials of those companies were anxious for our Company to own and operate these systems, and that they were the only municipally-operated systems in our territory.

The principal change in our relations with our customers during and after 1933 was in the City of Memphis, where the City notified us it was their intention to construct a municipal system to distribute TVA power in competition with the Company. The TVA stated they would make available to the City of Memphis, to the people in the City, a supply of electric power. In November, 1934, the citizens there voted in a general election to authorize the City to issue $9,000,000 of bonds for the acquisition or construction of an electric distribution system for the purpose of distributing TVA power. In December, 1935, the City applied to the Public Works Administration for a loan or grant of $10,000,000. This application was approved by the Public Works Administration, but was changed to a grant only, of $3,092,000. In November of that same year, the City of Memphis made a contract with the TVA for the purchase of its requirements of power for distribution in the City of Memphis.

Since this contract, the TVA has built a transmission line from Pickwick Dam to the City of Memphis. The City has [fol. 396] announced that it would proceed with its plans for the construction of a distribution system to distribute TVA power. The City has sold $3,000,000 of bonds which are to be used for that purpose. They have acquired substation sites and are now constructing their first substation there, through which to receive TVA power. The City has recently announced the letting of its first contract to build its distribution system in the City of Memphis to compete with us. I understand from the statements made that the construction will start in the immediate future.

"Q. When the City of Memphis completes this distribution system that you have mentioned, Mr. Ford, duplicating the facilities of the Memphis Power & Light Company to distribute power under its TVA contract, at the rates prescribed in that contract, what, if anything, will the Mem-

phis Power & Light Company be required to do with respect to its rates?

Mr. Fitts: I object to that question, may it please the Court, immaterial, irrelevant and incompetent under the ruling of the Court with respect to comparison of rates and the effect on rate levels.

Mr. S. D. L. Jackson: Now, if the Court please——

Judge Allen: The Court will permit the witness to answer in one sentence that question.

Mr. S. D. L. Jackson: Proceed.

A. We will have to put into effect similar rates if we expect to hold our business, otherwise, we will lose practically all of our electrical business and even if we did put in similar rates, or equivalent rates, the TVA rates required under the contract with the City, the company will no doubt lose the greater portion of its revenue.

Judge Allen: The Court after this will instruct as to the length of the sentence."

If the Memphis Power & Light Company is forced to adopt rates throughout its territory in competition with the TVA rates, we will suffer great loss of revenue due to the application of the rates; also, we will suffer additional loss due to the loss of customers in competition with the City. The combination of these two losses will bankrupt the Company.

[fol. 397] "Mr. S. D. L. Jackson: What, if anything, has the Memphis Power & Light Company done to attempt to avoid the effects of this competition?

A. Beginning in 1935 representatives of our company had discussions with representatives of the City, in which the company was trying to work out some plan.

Mr. Fly: I object to that as irrelevant, immaterial and incompetent.

Mr. S. D. L. Jackson: I might say, if your Honor please, we do not expect to go into this at any length. It is merely a very short recital as to the things that the executives of this company did in trying to soften the blow that they saw coming.

Judge Allen: The Court thinks that many of these questions, and particularly this specific question may be answered very briefly, in a short sentence.

The Witness: I heard it stated twice by a director of the TVA.

Judge Allen: On what occasions?

The Witness: The first occasion was a talk which was made before the Rotary Club.

[fol. 400] Judge Allen: Where was it, and when?

The Witness: At Knoxville, and again at a speech made before the Kiwanis Club, and I was present both times.

Judge Allen: The objection is sustained. The Court adheres to its ruling as to evidence of speeches not being received.

Mr. Seymour: We take exception, if the Court please. May we, before I ask the next question, say that what the witness would have stated was that immediately after the establishment of the TVA offices in Knoxville in the summer of 1933, the TVA stated it would make available to the people of the Tennessee Valley an abundance of cheap power, especially in Knoxville, because Knoxville was so close to one of its dams and transmission systems.

Judge Allen: Let the record show this testimony is excluded upon the ground that the statements purport to be contained in two speeches.

Mr. Seymour: An exception.

Judge Allen: The exception is granted.

Mr. Seymour: Let the record show that this testimony was offered in connection with the witness' previous testimony that there was a change of sentiment in Knoxville subsequent to 1933.

Judge Allen: Is there any contest over the fact that the TVA generally published its rates?

Mr. Fly: No, your Honor.

Judge Allen: Is that controverted?

Mr. Fly: The rates have been known and published generally in the official reports, and all of the contracts and everything.

Mr. Seymour: This testimony had nothing to do with the question of rates. It had to do with the question of the change of the attitude of the customers, and the public.

Judge Allen: It had to do with the offering of cheap power. The Court is endeavoring to assist counsel. Why should there be any controversy over the fact that this matter was known?

Mr. Seymour: So far as I can see, I am surprised that they should make any question about it.

[fol. 401] Judge Allen: I see no controversy over it. But the Court will not receive evidence of speeches. But since there is no controversy over this fact, certainly this man may testify now that he knew. Since there is no controversy over the fact it was generally announced that the TVA was offering power at rates—do I understand the Authority correctly, in view of its previous concessions, substantially lower?

Mr. Fly: That is right, your Honor.

Judge Allen: In every class of service, than the complainants? Then, it seems to me you don't have to get into this controversy over a speech or over the knowledge of this witness, who may testify that he knew, in view of the concession of counsel."

In answer to what, if anything, the City of Knoxville did in response to the changed conditions by the TVA being in the territory, in October, 1933, the City Council of Knoxville passed an ordinance authorizing a bond election to be held for the purpose of voting bonds to build or acquire a municipal electric distribution system to be owned and operated by the City. This election was held on November 25, 1933. The result of the election was the citizens voted in favor of the bond issue, which was for $3,225,000.

"Q. What, if anything, did the city do, either during the campaign for this bond issue or immediately thereafter with respect to obtaining funds to carry on its plant, or build a plant?

Mr. Fly: I object to anything about the political campaign, your Honor.

Judge Allen: The witness may state in one sentence what the city did.

A. It applied to the PWA for a loan-grant.

Judge Allen: Did it secure it?

The Witness: It did later secure it. It secured it, however, not for $3,225,000, but $2,600,000."

That loan and grant, as I recall, was approved some time in the early part of 1934. While the Company was under this threat of competition on the part of the City with a [fol. 402] distribution system financed with Federal funds, an agreement was finally made between our Company and

Company to furnish the power requirements of the Volunteer Portland Cement Company and I received notice from the Volunteer Portland Cement Company that they do not wish to continue to receive service from my Company after January 12, 1938. Subsequent to the making of that contract, the TVA made an assignment of that contract with the Volunteer Portland Cement Company to the City of Knoxville.

"Judge Allen: The Court desires to ask the Corporation or the attorneys in certain particulars. The situation is brought to our minds specifically by testimony of this witness just before we recessed. If it turns out that the witness was basing his statements upon the testimony of certain speeches. The Court has ruled, and adheres to its ruling, that evidence of such speeches is inadmissible. The Court is going to ask counsel for complainants not to present evidence of that kind, based upon speeches. We think that you know your case well enough that that particular question does not have to be raised and your record has been preserved upon that question.

The Court will ask counsel for the Authority to concede the facts which necessarily they must concede, they con- [fol. 405] ceded here this morning that they published information concerning their rates, and therefore, the Court then ruled that this witness could testify that he knew that cheaper power rates were offered. Now, does the Authority concede that the Authority fostered the use of its power by municipalities and cooperatives?

Mr. Fitts: No, your Honor, the Authority does not concede that. I think that we would have to say that we do not concede it, because there are so many qualifications to it, that the fact is not conceded.

Judge Allen: Then, you know your case, and we think that there are times when the Authority might well not object. In other words, when we might save time if these difficult questions as to whether such and such a man was authorized, and all that sort of ramification, were not gone into.

Mr. Fitts: I think one thing could be easily stated, if it helps any; I think it was stated this morning, and that is that the Authority undoubtedly announced to the public that there was a certain amount of power available at such and such rates.

Judge Allen: Yes, we understand that that is conceded.

Mr. Seymour: And the Court has stated, of course, we have been allowed to reserve our exception to the ruling of the Court with respect to the speeches and addresses.

Judge Allen: Yes."

The TVA now has under construction a transmission line extending from Norris to the plant of the Volunteer Portland Cement Company, which is only about 2 miles from the City of Knoxville. They are also building a substation at that location, the cement plant. The TVA will supply the current direct to the Volunteer Portland Cement Company. The City, however, under the assignment of the contract, will pay the Authority at the wholesale rate and sell at the resale rate to the Volunteer Portland Cement Company, and they will only have to read the meter once a month and make out a bill. The line from the Norris Dam to the plant is about 20 miles long and passes through a section of Knox County which we have been serving for many years. I have seen the line under construction.

[fol. 406] Over the period of years that we have served the Volunteer Portland Cement Company the average load has been approximately 3,000 kilowatts of demand. The line which the TVA has built to that plant is of the 110 kv. type and has a capacity many times greater than that necessary to serve the Volunteer Portland Cement Company. Since the making of the contract between the TVA and the Cement Company, some of our other industrial customers have made inquiry as to the possibility of being served from that line.

If the City builds the distribution plant and renders service to our other customers under the contract I have stated or a subsequent contract of like nature, it would have a serious effect on our Company. We would have to reduce our rates to meet the rates charged by the City, to retain any of our business. (It was here stated by counsel for defendants that the concession respecting TVA rates were not limited to any particular complainant companies and that TVA resale rates are concededly substantially lower than the existing rates of each of the complainants.) The putting into effect of such rates, and such competitive conditions would ultimately result in bankruptcy of the Tennessee Public Service Company.

Cross-examination:

The plant of the Volunteer Portland Cement Company is about 2 miles beyond the city limits of Knoxville. The date upon which the TVA entered into the contract for service to the Volunteer Portland Cement Company was in August, 1936. On that date, my Company had a contract with the Volunteer Portland Cement Company which under its terms would expire in about a year, and we were in negotiation with the officials of that Company regarding a renewal of that contract. It is true that our Company was notified on April 20, 1936 by the Volunteer Portland Cement Company that in view of the fact that the contract would expire on October 1, 1936, under its terms, that the [fol. 407] Cement Company was considering other means of procuring power, and in that notification stated to our Company that they were considering the possibility of generating their own power or using waste steam. The Volunteer Portland Cement Company also wanted to know if I would make a much lower rate, something around the TVA rates, if they would renew the contract. It is true that they were considering several alternative methods of obtaining power, including generating their own power, and so advised us. They gave me the date on which the contract would expire but I don't recall now whether or not it was October 1, 1936. I remember making an affidavit on the motion for preliminary injunction in this matter which is printed at p. 548 of Volume 2 of the transcript of the record of the preliminary injunction in the United States Circuit Court of Appeals. I don't recall the date upon which service was to start from the TVA under the contract between the TVA and the Cement Company. I don't recall whether or not it was after October 1, 1936.

I think I was pretty much aware of the movements for public ownership of a distribution system in the City of Knoxville from 1929 until this time. I don't recall whether on November 1, 1932, the City Council of the City of Knoxville directed the City Manager to make an inquiry and study as to the cost of construction and operation of an electric power plant to serve the municipal needs of the city itself, but from time to time there has always been somebody rising up and talking about municipal ownership. That is almost perpetual motion. In answer to whether although I don't recall that incident I can testify

that there was no movement in the city for municipal ownership, I believe I said there was no serious or concerted effort along the line of municipal ownership. As to whether the resolution of the City Council was serious, I don't believe anything ever came of it.

Following President Roosevelt's statement that he was going to create the TVA, the City Council on February 21, 1933 approved a resolution for the appointment of a com- [fol. 408] mittee to study the feasibility of a generating plant and distribution system in the City of Knoxville to serve the public. I am not informed as to the details of what the resolution of the City Council or the report of the committee stated. I recall that the power committee made a recommendation to the Council that an application be made to the TVA for the purchase of power, but I do not recall the date. I can't say as to whether the recommendation was approved by a resolution of the City Council or not. I understand that there was a recommendation made to the Council and that the Council accepted the recommendation before November, 1933. I cannot say whether it was in July, August or September, but I can say before November, 1933. I cannot recall whether it was before or after any announcement had been made as to the schedule of rates of the TVA. I recall the conference, about which I testified, in June of 1937 between representatives of the City and representatives of my Company concerning the possibility of purchasing the distribution system of my Company in the City of Knoxville. I do not recall at whose instance it was initiated. We had several conferences with the City, some of which I requested and some of which the City requested.

It is substantially correct to say that there was an agreement at one time between my Company and the TVA by which the properties of my Company were to be sold, and then that agreement fell through for various reasons, principally because of litigation, and since then there has been an effort on the part of the City to negotiate for the purchase. At the conference in June 1937, I asked the City where they could get the money to buy the system. They said they did not know. They asked me to make some definite specific offer to them as to the terms upon which we would be willing to sell. No such offer was ever made.

[fol. 409] The voltage of the transmission line from Norris to the Volunteer plant is much too high to serve directly from that line to rural customers along the way.

I am not familiar with the seal of the City of Knoxville, but what you show me looks like the signature of the Recorder. The signatures all look alike and do look like the signature of the Recorder of the City of Knoxville. (Counsel for defendants asked to have marked for identification as Defendants' Exhibits 10, 11 and 12 certified copies of extracts from the minutes of the City Council of the City of Knoxville. These were offered and received in evidence.)

Redirect examination:

Referring to the conference which I had with the City Power Committee, the Committee rather insisted that I make them an offer instead of them making an offer to purchase, and I informed the Committee that I personally was merely a trustee for the property of the Company, that the property was owned by its security holders, and that to sell the property the security holders would have to agree to such sale. Furthermore, it would be impossible for me to submit to the security holders, scattered widely, a proposition as to whether they would sell the property and to name a price, and that the more practical way would be for the City to make a definite offer, which I might then submit to the security holders of the Company for their consideration.

I informed the Committee that the security holders or stockholders would certainly want to know where the money was coming from, if the City should make an offer of any kind, and they replied they did not know where they could get the money at the moment. At that time, the [fol. 410] agreement between the PWA and the City was held up by court action in Washington, D. C., so money from that source at the moment was not available. Furthermore, the financial condition of the City was questionable. Their bonded indebtedness was very large. In fact, the City had been having a hard time meeting its obligations, the payment of interest on those bonds, even to the extent that up to the early part of this year the City employees had been paid in script for four, five or six years. Consequently, I felt the stockholders of the Company

would want to know something definite as to where the money would come from. I told them that personally I had no power to make an offer, as to myself, and for the reasons I stated, I would be willing to receive an offer of the City and transmit it to the stockholders for their consideration when they showed me some means of financing the contract.

It is substantially correct to state that the contract between my Company and the Volunteer Portland Cement Company, expired in October, 1936. That contract had a provision for an extension of its own. I have a written agreement with the Volunteer Portland Cement Company extending the contract beyond October, 1936, up to January 12, 1938. It was the notice of termination that fixed that date and the contract could have gone on beyond that date. There has never been a moment since we began to serve that company ten years ago, when we have not had some kind of an agreement and contract for service.

When I testified that the agitation in the City of Knoxville for municipal ownership of the electric distribution system was about 1933, I did not mean to fix a particular day of the week or month that that agitation started, but to give approximately when the agitation started. As I recall, there were published statements that appeared in the [fol. 411] press along about the first of the year 1933 and that a TVA or something equivalent to it was being considered and probably would be created by the President and Congress.

Recross-examination:

The contract with the Volunteer Portland Cement Company under which we are now operating is dated August 24, 1927 and contains the following provision:

"This contract shall be in effect for a period of five years from the date the consumer begins to use service, and thereafter for yearly periods until either party gives notice to the other 60 days before the end of any yearly period of its desire to terminate the contract at the end of such period."

Notice of cancellation has been given to the Company by Volunteer Portland Cement Company in accordance with the foregoing provision.

(Counsel for complainants then stated that Defendants' Exhibit 11 did not contain the full resolution of the meeting of the City Council of Knoxville and a copy of the full resolution of said meeting was thereupon offered and received in evidence as Complainants' Exhibit 373.)

(The witness was excused.

[fol. 412] (Thereupon counsel for complainants read into evidence the deposition of the witness, A. E. Yates, which was taken before the Special Master. Counsel stated to the Court that the depositions were taken under a general stipulation that all objections would be reserved to be made in Court, except objections that went to the form of the question. The narrative statement of the deposition of A. E. Yates is as follows:)

A. E. YATES was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Flintstone, Georgia, and am 62 years old. I am President of the Yates Bleachery Company, a Georgia corporation with its principal office in Flintstone, Ga. Its business is the bleaching and finishing of various forms of cotton goods. In this business we require about 225 H.P. of electricity which is 225 kva. At the present time we are taking electric power from and have a contract with The Tennessee Electric Power Company.

The contract between the Yates Bleachery Company and The Tennessee Electric Power Company, (offered and received in evidence as Complainants' Exhibit 338), is dated April 13, 1937. Prior to that time the Yates Bleachery Company was purchasing power from The Tennessee Electric Power Company, and throughout the year 1937 there was a physical connection between our plant and The Tennessee Electric Power Company.

[fol. 413] I am acquainted with a man by the name of Ayres and I have known him since 1929. I recognize him as one of the gentlemen sitting in this room. In 1929 he was connected with the Wheeland Company, but in 1937 I learned from him

that he was connected with TVA. I saw Mr. Ayres in the office adjoining mine sometime prior to April 13, 1937. To the best of my recollection, it was sometime in the early part of April. My son, Mr. Ayres and myself were present at the meeting. My recollection is that Mr. Ayres called on my son and discussed with him the advisability of us taking power from TVA and presented some figures as to what it would cost us to use this power. My son then became interested in those figures and called me in and advised me in the presence of Mr. Ayres what he had to offer, and after consultation he asked Mr. Ayres to present a contract to us so that we could figure exactly what we might be able to do with it. A few days later Mr. Ayres called on me.

Several days later, Mr. Ayres came with a contract drawn up showing what he could do for us and he stated that the reason he had not been to us before was that there had been an injunction which prevented him from coming, but now that the injunction had been lifted he was in position to sell us TVA power. I asked him how they would get that power to us and he said it would come through the National Park. I told him that my understanding was that no light wires could come through the Park and he said that the Government owned the Park and owned TVA and there would be no difficulty in going through the Park, and that if we made a contract with TVA, he would get the line in for us by May 15th. At the last meeting when Mr. Ayres presented the contract, we examined it briefly and told him we would take [fol. 414] it under advisement and see what might be done. Mr. Ayres then showed us some figures which I now have in my possession as to what it would cost us to use TVA power and what it would cost us to use The Tennessee Electric Power Company's power, showing us a saving by using TVA. Mr. Ayres left me the address of T. R. Hunnicutt, Division Manager of TVA, which address was in the old Post Office in Chattanooga, Tenn., where we could mail these contracts if we accepted them. Then Mr. Ayres left and I did not see him again until this morning when I saw him in this office.

The memorandum (offered in evidence as Complainants' Exhibit 339) consists of two pages containing pencil notes which is in Mr. Ayres' handwriting and has been in my possession and in our files ever since the date of the meeting. This memorandum shows the rates of The Tennessee Electric Power Company and the total cost of power which

A. The company endeavored on numerous occasions through discussions with representatives of the City, to work out a plan whereby the company might distribute TVA power at rates lower than our prevailing rates, through its own system. These discussions finally culminated in a definite offer by the company in April, 1937, in which they offered first to reduce its——

Mr. Fly: Your Honor, I think this is clearly irrelevant. We have got enough trouble without going into all this detail.

Judge Allen: The negotiations were not successful?

The Witness: No, your Honor.

Judge Allen: All right, that is sufficient.

The Witness: I would like to qualify that, if I may.

Judge Allen: You may qualify.

The Witness: I would like to say the City has neither accepted nor rejected, nor discussed with us that offer but, on the other hand, they are proceeding with the building of the competing system.

Judge Allen: They have not accepted your offer?

The Witness: No ma'am."

Cross examination:

[fol. 398] The TVA is serving one of our customers at the present time through competition to the West Tennessee Power & Light Company, the municipality of Jackson. The West Tennessee Power & Light Company is one of our customers and therefore any loss of business of the West Tennessee Power & Light Company through the TVA competition affects our revenue.

There was no movement toward public ownership in Memphis until after 1933. Our present ordinance reserves the right to the City to compete with us, but I am not sure about the previous ones. In answer to whether there have been a number of various statutes passed before 1933 enabling the city to carry on that business, I remember one particular instance in which a statute was passed before 1933 enabling the City to carry on that business. In answer to whether I know that a committee was appointed to study the feasibility of a municipal system in 1916, there was some political agitation in about 1916, not for the purpose of municipal ownership, but for the purpose of

maneuvering the City into a position to force down the rates of the then existing companies.

I understand that since the construction of Wilson Dam and long prior to the TVA, the City Commission sent representatives to Wilson Dam to investigate the feasibility of bringing Wilson Dam power to the City of Memphis, not necessarily to be distributed by the City of Memphis, but possibly through the distribution system of the existing companies.

(The witness was excused.)

[fol. 399] R. W. LAMAR, having been previously duly sworn as a witness on behalf of the complainants, was recalled and testified further as follows:

Direct examination:

In my previous testimony I testified that I have been a resident of Knoxville and the executive head of the operations of the Tennessee Public Service Company in Knoxville for several years. Since January 1934 up to date, I have been Vice President and General Manager of the Company. For four years previous to 1934, I was Assistant General Manager of the Company.

Prior to 1933, our relations with our customers were quite friendly and satisfactory. There was no serious or concerted public movement for the construction or operation of any municipally operated systems in the territory in which we serve. The change occurred about the middle of 1933. Shortly after the TVA established their main offices in Knoxville, they informed the people of Knoxville and the territory that they would make available to the people an abundance of cheap power.

"Mr. Fly: We object to that. It is obvious that the witness has no such knowledge as that, your Honor.

Judge Allen. The objection is sustained.

Mr. Seymour: If the Court please, this man is in a position where he was brought directly in contact with the activities of these gentlemen, and is speaking about a matter of general knowledge in the community.

Judge Allen: Well, he is saying that they "informed" people they could have cheap power. Were you present when that was done?

the TVA whereby the Company would sell its properties to the TVA, with the exception of the transportation system and the 110 kv. line from Waterville to Kingsport. That contract of purchase was not consummated by reason of litigation inaugurated by some outside interests.

"Mr. Fly: I object to the conclusion as to whether or not——

A. —its——

Mr. Fly: —they were outside interests. Let's know who they were.

Judge Allen: Who were they? Who were the outside parties?

The Witness: There were 13 ice and coal companies who protested the carrying out of the sale before the hearing held in the fall of 1934 before the State Railroad & Public Utilities Commission.

Judge Allen: Well, the agreement was not consummated.

The Witness: The agreement was not consummated."

The City made a contract with the PWA whereby they were to receive $2,600,000, 30% of which was to be a gift. The City also made a contract for securing power from the TVA. I believe it was about March 1, 1934. The Company secured a restraining order, an injunction against the City building a competing distribution system. This injunction was carried to the Supreme Court of the state, but before the Supreme Court had an opportunity of ruling upon the matter, the TVA withdrew the contract of March 1, 1934, and made another contract with the City. The Supreme Court thereupon dismissed the case, declaring it to be moot. When this suit was dismissed, the City subsequently and shortly after the dismissal of that suit, entered into a new contract with PWA and TVA substantially for the same purposes. The Company brought a second injunction suit to restrain the City from doing the same [fol. 403] thing, that is, proceeding with the construction of a competing electric distributing system. That suit was subsequently dismissed. We also filed a suit in the Supreme Court of the District of Columbia to restrain the PWA from loaning funds that have been allotted to the City of Knoxville. That case, as I understand it, is still pending, not decided.

The decree was entered in the Chancery Court of Knox County dismissing the second suit that we brought against the City of Knoxville on June 11, 1937. The power committee of the City of Knoxville, with some other officials, met with me some time in June 1937. They asked whether the Company would still be willing to sell its property. However, the City had no definite offer to make and did not know where they would get the funds. Nothing came of that. The conference was not broken up, it merely dissipated without any further action on the part of the City after we met with them.

The TVA communicated with the City of Knoxville with respect to the erection of its proposed distribution system on August 13, 1937. I am informed by the fact that I have seen a copy of the letter of Mr. Lilienthal. As a result of this letter, the City announced on October 26th that they would put out a request for bids to construct the North Knoxville unit of the distribution system in the City of Knoxville, stating that those bids should be in the hands of the City to be opened by November 30, 1937, which is today.

About 90% of the total gross electric revenues of my Company comes from the electric business in the City of Knoxville and immediate environs, what might be called the metropolitan district of Knoxville. The other 10% is covered by the business done in other communities and [fol. 404] towns outside of Knoxville. Both prior to 1933 and subsequent to 1933, our experience in that territory, so far as municipal ownership and distribution is concerned, was substantially the same as it was in Knoxville, with the exception that there has not been any attempt to actually establish municipal plants in the other towns. Attempts have been made, however, to establish rural cooperatives.

The present largest industrial consumer of electric energy served by us is the Volunteer Portland Cement Company. We receive approximately $125,000 a year revenue from the sale of electric energy to that company. We have been serving that company about 10 years, which is about the time the plant was constructed. We are not going to be serving that customer after January 12, 1938. On August 14, 1936, I believe that is the correct date, the TVA made a contract with the Volunteer Portland Cement

it is estimated we would use, at Tennessee Electric Power rates. Below that appears a tabulation of the rates of TVA, the cost of power which it is estimated we would use, at TVA rates. On the second page there is a tabulation showing the rates and cost of power if purchased from the Georgia Power Company.

The memorandum (offered and received in evidence as Complainants' Exhibit 340) was left with me by Mr. Ayres when he was at our plant with reference to our getting in touch with Mr. Hunnicutt and it also is in Mr. Ayres' handwriting.

The form of contract (offered and received in evidence as Complainants' Exhibit 341) was left with me by Mr. Ayres on the occasion of his second visit and has also been continuously in my possession since the time it was prepared by [fol. 415] Mr. Ayres. It purports to be a proposed contract between the Yates Bleachery Company and the North Georgia Electric Membership Corporation. I do not recall any discussion we had about the North Georgia Electric Membership Corporation any more than that if we made a contract, it would really be with TVA at Chattanooga through Mr. Hunnicutt. On the occasion of the first meeting, I do not recall any conversation in regard to the North Georgia Electric Membership Corporation. I have told practically everything that transpired to the best of my knowledge at those two meetings.

Mr. Ayres said he had been over to see the Crystal Springs Bleachery in regard to a contract but found that they had already signed up with the Georgia Power Company, and he said that they could have saved considerable had they waited for TVA to have at least made a proposition.

(At this point the following took place):

"Mr. Fitts: May it please the Court, we object to exhibit No. 339. That is the rough pencil notation that the witness testified was left with him by this man Ayres, who just figured it out, as I read the testimony, it was just rough figuring on a piece of scratch paper. And we object to it first upon the ground that it is irrelevant and immaterial to the issues in this case, it being a detailed comparison of bills that would be received under the various rate schedules. Second upon the ground it is incompetent, as being hearsay and not authorized, and he simply had rough draft notes of an employee whose only showing of his connection is his

own statement that he was an employee without any showing as to the nature of his employment, or the scope of his duties, or what he was authorized to do.

Mr. Bemis: Would the Court like to see those exhibits?

Judge Martin: Mr. Fitts, it is conceded he was an employee, is it not?

Mr. Fitts: Yes, he was an employee. I do not know what the scope of his duties were.

Judge Allen: The Court adheres to its ruling with reference to rates and for that reason rejects the offered exhibit No. 339. You may have your exception.

Mr. Bemis: We take our exception. I understand the other exhibits are admitted in evidence.

[fol. 416] Judge Allen: The other exhibits are received in evidence. The Court adds this comment, that this proffered exhibit which has been rejected only goes to establish the ultimate fact which has been conceded by Authority, namely, that its rates in every class of service are substantially lower than those of complainants.

Mr. Bemis: And, of course, it was offered for the purpose of showing the solicitation and the means and methods used in making the solicitation.

Judge Allen: The ruling will stand. You may have your exception."

(Thereupon the defendants offered the cross-examination of the deposition of the witness Yates.)

Cross-examination:

I had not figured on buying any more power than we had been using since 1930 from The Tennessee Electric Power Company, which was temporarily switched off by a switch in our line because we were using our own engine, until Mr. Ayres came in and approached us at that time. We have our own power plant which we have had since 1920. It has been in use during all that time and has furnished practically all of the power for our plant, with the exception of what was bought from The Tennessee Electric Power Company. Our steam plant has a capacity of 600 H. P. There is a difference between the steam power that we used and the electric power. We have three boilers totalling 600 H. P. and we use that steam for drying cloth as well as to make power and therefore the boiler capacity is much larger than the electrical department. Our engines rate 240 KVA. That is

not always sufficient to satisfy our power requirements for the plant. I cannot tell without examining the last invoices when we last used Tennessee Electric Power Company power. The reason why we stopped using power is because [fol. 417] the production in our business slowed up and we did not need it. That was in the last two or three years. 1932 was a fairly good year. I don't remember how much power from The Tennessee Electric Power Company we used in 1932. The earlier contract with The Tennessee Electric Power Company was the only one we had prior to the recent contract and that is a demand contract for 30 kilowatts. It was not for the full amount of current, because we had to run our own power at that time. The application for a contract for electric service by the Yates Bleachery Company (offered and received in evidence as Defendants' Exhibit 13), was executed by Mr. Yates as President and by The Tennessee Electric Power Company through P. E. Shacklett, dated March 7, 1930, together with a second sheet of the electric service rates.

We have certain residences and houses that are the property of the company. During the period from 1930 to 1936, the source of electric power for those houses was from our switchboard in the engine room of the company. The line that has been furnished for this 30 kilowatts service is shown in the contract to be a 2300 volt, 60 cycle, 3 phase service. Their current comes through their wires up to our property line and from that property line we own the line on our own property to our switchboard. We have that switch so that it can be thrown in and out at our discretion. That line has been taken down in the last sixty days. When we finally started taking the major power requirements of our plant from The Tennessee Electric Power Company, it constructed a new line which is already built. It comes from Chattanooga and goes south of our plant where they have [fol. 418] three large transformers. I could not say definitely that it is an 11,000 volt line. The only thing I know is that they brought electricity to our plant and put in a transformer to give us 2300 volts, but I do not know what voltage they have over the line. The Tennessee Electric Power Company serves the company houses now. We discussed that matter with them after we had made our present contract (Complainants' Exhibit 338). We took out our distribution lines to the company houses and The Tennessee Electric Power Company built new distribution lines. We

were glad to get out from under the loss that we were sustaining by furnishing that service to the company houses. Those lines were built after the new line was put in by the Company and we received our full demand. My house and that of my son is lighted from the switchboard of our company. The power comes from The Tennessee Electric Power Company through the plant and in turn to my house and to my son's house. The Tennessee Electric Power Company has no right to say what we shall do with our power after we get it on the switchboard and I did not consult them in any way any more than I told them what they had to put in there. They did not grant us any permission orally or in writing and never said anything about our using power that way.

The letter (offered and received in evidence as Defendants' Exhibit 14) is addressed to me from The Tennessee Electric Power Company and approves the use of lighting in our plant and in my son's and my house. I didn't know anything about this letter and therefore the answer which I gave to your previous question stated the facts as far as I know them.

I have the bills for payments to The Tennessee Electric Power Company since 1930. Here is one for $37.00, one for $36.00, and two for $35.00. I could not give the exact date when we shut off The Tennessee Company's service entirely, [fol. 419] but it will show on the last invoice. My best judgment is that we did not use that service after June, 1936. I don't know where the current came from. Our bills were rendered to us by the Toccoa Electric Power Company. Our invoices were all paid to The Tennessee Electric Power Company. I could not say that our service was from the Toccoa Power Company. I know very distinctly that The Tennessee Electric Power Company man came out here with their truck and read the meters. During 1936 most of our electric bills were minimum bills, we were not buying very much current. The bill under the new contract with the initial date of delivery given as May 15, 1937 (offered and received in evidence as Defendants' Exhibit 15) was received by us from The Tennessee Electric Power Company covering service from May 15, to June 21, 1937, for a total consumption of 20,700 kilowatt-hours. The bill from the Toccoa Electric Power Company covering the period up to May 21, 1936, shows only a consumption of 1400 kilowatts.

I was present during the last part of the first conversa-

tion with Mr. Ayres of the TVA. The first part of his conversation was had with my son and then my son called me to tell me what Mr. Ayres proposed. I was not present at all of the succeeding conferences or conversations. To the extent that I was not present, I was giving what my son reported to me as having been stated there. It is my best recollection that Mr. Ayres, in one of those conversations, said he would be out of town and would not be here for a day or so, and he suggested that if any questions came up as to the study of rates which he had made for us, we should keep in touch with Mr. Hunnicutt. It was in connection with that that he gave me the memorandum of Mr. Hunnicutt's name and address and also he gave that name to us so that [fol. 420] we could mail in the contract, if we signed it, to the old Post Office.

The Tennessee Electric Power Company built its new line across about 400 yards of our property. We did not get any compensation for the line crossing our property. We assumed that if we ever wanted service we could get it. I told them I wanted them to go across our property, knowing that if I ever wanted power later on I would have a better chance to get it. My son and I negotiated with the Power Company for our new power contract. I negotiated for a special rate comparable with the rate that had been suggested by Mr. Ayres.

Mr. Reed, Manager of the Chattanooga District of the Power Company, came down here and paid me a social call one afternoon and there was no discussion with reference to the power business. I had known him for over 25 years. I carried out the negotiations with Mr. Davies. I did not know anyone else connected with the company except Paul Shacklett, who is the industrial power engineer. I do not remember seeing Mr. Ayres after we signed the contract with The Tennessee Electric Power Company and I don't recollect giving him any information about the terms of the contract and I don't know if any information was given out. I did not tell anyone outside of our organization, our directors and stockholders, about the terms of the contract. It was nobody's business, the way I looked at it. I do not talk my business outside of my office, and I don't know of anyone else who has gotten this information from our office. I don't know whether The Tennessee Electric Power Company filed the present contract with the Public Service Commission.

[fol. 421] Redirect examination:

I do not know whether the Toccoa Electric Power Company was a wholly owned subsidiary of the Tennessee Electric Power Company organized for the purpose of doing business in Georgia.

"Mr. Bemis: If the Court please, I don't know what the record shows. It is a fact that the Toccoa Company was a wholly owned subsidiary of the Tennessee Electric Power Company.

Mr. Fitts: We admit that. I don't think it is disputed.

Mr. Bemis: It has been dissolved and the operations are now carried on by the Tennessee Electric Power Company."

I gave The Tennessee Electric Power Company permission to build a new line across my property in 1936 which was before the present contract with that Company.

During the period from 1930 until now, whether we used a large amount of power, a small amount, or none at all, there was a connection available for our taking power from The Tennessee Electric Power Company, so that in the event of the breaking down of our equipment we could have obtained power from the Power Company at any time by the throwing of the switch. That was why we contracted with the Power Company.

As far as I remember in my conversation with Mr. Ayres, nothing was said by him of serving my home or my son's home.

Recross-examination:

The reason for our entering into a new contract was not so that we could throw our switch and make that connection for service, because the new contract was on a different line entirely. They could not have supplied me with that much current on the old line. After the contract of 1930, until the new contract with The Tennessee Electric Power [fol. 422] Company, we had no further contract with the Toccoa Company or The Tennessee Electric Power Company. I presume the employees of The Tennessee Electric Power Company threw the switch in 1936 when we ceased to take power from the Toccoa Company. We notified them to cut the switch out and cancel the demand bill. The

service was discontinued, as I did not need the power at that time at that price. We had no further contract up to about April or May, 1937, when the new contract, Complainants' Exhibit 338, was entered into.

(The witness was excused.)

[fol. 423] MAJOR R. W. PUTNAM was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Riverside, Illinois, and am a consulting engineer by profession. I was educated in high school in Rushford, Minnesota, following which I entered the United States Military Academy at West Point, graduating in the class of 1913. I was commissioned in the Corps of Engineers as a Second Lieutenant after graduation. In September, 1914, I entered the Army Engineers' School at Washington Barracks, and I took a course in River and Harbor and Electrical and Mechanical Engineering and fortifications, which lasted until about the latter part of May, 1916. About 50% of that course was devoted to engineering connected with River and Harbor work. The course involved inspection of River and Harbor work in progress in the field, particularly on the Monongahela and Ohio Rivers. A part of the course in electrical and mechanical engineering was devoted to the study of the fundamentals of hydro-electric engineering, including the design and problems involved in design and location of hydro-electric facilities, and in connection with that study we had a few field inspections.

After graduation and omitting my post graduate engineering course about which I have already testified, my experience up until the year 1921 was entirely military engineering, service with troops in this country and abroad in various grades, up to and including that of Lieutenant Colonel during the war. In 1921 I was assigned to duty as Assistant to the United States District Engineer in Chicago, who was in charge of River and Harbor works there. In 1922 I succeeded to the position of United States Dis-

[fol. 424] trict Engineer for that District and held that position for the following four years.

The Chicago District included the lake harbors, at the south end of Lake Michigan in the States of Illinois and Indiana, the connecting waterways, such as the Chicago and Calumet Rivers, and Indiana Harbor Ship Canals, and the canals leading towards the Mississippi, such as the Chicago Sanitary and Ship Canal and the Calumet Sag Canal; supervision over the Desplaines and Fox and Kankakee Rivers; supervision of construction and maintenance of river improvement works on the Illinois River.

My tour of duty in charge of the United States Engineering office at Chicago involved studies of reports upon the condition and improvement of rivers and streams in that District. That included particularly a comprehensive investigation of the further improvement of the Illinois River, in connection with the resolution of Congress asking for recommendations as to its improvement. This involved a study of traffic possibilities, the methods in vogue on other waterways in the United States in connection with the development of water traffic, the possible savings and the justifiable expenditures under a number of different conditions. The study of the Illinois River involved its development with varying flows of water. The matter was complicated by the diversion of water from Lake Michigan through the Chicago drainage canal, and the development had to be worked out on several different plans to fit in with the diversion of water which would be finally authorized for that waterway. My report was published as a part of House Document No. 4, 69th. Congress.

As United States District Engineer, I had to supervise the reparation of investigations in connection with applications for permits for power developments under the Federal Power Commission. I had general supervision over the operation of the power plant of the Sanitary [fol. 425] District of Chicago at the lower end of the Chicago drainage canal. I was called upon to make a study and report of the relative values of hydro-electric power by way of the Niagara-St. Lawrence outlet from the Great Lakes and by way of the proposed Illinois River outlet through the Chicago drainage canal.

In 1926, I was asked by the Commercial Club of Chicago to make a general plan for the future development of the

harbors and waterways in the Chicago District. To undertake this assignment, I resigned from the service, was sent to Europe for a few months and made a survey of waterway and harbor developments in the more important locations in Europe, including the Rhine, the Elbe, the Seine and Thames Rivers, and quite a few harbors. On my return from that trip, I spent some time in investigating waterway and harbor developments in the United States, particularly the Mississippi and New York State barge canal development. Then I proceeded to complete that assignment with the Commercial Club. The work took about two years, and while that was being finished up I started in business as a consulting engineer on River and Harbor works. Since that time I have handled some 60 or more projects in various parts of the country, having to do with River and Harbor developments and navigation, such as the supervision and construction of harbors on the northern end of Lake Michigan, at the mouth of the Rio Grande River, and further surveys in connection with waterway traffic at several ports, and other assignments of a similar character.

Since 1928, I have been an officer in a navigation company operating equipment in the transportation of bulk commodities on the Chicago Drainage Canal and the harbors and waterways at the south end of Lake Michigan. In that connection we operated a fleet of barges on the [fol. 426] Illinois River for about a year, hauling coal into Chicago. Our operations covered the Chicago and Calumet Rivers. In 1930, I was in charge of the operation of a fleet of barges on the lower part of the Green River in Kentucky, transporting coal to Evansville.

I am a member of the American Society of Civil Engineers; past president of the Western Society of Engineers; a member of the Society of American Military Engineers; and an associate member of the American Association of Port Authorities. I have written technical articles on navigation subjects.

With reference to the Tennessee River, about 1924, while I was still in the service at Chicago, I came down to Muscle Shoals while it was still under construction, and in general became familiar with the conditions at that location. In the latter part of 1934 and early 1935, I made a navigation and flood control study of the Tennessee River and its tributaries, and in that connection visited the works then

under construction by the TVA and Wilson Dam and several places along the river having to do with the existing water-borne commerce. In September 1936, I took a trip in a small boat on the Tennessee River, the entire length between Paducah and Knoxville. On that trip I examined the number and condition and character of the terminal facilities at various points; the class and amount of water traffic that could be observed; the various navigation improvements that had been made; and also the structures under construction by the TVA. Then in August, 1937, I made a trip by automobile to refresh my mind on a good many of these things and the various works under construction by the TVA and other places along the river.

Since July, 1936, I have spent a large portion of my time in the study of the navigation features and possibilities and characteristics of the Tennessee River. I estimate that since July 1936 I have put in the equivalent of about six [fol. 427] months continuous study. That is in addition to the studies I had made in 1934 and 1935. In the course of my studies of navigation and navigation possibilities on the Tennessee River, I have studied most of the recent annual reports of the Chief of Engineers of the United States Army; House Document 328 of the 71st Congress having to do with the general and detailed investigations of the possibilities of developments in the Tennessee River; and certain annual reports and publications issued by the TVA; also documents having to do with the improvement and flood control of the Mississippi River.

I have made a study of the low dam plan for improvement of navigation on the Tennessee River which is set forth in House Document 328, 71st Congress, which is in evidence as Complainants' Exhibit 105.

Prior to June 1, 1933, there were in existence on the Tennessee River what is known as the Riverton Lock at the foot of Colbert Shoals Canal, which is an improvement about 8 miles long and located some 225 to 235 miles from the mouth of the river; Dam No. 1 just below Florence and the Florence Canal, which is about 2½ miles long immediately above that dam; Wilson Dam with its flight of two locks at the head of the Florence Canal; two locks of the old Muscle Shoals Canal at the head of Wilson Dam; two locks remaining and in use of the Elk River Shoals Canal a few miles further upstream on the left bank; the

Widows Bar lock and dam located about 407 miles upstream from the mouth of the river; and the Hales Bar lock and dam located about 431 miles from the mouth of the river. In addition to these visible improvements, a number of cuts and dikes and things of that character had been built.

With respect to the navigation conditions on the Tennessee River as they existed prior to June 1, 1933, there was [fol. 428] about 15 miles of channel with the least depth of nine feet that existed through Wilson Lake; about ten and a half miles of 7-foot channel of which 8 was in the Colbert Shoals Canal, to which I have previously referred, and two and a half miles in the Florence Canal; about 33 miles of 6-foot channel upstream of the Hales Bar lock and dam, and about 250 miles of 4½ foot channel, of which some 226 is in the lower portion of the river below Riverton, and the balance between Widows Bar lock and dam and Hales Bar; about 22 miles of 4-foot channel in the river between Florence and the head of Colbert Shoals Canal; above Chattanooga some 185 miles of open river navigation with a controlling depth of 1.3 feet at extreme low water; and between the head of Wilson Lake and Widows Bar lock and dam a distance of some 133 miles, a controlling depth at extreme low water of slightly less than a foot.

The general character of the improvement of the Tennessee River for navigation, as authorized by the Rivers and Harbors Act of July 3, 1930, is as described in House Document 328 and provides for a series of low dams between Paducah and Knoxville, which, when supplemented by the existing structures at Dam No. 1, Wilson Dam, Widows Bar and Hales Bar, would provide a continuous 9-foot navigation channel from one end to the other of the river.

The map (offered and received in evidence as Complainants' Exhibit 342) shows in the upper half a map of the Tennessee and its principal tributaries, showing as closely as possible on this scale the location of the low dams proposed in House Document 328, such as Aurora, marked immediately below the first site upstream from Paducah, with an indication 42.2 of approximate mileage of that particular dam from the mouth of the river. Going upstream, the additional dams are shown at the locations opposite their names with the approximate mileage from the mouth of the river in each case. The location of improvements exist- [fol. 429] ing as of about the first of July, 1933, are as

indicated by Wilson Dam and Lock B, and so on. In the lower portion of the exhibit, I show in two sections a profile of the Tennessee River, starting at Paducah on the left hand side of the upper section, running up to about mile 350, the right hand side of the section, and then continuing, the lower section, from the left hand side to the right hand side, to the head of the river. The vertical scales had to be exaggerated because where one inch shows 50 feet vertically, one inch shows horizontally some ten miles. That was necessary in order to show the vertical situation. The low dams are indicated in cross-hatched sections all of the way up the river. Merely for purposes of location and general comparision I have located in outline the dams recommended for construction by the TVA, and also existing improvements, such as Wilson Dam and Hales Bar.

When I say "Dams recommended for construction by the Tennessee Valley Authority", I mean the dams on the main river which were included in the report of the TVA dated March 31, 1936, to Congress. I also show a line on the approximate location of the crest of the 1926 flood and a line showing the approximate location of low water without dams merely to complete the picture. The lower line would show open channel conditions. The map accurately sets forth the data of the low dam plan as disclosed in the official report.

I computed the capacity of the low dam navigation plan for carrying commerce on the Tennessee River. I examined the plans which gave the description of the size of the structures, and from that knowing the character of the structures, it was possible to make computations of the capacity of the waterway. The capacity of the Tennessee River as a through waterway, that is from Knoxville to points on the Ohio-Mississippi Rivers, would be limited by the capacity of the locks already in existence at Wilson [fol. 430] Dam. They are small end of high lift. The practical working capacity of the waterways as thus controlled by Wilson for through navigation would be 5,960,000 tons per year.

Below Florence, the capacity of the waterway would be limited by the highest lift located in that low dam plan at Colbert Shoals, and would be on a practical working basis about 31,540,000 tons per year.

The section between Wilson Lake and Hales Bar dam would be controlled by the highest lift lock there, and that in accordance with the low dam plan would be at Beards Reef, Mile 355.8 with a capacity of 34,280,000 tons per year. Above Chattanooga, the capacity would be limited by the lock at Sherman Hill, and its practical working capacity would be 35,840,000 tons per year.

What I term "practical working capacity" is only 20% of the theoretical, which presupposes continuous operation of the locks every hour of every day throughout the year, with a full load. So that these figures I have given are only 20% of the theoretical and will be what is assumed to be a practical limit beyond which delays become so bothersome to equipment that additional locks are usually necessary.

The theoretical capacity for Wilson would be 29,800,000 tons per year. That would govern all through traffic. Below Florence, it would be at Colbert Shoals as before, 157,700,000 tons per year. At Beards Reef between Wilson Lake and Hales Bar, 171,400,000 tons per year, and above Chattanooga at Sherman Hill, 179,200,000 tons per year.

Movable wicket dams are constructed with what is known as a navigable pass, anywhere from 600 to 800 feet in length. This pass is so arranged that it can be practically folded down to the bottom of the river when stages are sufficient in the river to provide project depths without the use of [fol. 431] dams. And when these stages reach this point these movable wickets, which are composed of planks, practically, each one of which is hinged and may be lowered separately to the bottom of the river, are lowered and it is unnecessary then to utilize locks in passing from one section of the river to the other. It provides open river navigation for that time when the stream is at an adequate stage of the water.

In my estimate of the capacity of the low dam plan of improvement for carrying commerce on the Tennessee River, I made no allowance for open river navigation. In an average year, open water navigation would be available under the low dam plan, other than at places such as Wilson, already in existence, up to 67% of the time, depending upon the location of the particular dam in the river.

If I had made an allowance for open river navigation with the low dam plan, there would be no calculable limit on the amount of traffic that could pass during the season of open

river navigation. The limitation would be applied during the season when the dams were up. And then they would have the annual capacity rate that I gave.

Referring to the low dam plan providing a 9-foot channel on the Tennessee River, the lock and dam which would require the greatest amount of water for navigation purposes at extreme low water, and assuming a lock was used to its theoretical maximum capacity, would be at the location of the present Riverton Lock at the foot of Colbert Shoals, the lock with the highest lift. Assuming that that lock was used to its theoretical maximum capacity, about 1360 cu. ft. per second would be required for navigation purposes at extreme low water. About 1,000 cu. ft. per second would be used for lockages and 360 would be used for taking care of leakage, evaporation and the operation of the [fol. 432] small turbines that work lock gates. The extreme low water flow in the vicinity of the head of Colbert Shoals is about 4350 cu. ft. per second, which would be several times what is required for navigation.

No headwater control is necessary under these conditions to provide water for the maximum operation of the low dam navigation plan, as the natural flow of the river is more than ample.

I made a study of the cost of the low dam plan of improving the Tennessee River for navigation. The estimated cost of the low dam plan for navigation purposes, as reported to the Congress by the Corps of Engineers of the United States Army was $74,709,000. I believe that to be a reasonable estimate. I also made an estimate of the annual maintenance and operating costs of the low dam navigation plan. I made a study of the various elements entering into the maintenance and operating costs and estimated the costs. Exclusive of Wilson Dam and Dam No. 1 and Hales Bar, which are common to any plan, I estimate the costs of maintenance and operation of the low dam plan to be about $1,580,000. per year. This estimate of $74,709,000. as the cost of constructing the low dam plan included locks 600 ft. long by 110 ft. wide throughout, wherever new structures were to be built.

I have also made a study of the amount of prime electric power which would be produced by the construction of the low dam plan. I estimate that about 4400 kilowatts of prime 100% continuous power would be available at the

location of Dam No. 3, which is the location of Wheeler Dam. That would be a dam about 15 feet high and would produce about that amount of continuous power. Any other power which might be produced would be secondary power. Very probably at each dam small hydro-electric units would be installed to provide power for the operation of the locks where movable dams are used. This means that stand-by sets must be installed to take care of the times when the dams are lowered, and the power cannot [fol. 433] be generated, and roughly about 5,600 horse power would be involved of secondary power for all of the low dams in this project.

I have examined the report of the TVA to Congress, under date of March 31, 1936, Complainants' Exhibit 328. That includes the 7 main river dams and 3 tributary dams. The main river dams beginning at the one farthest down stream and their normal lifts are as follows: Gilbertsville, 55 ft.; Pickwick, 56 ft.; Wheeler Dam, 50 ft.; Guntersville, 39 ft.; Chickamauga, 56 ft.; Watts Bar, 63 ft.; and Coulter Shoals, 65 ft. Then on the tributaries, high dams were included, Norris on the Clinch River, Fowlers Bend on the Hiwassee and Fontana on the Little Tennessee River. This plan includes certain existing structures, just as certain existing structures were included in the low dam plan of the Army Engineers. Wilson Dam and Hales Bar dam would be included in the program.

The map (offered and received in evidence as Complainants' Exhibit 343) shows the upper section of the Tennessee River and its principal tributaries, and the location of structures recommended by the TVA in its report to Congress of March 1936, such as Gilbertsville, with the approximate mileage from the mouth of the river as indicated. I have indicated opposite the names of those not under construction by a conventional sign, which under the legend is explained as "recommended for construction", and that legend applies to Gilbertsville, Watts Bar, Coulter Shoals and Fontana. In the lower section, I have a similar profile to that in the previous exhibit, except that in this case the dams in the recommended plan of the TVA are cross-hatched in blue to bring them out more prominently. The low dams are shown and included in the area of the high dams. I have given certain water levels at the approximate elevation of the 1926 flood, and with-

out dams, and also used that in the pending design of the [fol. 434] outline of existing structures, which will be common to both plans and will not be displaced by either plan. That includes Wilson Dam and Hales Bar. Complainants' Exhibit 343 accurately shows the data with reference to the recommended plan which is set forth in the report of 1936, upon which it is based.

I have calculated the capacity of the navigable channel which would incidentally result from the completion of this high dam program which is the plan included in the report of the TVA to Congress on the Tennessee River. As a highway for river transportation between Knoxville and the Ohio River, the capacity is as limited by the locks at Wilson Dam to be 5,960,000 tons a year, the same as with the low dam plan. These capacities are practical working capacities. For the section of the river below Florence, the capacity would be limited by the lock at Pickwick Landing, which would be 26,280,000 tons per year. For the section of the river between Wilson Lake and Hales Bar, the capacity would be limited by the Wheeler lock, which would be 9,520,000 tons per year. Above Chattanooga, the capacity would be limited by Coulter Shoals to about 8,900,000 tons per year. As in the previous case, these are 20 per cent of theoretical working capacities. The theoretical capacity for Wilson Dam would be 29,800,000 tons per year; at Pickwick Dam it would be 131,400,000 tons per year; at Wheeler Dam 44,500,000 tons per year, and for Coulter Shoals, 46,500,000 tons per year.

The capacity for through traffic between Knoxville and points on the Ohio and Mississippi River- would be the same on the channel incidentally resulting from the TVA high dam plan as that which would be provided by the completion of the low dam plan, because of the limitations imposed by locks at Wilson Dam which are now in existence and which are a part of both plans. For the river [fol. 435] below Florence, the capacity, in accordance with the TVA plan, would be 26,280,000 tons per year for the high dam plan and 31,540,000 tons per year for the low dam plan. For the section above Wilson, the capacity of the TVA plan would be 9,520,000 tons yer year compared with 34,280,000 tons per year for the low dam plan. And above Chattanooga, the capacity, according to the TVA plan, would be 8,900,000 tons per year, and for the low dam

plan would be 35,240,000 tons per year. These figures are practical working capacity in each case.

The navigable capacity of the waterway resulting from the TVA plan would be smaller than the capacity of the low dam plan, due to two reasons: In the first place, the locks in the TVA plan are much higher, and then the locks in the TVA plan above Wilson Dam are much smaller than those in the low dam plan. The locks for the TVA plan being 60 feet by 360 feet, and the low dam plan 110 feet by 600 feet, so that larger tows can go through at a greater rate of speed, thus increasing the capacity of the low dam plan as compared to the other.

Excluding Wilson Dam, the estimated cost of the TVA plan as set forth in the table at Page 403 of the Hearings of the House Appropriations Committee on the Second Deficiency Appropriations Bill for 1937 (Complainants' Exhibit 116) would be $473,649,650.

I have calculated what I believe to be the minimum annual cost of maintenance and operation of the TVA plan from the point of view of navigation alone. From the standpoint of navigation alone, I believe the annual maintenance and operating cost of the TVA plan to be $994,000 a year. This includes the cost of operation of locks, their repairs, any dredging that might be necessary and the allocation of the cost of the maintenance and operation of reservoirs and dams as chargeable to navigation.

I have calculated the amount of prime continuous power which was available at Wilson Dam before the completion [fol. 436] of any of the other structures included in the TVA plan embodied in the report of 1936, which under those conditions was about 28,000 kilowatts. I ascertained from these reports the estimated amount of prime or continuous power which would be available from the completion of the TVA plan embodied in the report of the Directors of March, 1936, to Congress, which stated that 660,000 kilowatts of continuous power would be available. That excluded the Sheffield steam plant, but included such prime power as was available at Wilson Dam before the completion of any other structures.

The factors which determine the theoretical efficiency of a navigation channel are those involved in minimum widths for safety and maneuverability, maximum curvatures for the same reason, minimum depths, maximum widths, maxi-

mum current velocities, the elimination of lockages, of lost time as the result of lockages, an adequate water supply during low water seasons, a direct as against a circuitous route, and an absence of excessive depths. The channel should be wide enough so that the type of equipment for which it is designed and which it is expected will use this waterway will have no difficulty in passing other equipment in the channel and the width should also be sufficiently great to allow a substantial factor of safety against grounding on either side. The width of the waterway should be limited so that hazards and delays will be reduced to a minimum resulting from wind or wave action on waters of excessive width. That has peculiar application to inland water transportation equipment, because of the fact that modern inland water transportation is handled by equipment which is adapted to comparatively narrow bodies of water. The curvature should not be so great that it will restrict the size or speed of tows or equipment using the waterway. The depth should be sufficient so that vessels loaded to the project depth will not run any risk of ground- [fol. 437] ing and sufficient to eliminate frictional resistance to navigation offered by the bottom of the channel. Excessive velocity may introduce hazards and also restrict the speed of the vessels or tows going upstream, and operate to cause a loss of time because it is not possible to take full advantage of the added velocity or speed going downstream.

It takes about 20 minutes for a lockage, depending upon size and type of lock, so that a perfect waterway would have no locks at all. The elimination of time lost through lockages is sought either by decreasing the number of locks or providing for open river navigation.

By circuity is meant the ratio of water distance between two ports and the corresponding land distance; and if the waterway were 100 per cent perfect, these distances would be equal. The inspection of that map (Complainants' Exhibit 343) shows the curvature between Knoxville and Paducah as a factor in connection with any waterway use by way of the Tennessee River.

For open river navigation, the water supply must be ample to fill the channel to the projected width and depth at all times, low water and high water. Otherwise, where navigation is provided through locks and dams, the water

supply must be sufficient to provide for water used for lockages, for leakage, evaporation and the operation of any power facilities to manipulate the locks. In the case of slack water navigation channels, additional water is not of significance to navigation.

Depths beyond those necessary to eliminate bottom friction, that is resistance of a tow to movement over shallow water, are of no value to navigation and in fact become a hazard when they become excessive. When accidents occur, as they inevitably do, it is the practice to ground the damaged vessel as soon as possible, and in deep water this becomes increasingly difficult, and furthermore, where vessels founder in waters of excessive depth, salvage operations are [fol. 438] more difficult, sometimes impossible and certainly more expensive.

Such factors are usually considered by engineers in designing or determining the economic feasibility of a waterway. Such theoretical efficiency, however, is not attainable in the design of works for the improvement of a waterway like the Tennessee River. I have calculated the theoretical efficiency of the waterway which would result from the execution of the low dam plan and have made similar calculations with respect to the waterway which might result from the TVA plan. I analyzed both improvements from the point of view of lost time due to lockages, excessive current velocities, inadequate channel dimensions, and lost time due to wind or waves on wide waters, and from other causes, and applying the circuity factor which I previously explained, I find that the total lost time as compared with the hypothetically perfect waterway in the case of the low dam plan would be 32.6% of the theoretical total, giving this waterway an efficiency compared with the theoretically perfect waterway of 67.4%. With the channels resulting from the TVA plan, I find total losses of 29.4% as compared with the perfect waterway, giving that waterway an efficiency of 70.6% compared with the perfect waterway. The theoretical difference is 4.75%, if you express the waterway produced by the TVA plan in terms of the waterway that would be produced by the low dam plan. The arithmetical difference is 3.2%.

The theoretical difference has no practical significance, because while it is possible to evaluate lost time due to these various causes I have mentioned, I know of no way of evaluating the disadvantages inherent in the TVA plan in the

way of the excessive wide waters causing loss of property possibly and life in cases of storms, increased insurance rates on equipment and cargo, and I am certain that these will offset any small theoretical difference in efficiency. [fol. 439] In computing these theoretical efficiencies of waterways, I assumed the existence of a substantial volume of traffic carried in equipment such as that which now uses the Ohio-Mississippi Rivers. But aside from that assumption, these efficiencies are independent of the volume of the traffic up to the time the practical working capacity of either waterway is reached. In computing these theoretical efficiencies of the two navigation channels, I made no allowance for the excess capacity which I found would be provided by the low dam plan.

No expenditure would be justified by any increased benefits to navigation on the Tennessee and Mississippi Rivers which might exist in favor of the channel resulting from the TVA high dam plan over the channel resulting from the low dam plan for the reasons I previously gave, that the effect of wide waters offset any theoretical advantage which might exist otherwise. I have computed the excess of the estimates of cost for the TVA high dam plan as submitted in its reports to Congress, over those for the low dam navigation plan, and have found that the TVA estimate is some $399,000,000 greater than the estimate of cost for the low dam plan.

I have made a study to determine the nature and amount of existing commerce moving by water on the Tennessee River, by examining the annual reports of the Chief of Engineers and by actual personal contact with conditions on the river studied existing commercial developments there. I have also made a general study of the natural resources of the Tennessee Basin. Between the years 1927 and 1934, the annual commerce on the Tennessee River has varied between a minimum of 800,000 tons a year to a maximum of 2,600,000 tons a year, averaging about 1,750,000 tons a year. The average haul was about 23 miles during that period. About 82% of the total movement consisted of sand and gravel; about 9% of it of various forest products, such as lumber, ties, poles and posts; and the remaining 9% consisted of miscellaneous commodities, such [fol. 440] as iron and steel and lime and cement, and things of that character. The largest portion of the movement of lumber and forest products is from Riverton Lock on down-

stream to Paducah. There is no movement of iron and steel of any significance except as recently reported in connection with the installation of equipment in some of the dams under construction by the TVA. The old movement that existed from Sheffield is practically gone, if not entirely so. The minimum value of the material hauled on the Tennessee River during this period, 1927 to 1934, was $5,600,000, and the value at the maximum high was about $19,000,000, averaging slightly in excess of $11,000,000 a year.

The chart (offered and received in evidence as Complainants' Exhibit 344) is based upon data taken from the annual reports of the Chief of Engineers of the United States Army. The chart shows the traffic existing on the Tennessee River during each calendar year from 1927 to 1934. (At this point the Court stated that it was a very simple chart and the Court could readily understand it without further explanation.) This commerce that was analyzed from 1927 to 1934, about 1¾ million tons, was divided so that below Riverton the average movement was about 625,000 tons, between Riverton and Brown's Island about 154,000 tons, from Brown's Island to Hales Bar about 340,000 tons, between Hales Bar and Chattanooga 117,000 tons, and above Chattanooga 652,000 tons. The sum total of that is about 140,000 tons in excess of the total movement for the year, and that covers the movement between sections which involves a certain amount of duplication in the figures. The statistics list them both by sections and then eliminating duplications they give the total.

The chart (offered and received in evidence as Complainants' Exhibit 345) is based partly on information obtained from the annual reports of the Chief of Engineers for the period studied and partly on the basis of personal [fol. 441] observations made in the field with reference to the distribution of water traffic. It shows the approximate distribution of the average freight movement on the Tennessee River from 1927 to 1934, inclusive. On the lefthand side is a set of figures running vertically which represent the number of tons of commerce. The figures on the bottom of the exhibit reading from left to right are the miles upstream from the mouth of the river, so that if at any one particular point such as Decatur just above mile 300, if you desire to know the approximate amount of traffic in the

river at that point, by reference to the scale at the left or the figures shown there, it is indicated that about 69,380 tons a year on the average move at that point, the larger portion of which is sand and gravel and the balance being forest products. A similar explanation would apply at any other location as to the different commodities indicated. Referring to the diagrams shown as sand and gravel, they show that during that period the sand and gravel movement was very largely a local movement, only moving a short distance. By relating it to the miles of the scale on the bottom of the chart, you will see that the approximate distance that sand and gravel was hauled above Paducah would be between 10 and 20 miles. In each instance the distance between the vertical lines indicating the kind or the particular commodity moving on the river shows the stretch or reach of the river over which that commodity moves or to which it is confined.

Whether or not a proposed navigation improvement is economically justified depends upon whether the transportation savings resulting from the use of that waterway by existing or reasonably prospective commerce will exceed the fixed charges on the cost of improvements, plus the annual maintenance and operating costs. Those are the factors that are established by the Corps of Engineers in reporting upon such projects.

Referring again to Complainant's Exhibit 345, the movement of sand and gravel during the period 1927 to 1934, [fol. 442] inclusive, took place entirely below Gilbertsville, the lowest of the proposed dams included in the plans submitted by TVA to Congress. That is a historical movement that I am showing there.

I have computed the approximate annual savings resulting from the use of water transportation instead of land transportation for the commerce now using the Tennessee River. I estimated the cost of land transportation necessary to move the traffic shown in this exhibit and I also estimated the cost of hauling it by water under present conditions. And I found a result which showed the annual savings in the way of transportation costs. The savings on the basis of the 1927 to 1934 traffic averaged approximately $2,000,000 a year. That is the transportation savings on existing traffic. A capital expenditure of about $28,600,000 would be justified to provide navigation facilities for handling present commerce on the Tennessee River.

In arriving at that figure, I allowed 3½% for interest charges on the investment, 1½% for depreciation and 2% for maintenance and operating costs, making a total annual cost of 7%. And capitalizing the total annual savings of $2,000,000 at 7%, the justifiable capital expenditure comes out not to exceed $28,600,000. That is a standard and accepted method of determining the economic feasibility of a waterway improvement.

I have also investigated to determine approximately how much money has been expended for the navigation facilities existing on the Tennessee River as of June 1, 1933. The capital expenditures prior to June 1, 1933, for navigation purposes on the Tennessee River are about $24,600,000. The additional expenditure justified for navigation facilities by the present commerce on the Tennessee River would be the difference between $28,600,000 and the $24,600,000 figures that I have given, or $4,000,000.

I have made a study to determine the nature, extent and value of the commerce which may reasonably be expected [fol. 443] to utilize the 9-foot navigation channel when and if such a channel is completed between Paducah and Knoxville. I have examined the rail movement into, out of and across the Tennessee Valley for the year 1926, for which year I was able to obtain very complete records. I found on further examination that the year 1926 was a peak year up to and including the 1935 year in the way of traffic in the region. I found further that in the general commodity subdivisions, 1926 was a peak year. On the basis of the 1926 figures and experience with water transportation and land transportation costs, I was able to determine or make an estimate of the future traffic for the Tennessee River for from 20 to 30 years in the future.

In the next 10 to 15 years after completion of a 9-foot channel between Paducah and Knoxville, I estimate the existing traffic will average 2,907,000 tons additional. Beyond that period I estimated a further increase over another period of equal length of 2,115,000 tons. So, I figure a total increase up to the end of a possible 30-year period of slightly over 5,000,000 tons in excess of existing annual traffic.

I found that the War Department in 1926 had assembled very complete traffic statistics on the area, more complete than could be found elsewhere or for any other time. And

I made a study of the cost of rail transportation in the region. I made a study of the costs of water transportation on the proposed 9-foot channel. I made allowance for extra terminal costs that might be involved in handling water traffic as against rail traffic, and examining some 9 and a half million tons of commerce contained in the War Department's report, I arrived at the conclusions that about 5,000,000 tons of that would move in the next 30 years. I also computed at the same time my estimate of the amount of savings that would be realized in transportation from this prospective movement, and for the first 10 to 15 year period I estimated that the savings for the additional traffic would amount to $1,367,000 a year; for the second [fol. 444] 10 to 15 year period, that the savings would be increased by $1,812,000 a year, making a total increase in savings of $3,180,000 a year.

The estimated savings on this amount of potential commerce, which I derived from my investigation, were comparable with experiences elsewhere. I found an average saving of about 63.3¢ per ton to be realized on this traffic, and that is comparable with experience elsewhere. I found the traffic divided itself into two general classes. The first class might be defined as port-to-port traffic, that is, commerce which would move from one city directly to another with no long land hauls involved and possibly only short switching or trucking operations at each end. That sort of traffic usually develops first when a waterway is improved. So I segregated that and figured that would come within the first 10 to 15 years after the development or completion of the waterway. That is the basis for my first set of figures of 2,907,000 tons. The other traffic is known as rail and water interchange traffic, for instance, traffic originating in the interior and going by rail to the river port, transferred to the river carrier and carried to the destination either by water or a combination of rail and water. In view of the complicated nature of that class of traffic, I estimated that would develop later. For that reason, I separated the estimate into these two different periods. The latter traffic involves duplicate handling charges that are not involved in the other class of movement.

Assuming that in accordance with my estimates, river traffic will increase by 5,000,000 tons or a little better, with

a total saving of $3,179,000 per year within a period of 30 years after the completion of a 9-foot navigation channel on the Tennessee River, the justifiable investment in navigation facilities under those conditions would be between $35,600,000 and $48,000,000, depending on the type of improvement.

[fol. 445] That takes into consideration the annual maintenance and operating cost factors. There is a different factor for the annual maintenance and operating cost with the low dam type of construction, in which case the annual maintenance and operating costs are about 2%. With the TVA type of construction, the amount of maintenance and operating costs chargeable to navigation is about .2% of the total expenditure, so with the low dam plan the savings are capitalized at 7% and with the TVA plan the savings are capitalized at 5.2%, making the difference. In each case the cost exceeds the investment justified by the estimate of savings. With the low dam plan the cost exceeds the justifiable investment by about $39,400,000; with the TVA plan the cost exceeds the justifiable investment by about $425,650,000.

The chart (offered and received in evidence as Complainants' Exhibit 346) shows a comparison of the low dam plan and the TVA plan, on four different items. The first item is the comparison between the additional investment justified by the savings previously testified to. On the left hand side for the low dam plan there is shown graphically to scale 35,600,000; on the right hand side there is shown to the same scale $48,000,000. Then the next large block contains the capital cost involved in the two different improvements. These are to scale. For the low dam plan it shows $75,000,000; for the TVA plan, $473,600,000. The next block shows the excess of cost over the justified investment, which is really a difference graphically between the items shown in the second block from the top and the items shown in the first block. The bottom block shows graphically to scale the additional prime power in kilowatts at 100% load factor brought into existence as the result of the execution of these two plans—4,400 kilowatts for the low dam and 632,000 for the TVA Unified Plan. The 632,000 kilowatts shown in the bottom column on Complainants' Exhibit 346 is the difference between the 660,000 kilowatts shown [fol. 446] in the TVA plan as reported to Congress, which

will be the total amount of 100% prime power available after the execution of the TVA plan and the amount available before the TVA plan was executed, that is 28,000 estimated for Wilson Dam. I subtracted the Wilson Dam power previously existing.

The elements which enter into flood damage to navigation on the Tennessee River are those resulting from excessive current velocities which may cause a suspension of navigation during excessive floods at certain critical locations, or may cause the reduction in speed, or increase the time of round trip for the vessel, due to the fact that the additional speeds going down stream may not be safely made use of. Then there is the element of the interference or possible suspension to navigation during excessive floods when the waters of the river are sufficiently wide to create conditions where winds and waves may interfere with the operation of river equipment. And then excessive floods may suspend operation at some of the terminals on the Tennessee River.

I estimate that the average annual flood damage to existing traffic on the Tennessee River is approximately 25,150 a year. The construction of the TVA plan as submitted to Congress in its report of 1936 will eliminate a part of the flood damage to navigation resulting from excessive current velocities. It will eliminate a part of the interference with terminals. To the extent that it affects those conditions, there will be a reduction in the loss of practically $10,100 a year. It will aggravate the condition insofar as wave action on wide waters is concerned, because in extreme floods, with the pools behind the dams filled to their extreme limits, much wider waters will be experienced on the lower sections of the river than would be the case in a state of nature, so that I believe that that situation, coupled with the fact that one or two of the terminals at least will have to be moved in connection with the execution of the TVA plan to get them [fol. 447] up above pool levels, will offset the savings in the other direction. In my opinion, no capital expenditure is justified by reason of benefits to navigation from the standpoint of decrease in flood damage to navigation.

On completion of the TVA Unified Plan as set out in their Report of March, 1936, any enrichment of low water flow by regulation from tributaries will be of no value to navigation, as the channel dimensions will be provided by

slack water methods and the natural flow of the water is ample to take care of what is necessary for lockage, leakage and use for navigation purposes. I have already testified with respect to the low dam plan that it will be 2½ times greater than will be required for commerce. Assuming the carrying out of the TVA Unified Plan as set forth in its Report to Congress in March, 1936, navigation from the Ohio River to Knoxville will be entirely slack water navigation, because the Ohio River itself is a slack water project at the mouth of the Tennessee. That will make slack water from the mouth of the Tennessee up to the first dam.

Norris Dam has no value to commercial navigation on the Clinch River above the dam. The pool behind Norris Dam will have a maximum vertical fluctuation of between 95 to 100 feet. It will have a normal fluctuation of between 60 and 70 feet, and fluctuations of as great as 75 feet will not be unusual. Any local commerce handled on the Clinch River above Norris Dam would have to be provided with terminal equipment so arranged as to overcome these great differentials in vertical lifts, and in my opinion the expenses involved would be so great as to eliminate the possibility of any commercial navigation above the dam, except as the dam itself is a barrier to land transportation and might require it to resort to the use of ferries to cross the reservoir back of the dam.

Norris Dam has no value with reference to through commercial navigation on the Clinch River. Any through [fol. 448] navigation would be subject to the same terminal difficulties in Norris Lake that local navigation would have. Furthermore the dam itself as now built is an obstacle to through navigation. It has no locks or barge lifts or any other means for the transfer of vessels or cargo from one side of the dam to the other, so that as built, Norris is an obstacle to development of through navigation on the Clinch River.

Norris Dam can have no permanent value to navigation on the Tennessee and Mississippi Rivers under those conditions. The cost of Norris Dam, according to the estimates of the TVA, was approximately $36,310,000. In my opinion, taking all factors into consideration, Norris Dam has no value to navigation on the Mississippi, Tennessee and Clinch Rivers. Fowler's Bend Dam will have no permanent value to navigation on the Mississippi, Tennessee and Hiwassee

Rivers for the reasons similar to those given in connection with Norris Dam. Fontana Dam could have no permanent value to navigation on the Tennessee and Little Tennessee Rivers for the same reasons.

In my opinion the TVA Unified Plan for the Tennessee River as submitted to Congress in March, 1936, is not designed primarily to promote navigation on the Tennessee River and its tributaries. Any improvement designed to promote navigation on the Tennessee River and its tributaries would not necessarily or otherwise create the chain of lakes such as resulted from the completion of Wheeler Dam and such as will result from the completion of the other dams; a chain of lakes which are of such nature as to introduce delays and even hazards to navigation. A waterway designed primarily for navigation would avoid any such arrangement of wide waters, so that if the reverse actually is the result, then in my opinion the TVA plan was not designed with that primary purpose in view. Then we have here a case of an expenditure nearly six times as great as that necessary to accomplish the primary objective. And [fol. 449] furthermore, I don't believe that the TVA Unified Plan is integrated with the navigation developments on the rest of the Ohio and Mississippi River systems.

The navigation projects of the Federal government call for the completion of 9-foot channels on the Ohio and upper Mississippi Rivers. Those channels are quite similar to the channel which would be provided by the low dam navigation plan and call for the use of the same type of equipment which has been in use on the Mississippi and Ohio Rivers for a great many years. The TVA Unified Plan would not fit into that development of the Ohio and Mississippi Rivers, because the standard Mississippi River equipment or Ohio River equipment would find it more expensive at least, if not hazardous, to operate on this chain of lakes. I am comparing the TVA channel with the Ohio and Mississippi. The equipment now in use on those rivers would have to either load more lightly or be reconstructed or redesigned to stand the wave action to be encountered, and the result would be a heavier type of equipment which would find difficulty in competing with the lighter equipment now in use on the other river systems.

Cross-examination:

I have been a witness in three recent cases involving dams and navigable streams. I was a witness against the government in each case. I made some little investigation of the Tennessee River about 1934 or 1935, and I was a consultant for the complainants in the Ashwander case. I sat in the court room practically throughout the trial, but did not testify.

Some sections of the Mississippi River are comparatively wide. Navigation moves commercially and successfully between St. Louis and New Orleans, but is still in an experimental state between St. Louis and St. Paul. Lake Pepin is not continuously navigated by crafts ordinarily used on the upper Mississippi and the other inland waterways and [fol. 450] there have been occasions of difficulties on Lake Pepin. I have witnessed no hurricanes on the Tennessee River. It is not my opinion that it would require a hurricane to seriously interfere with commerce on the river. I so testified in the Santee-Cooper case, but the conditions are entirely different. In the Santee-Cooper case we had one small reservoir there of a few miles in length. Here we are going to have a lake, a set of lakes, less wide than involved in the Santee-Cooper case, but of considerably greater length, so that the difficulties are going to be somewhat more substantial. In that case we were dealing with fifteen miles of water on the Pinopolis Reservoir, with roughly about ten miles of width.

This difficulty of so-called wind and wave action depends upon the fetch. On the Tennessee River, the fetch will vary as between different lakes. The fetch is the unobstructed water distance over which wind may blow to create waves. That means the water is open and has no obstruction either to wind or waves in that stretch. And I might say that with reference to the reservoirs proposed, this fetch will vary from point to point, and be different as between pools. When I testified that it would require a hurricane to interfere with commerce in the Santee-Cooper case, I was dealing with a fifteen mile fetch over a comparatively short journey where vessels could stay tied up in port rather than venture out into the hurricane. I have calculated the fetch in the different reservoirs of the Tennessee plan. None of them exceed fifteen miles in length.

Within the past year I think I have studied the recent reports of the Army Engineers, dealing with navigation improvement on the Tennessee River, the Ohio, and the Kanawha. The time spent on the ground at each of the points on the Tennessee River would probably total about three weeks. The time spent in the office, studying the plans and the effect of them, all plans and the effect of them the equivalent of six months. I spent a total of three weeks on the ground, either in a boat or in auto trips to the various [fol. 451] places. I came all the way up the Tennessee in a small out-board motor boat, carrying four persons and about seventeen or eighteen feet long. I took eight days for that trip. I could not tell what the speed was. On that trip I inspected each of the dam sites and each of the dams in a general way. I did not make any detailed study as to the details of the construction, but merely as to the location of the locks, whether on the right or left bank, and the factors which I felt affected navigation. I did not go into the designs of the dams. There were eight days of this one particular boat trip. Then, on the three automobile trips I took, plus my time at Wilson years ago, I would state that the rough estimate was slightly over or under two weeks, and would cover all of the rest of the three weeks.

I first came down here for a few weeks in the summer of 1936. Then I went back and returned for the boat trip in September of 1936. Then I came down here and spent a considerable length of time between the first of October and the first of January. I was down here in connection with the study; and then last August, I was down here for less than a week, and then I came down about the 8th or 10th of November. I imagine I spent not over all told two hours at each of the dam sites, and on several different visits to each one, I guess two hours time at each one.

The testimony which I have given is based partly on the reports of the Army Engineers and partly on the reports of the TVA. I would call what I made as original a study as can be made under any circumstances. My material came from the published document of the War Department, but in turn that material came from the railroads. I would have had to go directly to the railroads myself for the same class of material. I spent some time in each of the river cities themselves to get generally familiar with their industrial setup. I certainly did go around sizing up the plants. I have been doing that for the last two or three weeks.

I have made no geological surveys. I am not a geologist. I [fol. 452] am used to relying on geologists' reports for those things.

I observed that there would be large locks on the dams below Wilson. I have no criticism of the locks from the standpoint of their feasibility for traffic below Wilson Dam. Those 600 by 110 foot locks are ample in size. The size of the lock at Wilson is 60 feet by 300 feet in the clear for full width. The difficulty is that when you get to Wilson, you would have to break tow at Dam No. 1. The lock at Hales Bar is a little shorter, about 280 feet as I recall it. The major difficulty is in breaking tow at Dam No. 1 and at Wilson. They would have to be broken again at Hales Bar. The operation would be you would lock through part of your equipment at Dam No. 1, possibly take it all of the way through to Wilson Lock and then return to get the balance of it. Then you would make up your tow again and go up to Wheeler, and whatever size lock is there would govern what you did.

"Q. You know, do you not, that the Army was building the lock at Wheeler when the Tennessee Valley Authority was first created and undertook this work?

A. That is correct.

Q. And you know also, do you not, that the Chief of Engineers and the Board of Rivers and Harbors recommended that the smaller locks be placed in the dams above Wilson for the time being?

A. I don't know whether they made that recommendation with reference to the dam of the Tennessee Valley Authority.

Q. Well, you do know that in 328 they made that recommendation, do you not?

A. They made that, the Board of Engineers made that recommendation.

The final recommendation of the Chief of Engineers for a sum total of $74,000,000 some hundred thousand, which included the large locks all the way through.

[fol. 453] Q. Now, let me read you from House Document No. 328, the report of the Chief of Engineers. I will ask you this—

Q. On page 6, paragraph numbered 21, the Chief of Engineers says:

'While locks of the size used in the Ohio River would be a great advantage in passing a large tonnage water borne commerce through these high dams, the Board considers that the smaller locks on which the estimate of the District Engineer were based can carry a large and valuable amount of traffic and will be sufficient to handle all the commerce which can be expected to develop for many years after the construction of the dams. If, at some future date the development of a larger traffic makes the provision of additional parallel locks desirable, such locks can be added at that time and can be made of Ohio River size if economic conditions then justify such dimensions.'

Now, does that refresh your recollection as to the position of the Chief of Engineers?

A. It does not change it, because he is reciting what the Board of Engineers stated, whereas the Chief of Engineers' final recommendations are different.

Q. Does he dissent from that part?

A. Not in so many words, but he recommends the $74,709,000 project, which, by reference to detail, incorporates the cost of the larger locks.

Q. Well, we will go back to that in a moment. Neither at this point nor elsewhere in this report does he criticize that, does he, any particular?

A. No, not that I know of.

Q. Who was in fact the Chief of Engineers when the Army began the construction of Wheeler Lock?

A. I think General Brown was Chief of Engineers then. I am not sure.

Q. And he was the man who wrote this part of the report, was he not?

A. That is correct."

In my inspection of these dams, I could not tell whether or not the TVA had provided places in all of the new dams [fol. 453a] for the insertion of the additional and larger lock at a later date, but I understood that to be the case.

In dealing with the alternative plan for the low dams, I have assumed the scheme discussed in House Document 328. That provides a minimum depth of 9 feet. Those proposed low dams were comparable to the prevailing depths on the Ohio River and the Kanawha River. I am not sure as to whether the new work has been finished on

the Kanawha, but on the Ohio they have a project with a minimum depth of 9 feet.

I testified about the value of having the channel with a minimum 9-foot depth so there would be no friction of the vessels with the bottom of the river. If you have a nine foot draft and a nine foot depth, you would have collision. If there was an inch of available water between the draft and the depth, you would have friction. It is now customary and the practice of Army Engineers to provide the channel for 9-foot draft by providing some substantial overdepth. The additional depth depends upon the question of whether the excavations are in rock, clay or sand. Where the chan- [fol. 454] nel is in rock and the collisions would be serious, they provide extra depth there. I am aware that the Corps of Engineers has recently replaced some low lift dams on the upper Ohio and Kanawha rivers with higher dams. I think twenty-eight feet at Winfield on the Kanawha is the limit. They have also replaced a couple of low dams on the Kanawha. I only know very remotely about the dam of around 60 feet in height that is being constructed on the Warrior River. I have never seen it, and have just heard there was such a thing.

When I was a Major in the Corps of Engineers, I recommended an improvement on the Illinois River for a nine foot channel. I have forgotten the amount of over-depth beyond the nine foot channel, but I know it was substantial.

I am generally familiar with the recent recommendations of the Chief of Engineers for the replacement of the old low locks and dams on the Ohio River with a less number of higher lift dams. I concur in the following opinion of the Chief of Engineers in House Document 306, 74th Congress, 1930:

"The dams on the Ohio are generally of the Chanoine wicket type with submerged moving parts, and the locks constructed in the early part of the period of the work did not meet modern standards of concrete construction, and are subject to progressive deterioration over a long period of years.

"The general plan for the most effective improvement of the main stream of the river is the execution of betterment to the existing system, and the progressive replacement of the old locks and dams with a less number of higher

lift dams as the replacement becomes necessary because of the deterioration of the old dams, or warranted because of the superior facilities afforded to navigation."

The dams that were eliminated on the Ohio and the Kanawha were of the wicket or removable type. I believe there were some fixed dams at the upper end of the Ohio River that are being replaced by a roller gate type of dam.

In getting the information as to the cost of the low dam development of the Tennessee, I made three independent in- [fol. 455] vestigations, and with respect to one, which was practically the same in characteristics as that shown in House Document 328, my estimate came out about $75,400,000, so to that extent I have made an independent estimate. In the course of making my own estimates, I actually passed the site of each of the proposed structures. I made no borings or geological investigations, for they are not necessary for that type of preliminary estimate, for that type of structure. It was a preliminary estimate of the construction of that type of dam. I made no estimates as to the amount or the cost of the various materials, such as cement, steel or of the types or of the quantity of labor, or of the rates of pay, the cost of construction camps, and that sort of thing. My estimates covered the number of lineal feet of dam for various degrees of lift, size of locks, and with experience elsewhere and knowing what dams of that character cost per lineal foot, I was able to arrive at this preliminary estimate. I did not just assume that I would know what that dam would cost per foot. I made a sufficient study of factors such as the cost of actual materials, steel, cement, property, materials to be purchased, labor, the type and quantity of labor, the rates of pay, etc., to be able to cut the thing short and make preliminary estimates of that character, without going into all of those details.

I made no complete investigation of the character of the sites. I made considerable previous study of the surveys available, showing soundings, showing the general character of the underlying material, the width of streams, contours of the bank, and other things which would affect the cost of structures at each location. The basic data for that information came from the unpublished exhibits of House Document 328. I did not get that from any other source. My understanding is that final borings at every site were not made prior to the writing of House Document 328. They

were dealing with a structure here that was comparatively light in construction, so that the factors of probable error [fol. 456] were very small. I made an estimate of the dredging necessary by comparing the stream with other streams in my experiences and knowing the cost of dredging elsewhere. I made no soundings in the field to determine the presence of shoals here and there. Observation showed their existence and the characteristics of the river are such that by comparison with other streams it is possible to arrive at a reasonable estimate. I made no assumptions as to the profile of the river or the cross sections, except I assumed the unpublished exhibits of House Document 328 were correct in showing that.

The figures I took as the cost of the high dam project of the TVA were the figures that were shown on Page 403 of Hearings before Congress with reference to appropriations in about April, 1937. The total figure reported in those Hearings was in excess of $520,000,000., which was the ultimate stage, and from that I deducted the figure shown in that same table for the original cost of Wilson Dam, arriving at the approximate figure of $473,650,000. for the works exclusive of Wilson Dam. That includes the estimated cost of all the dams, including flowage rights, locks, provisions for electric power and power house facilities, generating plants, the cost of Fontana Dam, the cost of the highways, the town of Norris and forest lands. I have arrived at no independent figure for the cost of the dams excluding Fontana and excluding the power house and generating equipment and excluding the other property in the vicinity of the dams.

I estimated the cost of maintenance and operation for the low dam project by setting up my opinion as to the size of crew that would be used to operate the locks, and the amount of money required to maintain the locks, to repair them, and the amount or the size of the crew, and the amount of money necessary to maintain and operate the wicket dams, and by comparison of the Tennessee with other streams, I estimated the amount of dredging to be required, and bringing these all together, the estimate I gave [fol. 457] of $1,580,000. covers the total for the low dam plan. On the low dam program, I assigned to maintenance of locks $160,000; operation of locks $422,400; maintenance and operation of dams $510,330; dredging $489,000; total $1,581,730.

For the TVA program I estimated maintenance of locks $296,000; operation of locks $92,400; maintenance and operation of dams $280,330; dredging $326,000; total $994,730. I estimated that it would take only $10,000 per year to operate a moveable dam. That is just the dams alone and does not apply to the reservoirs.

In reaching my conclusion as to the comparative length of time required to navigate the entire length of the river with the high dam scheme as compared to the low dam scheme, I assumed the movement of a tow boat and tow at a speed of 5 miles per hour in still water, and then I made appropriate deductions for lost time in connection with lockages, inadequate channel dimensions, such as depths too close to 9-feet and inadequate channel widths and other factors entering into the consideration, so I could not give you the exact figure an hour, but that is the method that was used. With respect to the comparative times required for lockage, I figured that with the low dam program, 7.3% of the time would be lost in navigating from one end to the other of the river as compared with 4% of the time with the TVA program. In other words, it would take almost twice as much time for lockages under the low dam plan.

I adopted the study of the traffic potentialities in House Document 328 only as far as utilizing the consolidated reports that have been obtained from the railways as to the actual traffic movement existing in the area at that time is concerned. From then on, I made my own study. I did not adopt the estimate of the District Engineer that by 1950 there would be 17,000,000 tons of traffic at an annual saving of $22,000,000. I considered exactly the same line of commodities that were considered by the District Engineer [fol. 458] at that time. The difference lies possibly in a difference of opinion as to how much existing traffic would be diverted to water. I took the same classifications and had them classified and summarized in one table. They had some 27,000,000 tons of commerce that was classified nto about 13 different classifications, and I used the same, and found some tonnage to move from each and every one of those classifications, but different amounts than the District Engineer had worked out. I have a total estimate in the neighborhood of 100,000 tons per year of petroleum products, to move over the waterway. I know that the traffic in petroleum products has grown markedly in the last few years on inland waterways. There is a substan-

tial saving in those shipments of petroleum products where the distance factor is satisfactory. I do not know of any substantial investments by oil companies in terminal sites on the Tennessee River. I know that inquiries have been made and some plans have been worked out. How substantial in the way of dollars and cents, I do not know. That is generally one way traffic going up-stream.

I made an estimate of the cost of terminals for handling the commerce I expected to materialize under either plan. I analyzed this traffic movement which I estimated would result on the assumption that suitable terminals would be provided at the river ports. Then I went to those port locations and further analyzed my traffic movements to see how much traffic would be received and shipped to each one of those locations. Then I made an estimate of the cost of terminal facilities to handle the predicted movements at these specific locations.

I have not totalled the cost of terminals under the two schemes. I have got it individually by ports. There would be about 14: At Johnsonville with the TVA plan $122,100, with the low dam plan $163,150; Florence, Sheffield and vicinity with the low dam plan $210,835, with the TVA plan $200,795; Decatur with the low dam plan $255,926, with the [fol. 459] TVA plan $232,660; Guntersville with the low dam plan $357,755, with the TVA plan $238,505; South Pittsburg for either plan $25,230. At Chattanooga, I made no estimate, as I found no difference in the cost of terminal construction there. At Dayton, with the low dam plan, the terminal cost $44,800, with the TVA plan $22,400. At Knoxville, with the low dam plan $952,211, with the TVA plan $906,868. This summarizes in showing the differential cost between the two of $281,249.

You will have greater fluctuations of pool levels with the low dam scheme except at the head of Hales Bar pool, which I do not think will be affected much one way or the other.

The alternate land haul in combination with the water borne traffic varies as between commodities and as between ports. For instance, out of Chattanooga there will be some commodities that might be diverted from rail that would come from points in Georgia, South Carolina and North Carolina. I could not give you the exact distances without reference to a lot of detail.

I did not make any assumptions as to the land movement combined with the waterway. I didn't handle it that way. I

got the traffic to the port by the shortest land route, and from there on made an estimate of the comparative costs of transporting to destination. I utilized largely rail transportation for the long distance haul to rail-water interchange. For local movements, there would be either local switching by rail or short distance trucking. In calculating the savings, part was assumed to move by truck.

I have rather detailed figures in regard to the direction in which the traffic moved up-stream or down-stream. I had what we call an unbalanced load factor of about 80%. The traffic in one direction would be 80% of the traffic in the other direction for the river as a whole based upon ton miles of movement. It is a high factor for loading. Within the limits of my ability on a matter of this kind, that is the way it came out and I had to stick with it.

[fol. 460] I calculated my item of savings on the basis of rail costs, as distinguished from rates. I used water costs as well. In my recommendations on the Illinois River, my estimates then were based on rail rates. I stated that I would estimate a savings of about 63.3¢ per ton. I am familiar with the Chief Engineer's estimate of $1.31 per ton. I cannot tell off-hand what ratio of the total those two estimated savings represent. I didn't assume an average haul. What actually happened was that certain traffic movements were worked out, and then the average haul resulted from those traffic movements. As I recall it, it was in the neighborhood of an average haul of 200 miles, a relatively long stretch when considering waterway traffic throughout the country, particularly when you consider the present condition of the Tennessee River and the existing traffic. I have not seen recent figures on savings on the Ohio. I have just seen Colonel Hall's report, but I have not had a chance to go into it. I know that the haul is increased and the savings are beginning to increase on the Ohio.

Generally speaking, the longer the efficiently improved waterway and the greater the number of interconnections to industrial, productive and trading points, the greater will be the traffic naturally on the waterway system.

The petroleum products have self-propelling barges on the canal systems in the East, New York State Barge Canal, and so on; on the western rivers the barges largely have to be towed by tow boats.

I don't recall the size of the locks on the Monongahela River, but I think that they are small locks. The traffic

upon that river is about the heaviest in the country. As I recall it, there are twin locks on the lower Monongahela, about the same dimensions as the lock at Wheeler. I think where this heavy traffic is being handled, they are twin locks. In the upper portions, they have single locks. The product there that is shipped so heavily is coal. It comes from mines [fol. 461] practically on the banks of the river and is shipped down to steel mills at Pittsburgh on the banks of the river, not more than 100 miles from Pittsburgh.

In my study of navigation costs, I do not assume still water but figure on my losses at lockages, current velocities and so on, with reference to a tow that could make 5 miles per hour in still water. I had to have some basis for it.

The percentage of time that the wicket dams would be down would change from time to time, depending upon the character of the flow of the stream at that particular point. In the lower river, the percentage is up to 65% of the time. On the upper river, the per cent of time begins to decrease at Florence, and above Chattanooga it is anywhere from 8% to 25%, I believe.

I do not recall whether or not more traffic moved up-stream than down-stream. So far as petroleum is concerned, it would be entirely up-stream. I will have to refer to my notes. Out of a total traffic movement of 1,654,000,000 ton miles, 924,000,000 of that will be up-stream and 730,000,000 will be down-stream. (The witness thereupon produced a typewritten table from his working papers giving a list of the specific commodities and the amounts. This table was offered and received in evidence as Defendants' Exhibit 16).

It would require an immense amount of detail to give the velocities of the current in the navigable passes in the low dam plan. I can summarize and give the average current velocity in three sections of the river under the low dam plan, covering the entire year, whether the dams are up or down. Between Paducah and Dam No. 1, the average current velocity throughout the year will be 1.06 miles per hour; between Wheeler and Hales Bar, it will be 1.12 miles per hour; between Chattanooga and Knoxville, it will be 1.15 miles per hour. By Dam No. 1, I am referring to an existing low dam just below Florence which will fit into either plan. [fol. 462] It is 2½ miles below Wilson Dam with a small canal connecting the two.

I also have figures which will show the duration of various current velocities at some sixty odd cross sections of the stream, but I cannot answer the specific question as to the average current at the time when the boats are going through the navigable passes without some further calculations. The current will be the equivalent of exceeding 3 miles per hour over the entire stretch of the river for 2.17% of the time. In other words, locations are spotted where the velocities in excess of 3 miles per hour will occur. 2.33% of the navigating time would be lost by reason of velocities in excess of 3 miles per hour. That is taking the entire river and taking and balancing the gains on down-stream traffic against losses on up-stream traffic, limiting the down-stream speed in straight stretches to about 8 miles per hour, which cuts off some of the round trip, and around the curves to as low as 3 miles per hour. I cannot assume that the current averages 4 miles per hour throughout the entire 650 mile stretch from Paducah to Knoxville. In spots it will get as high as 5 and 5½, maybe 6 miles an hour, but throughout the entire length of the stream, its average velocity will be less. A current of 3 miles per hour would not be a substantial impediment to navigation if it occurred on a straight stretch of the river. If it occurred on very crooked stretches, it would be substantial to the extent it required slower speeds going down-stream than the current would permit you to take in a straight reach. If it is a straight reach, you lose the 3 miles going up, but gain it going down. I have not assumed that the gains going one way balance the losses going the other.

Assuming a 100 mile stretch, a vessel going 5 miles per hour and a 3 mile current, the vessel will go up-stream at the net rate of 2 miles per hour and will take 50 hours for the 100 miles. It will come down-stream at the rate of 5 + 3 or 8 miles per hour, taking 12½ hours for the 100 miles—that [fol. 463] is a total of 62½ hours for the round trip. If you are navigating in still water, it takes you 20 hours to go up and 20 hours to come back or 40 hours for the round trip. The net loss by having that current is 22½ hours.

The velocities will vary in different stretches of the river and depending upon the quantity of water moving in the different stretches, so the average for the entire river does not give you a great deal of information regarding particular velocities in particular stretches. They have to be analyzed in each particular stretch.

In my recommendations for the Illinois River, I recommended over-depths of the pools on a 100 mile stretch of that river. When I recommended the 3 ft. over-depth, that is 3 ft. in addition to the bare 9 foot depth on the Illinois, I made that recommendation based upon the report of the Army Engineers on experimental towboat operations. I did not make any estimate of the increase in savings to the shippers by reason of that over-depth. It is my opinion that in addition to the tangible benefits that may be calculated from simply the bare savings in the cost of certain transportation, there are certain intangible attributes to all projects of this character.

The following quotation from my article entitled "The Value of Water Transportation" from the proceedings of the American Society of Civil Engineers, September, 1937, accords with my opinion:

"All the great nations of the world have been developed on the premise that the sea is the base of the system of transportation. The world ports achieved their preeminence because they served as focal points for the lines of transportation to the interior, and as gateways for commerce over the free routes of the high seas to domestic as well as foreign destinations. The controlling elements in this situation are (1) That ocean transport was, and still is, cheaper than land carriage; and (2)—which is possibly of greater importance—that the water highways are free and dedicated to the unrestricted use of all.

[fol. 464] "By close analogy the interior of a great country may be developed to best advantage by preserving for the use of the general public the free water highways of its great rivers even at some expense, if necessary. The principle involved is identical. In the writer's opinion the price of about $22,000,000 per year is a small one for this country to pay if, in making this investment, it accomplishes the multiple purpose of salvaging large expenditures made in previous years, of preventing a violent readjustment in the distribution of industries and population, and of preserving a group of minor 'sea bases' located on a secondary coast line 7000 miles in length.

"There is another important set of intangible values involved in this question which can be emphasized to best advantage by quoting a short part of a statement by the

late G. E. Grunsky, Past President, American Society of Civil Engineers:

"'In his opening paragraph the Author, the late William Murray Black, presents the conclusion that a new waterway line of transportation should not be established unless the need for it can be shown, and unless *if it* established, it will produce an annual saving in the cost of transportation greater than the interest on construction plus maintenance and operating costs'. There is another element which should sometimes be considered when the advisability of such a line of transportation is being studied, and by virtue of which many a project may be found advisable, despite the fact that it cannot, perhaps, for many years in the future, produce revenue to meet in full the interest charges against it. This element is the project's contribution to general prosperity as measured in terms of population, of business, and of property values. It becomes a factor because the expenditure of funds in its construction and the utilization of the facilities which it provides when it is completed, bring increase of population; and to the extent that the growth in population of the zone coming under the influence of the improvement is thus accelerated, to the same extent will land values increase, and wealth be created, which may fairly be weighed against the cost of the improvement when the advisability thereof is under consideration. Society, in other words, may reap material advantage from many an enterprise that would be condemned by the stockholder who weighs only the cost of the service against the prospective revenue.'"

[fol. 465] "Q. Major, assuming that Gilbertsville Dam will create and maintain a depth of more than 9 feet for a distance of 184 miles along the Tennessee River from the mouth of the river to Pickwick Landing Dam, in your opinion, will this be a substantial improvement in the navigability of the river?

Mr. R. T. Jackson: Over present conditions?

Judge Allen: He may answer.

Mr. Fly: Oh, yes, of course.

A. It will be an improvement over the condition of the river as it now is.

Q. It will be a substantial improvement, will it, Major?

A. It will be a substantial improvement so far as width, and depth are concerned, yes,—width and depth of channel.

Q. I am asking, I want to make this clear, will it be a substantial improvement in the navigability of the river?

A. It will.

Q. Assuming that Pickwick Landing Dam will create and maintain a minimum depth of more than 9 feet for a distance of 53 miles along the Tennessee River from the site of the dam to lock and dam No. 1, in your opinion will this be a substantial improvement in the navigability of the river?

A. It will.

Q. Assuming that Wheeler Dam will create and maintain a minimum depth of more than 9 feet from the site of Wheeler Dam to Guntersville Dam, in your opinion will this be a substantial improvement in the navigability of the river?

A. It will.

Q. Assuming that Guntersville Dam will create and maintam a minimum depth of more than 9 feet from the site of the dam to Hales Bar, in your opinion will this be a substantial improvement in the navigability of the river?

A. It will.

Q. Assuming that Chickamauga Dam will create and maintain a minimum depth of more than 9 feet for a distance of 58 miles from the site of the dam to the proposed site of Watts Bar Dam, in your opinion will this be a substantial improvement in the navigability of the river?

A. It will.

[fol. 465a] Q. Assuming that the proposed Watts Bar Dam when constructed, will create and maintain a minimum depth of more than 9 feet from the site of the dam to the site of the proposed Coulter Shoals Dam, in your opinion will this be a substantial improvement in the navigability of the river?

A. It will.

Q. Assuming that the proposed Coulter Shoals Dam when constructed, will create and maintain a depth of more than 9 feet from the site of the dam to a point above Knoxville to the formation of the river, in your opinion will this be a substantial improvement to the navigability of the river?

A. It will.

Q. Assuming that all of the dams of the Authority's project will create and will maintain a navigable channel of

more than 9 feet in depth from Paducah, 652 miles to the point of formation of the river, in your opinion will this project be a substantial improvement in the navigability of the Tennessee River as a whole?

A. It will."

Redirect examination:

Under present conditions there is a 9 foot navigable depth in the Tennessee River from the mouth at Paducah, Kentucky, of only 15 miles. The rest of it does not have a 9 foot navigable channel. In my opinion, the provision of a 9 foot continuous channel from Paducah to Knoxville would be an improvement of the navigability of the Tennessee River. The navigable channel should be attained by the expenditure of such funds as would be necessary and only such funds as would be necessary to provide an efficient navigable channel of that depth. In my opinion, the expenditure of six times as much money as would be required to provide a navigable channel of this character could not be justified as an improvement in navigation.

In my computation of comparative theoretical efficiencies of the low dam navigation plan and of the channel resulting from the TVA plan, I took into consideration all such [fol. 465b] factors as widths, depths, current velocities, curvatures and things of that kind.

I was asked on cross-examination about the possibility of any adverse effect upon navigation on the TVA lakes because of the excessive widths for inland water transportation using the standard customary equipment for that purpose and an incident has come to my attention with reference to the effect of waves on Wheeler reservoir. The Waterways Journal of St. Louis, Missouri, is a trade paper in the water transportation business and is generally recognized and accepted as a reliable publication. (An article from such Journal was thereupon marked for identification Complainants' Exhibit 347 and the following occurred:)

[fol. 466] "Q. I show you what has been marked as exhibit 347 and ask you whether that refers to the incident of which you just spoke?

A. It does.

Mr. Fly: I object to this as the rankest sort of hearsay, your Honor.

Mr. R. T. Jackson: I think not. I think it has been qualified by the cross examination.

Mr. Fly: You have not qualified that as a news item.

Mr. R. T. Jackson: It is a trade paper.

Mr. Fly: You have not qualified that, look up the rules as to qualifying trade papers and statistics, it will take an hour to do it.

Mr. R. T. Jackson: I think not.

Judge Allen: The exhibit is rejected. You may have your exception.

Mr. R. T. Jackson: We have our exception noted on the record that 347 has been rejected. Now, I do not want to violate the ruling of the Court. I was going to ask the witness whether or not he could state more definitely the nature of the incident to which he referred.

Mr. Fly: That is taking the same hearsay right into this record.

Mr. R. T. Jackson: It is information that has come to him as a man who is an expert on inland waterways.

Mr. Fly: Through a newspaper.

Judge Allen: Just a minute. You may have your exception.

Mr. R. T. Jackson: May I make the offer to prove very brief.

Judge Allen: Very brief.

Mr. R. T. Jackson: Complainants offer to prove that it has come to his information as a student of inland water transportation that on or about September 18th, or shortly prior thereto, 1937, a pusher boat of the Tennessee Valley Authority lost its tow in a Tennessee Valley windstorm—that was in April, 1937,—upon Wheeler Lake with the result that there was some damage, and that that one tow boat was delayed for 44 hours and another for 22.

Judge Allen: The Court adheres to its ruling.

Mr. R. T. Jackson: Exception noted, please."

[fol. 467] I was asked on cross examination about making a computation of savings in my report on the investigation of the Illinois River, based upon comparative rates, and about my present estimate, based on comparative costs. Shortly after I became engaged in the navigation business, I found that as an operator I had to meet the costs of my

competitors rather than their rates. And as a matter of general procedure then in evaluating savings, it was necessary in my opinion to compare costs of water transportation with costs of rail or water transport company rates as against railroad rates—and not compare rates in one case against costs in the other, or vice versa. From the standpoint of public benefit, the question of gain, if any, is reflected by the difference in actual cost as that reflects the expenditure of the natural resources.

The usual practice of navigating the Mississippi, if the waters are so wide as to create hazards, is to hug the shore or else have tows tie up. In many places during flood stages, the navigator has the protection of trees growing along the natural lower water banks of the river, and the result is that the probability of encountering dangers or delaying conditions is much less than in an open lake. The same situation obtains with reference to tree shelters or tree belts along the banks and with reference to natural banks along wide places on the Mississippi and on the lakes that are created and to be created by the TVA. There is along considerable stretches of the Tennessee River in its natural condition just the same belt of tree protection and natural bank conditions. There are tree banks which, under natural conditions of wide water floods, shelter the navigator. That condition will not continue to obtain after the lakes are built by TVA.

If small locks, such as are to be installed in the TVA dams above Wilson Dam were used in the low dam program, there would be a substantial reduction in the estimates of cost below the $74,709,000 figure. I stated that the highest of the so-called high dams on the Ohio River and [fol. 468] the Kanawha River was 28 feet. Those so-called high dams on the Ohio River and the Kanawha River will not create lakes comparable with the lakes which have been created and will be created by the execution of the TVA plan on the Tennessee River, because their height keeps the river within its natural banks at practically all places. Those dams on the Ohio and Kanawha Rivers, which are being built in some instances by the Army Engineers, do not give rise to the hazards to inland shipping caused by wide waters about which I have testified.

Assuming the completion of all of the dams in the TVA plan on the main river, or any other dams for that matter,

to create slack water navigation on the main river, the three headwater storage dams, to wit: Norris, Fowlers Bend and Fontana, on tributaries, would not be necessary in any way and would not in any way contribute to maintaining the slack water navigable depths of the Tennessee.

Recross-examination:

It is my understanding that the Army Engineers planned a dam of the general type of Norris at that site.

During the past year, I do not know of any disasters to navigation on the Wilson Dam pool due to wind and wave action. I know of no disaster to navigation during the 11 years that that lake has been there.

Examination by the Court:

From my studies of the river borne transportation on the Tennessee River, the saving on existing river transportation over rail transportation I estimate at about $2,000,000 a year. On existing traffic, the ratio is large, because of the nature of it, and there is saved an annual amount of about $2,000,000 out of a total transportation cost of about $3,000,000. On the future traffic, the situation is different. I can get that for you, but I cannot do it on the stand right [fol. 469] now. (In compliance with the Court's request, the witness produced a memorandum of his estimates of the cost of Tennessee traffic by land and water, which was marked Complainants' Exhibit 363 and was offered and received in evidence.) It is correct to state that the circuity factor involves the fact that commodities are transported, not as the crow flies, but that they have to go the longer way round. The circuity factor exists for all practical purposes, either under the low dam or the high dam plan, because of the inherent nature of the river. The river is confined by mountains in a great many places and has to wind, so that the circuity factor as between the two plans is practically identical. I estimated the difference in efficiency between the low dam system and the TVA system in terms of percentage of time. I estimated that the TVA plan on the theoretical basis was 4¾% better as to navigability than the other. If it took a hundred hours to navigate the Tennessee River by way of the low dam plan, it would take 95¼ hours to navigate it by way of the TVA plan.

"Judge Allen: Well, then, so far as the depth of the channel is concerned, so far as securing the channel is concerned, the two systems secure the same channel?

The Witness: They secure the same channel. There are greater depths and widths in the Tennessee Valley Authority channel than the other, but they both secure the minimum of nine feet.

Judge Allen: But substantially the same channel.

The Witness: Then the Tennessee Valley Authority channel is substantially wider and deeper at the lower end?

Judge Gore: You may have stated, but if so I overlooked it,—What is the dimension of the locks at Dam No. 1?

The Witness: The lock at Dam No. 1 is 60 feet wide, and has a useful length of 300 feet.

Judge Gore: The same as Wheeler?

[fol. 469a] The Witness: Wheeler has 360 feet of length.

Judge Gore: I mean Wilson.

The Witness: Wilson is the same, 60 by 300. Hales Bar is 60 feet by two hundred eighty some odd feet. They are about the same size, those three sets of locks."

Redirect examination:

I measured these against the hypothetically perfect water way and I got a theoretical percentage of efficiency, difference in the two of 3.2%. That took into consideration all considerations as to width and depth. The computations of savings by water transportation are independent of which plan is used.

(The witness was excused.)

[fol. 470] Ford Kurtz was called as a witness on behalf of the complainants and, having first been duly sworn, was examined and testified as follows:

Direct examination:

I reside at Hollis, Long Island, and am at present Hydraulic Engineer of the J. G. White Engineering Corporation of New York City. I received my preparatory education in the public schools and in the State Normal School of East Stroudsburg, Pennsylvania. I received my technical education at Cornell University, where I was gradu-

ated in 1907 with the degree of Civil Engineer, with first honors. I have been a member of the American Society of Civil Engineers since 1919, and have served for three years as the secretary of the Power Division of that Society. I am also a member of the honorary scientific society of Sigma Xi. I am a licensed professional engineer in the states of New York and Pennsylvania.

From 1907 to 1910, I was an officer of the United States Coast and Geodetic Survey engaged in geodetic survey work in various sections of the United States. Since 1910, I have been connected with J. G. White & Company and with the J. G. White Engineering Corporation in various capacities. During this period, my principal engagements have been:

First, from 1910 to 1912, Assistant to the Hydraulic Engineer of the J. G. White & Company, during which time the major portion of my work was in connection with all of the various phases, hydraulic features and phases of hydro-electric projects, including water supply, available power, the general layout of the hydraulic features of the projects and a study of the maximum flood to be expected and the provisions which could be made for passing it over or through the dam.

[fol. 471] Second, from 1912 to 1913, Designing Engineer on the power house and on other hydraulic features of the Parr Shoals Hydro-Electric Development on Broad River in the State of South Carolina, and on the Stevens Creek Hydro-Electric Development power house and dam located on the Savannah River located near Augusta, Georgia.

Third, 1913 to 1914, Resident Engineer on the construction of the Parr Shoals Development.

Fourth, 1914 to 1915, a second engagement of about one year on hydro-electric development studies, including writing of reports thereon.

Fifth, 1915 to 1917, Designing Engineer and later Resident Engineer on the construction of a complete gravity water works system for the cities of Caibarien and Remedios in the province of Santa Clara, Cuba.

Sixth, 1917 to 1918, Designing Engineer on air field drainage, storm sewers, sanitary sewers and sewerage disposal plant and a water works system for Langley Aviation Field near Hampton, Virginia.

Seventh, 1918 to 1919, Resident Engineer on the construction of the 60,000 kilowatt steam electric power plant of

the United States Nitrate Plant No. 2 at Muscle Shoals, Alabama, in full charge of all field engineering work and of all inspections in the civil, mechanical and electrical engineering fields.

Eighth, 1920 to 1922, a third engagement of about 2 years on field and office investigations and on the making of reports on hydro-electric plant projects and steam electric power plant projects.

Ninth, 1922 to 1928, in immediate charge of hydraulic design for the J. G. White Engineering Corporation.

Tenth, 1928 to date, hydraulic Engineer of the J. G. White Engineering Corporation in full charge of all hydraulic engineering work.

I have been intimately connected with the engineering [fol. 472] construction of the following large hydraulic projects, among others: Parr Shoals, South Carolina, a $3,000,000. project with a concrete dam, 2000 ft. long and 35 ft. high and with a power installation of 18,000 HP; Stevens Creek, Georgia, a project costing $2,250,000, with a concrete dam 2000 ft. long and 27 ft. high and with a power installation of 15,625 HP; Davis Bridge, Vermont, a project with an earth dam 200 ft. high and a power installation of 60,000 HP; Sturgeon Pool, New York, a project with a concrete dam 110 ft. high and a power installation of 20,000 HP; Oak Grove, Oregon, a project costing $8,000,000. with a head of over 900 ft. and a power installation of 40,000 HP; Great Falls, Tennessee, a project which involved the raising of a 35 ft. concrete dam with large spillway gates to a height of 70 ft. and the installation of a new 22,200 HP unit; Blue Ridge, Georgia, a project involving an earth dam 165 ft. high and a power installation of 30,000 HP; Saluda, or Lake Murray, South Carolina, a project costing $20,000,000 with an earth dam over 200 ft. high and more than a mile long and containing 11,000,000 cubic yards of earth and having a power installation of 220,000 HP; Pleasant Hill, Ohio, a flood control dam costing $1,250,000.

Since 1910, I have made a very large number of investigations and reports on hydro-electric and other hydraulic projects, both prior to and during their final design and construction. These have covered a wide variety of such projects, in all of their phases, from water supply, provision for floods, amount of power and general design down to estimates of construction costs and of operating expenses. For example: I recently completed an extensive investiga-

tion and report on the $220,000,000 aqueduct now being constructed to convey 1,000,000,000 gallons of water daily from the Colorado River across the deserts of Southern California to the city of Los Angeles. In this report, I passed upon the adequacy of estimates of construction costs, estimated in [fol. 473] detail the operating expenses of the project, inspected the construction work, completed and in progress, passed upon all of the major features of engineering design and upon the quality of water supply for domestic, industrial and irrigation purposes.

In the work which I have outlined, I have had occasion to study the matter of great floods and their control by reservoirs, as well as the designing of structures for safety against such floods. A complete study of any hydro-electric project involves an investigation of the floods on the stream on which it is to be located, and the study from which must follow a determination of the maximum flood to be expected, and the method of passing it safely over or through the dam. Also, in many of these projects the reservoir is large enough so that the retention of flood waters for equalization of the flow is an important factor in the study. In nearly every case also, outlets, either permanent or temporary, are involved for the control of floods and form an important part of such investigations and studies. In connection with the Saluda or Lake Murray dam in South Carolina, the type of dam and the construction program were such that extended studies were necessary in connection with the control of floods during the construction of the dam. The determination of the capacity of those outlets and the design of them, for taking care of the maximum flood to be expected during the construction, formed a very important part of the engineering work which I did on that project.

During 1935, I acted as Consulting Engineer to the United States Engineer Corps on the Pleasant Hill, Ohio, flood control dam and the Muskingum Watershed Conservancy District. At about the same time, I also acted as Consultant to the Engineer Corps on the outlet tunnels of the Fort Peck, Montana, flood control and water storage project.

I also in the last few years was in full charge of two extensive investigations and reports on the storage of flood [fol. 474] waters of the Blue Nile in Lake Tsana, Ethiopia, and the storage of those waters for irrigation uses in Anglo-Sudan and in Egypt. This work was done for the Egyptian,

Sudanese and Ethiopian Governments jointly. It covered two major surveying, mapping, hydrologic, as well as exploring expeditions, each taking more than one year and requiring also the sending of an expeditionary force to the country, including estimates of designs and estimates of costs of the project, and requiring extensive conferences, both in this country and abroad with both Egyptian, Sudanese and British officials.

During my engagement of nearly two years as Resident Engineer on the U. S. Nitrate No. 2 steam plant, which has as its source of condensation water from the Tennessee River near Florence, Alabama, I had extensive and ample opportunity to observe foundation conditions, as well as flow conditions of the Tennessee River from that vicinity as far as the head of big Muscle Shoals, which is a short distance from the present Wheeler Dam. Due to the deep foundations required for portions of the steam plant building and to the special and unusual rock conditions obtaining at that site, I had opportunity seldom given to study the characteristics of the lesser known of one of the important limestone formations which predominate throughout the Tennessee Valley.

In the design of Great Falls Hydro-Electric project on Caney Fork River in the Cumberland Plateau area of Tennessee, I had opportunity to study conditions of limestone formations of the same general character, as well as to study the matter of flood flows and their control through the gates which I have already testified were placed on that dam. Again, through the design of the outlets and structures of the dam of the Blue Ridge hydro-electric development on the headwaters of the Ocoee, which is one tributary of the Tennessee, I had ample and extended opportunity to observe foundation conditions, construction conditions in mountainous sections of East Tennessee where the rock formations [fol. 475] are quite different from conditions in the immediate valley.

During the summer of 1934, I visited Norris and Wheeler Dams of TVA, at times when a large amount of foundation was exposed and construction work in progress. I recently made an extended trip through eastern Tennessee and along the Tennessee River from Paducah to Knoxville for the express purpose of investigating conditions at the proposed dam and reservoir sites on the Tennessee River and tributaries and observing the areas subject to overflow by floods

in various towns and cities, among which were: Chattanooga, Knoxville, Kingsport, Florence, Harriman, Erwin, Newport, Mascot, Loudon, Dayton, Clinton, Murphy, Soddy, Oakdale, Stevenson, Charleston, Johnsonville, Embreeville, Rhea Springs, Riverton, Hamburg, Strawberry Plains, Fackler, Deermont, Perryville and Catlettsburg.

I have examined the report of the TVA to Congress made March 31, 1936 (Complainants' Exhibit 328) sufficiently to acquaint myself with the projects and structures involved in the plan of the TVA therein set out. I have also reviewed the annual reports of the TVA for the fiscal years ending June 30, 1935 to June 30, 1936, and also the printed reports of Hearings before the Subcommittee of the Appropriations Committee of the House of Representatives on the Second Deficiency Appropriations Bill for 1937, the First Deficiency Appropriations Bill for 1936 and the Second Deficiency Appropriations Bill for 1935. I have also reviewed House Document 185, 70th Congress, First Session; House Document 328, 71st Congress, Second Session; House Document 258, 74th Congress, First Session; all of which relate in whole or in part to the control of floods on the Tennessee River and its tributaries.

I have made a study of flood damages on the Tennessee River and its tributaries. All flood damages fall into two general classifications and I have used those classifications in my study. The first is hazard to life and the second is various types of damage to property. I had the subclassi- [fol. 476] fications of damage to cities and towns as one group; to railways as another group; to highways as the third group; and to agricultural lands and crops as the fourth group.

Cities and towns represent large concentrations of improved real estate, such as houses, business buildings, industrial buildings, railway shops, improved streets, water supplies and all of those improvements around which communities center. All of these are subject, of course, to flood damage. Damage to railways consists in washouts of tracks and damage to or destruction of bridges. Damages to highways are of the same kinds as I have just stated for railways. The principal agricultural damage is loss of crops due to floods occurring during crop seasons. Occasionally, agricultural lands themselves are badly eroded by flood or damaged by deposits of material which destroy the fertility of the soil. But this is a type of damage which is of very

small import in the Tennessee River basin and should not and does not enter into consideration to any material extent in studying the problem of flood damages.

Flooding during non-crop seasons is as a general rule beneficial, because fertile river valleys have been built up in that manner and are re-fertilized in the same manner more or less every year as the floods occur. In general, it may be said that great floods on the Tennessee River occur out of the cropping season. That is, they occur in general in the months of December to April, inclusive.

(Counsel for complainants then stated that it was complainants' position that the power of the Federal Government in relation to flood control is limited to the protection of navigation or navigation works and channels and does not extend to the protection of local property, which is a function of the States, but that complainants were presenting evidence dealing with property damage as well as navigation.)

[fol. 477] The tabulation, (offered and received in evidence as Complainants' Exhibit 348), is based upon the data contained in the tables 2 to 57, inclusive, of Appendix N of House Document 328. I think the proper term is that those tables were published but not printed. The exhibit shows the population in 1930 of the cities and towns on the Tennessee River, which according to those tables which I have just mentioned as the source of the data, suffered damages during floods. It shows that the greater portion of population which may be threatened by flood damage by far, of course, is on the main river in so far as hazards to life is concerned. The purpose of this exhibit is to give some indication or index by which to judge the hazard to life during the very great flood that might be expected on the Tennessee River or its tributaries.

Referring to Complainants' Exhibit 348, the City of Chattanooga had the largest population of any city in the list in 1930—that was, 119,798, which represented more than 35% of the total population residing in towns and cities subject to flood on the Tennessee River and its tributaries. The next largest city among those subject to flood on the Tennessee is Knoxville, with a population of 105,802, which is more than 30% of the total shown on the list. The next five cities in order of size that are among those subject to flood damage are Asheville, N. C., Kingsport, Tennessee, Florence, Alabama, Columbia, Tennessee and Harriman, Tennessee. Less

than 8% of the population residing in towns and cities subject to flood damage reside below Chattanooga.

The table (offered and received in evidence as Complainants' Exhibit 349) shows the flood damages to cities and towns, railways and highways, in the entire Tennessee River basin caused by a large flood, and also the average annual damage caused by all floods. The information shown on this table was obtained from Tables 2-57, inclusive, of Appendix N of House Document 328. For the main Tennessee River and for the Clinch River, the magnitude of the large flood adopted by the U. S. Engineer Corps in [fol. 478] House Document 328 was practically the same at all points as the maximum flood of record during the past. For the Hiwassee, Nolichucky and Big Pigeon Rivers, the magnitude of the large flood adopted by the Engineer Corps was considerably greater than the largest flood of record. By far the greater portion of the damage to cities and towns is in the section of the main river above Chattanooga, the ratio for a great flood being $3,217,600 to $84,000. Most of the flood damage to cities and towns on the main Tennessee River occurs in the City of Chattanooga, where a very large flood, such as that which the U. S. Engineer Corps called a 500-year flood, is estimated to cause damage of over $3,000,000 and would flood about 6,450 acres of business, industrial and residential areas and has, therefore, been a matter of great concern to the civic organizations and to the political organizations in that territory. It has been the subject of a great many investigations, reports, surveys since 1917, and as a result of that the State Legislature some years ago passed an act providing for the creation of a Flood Protection District which was organized and a great deal of work done by this organization on this subject.

The tributary of the Tennessee River which suffers the greatest damage to cities and towns is the Emory River, where a very great flood occurred in March, 1929, and where annual floods are very severe. In the case of this particular tributary, it represents more than 75% of the total damage to cities and towns on tributaries, both in a very great flood and in the average annual resultant damages. The cities and towns on the Emory River which are particularly affected are Harriman, Oakdale, Deermont, Goby.

The major portion of the damages to railways on the Tennessee River and tributaries occurs on the Emory River in

the vicinity of Harriman and Oakdale, and on the French Broad River.

The percentage of flood damage to highways on the Tennessee River and its tributaries occurring below Chattanooga is about 43% of the damage during a great flood such as that set up by the U. S. Engineer Corps, and about 32% [fol. 479] of the average annual damage. For cities and towns in a great flood, the percentage of damage below Chattanooga is very small, perhaps not more than 2% or 3%. The percentage of total flood damage to railways on the Tennessee River and its tributaries occurring below Chattanooga is relatively small, not more than about 3%.

In referring to flood damage below Chattanooga, I have not included the City of Chattanooga. In referring to flood damage occurring in the stretch of river between Chattanooga and Knoxville, I included both Chattanooga and Knoxville.

The annual flood damages to cities and towns upon the Tennessee River at and above Chattanooga is more than 95% of the total annual flood damages to cities and towns in the entire basin.

In a great flood, about 30% of the total flood damage to highways on the Tennessee River and its tributaries occurs below Chattanooga, and of the average annual damage to highways about 43% occurs below Chattanooga. About 7% of the total flood damage of all kinds to cities and towns, railways and highways, combined, occurs below Chattanooga; that is excluding Chattanooga.

As the result of the study of flood damages which I have made, the data for which was briefly summarized in Complainants' Exhibit 349, I reached the determination that a flood control program to achieve the maximum practical protection of the Tennessee River basin, should be directed primarily at and above Chattanooga. I have made a study and determination of the maximum floods to be expected on the Tennessee River and its tributaries at and above Chattanooga. In the determination of the storm which could be expected to produce the greatest flood at and above Chattanooga, I used the records of the U. S. Weather Bureau and the publication of the Miami Conservancy District, entitled "Storm Rainfall of the Eastern United States". In the determination of the peak flows and maximum stages of the river which would be caused by that great storm, I used the records of the weather supplied by data of the U. S.

[fol. 480] Geological Survey, the data of House Document 328 and some general sources which are open to use by all hydraulic engineers.

The first step in the study of the storm which would produce the maximum flood to be expected on the Tennessee River and its tributaries at and above Chattanooga was, of course, the determination of that maximum storm through use of the data which I have just mentioned. Since I had already decided that this program to achieve maximum practical protection should be directed primarily towards securing protection at and above Chattanooga, I confined my study of those great storms to an area equal to that of the Tennessee River at and above Chattanooga, which is about 21,400 square miles. A study of more than 200 such storms covering at least that great an area revealed that in only 7 cases had that storm rainfall over an area of 21,400 square miles exceeded 12 inches during the entire period of the storm. Of these 7, 3 were summer storms on the Gulf Coast of Texas; 2 of them were summer storms on the Gulf Coast extending from Louisiana to Northern Florida; 1 was a spring storm on the coast of Alabama, and the 7th was a storm which occurred in November and centered on the Mississippi River between the States of Mississippi and Arkansas and extended into Western and Central Tennessee. This particular storm had a total rainfall of 11.85 inches.

At this point in my study I found it necessary to take up the subject of the percentage of the rainfall which during such great storms may be expected to run off into the streams. That percentage, of course, varies with the time of year and also with the condition of the ground at the time that the rainfall occurs. From a study of various data, particularly the excellent data collected in connection with the March, 1929, flood in central Tennessee, I found that during the period from December to April when these great storms in general occur that cause devastating floods, that the per- [fol. 481] centage of run-off is very apt to be as high as 90%. During other times of the year, that is, during the summer and during the late spring when some of the great storms to which I have just referred occurred, the percentage of run-off is very much less, so much less that you have to have a much greater storm during those particular months to produce a flood of a given magnitude than you have to have during the months from December to April. As a result of that digression from the main subject, I confined my study

after that particularly to storms occurring during this period when the run-off may be expected to be as great as 90%. The one particular storm out of the seven that was directly applicable to this case was the one that I mentioned that occurred in November and centered on the Mississippi River but extended into Western and Central Tennessee and affected the main river and its tributaries below Chattanooga. The other storms to which I have referred on the Gulf Coast had centers of very high intensity which do not persist in storms of that type when they pass inland over the area.

The conclusion which I reached is that the storm which would produce the maximum flood at, or to be expected in, the Tennessee River and its tributaries at and above Chattanooga would be a storm having a total rainfall of 11 inches. There are other characteristics for this storm in addition to the total rainfall and the percentage of run-off into the stream. The total rainfall does not give sufficient information to proceed to a determination of the maximum flood. It is necessary to fix the duration of the storm, the distribution of the storm during its duration, and also the distribution of the storm over the area in which it occurs.

The significance of those figures from the standpoint of flood control protection is that the shorter the period of time in which a given storm occurs of a total given rainfall, the greater is the peak flow which it will produce and, therefore, the greater the requirement on a system of flood control. The greater the intensity is over small portions of that area, the greater may be the local problem of protection.

[fol. 482] After a study of the duration period of the great storms to which I have referred, I decided that the storm which can produce this great flood through a rainfall of 11 inches during the entire storm would have a duration of three days; next, that the distribution of rainfall during the three day period would be 3 inches the first day, 6 inches the second day, and 2 inches the third day. I further determined that a storm of 11 inches was one of such great intensity that it would be sufficient to consider it as a uniform distribution over the entire area of 21,400 square miles, with two exceptions. One exception is the Emory River and the other is in the case of the upper reaches of the French Broad River. In the case of the Emory River, the potential damages are so great and the possibility of the occurrence of a

more intense rainfall over the 800 square miles of the river above Harriman are so great that I determined to base that part of the design upon a total rainfall of 13 inches. The same general remark would apply to the upper reaches of the French Broad River.

The chart, (offered and received in evidence as Complainants' Exhibit 350), shows the variation in flow, day by day, during the maximum flood to be expected at Knoxville, Loudon, and Chattanooga, showing in addition the maximum stage which would be reached at each of these three cities by that great flood and also the greatest stage that has been experienced at these three cities in the past. That is the maximum recorded stage as shown in the chart.

The chart (offered and received in evidence as Complainants' Exhibit 351) is a profile of the Tennessee River from Knoxville to Chattanooga showing: (a) the bottom of the river; (b) the low water line; (c) a line joining the peak stages, which I estimated to be reached at various points by the maximum flood to be expected at and above Chattanooga; and (d) a line similarly joining the highest stages which have been reached in the past at various points along [fol. 483] the river by the highest flood of record at each particular place. There are also shown the more important cities and towns which are affected by floods in this section of this river, and the horizontal line at the bottom of each of the vertical lines indicating the location of these cities indicates the elevation at which flood damage begins. The stage which this maximum flood would be expected to reach at Chattanooga would be 73 ft. at the Walnut Street gauge. The highest stage that the river has been known to attain at Chattanooga in the past is 57.9 ft. during the great flood of 1867.

Referring to the City of Harriman, the maximum flood stage to be expected at Harriman is higher than the severe flood of 1929 at Harriman which I mentioned awhile ago, but the difference is not as great as the difference shown on one of these exhibits to exist between the maximum recorded stage at Chattanooga and my predicted stage of 73 ft. at Chattanooga.

I have made a study for a system of flood control to achieve maximum practical protection against flood damage on the Tennessee River and its tributaries. The map (offered and received in evidence as Complainants' Exhibit 352) shows the entire Tennessee River Basin, the location

of the system which I have designed for flood control reservoirs, which have the maximum practicable protection, and the existing power reservoirs in the basin in May, 1933. The existing power reservoirs in May, 1933, are shown in blue and my recommended flood control reservoirs in red. The protection refers solely to the Tennessee River Basin and does not refer to the Mississippi Basin.

The table, (offered and received in evidence as Complainants' Exhibit 353), shows for each reservoir of the flood control system shown on the preceding Exhibit 352: (a) the name; (b) the stream on which it is located; (c) the tributary drainage area; (d) the gross storage volume; (e) the net storage volume; (f) the estimated cost of construction of the dam and reservoir; and (g) the lands flooded when [fol. 484] the water is at the spillway level in that reservoir. The reason for the difference between the columns headed "gross storage volume" and "net storage volume" is that a portion of the storage volume of any flood control reservoir is already in use by nature before the creation of that reservoir, for the purpose of reducing flood heights by what is known as valley storage. In creating that reservoir, the amount that has been previously affected through what I term valley storage is eliminated in so far as the additional effect of the creation of this reservoir is concerned in making computations of the reduction of such reservoir from the gross storage to arrive at the net storage which is used. The net storage is the amount that the system raises it over the system of nature.

The system of flood control reservoirs which I have shown on this exhibit is a system of 19 detention reservoirs located all on the tributaries of the Tennessee River and none on the main river itself. Four of these are located on the Hiwassee River, four on the French Broad and its tributaries, five on the Holston River and its tributaries, two on the Little Tennessee River, one on the Clinch River proper and three on the Emory River and its tributaries, the Emory in turn being a tributary of the Clinch. These reservoirs are of the type known as detention or dry reservoirs. They are designed solely for flood control protection and have no other purpose in mind and achieve no other result. Normally they are dry and they will collect the flood waters only in event of those floods in excess of a certain capacity. They

develop absolutely no power, because they are normally dry a very, very large percentage of the time. As soon as they collect any flood waters, these waters are released just as soon as it is safe to do so from the standpoint of the streams below the reservoir. Insofar as being detention or dry reservoirs are concerned, these are exactly the same type as the Miami Conservancy District reservoirs in the [fol. 485] State of Ohio. There is a certain difference which is important in regard to the method of operating these reservoirs.

This system of flood control reservoirs would in no way be inconsistent with or interfere with the low dam navigation plan for providing a 9-foot channel from Paducah to Knoxville outlined in the report of the Chief of Engineers in House Document 328 and previously discussed by Major Putnam.

The outlined control works of these reservoirs have openings of two different classes. One of these openings would be without any gates and, therefore, could not be closed off at any time. The remainder of the openings would be of a second class which could be controlled by gates automatically. The purpose of having this type of control is to make full and effective use of the entire net storage volume of each reservoir for cutting off the flood peak. This is accomplished by maintaining at all times while the reservoir is being filled, a constant flow through the total area of the openings in the dam. When the floods begin, the gates, as well as the unobstructed openings, are all functioning and carrying water. As the reservoir begins to fill, there would be a definite automatic schedule which would bring a gradual closure of the gates, with the result there would be maintained at all times a constant flow through the openings and at the time the reservoir had just filled all of the gates would be closed and the entire amount of this constant flow would be passing through the openings which have no control on them.

The amount of this discharge, which would be constant while the reservoir was filling, varies for each of the reservoirs, depending upon the tributary drainage area, the expected flood at that point, and the capacity of the reservoir, and the amount of constant flow as given by the openings and distribution between openings which have no gates and those which have gates was all determined during the course of this study.

[fol. 486] During the emptying program, the opening of the lowest reservoir of each of these principal tributary groups would be maintained at a constant and fixed discharge and that would be such as to keep the discharge below the reservoir and all of the way down as nearly as possible at bank full stage. The upper reservoirs on each tributary would have their discharge varied within a considerable range, so as to suit conditions obtaining for any particular flood. From the lowest reservoir the attempt would be to keep the rate of emptying down to a point where it would not raise the streams below higher than the bank-full stage. Furthermore, this would be automatic. It would not be subject to anybody's guess during any particular flood and would have a definite schedule, just the same as the filling schedule, and the amount released is definitely fixed for every reservoir. That would not be changed at all by anyone. No one would have any authority to do that. The filling program is very definite, very important, and would not be subject to any alteration.

I deem the system I have described to be the best practicable system for flood control to protect the Tennessee River and its tributaries, because I have arrived at it by applying to the conditions obtaining on the Tennessee River and its tributaries those basic principles which govern the design of a proper flood control type of reservoir. The first basic principle is that consideration should be given in the design of such system first to the protection of human life and second to the protection to various types of property. The second principle is that flood control, in order to be positive, must control all floods; therefore, it must be capable of controlling the maximum flood to be expected. Any flood control system which simply decreases the frequency of immersion of areas that are subject to high frequency of flooding and is not protection against the maximum flood to be expected is really a dangerous thing, because it leads people to [fol. 487] think that they are having a larger amount of protection than they have. They will encroach upon these areas that are subject to inundation, and when the great flood does come at rare intervals, the loss of life will probably be very much greater than if they had not gotten the impression that they were being fully protected. So that this second principle is a very important one, with the primary purpose of a real flood control system, because it must protect against the maximum flood to be expected.

The relation between lands permanently flooded and those sought to be protected is another very fundamental point. It would be a matter of flying in the face of economics to attempt to protect a certain amount of property from flood damage if in doing so you have destroyed more property and buildings than were being protected.

The use of automatic operation is one that has long been fully recognized as of major importance in the design of flood control structures. In my opinion, we are very far from having arrived at the point where it is possible during the greatest of storms to predict with accuracy what is ahead of us even for a relatively short period of time. Therefore, instead of attempting to predict operations of control works for each particular flood, they should be designed for the greatest flood to be expected and their operation should always be in conformity with that condition. Therefore, it should be made automatic as nearly as possible, so it will not be subject to any tampering by people attempting to predict what is going to happen.

With reference to the difference in principle applicable to the protection against flood waters originating on tributaries and flood waters originating in the main stream, in general it is best to take care of the flood waters on the tributaries of the stream by flood control reservoirs of the detention or dry type, and to take care of the flood inflows to the main stream by channel improvement which may be either of the by-pass or of the levee or some other [fol. 488] type such as excavation of the channels for its improvement. The application of these principles leads to the determination that this system should obtain the maximum practicable protection at and above Chattanooga, because only about 7% or 8% of the damage occurs below that point, and in addition, one that is designed primarily for protection at Chattanooga will afford a share of protection below Chattanooga. I have located all of the reservoirs on the tributaries, because the major portion of property, except in the case of the Emory River, that should be protected, lies on the main river. After investigation of conditions at Chattanooga, and also at a number of other towns which are subject to flood damage, I decided it would be necessary to protect Chattanooga by a system of levees, even after the reduction which is accomplished by the flood control reservoirs.

I have studied the elements of the so-called TVA Unified Plan contained in its report to Congress on March 31, 1936, in so far as they could in any way affect floods.

The map of the entire Tennessee basin, (offered and received in evidence as Complainants' Exhibit 354), shows in red the dams and reservoirs of the TVA Unified Plan recommended to Congress, and likewise in blue existing power reservoirs on the Tennessee River and tributaries in May, 1933.

The table (offered and received in evidence as Complainants' Exhibit 355) shows for each of the reservoirs of the TVA Unified Plan, which would in any way affect floods at and above Chattanooga, the name, the stream on which located, the tributary drainage area, the dependable flood storage volume in the greatest flood to be expected, the flood storage volume used by me in determination of non-dependable modification which might be effected by the TVA Unified Plan during the greatest flood to be expected, and the lands flooded by each of these reservoirs when water is at normal pool level.

[fol. 489] There are six of the dams and reservoirs of the TVA Unified Plan which would affect floods at and above Chattanooga in some measure. Three of these are located on the tributaries, namely, Fontana on Little Tennessee, Norris on Clinch, and Fowlers Bend on Hiwassee River. The three on the main river are Chickamauga, Watts Bar and Coulter Shoals. The dependable flood storage volume of these six reservoirs is 620,000 acre feet in contrast to the net storage volume of 6,000,000 acre feet of my recommended system shown in this exhibit. These six reservoirs, when at normal pool level, would flood 110,870 acres permanently, in contrast to the 19 reservoirs of my recommended system which would temporarily flood at the time of the greatest flood to be expected 132,000 acres. Dependable flood storage volume, as it is used in this exhibit, means the volume of the reservoir between the top of the gates on the dam and the elevation beyond which it is declared it is not intended to go for power or any other purposes except flood control storage.

The reservoirs of my recommended system would provide a large measure of effective control over 78% of the total tributary drainage area above Chattanooga. The reservoirs of the TVA Unified Plan would provide a certain

measure of control over 25% of the drainage area above Chattanooga.

The table (offered and received in evidence as Complainants' Exhibit 356) lists the towns and cities on the main river and also on the Emory River and shows the comparisons of reductions in maximum flood stage which would be brought about by my recommended plan of flood control and the non-dependable reductions which might be brought about by the TVA Unified Plan. The first column after the names of the cities shows the maximum recorded stage during the past at each one of those towns or cities. The next column shows the maximum stage which I estimate would be attained during the greatest flood to be expected without any flood control of any sort. The column headed "C" shows [fol. 490] the reduced stage which would be brought about by the operation of the reservoirs of my recommended system of flood control. The column headed "D" shows the non-dependable reduced flood stage which might be brought about by the operation of the reservoirs of the TVA Unified Plan. And for the purpose of reference, there is added a column showing the stage at which the submergence begins at each of these towns and cities. If the dependable flood storage volume only were to be considered, the reductions which would be effected by the operation of the TVA Unified Plan would be so much less than the reductions shown by the differences between columns "C" and "D" that they would be negligible.

The chart, (offered and received in evidence as Complainants' Exhibit 357), is a companion one to the one submitted earlier in my testimony, which showed solely the predicted maximum flood to be expected at Knoxville, Loudon and Chattanooga. There have now been added two separate lines for each diagram in general, one of which shows the flow of this maximum flood as it would be reduced by my recommended flood control system, and the second line shows the flow of that same flood as it might be reduced by the operation of the reservoirs of the TVA Unified Plan. This is a modification which I have termed "Non-dependable". That is, it is based upon the possibility of having a greater amount of space available in the TVA reservoirs than the dependable storage volume if some of the power storage might happen to have been drawn down at the time of the occurrence of the flood. This exhibit shows that un-

der the TVA high dam plan at the time of the maximum flood, the peak at Knoxville of 68.3 ft. would not be reduced, whereas my recommended system would reduce the peak stage by 41.2 ft. to 27.1 ft. At Loudon the peak of the flood would be reduced by the TVA high dam plan from 71.5 ft. to 66.2 ft., whereas my recommended system would reduce the peak by 37.6 ft. to 33.9 ft. The estimated reductions by the TVA high dam plan are non-dependable and it is just a possibility that they might be brought about by the [fol. 491] operation of the TVA Unified Plan. At Chattanooga, where I have predicted that there is every possibility of the occurrence of a flood which would have a maximum stage of 73 ft., my recommended flood control system would reduce that stage to 53.9 ft., which is a reduction of 19.1 ft. The non-dependable reduction which might be brought about by the operation of the TVA Unified Plan would reduce the stage of 73 ft. down to a stage of 67.7 ft., or a non-dependable reduction of 5.3 ft. This exhibit does not show what reductions might be achieved by the dependable storage of the dams in the TVA Unified Plan as that amount was so much smaller than the possible volume of non-dependable storage, which I used for this graph, that it would be insignificant and I did not make any computations of it.

The graph (offered and received in evidence as Complainants' Exhibit 358) shows the reduction in flow each day which would be brought about at Harriman by my recommended flood control system during the greatest flood to be expected on the Emory River. It indicates that my predicted maximum stage of 63.7 ft. would be reduced by the operation of my recommended reservoir system to a stage of 39.8 ft. In contrast to this, the TVA Unified Plan would not reduce this stage any amount whatsoever, because it makes no provision for flood protection of any kind on the Emory River.

I testified yesterday to the numerous places which I have visited recently to look into the matter of flood damages. On the occasion of my visit to Oakdale, which is just above Harriman on the Emory River and which was the scene of a great deal of destruction during that flood, I took particular pains to examine into all of the records that I could find from local information, and at one particular point it was possible to observe that the round house of the CNO

& TP Railroad had apparently never been restored since that flood, and it was possible quite definitely to identify that the picture shown in the TVA Unified Report to Congress was a picture of that round house immediately after that flood.

[fol. 492] The chart (offered and received in evidence as Complainants' Exhibit 359) is a companion exhibit to Exhibit 357, which was a comparison of my recommended flood control system and of the TVA Unified Plan at three specific cities, including Chattanooga and two above. Complainants' Exhibit 359 shows a comparison through the medium of a profile for the entire river between Knoxville and Chattanooga. The profile shows first the bottom of the river; second, it shows the location of the dams of the TVA Unified Plan between Knoxville and Chattanooga; next, the low water line of the river; then, in green is shown the peak stages, which would be reached by the maximum flood to be expected under conditions existing in May 1933, without these three proposed TVA dams in existence. The purple line shows the non-dependable modification of this maximum flood which I have predicted, resulting from the possible operation of the TVA Unified Plan. The red line marked "E" shows the modification of this great flood, which would be brought about at each point along the river by my recommended flood control system with no TVA dams in existence. In contrast, of course, the purple line shows the TVA dams in existence. shows those three main river dams in existence, because they are a part of it, and in order to properly picture the conditions resulting from the TVA Unified Plan, those dams had to be considered in existence. Again, I show the towns and cities in this stretch of river affected by floods and elevations where flood damage occurs, by horizontal line at the foot of the vertical line, indicating the position of each of these towns and cities.

A comparison of Complainants' Exhibits 357 and 359 shows that the operation of my recommended system at Chattanooga would bring about a reduction in the maximum stage of this great flood of 19.1 ft. as compared with a possible non-dependable reduction of 5.3 ft. from the operation of the TVA Unified Plan. In my opinion, the resultant protection rendered by the TVA Unified Plan would not be sufficient to render practicable the construc-

[fol. 493] tion of levees at Chattanooga to protect that city

against the greatest flood to be expected, whereas the maximum protection afforded by my plan would be sufficient to render practicable the construction of such levees at Chattanooga.

Bulletin No. 40 of the Division of Geology of the State of Tennessee on page 52 states that during the devastating flood of March 1929 about 50 lives were lost in central Tennessee. The report of the United States Department of Agriculture Weather Bureau Climatological data, Tennessee Section, issued at Nashville, Tennessee, in March, 1929, states:

"The Emory River, a small mountain stream emptying into Clinch River, is said to have risen 50 feet in 12 hours, flooding portions of Morgan and Roane Counties, and drowning at least 22 persons. Most of these bodies had not been recovered 10 days after the flood."

I have already pointed out that the TVA Unified Plan affords no protection on the Emory River. The TVA Unified Plan would bring no reduction whatsoever at Knoxville. (At this point, counsel for defendants stated that the TVA Plan includes no dam above Knoxville.)

The table (offered and received in evidence as Complainants' Exhibit 360) is a comparison in acres of the lands flooded by the flood control system designed by myself and by the TVA Unified Plan. My plan does not permanently flood any land. The TVA Unified Plan reservoirs flood permanently at normal pool level a total of 374,840 acres. The Army Engineer Corps estimated that 480,000 acres of land would be overflowed in the Tennessee Valley between Knoxville and Paducah by the 500 year flood. My system floods temporarily approximately 132,000 acres. The TVA Unified Plan will flood permanently more than ⅔ as much land as the Army Engineers estimated would be flooded in the 500 year flood, if we take into account the total areas of land flooded by the TVA Unified Plan, the ratio being 375,000 to 480,000. The figure of 480,000 acres refers to [fol. 494] the main river between Knoxville and Paducah and does not include the tributaries. Therefore, the figure of 375,000 is not directly comparable to the figure of 480,000. A comparable figure is one of 330,720, which is the amount flooded by the TVA Unified Plan between Knoxville and Paducah; that ratio is about two-thirds.

I estimate that $81,133,600 would be the total construction cost of my recommended flood control system, if its construction had been initiated about the same time that work on the TVA Unified Plan was begun and had been prosecuted without large delays, so that a large portion of the work would now be nearing completion. The estimated cost of the TVA Unified Plan, excluding the cost of Wilson Dam, as shown in the estimate submitted to Congress in the Appropriations Bill Hearing, is approximately $473,650,000.

In my estimated total construction cost of something over $81,000,000 for my flood control system, $8,136,000 was included for a dam and reservoir on Clinch River located at substantially the same site where Norris Dam now stands and furnishing 1,300,000 acre feet of storage for flood control purposes. The estimated cost of Norris Dam in the TVA Unified Plan is approximately $36,000,000, including the cost of the town of Norris and some additional lands.

The dependable flood storage volume of the Norris Reservoir in the greatest flood to be expected is 497,000 acre feet. It is absolutely necessary in hydro-electric power projects to have certain dead storage for the purpose of concentrating the fall for power development. That is the storage that lies below what is sometimes called the "maximum draw-down" on a navigation reservoir. The amount of that dead storage in the Norris Reservoir is 570,000 acre feet.

In connection with my study and investigation and my recommended flood control system, I inspected the site of [fol. 495] all the proposed dams on that system. I consider feasible the construction of dams of the height which I proposed at these sites and that the cost would have been substantially as I have estimated it. I estimated that the annual cost of operation and maintenance of my recommended flood control system would be $400,000 per year.

Referring to Complainants' Exhibit 360, dealing with the lands flooded, on which I show that the greatest amount of land temporarily flooded under my recommended plan would be 132,285 acres, my recommended plan would interfere very slightly with the normal use of those lands as they are now being used. They could continue to be cultivated every year with only an occasional loss of crops,

when they were flooded temporarily for the relatively small period of time that they would be flooded.

Firm power is that power which is available every day in the year in every year. It is also referred to very commonly as prime power or primary power. The objective of the development of any hydro-electric system is to obtain the greatest possible amount of firm power, which is controlled both by the lowest flow which is ever to be expected during the driest periods that may be experienced and by extreme high water which reduces the head at the dam, due to the fact that the water below the dam rises faster than the water going over the dam, resulting in a net loss of head. Therefore, it is important that there be sufficient generating equipment installed so that under that reduced head additional flow can be passed through to make up for that deficiency and thus maintain the fixed amount of prime power at flood times as well as at low water times.

Secondary power is that which is not available throughout the year. It is quite usual to divide it into classes, either according to the number of months that it is available in a low water year or the number of months that it is available in an average water year.

[fol. 496] The load of a utility system is the demand upon that system for power expressed in kilowatts or horsepower. It is not a constant quantity, but varies from hour to hour during the day and varies for the days of the week and varies for the month of the year and varies from year to year according to business conditions.

The load factor of a public utility system is the ratio of the average demand for power on that system expressed in kilowatts, for some stated period of time, to the maximum demand for power on that system within that same period of time. For instance, an annual load factor refers to a stated period of one year and is the concept that is referred to generally as the load factor of a public utility system.

What is meant by the term energy as compared with the term power can best be illustrated by the example of a lighting load in a home. Suppose you have 10 lamps installed in that home, each one of which when you buy it is marked 100 watts. Then, the power installation in that home is 10 x 100 or 1,000 watts, and that is what is called 1 kilowatt. The energy, on the other hand, is controlled not only by the power installation, which in this case which I am citing is 1 kilowatt, but also by the number of hours that those

lamps are used during some stated period of time. For instance, if the lamps are burned continuously 10 hours per day, then the energy demand or energy consumption is 10 kilowatt-hours, and that is the unit which appears on everybody's monthly bill when you pay for your electric service.

I am familiar with the normal annual load factor of large public utility systems in the Tennessee basin area. Today it is about 60%. I have made a study of the additional firm power which would be produced on a 60% annual load factor by the construction of the plants included in the TVA Unified Plan, over and above the firm power capacity of the Wilson power plant as it was originally constructed. I estimate that the additional firm power would be 1,072,000 kilo- [fol. 497] watts at 60% annual load factor.

Under my recommended flood control plan, no power of any class would be produced, either firm or secondary.

The graph, (offered and received in evidence as Complainants' Exhibit 361), shows the figures which I have previously testified about with reference to costs and additional power. By the term cost I mean the construction cost, not operating cost.

I have made a study of the power and flood control functions of the proposed dam and reservoir on the Clinch River in my recommended system in comparison with the same functions of the Norris Dam and reservoir as constructed in the TVA Unified Plan. The chart (offered and received in evidence as Complainants' Exhibit 362) is a comparison of the power and flood control functions of the Norris Dam and reservoir as it now exists, as a part of the TVA Unified Plan, with the proposed dam and reservoir on Clinch River which is included as part of my recommended flood control system. My recommended dam on the Clinch River is shown on the right hand section of this drawing and Norris Dam as built on the left.

The sole purpose of the reservoir colored yellow behind the dam in my recommended plan shown on the right hand side of Complainants' Exhibit 362 is to provide the dependable flood control storage as part of my recommended flood control system. It is intended to release storage as quickly as is consistent with safety to the river below, and its release is controlled by no other consideration. The reservoir would normally be dry, as is indicated by the term which I have used a number of times, a dry or detention

reservoir. There would be no power of any kind whatsoever produced by the water collected in this reservoir.

Absolutely no power can be incidentally produced by a dam that impounds no water permanently, such as this dam on Clinch River in my recommended flood control system. That is because it must be kept empty. At all normal times [fol. 498] it presents practically no obstruction to the flow of water. It is practically the same as if the dam were not there. The water is passing right through the openings in the bottom of the dam. In a pure flood control system, the reservoirs should not impound any water permanently, because the primary and sole function of a flood control system is to control floods and as soon as you impound any water permanently you have taken up a part of that volume for another purpose which completely destroys it and eliminates it in so far as any flood control function is concerned.

The most notable example of such pure flood control systems in existence is the flood control system of the Miami Conservancy District in the State of Ohio, which is the pure flood control type. It produces absolutel. no power. The dams of a pure flood control system never produce any power incidentally.

Referring back to Complainants' Exhibit 362, there are two principal factors which determine the amount of power that would be developed at Norris Dam or in fact at any dam. One is the height or head through which the water falls and the other is the quantity of water flowing. The sole purpose of the dead storage at Norris Dam which is colored in blue on the exhibit is to create a head for the production of power and it is permanently maintained for that purpose. It concentrates the fall of the river. It is a substitute for a natural fall, such as Niagara Falls, where you do not need to build a dam to create that head; nature provided it for you. There is absolutely no incidental flood control value to this dead storage shown in blue behind the Norris Dam.

The reservoir area indicated in red behind the Norris Dam in the TVA Unified Plan on Complainants' Exhibit 362 to distinguish it from the dead storage which is shown in blue, has two purposes as a power storage reservoir. One is that it can be drawn upon during the dry periods which usually [fol. 499] come in the summer and the late fall to produce additional flow through the generating units at the power house. It also serves to create an additional and variable

head to the permanent head which is created by the dead storage.

At Norris Dam the space for the purpose of power storage shown in red on the left hand side of Complainants' Exhibit 362 can create no dependable incidental flood storage, because there are certain months in the year when that is filled just the same as the dead storage is filled permanently and, of course, when it is filled it can serve no purpose of providing dependable incidental flood control. Whether or not any of that would be useful for that purpose would depend upon the stage of the reservoir when the flood happened.

The space in yellow shown on the left hand side of Complainants' Exhibit 362 shows the dependable flood control storage behind Norris Dam, to which I have referred in my previous testimony; that is, it is the part behind the top of the gates and the top of the volume which is designated as power storage. This volume indicated in yellow behind Norris Dam on the left hand side of Exhibit 362 can create no firm power at all.

In the popular sense a dam such as Norris Dam in the TVA Unified Plan and shown on the left hand side of Complainants' Exhibit 362 in reality consists of one dam for power and another for flood control. It is one dam, but there are certain dividing lines within the reservoir which definitely divide its functions into two parts that are very separate and distinct.

My proposed dam on the Clinch River shown on the right hand side of Complainants' Exhibit 362 would create a great deal more dependable flood control than the Norris Dam shown on the left hand side of Exhibit 362, because the net amount of dependable flood storage in my dam would be 1,300,000 acre feet, whereas the dependable flood storage volume behind the existing Norris Dam is 497,000 acre feet, the ratio being 2.6 in favor of my proposed dam.

[fol. 500] A pure flood control project can never incidentally produce any power and a pure power project can never produce any pure incidental flood control. If power is produced from a flood control dam, that dam, in my opinion, serves two separate and distinct purposes. One is production of power and the other is a provision of flood control. In such case the power production must be purposely arranged in addition to the flood control. It is a very separate function and in combining those two into one struc-

ture, it is the same as in general designing two separate structures which later are superimposed on each other.

I estimate that the amount of firm power from the plants included in the TVA Unified Plan, excluding Hales Bar, but including Wilson Dam, if completed and operated on a 100% annual load factor with regulation by the reservoirs on the tributaries only, would be 660,000 kilowatts at 100% annual load factor. The annual available firm energy under similar conditions would be 5,780,000,000 kilowatt hours per year. That amount of firm power and of firm energy is more than five times as great as it would be if the three power plants on the tributaries were not included in the TVA Unified Plan.

The firm power capacity from the plants included in the TVA Unified Plan, excluding Hales Bar but including Wilson Dam, if operated on a 60% annual load factor with regulation only by the tributary reservoirs, would be 1,100,000 kilowatts. The available annual energy, assuming the same conditions, would be 5,780,000,000 kilowatt hours per year.

The firm capacity from the plants included in the TVA Unified Plan, excluding from consideration the Hales Bar plant but including Wilson, and also including U. S. Nitrate No. 2 steam plant, if completed and operated on a 60% annual load factor, would be 1,200,000 kilowatts. The available firm energy would be 6,307,000,000 kilowatt hours per year.

[fol. 501] In such a low water year as 1925 during which the drought was very severe, I find that the total available energy for the plants included in the TVA Unified Plan, excluding Hales Bar but including Wilson Dam, would be 7,667,000,000 kilowatt hours. The firm energy would be the figure to which I have previously testified, 5,780,000,000 kilowatt hours per year, and the secondary energy would be 1,887,000,000 kilowatt hours. In such a low water year as 1925, none of that secondary energy would be available 75% of the time.

Assuming that I was required to produce 100,000 kilowatts of secondary power on a 100% load factor to be available at least 75% of the time in every calendar year from the plants included in the TVA Unified Plan, I would produce that amount of guaranteed nine months secondary power from water storage in the tributary reservoirs when no other source was available. The use of a portion of

the stored water in the tributary reservoirs to create secondary power instead of primary would, of course, reduce the amount of primary power available below that which I have previously testified. The use of the storage in the tributary reservoirs to produce this requirement of 100,000 kilowatts of guaranteed 9 months secondary power would result in reducing the firm power capacity of the TVA Unified Plan from 660,000 kilowatts on a 100% annual load factor to 625,000 kilowatts on that load factor. The corresponding amount of firm energy which could be produced would be 5,475,000,000 kilowatt hours per year. A corresponding amount of secondary energy available 75% of the time is 657,000,000 kilowatt hours per year and there would be 1,535,000,000 kilowatt hours of secondary energy available for a lesser amount of time.

Assuming I was required to produce 150,000 kilowatts of secondary power on a 100% load factor available for at least 75% of the time in every calendar year in the plants [fol. 502] included in the TVA Unified Plan, the firm power capacity of the TVA Unified Plan would be reduced from 660,000 kilowatts on a 100% load factor to 607,600 kilowatts on that load factor, and the amounts of energy produced would be: Firm energy, 5,322,000,000 kilowatt hours per year; guaranteed secondary energy available 75% of the time, 986,000,000 kilowatt hours per year; and secondary energy available a lesser period of time, 1,359,000,000 kilowatt hours per year.

Taking the same conditions except that 75,000 kilowatts of the designated type of secondary power be required to be produced, the firm power capacity of the TVA Unified Plan would be reduced from 660,000 kilowatts on a 100% load factor to 633,750 kilowatts on that load factor. The corresponding amounts of energy are: Firm, 5,552,000,000 kilowatt hours per year; guaranteed secondary energy available 75% of the time, 493,000,000 kilowatt hours a year; and secondary energy available a lesser period of time, 1,622,000,000 kilowatt hours per year.

From a study which I have made of the flow records at Chattanooga and Florence, Alabama, both of which are very long term records, I have determined that the year 1921 may be considered as a typical or average water year for the purpose of an estimate of the total available energy from the plants included in the TVA Unified Plan, exclud-

ing Hales Bar and including Wilson Dam. In such a year, those plants would produce 10,000,000,000 kilowatt hours of energy. The firm energy or primary energy which, of course, is fixed by the amount in the low water year remains the same as I have previously testified, 5,780,000,000 kilowatt hours per year. The remainder of the 10,000,000,000, or 4,220,000,000 kilowatt hours per year, is the secondary energy of such a typical or average low water year as 1921.

I have made a study of the firm power capacity of Wilson Dam as it was originally construed and without any increased capacity which has resulted or would result from [fol. 503] the construction of additional projects under the TVA Unified Plan. It was 27,700 kilowatts. That capacity does not depend upon the annual load factor. Wilson Dam power plant, excluding U. S. Nitrate No. 2 steam plant, was capable of producing 242,600,000 kilowatt hours per year at 100% load factor before the construction of any additional works by TVA. Assuming a 60% annual load factor, Wilson Dam power plant without the use of U. S. Nitrate No. 2 steam plant and without any benefit of the structures built by TVA could produce 145,600,000 kilowatt hours per year.

The completion of the works included in the TVA Unified Plan and the operation of the reservoirs on the tributaries only for regulation of the river would increase the firm power capacity of the Wilson Dam power plant at 60% annual load factor by 151,300 kilowatts and would increase the firm energy at 60% annual load factor by 795,200,000 kilowatt hours per year. The corresponding figures on a 100% annual load factor are 79,700 kilowatts of firm power capacity and 698,200,000 kilowatt hours per year increase of firm energy.

The only existing hydro-electric plants on the Tennessee River proper in existence in May, 1933, were Wilson Dam power plant and Hales Bar power plant. On the tributaries there were, of course, a large number, but the principal ones were first on the Ocoee River, the plants known as Ocoee No. 1 and Ocoee No. 2, and Blue Ridge. On the Little Tennessee River and its tributary the Cheoah River, there were three plants of the Aluminum Company of America known as Santeetlah, Cheoah, and Calderwood. On the Big

Pigeon River, there was the Waterville plant owned by a subsidiary of the Electric Bond & Share.

Assuming that under conditions existing in May, 1933, I had been commissioned to make all necessary investigations and design a plan for the development of the Tennessee River and its tributaries so as to produce rapidly a large amount of continuous firm power on the order of 600,000 to 700,000 kilowatts, suitable for use in an utility [fol. 504] system, disregarding the economics of its production, and subject only to the limitation that there should incidentally result a 9-foot channel for navigation in the Tennessee River from its mouth at Paducah to Knoxville, I would have selected on the main river, that is between Paducah and Knoxville, the dam sites known as Gilbertsville, Pickwick Landing, Wheeler, Guntersville, Chickamauga, Watts Bar, and Coulter Shoals. On the tributaries, I would have selected the sites known as Cove Creek or Norris on the Clinch River, the site known at one time as Powellson, or now as Fowlers Bend, on the Hiwassee River, and the site on the Little Tennessee River known as Fontana. These are the same sites as the sites included in the TVA Unified Plan.

I have stated in my testimony that my recommended flood control system is a system having as its sole purpose flood control on the Tennessee River and I have compared my system with the TVA Unified Plan submitted to Congress in its report of March 31, 1936. It is my considered judgment that the primary purpose of the TVA Unified Plan is not flood control.

I have also stated that under the conditions existing in May, 1933, if I had been commissioned to make all necessary investigations and design a plan for the development of the Tennessee River and its tributaries so as to produce rapidly a large amount of power on the order of 600,000 to 700,000 kilowatts, suitable for use in a utility system such as operates in this area, without regard to the economics of its production, and subject only to the limitation that the plan should incidentally result in a 9-foot channel from Paducah to Knoxville, I would select the same dam sites as are included in the TVA Unified Plan. As a result of my studies of flood control and power development on the Tennessee River, it is my considered judgment that the

primary purpose of the TVA Unified Plan is power development with incidental navigation facilities and incidental [fol. 505] flood control of a degree that is inadequate.

Cross-examination:

Taking Complainants' Exhibit 362, I obtained the figure of 497,000 acre feet of flood storage at Norris from a compilation of all of the various figures that have been made available to the public and which have come to my attention in regard to the storage volume and the proposed controlled elevation for the Norris Dam. That is my best estimate of the amount of space which is covered by the gates above the spillway. I have not assumed that that is possibly available for flood control. I have said definitely in my testimony that that is the dependable flood control storage which according to the best sources available to me is reserved solely for flood control purposes. The space which I have indicated might be used for flood control is a part of the power storage added to the dependable flood control storage. That is a part of the pink area added to the yellow.

My dam at the site of Norris has absolutely no provision for low water releases for navigation purposes below. I have clearly testified that it is designed as the sole purpose of flood protection and has no other purpose of any sort.

If I were required to build a dam for navigation and flood control purposes, I cannot say whether I could build the dam which I have designed, because it would require a specification as to the type of navigation that was to be provided. If I were required to release water during the low water season and build up the navigable depths below, I could not build that dam. I could not achieve the result of releasing water during the low water season for navigation purposes.

The maximum 24-hour discharge of the Clinch River during my assumed flood, which would produce a maximum stage of 73 feet at Chattanooga, was 253,000 cu. ft. per second at the mouth of the Clinch River where the total [fol. 506] drainage area is 3,584 square miles. That is considerably in excess of the drainage area at Norris. I would say, as I recall it, the drainage area at Norris Dam is about 2,960 square miles, as the Emory River enters the Clinch a short distance above its confluence with the Tennessee

and below Norris. I assumed that the maximum daily discharge at the dam site was about 200,000 cu. ft. per second, maximum 24 hours average.

I did not testify that the flood would last three days. I testified that the storm would last three days, but the flood would last over a longer period of time. I do not happen to have the figure readily available as to the total run-off in the area back of the site of Norris Dam, but it was 90% of the total run-off of 11 inches on the number of square miles above the dam.

I calculated the effect of Norris Dam on that flood. The total run-off of the Norris Dam during the number of days that that flood continued, both during and after the duration of the storm, and including the natural base flow which would have occurred anyhow and which would have gone down the river anyhow if there had been no storm, is approximately 1,750,000 acre-feet. Excluding that base flow, it was somewhat less, on the order of 1,560,000 acre-feet. That includes a period of ten days, including the first day of the storm. That is an ample time to retain the total amount of water there in order to block that out at the time of any possible danger at Chattanooga. Assuming that you stored the entire flow of the Clinch River at the dam site and in order to attain that result at the beginning of the flood period, the dam would be somewhat higher than the height shown by me on Complainants' Exhibit 362 for my proposed dam.

The elevation of the reservoir that would be required to take care of that entire flood would be approximately an elevation of 1010, assuming, of course, that the reservoir were completely empty at the beginning of the storing of [fol. 507] the flood waters. In order to find out what elevation of water you can start with and still have enough to take care of the entire flood would require information as to the elevation at which you were going to arrive if you had stored it. The storing of water would have to begin at approximately elevation 972 if my estimated entire flow of the river during those ten days were to be stored without exceeding the elevation of 1034 in Norris reservoir. I am quite confident of that figure, based, of course, as I stated before, upon the best published or public information which I have been able to get as to the volumes of Norris reservoir at different elevations.

You would have a million acre-feet in the reservoir measured from the bottom at approximately elevation 982. I calculate the total reservoir capacity to 1034 at the top of the gates to be 2,567,000 acre-feet. If you take off 1,560,000 acre-feet and did not exceed the elevation of 1034, you would start at approximately 982.

I would say approximately 12 or 13 days would be the time that the flood crest at Chattanooga would be above a gauge of 30, without any modification of that flood by storage of the waters. Those flood heights would not be substantially reduced by the retention of that total flow at the Norris Dam site. You can reduce the flood at Chattanooga by cutting out the 200,000 cubic feet of flow at the Clinch River at the site of the dam by reason of preventing the entire amount of it from getting to Chattanooga. I would not say you can reduce it substantially. I have not made a figure as to how much that reservoir would reduce that amount. That reservoir is capable of taking out the entire 200,000 cubic feet per second over the entire period if it is at the elevation which I have testified to when that storm begins. I got my information about the dams to a certain extent out of the Unified Report. I did pay attention to the statement there that that dam was to have seasonal operation. In figuring my non-dependable flood control [fol. 508] capacity, I did not assume at the time of the flood that the water was considerably below spillway level. In giving the figure of dependable flood storage volume, I assumed the water would be at the spillway. That dam could be operated to do substantially more than I testified was the dependable part of the operation if operated with proper control, as I interpret it, but not by the stated plan of the TVA for operation of that reservoir.

I assumed that my theoretical flood would occur as late as early April, which is practically the end of the flood season. I assumed that the flood would occur practically on the first of April, and in figuring the non-dependable reduction that might be accomplished by the three tributary reservoirs of the TVA Unified Plan, I have Norris Dam at an elevation of 1,007, as the elevation at which the water would stand when that flood began.

I assumed the maximum 24-hour average flow during that storm at the Fowler Bend site, where the Hiwassee Dam is now being constructed, is 98,000 second feet.

I have no figures available as to the effect on the gauge height by eliminating the entire flow of the Clinch River at the Norris Dam site.

I assumed the maximum 24-hour average flow at Chattanooga corresponding to the predicted maximum stage of 73 feet is about 680,000 cubic feet per second. It is not correct to state that by retaining the entire flow of the Clinch River at the Norris Dam site you could have reduced the flood at Chattanooga by about 30 per cent. I do not have the percentage, but I know that you could not have reduced the flow by 30 per cent. Hydraulic engineering in flood design is not so simple as comparing the 200,000 cubic feet per second which I gave you to the 600 odd thousand cubic feet per second, which I gave you as the flow at Chattanooga. You cannot take two designated flows many miles [fol. 509] above Chattanooga and simply take it from the flow at Chattanooga, because of having stored a certain amount in the river at Chattanooga during the storm. You take a 24-hour period for this average and the same at the dam site.

I am giving this theoretical flood, that is what my testimony is about. The peek at Norris Dam would, according to my estimate, occur on the 4th day, counting the first day of the storm as the first day and would arrive at Chattanooga about the 7th or 8th day. If you desired to discharge some of the water out of Norris ahead of the peak on the Tennessee, you could have released water if you were legally permitted.

"Q. When do you calculate the peaks on the Ohio-Mississippi at Cairo as compared to the peak of the Tennessee arriving at that point?

A. I made no study of the floods on the Ohio and the Mississippi, either in themselves, or in relation to floods on the Tennessee River. I am, therefore, unable to answer the question.

Q. But then, your plan does not purport to be for the alleviation of the floods on the Mississippi?

A. My plan, as I think I very clearly stated, was to show the maximum practical protection on the Tennessee River and its tributaries, and it gave no consideration either to the Ohio nor to the Mississippi Rivers.

Q. In other words, had you been directed to achieve the alleviation of the flood waters of the Mississippi, as well as

the flood waters of the Tennessee, you would not have devised that kind of system?

A. I could not say what kind of system I would have devised, because I have not studied that problem, Mr. Fly.

Q. The question is, you did not plan your dams to perform that double function, did you?

A. No, no, most decidedly not."

I have studied House Document 328 and have noted the flood of December, 1926. I know that that study of that flood played a very prominent part in the computations of House [fol. 510] Document 328. I don't recall the figures, but I would not doubt that in that particular flood the Army Engineers estimated that Norris Dam alone would have reduced the flood peak at Chattanooga by 5.7 ft.

As to whether page 196 of House Document 328 shows that the Army Engineers estimated that the combined use of Norris, Coulter Shoals, Watts Bar and Chickamauga would have reduced the peak at Chattanooga by 12.1 feet, several cases are referred to on that page and the Army Engineers figured so many different combinations it would take quite a little time to make accurate statements as to what those various reductions were exactly.

Examination by the Court:

In Complainant's Exhibit 362, the acre feet in blue on Norris Dam dead storage is 570,000 and in the pink is 1,500,000 and in the yellow is 497,000 acre feet, although the width (height) of the blue is much greater than the width (height) of the pink, because the ratio of height required is not in direct proportion to the volume of storage produced because the water spreads out as you go higher. In Complainants' Exhibit 362 the volumes in acre feet of the areas back of Norris Dam colored respectively, blue, pink and yellow are not proportional to the heights of such colored areas because the ratio of height is not in direct proportion to the volume of storage produced because the water spreads out as you go higher. The total acre feet which Norris Dam would contain would be 2,557,000 up to the top of the gates raised to their highest position. If you multiply cubic feet per second for one day by two, you have the number of acre feet that will produce in one day.

"Judge Allen: I understand that it is your testimony that this Norris Dam could hold the entire flood flow of the Clinch River?

[fol. 510a] The Witness: Oh, yes, there is enough volume there if it is empty, yes.

Judge Allen: And that if it did, there would still be a certain, considerable amount of what you call dead storage.

The Witness: Storage below that point, assuming in filling it during that storm you just filled it up to the top of the spillway gates, yes, that is correct."

Cross-examination continued:

I know that one of the possibilities that the Army Engineers contemplated in House Document 328 was that the Tennessee River dams would be used for navigation and flood control and power.

[fol. 511] I have read in a casual manner a report in regard to the operation of the Norris Dam as concerns flood peaks on the Tennessee in the 1936 flood, which report forms part of a recently released publication of hearings before a Congressional Committee on what is in the laymen's language known as the Seven TVA Bill. But I have not given any specific study to that report. I believe it is correct that Norris Dam was utilized at that time to retain the entire flow of the Clinch River at that point. That is my recollection of the statement that was made. I do not know for what length period.

I designed for the U. S. Engineers Corps the outlet control works of the Pleasant Hill, Ohio, flood control dam of the Muskingum Valley Conservancy District. That is one of the 14 flood control dams of the Muskingum water shed conservancy district. The Pleasant Hill project has what is called a conservation pool, the purpose of which as I understand it was for combined navigation, industrial, domestic and recreational uses in the river below.

I have not directed any other multiple purpose projects, with the exception of the Blue Nile to which I have referred. That did have a multiple purpose. I was not in charge of that Ethiopian expedition. That was a little too rough for me. There was a problem of flood control that assumed great national importance because that lake is a sacred lake, and the islands and shores of it are dotted with literally hundred of churches, and the question of proper flood control in regard to those churches was one that concerned the

Government of Ethiopia very much and had to be carefully watched and taken care of in connection with the use of waters of the lake for irrigation purposes. I would call it a combination of flood control and irrigation. There were no other major functions whatsoever. Storage of flood waters was released in dry seasons for irrigation.

[fol. 512] I was a consultant in connection with the outlet tunnels of the Fort Peck Dam which was being erected by the Corps of Engineers and was 242 ft. high. I could not say what the cost was. That dam is designed for navigation by low water regulation, flood control, irrigation and ultimately for power. Penstocks are now being provided for power installation. I could not testify to the fact that the plan is to release a minimum flow of 30,000 cubic feet per second at all times during the navigation season, because the points on which I was brought in did not involve that question of the low water release. I was a member there of a special board that was formed at the request of the Chief of Engineers of the United States Army.

I am not familiar with the Tygart project which I think is on the Tygart, a tributary to the Monongahela. I really couldn't say that I know it is also a combined flood control and navigation project. I have never had any connection with it or even very much of a casual interest.

I did no work on the Boulder Dam project, except to visit it in connection with certain functions which the Boulder project performs in connection with the aqueduct of the metropolitan water district of Southern California. The aqueduct leads from Parker Dam, some considerable distance below Boulder Dam, and now under construction. At that point the water supply is fed by the discharges from Boulder Dam. Boulder Dam serves a combined function of navigation, flood control, irrigation and water supply. I could not testify that it has an installed capacity for the generation of electricity of 660,000 kilowatts. I know it is a very large installation. It cost something on the order of $165,000,000. It has no navigation lock.

[fol. 513] By Mr. Fly:

"Q. Mr. Kurtz, are there many projects with this plan of yours for the automatic control of gates on the dams?

A. The Muskingum Dams have gate control instead of purely automatic Miami type, but I do not think that they

have any automatic features. I am not positive on that point. The one with which I was connected did not.

Q. Now, under your scheme you do have the automatic controls, do you not?

A. Yes, that is true.

Q. And has the Army constructed any projects with controls of that sort?

A. So far as I know they have not. The only one I know they have constructed is the Muskingum pure flood control the one to which I have just referred.

Q. You do know, don't you, Mr. Kurtz, that the reservoirs recommended in House Document 259, that all of them were designed for control by human beings who were operating them.

A. I must say, Mr. Fly, I am not certain on that point. I do not think that that document went into details that far. It may, and I missed that.

Q. You do not know of any recommendation of any structure by the Army where that automatic system of control is installed or is to be installed, do you?

A. No.

Q. Are you familiar, Mr. Kurtz, with the report of the Mississippi River Commission regarding a comprehensive system of reservoirs for the Mississippi River Valley, including the Tennessee?

A. I have reviewed the portion of that report which relates to the reservoirs that were proposed on the Tennessee River as a part of that comprehensive system.

Q. You do know, do you not, that the Commission recommended that a plan of reservoirs be designated as the only feasible way for further flood control on the Mississippi.

Mr. R. T. Jackson: I object to that question unless the document is exhibited to the witness, and the part that counsel is inquiring about.

Mr. Fly: The witness can state. I will be glad to show him the document.

Judge Allen: He can state whether he knows. That is the question, is it? Read the question.

[fol. 513a] (Question read by reporter.)

A. No, sir, the answer is I do not know that.

Mr. R. T. Jackson: Neither do I.

A. I do not say it is not there, understand."

Referring to my system of reservoirs, I can state what continuous unimpeded flow through each of my reservoirs has been assumed. I will read these continuous rates of release when the reservoirs are filling in the same order that the reservoirs are listed in Complainants' Exhibit 353: Painter Creek, 22,400 cubic feet per second; Solomon Ferry, 42,000 cubic feet per second; Dandridge, 65,000 cubic feet per second; Kikers Ferry, 60,000 cubic feet per second; Island Mills, 2,000 cubic feet per second; Bachman Ford, 24,000 cubic feet per second; Burgoinsville, 36,000 cubic feet per second; Three Springs, 35,000 cubic feet per second; Strawberry Plains, 40,000 cubic feet per second; Fontana, 50,000 cubic feet per second; Davis Ferry, 60,000 cubic feet per second; Cove Creek, 20,000 cubic feet per second; Frankfort, 2,500 cubic feet per second; Milliken Branch, 16,500 [fol. 514] cubic feet per second; Wartburg, 250 cubic feet per second; Coleman, 29,000 cubic feet per second; Apalachia, 21,000 cubic feet per second; Austral, 16,000 cubic feet per second. Charleston, 46,000 cubic feet per second. I did not total it. It did not have any significance.

I went into very considerable detail of the design of these dams in order to be able to prepare the estimates of cost which I have submitted. I have figures as to the height of the dams and more of the estimates, quantities and details on my work sheets, yardages of concrete and all of those details which are necessary in order to prepare an estimate of cost of the general nature and accuracy of the one about which I have testified, of the total estimated construction cost. The heights of these 19 dams measured from low water to spillway crest, are as follows: Island Mills, 169 ft.; Bachman Ford, 137 ft.; Surgoinsville, 96 ft.; Three Springs, 83 ft.; Strawberry Plains, 78 ft.; Painter Creek, 123 ft.; Solomon Ferry, 76 ft.; Dandridge, 112 ft.; Kikers Ferry, 72 ft.; Cove Creek, 171 ft.; Frankfort, 170 ft.; Milliken Branch, 257 ft.; Wartburg, 68 ft.; Coleman, 184 ft.; Apalachia, 156 ft.; Austral, 136 ft.; Charleston, 58 ft.; Fontana, between 275 and 300 ft.; Davis Ferry, 80 ft. In addition to the conduit type of outlet, there is a spillway provided for each of these dams. In all cases it is an overflow type of spillway over a masonry dam, concrete dam.

The thickness of the dam is a rather difficult thing to give in a spillway dam, because it is rounded at the top. At the very crest it is zero, then you go down and it increases as you go down the slope. In the case of non-over-

flow dams, it is possible to give the top. I think we can take the top width of the non-overflow sections of 6, 8 to 10 feet, depending upon the height of the dam and whether or not a roadway was to be built across it. In all other cases, the type of spillway dam was made to conform to the jet of water passing over the top. The lower nappe of that [fol. 515] stream was at a depth of 5 feet. I did not provide for extended bases for further increasing the height of the dams. It is the complete structure in itself providing for no extensions of any kind.

I do not know of any example of a private power company developing a navigable river from its head to its mouth with consecutive navigation pools, comparable to that of the TVA Plan. There is not to my knowledge a single one in the United States.

Hales Bar Dam was the only dam providing the navigable channel constructed on the Tennessee River proper by a private power company before 1933. I have not included navigation in regard to the length of channel in my study, but that dam made navigable whatever the distance is between Hales Bar and Chattanooga. It makes slack water up to Chattanooga.

The following dams of substantial size were erected by the power companies on the various tributaries of the Tennessee River and were in existence in May, 1933: Parksville, Ocoee No. 1, Blue Ridge, Andrews, Calderwood, Cheoah, Santeetlah, Waterville, Greenville, Elizabethton, Columbia, Murphy. There are some of those not very large, but that is a representative list of the larger ones. It is an obvious fact that the power companies have been interested in those sites on the tributaries where they have the high height and the narrow gorges. At the same time, with the single exception of Hales Bar, they have avoided putting up dams on the main stream.

The main stream dams, such as those in the TVA Plan, are relatively undesirable from the power viewpoint, because of the reduction of the head in periods of high water, if they are not combined with steam plants which can carry the load at the time when the head is reduced or a large number of additional units installed to take care of the deficiencies in the head at times of great flow. The power companies do not have that particular difficulty in the tribu- [fol. 516] taries, because the dams are higher. The dams on the tributaries are not subject to that reduction of head,

because they lend themselves to greater height for development of power and the amount of loss in high water is more or less constant, regardless of the height of the dam you build. Therefore, the relative effect becomes smaller and smaller the higher you build the dam. If I were going into the power business, whether I would go out in those tributaries and build that type of dam would depend as to the amount of power I would want to produce. Whether I would go up there if I were looking for a greater amount of power would depend upon the quantity of power I would want to develop. I do not think the power companies have made a mistake by going up there rather than going to the main stream, because their problems were gradual, their additional demands were small and they went to the source where they could get that given amount of power cheapest. They did not have a sudden demand for a large block of firm power.

I know that a number of the power companies have taken out or applied for preliminary permits over a period of years on the Tennessee. I happen to know particularly of a preliminary application, at least, that was made for Cove Creek, and I know the Aurora Landing project was passed around the engineering offices of this country as a promoting job for a good many years. I don't know the names of the plants, but I do know the preliminary application to which I referred for Cove Creek was made by The Tennessee Electric Power Company or its predecessor, or some subsidiary.

At a stage of 51 ft. in the city of Chattanooga, I know that the water would cover quite a lot of business area. I do not have the figures of the area or by streets or anything like that. I could not give the detail as to the part of Market and Broad Streets it would cover.

[fol. 517] As I testified, the estimates of flood damages presented in my exhibit are all taken from tables 2 to 57, inclusive, of Appendix N, House Document 328. I did not make any independent estimate of flood damages at any plant.

I do not recall giving that Document's estimate on the 500 year flood at a $14,350,000 figure at Chattanooga, but it seems to me that I used the flood damages only for the purpose of determining those points which were in need of protection and I made no attempt to estimate the flood benefits or estimate the damages, but I considered those as re-

liable engineering data, and engineering data to show for what purpose and at what points protection is needed in the Tennessee Valley. I adopted the figure on page 39 of House Document 328, of $1,780,000 average annual damage at Chattanooga. Referring to Complainants' Exhibit 349, the difference between my figure of $1,400,000 and the Army figure at the top of page 39 in House Document 328 of $1,780,000 is due to the fact that my exhibit covers only flood damages to cities and towns, railways and highways; whereas, the figure of $1,780,000 includes damage to agricultural lands and crops. The same explanation applies to my figure of $11,009,000 as compared to the Army figure of $14,003,000. I am under the impression that the Army Engineers' figures, which I have used, do not include indirect damages, such as is due to interrupted traffic and business, unsanitary conditions, spread of disease, deaths, personal injuries, depreciation of land, the general discouragement of business, discouragement of population and that sort of thing, but I do not like that to be a positive statement. I don't think the matter is entirely clear in House Document 328, but that Document does state on page 39:

"This does not include indirect damages, such as loss due to interrupted traffic and business, unsanitary conditions and spread of disease due to flooding of towns, depreciation of land due to overflow, etc., which are difficult to assess. These indirect damages, if eliminated, would greatly increase the value of flood control."

[fol. 518] I know that all of those things, other than ascertainable property damages, such as loss of life, personal injury, impairment of health, unsanitary conditions, interruptions to trade generally, shipment and travel and the damage to trade and commerce of the city by thwarting its growth, the discouragement of population increase, depreciation of property values in general, all of those flow as results of a continuing flood menace. Any of these large floods will disable a considerable number of railroad and highway and terminal facilities. That is particularly true in the city of Chattanooga. I don't recall that the Army made any separate estimate of railway damages in Chattanooga, but I do know that the railway damages on the Emory are very high and bulk very large compared with the total for the entire Tennessee River basin. I find that I was too hasty in

my statement. The Army Engineers do have a separate estimate for those damages in the city of Chattanooga and I find from my exhibit that the railway damages at Chattanooga by the great flood which the United States Engineer Corps adopted is given in their tabulations as $237,000 and the annual damage to railways at Chattanooga is given as $3,318. I am reading that off of my exhibit under the heading of "railways" under the summary and under the head "Main Tennessee River" and sub-item "Chattanooga".

In mentioning the total costs of the Unified Plan, as I referred to it in the report of the TVA of March, 1936, I included, with the exception of the original cost of Wilson Dam, everything that is included in the tabulation of the principal features of the present and proposed dam and reservoir projects of the TVA appearing on page 403 of the Hearings Before the Subcommittee of the Appropriations Committee of the House of Representatives, Second Deficiency Appropriation Bill of 1937 (Complainants' Exhibit 116). It includes everything shown there which specifies only those specific items; it includes $500,000 for [fol. 519] raising Wilson Dam; it includes the cost of the lock built by the Corps of Engineers of the United States Army at Wheeler and the cost of Norris Dam, and highways, town of Norris, forest lands, etc. Otherwise, it is the estimated cost of the ultimate stage of the TVA Unified Plan. From this notation, which says that includes highways, town of Norris, forest lands, etc., I would not say that there are any properties in the vicinity of Norris that are excluded. I didn't know what the "etc." includes. It does include the power house and generators and all that. That is quite apparent. The table also includes Fontana at an estimated cost at the ultimate stage of $51,000,000. In making my estimate of power available, I assumed the completion of all those projects including Fontana and I also assumed the full installation to use all water power at the dams.

I have never had general control of any general scheme of flood control on any river. I have not had the direction and supervision of any entire project devoted to flood control.

Redirect examination:

I have direct knowledge of the fact that private interests have taken steps looking to the development of the Aurora

Landing, now known as Gilbertsville, site at which the TVA proposes to construct a project. I also understand that much of the site at Pickwick Landing was owned by private interests, having acquired it for power purposes. I learned when I was Resident Engineer at Muscle Shoals that prior to the construction of Wilson Dam, much or all of that site was owned by a private power company, having acquired it for a power development. I have been informed directly that the Guntersville site, at least a part of it, was owned by a private power company interest, holding it for development for power purposes. It is also true that the site of Norris Dam was owned in whole or in part by private power inter- [fol. 520] ests for the development of power. It is a fact that similarly the site- on the Hiwassee and at Fontana were owned by private interests for power developments. It happens that at Hiwassee, I have a very intimate knowledge of that, because I made a couple of reports for one of the principal owners of that project a good many years ago. I also know that it is a fact the Wheeler Dam site was likewise owned in whole or in part by private power companies for power development. I have the same sort of information in regard to Wheeler.

I estimated the total reductions at Chattanooga from the use of all of the TVA reservoirs in the TVA Unified Plan above Chattanooga for an amount of flood control storage greater than the dependable amount and have already testified to that figure.

I stated on cross examination that in making my estimates as to possible reductions from the TVA reservoirs above Chattanooga during the maximum flood, I did not consider merely the dependable storage at Norris, but assumed that Norris might be as low as elevation 1,007, at the time of the occurrence of the flood around the first of April. I made that assumption because I took particular pains to try to get the most reliable official information that I could in regard to the plans for operation of the three tributary reservoirs, and in the case of Norris, I was fortunately able to secure very definite statements made by Dr. A. E. Morgan before the Subcommittee of the House Committee on Appropriations of the House of Representatives on the Second Deficiency Bill of 1937. He did not state 1,007 ft., he stated quite definitely there that by the end of January, it would be up to 1,010 ft. and they would hold it there until the first of April. But I was a little more liberal to them and I adopted 1,007.

In the case of storage used for power, such as that shown in the pink area of my Norris Dam diagram on Complain-
[fol. 521] ants' Exhibit 362, every effort is made to have the storage areas filled at the end of the flood season and at the beginning of the dry season.

The flow at Chattanooga would not be reduced by an amount equivalent to the amount of or volume of flow which might be stopped at Norris. There is no quick and easy direct relation which can be used. It is a question of long, elaborate, detailed hydraulic computation, taking into account many technical figures. It cannot be reduced to a simple formula. What I have previously described as natural valley storage is one of the major factors entering into that problem.

I testified that the total dependable storage of my recommended flood control plan in case of a maximum flood above Chattanooga would be approximately ten times as great as the dependable storage of the TVA recommended plan under the same circumstances above Norris. The amount of reduction in the case of a maximum flood is not directly proportional to the volume of flood storage which you have. The Court pointed out that I have in the pink area on my exhibit showing Norris Dam approximately three times as great a volume in acre feet as I have in the colored area below, even though the vertical depth of the lower block is greater than the upper block. I explained to the Court that that was because the contour of the reservoir widened out as you reach the top, and therefore a lesser vertical height would produce a greater volume in acre feet of storage. That same principle illustrates the reason why reduction in a space of a maximum flood is not proportional to the amount of flood storage which you have. That is, for instance, applied to this particular valley on Norris Dam, one might say that 570,000 acre feet at the dam would reduce the stage by the total depth of the blue area, whereas the same reduction at the top of the pink area would only reduce it about one-third of the total depth of the pink area. The
[fol. 522] same general principle holds in both cases. That principle is directly applicable to the difference in storage capacities provided by my recommended plan and the TVA Unified Plan.

Examination by the Court:

Norris Dam would have to provide dependable storage of about 1,750,000 acre feet to take care of my theoretical ten day flood waters from the Clinch River, if no water at all were released during that ten day period from the area above Norris Dam. On Complainants' Exhibit 362 on the drawing of Norris Dam in the pink area, there is the heading "Power Storage Creates Head and Storage for Additional Power Production in Summer and Fall." That means that that is the usual period when the natural stream flows are low, and you draw upon that supply of stored water to increase the low flow and bring it up to a higher point so that it can maintain a certain desired amount of firm power. That statement applies to the 1,500,000 acre feet in the pink area, so that 1,500,000 acre feet are kept for power storage to create head and storage in the summer and the Fall. It would be possible not to use this 1,500,000 acre feet for the creation of power storage, but to hold that space in the dam available for flood control. The only limitations I would make there would be this, that in this case any water released during the period that was being so controlled would have to be through either the generating units or through the free discharge outlets which have been provided, and there would be some limitation on the manipulation. Above that point, they could lower the gates and let it go or hold it as they saw fit. But in general, it is correct that if an operating rule were made that we will not go above such and such an elevation except for flood control purposes, any or all of that whatever part anybody might designate as an operating rule could be reserved solely for flood storage, and in that way being added to the [fol. 523] amount of dependable storage shown. I would not say that the dam could be seasonally operated to produce the number of dependable storage in acre feet which I say is necessary to take care of the flood waters of the Clinch River, because in my understanding "seasonal operation" means that you would empty it in the Summer and fill it as soon as you could when the rains begin. That is my usual use of the term "seasonal operation". It would have to be held all of the time empty except when this great flood occurred. Then you would let it out just as soon thereafter as possible. You would not save it for anything, any other purpose, but you would let it out as soon as it was

safe to let it go down the river. Otherwise you would not have it empty when the next flood occurred. If there were no provisions for the generation of power at Norris Dam, the dam could be used to secure flood control. I have not investigated the capacity of those free outlets. It might be if I were designing it for that purpose, I would want more of those free outlets. I would want a different type of construction. But this structure could be used to secure flood control with a change in the operating rules, if there is sufficient outlet capacity to operate it in accordance with the rules. All of the dams in the TVA's system could be used to secure a certain measure of flood control.

Redirect examination continued:

Any power dam and reservoir, where the reservoir is drawn down seasonally for power production purposes, has a certain measure of non-dependable flood control, but whether or not it will be effective depends upon whether the flood happens to come at the time when it is drawn down.

Examination by the Court:

The floods come at any time between December and April, but the four greatest floods of record at the City of Chatta- [fol. 524] nooga have all occurred in March or as late as the third of April. That is not saying that that is a fixed rule of nature, but is a fact which I took into consideration when I made my calculations in all of my work, and it was an important element in the decisions which I reached. That much we know; I am not estimating that.

If the area shown in pink on Norris Dam were reserved for dependable flood control storage down to elevation 955 as shown, and if the reservoir were never lowered below 955, there would be power, but it would be limited to the natural flow of the stream. It would be just run-of-river power.

In my opinion it would not be possible so to operate Norris Dam that there would be a dependable storage in acre feet sufficient to accom-odate the flood on the Clinch River in the months in which floods do occur and in which they have occurred and then fill the reservoir and use the space in the reservoir for the creation of power because of the fact that the incidence of these great floods in four cases

of record has come at the end of the rainy season, and if you wait until then to fill it, the amount you could fill would be relatively small. I don't say it would be zero but you would have lost all of this large flow between December and April and you would only be able to store what came after that period about the first of April. I do not recall the manner of operation of Norris Dam last Spring. I don't know at what level they began to store or anything about that. I am not familiar enough with that report to which I referred earlier to say as to just how they operated.

(Thereupon counsel for complainants read the statement of Dr. Morgan from Complainants' Exhibit 116 on the Second Deficiency Appropriations Bill of 1937, at page 374 dealing with the elevation of Norris reservoir on April 1 each year and counsel for defendants also read certain extracts.)

(The witness was excused.)

[fol. 525] OFFERS IN EVIDENCE

(Thereupon counsel for complainants asked to have marked as Complainants' Exhibit 364 for identification the Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, 74th Congress, First Session; as Complainants' Exhibit 365 for identification the Hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, First Session; and as Complainants' Exhibit 366 for identification the Hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, First Session, Volume 2, from which complainants desired to offer certain excerpts, and the following occurred):

"Mr. Fly: Your Honor, I do not know what these exhibits are, except I know one of them is hearings on some bill other than the Tennessee Valley Authority. We naturally object to that one. It is a public utility holding company bill, I believe.

Mr. S. D. L. Jackson: In connection with that from Complainants' Exhibit for identification 364 complainants offer excerpts on the following pages—and in that connection if

I may read just the first part of this excerpt from page 1947——

Mr. Fly: I object to reading that.

Judge Allen: What report is that?

Mr. S. D. L. Jackson: This is from the hearings of the Interstate and Foreign Commerce Committee, House of Representatives.

Mr. Fly: A Public Utility Holding Company bill.

Mr. S. D. L. Jackson: That is correct, and that committee called, requested the Tennessee Valley Authority to appear before it, and the first sentence of the hearing is this, if I may read it:

'Mr. Lilienthal: Mr. Chairman and gentlemen of the Committee, my name is David E. Lilienthal, I am a member of the Board of Directors of the Tennessee Valley Authority. I am appearing before your Committee in response to the request of the Committee directed to the Board of the Authority.'

Then he testified at some length. The excerpt I have just read is one of those we desire to offer. I would like to [fol. 526] state to the Court and for the record, the other excerpts from this volume that we desire to offer, and I apprehend the Court's ruling will probably be the same as it was when excerpts were offered from previous committee hearings. In that event we would like to preserve our record, and at such time take such proper steps as may be advisable.

Judge Allen: What is the objection to that?

Mr. Fly: The committee did not have a report on the activities of the Tennessee Valley Authority, but just appeared in response to the summons of the Appropriations Committee.

Judge Allen: Was this a hearing on the S. E. C. bill?

Mr. S. D. L. Jackson: No sir; on the Wheeler-Rayburn bill, at least the Public Utility Holding bill which was passed by the Congress in the summer of 1935. I might say otherwise, it will appear in evidence or evidence will be offered to show that prior to that date the National Power Policy Commission had been set up of which Mr. David E. Lilienthal was Chairman and Mr. Ickes was Secretary, that that report was made to the President and the President sent that to the Congress. That was on the holding

companies in the utility fields, and the bill was later passed by the Congress. I might say that that report is, I think defendants' exhibit, it is attached to the deposition of Joel David Wolfsohn, which will be offered by the complainants later on.

Mr. Fly: Your Honor, I think my friend has pretty well indicated the trouble we are borrowing here by trying the public utilities holding company bill, going into the hearings of that bill. We were called upon, not to report upon the work of the Tennessee Valley Authority. Mr. Lilienthal was there as a witness for the committee, concerning that measure, which has nothing to do with the Tennessee Valley Authority Act in any way. And he was not there in any official capacity to report on behalf of the Tennessee Valley Authority. He was there as a witness on the other bill. I might say he was at the request of the Congressional Committee, made to the Tennessee Valley Authority, and he stated he was appearing in behalf of the Tennessee Valley Authority for the Committee.

Judge Allen: Are you now making the offer of proof? You have indicated you presume the Court would exclude the exhibit.

Mr. S. D. L. Jackson: We are offering these in evidence. [fol. 527] Judge Allen: If you offer them in proof, if they are objected to, bear in mind the ruling of the Court adopted for the convenience of yourself and the complainants and the Authority, that we would not encumber this record with long statements of offers to prove. For that reason we suggest that you hand up to the Court, marked, these books. We will look at them and decide what can be admitted and what rejected; also the form of offer of proof which may be made."

(Thereupon complainants handed to the Court a list of the excerpts so offered and subsequently the following occurred:)

"Judge Allen: At the time the Court closed, Mr. Jackson had offered to introduce in evidence statements made in certain hearings before committees of the House of Representatives. The statements offered in complainants' exhibit 365, in the hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, First Session, of the dates of March 28th, 29th, 30th, April 2, 3,

9 and 10, 1935; and the statements offered in complainants' exhibit 366, in the hearings before the same committee, same session of the same Congress, of May 20, 21, 22, 23, 1935, the Court considers admissible. But the Court makes the same ruling, that the entire statement will be received in evidence as it has made on previous occasions.

With reference to the hearings before the Committee on Interstate and Foreign Commerce of the House of Representatives, 74th Congress, First Session, part 3, of April 5, 9, 10, 11, 12, 15, 1935, on House resolution 5423, that is dealing with the subject of the Wheeler-Rayburn bill, the complainants offer to prove certain statements that Mr. Lilienthal made in this hearing; and these statements, the Court considers inadmissable as evidence. This was not a hearing upon a TVA Act, nor upon any appropriation thereunder, and the statements and the report of the hearing are excluded upon the ground the Court considers them immaterial and irrelevant. You may have your exception, Mr. Jackson, and the Court will appreciate it if in your offer to prove you will simply offer the pages as indicated.

Mr. S. D. L. Jackson: Then, your Honor, may I for the purpose of the record now state that complainants respectfully offer in evidence the extracts from exhibits 365 and 366. And I understand the Court has announced that the extracts will not be received, but I would like the record [fol. 528] to show that we offer the extracts as they appear marked in those volumes. And may I recite the pages, or hand the sheet to the reporter?

Judge Allen: It will be satisfactory to hand the sheet to the reporter, and the ruling of the Court upon the same is that the excerpts will not be received, but that the statement as a whole is received in evidence."

(The excerpts offered by complainants from Complainants' Exhibit 365 were as follows:)

On page 7, the last four lines at the bottom of the page; on page 24, the seven lines at the bottom of the page. beginning with the statement of Mr. Lilienthal, "In the first place the law"; on page 25, the two paragraphs beginning with the statement of Mr. Lilienthal, "The Congress has written into this law"; beginning with the statement of Mr. Lilienthal at the bottom of page 26 and extending through the first three lines of page 27; on page 28, the first three

questions and answers; on page 29, beginning with the question of Mr. Wilcox "What is the rate per kilowatt hour" and extending to the bottom of the page; on page 32, the first paragraph at the top of the page and the two paragraphs beginning "Furthermore, the legislatures of the States"; beginning on page 33 with the question of Mr. May, "You just stated that one-third of the gross revenues" and extending through the statement of Mr. Lilienthal on page 34, ending "the value of the property in Chattanooga"; on page 35, beginning with the sentence "In view of the policies of Congress" extending to the question of Mr. May near the bottom of the page; on page 36, the first three questions and answers; the two questions and answers at the bottom of page 36 and the first question and answer at the top of page 37; on page 37, the answer of Mr. Lilienthal beginning "That is part of the duties" and the subsequent two questions and answers; on page 38, in the middle of the page, the paragraph of Mr. Lilienthal beginning "The Knoxville situation"; on page 39, beginning with the question of Mr. May "Your company is not interested today" and extending through the statement of Mr. Lilienthal, ending "electricity should be widely available"; on page 40, the statement of Mr. Lilienthal beginning "We believe that the law"; the last two lines on page 47, and the first three lines on page 48; the last six lines on page 48 and the first question and answer on page 49; the last question and answer on page 49 and the first five lines on page 50; on page 50, the question of Mr. May "And that has been written down to $21,000,000" and Mr. Lilienthal's answer thereto; on page 55, in the middle of the page, the two questions and answers beginning with the question of Mr. Maver- [fol. 529] ick "I want to ask"; on page 60, the question of Mr. Montet "Before we enter on that" and Mr. Lilienthal's answer thereto; on page 61 the two questions and answers beginning with the question of Mr. Montet "Do you consider the TVA" and the two questions and answers beginning with the question of Mr. Montet "Mr. Lilienthal, if you came down in Alabama"; on page 77, the first question and answer at the top of the page and the question of Mr. May beginning "Now I am conceding" and the first paragraph of Mr. Lilienthal's answer thereto.

(The excerpts offered by complainants from Complainants' Exhibit 366 were as follows:)

On page 591, in the middle of the page the two questions and answers beginning with the question of Mr. McLean "Is it not proper to say"; on page 594, beginning with the question of Mr. McLean "Let us assume that that is all" and extending to the bottom of the page; lines 5 to 8 on page 595; on page 833, the two questions and answers beginning with the question of Mr. Wilcox "There is one other question, Mr. Chairman"; lines 2 to 12 on page 834; beginning with the question by Mr. May on page 834 "Mr. Chairman, I just have a question or two" and extending through the statement of Mr. Lilienthal on page 836, ending "The CCC work is not related to power operation".

"Mr. S. D. L. Jackson: And may we have an exception to the ruling of the Court in refusing the extracts? And then, not waiving the benefit of our exception, but still claiming whatever benefits we may have thereunder, we now offer exhibits 365 and 366 with the request for permission to have the reporter copy into the record the extracts designated from those exhibits, which are the same extracts that we would like to offer separately had we been permitted. And may we have an exception to the Court's ruling on refusing to accept in evidence the extracts from exhibit 364, as shown on the attached sheet which the reporter will designate in the record, and may we have exception separately to that?"

(The excerpts offered by complainants from Complainants' Exhibit 364 were as follows:)

The first three sentences of Mr. Lilienthal on page 1947; on page 1952, beginning with the question of Mr. Cooper (interposing) "I believe you made" and extending through the statement of Mr. Lilienthal ending "at the time this figure was made up"; beginning on page 1953 with the question of Mr. Cooper "Now private utilities have to pay a great many taxes" and extending through the statement of [fol. 530] Mr. Lilienthal on page 1954 ending "Under the Railroad Land Grant Act you mean? Yes."; on page 1954 beginning with the question of Mr. Cooper "You have no Workmen's Compensation Tax to pay" and ending with Mr. Lilienthal's answer of "Yes" to the question "Do you have the franking privilege?"; on page 1955, beginning at the top of the page and extending through the statement of Mr. Lilienthal ending "Those figures may well be accurate;

I am unable to carry them in mind", and beginning with the question of Mr. Wadsworth "Referring again to the tax matter" and extending to the bottom of the page; the paragraph beginning at the bottom of page 1956 and the first paragraph on page 1957; on page 1957, the next to the last paragraph on the page and the first sentence of the last paragraph; beginning on page 1962 with the statement of Mr. Lilienthal "It is obvious that" and extending through the statement of Mr. Lilienthal on page 1963 "It would be a substantial amount."; on page 1964, beginning with the question of Mr. Wolverton "Let us see just how much difference" and ending with the statement of Mr. Lilienthal "I am perfectly willing to say that it is"; on page 1976, the two questions and answers beginning with the question of Mr. Bulwinkle "In getting the benefit back into the Treasury"; the last statement of Mr. Lilienthal on page 1980; beginning on page 1981 with the question of Mr. Cooper "Well I want to ask you this question" and extending through the paragraph on page 1982 ending "governmental activities to give out this information"; on page 1982, beginning with the question of Mr. Cooper "You have made speeches have you not" and extending to the last paragraph at the bottom of the page; on page 1990, the two questions and answers beginning with the question of Mr. Merritt "But you did have a tremendous leverage"; on page 1992, beginning with the question of Mr. Huddleston "Under the system you now have" and ending with the answer of Mr. Lilienthal "I think the cost for firm power is approximately 3 mills"; beginning with the statement of Mr. Lilienthal at the bottom of page 2018, "The citizens of two counties" and extending through the statement of Mr. Lilienthal on page 2019 ending "most of the people in those counties who use electricity have taken out membership"; on page 2022, beginning with the question of Mr. Pettengill "On this matter of publicity" and extending through the statement of Mr. Lilienthal ending "the preparation of information in the form of press releases."; on page 2023, the two questions and answers beginning with the question of Mr. Pettengill "Are you familiar with the statute"; beginning on page 2027 with the statement of Mr. Lilienthal "Furthermore, while it is not required by law," and extending through the answer of Mr. Lilienthal on page 2029, "The principle you have laid down, I agree with, entirely."; on page 2030, Mr. Pettengill's question beginning "My idea is that" and ending with

Mr. Lilienthal's answer "Well yes; in that form, I would."; on page 2037, the entire statement of Mr. Pettengill beginning "There is just one more observation"; and beginning with the question of Mr. Cooper on page 2062, "Were State regulations supplemented when Congress passed the Ten- [fol. 531] nessee Valley Authority Act" and extending through the statement of Mr. Lilienthal on page 2063, "I intended to state that in some States that had occurred, and it has, as everyone knows."

"Judge Allen: You may have your exception, and in order to make the Court's position clear, Mr. Jackson, you presented no specific authority in support of your position that the statements of Dr. Morgan with reference to an appropriation being made for the building of a certain dam or certain dams was admissible in evidence. The Court considered that matter, found no specific authority on it, and feeling that in the interest of—well, in the public interest, that a statement of that kind should be admitted because it constituted a quasi official report to the committee before Congress dealing with a specific subject. The Court feels it was liberal in making that ruling, and the Court does not intend to extend that ruling to hearings before any committee of Congress that might call someone to talk before it.

Mr. S. D. L. Jackson: Other than those that are directly related to the TVA statute.

Judge Allen: That is the ruling. The Court has noted that these particular excerpts in the excluded exhibit, No. 364, and the other excerpts which were offered by counsel for the complainants, have been marked in red. It will help the Court if counsel for the Authority wish to rely upon any particular excerpts in the statements that have been admitted, if they be marked in the color in which the Authority marked the other exhibits relied on."

Counsel for defendants then brought to the Court's attention the following excerpts from Complainants' Exhibit 365 (which excerpts are set forth in Appendix I following Defendants' Exhibits):

On page 24, the first two sentences of the paragraph beginning "There have been some suggestions"; beginning on page 24, the second line from the bottom of the page,

"Furthermore that duty" and extending through the sentence at the top of page 25, ending "almost the entire length of the spillway."; the first paragraph on page 26; on page 30, the two questions and answers beginning with the question by the Chairman, "This non-profit corporation"; on page 37, beginning with the question of Mr. May, "What was their original valuation" and extending through the statement of Mr. Lilienthal ending "We paid for the property as it stood"; on page 77, one sentence of Mr. Lilienthal [fol. 532] beginning "As to TVA, we never suggested"; the first thirteen lines on page 78; on page 92, the statement of Dr. Morgan beginning in the third line "The high dams" and extending through the sentence ending "There is no comparison between those high dams and the low dams."

Counsel for defendants then brought to the Court's attention the following excerpt from Complainants' Exhibit 366 (which excerpt is set forth in Appendix J following Defendants' Exhibits):

Beginning on page 826 with the question by Mr. Schaefer, "Mr. Lilienthal, I believe the last time you appeared * * *" and extending onto page 827 ending with the words by Mr. Lilienthal, "* * * in terms of so many additional generators needed."

T. J. Davis was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 60 years old and reside at 1700 Duncan Avenue, Chattanooga. Farming is my occupation. I lived out in what is known as the Chickamauga Basin and owned a farm out there. I farmed a river bottom farm all my life.

I am acquainted with where the survey made by the TVA is and where their stakes are set out with reference to the bank of the river out in the Chickamauga Dam reservoir. Other gentlemen and I have estimated the value of the crops that were standing at the time that I made the estimate on these lands between the white stakes located by the Authority and the River Bank.

"Q. Tell the Court how many acres you estimated, and what crops you found standing upon the land, and whether or not you considered only the standing crops?

Mr. Fly: May it please the Court, the over-all cost of [fol. 533] these projects has gone in here time and again, and I don't think the Court can have any possible interest in the details of the cost of these reservoirs or the amount that the farmers have been paid for the land that has been flooded, or the amount of crops that could have been grown on the land if it had not been taken for reservoir purposes. I fail to see any possible relevancy in this case.

Mr. Spears: If the Court please, if that was the point there might be something in it, but that is not what I am trying to prove at all.

Mr. Fly: What are you trying to prove?

Judge Allen: Yes, what are you trying to prove?

Mr. Spears: I am trying to prove, if your Honor please, that this so-called flood control don't amount to a thing in the world, that they cover up the same land that is flooded, eternally, instead of as it has been heretofore just occasionally, and that the damage as estimated by the Army Engineers above Chattanooga, to lands, is only $43,000, and I propose to prove by these witnesses in the Chickamauga Basin alone they are covering up crops now standing on the land, on land that will produce crops now standing on the land, of $400,000. It does not go to the value of the land. I am not trying to prove the value of the land. I am just trying to reflect on the good faith of the claim that this is a flood control project.

Judge Allen: On the statement of counsel the objection is sustained. The Court considers this testimony of this kind irrelevant and immaterial. You may have your exception."

(Counsel for complainants then stated that the testimony would go to show that the TVA flood control program is a sham and pretense, as the annual flood damage of the entire Tennessee Basin according to the Army Engineers is $1,790,000 a year and the annual value of the crops which would otherwise be grown on the land flooded permanently by the TVA reservoirs would be six or eight times as much as the annual flood damage.)

"Judge Allen: Just a minute please. The Court will point out again to counsel the fact that by securing the benefit of bringing a joint bill here, seventeen complainants have to bear the burden of avoiding multifariousness. Now, if the Court were to go into the question of damage to every farmer, what was paid every farmer, and what his crops [fol. 534] were, we would have an impossibly unwieldly record. In our judgment it is not relevant and material to this controversy. You may have your exception.

Mr. Spears: If Your Honor please——

Judge Allen: Based on the statement of counsel the court rules that testimony of this kind is irrelevant and immaterial and you may have your exception.

Mr. Spears: If your Honor please, I don't want to be persistent, but I am not trying to prove the value of the land or the damage to the farmer.

Judge Allen: Well, you have stated what you expect to prove.

Mr. Spears: I am trying to prove that the public welfare——

Judge Allen: The Court considers that this testimony, on the statement of counsel, is irrelevant and immaterial, and you may have your exception. I might say that the Court does not simply consider these questions at the moment. The court is considering all of these questions all of the time, so that it is not necessary to stop and have an argument with counsel for an hour or two over every point that arises. The ruling will stand. Your statement stands as your offer to prove.

Mr. Spears: We except to your Honor's ruling, and let the statement stand as the offer to prove. I have a number of witnesses, the least I could get along with in this matter, —I have three teams out of two men each for about 15 or 20 days, and I want to let this witness' offer stand for the three——

Mr. R. T. Jackson: May we have an arrangement whereby if counsel is agreeable we submit an offer to prove with a list of the witnesses, without going through the formality of calling them to stand, and a brief statement of what they would prove, and then let that stand as the offer and the ruling on it?

Mr. Fly: We will accept the offer of proof, and the pur-

pose of the testimony as previously stated by counsel in this instance, as being typical of the other instances.

Mr. R. T. Jackson: Well, I don't think that is adequate. We have a number of witnesses.

Judge Allen: Mr. Spears, you may dictate the names of the witnesses you wish, who you claim support this proposition?

[fol. 535] Mr. Spears: Mr. Davis, Mr. Kinney, H. S. Sharp.

Judge Allen: Do you want to give the address of each witness?

Mr. Spears: Mr. Davis, Chattanooga; Mr. Kinney, Sale Creek.

Judge Allen: And their initials?

Mr. Spears: Mr. M. E. Shields, Bradley County. Now I want to make the same offer as to the Guntersville Basin. Mr. Chandler, will you come around?

Mr. Fly: We will stipulate that he has made it. Will you list the witnesses, Mr. Spears?

Mr. Spears: Yes, sir.

Mr. Fly: If that is satisfactory.

Mr. Spears: Mr. Eric Alsobrook, D. W. Culbert, Henry Kennamer, A. G. Chandler, J. H. Hennegar, M. F. Derrick, and J. D. Robbins.

Judge Allen: The same ruling as to these witnesses.

Mr. Spears: I want to state what they would prove. These witnesses, if allowed to testify, would prove that they estimated the corn standing on 22,000 to——

Judge Allen: Now Mr. Spears, I remind you that the Court asked counsel to be careful with reference to their offers of proof. We don't feel that when we have held matters are incompetent or irrelevant that the record should be cumbered with pages and pages of offers to prove. Does the Authority concede that these witnesses would testify substantially the same with reference to the Guntersville Dam?

Mr. Fly: As has been previously stated by counsel as to the Chickamauga Dam. We will stipulate as to all of them.

Mr. Spears: Will you stipulate that in the Guntersville Reservoir, that the crop, including corn, hay, and seed cotton is valued at $829,650.00?

Mr. R. T. Jackson: Annually destroyed.

Mr. Fly: We have made our stipulation and concession, your Honor.

Mr. Spears: You agree that they would, if allowed to testify, prove, or testify to that effect?

[fol. 536] Mr. Fly: No, no.

Judge Allen: Now, Mr. Spears, the Court will permit the record to show that these witnesses would testify substantially the same with reference to the Guntersville Dam, or to any other dam you want to show, as you have offered to prove with reference to the Chickamauga Dam, and your offer to prove will be confined to that. If you want to write it out and submit it to the Court the Court will under Equity rule——

Mr. Spears: If your Honor please, there it is, right there, it is just three lines (indicating).

Judge Allen: The Court thinks that it has made plain that if the Complainants show that they fall into substantially the same category, and if substantially the same facts are shown with reference to what the complainants claim as their legal rights in this case, the Court feels that the complainants have been permitted to show their case. Now, are you willing to make an offer to prove that these gentlemen, if permitted to testify, would testify to substantially the same facts with reference to the Guntersville Dam as you want to show with reference to Chickamauga?

Mr. Spears: They did not testify to that.

Judge Allen: Suppose you make out your offer to prove and submit to the Court, and under equity rule 46 we will see that the record presents that clearly.

Mr. Spears: Now——

Judge Allen: The Court has ruled. The ruling of the Court will stand.

Mr. Spears: I understand that. I want to prove by these other witnesses also—Mr. Davis, come back to the stand. I want to ask one more question.

Mr. Fly: Can you state it?

Judge Allen: What is the question you want to ask?

Mr. Spears: I want to ask about the 1917 flood, if it was not practically coincidental in a great many respects with the normal lake line they will have at Chickamauga when completed.

Judge Martin: That is immaterial.

Judge Allen: The Court suggests, Mr. Spears, that you write out what you offer to prove and submit that to the Court and the Court will, under equity rule 46, make a clear statement of the question presented.

[fol. 537] Mr. Spears: I have got the same thing I want to prove with the Alabama witnesses with reference to Guntersville Dam.

Judge Allen: When we receive your statement, the Court, under equity rule 46, will make your offer to prove. You may proceed with the case.

Mr. R. T. Jackson: I am told, if your Honor please, there is at least in part a similar offer to be made with reference to the Wilson and Pickwick Dams. I assume that can be included in this offer without additional formality.

Judge Allen: Yes. The Court requests the offer to prove be submitted to the Court."

(The witness was excused.)

(At a subsequent session of the Court, counsel for complainants submitted the following written offer of proof of what these witnesses would have testified if they had been permitted:)

"Plaintiffs offered witnesses T. J. Davis, Jack Kenney and H. S. Sharp, who after qualifying to speak, as to the value of crops in the Chickamauga basin to be covered when Chickamauga Dam is completed, would have testified had they been permitted that the crops standing on the land in November, 1937, within the basin to be covered, were of a value in excess of $407,000, a fair average annual value.

That the TVA stakes at elevation 683, now on the land, showing the normal pool level of the lake after completion of the dam was practically coincidental with the pool level of the 1917 flood.

Plaintiffs also offered qualified witnesses, to wit: Eric Alsobrook, D. W. Culbert, Henry Kennemer, A. G. Chandler, J. A. Hennegar, M. F. Derrick, and J. D. Robinson, who had they been allowed to testify, would have testified that the crops standing in the Guntersville basin, to be covered upon completion of the Guntersville Dam, were of an average annual value in excess of $829,000, and that the stakes showing the pool level of the Guntersville lake upon completion of the dam covers more land than was covered by the 1917 flood.

Plaintiffs also offer to show by qualified witness A. E. Jackson, had he been allowed to testify, that the average

[fol. 538] annual crop produced in the Pickwick basin on the land normally cultivated would have been valued in excess of $890,000.

That the average annual crop produced on the land normally cultivated in the Wheeler basin was in excess of $1,000,000."

(At a later stage of the trial, the following occurred:)

"Judge Allen: The court has condensed somewhat the offer to prove with reference to the testimony of the farmers who appeared in court as witnesses, and whose testimony was excluded as being irrelevant and immaterial. The Court might say that it has tried to indicate to counsel how these offers to prove might be condensed and made more succinct. This offer to prove is given in connection with the testimony offered for the witnesses named.

Complainants offered as witnesses T. J. Davis, Jack Kenney and H. S. Sharp, who, if permitted to testify, would have testified that the crops standing on the land in November, 1937, within the basin to be covered when Chickamauga Dam is completed were of an average annual value in excess of $407,000, and that the TVA stakes show that the normal pool level of the lake after completion of the dam will practically coincide with the pool level of the 1917 flood.

Plaintiffs also offered as witnesses Erie Alsobrook, D. W. Culbert, Henry Kennemer, A. G. Chandler, J. A. Hennegar, M. F. Derrick, and J. D. Robinson, who, if they had been permitted to testify, would have given similar testimony greater as to amount with reference to the average annual value of the crops standing in the Guntersville basin to be covered on completion of the Guntersville Dam, and similar testimony concerning the pool level of the Guntersville Lake.

Complainants offered as a witness A. E. Jackson who, had he been allowed to testify, would have given similar testimony, greater in amount as to the average annual value of the annual crops normally produced on the lake in the Pickwick and Wheeler basins.

Complainants may have their exception to the exclusion of this testimony, which is excluded by the Court upon the ground that it is immaterial and irrelevant to the issue presented in this controversy."

(Complainants further took exception to the revision by the Court of the written offer of proof submitted to the Court and had their written offer of proof copied into the record.)

[fol. 539] PHILIP SPORN was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside at Brooklyn, New York, and am 41 years of age. I am Vice President and Chief Engineer of the American Gas & Electric Company and Chief Engineer of the Appalachian Electric Power Company, the Kentucky-West Virginia Power Company, Inc., and the Kingsport Utilities, Inc. I was educated at Columbia University and there received the degree of Electrical Engineer. Subsequent to graduation, I took post graduate work there. For about a year and a half, I engaged in manufacturing engineering, after which I entered the field of public utility engineering and have been engaged in that field ever since. I entered the employ of the American Gas & Electric Company in 1920. Since that time, I have successively held the positions of project engineer, transmission and distribution engineer, plant engineer and assistant electric engineer. In 1927, I was made chief electric engineer of the American Gas & Electric Company and all its subsidiary companies. In 1932, I was made engineer of the American Gas & Electric Company and all its subsidiary companies. In 1934, I was made vice president and chief engineer of the American Gas & Electric Company and chief engineer of all its subsidiary companies.

In the 18 years that I have been with the American Gas & Electric Company, I have been intimately connected and I have had, for a large part of the time, direct supervision over the planning, construction and operation of the transmission, distribution and generating facilities of all of the [fol. 540] properties, which include one of the largest inter connected systems in the United States and one which accounts for approximately 5% of the central station energy generated in the United States. During that time, I have done a great deal of original work in the field of protection, transmission, distribution and generation. I have written

scores of papers, articles, and monographs, and presented them before the leading technical societies of the United States and abroad. And particularly in the last years, I have done a great deal of work on the problem of development of power supply for inter-connected systems. As chief engineer of the Appalachian Electric Power Company, the Kentucky-West Virginia Power Company and the Kingsport Utilities, I have had direct supervision of the planning and construction and the subsequent, following operations to assure satisfactory performance of their distribution, transmission and generating facilities. I have carried out this work for all of these companies ever since the formation of the Appalachian Electric Power Company in 1926, and for some of the companies dating back prior to that time.

I have made a recent study of the adequacy of the facilities of the Appalachian Electric Power Company, the Kingsport Utilities and the Kentucky-West Virginia Power Company in regard to the ability of these companies' transmission and generating facilities to carry their loads, at the present time and in the immediate future. By adequacy of facilities, I mean the availability in sufficient quantity of distribution, transmission and generation facilities at all times to assure ability to take care of the immediate loads and any reasonably expected increase in load with a sufficient margin to assure the supplying under all these [fol. 541] conditions of proper service. I think it is important to point out, however, that so far as generation is concerned, the planning is all pointed towards carrying what in general is a peak load that may occur for one hour in the year and never occur again in that particular year, and that, if under the conditions when the load comes on you are able to carry that load with an adequate margin of reserve, you can definitely state under those conditions you have had adequate facilities to take care of the load.

It is very definitely a good utility practice to have such surplus capacity as to permit the building of increased facilities should they be required before the existing facilities are overtaxed. That is, the proper planning of facilities takes into account the time factor needed to bring new facilities into operation, and, therefore, provides enough, but not much more than enough, in the way of reserve to take care of this situation. If excess reserves were provided for over and beyond reasonable requirements, the net

effect, of course, would be that the company would have investments that would not be productive, or if any attempt were made in the price charged to consumers to provide enough to carry these non-productive or non-used facilities, then it would result in cost to the public for services above what they normally would be. Also, facilities in excess of what is normally needed mean in many cases very much higher operating costs, because facilities operating at less than substantially full load are in general facilities not operated at the most economic point.

In making my study, we have given primary consideration to our generation facilities, and in so far as distribution and transmission facilities have an effect on the planning [fol. 542] and the functioning of our generating facilities, these have been considered also. We very definitely gave weight in our studies to the relationship that exists between the facilities of these three complainant companies about which we have made this study. The facilities of these three companies are very closely interconnected, as stated in testimony and an exhibit previously presented in this Court. Complainants' Exhibit 49 definitely shows the interconnection of the generating facilities and of the load centers of these three companies by very extensive high tension transmission lines and the integration of all these facilities into a single coordinated system. The existence of these integrated facilities, therefore, makes possible the planning of the generation requirements and of the power supply requirements of the three companies on a unified basis and thus offers considerable economies in the way of facilities.

These facilities which I have shown as physically interconnected on Exhibit 49 are operated together as a unit. All the load dispatching, that is the allocation of loads between the various generating stations and the determination of what amount of load will be carried on any particular unit or set of units, is all handled from a central dispatching point. The result of that unified operation is that these three companies are supplied in effect from a common pool, and I might add there is another series of economies that result from that. For one thing, in having the common system, it makes for closer coordination of the steam and hydro facilities. It makes possible also the coordination of the maintenance schedules to the end that at all times there is made possible the obtaining of the power supply of the three companies in the most economical manner.

[fols. 543-544] In the operation of the facilities of these three companies, there is also a relationship to the operation of the facilities of other companies. These three companies are interconnected with a group of affiliated companies in Ohio, Indiana and Michigan, and with non-affiliated companies in Tennessee and North Carolina. With each of these groups, close coordination is carried out, again to the end that the utmost that can be done in the way of obtaining a supply of power in the most economical manner at all times obtains.

In making a study of the loads that would be imposed on the facilities of the three companies, I have followed these methods: first, I have given consideration to the fact that I have had a very close contact and intimate familiarity with the operating history of each of these companies, going [fol. 545] back prior to the formation of the Appalachian Electric Power Company, secondly, I have maintained a very intimate contact with the plans of expansion, both immediate and prospective, of all of our major industrial power users, and it is necessary here to point out that in the case of these three companies the industrial use accounts for something like 85% of the total energy used on the system, and third, I have given weight to my knowledge of what is being done in the way of load building and the development of heavy current consuming devices, such as ranges, hot water heaters and similar devices in our domestic field. I have also considered the effect on our load of our extensive rural programs. Then, again too, I have checked very carefully the history of similar studies that were made years ago, that have passed into history, and have been able to take advantage of the knowledge so gained as upon production and actual performance, and I found that when all of these factors were taken into consideration, it was possible to project a long range, load curve growth, and heretofore, at any rate, we have found that utilizing such a curve we have been able to provide all the necessary facilities without any danger of being caught short.

I have described the factors that I considered in determining the ability of the facilities of these companies to carry the loads predicted by me within the future. That is, I have found that taking all these factors that I have enumerated into consideration, developing them into a long range load prediction curve, that it was possible to use that as a basis for determining the adequacy of existing facilities,

that is, determining what load would have to be carried by existing facilities. For this particular purpose, I have [fol. 546] given attention to the ten years starting with 1928 and ending with the year 1937, and I have projected the study and estimates of load predictions up to 1941.

The table (offered and received in evidence as Complainants' Exhibit 367) shows the combined one-hour peaks by months for the period shown in the table. It is to be noted that the pre-depression peak, which occurred in 1930 and amounted to 280,600 kilowatts, was not equalled or exceeded until 1935. The 1936 peak was in excess of that, but subsequent to that time, the load has receded and it has receded sharply at the present time.

I used data of the sort appearing on Complainants' Exhibit 367, as well as a great deal of other data, to project what I call the long time load growth, and I have prepared a graph showing that very thing.

On the graph (offered and received in evidence as Complainants' Exhibit 368) I have plotted in Curve A, the actual one-hour peaks as shown previously in tabulation form in Complainants' Exhibit 367. Based upon a study of this data and the data previously referred to, I have projected the long time load growth curve or the long range forecast curve shown as Curve "B". "A" is taken from the actual records. "B", in so far as it goes into the future, is my best estimate, but carefully made estimate, of the long time load trend in the future of the three companies. Within the limits of the period required to supply additional facilities, this is the same method which is customarily used in carrying on the utility business in determining when and how additional facilities should be provided. It is as near a single guide as we have been able to obtain, although we obviously use other guides.

[fol. 547] The combined system peak of these three companies in November, 1937, was 336,455 kilowatts, but the last peak for which we have any record which occurred on Tuesday, November 30, was actually only 312,000 kilowatts, and that is some 10% below the peak of 1936. I think it is interesting to note that the long range forecast would have given a load here of approximately 360,000 to 370,000 kilowatts as against the actual November peak of 310,000 kilowatts. My forecast of load as reflected in Complainants' Exhibit 368 does not take into account any possible loss of load by reason of a competitive power supply.

The tabulation (offered and received in evidence as Complainants' Exhibit 369) reflects the results of my study of the load carrying capacity of these three companies and shows the relationship between capacity available on the system and actual load that had to be carried, or in the case of the years 1938 to 1941, the load predicted and, therefore, is an index of the ability of the system to carry that load or an index of the adequacy of the facilities. In Column 1, we show the name plate rating for the various years, and in this following column, I show the firm capacity for a dry year basis. In the next column, I have shown the capacity that could be carried with the facilities available on a dry hydro year, and in Column 4, the capacity available from interconnections. Columns 5 and 6 are repetitions of similar data shown previously in Exhibit 367. Referring to Column 4 of Exhibit 369, the capacity coming from our own affiliated companies for the years 1928 and 1929 was 25,000 kilowatts and for the years 1930 to 1941, 40,000 kilowatts.

Examination by the Court:

"Name plate rating" means the capacity or is a summation of the capacities indicated in manufacturers' name [fol. 548] plates placed in each case on the generating facilities installed in the various plants. The capacity that that equipment purports to have as set out by the name plate is generally known as the name plate rating or name plate capacity as distinguished from the actual.

Direct examination continued:

Complainants' Exhibit 369 shows from 1928 to 1941 the combined loads and generating capacities of the three companies. That is, for the years shown where data is available, it shows the actual results. In the case of Columns 1, 2, and 3, it recites the capacity for the years 1938 to 1941 that is actually under construction at the present time. In the case of the last column it is, of course, as previously testified, my best judgment as to the loads that the system will be required to carry. Referring to the increase in 1938 and thereafter as to capacity, it represents the time when other plants are to come into operation.

The graph (offered and received in evidence as Complainants' Exhibit 370) shows curves A and B, which are exactly

the same as curves A and B on Complainants' Exhibit 368, but which have been included here for convenience of comparison. Curve C represents the firm combined system capacity on a dry year basis at the time of maximum system demand. Curve D shows the combined system capacity again on the dry year basis, including, however, capacity available to the three complainant companies from interconnections, but taking out of consideration the largest unit on the system, assumed to be out of service for maintenance or repairs. In all of my estimates of adequacy, I have allowed for taking out a unit. That is, to really get a clear and concise picture of the adequacy situation, all that has [fol. 549] to be done is to compare the curves A or B with curves C or D. The margin, for example, between curves A or B and Curve C, represents the margin available to the system in excess of the actual load that the system has to carry in the case of curve A, or the long range predicted load in the case of curve B. For the years 1938 to 1941, that is all we have available, of course. Curve C, however, assumes that we always operate in our normal manner, which means that we carry on our maintenance at a time when our system peak is down and during a period when hydro is plentiful. I have assumed the same amount of capacity available from interconnections during the years subsequent to 1937 as has been available in the year 1937. Curve D and the margin between it and the curves A or B is the measure of available margin between actual load and long time predicted load, and the capacity available to the system of the three companies under the unfavorable conditions of our largest unit out, by taking advantage of the capacity available to the system from its interconnections. It is apparent from this that that margin is actually greater than the corresponding margin between curve C and either curves B or A, which means, of course, that the capacity available to the system from those interconnections is in excess of the capacity of any of its largest units.

It is generally considered very conservative to make estimates on the basis of the largest unit out and we have found it very conservative ourselves. Never since we have operated these companies have they failed to meet their customers' load requirements. It has never been necessary for any of these companies to refuse additional business due to lack of facilities since they have been under our operation and supervision.

[fol. 550] On the basis of the studies that I have described, the present facilities of these companies are in my opinion entirely adequate to meet the present and immediate future loads on the system, and I think the data submitted as regards existing loads prove that. As regards loads in the immediate future, it is my considered opinion that with the capacity that we have actually under way, that is actually being constructed at the present time, there is not any question but that we will be able to take care of that adequately, with adequate margin, all our future requirements. We have carried this up to 1941. Within that period it would permit construction of additional facilities should any change require that. It is generally considered, and we have found that true by experience, I have myself, that working leisurely it is possible to add steam generating facilities in a period not to exceed about 20 months. It is possible, however, if necessary, to add facilities like that in less time, if there is reason for doing so.

Provided the proper interpretation is made of dependable capacity, firm capacity and dependable capacity are exactly the same. My own notion of what dependable capacity means is capacity that is available to carry the load that is assigned to that capacity in the system load curve at the time of system peak. That is what I mean by firm capacity on Complainants' Exhibit 369.

I am familiar with the values of dependable capacities as they are reported by my Company to the Federal Power Commission. The values furnished to the Federal Power Commission do not agree with the values of firm capacity used in Exhibit 369, Column 2. Each in its own way is correct. I have already stated what my own notion of firm [fol. 551] or dependable capacity is, but at the time the Federal Power Commission sent out its requests for information on system capacities, there was considerable confusion as to the meaning of the term. Incidentally, it ought to be pointed out that although I am familiar with a good deal of this information, it was not prepared under my direction. It is rather a statistical report. At any rate, at the time this report was called for, a definition was adopted for dependable capacity in the case of hydro capacity as "that capacity which the plants could carry under minimum flow under a 25% weekly load factor." That is not the load factor at which our hydro is operated. We operate these hydros in many cases at load factors consid-

ably below that, in many cases at load factors as low as one-half of that. It is apparent that the lower the load factor, that is for a given amount of water, the fewer the hours the capacity is operated, and the larger the load that would be able to be carried for those hours.

In planning for our capacity and in determining whether we need any additional capacity, we definitely do not use the Federal Power Commission data for that purpose. I have already stated that that is primarily a statistical report. The weakness of that report is the fact that it puts each plant on an isolated basis and on its own, so to speak, and in the dependable capacity rating placed in the report on each plant, all of the negative factors that would have an influence on reducing the capacity of each plant are put in. If this information were used directly in the determination of the capacity of the combined plants of the system operating as a practical operating system, we would be giving effect to all of the negative or reducing factors regardless of the fact of whether or not all these factors can or do occur simultaneously. As a matter of fact, we have ample operating experience and I know that many of those [fol. 552] factors do not occur simultaneously, and therefore we have not treated those factors as of simultaneous incidence in preparing column 2 on Exhibit 369. I have, however, given consideration in that column to all of the factors that our experience has shown are likely to have to be considered at any particular time and particularly at the time of peak load.

The facilities of these three companies have been designed and constructed to provide for increment expansion. That is a very definitely economical development of facilities. Increment expansion is provided in anticipation of load growths.

"Q. What, if any, effect, would be produced upon the company if a competitor took over all of that increment business expansion?

A. Well, it very definitely——

Judge Allen: The Court thinks it can assume what the effect would be.

Mr. R. T. Jackson: I think that is right, your Honor. We just wanted to have the record show that we have expert testimony as to the damages that would result from that line.

Judge Allen: The Court does not think it needs expert

testimony on that. The Court thinks a layman understands that, and we think there is proof in this record that the presence in the territory of a competitor with rates substantially lower for the classes of service than the complainants charge, would have a very definite effect.

Mr. R. T. Jackson: I was approaching the element of property value, which your Honors suggest is unnecessary to go into, as I understand.

Judge Allen: We consider it cumulative, that it has already been shown and is not necessary.

Mr. R. T. Jackson: I might just state we offer to prove, that if permitted to testify, the witness would state it would damage the increase in facilities of the company."

[fol. 553] Referring to Complainants' Exhibit 49, which shows the geographical relation between the properties and operating areas of these three complainant companies to Norris Dam of the TVA, I am familiar with some phases of what has been sometimes called the TVA Unified Plan. Assuming that that plan were executed so as to generate or provide for the generation of a large block of power with the dams interconnected by high tension transmission lines, it would be technically feasible to transmit the power from that grid system into the territories in which these three companies operate for distribution; and it is being done, of course. For example, in the case of the line from Boulder Dam to Los Angeles, it is being transmitted a distance of 270 miles. It is technically feasible to transmit the power for a distance of 250 miles. In order to transmit power from such a pool for such a distance, that is, 250 miles, it is not necessary to have intermediate feeding into the transmission line, or relaying.

Cross-examination:

I stated that the figures which I have used as the firm generating capacity were different from the figures reported to the Federal Power Commission and I explained the reason why. I have not a summation of those figures with me, but I believe I have enough data to give those figures plant by plant. The firm capacity I have shown in my Exhibit 369 for 1933 is 317,100 kilowatts and the reported capacity to the Federal Power Commission was 308,040 kilowatts.

I have shown on Complainants' Exhibit 369 that in 1937 we are relying upon a capacity available from interconnections of 67,000 kilowatts. Some of it is in contract form [fol. 2554] and the other is by operating agreements. In every case that capacity is available to the system if we need it at the time the systems need it and we have obtained it as a matter of record. Under our definition of firm power, it is firm power; that is, it is available to meet the peak demand and applies to the load curve at the time of system peak at the place which is assigned to that capacity in the load curve.

The companies with which we have these contracts are one with the Ohio Power Company, one with the Carolina Power & Light Company and the third with the Tennessee Eastern Power & Light Company. The Carolina contract was a 5-year contract from 1934, I believe, subject to automatic renewal from year to year. The Ohio Power Company contract was made some time in 1933 and goes on from year to year for no definite period, goes on from year to year automatically unless terminated by either group on proper notice. The Tennessee Eastern contract is a 5-year contract that went into effect, I believe, August 1, 1937, and provides for continuous renewal thereafter.

I wrote an article published in the Bulletin of the Edison Electric Institute under date of June, 1937, which contains the following:

"In 1927 the same Appalachian Electric Power Company made an interconnection with the Carolina Power & Light Company at Kingsport, Tennessee, and at the Virginia-North Carolina State Line, near Roxboro, North Carolina.

This materially strengthened both systems, permitted economy interchange between the two systems, one of which was predominantly hydro and the other steam, and for a period when faced with a shortage of capacity allowed the Appalachian Company to purchase firm capacity from the Carolina Company.

During the depression years a new arrangement involving no firm capacity was developed, which continues in force. This arrangement provided mutual back-up capacity, and made available large amounts of dump hydro for replacing steam generation on the Appalachian system."

[fol. 555] The facts stated in the quotation, so far as they go, are correct, but they are not all the facts. The testimony

which I have given here with regard to 25,000 kilowatts availability is a definite part of the agreement referred to in this article as the depression agreement. The statement that no firm capacity is involved in that agreement means that we are not obligated to take capacity regardless of whether we need it or not, but they are obligated to give it to us. We in turn are obligated to do other things for them in compensation for that. That involves the interchange of power from our system to theirs. It means it involves the obligation on our part to give them power in excess of what they give us on our peak, during our off-peak hours, to enable them to better coordinate their hydro facilities with our steam facilities.

When I speak of an automatic renewal of one of these contracts, I believe the terms are that either party can cancel the contract on one year's notice. I stated that in figuring our future capacity on my exhibits I have assumed that we will have the same capacity available from interconnections as exist now in 1937. About 8% of the total firm capacity of our companies which I have estimated for 1941 is represented by the capacity from the interconnection with companies that are not complainants in this case.

The figures on Complainants' Exhibit 367 showing a combined net peak demand for the three companies do not include any demand from interconnected companies. There would have to be added for varying years different amounts. Our experience has shown that that demand, as shown on these exhibits, would not change the figures as to our combined net peak demands, and I have not found that these demands have any material probability of occurring at the same time when we have our annual peak demand. It is [fol. 556] right that we have included in capacity the amount that we can get from the other companies interconnected with our system but have excluded the amount that we have to supply under the same contracts from our demand. And it is quite sound. For example, in the case of the Carolina Power & Light Company, we have no obligation to give them capacity except in off-peak periods, but their obligation to us is to give it to us on our peak. That is a very sound arrangement, incidentally. The arrangement with the Ohio Power Company, for example is not the same, but our experience in general has not been that the peaks occur at the same time. We are obligated to deliver power under

that contract. If it should happen that they would need capacity, then we would be obligated to help them over their peak. As to the Tennessee Eastern contract that is a very small amount that we are obligated to deliver, only 2,000 kilowatts.

It is not true that in order to sell power at the end of a transmission line as long as 250 miles, that line has either got to be very extra heavy duty type of line or else you have got to have generation at the terminal end of that line. You might have to have two circuits to supply dependable service, but that is entirely practical and feasible.

An article published by me in the Electrical World, under date of June 5, 1937, contains the following:

"In all of this, it ought to be pointed out that no long distance transmission of power is involved. Those who have closely studied the problem of transmission and thoroughly understand the economics of power supply, know that there is no sound economics in long-distance transmission of power. On the American Gas & Electric Company's system for example, the actual mean weighted distance of transmission under normal conditions in the nine states over which the system extends is less than 60 miles."

That statement is correct, but it has nothing to do with the feasibility of transmitting power say 250 miles. It [fol. 557] means it is not done on our system where economics are the guiding force, but it does not follow that every transmission is made with regard to economics.

Redirect examination:

The American Gas & Electric Company system is very definitely a steam system, and in the case of a steam system you have, of course, full control, or substantially that, and that is the way you locate your plants. If the system is developed properly, with proper regard to economics, the plants are located so as to provide for a minimum of transmission. That is what we have done. There is a totally different set of conditions, as to length of transmission, where you have a system that is wholly hydro. You develop the hydro where it is available and you transmit as far as you have to, and can go, or might be forced to go to find a market.

operating arrangement which is a firm obligation on their part to deliver to us firm power.

[fol. 572] "Judge Allen: • • • We are very much in hopes that the case can be concluded by Christmas time, that is, before we separate for Christmas, and we do think with the cooperation you have already shown and the further cooperation wherever possible, the Court hopes if it is possible, sometimes where it does not seem to be, that this case ought to be finished prior to Christmas.

Judge Martin: That schedule allows complainants four weeks in taking proof and defendants two. Speaking individually, I think that is quite adequate an allotment of time, and that the proof ought to be completed by the 23rd of December. Then I understand that you wanted time between the conclusion of proof and the presentation of proposed findings of fact and conclusions of law. But it does seem to me, speaking individually, six weeks full time for the presentation of proof is adequate.

Mr. R. T. Jackson: We will try to make it if we can. Of course, I have never found it possible to measure the proof merely by the calendar week.

Judge Allen: Well, it is the feeling of the whole bench that the case ought to be able to be completed within that time, bearing in mind as the Court has indicate before, that this bill is multifarious unless the plaintiffs fall into a common category. I think bearing that in mind that some of the proof is rather cumulative and ought to be either stipulated, or perhaps eliminated.

Mr. R. T. Jackson: I want, if the Court will permit me to say at this point, since the question of multifariousness has been mentioned from time to time, when and as it becomes material I want to strongly urge that any issue of fact which determines or bears upon the validity or constitutionality of these defendants' acts could not be multifarious, because whatever determines the validity or constitutionality of this utility, Federal utility, is something that would have to be considered even if each of the cases had been filed individually and the Court had been clogged with 18 separate suits.

Judge Allen: Of course, Mr. Jackson, very many of these acts do fall into a common category, and many of these circumstances, many of the situations fall into a common category. Is that not so?

Mr. R. T. Jackson: That is true. I am not going to argue the matter. I merely want to make the observation that there has been mentioned from time to time the matter of multifariousness.

[fol. 573] Judge Martin: If they do not fall into the common category, it would be multifarious.

Mr. R. T. Jackson: I am prepared to argue that at length and I have done that several times heretofore. I have not considered that issue to be involved since the Circuit Court of Appeals.

Judge Martin: Applying the decision of the Circuit Court of Appeals which I am attempting to do, I think you must be in the same boat with all the complainants, otherwise you would be in a multifarious situation, if I rightly read the opinion.

Mr. R. T. Jackson: I think the most important question in this case is the validity of the Tennessee Valley Authority Act. That is common to every plaintiff, and that is the point I make, anything that bears on that cannot be multifarious.

Judge Allen: Proceed."

Cross-examination continued:

In discussing the South Carolina contract, I said 4,000 kilowatts. I have not got a copy of that contract here, but I think it was executed somewhere about January 1, 1937. The demand figures that I have shown on this chart are the demands incidental to the territorial supply, the firm supply of our customers in the area in which we serve, and do not include the demands which might be reflected by reason of interconnections which are on a when and if available basis. We are not under an obligation to deliver power in return for power we receive from the Florida Power Corporation or the South Carolina Gas & Electric Company.

With respect to the balance of the 50,000 kilowatts, we have made a further and another arrangement with the South Carolina Electric & Gas Company whereby the surplus energy that is available upon our system in quantities during the early part of the year may be moved into the Saluda reservoir on their system and stored. The increase which becomes available to the South Carolina Electric & [fol. 574] Gas Company by reason of the movement of this energy is made available to us in the Fall of the year should we require it. That is firm energy. As long as we are able

In hydro practically all of the costs are fixed, and once you have developed a hydro plant, you literally have a terrific pressure exerted on you to find a market and you can go much further and yet after paying for the cost of transmission, be better off than you would be if you did not go to find that market but allowed the power to go to waste. But that don't mean that that long distance that you go is necessarily economical.

(The witness was excused.)

[fol. 558] WALTER M. ROBINSON was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 43 years old, reside in Nashville and am in the investment business, the senior partner in the firm of Robinson, Webster and Gibson. The partnership is engaged in the general distribution of investment securities, underwriters of small industrial and corporate issues and municipal bonds, and is a member of practically all of the national distributing syndicates. I have been in the investment security business in Nashville since 1920, 17 years. We were a party to most of the underwriting syndicates for the distribution of the issues which are underwritten and distributed nationally. Last year about 40% of our volume was in public utility securities. We handle or deal particularly in securities that might be called local or quasi local-securities; that is, securities of The Tennessee Electric Power Company, Nashville Gas & Heating Company, Nashville and Decatur Railroad and other local issues. It has been a part of my business to keep myself informed about the conditions of the companies whose securities we were handling and about the markets and financial conditions generally.

"Q. How have you done that, to what extent?

Mr. O'Brian: If the Court please it is apparent that this testimony, from the questions already elicited, is in some way directed to some question of damage in this case. I desire to object at this time to any evidence being offered as to security values through an expert witness. It is obvious

that with the number of complainants that we have in this case there can be no similarity or basic similarity among them, and it is also evident that facts of this character going to damage would be speculative, it would be a matter of opinion, they would be remote in application, and would be irrelevant and immaterial in this case. It is proof [fol. 559] offered through an expert witness testifying as to the market values. It is offered as not direct evidence, but indirect evidence of actual value and actual damage to any particular complainant as distinguished from damage to the owner of a stock in that company. The value of a stock is not a matter of damage, an element of damage to a corporation. It may be an element of damage under certain circumstances to the owner of the stock. Therefore, for all of these reasons we object to evidence of this character being offered as irrelevant and immaterial and remote and speculative, and not the proper form of evidence on which to predicate damage.

Judge Allen: Just what do you expect to prove by this witness?

Mr. Trabue: Why I expect to prove, may it please your honors, that the investment quality of the Tennessee Electric Power Company bonds, judged by its statistical record, is good, and that by reason of this good statistical record, and judged by that alone, it would be able to refinance its outstanding bonds which are now at 5 and 6 per cent, for say 3¾ per cent, and save for that company something like $800,000 a year. And that in consequence of the TVA competition, and threat of competition, it is unable to refinance its bonds.

Mr. O'Brian: May it please the Court, taking this statement as an offer of proof, it is perfectly evident a matter of common knowledge of which the Court will take cognizance, that the elements affecting the security values are very numerous, that a vast number of questions have to be weighed in determining whether a quotation, for example, this morning, is any proper reflection of the value of the security—a study of the existing money market, the study of the conditions, the desire of a holder to sell, the question of whether banks are holding stocks as collateral and attempt suddenly to liquidate them. There are a thousand elements of which the Court as a matter of common knowledge may

be aware, affect the value of securities. Certainly under these circumstances evidence of the opinion of a witness as to the precise degree of effect which a competitor's activities may have upon the value of the security cannot be competent or relevant evidence. On these grounds, we object to its reception.

Mr. Trabue: May it please your Honor, the only objection I had at all anticipated would be to this, would be on account of your Honor's suggestion a little while ago that the Court would take judicial cognizance of the fact that competition would injure and damage the business and the property of the other competitor. Now, one form of injury, may it please your Honors, is to so prejudice its securities, issued at a high interest rate, that it cannot get the benefit that some other companies in similar situations are getting by [fol. 560] reason of the low money market, and save $800,000 a year for the company, not the stockholders.

Judge Allen: On the statement of counsel, the Court considers that the evidence proffered is irrelevant and immaterial. It will be excluded and you may have your exception. The statement will be taken as the offer of proof.

Mr. Trabue: May I make one further offer in a little bit more considered language, which I will do right now if your Honor will permit.

Judge Allen: You may, but submit it to the Court—or if you want——

Mr. Trabue: It was intended to be shown and proven by this witness that upon the statistical record of the Tennessee Electric Power Company, its bonds are all a good investment quality, and the company would be able to refund them from their present 5 and 6 per cent rates to a lower rate of say, 3¾ per cent, and save some $800,000 annually to the company, but that in consequence of the competition of the Tennessee Valley Authority and the threat of competition by the Tennessee Valley Authority, its 5 and 6 per cent bonds average the very low value of 85, and it cannot refinance at lower rates.

Judge Allen: I might say the Court has assumed the existence of damages from the presence of such competition as is shown by this record. To go into such facts as are offered and to examine into the various factors which might bear upon and perhaps cooperate in causing the fall in value of the security, in the judgment of the Court, would

lead us into endless ramifications, which certainly is totally unnecessary for the plaintiffs, in view of the assumptions made by the Court."

(The witness was excused.)

G. H. MIDDLEMISS was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

My occupation is Manager of Production & Transmission for The Commonwealth & Southern Corporation of New York. My residence is in Birmingham, Alabama and that is my headquarters. My duties with The Commonwealth & [fol. 561] Southern Corporation of New York involve the coordination of the generating facilities for the maximum capabilities and the lowest cost of generation for the entire system of the Commonwealth & Southern in the South. Of course, continual studies are required in this matter and aside from these duties I understake special work with problems in connection with operations and economics.

I graduated from the University of California in 1910 with the degree of electrical engineer and entered the employ of the Pacific Gas & Electric Company at Sacramento, California, where extensive underground construction was in progress. I became responsible for design and construction activities and later undertook duties in connection with the rehabilitation of the overhead distribution systems. In 1917 I entered the employ of the Alabama Power Company with headquarters in Birmingham, as Superintendent of Maintenance, having the responsibility for the operation and maintenance of all transmission and distribution facilities from the switchboards of the generating plants to the ultimate consumers. The Company was expanding rapidly in that time and I became involved in certain phases of construction. In about 1928 I became Vice President of the Southeastern Engineering Company, a service company for the Southeastern Power & Light Company, which was the predecessor of The Commonwealth & Southern Corporation to these properties. My position caused me to contact all companies of the South in that group and to assist in a

supervisory capacity with relation to operations of electric, water, gas, ice, transportation properties and so on. During all this period I was in close touch with the construction activities and with the power plants and became familiar with the coordination of those units for the maximum output. In 1930 when The Commonwealth & Southern Corpo-
[fol. 562] ration assumed sponsorship, I was assigned the position I now hold.

There are six operating companies which comprise the integrated system of the Commonwealth & Southern system of the South—the Alabama, Georgia, Tennessee, South Carolina, Gulf and Mississippi Power Companies. There is a transmission grid composed of 9,581 miles of circuit serving 1,877 communities. Over 562,000 customers directly and over 150,000 customers indirectly were being supplied from this network in August, 1937. The system serves an area which covers about 150,000 square miles of territory.

The table (offered and received in evidence as Complainants' Exhibit 371) entitled, "Summary of Capacities Available to Commonwealth & Southern System 1937, Southern System", shows the capacities of the integrated system by types and by companies. There is a total of 1,397,940 kilowatts of capacities, consisting of 43 hydro sources and 95 steam sources, about 98 per cent of the total capacities serving the entire interconnected transmission network. All of these resources are integrated in operation as one source of power supply. It shows steam and hydro plants by divisions and by companies. (The data with respect to the Georgia Power Company was limited by counsel's statement that it was offered not as any proof of any property rights or interest of the Georgia Power Company but solely for the purpose of showing the adequacy of the complainant companies in the Commonwealth and Southern group, the capacity of which group is integrated.)

About 65 per cent of the total capacities of this system are in hydro plants located principally in Alabama, Georgia and Tennessee. On the Coosa River there is 262,000 kilowatts of installed capacity in the run-of-river type of plants which requires generation of the flows as they pass the structures, [fol. 563] there being very little storage. At these particular plants 30 per cent of our total average yearly hydro generation is produced. There are 9 plants on the Chattahoochee River with 100,000 kilowatts installed. In Tennes-

see there is the Hales Bar Plant and throughout East Tennessee and Georgia there are 16 smaller capacities. As to the storage type of plant where the water is retained for use later in the year or when the flows of our run-of-river plants are low, we have 563,000 kilowatts of capacity connected with seven large storage reservoirs. There are 17 plants altogether and the amount of energy stored alone is 524,000,000 kilowatt-hours.

There is an aggregate of 314,500 kilowatts of capacity in large steam plants located in the coal fields of Alabama on the Warrior River and in Tennessee near the source of low cost fuels of Kentucky. These plants are used for the greatest period of time in carrying our loads and to supplement hydro generation. We have 123,000 kilowatts of so-called secondary sources which are required to operate fully in the extreme low flow years, but only to a very limited extent in other years. They are not in regular service but occasional service every year to take care of line maintenance and outages. These plants are not required to operate except in the extreme low flow years, for occasional line outages, for maintenance of lines, and to some very limited extent when the flows are somewhat below normal. The power sources supplying this integrated transmission system are operated as though all companies were a single company. There is a central agency which specifies the loading upon the plants for maximum utilization of the waters that are available and directs the bringing on of steam capacities to supplement hydro generation. The plants that are of the [fol. 564] least operating cost are brought into service first.

The function of the transmission network is to provide for complete integration of the generating capacities and to serve load centers. The transmission network permits the full freedom of operation of the plants and is designed for this purpose. There are 133,000 kilowatts of tie line capacities between the transmission network of the Commonwealth & Southern system and the integrated transmission network extending from Florida up through Pennsylvania and into Chicago. Practically all of our large load centers are supplied by duplicate lines. When the construction of the second circuit to Mobile is completed in the early part of 1938, all of our large centers will be supplied by duplicate circuits. The important interconnections involving this 133,000 kilowatts of tie line capacity include the

Carolina Power & Light Company, Florida Power Corporation, the South Carolina Electric & Gas Company, the Duke Power Company and the Aluminum Company of America. These interconnections are closed practically all of the time. When surplus energy exists upon one system and is useful upon some other system, negotiations are made at the time for particular quantities and its delivery.

We have definite contracts with the Carolina Power & Light Company, the South Carolina Electric & Gas Company and the Florida Power Corporation. Capacities are available to us for regular or emergency use. I am satisfied that all together we have available to our system from interconnections 50,000 or more kilowatts capacity should we require it.

Examination by the Court:

The Commonwealth & Southern Corporation of New York [fol. 565] is a service corporation supplying advisory service as to operating and management policies. It does not own the stock of the Georgia Power Company. Each operating company owns stock of the service company. I do not know how many shares of stock the Georgia Power Company owns. All the facilities of the Georgia Power Company that I have shown on this chart are operated as a part of the entire interconnected system. It arises through the dispatching and daily contact with this central agency that I have described. I don't know who owns the stock of the Georgia Power Company.

(Counsel for complainants' then read the following statement setting forth the relationship between these companies):

"(1) Commonwealth & Southern Corporation (of Delaware) is a corporation organized in 1929 under the laws of the State of Delaware. It owns all of the common stock of a number of operating companies, including: Alabama Power Company, Southern Tennessee Power Company, Mississippi Power Company, Gulf Power Company, Georgia Power Company, South Carolina Power Company, and over 99 per cent of the common stock of the Tennessee Electric Power Company. It also owns bonds and preferred stock of these companies.

"(2) The Commonwealth & Southern Corporation (of New York) is a corporation organized under the laws of the

State of New York in 1930. It has 4,500 shares of capital stock of $100 par value. This capital stock is owned by fourteen operating subsidiaries of The Commonwealth & Southern Corporation of Delaware as follows: The Tennessee Electric Power Company, Georgia Power Company, Mississippi Power Company, Alabama Power Company, Gulf Power Company, South Carolina Power Company, Southern Indiana Gas & Electric Company, Central Illinois Light Company, Ohio-Edison Company, Consumers Power Company, Pennsylvania Power Company, and Akron Transportation Company, Penn-Ohio Coach Lines Company, and the Youngstown Municipal Railway Company. The amount of common stock of Commonwealth & Southern Corporation of New York owned by each of the foregoing companies is the proportion that the gross operating revenue of each com- [fol. 566] pany bears to the total gross operating revenue of such fourteen companies. The Commonwealth & Southern Corporation of New York is therefore a mutual service company acting in matters common to these companies such as operation, finance, accounting, purchasing, engineering and other matters."

Direct examination continued:

We made a recent study to determine the load carrying ability of the generating system. We made a recent survey of all of our smaller steam generating capacities. We used operating records of those plants that are regularly operated in our loads. During the past 40 years of record, we have experienced 3 years of extreme low flows wherein our stream capacity was restricted to practically the same degree. 1931 was one of those years where we had at that time all of our present hydro capacities in existence, and accordingly we had full experience in operations in that type of year. We gave due consideration to reduced capacities, because of low flows and other factors involved in the operation and maintenance of the system. We provided adequate reserves based on our experience and our day to day knowledge of the operation of the plants. We also gave consideration to questions involving the adequate supply of power to our customers, at the same time having power ready for the growth of load. On the other hand, it was necessary to give consideration to avoidance of undue surplusages of capacity which would ultimately result in increased burdens upon our

system, financial burdens, and less reduction of cost to customers, as the years go on. The capacity of the coordinated system in the load such as we have in 1937 is 919,000 kilowatts.

The difference between this figure of 919,000 kilowatts and the figure 1,397,940 kilowatts appearing in the last column on Complainants' Exhibit 371, opposite the legend reading [fol. 567] "Total Maximum Capacities", is that the figure of 919,000 kilowatts is the firm capacity of our system after making allowances for reduced flows, flow regulations required because of navigation, reduced hydro capabilities, reservoir reserves, and in addition, an assumption of the loss of a large unit during the most critical period of stream flow. These omissions account for the difference between the figures mentioned.

In 1936 the transmission network of the coordinated system carried 4,553,000,000 kilowatt-hours and a demand of 880,570 kilowatts. The forecasts of loads that we have made for this year and for subsequent years are predicated upon a continuation of service to our existing areas and customers now supplied. Forecasts are somewhat speculative, but the forecasts that we have made exceed the average trend experienced over the past 25 years, and we feel that they are the maximum loads that we will be required to supply. The figures for 1938 are 5,195,000,000 kilowatt-hours and 945,000 kilowatts. Those figures are in excess of the load estimates or of the actual loads that we expect to have in 1937 by about 361,000,000 kilowatt-hours. However, our loads in 1937, at this time, are showing a downward trend, and we have reflected that in these estimates. In making these estimates we assumed the Company's continuing service to the customers now supplied in the same service area. However, we assumed that there would be a normal growth of load, and of customers also, based upon our past experience.

The estimates are based upon a contact with our field representatives and Commercial Department and Power Sales Divisions which are continually in contact with customers and are apprised from time to time of the industrial outlook. [fol. 568] We have a running record of the classification of sales. We have considered in 1938 and 1939 a continuation of the residential and commercial trends of growth that have been experienced in recent years. However, in respect to industries, the problem cannot be approached from that

standpoint. We have given consideration to the extent of recovery indicated in a particular industry or group of industries and the outlook as we obtained it in reference to future manufacture. All of these considerations provide a basis for the estimates of 1937, 1938 and 1939. Our loads in 1937, however, for the past several weeks, have shown a pronounced dip. In our estimates we did not allow for the continuance of that dip but for the resumption of the upward trends.

The maximum demands that we have experienced in 1937 so far are 891,700 kilowatts, and we anticipate that this is the maximum for the year. The capacity of our system is 919,000 kilowatts and the surplus is 27,300 kilowatts. Frankly, I believe that in view of the reserves that we have considered, our actual surpluses are in excess of 60,000 or 80,000 kilowatts.

These companies have taken steps to add capacity in 1938 and 1939. A 25,000 kilowatt steam turbo unit has been ordered and is now completed for installation at Nashville. Regulatory commissions in Tennessee and Georgia have approved this construction.

"Mr. Fly: May I ask Mr. Middlemiss are all these generating plants on the same interconnected system?

The Witness: All of them.

Mr. Fly: And can you cut in all of those generating plants on to the system without further substantial expense?

The Witness: They are all operating and interconnected to this transmission grid at the present time.

Mr. Fly: And there would be no problem of expense of cutting any one of them into that pool?

The Witness: They are already in the pool."

[fol. 568a] Two 40,000 kilowatt units are now on order, one for delivery in May 1938 and the other in June 1938. It is proposed to install this equipment at the Atkinson Steam Plant near Atlanta, Georgia. Aside from these capacities which will be available for installation, I am satisfied that we can obtain 50,000 kilowatts of additional capacity from our interconnections. We could carry our [fol. 569] 1938 projected loads with the surplus of capacity that exists in 1937 and the use of the 50,000 kilowatts available from interconnections, but we are not counting upon that. We hope and expect to receive governmental approval

for the installation of the equipment at Nashville: and the new 105,000 kilowatts of capacity, plus the 50,000 kilowatts that will be available to us from interconnections, should provide a total of 155,000 kilowatts available in the next two years, beyond the 1937 capacity. In my opinion, that capacity will be available for the loads to be anticipated during those years. Our anticipated growth of load through 1939 is about 93,000 kilowatts. We have 155,000 kilowatts of additional capacity in sight. All together we would have then a surplus of 60,000 kilowatts on our system. There has not been any power shortage on our system in previous years. Our capacities have always been increased in advance of market demands or otherwise. They have always been increased. There has always been a surplus.

The graph (offered and received in evidence as Complainants' Exhibit 372) shows by the line at the top of the sheet the installed capacities of the interconnected system from 1929 through 1937, and as contemplated in 1938 and 1939. The line at the top of the shaded area is the firm capacity of the system for each year through 1937 and as suggested in 1938 and 1939. The lower line, or at the bottom of the shaded area, is the loads upon the interconnected system set forth in the same manner that the capacities have been shown; that is, they are actual up to October 1937 and estimated thereafter. The shaded area indicates the amount of firm capacity surplus that we have experienced each year in this territory. These curves as they relate to past years [fol. 570] are correct representations of the company experience as to load and capacity. The curves on the graph for the years 1938 and 1939 and the balance of 1937 represent our opinion as to the adequacy or what will be the adequacy of the facilities of this system. As shown on this graph the greatest surplus existed in 1933. The figure totals 279,000 kilowatts. There has never been a shortage of power on our system.

Cross-examination:

In answer to the question as to whether considerable additions to capacity are not contemplated in 1938, according to Exhibit 372, I testified that in 1938 we would have ample capacity to carry our respective loads, if we installed the 25,000 unit at Nashville and obtained 50,000 kilowatts from interconnections. There would be only then an increase of 25,000 kilowatts of installed capacity on our system. Re-

ferring to the fact that the firm capacity line on the graph shows an addition by the end of 1939 of about 150,000 kilowatts, I would not say that that was a necessary indication that this was in my opinion a necessary addition of capacity. In planning our capacity installations, decisions are made as to the actual construction of plants and additions to them when it is required. It is speculative as to what is going to happen in 1939. The exhibit is intended to show that we are prepared to add 150,000 kilowatts to our capacities in 1939 if we need to add them.

I said 361,000,000 kilowatt-hours was the estimated increase in loads of 1937 over 1936. The estimate for 1938 over 1937 was 281,000,000 kilowatt-hours. For the three years, 1934, 1935, and 1936, the increase was approximately 1,311,000,000 kilowatt-hours. That represents an increase [fol. 571] of over 40 per cent over the 1933 figure. However, you must take into consideration the fact that 1933 was at the depth of the depression and we were experiencing a recovery of industrial operations upon the same or practically the same plants that existed prior to or at the end of 1929. In other words, there had been very little expansion of industries in our territory and this increase was a development or return to higher production upon that capacity. Even if we take the years 1930 to 1937, our average annual increase I believe is about 5 per cent. In the three years from 1937, which includes the effect at the present time or shows the effect of the recession on that curve through 1939, these estimates are slightly in excess of 6 per cent average annual increase—a little bit more than 6 per cent.

I said our surplus generating capacity in 1937 was 27,300 kilowatts. In that figure I have provided reserves which there is a remote possibility of their utilization. I took no power from interconnections which are available to us. I think with the back-up of interconnections and the probability of not having to use these reserves, that there are 60,000 to 80,000 kilowatts of surplus on our system. With respect to the 50,000 kilowatts of capacity from interconnections, we have under firm contract 15,000 kilowatts from the Florida Power Corporation. That is available to us at any time. I mean that they are under a contractual obligation to deliver us 15,000 kilowatts of firm power. That contract is dated October 20, 1937, and is for a term of 3 years. We also have a contract for 4,000 kilowatts with the South Carolina Electric & Gas Company. We have an

to put that energy into the Saluda reservoir, we have 10,000 kilowatts available to us when we need it. That is not in the form of a contract. It is not my understanding it is yet in the form of a contract, but it is actually in operation. I do not know what the terms of the arrangement are or the length of the term, nor do I know what they will be.

With respect to the rest of the 50,000 kilowatts, there is a surplus of capacity upon the Duke Power Company's system. They have recently installed, and it will be completed in the Spring of 1938, according to my understanding, an additional unit at the River Bend plant. Our executives have been in contact with the Duke Power Company and we are advised we can have the power surplus as available on their system. We have no contract with them. That is not the balance that we counted on to make up the 50,000 kilowatts. There are capacities available from all of the companies that are interconnected to our transmission network in varying degrees. I have mentioned a part that is under contract. The 10,000 kilowatts of the South Carolina Electric & Gas Company should be available to us. It is just a question of using the equipment that is all.

The figure of 919,000 kilowatts is our figure of firm capacity after we have given due consideration to a number of reserves which in our opinion are likely to be called upon very seldom. That figure varies from the figure our system reported to the Federal Power Commission in 1934. We reported to the Federal Power Commission in 1934, 904,000 [fol. 575] kilowatts. Since that report we have added the 4,000 kilowatts from the South Carolina Electric & Gas Company. We have extended the transmission network to include other capacities that were not then connected. We have made improvements in varying degrees in our plant facilities. Also in our larger loads, we are able to attain a greater utilization of hydro resources, and the result of all of this gives us the increase from 904,000 kilowatts to 919,000 kilowatts.

There are no major generating plants now under construction. There may be some minor additions at various plants now in process of construction. Except for a few very small plants, I believe we are adding an oil engine or two down in some of our isolated districts, but outside of that we are installing no larger capacities. However, plans are being made for developments at Nashville and Atkinson. And we have given considerable preliminary

study to the addition of capacities elsewhere on our system, but no actual construction work has begun.

In my calculations there was 60,000 kilowatts of firm capacity reserved over demand. We assumed a possible loss of one of our largest steam plants at a particular time in a particular dry year, three of which occurred in forty years of record, and during that dry year our loads would likewise have to be maximum, of course, for the loss of that unit to cripple us in any respect. That is not the only allowance. We have in our reservoirs a reserve which at the end of the dry season is equivalent as energy to the operation of a 60,000 kilowatt unit for nearly two months. We have not loaded our steam facilities up to their maximum capacities. The average loading we have assumed in this study is 20,000 kilowatts below the capabilities of these steam units. We also have an overload capacity which we [fol. 576] think perfectly proper to allow for reserve in case of extreme emergencies.

Referring to the 33,820 kilowatts in twenty customers' plants, included in our installed capacity on Exhibit 371, many of those plants are in actual operation, and particularly at locations where process steam is required, generation is also secured from that process steam, and we supply a part of the load and the manufacturer supplies the remainder. At many of the plants the boilers are fired regularly and used regularly for process steam. Others of the plants are not operated except in emergency, long outage or something of that sort. When I say many of these plants have been operated, what I mean is that they have been operated for that particular customer's own use, because we require these plants very, very seldom. As a matter of fact, we only contemplate using them in extreme dry years which occurred three times in forty years of record. I do not know how many of those twenty plants have been operated to supply energy to meet our demand. I have no data on that with me.

The 17,500 kilowatts of power, shown on Complainants' Exhibit 371, as purchased by the Alabama Power Company, consists of 15,000 kilowatts available to us from the Tennessee Coal, Iron & R. R. Company from a large steam plant located on the outskirts of Birmingham and 2,500 kilowatts available to us from the Sloss-Sheffield Company, a by-product concern located in Birmingham. The four

sources shown on that table mean that for the entire line of all of the companies there are four sources of power. I have not included any of the power purchased or obtained from the TVA.

(The witness was excused.)

[fol. 577] ALBERT S. CRANE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside at 32 West 40th Street, New York, and am a consulting hydraulic engineer. I had my primary education in the schools of Addison, New York, and in 1891, I was graduated from Cornell University with the degree of Civil Engineer. Upon graduation, I went to Europe with a prominent engineer to study sewer construction and inspect plants there. Upon return, I went to the city of Newton and was engaged in the design and construction of sewers for four years. I then went to Washington and was in the United States Engineer office on the design of sewers and sewage disposal for Old Point Comfort. I then went to Brooklyn in the department of city works and I was on the sewer design until October, 1898. I then went to Sault Ste. Marie, Michigan, as principal assistant engineer on the construction of a hydro-electric plant of about 30,000 horsepower capacity. In 1902, I went to Sault Ste. Marie, Ontario, as chief engineer of the Lake Superior Power Company, where I also had charge of the operation of a 14,000 horsepower hydro plant. I then went to Chicago as principal assistant engineer on the Chicago Drainage Canal. While I was there, I had charge of the extension of the main canal from Lockport to Joliet and of the design of the hydro-electric plant at Lockport. Then in 1905, I went to New York as hydraulic engineer of J. G. White & Company. On January 1, 1913, I became vice president in charge of construction of J. G. White Engineering Corporation. I resigned in September, 1928, and went into business for myself as consulting engineer. I have been engaged in the [fol. 578] design of dams and hydro-electric plants since 1898—39 years. Some of the larger dams and hydro-electric developments which I designed are as follows:

	State	Horse-power
Michigan Lake Superior Power Co.	Michigan	30,000
Sanitary District of Chicago	Illinois	30,000
West Buxton	Maine	6,000
Comerio	Puerto Rico	8,000
Bonny Eagle	Maine	15,000
Vernon	Vermont	26,000
Ocmulgee	Georgia	15,000
LaCrosse	Wisconsin	25,000
Canadian Light	Quebec	30,000
Stevens Creek	Georgia	15,000
Parr Shoals	So. Carolina	18,000
San Joaquin	California	10,000
Glenwood	Colorado	10,000
Boulder	Colorado	10,000
Soda Springs	Idaho	12,000
Cove	Idaho	12,000
Grace	Utah	20,000
Oneida	Utah	20,000
Deerfield No. 2	Massachusetts	8,000
Deerfield No. 3	"	8,000
Deerfield No. 4	"	8,000
Deerfield No. 5	"	12,000
Parksville	Tennessee	22,000
Ocoee No. 2	Tennessee	30,000
Caney Forks	Tennessee	20,000
Big Sandy	Oregon	10,000
Oak Grove	Oregon	40,000
Dashville	New York	10,000
Sturgeon Pool	New York	20,000
Davis Bridge	Vermont	60,000
Bellows Falls	Vermont	60,000
McIndoes	New Hampshire	15,000
Comerford	New Hampshire	210,000
Saluda Dam	So. Carolina	220,000
Osage Foundations	Missouri	201,000
Beauharnois	Ontario	450,000
Canyon	Ontario	132,000
Saltos del Duero	Spain	200,000

I have also had charge of the design or been consulting engineer on between 20 and 30 larger dams and have been connected with three large irrigation projects, one in Idaho, one in Don Martene, Mexico, and one at Agua Caliente, Mexico; also consulting engineer for the Sacandaga, New [fol. 579] York, Flood Control District in the building of the Sacandaga Dam. At present, I am consulting engineer on the Mahookey Flood Control project in New York State where we are building three large dams; also on the Board of Consulting Engineers on the Southern New York Flood Control District.

I am a member of the following technical or professional societies; The American Society of Engineers; the American Institute of Electrical Engineers; the Western Society of Engineers, and the Boston Society of Civil Engineers.

I have done engineering work for electrical utilities companies on the Tennessee River and its tributaries. Beginning twenty-two years ago, I was in charge of the designing of the Ocoee, Parksville, dam and station, and Ocoee No. 2, which is just above it. I did quite a little work on the rehabilitation of the Hales Bar turbine units. I had charge of the design of the Rock Island plant on the Caney Forks River. I also made a number of investigations on the main river and tributaries.

A little over a year ago, I made a trip over the Tennessee River and visited all of the TVA sites, except Gilbertsville. I also went to Norris and I already had been at Fowler's Bend on the Hiwassee.

I have examined the report of the TVA to Congress setting forth the so-called Unified Plan of the TVA transmitted under date of March 31, 1936, Complainants' Exhibit 328 in this case. Wilson Dam and Hales Bar Dam were in existence on the Tennessee River in May, 1933. There were also substantial hydro-electric developments on the tributaries at that time. On the Ocoee, there was Parksville and Ocoee No. 2 and on the Little Tennessee, there was Santeetlah, Cheoah and Calderwood. I forget the [fol. 580] name of the other on the Pigeon.

Assuming that the primary purpose was to develop the Tennessee River for power purposes, it could best be achieved by constructing a small number of high dams. In the first place, a small number of high dams would be less subject to fluctuation of head. For instance, if they were

all low dams, at very high water there would be no head at all. With high dams, it is not so. Then, the ponds created by high dams are of great use particularly for the storage and partly for pondage to carry over the water for the week-end; also to turn the power into a form that is most useful. In other words, perhaps all of the power might be developed in eight hours instead of twenty-four hours.

The characteristics of commercial power are, first of all, that it must meet the demands of the customer as to time and quantity. It also must meet seasonal fluctuations. In other words, it must be there at all times whenever the customer wants it. Commercial power would best be developed on the Tennessee River by a system of high dams with large ponds.

Assuming that under conditions existing in May, 1933, I had been commissioned to design and plan for the development of the Tennessee River and its tributaries, so as to produce rapidly a large amount of continuous firm power on the order of 600,000 to 700,000 kilowatts, suitable for use in a utility system, disregarding the economics of its production and subject only to the limitation that there should incidentally be provided a nine-foot channel for navigation on the Tennessee River from its mouth at Paducah to its source at Knoxville, at that time I would have turned to House Document 328 and selected as therein shown Aurora Landing, Pickwick, Wilson (already developed), Wheeler, Guntersville, Chickamauga, White River and Coulter Shoals. [fol. 581] And then I would have continued investigations, more detailed investigations, and I probably would have arrived at the change of the lower one to Gilbertsville and White River to Watts Bar. Those changes would have come about due to, for instance at Aurora Landing, the lower one, the foundations were bad, and they found a better place to locate them. The same holds more or less true of the White River location.

On the tributaries, I would select—I already had made investigations on the Cove Creek years ago and I would select that and probably move it to the present site of Norris. I also had investigated the Powellson site on the Hiwassee and that now has become Fowler's Bend. I had a general understanding of the conditions at Fontana, but I never was there, but from the report, I would have taken

it, because it was such a large reservoir and high dam where you could get a lot of storage and at times you could get a lot of power.

The storage from the standpoint of power in this whole proposition is of very great importance, because the natural low water flow, say at Wilson, is merely something like 4,000 second feet. After you develop these others, Norris, why it would be over three times that, 3.2 times that. After you got Fontana in, it would be about 3.9 times that. And after Fowler's Bend, it would be over four times what it was originally, so that shows the great importance of storage.

As a result of my examination, in my opinion the projects and design of the TVA as set forth in its report to Congress, under date of March 31, 1936, is primarily a power development. My reasons are: first, that the dam sites and dams as arranged are just as anyone would make if they [fol. 582] were developing for power and had no thought of anything else. And then, at each dam, there is a large capacity for machinery installed, and also at each dam, there is a large pond which enables one to convert the 24 hour flow into 8 hour power or any desired flow. And then, the cost of the whole project as given in these reports is very much greater than the sum of the cost for navigation alone, as has been testified here, plus the cost of making a flood control project. These all indicate that its main purpose is power. If it is to be made as a yardstick for power, that would have a lot to do with it. It has been said this was a yardstick for power. I have already commented on the significance of storage.

Cross-examination:

I was retained as a witness in this case in November 1936. I had been more or less familiar with this river for twenty years or more. My first study after I was retained as a witness was in November, 1936. That was the time last year when I went up the river as I described it. That was not in the outboard motor boat that Mr. Kurtz went in. Mr. Yates asked me if I would help in this TVA lawsuit. I then said "Why, I will, but the first thing I want to do, I want to go down and see all of these plants". I had been familiar with Hales Bar and Hiwassee sites and the other places that I mentioned before that.

I said that if I were commissioned in 1933 to build a project primarily for power, I would take the plan of the Army Engineers for the high dams to start with. With the exception of Aurora, these dams that have been erected and are under construction and are recommended for construction in the Unified Plan are all of them located either exactly on the site recommended by the Army Engineers or near [fol. 583] to the respective sites. White Creek is a little different, but not very much. Guntersville is also a little different. But otherwise, these dams that have been built have been built substantially on the sites recommended by the Corps of Engineers prior to the creation of the TVA. That is also true of the Cove Creek Dam. I was familiar with Cove Creek some years back. I think that dam was discussed by the Army Engineers prior to 1930, their House report. I investigated it before that. That site too was recommended by the Army Engineers.

I spoke of the difficulty of locating Gilbertsville. I understand that the site approximately selected by the Army Engineers proved to be unsatisfactory because of bad foundations at Aurora and that it took several years of study and borings before the TVA engineers found a site at Gilbertsville, which they believed to be satisfactory, so that the location of that site was delayed by natural conditions, so to speak.

Next to Wilson Dam, I know that one of the worst spots on the river for navigation above or below Wilson Dam was where the Wheeler Dam has been located, but I am not very familiar with the navigation feature. I said I was familiar with the river for some years back but more from a power standpoint than navigation. Next to Wilson Dam, the Wheeler dam site was known as the steepest spot on the river. I understand that before TVA was created, the Army Engineers had decided on building a dam on the site of Wheeler Dam and had already commenced the building of the lock.

I believe that it is a fact also that next to Wilson and Wheeler, the next worst spot on the river was above Colbert Shoals where Pickwick Dam is located, and that the Army Engineers had tentatively selected that site for a lock. I don't know whether they selected a lock. They selected it as one of the places for a dam.

[fol. 584] "Q. Referring to the Gilbertsville site named in the unified plan, is it not a fact that the dam, if located at that site, instead of at Aurora, as originally considered by the Army, will result, if the dam is erected, in a very much larger facility for flood control than if it had been located at Aurora, assuming the dams to be the same height?

A. Yes, the pond would be longer.

Q. The Gilbertsville site is much better for flood control than Aurora, that is what I am trying to get at?

A. Yes.

Q. That is a fact, isn't it?

A. Yes, that is a fact."

I spoke of the Sacandaga reservoir on which I was consulting engineer. That is a reservoir in the upper reaches of the Hudson River above Albany. I had a lot to do with its design as consulting engineer. That is a flood control project. It is fundamentally a river regulating project. It is not a detention basin or a retarding basin. It is a multiple purpose dam. That is to say, its function is to provide flood control and to provide water for regulation of the Hudson River below the dam in low water season and also to develop power. The Sacandaga reservoir accomplishes three separate functions and is a so-called controlled reservoir. It is constantly under the care and immediate control of the Water Regulating District. To some extent it is a seasonal operation. It does not generate power all the time. In actual operation, the Sacandaga reservoir is operated successfully for the control of floods, including the greatest of record in that area. The dam, although it is equipped with power facilities, is operated with remarkable success in the control of floods, but power is a purely secondary thing—that is, a by-product. I don't know that that is just as it is in your dams. There are months when there is no power developed at Sacandaga. Low water regulation [fol. 585] is the main thing. The rule is that we shall regulate the flow of the Hudson River at Spier Falls to 3,000 feet per second, in other words, sometimes it gets down to 200, but we always keep it up to 3,000 and everything else is subject to that.

"Q. But if it was not for your standing by that rule you could use the dam pretty much all the year round for power, couldn't you, that dam?

A. Oh, yes.

Q. That is depending upon the integrity of its operation?
A. Yes.
Q. It could be used for power or it could be used for flood control?
A. Yes.
Q. That is fair, isn't it, a fair statement?
A. Physically, yes."

When I said that I based my opinion in part upon the fact that the cost of the whole TVA Plan was greater than the sum of the cost for navigation, or as testified here, the making of a flood control project, I was not referring to the cost of the low dam project. I was referring to approximately $500,000,000 cost for the whole project and of the $75,000,000 for the low dam navigation plus the $70,000,000 or $80,000,000 for flood control. When I said $75,000,000 or $80,000,000 for floods, I was referring to the plan suggested by Mr. Kurtz, which would have given relief to floods only on the Tennessee River and the Emory, as distinguished from the Mississippi. In giving my answer on that matter of cost, I was assuming those two costs to be approximately correct, $75,000,000 for low dam navigation plus $70,000,000 or $80,000,000, such as Mr. Kurtz recommended. I am taking that from the testimony. I know nothing about that myself.

"Q. If I understood you correctly, Mr. Crane, you said that one of the reasons on which you based the opinion you expressed to opposing counsel was, what you had read as to [fol. 586] the purposes of this project in the statement of the unified plan; is that correct?
A. Yes. No, not in the statement of the unified plan, but what I read in the press.
Q. In the press?
A. Yes.
Q. That is to say you accepted partly—you accepted as a part of the basis for your opinion, what you had read in the press as to the purposes for which these dams were intended?
A. Yes. Before I came here I supposed from what I had heard and read——
Q. You are not going to say what you supposed. I have no objection to your telling what you had read.
A. Well——

Q. I mean by the question I am trying to get at is this, you assume from something you read or various things that you read certain facts, came to an opinion as to what this project was really for?

A. There were many definite statements made that this project was a yardstick for power.

Q. Oh, that is what you meant?

A. That is what I meant, yes.

Q. Well, you read, did you not, this unified plan, so-called.

A. Yes.

Q. Which was sent to Congress?

A. Yes, sir.

Q. In forming your opinion, how much consideration did you give to this statement in the plan—I will show you this before you answer.

A. Yes.

Q. Under the terms of the act, section 4-J is quoted here with reference to navigation and so forth.

'Under the terms of the Act, the board of directors has but limited discretion in determining the manner of execution of the purposes for which the Authority was created. By its express terms, the Act directs that in any plan formulated under the authority thereby conferred, priority shall [fol. 586-a] be given to the improvement of navigation in the Tennessee River and its tributaries, and to the control of flood waters in the Tennessee and Mississippi drainage basins. The Act further provides, among other things that, insofar as incidental to these objectives, the provision may be made for the generation, transmission, and sale of power that is created by the dams necessary for the accomplishment of the primary purposes. In formulating recommendations, the directors are bound by this mandate. Discretion is reposed in them to determine the emphasis to be placed on flood control as compared with that on other phases of stream control which affect navigation; and to select and to recommend the modes of development best adapted to the accomplishment of these and incidental purposes.'

Did you give any weight at all to that report, this is the statute?

A. I remember well reading that, but I did not pay a great deal of attention to it."

That is to say, I did not wholly believe all that statement. I know that the TVA Act specifically directed that this project should be operated primarily for navigation and flood control. I stated that I believed the purpose of this whole project was primarily to generate power. I do know I had not thought of anyone violating the statute. I say that I thought that was the law, but that in my opinion, the project was designed primarily for power, to be operated primarily for power. I do not think it is being carried out in accordance with the law. I think that the directors are not operating this project at the present time primarily for navigation or flood control. I base that opinion on the factors I have already mentioned.

(The witness was excused.)

[fol. 587] FRED J. RANKIN was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live in Maplewood, N. J., and am a consulting engineer employed by the Phoenix Engineering Corporation. The business of the Phoenix Engineering Corporation is almost exclusively the design and construction of properties for those public utility properties who are clients of Ebasco Service, Inc. Ebasco Service, Inc. is a service company which is wholly owned by the Electric Bond & Share Company.

I graduated from the University of Kentucky in the class of 1907 with the degree of Bachelor of Mechanical Engineering. I later received the advanced degree of electrical engineer from the same University. For about 1½ years after my graduation, I was in the employ of the General Electric Company, as what is usually known as a cadet engineer. For a period of some two years, I was in the employ of the Commonwealth Edison Company of Chicago, a part of this time as a substation operator and a part in the engineering department. For a period of about 3½ years, I was a teacher of electrical engineering at Colorado State College. Also for a period of about 3½ years, I was Chief Electric Engineer of the Colorado Public Utilities Commis-

sion. During this period, I was in charge of rate investigations, appraisals, engineering investigation and work of that nature that was undertaken by the Colorado Commission. For a period of 7½ years, I was in the employ of the Idaho Power Company, during 6½ years of which I was Chief Engineer of that company. As chief engineer of the Idaho Company, I had responsibility for the construc-
[fol. 588] tion, operation and maintenance of all of the physical properties of the company. This was the period during which a major expansion program was undertaken and carried out. Since about the first of 1907, I have been in the continuous employ of either the Electric Bond & Share Company or one of its affiliated organizations. For about 3 years of this last period, my work had to do primarily with the examination and acquisition of public utility properties, to some extent in the United States, but largely in South America. During this time I examined and reported on properties both in the United States and in Mexico, Central America, Cuba, Venezuela, Colombia, Panama and Ecuador. Following the period of examining and acquiring properties, I served for some three years as an operating sponsor in the foreign division of Electric Bond & Share Company. My work in this connection had to do with advising with the operating forces of the local operating concerns as to operating problems generally.

Since 1933, I have been engaged primarily in special engineering investigations and studies for public utility properties that are associated with the Ebasco Service, Inc. It has been part of my duties to make studies and estimates of electric load growths and of the facilities necessary to serve them. During all of the time that I was the Chief Engineer of the Idaho Power Company, I had charge of studies of load growth that were made prior to the installation of production facilities that were installed for that company during that period. Also as a matter of regular routine, I supervised the preparation of load forecasts that were and are made a part of the annual operating budget.

In addition to this, while I was in the West, I collaborated with the joint study made by the Idaho Power Company
[fol. 589] and the Utah Power & Light Company with which the Idaho Power Company is interconnected. This study covered a very large area and was made for the purpose of determining not only when facilities should be in-

stalled but where they should be located. While I was engaged in the examination and purchase of public utility properties, it was a part of our usual procedure in such examinations to make load forecasts that usually covered the period of five years. I have supervised the preparation of numerous forecasts of this character which were subsequently used as the basis for the authorization of production facilities. Also while I was employed as operating sponsor, I had something to do with the annual forecasts that were made as a part of the operating budget of these properties, and also studies and forecasts that were made in connection with further additions to generating plants.

I have investigated the adequacy of the facilities of the following complainant companies to meet their load requirements:—Carolina Power & Light Company, The Tennessee Public Service Company, Holston River Electric Company, Memphis Power & Light Company, West Tennessee Power & Light Company, Mississippi Power & Light Company, and Birmingham Electric Company. They are all clients of Ebasco Service, Inc. In making this study it was necessary to give consideration to the load requirements and adequacy of facilities of other companies which are not parties to the suit. It was necessary to give consideration to the production facilities of the Arkansas Power & Light Company and Louisiana Power & Light Company, for the reason that the facilities of all of these companies are interconnected and operated as an integrated unit. In other words, their power supply facilities are all pooled and the adequacy depends upon the adequacy of the group. I have general supervision of all [fol. 590] of these studies that have been made during the past year in connection with this work, and in addition I have devoted approximately five months of my own time to the studies.

My first contact with any of these properties was in the summer of 1927. At that time I was called upon to examine and report upon a number of properties in the Mississippi Valley which were later acquired by the present operating companies under this Mississippi Valley Group about which I have been testifying. Since that time, except only the period that I was in the foreign field, I have followed the operations of all of these properties rather

closely. Substantially all of the principal additions to the production and transmission facilities of these properties have been both designed and constructed by the Phoenix Engineering Corporation, by whom I am employed. I have also had occasion during the past four years to visit these properties on numerous occasions in connection with the load investigations, special engineering investigations and matters of that kind. We also have in our organization the department known as "Plant Betterment" department, which analyzes monthly the performance of every one of the larger power supply concerns. I have always had these analyses available to me. In addition to that I have studied the monthly reports as they have come out during the time that I have been engaged in this case. I have also made it a point during the past year to particularly follow the monthly production reports of each of these properties. I personally selected, assembled, and analyzed data with respect to the facilities, both installed generating facilities and power available under contracts over a period of usually about ten years. Also in connection with the study I went to the field and made a personal inspection of each of the principal sources of power supply.

[fol. 591] There are two major problems involved in reaching a conclusion as to adequacy of facilities. The first is a determination of the dependable capacity or load carrying ability of the available facilities, and the second is a forecast of the loads reasonably to be expected over the future period of time. I first determined, largely from the records of the company, the loads that have actually been carried by these facilities. In addition to this, I collected data as to the rated capacity, which, while not controlling, is an important factor in determining the load carrying ability. I also studied and analyzed the contracts covering power purchased under either interchange or firm power purchases; also the capacity available to these companies from plants of secondary or consumers, which are normally closed down, but which are available to the operating companies on call.

In the group of properties comprising the Carolina Power & Light, the Tennessee Public Service and Holston River Electric Companies, the facilities are predominantly hydro electric, with steam plants which are usually held as reserve, particularly as reserve against extremely dry periods. The facilities of the properties which I will call

the Valley Group of properties are predominantly steam electric generating plants, with a large hydro electric development on the Ouachita River, which is operated primarily for peak and standby service, particularly during dry periods. The Birmingham Electric Company, of course, has no power supply facilities of its own. The load carrying ability for facilities that are principally hydro are based on the dry period of the driest year of record. This period usually extends from July to November of the year in which it occurs.

[fol. 592] I stated that in some of these companies the facilities were predominantly hydro and in others predominantly steam. There are two rather logical groupings of these power supply facilities. That is, based on the manner in which they are interconnected and operated, the facilities of the Carolina Power & Light Company, the Tennessee Public Service Company, and Holston River Electric Company were treated as a unit or group. Likewise, the facilities of the Memphis Power & Light Company, West Tennessee Power & Light Company, Mississippi Power & Light Company, together with those of the Louisiana Power & Light Company and Arkansas Power & Light Company, were treated and studied as a group. Birmingham Electric was a unit by itself in the study. Those were the three groups into which I divided it for the purposes of this study.

I studied the load requirements and the records of actual loads carried by all of these companies over a period that usually extended from about 1928 to 1936, inclusive. I assembled data as to monthly and annual peak loads, load factors, kilowatt hours generated; also classified data as to kilowatt hour sales, number of customers served, and data of that kind. The peak load is, of course, the group peak. From the data that I have testified to, and particularly data as to sales, and also from the data as to the peak loads, I developed first general load trends which are a basic factor in estimating load growth. In addition to this, I developed such factors as customer use, and kilowatt hours used annually by domestic customers, farm customers and commercial customers. Then at my request each of the companies involved, and this includes the Arkansas and Louisiana companies that are non-complainants, made detailed forecasts of kilowatt hour sales which they estimated for [fol. 593] the period 1937 to 1940, inclusive. These forecasts were submitted to me and naturally I studied and

analyzed them in connection with my work. After these reports from the field had been received, I personally visited each of the companies involved and I discussed with both the operating and the commercial executives these load forecasts, general business conditions in the territory, industrial trends and matters of that kind. Then I merely used these reports from the field as a basis and as a guide to my own determination of future loads. I gave more weight to the detailed forecasts and figures submitted to me by the individual companies than to any other factor. However, where these company forecasts appeared to me to be either overly optimistic or pessimistic or out of line with past trends, I made such adjustments as seemed to me to be proper under the circumstances. According to my experience, the developing of load trends is done regularly in the planning for the future and management of utility operations and is, I will say, standard procedure with all public utility companies with which I have ever had any connection.

There were a number of basic assumptions which were, of course, necessary in determining the adequacy of the facilities of these companies. First, I assumed that with the exception of power supply facilities in existence or authorized, there would be no substantial additions to these facilities up to the end of 1939. Then I assumed that the average usage of particularly the residential, farm and commercial classifications of service, that is the average annual usage in kilowatt hours per customer, would continue to increase as it has over a period of several years. I further assumed in determining or reaching an opinion [fol. 594] as to what this average usage might be that the rate trend stated as an average would continue to be downward as it has for a number of years and that the number of customers, particularly in those classes of service that have a large number of customers, would continue to increase first on account of further extensions into rural and outlying territories and second on account of the downward trend in rates.

With respect to the industrial loads generally, I did not make any provision in my forecast for any abnormally large increase in this class of load. I did assume, however, that this load would continue to grow and develop at a normal rate similar to its progression over the past several years. I made this assumption first for the reason that the develop-

ment of large industrial loads is very difficult, if not impossible, to forecast. I made it for the further reason that if an unusually large industry requiring a large block of power capacity should locate in the territory of any of the companies served, and if such an industry should contract with one or more of the companies involved, then in my opinion, the company or companies involved could provide power supply facilities by the time such industries would be ready to take service. That has been my general experience in cases of that kind.

I have already stated the principal assumptions in connection with my load forecasts. The two classes of load that I have not stated the assumptions for are those classes known as Government and municipal, and sales to public utilities. The Government and municipal load as a whole has shown a rather slow rate of growth over a long period of time and I assume that this rate of growth would continue. Sales to public utilities involve merely sales to utilities other than those in the integrated group or of the [fol. 595] interconnected group that rely upon the system for a part or all of their firm power. These sales are a comparative- small part of the total load, but nevertheless I assumed that such sales would increase at about the same rate as the general business of the group. In making my study of load requirements of these companies I did not give any effect to loss of load through competition or otherwise. My estimate of future loads is based upon the total load available within the service areas.

It is not quite accurate to say that the Birmingham Electric Company has no generating facilities. I should have said that it has no generating facilities which are used by that Company. Actually, the Birmingham Electric Company does own a steam electric station in the City of Birmingham with an installed capacity of 11,300 kilowatts. This plant, however, is not operated by the Birmingham Electric Company but is available to Alabama Power Company on call.

The document (offered and received in evidence as Complainants' Exhibit 374) is entitled, "Adequacy of power supply facilities, Carolina Power & Light Company, Tennessee Public Service Company and Holston River Electric Company." The first sheet of the exhibit is a summary which condenses the adequacy data for the Carolina Power & Light Company, Tennessee Public Service Company and

Holston River Electric Company. The data given cover a period of 12 years, those for the period 1929 to 1936, inclusive, being actual, and from 1937 to 1940 estimated. There is first shown the total name plate rating by companies for each of the companies within the group. Next there is shown the total amount of power in kilowatts which is available to the group under purchase and interchange agreement. Next is the capacity available to the group [fol. 596] from generating stations of clients or secondary customers that are normally closed down but are available on call. Next is shown the total peak carrying capacity of the facilities by companies for the entire period covered by the summary. Inasmuch as the facilities of this group are largely hydro electric, the peak capacity of the facilities depends entirely upon load factor of the load during the dry period, and it was found in the study of these facilities that there is a substantial amount of machine or generating capacity that cannot be utilized under existing load factor conditions. This excess capacity was, of course, deducted in order to develop the total peak carrying capacity at system load factor. Next, this summary sheet 1 shows the territorial peak load for the period, the data being actual up to and including 1936 and estimated for 1937 to 1940, inclusive. The difference between the total peak capacity and the total peak load is the gross surplus capacity available to the system. This gross capacity, however, is not firm or saleable capacity, and it is necessary to deduct from it the reserve capacity. Consequently, near the bottom of the sheet under the caption "less reserve capacity", this deduction has been made and the resulting figures are the firm capacity surplus of the system for the entire period year by year. The reserve capacity for this group consists of one steam unit at the Cape Fear Steam Plant and one hydro electric unit at the Waterville Hydro Electric Plant, rated at 15,000 kilowatts and 35,000 kilowatts, respectively. These units were provided as reserve units in planning and designing the system, and the system is so operated and I consider that the amount of reserve which I have deducted is entirely adequate for this system.

[fol. 597] There were a number of reasons for using this period of 1929 to 1940 in this study. In the first place, 1929 and 1930 considered together mark the termination of a rather long period, an active period of construction and

addition of power supply facilities to electric utility properties generally. It was to be expected that with the beginning of the depression these properties would have substantial amounts of surplus, that is, relatively substantial amounts of surplus capacity. This summary sheet clearly brings that out. Then I thought it was necessary to study loads and load growths over as long a period of time as reliable data were available for it. The study was projected up through the year 1940 for the reason that it was desired to determine first for how long a time the existing facilities would be adequate and whether or not there is or would be sufficient time to provide additional facilities wherein adequacy might exist.

All of the data shown on page 1 of Complainants' Exhibit 374 with respect to name plate ratings, excepting that part that is estimated, was obtained either from actual company records which were verified in the field or for earlier years from historical data and reports which I believe to be reliable. The amount of power available to the system under purchase interchange contracts and from the plants of the secondary customers was derived from a study and analysis of such contracts and from the operating experience of the companies thereunder. The total peak capacity of these facilities is my own determination of what the facilities, as they existed, or as they do exist, will carry. The territorial peak load and annual system load factor are two other items set out on this sheet which are actual or are derived from actual records up to and including 1936, and are estimated beyond that period. The other data on the sheet are merely derived data.

[fol. 598] Pages numbered 2 to 9, inclusive, on Complainants' Exhibit 374 summarize in detail for each of the years 1929 to 1936 the power supply facilities of the group of companies to which the exhibit refers. There is shown by plants the name plate rating and kilowatts of all generators and the dependable capacity of these plants, whether they are hydro electric or steam, under both favorable water supply conditions and under critical water supply conditions. It was necessary to determine this in order to determine the period in which the dependable capacity reached a minimum. There is shown for each of the years the power available under purchase and interchange contracts, power

available from plants and resale to secondary power customers, then the total capacity available, from which is deducted the amount assigned to reserve capacity for the particular year. Data as to territorial peak loads and system load factor are made from company records. The resulting data from these sheets were carried back and summarized on the condensed summary on page 1 of the exhibit. Sheets 2 to 9 give the real, underlying data for each of the companies, which is shown in the summary, combined form on page 1.

Page 10 of Complainants' Exhibit 374 is entitled "Summary of power requirements—Company and Territorial group", and that is briefly what it is. It sets forth first the total energy sales in kilowatt-hours by years for each of the companies in the group, these sales being actual up to and including 1936 and estimated from 1937 to 1940, inclusive. There is next shown inter-company and dump sales which are necessarily included in the statistical data as a part of the total sales. These inter-company sales are sales within the integrated group, and naturally they are deducted in order to avoid duplication in arriving at what I call "total [fol. 599] territorial sales". This sheet next shows unaccounted for losses in transmission and distribution, both in actual kilowatt-hours and in percentage of the total. Then the total territorial energy requirements, annual load factor, the peak load for the territory and the kilowatt-hour sales per kilowatt of territorial peak. I should say that as to all of the data on this sheet, they are actual or derived from actual data up to and including 1936 and then estimated beyond that period. The estimated or forecasted power loads on page 10 for the years 1937 to 1940 are actually based on one simple computation. That computation in turn is based on the assumption that over the immediate future the kilowatt sales or peak kilowatt load would remain about the present level. It will be noted from the bottom line on page 10 of this exhibit that during the year 1936 the kilowatt-hour territorial sales per kilowatt of peak load amounted to 3,490 kilowatt-hours, which, as a matter of fact, is the highest ratio reached over the entire period. I have assumed that this ratio would continue up to the end of 1940. Consequently, the forecasted kilowatt peak is arrived at merely by dividing the estimated sales in kilowatt-hours by 3,490. I think that is a reasonable assumption.

Page 11 of Complainants' Exhibit 374 is a chart or graph which shows in graphical form most of the data with respect to loads, both actual and future, to which I have testified. This exhibit shows monthly from 1928 to about June of 1937, the actual territorial peak loads, and beyond that [fol. 600] period and for the period covered it shows estimated annual peak loads. It shows also graphically kilowatt-hour sales, which are actual up to and including 1936 and estimated beyond that period. In addition to this, it shows the monthly load factor graphically, also the average monthly load in kilowatts.

The document (offered and received in evidence as Complainants' Exhibit 375) is entitled, "Adequacy of Power Supply Facilities, Arkansas Power & Light Co., Louisiana Power & Light Co., and West Tennessee Power & Light Co." The data contained in the exhibit are entirely similar in type and in substantially the same method of development as that contained for the other integrated group of properties in Complainants' Exhibit 374 which I have just explained in detail. These data are actual historical data up to and including 1936 and estimated beyond that point.

The document (offered and received in evidence as Complainants' Exhibit 376) is entitled, "Birmingham Electric Company, actual and estimated load data, 1927 to 1940, inclusive." The data therein as to actual and estimated loads was compiled in the same manner and by the same methods as the same data in Complainants' Exhibit 374. The reason why Complainants' Exhibit 376 dealing with Birmingham Electric Company includes no summary of adequacy of facilities is simply for the reason that, as I believe I have testified already, the Birmingham Electric Company purchases all of its power requirements from Alabama Power Company, and inasmuch as there are no facilities, naturally I could not show anything as to adequacy.

[fol. 601] I think there is quite a similarity between my study of the adequacy of the facilities of these companies and studies and investigations made in the course of business of public utilities generally in their consideration of whether or not additions should be added to facilities. In so far as I know, all large electric public utility companies make studies and investigations substantially of the kind that I have made before authorizing or installing additional power supply facilities. In so far as my experience goes

decisions in that respect are based upon such studies. With respect to Exhibits 374 and 375, I have formed an opinion as to the adequacy of the facilities of these two groups to meet the load requirements imposed on them at the present time and for such time in the future as would be reasonably necessary to permit the installation of additional facilities. My opinion with respect to Exhibit 374 is that the existing facilities are adequate to meet all load requirements reasonably to be expected up to and including the year 1940. This is considerably more than ample time within which to provide facilities beyond the year 1940.

Referring to Exhibit 375, my study of the facilities of those properties which was completed some two or three months ago indicated that for the year 1937 the total peak load would exceed the firm peak capacity of the facilities by some 2,250 kilowatt-hours or an overload of approximately 1%. Such a peak load, if it had been experienced, would have existed for a period of probably not more than one hour, and there is no question in my mind as to the ability of the facilities to have carried it. As a matter of fact, the peak load period for the year 1937 for this group has now passed, and the facilities were entirely adequate to carry the total load. I say that this peak load period for the year is passed for the reason that the peak of this group is the strictly seasonal one, and has always occurred, and [fol. 602] as is shown by the chart on page 7 of this exhibit, occurs during the months of September and October. My study indicates that after giving effect to the power purchased from the TVA by the Arkansas Power & Light Company, which will become available during 1938, these facilities will be adequate both for the years 1938 and 1939. This study further shows that additional capacity will be required during 1940. As a matter of fact, since, as I have testified, the peak load does not occur until September or October of the year in which it occurs, it means that there is still approximately three years remaining within which to provide additional power supply facilities. I consider this an entirely ample period for that purpose. I have already testified that the adequacy of existing facilities of the Birmingham Electric Company depends upon the adequacy of facilities of the Alabama Power Company which has been covered by another witness.

[fol. 603] Cross-examination:

I have not shown the peak demand of the Carolina Power & Light Company separately. The peak values shown there include Carolina Power & Light Company, Tennessee Public Service Company and Holston River Electric Company. Actually in order to reach the total you have to get a peak on each. On that particular group, the monthly peak loads of Carolina Power & Light Company were added to the monthly peak loads of Tennessee Public Service Company and the Holston River Electric Company. In reaching the final result shown on the next to the bottom line of the first sheet on Complainants' Exhibit 374, which is "firm power surplus", I took into consideration the demand upon these companies that might have to be met when the demand is from other power companies. I plotted the demand imposed by what you might call minor power companies who rely upon this group for either a part or all of their firm power requirements.

I heard most of the testimony of Mr. Sporn, but I did not hear that part of the testimony in which you say he testified that the Appalachian Electric Power Company had a contract with the Carolina Power & Light Company under which the Carolina Power & Light Company was obligated to deliver to the Appalachian Electric Power Company 25,000 kilowatts to meet the Appalachian Electric Power Company's peak and that that was a binding obligation on the Carolina Power & Light Company. The peak loads that are shown for this system do not include any load which the Carolina Power & Light Company might deliver to the Appalachian Electric Power Company. The arrangement between those two companies, which has been in effect for a number of years, provides substantially for the interchange of energy. The Carolina Power & Light Company does not rely upon the Appalachian Electric Power Company for any firm capacity to carry its own load and Ex-
[fol. 604] hibit 374 will show very clearly that nothing has been included, so far as capacity goes, from the Appalachian Electric Power Company. On the other hand, the facilities of the Carolina Power & Light Company are such that there is always a substantial amount of capacity, generating machine capacity, available to Appalachian Electric Power Company. That is available continuously, and there is no reason why the Appalachian Electric Power Company can-

not use that as a firm source of power with the provision under the contract that whatever energy they draw out of the reservoir at the time they use that supply will be returned to us at any time they have the energy available. It can be returned, and usually is, in the form of steam power which is generated off-peak during the low load periods at night.

The Appalachian Electric Power Company could call on the Carolina Power & Light Company and get 25,000 kilowatts of capacity at any time, but it would be obligated to return energy at some time later. I believe this Exhibit 374 clearly shows that not only have we reserved a 35,000 kilowatt hydro-electric unit at Waterville, but we also, during 1937, had a surplus of machine capacity for which the Carolina Power & Light Company has no energy. The Appalachian Electric Power Company can get that power any time and use it, provided that, in effect, they will give us water with which to run it. They give us that water, so to speak, by giving us steam energy and letting us back off of the reservoirs. The Appalachian Electric Power Company could demand that the Carolina Power & Light Company supply that 25,000 kilowatts even if the demand came on the Carolina Power & Light Company's peak. They can demand it and get it during that period for the reason that I have tried to explain. I have not counted that 25,000 kilowatts, so to speak, in the facilities of the Carolina Power & Light Company. It is idle capacity, capacity that I designated as not useful under existing load factors, that is not useful to the Carolina system.

I believe that the Yadkin River Power Company was one of the predecessors of the Carolina Power & Light Com-
[fol. 605] pany. I don't know whether it is a fact that on March 14, 1917, that company entered into a contract to purchase from the Wateree Power Company, because I have not gone that far back in history but I do know that the Carolina Power & Light Company does purchase power at wholesale under a contract which I am quite sure was originally entered into with the Wateree Power Company. That is one of the contracts that I rely on as giving us part of our dependable firm capacity on the system. On page 9 of Exhibit 374, there is set out what we have designated as the Wateree contract. We are relying on a 14,000 kilowatt peak of firm power under that contract. The contract is cancellable on June 1, 1949, or at any time thereafter, provided

the party desiring to cancel gives three years notice, as I remember my study of the contract.

I have testified that the Arkansas Power & Light Company, Louisiana Power & Light Company, Memphis Power & Light Company, Mississippi Power & Light Company and West Tennessee Power & Light Company draw their supply of power from a common pool. The systems are completely interconnected and power is shifted from one part of the system to another and delivered where it is needed. My study shows that there would have been adequate capacity in that pool prior to June, 1937. The maximum load of that system, which is very short, occurs about September, and also about that time the Arkansas Power & Light Company completed the installation of a new unit of some 10,000 to 12,000 kilowatts capacity. I know that in June, 1937, the Arkansas Power & Light Company entered into a contract with the TVA for the purchase of considerable amounts of power. The power purchased from the TVA constitutes a part of the facilities and has been included in my figures, as set out on Complainants' Exhibit 375. Arithmetically, it is true that if you deduct the amount of power that the Arkansas Power & Light Company is going to get from the [fol. 606] TVA under that contract, there will be a definite deficit in the capacity of that system, according to my own predictions by 1940, but if that contract had not been entered into, we would have done something else for that group. It is a fair statement to say that as things now stand, our surplus arises out of the power the Arkansas Power & Light Company obtains from the TVA.

(The witness was excused.)

FRANCIS E. FROTHINGHAM was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live at Cambridge, Massachusetts, and am 66 years old. When I left college, I began working in the machine shops of the Westinghouse Machine Company in Pittsburgh and learned how to construct and operate their machinery. I was then with the Westinghouse Chair & Car Company of

New York. They were selling agents of the products for the Machine Company, and I was employed on repair work for a number of years. Then, I was for some time on the drafting board, learning about the design and construction of the power houses. I then went with Stone & Webster and was with them and was largely engaged in the examination of gas, electric, street railway, interurban and power properties. In that connection, I traveled all over the United States and Canada. I then went with Perry, Coffin & Burr, an investment house of Boston, which specializes in investment securities. I was on what was known as the buying end of that business, and in connection with the studies involved in that work, I travelled all over the United States, Canada, Mexico and a substantial part of South America. In 1916, when Mr. Perry dropped out of that concern, I [fol. 607] became its vice president and have filled that position since. I was recently elected President of the Investment Bankers Association of America for the coming year.

The investment market, when lending money to utility companies on their properties or investing in their securities, wants to have made for its benefit very careful and elaborate studies of the situations in which they are thinking of making investments, and it has been my position within such capacities as I have, to make those examinations for my concern. As I say, those overlap street railway, interurban railway, gas, electric, light and power.

Examination by the Court:

By examination I mean an examination of the whole situation, physical and otherwise.

Direct examination continued:

The factors which are examined and considered by the investment market include an investigation into the franchises and competitive conditions of the utility, its condition and its adequacy, and an investigation into the conditions under which the company does business, its authority from state commissions, legislatures and otherwise. It looks into the management of property, the earnings, classifying them, studying them, studying the present situation, the character of the territory, the prospects for the growth of the [fol. 608] territory and enlargement of the company and

its ability adequately to raise the necessary facilities for the conduct of its business. Those things having been weighed, as well as possible to weigh them, a decision is made, for instance, by my concern, as to whether or not they will make an investment. The question of competition, of course, is fundamental in the whole situation. The matter of competition is one of cost, which is of fundamental importance whenever any investor risks his funds. In the case of public utilities, he wants to know whether or not the certificate of convenience and necessity is a part of the law of the state before a competitor may compete with him. He inquires into what the general laws may or may not permit. He looks to other surrounding agencies to see to what extent they may or may not be in position to engage in competition. Those questions are raised with a great degree of regularity, as well as many others before an investment buyer can be induced to come forth. It is always so.

May I say that while the different considerations that I have mentioned must weight in the final judgment of a situation, there not infrequently comes a time when one of those factors looms so large and so important that it takes paramount consideration. That is the case in this situation.

I have been familiar with the properties and securities of all of the companies that are complainants in this suit, perhaps particularly with the Alabama Power Company, for the period prior to 1933. Just before the war, Mr. James [fol. 609] Mitchell had expended some $12,000,000 of British money in building a hydro-electric plant on the Coosa River and building transmission lines with the idea of furnishing the state of Alabama with the first abundant supply of electric current that it had had. With the coming on of the war, that source of funds dried up, and as a result of discussions, negotiations and an examination on the grounds, Harris Forbes & Company and my house bought a first mortgage bond issue, which was placed on the property, the $12,000,000 that had been spent being lifted from the property, so that the first mortgage lien could be created. From then until today, we have financed the bonds of that company. I am intimately familiar with the property, with the management, with the individuals connected with it and with the whole situation.

As to what was the attitude of the investment market prior to 1933 toward securities of Alabama Power Com-

pany, The Tennessee Electric Power Company and complainant companies in the area where TVA operates, the larger and stronger companies in this territory had free access to the investment market and were never at any time deprived of necessary funds to carry on their respective operations. They were able to finance at rates comparable to the general market for utility companies of that size; there is no doubt about that. Prior to 1933, part of the interest of the investment market in the Southern properties was the expectation of growth of the South, increase in population, its increased industrialization. Such factors are [fol. 610] always taken into consideration by an investor.

I have studied and kept myself familiar with the securities of such companies as the Alabama Power Company, The Tennessee Electric Power Company, Mississippi Power Company, Tennessee Public Service Company and companies carrying on an electric business in the TVA area since 1933.

"Q. And will you state what, if any, change in attitude has taken place in the investment market towards the securities of such companies since 1933?

Mr. O'Brian: To that I object as speculative, and no proper foundation being laid for the answer.

Mr. R. T. Jackson: I can qualify him further as to his being in the business.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And an exception will be allowed, please?

Judge Allen: The Court considers that the question embodies fluctuations in the market.

Mr. R. T. Jackson: This is not intended to do that. It is intended to indicate a change in attitude towards these particular securities of the investment market. I will try to reframe the question, and perhaps I will meet the objection that the Court suggests.

Q. Mr. Frothingham, will you please state what change, if any, has occurred in the attitude of the investment market towards the securities of these companies since 1933, apart from the general fluctuations of the market, and which are peculiar to these companies.

Mr. Fly: May we know what companies we are talking about, whether there are two or three selected, or whether

we are talking about the 18 companies, each and everyone? The question is ambiguous and misleading.

Judge Allen: Will you frame your question so as to meet that?

Mr. R. T. Jackson: I wonder if I might say in answering that question, I would like the witness to consider the Alabama Power Company, the Mississippi Power Company, the Tennessee Electric Power Company, Tennessee Public Service Company, the West Tennessee Power Company, Memphis Power & Light Company, Kentucky-Tennessee Power Company, Holston River Company, Kentucky-West Virginia Company,——

Judge Allen: All of the complainants except the Georgia Power Company.

[fol. 611] Mr. R. T. Jackson: Well, I want him to consider those that he has any differentiation to draw between, I will expect him to draw them, of course, not the Georgia Power Company, which I understand is not a party.

Mr. Fly: Are you excluding any other complainants?

Mr. R. T. Jackson: No, I am not, unless the witness excludes it in his answer.

Mr. Fly: Does he know who the complainants are? Ask him if he knows.

Mr. R. T. Jackson: I will give him a list of them.

The Witness: I know.

Judge Allen: He may answer.

Mr. O'Brian: May I interpose an objection on a different ground? The attitude of the investment market is what the witness is asked for, not his own opinion. That manifestly is a question that does not subject itself to expert evidence.

Mr. R. T. Jackson: I don't think that is true.

Judge Allen: The objection is sustained upon that.

Mr. R. T. Jackson: If your Honor please, I would not know who could tell what the attitude of the investors' market is, unless it was an expert in that market.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: An exception, please."

As to whether in my opinion the ability of these Companies to refinance their outstanding bonds and to engage in new financing has been adversely affected since 1933 by TVA's activities, the general statement can be made that the investment market has completely dried up so far as funds

are available for the required operations of these various properties in this district I listed exist. The explanation for this fact will be found in this. The ordinary theory and practice of capital structure is to divide it between fixed or bonded debt and equity. The fixed money obligation never provides sufficient funds for the full money requirements of operations, the building of physical plant and property. The balance of those funds must come from equity securities. That equity money provides the cushion which protects the bond. Those sources of equity supply have com- [fol. 612] pletely dried up. By "drying up" I mean that those having money to invest are unwilling to buy the equity securities of the companies which are subjected to the peculiar threat to which these are subjected today, because in the event of further aggression, in the event of the difficulties multiplying, they are the first to stand the brunt of loss.

Examination by the Court:

In the use of the term "equity securities," I do not mean to include junior lien bonds, as well as stock. I mean securities which are not protected by an indenture of trust, such as preferred and common stocks and similar classifications of securities.

Direct examination continued:

If then, such equity money is not available, the question is not should it be available or not; the question is, is it available. The fact of the situation shows that it is not available. Then, the bond money is itself not adequately protected by the cushion which it requires and it is not forthcoming. The result is that the financial process is slowed up and stopped. The moneys which these various properties have been securing for enlargements and expansions of their property in the recent past, have come not from the public, but have come from holding company sources, and in course of time, those holding company sources themselves dry up. That simply means that these situations, taking them by and large, face a condition where they cannot normally get from the public the moneys which they would easily otherwise get. They are not in a position to carry on the necessary extensions, and what not, of their business, with the inevitable result that in the course of time, their capacities prove to be inadequate, and then the opportunity comes, and perhaps

the necessity comes for further aggressions on the part of Government, which still further complicate and injure the situation. That is as brief as I can make the general statement on that subject.

Based upon my experience in and knowledge of the invest- [fol. 613] ment market since 1933 and before, it would, in my opinion, have been possible for these complainant companies to have refinanced their outstanding bonds at substantial interest savings, but for the activity of the Tennessee Valley Authority. There is no possibility of doubt of it. In some cases, refinancing could not have taken place, because the properties are relatively small or relatively immature. In the most cases, refunding could have been put through to the great advantage of the properties. The larger companies ranked in a class which made that possible. They were in high esteem in the investment market. To have refunded such a situation as the Alabama Power Company, for instance, to have substituted even a four per cent coupon for a five per cent coupon, would have saved in the neighborhood of a million dollars of interest charges. The refinancing of six or seven per cent preferred stocks into lower coupon stocks would have again saved the outgo on dividends.

I think that there are distinctions that should be drawn between certain of the large company complainants in this case in respect of the matter of the factor about which I was testifying. I would perhaps put the Appalachian Electric Power Company in a class by itself in this group as being rather more remote in the major part of the territories it occupies to the threats of the TVA than are the other companies. Not only that, but the character of its property is such, being scattered, with substantial communities in it and the availability of low-priced steam power, that it puts that Company in a less vulnerable position than the others.

There is a most decided difference in the relationship between investment turnover in the case of utility operations as compared with the financing of other types of business. Quite a special difference applies to utility operations. In [fol. 614] utility operations, experience has shown that it takes five or more dollars of investment to produce one dollar of gross. That means that it takes five years to complete the turnover of capital invested. In other types of industry, the turnover is many times a year, and that condition does not exist in utility operation. In the case of utilities,

also, it has come to be the practice that they do not turn back into their properties any of their earnings as other industries do, with the result that all of the money which utility operations require for their needs has to come from the public. That is another important distinction. On the other hand, the Government provides all of the funds that are required for the various needs of its operations, whether those funds are earning or not. Some investors think those funds are forthcoming with an unusual degree of lavishness.

Cross-examination:

I think the Appalachian Electric Power Company, of which I spoke, owns all of the securities of the Kentucky-West Virginia Power Company and Kingsport Utilities, Inc.

I do not know that I was inclusive, but I mentioned some of the factors which enter into the determination of an underwriter or one financing securities as to the desirability of the proposed investment. I suppose that in addition to those I mentioned, it is fair to say the real test is how attractive the security is going to be to the ultimate consumer. Undoubtedly, one of those factors is whether or not the security is listed on an exchange. I might say it is not so important a factor as is sometimes considered. As to whether or not the security is a listed security frequently makes a difference in the desirability of the security for borrowing purposes. A listed security has that advantage. Frequently, a well-known security, however, unlisted, has borrowing value. There are many banks and trust com- [fol. 615] panies, especially in the north, that prefer to loan on securities listed on the well recognized exchanges and the best market in that narrow sense is the New York Stock Exchange. In considering refinancing securities, a factor undoubtedly taken into consideration is an investigation of what the market has been for the previous securities then in existence, that is, what turnover there has been. Speaking in general terms, terms of generalization, the securities which are not sold perhaps every day, are customarily considered less desirable than those securities having an active market. If you state it as a general proposition, it is probable that it is more difficult to borrow money upon inactive securities as contrasted with the more active securities. Inactive markets sometimes result in what are called thin

markets with a wide degree of quoted fluctuation. It is not easy to answer the question whether securities which are listed on the New York Stock Exchange or the New York Curb Exchange ordinarily command a slightly better market than securities not so listed. I suppose one would probably say yes. There are so many special cases that come in to disturb the correctness of that. Generally speaking, the more actively saleable a security is the more attractive it is.

I simply cannot tell you how many of the complainants have any securities listed on the New York Stock Exchange. I don't know. I would have to look it up and see. The matter has not impressed me as of any consequence under these conditions, and I have not looked it up. In testifying I did not give any regard to that distinction as I did not think it relevant. If it were true that only one of these complainants had its securities listed on the New York Stock Exchange, that would differentiate that complainant from the others in that respect as to the desirability of investment on the part of certain investors.

[fol. 616] Securities are also affected as to marketability, or desirability, or attractiveness, by the question of whether or not they are available for purchase by savings banks or for trust funds or by life insurance companies. That is a factor also which differentiates securities of one company from another. At least in the north, the states customarily have regulations by law governing investments by savings banks and by life insurance companies which are called "legal trust funds". There is no question of the fact that on the ordinary daily market public utility securities are bought and sold in competition with other utility securities. The investment is always selected, but unfortunately not always carefully selected. Unquestionably, another factor is what we call in general terms the state of the money market, as to whether money is readily available for investment. It is a considerable factor.

I don't think I would go to the extent of saying that today it would be very difficult for any utility other than one of the great nationally known utilities with listed stocks to refinance at a considerable savings.

"Q. You would say, however, would you not, that speaking of the market conditions as they exist today, it is certainly much more difficult today to finance a utility or an industrial than it is in times when business conditions are

good, and money is in the language of the street cheap or plentiful; that is a generalization.

A. If I might I would like to say that I don't think that the conditions existing at the moment are what I would call germane to the general question, so that I have set them aside as not being weighty in my judgment of the whole situation.

Q. I appreciate that, but the court may take a different view.

A. Certainly.

Q. It has differed with me several times.

A. The Court wanted to hear my judgment.

Q. You didn't give any attention to that in answering [fol. 617] your question,—I mean you left that out of consideration?

A. I did leave it out for the same reason that this morning I said that the factor of competition was the paramount one in weighing the various factors.

Q. Is it fair to say that is the only factor you considered in answering the questions of Mr. Jackson?

Q. The question of competition?

Q. Yes.

A. In my judgment, and my judgment may be faulty, I can only give my judgment to the best of my ability, the factor of the TVA approach in this general territory is paramount to all other considerations.

Q. I so understood.

A. It is sufficient in itself to set in the background all of the other factors. It is sufficient in itself to put into the background these other various collateral points that the gentleman has inquired about.

Q. I understood you so to testify, and I am simply asking whether you laid all of these other factors aside in answering Mr. Jackson's questions?

A. I weighed them and laid them aside, as I say.

Q. In order to induce investors to purchase new securities issued at a lower yield, you must either offer something better than the old security or the conditions in the money market must be definitely favorable?

A. Those factors have to be weighed.

Q. That goes without saying?

A. Without saying, yes."

My recollection is that there are only two of these complainant companies which have no securities at all in the hands of the general public. I may be mistaken, but one may be the Kentucky-West Virginia Power Company, one the Holston River Electric Company, I am not sure. I don't think the stock of the West Tennessee Power & Light Company is held by the public. I don't know which company owns it. I don't think the Holston River Electric Company has any securities in the hands of the public. I don't remember whether the Kentucky-Tennessee Light & [fol. 617a] Power Company has any securities in the hands of the public. Those are facts, whatever they are. Very likely the Southern Tennessee Power Company has no securities in the hands of the general public; I am not sure about that. Assuming that the six corporations that have been named have no securities outstanding in the hands of the general public, they would be in a somewhat different class from the remaining complainants with regard to that ownership. They would not be in any different class should they endeavor to place their securities on the market. The [fol. 618] companies which are owned by certain others and do not make any appeal to the public for their funds are in a different class from the companies whose securities are in the hands of the public and who had to seek money from the public by virtue of their different ownership. But they are in the same category with reference to any opportunity they may have to reach out for public funds. Assuming that the companies had in the past been obtaining their money for operations from the parent company, these subsidiaries would not make a direct appeal to the public so long as they got their funds from the holding company and, as I pointed out this morning, the holding company funds are not inexhaustible.

I have been presenting my thought entirely and addressing myself entirely to the ability of these various companies to get funds from the public. And, from that point of view, it makes little difference in my state of mind towards the subject as to how the securities may at the moment be owned. The inability of these companies to get money from the public is the point that I have concentrated on.

Examination by the Court:

The holding company gets its money by virtue of the diversity factor of business which it has in owning different situations and being able to offer to the public a security which is protected by that type of diversity factor, so that it is in a peculiarly favorable position to raise equity moneys when equity moneys can be raised. At the present time they cannot be.

Cross-examination continued:

As to whether the holding company receiving dividends from the subsidiary operating company has that amount of money in hand, it has whatever income it gets that way, yes. In so far as those funds are not used for its own dividend purposes, it does not need to appeal to the public.

I can only say that I see no distinction between the com- [fol. 619] panies which are wholly owned subsidiaries and the other companies from the point of view of their ability to get public funds. Ordinarily, a larger company like the holding company would find it easier to raise money with the public under the same conditions than a minor subsidiary would, but the conditions are not today ordinary. If one of these complainant companies had very poor earnings, it would certainly be true that it would have more difficulty refinancing itself under the same conditions than a company which had excellent earnings and that would be true whether there was the threat of competition or not. Even if the threat of competition were removed, that particular company would have a great deal of difficulty in refinancing itself, unless its earnings were satisfactory. There is no possibility of doubt on that.

As to whether I assumed that all of these companies except Appalachian Electric Power Company were equally affected by the threat of this competition, I definitely stated, if I recall, that the companies differed among themselves in respect to the degree to which they were affected by the threat of this competition, but that all were subject to that threat to an extent that it made it impossible for them to reach public funds.

So far as I know, my house does not own any of the securities of any of the complainant companies. A house like mine buys its securities for its own account and resells them.

We do not buy for ownership. So far as I know, we do not own a security of them. I think that I have been reasonably familiar with the entire situation of the Alabama Power Company by reason of my connection. I am not as familiar with the Mississippi Power & Light Company as I am with the larger companies. These are rather newer companies. I have been over the territory and our men have studied them with great care. By my testimony as to remoteness, I mean some of these companies are more immediately affected than others by this threat and that all [fol. 620] are to some degree. I doubt if my house has marketed any securities of these companies in the last three years. It is possible, if a customer has come in and said he wanted a bond, we might pick it up on the market, but I doubt if we have handled any.

If any of the companies in this case have, at the present time, a record of defaults in interest payments or arrearages on their cumulative preferred stocks, that factor would differentiate them from those whose securities have no such drawbacks, and they would undoubtedly have a greater difficulty in refinancing themselves than other complainants under similar conditions without that handicap. It is perfectly obvious that even if there were no threat of competition, that condition is not a healthy condition in which to refinance a corporation. That is due to the fact that the lack of coverage, or apparent lack of coverage, frightens off or deters the investor.

When I spoke of the Appalachian Company, I meant the large Appalachian. I think it is very probable that the first fives of that company were quoted as high as 107 in 1936. It is very likely that in 1936, the first fives of that same Appalachian Company were quoted at prices ranging from 106.5 to 108.5 and that the same securities of this same company were reported in 1936 to range from 98 to 107. It may be that the 107 mentioned for the last company mentioned was the highest price in six years, but I would not call it a high price on the coupon list. In my opinion, the threat of the TVA had a very definite effect on investors in those bonds. I think they would have sold higher. As to whether this same company's 6% debentures sold in 1936 on the New York Curb at the high point of 121 and as low as 113, I do not have the figures. The high point of 121 for 1936 was undoubtedly high for that

company. It may also be that the company's 6% preferred stock ranged from 97½ to 108. It is very likely that those were the high points for those stocks in the last six years. [fol. 621] I would say the threat of TVA operations was the reason that, although the Alabama Power Company's high on its seven per cent preferred of 113½ in 1930, in 1933, it was only 26. That threat put in its appearance in 1933 and 1934. I am not interested in any particular date. I am interested in something much more fundamental in my judgment. The Alabama five per cent preferred stock was bid at 21 in 1933; 30 in 1934; 59 in 1935; 59 in 1936; and in the year 1937 has varied from 65 to 50. Its six per cent stock was 25, low, in 1933; 32½ in 1934; 37 in 1935; 58 in 1936; and 58 now, low. The seven per cent stock was 26 in 1933; 31¾ in 1934; in 1935, 41¾; in 1936, 67½; and low for 1937 is 67. That is to me an abundant record, quite independent of dates, that the preferred stock has been very seriously injured by what is going on in the state of Alabama. You are correct in stating that in each of those cases, the preferred stock has steadily risen in value from the time the threat of TVA competition began to the present time. It would be an interesting way of putting it to state that the fact that it has risen steadily in price is certainly a demonstration that the rise was not due to the TVA.

The first refunding bonds of the Carolina Power & Light Company touched a low of 46 in 1932; in 1933, a low of 52; in 1934 a low of 83; in 1935 a low of 98; in 1937, a low of 91, which is a 5.80 yield basis. And they touched a high for 1937 of 105.75. The $7,500,000 Yadkin River bonds, which are prior liens, touched 63 in 1932; in 1933 they touched 66; in 1934, 95.5; in 1935, 106; 1936, 106. They are now from [fol. 622] 105 high to 100¾ low. My record shows Mississippi Power & Light Company touched 40 in 1933; 48¾ in 1934; 52 in 1935; 79½ in 1936, and a high of 101½ in 1937 and a low of 78. All of which quotations I would like to say indicate distress, although conceivably a decreasing sense of distress. In each of the bond issues that I have referred to specifically, the market has steadily risen, but in my opinion, certainly has not risen as high as it would have risen but for the effect of the TVA threat.

Several of these complainant companies have shown very substantial increases from 1933 to 1936 in earnings, in

gross receipts. Most of the larger companies did. It is very likely a fact that there was an arrearage in the cumulative preferred stock of the Birmingham Electric Company of $214,000, which still exists. There well might be outstanding arrearages on preferred stock of Tennessee Public Service Company of $533,000 at this time. It is entirely possible that on the six per cent cumulative second preferred stock of the Mississippi Power & Light Company there are arrearages now of $822,500, and on the six per cent first cumulative preferred, there are arrearages outstanding of $689,497. I assume you have the facts. I have not got them. Assuming that to be true, however, I don't think it is quite fair to say that it would be very difficult for that company to refinance itself at the present time, regardless of whether or not it was threatened with TVA competition. The situations cannot be analyzed and segregated with that degree of definiteness. What I am here for is to give my judgment as to the effect on the credit of these various companies, and credit means ability to raise money in competition in the markets, as the result of the divers and sundry threats that they are subjected to. And I say my best judgment is—others may differ from [fol. 623] me—but my judgment is those things are such as to make their reaching public funds out of the question. I am not particularly interested in these other details. Assuming that a company has outstanding at the present time arrearages on its cumulative preferred stocks of over a million and a half dollars, so far as being difficult, that company cannot finance itself as well as one that is not in arrears. I do not know the entire surrounding circumstances, how it might refinance itself to take care of the arrearage, the occasion of the arrearages. There are many factors which come into that question. That company would find it more difficult to refinance whether or not it was threatened by TVA, but that is not the question outstanding today in the minds of the investing public. That is my opinion. It may be worth nothing.

If it were true that the Federal Trade Commission had reported what it believed to be a wrongful write-up in the capital structure of some of these companies, that would undoubtedly be something of a factor to be weighed by investors in that particular company. In answer to whether, if the Federal Trade Commission reported a write-up in

the Tennessee Public Service Company in 1931 of something over four and a half million dollars that would be something of a deterrent to an investor, I happen to know something about that situation and I question the conclusion. To inject the question of write-up, I must say, I can not help it, is an attempt to divert the question from the paramount issue of competition in Knoxville. Undoubtedly no one would gainsay that a widely publicized report by the Federal Trade Commission that there was an unjustified write-up would have a deterring effect on the average investor. If the officers of the complainant com- [fol. 624] panies for the last three years repeatedly stated publicly that the threat of competition would seriously affect their businesses, those statements, if made, would have a deterring effect on the purchaser of stocks, and I think under the complete disclosure theory they should and would be made.

As to whether I am in a position to state the earnings of the respective complainants during the past three years and whether I laid aside that factor, the earnings of several of the larger companies, among the complainants, have gone up materially during the past three years, the gross receipts have. Nevertheless, they have not yet reached the point where the margin of production cost, bond interest, and margin of protection against preferred stock interest have reached the normal levels, which would of themselves induce investment. Furthermore, I would like very much to say in connection with that increase in business, in my judgment, it contains something of a menace rather than being to the good,—something of a menace for this reason. I pointed out this morning the inability of the companies to get money to carry on their affairs. The increase in business means that the time will be reached so much sooner when they will be unable to expand, because they are unable to enlarge the capacities and that will bring down on them so much sooner the continuous accusation by the Government of their inability to take up the slack, so that increase in business is rather a matter of concern, rather than increased prosperity of the company.

The prices of the securities that I named have risen steadily in the last three years, but have not by any means approximated the levels which they would take under

normal conditions. My judgment is unqualified that without TVA, these companies would have reached the financial markets and secured all the funds they wanted, expanded their operations and have had credit comparable with [fol. 625] other companies more or less similarly placed that these companies do not enjoy.

Examination by the Court:

I have just stated in connection with the earnings that I looked upon the increase in earnings as rather threatening to the future well being of the companies rather than otherwise. I undoubtedly have taken the earnings and increase in amounts paid for the bonds into consideration in my answer.

Redirect examination:

In expressing the opinions that I have expressed in my testimony, in answer to questions with reference to the effect of listing on stock exchanges and things of that character upon the marketability of securities, including bonds and preferred stocks, I tried to consider the position of the securities of these companies in those respects in relation to the general market before 1933 and since.

"Q. And if there has been any change in that respect since 1933 would it have been favorable or otherwise from the standpoint of increased listing, and so forth, of securities?

Mr. O'Brian: To that I object as wholly speculative, and no proper foundation being laid. I asked him nothing about——

Judge Allen: Objection sustained.

Mr. R. T. Jackson: Exception noted, please.

Q. Mr. Frothingham, do you know whether or not the Wisconsin Power & Light Company refinanced its bonds within recent years, or within the last year or two, at the four per cent coupon rate, with outstanding accumulated defaults on its preferred stock, and without earnings at the present time sufficient to pay current dividends on preferred stock.

Mr. O'Brian: We object to that.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: May we have an exception, please?

Q. Mr. Frothingham, will you state whether or not various utilities away from the TVA area have refinanced [fol. 626] their bonds at a lower coupon rate, within the last—before the objection and ruling I would like to state something—within the last few years, notwithstanding accumulated preferred dividends?

Now I want to say that I am not asking that question merely to circumvent the Court's ruling. It occurred to me that the other ruling might be based upon the ground that I had asked about a specific company, and was therefore leading, and I am here attempting to ask a general question which as I see it meets the general inquiry which was made by the cross examiner.

Mr. O'Brian: I desire to object to that question on the same ground that I did before.

Judge Allen: Just a moment please. The objection is sustained. The Court considers this subject remote and speculative. I might say we consider that we have been quite liberal in allowing the questioning that has been permitted along this line.

Mr. R. T. Jackson: I will say the only reason I asked it was in response to the cross-examination which I thought had made it germane. Undoubtedly the cross-examination was far afield, and I should have objected to it. Note an exception please, for the record.

Q. Mr. Frothingham, will you state, if you know, whether there has been any refinancing of public utility companies in the TVA area?

A. So far as I know, none.

Q. Mr. Frothingham, will you state, if you know, whether there has been any substantial amount of refinancing among public utilities outside of the TVA area?

Mr. O'Brian: To that I object also as irrelevant and immaterial, too remote and speculative in its bearing.

Judge Allen: The Court will permit the witness to answer this one question.

A. There has been a very great deal of such refinancing.

Mr. R. T. Jackson: With that caution from the Court I will ask no further questions. That is all. You may come down."

(The witness was excused.)

[fol. 627] JOHN W. WOODALL was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I live in Scottsboro, Alabama, and am manager of the Scottsboro Ice & Coal Company and Mayor of Scottsboro. I have been Mayor since October 5, 1936. Scottsboro is in Jackson County, Alabama.

Last summer I attended a meeting in the offices of Proctor & Snodgrass at Scottsboro, Alabama. John Vincent, one of the City Aldermen, John M. Snodgrass, J. M. Proctor, and I were present. I am pretty sure that is all that was present. There was also a gentleman who was introduced as a representative of the TVA. They introduced him to me as Mr. Beauchamp of the TVA. Mr. Vincent called me over the telephone and asked me if I would come over to Proctor & Snodgrass' law office, and that Mr. Beauchamp was over there, and they wanted to have a conference, or something to that effect. I don't remember the exact words. That was the first knowledge that I had had of a meeting of that kind. I don't remember the month, but we had an election there in July, 1937, and it was sometime prior to that. I was mainly a listener at the meeting and the others did most of the talking. The topic of their conversation was the TVA and how to get it in there. Mr. Vincent is a member of the Council. Mr. Beauchamp answered their questions.

"Q. Generally what was the nature of information or discussion that he gave, just briefly?

A. Well, I just don't remember exactly.

[fol. 628] Mr. Fly: May we have, rather than what one party said, may we have the entire conversation so that we will know how this came about? I don't think the inquiry is relevant anyway, your Honor, but I think we ought to have it accurately if we are going into it.

Mr. Bouldin: I was trying to confine this as much as possible to the remarks made by the TVA representative, if your Honor please.

Judge Allen: Are you objecting, Mr. Fly, or not?

Mr. Fly: Yes, your Honor, I think I must object, if we start to wasting time in this way.

Judge Allen: Who is Mr. Beauchamp, Mr. Fly?

Mr. Fly: Mr. Beauchamp is an employee of the TVA, your Honor.

Judge Allen: What is his office?

Mr. Fly: He is division engineer for North Alabama.

Judge Allen: Mr. Bouldin, just what do you expect to show by this witness?

Mr. Bouldin: I simply expect to show that Mr. Beauchamp advised Mr. Woodall and other members of the Council as to what would be necessary for the city to do in order to obtain TVA power.

Judge Allen: The objection is sustained. The evidence is cumulative, and we consider it immaterial. Objection sustained, and you may have your exception.

Mr. Bouldin: Exception.

Mr. R. T. Jackson: May the record show the purpose is to prove solicitation?

Judge Allen: We have asked for the purpose.

Judge Martin: We asked for that just a moment ago, the purpose.

Mr. S. D. L. Jackson: May we make a statement in the record as an offer to prove, if your Honor please?

Judge Allen: That statement stands as an offer to prove. What else do you expect to prove?

[fol. 629] Mr. S. D. L. Jackson: If the Court please, I think under the rule we should be permitted to state for the record not only what the purpose of the evidence is, which, of course, would be a most general statement, in answer to an inquiry from the Court, but the character of the evidence that the witness would give if he were permitted to answer. I think that is the language of Equity Rule 46, if I recall the rule correctly.

Judge Allen: No, Equity Rule 46 says that the Court shall make a statement merely showing the nature of the evidence. It does not say that the evidence shall be verbatim.

Mr. S. D. L. Jackson: No, I understand that, your Honor. But the point I am trying to make clear is that a mere statement from counsel in answer to the Court's question as to the general purpose sought to be served by a line of testimony,—and that is I understand what Mr. Bouldin stated in answer to your Honor's question—would not be a statement of the character of the evidence sought to be elicited

from the witness, and the form in which it is sought to be elicited is as set forth in Equity Rule 46.

Judge Allen: Mr. Jackson, I don't think that we are at all apart in the end that we both seek, except that the Court does not consider that a statement of the verbatim testimony of the witness is necessary in order to show the character of the evidence rejected.

The Court has been trying to make counsel confine their offers of proof for the sake of this record, to the salient points of the evidence. Now, when counsel dictates extemporaneously a statement, it very often takes on the nature of a long dissertation. That has happened in this case a good many times.

Mr. S. D. L. Jackson: I can assure your Honor that this one will not. It will be very briefly stated, but I do earnestly implore the Court to permit us to make a slightly more elaborate statement of the character of the evidence, or submit to the Court information from which such a statement may be made, rather than just the bare answer to your Honor's question which Mr. Bouldin stated a moment ago.

Judge Allen: You may proceed, Mr. Jackson. Confine yourself to the salient facts.

* * * * * * *

Mr. S. D. L. Jackson: If the witness were permitted to give this testimony and testimony on succeeding questions [fol. 630] relating to this same matter, he would state that Mr. Beauchamp advised the city as to the method to proceed in holding an election and stated that he would furnish them with certain literature for use in the election; that the document that has been marked as Complainants' Exhibit No. 377, and in addition a TVA circular are all of the literature that were received and circulated at Scottsboro prior to the election, pursuant to that offer of literature."

The contingent power contract for residential customers, (offered in evidence as Complainants' Exhibit 377) was circulated in Scottsboro prior to the election that was held sometime in July, I don't just remember that date. That contract was signed by a substantial number of people in Scottsboro, Alabama. I would guess 85 to 90% of the electric users in Scottsboro signed that contract. The City Council of Scottsboro had several meetings, and if it was

ever written up in the minutes that this certain contract would be circulated, I just don't recall it. Now, it might have been, I don't have the minutes with me, and I have not examined them, but I don't think it was. I never authorized any one to use my name in the body of the contract.

Cross-examination:

When the matter came up to hold an election in Scottsboro, there was, as I remember, a resolution passed to hold the election, and I signed the order to hold the election. I appointed a committee to run the city's end of the election, but I don't know who circulated those contracts. The City of Scottsboro does not have a contract with the TVA for wholesale power.

"Mr. Fly: I object to the exhibit as irrelevant, as showing no connection with the TVA.

Judge Allen: The objection is sustained. Exhibit 377 is excluded and you may have your exception.

Mr. S. D. L. Jackson: Exception."

(The witness was excused.)

[fol. 631] HURST MAULDIN was called as a witness on behalf of the complainants and, having been first duly sworn, examined and testified as follows:

Direct examination:

I reside in Huntsville, Alabama, and am an employe of the Alabama Power Company. I attended a meeting which was held in the Community of Fyffe in October, 1935, at which there was a discussion of the use by the people of that community of electric power. The representatives of the TVA present at the meeting were David E. Lilienthal, Mr. Beauchamp, also Dr. H. A. Morgan. The meeting was held at the High School at Fyffe, about 200 high school pupils being present and about 50 adults.

"Judge Allen: What do you expect to prove by this witness in addition to the meeting and the speeches?

Mr. Bouldin: We expect to prove, your Honor, that at this meeting Mr. Lilienthal invited the people present to another meeting at Guntersville, Alabama the next day.

And on the next day Mr. Lilienthal made some invitations——

Judge Allen: Another speech?

Mr. Bouldin (continued): —in a speech, made an invitation to the people of that community, and stated that they must organize to get TVA power; and further that he offered the cooperation of the TVA in obtaining that power, and forwarding those organizations.

Q. At this first meeting, Mr. Mauldin, the meeting to which you have just referred, what did Mr. Lilienthal say in substance?

Mr. Fly: We object to the speeches, your Honor.

Judge Allen: The objection is sustained. The Court adheres to its ruling with reference to the speeches."

[fol. 632] Mr. Lilienthal at this meeting invited the people present to a meeting the following day at Guntersville, Alabama, which I also attended. I don't recall the paper report, but there were several thousand people present. Mr. Lilienthal was present and spoke at that meeting.

"Q. What, if anything, did Mr. Lilienthal say would be required of the people of a community in order to obtain TVA power?

Mr. Fly: Objection to the speech.

Judge Allen: The objection is sustained, on the grounds hitherto stated, and the Court will add this, very many considerations arise in this case because of the number of complainants and the character of the controversy which must be of practical importance. If there is anything material in these speeches the Court thinks that evidence of the same sort of thing is in this record. Now, if the Court were to admit evidence of this speech and that speech, then the other side, the defendants have the right to dispute that that was said. This case could well run on for years if every address were to be drawn into the controversy. You may have your exception.

Mr. Bouldin: Realizing that, your Honor, the particular reason for the presentation of this testimony is that we intended to follow it up with another witness which showed the effect, the practical effect of this particular speech in this locality.

Judge Allen: We understand the possible effect of these things, but the ruling stands:

Mr. S. D. L. Jackson: May we have an exception, and as a succinct offer to prove I would like to state had the witness been permitted to answer he would have stated Mr. Lilienthal said in substance that the farmer must organize, that progress in getting electricity is not going to come without that kind of organization, that the TVA wanted to work with the people, and wanted them to work with the TVA, and that TVA was asking as earnestly as men ever asked that the people themselves cooperate with the TVA. If I may add just a sentence,—and that if the TVA and the people did work together, nothing could stop them.

Judge Allen: The ruling will stand."

(The witness was excused.)

[fol. 633] Roy McCullough, Jr., was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live in Centerville, Tennessee, and am a weekly newspaper publisher. In February, 1936, I was the editor and publisher of the Sand Mountain Banner, which is published in Albertville, Alabama.

A letter (offered and received in evidence as Complainants' Exhibit 378) was received by me through the mails from Mr. Lilienthal. I do not know whether I saved the original letter or not. I partially made search for it but was unable to find it. I had not written to Mr. Lilienthal prior to the time I received this letter.

The second sheet of the exhibit is a copy of an envelope addressed to me. I cannot say for sure that is a copy of the envelope which I received with that letter, but to the best of my recollection I believe it is. The letter was addressed, misaddressed, and it followed me to Albertville. That is why the confusion.

(The witness was excused.)

F. T. Mastin was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Albertville, Alabama, and am District Manager of the Alabama Power Company. I have been employed by the Alabama Power Company 18 years. In 1934 I lived in Russellville, Alabama.

[fol. 634] In January 1934, in company with Mr. Ramsey, the Mayor of Russellville, I visited the TVA offices in Knoxville, Tennessee. When we got there, Mr. Ramsey asked for Mr. Falck and we were shown to Mr. Falck's office. Mr. Ramsey, Mr. Falck and I had a discussion there of the purchase of the Alabama Power Company's system in the City of Russellville by the City of Russellville. Mr. Ramsey told Mr. Falck he was anxious to get the TVA power in Russellville as soon as possible, and asked what he thought of purchasing the Alabama Power Company's system.

"Mr. Fly: May it please your Honor, I think this is in line with numerous other efforts to bring in numerous conversations and remarks of different subordinates of the Authority.

Judge Gore: Who was Mr. Falck?

Mr. Fly: He was an engineer, rate engineer of the Authority.

Mr. S. D. L. Jackson: Senior rate engineer of the Authority.

Judge Gore: How many rate engineers has the Authority?

Mr. Fly: There are several—there are only two.

Mr. S. D. L. Jackson: Was not Mr. Falck the senior rate engineer, Mr. Fly?

Mr. Fly: I do not know whether he was at that time or not. He might have been senior engineer.

Mr. S. D. L. Jackson: May it be stipulated, Mr. Fly, that Mr. Edward Falck is listed in your 1936 report as director of rate research, at a salary of $5200 a year?

Mr. Fly: If it is so listed there, I will so stipulate, Mr. Jackson. He is listed as a director of rates, or a rate research man. That was 1936."

Mr. Falck replied that the systems in the so-called ceded area were worn out and antiquated. Mr. Ramsey said he knew that the system in Russellville had been completely rebuilt in the last ten years, and at the same time he repeated the first question, "Do you think we could buy the Power Company's system at a reasonable price." In sub-

stance Mr. Falck said, "Hell, you can buy it a lot cheaper if you wait awhile, when we get through with them." Some days after that I had a discussion with Mr. Ramsey and [fol. 635] Llewellyn Evans of the TVA in Russellville, Alabama. I was informed Mr. Llewellyn Evans was the chief engineer of the TVA at that time. During that conversation the question of the purchase of the system of the Alabama Power Company was discussed. Mr. Ramsey just asked Mr. Evans what he thought about buying it. Mr. Evans said, "Wait awhile", that he thought it could be bought cheaper later on. Mr. Evans did not explain why he had that opinion.

Cross-examination:

I know that in October, 1933, Mr. Ramsey had applied to the TVA for a contract for power. I did not know the exact dates, but I know he had applied. I think I stated the date of these conferences was in January, 1934. The first one was in January, 1934 at Knoxville. The second was in Russellville in March—I am not positive it was March, but it was about sixty days later. I knew that prior to those conferences the TVA had entered into a contract with the Alabama Power Company under date of January 4, 1934. I know that under that the Alabama Power Company had agreed to use all diligent efforts to sell its distribution systems in the ceded area to the municipalities. The Alabama Power Company has not sold its distribution system in Russellville to the municipality. I presume it still owns it.

(The witness was excused.)

[fol. 636] Counsel for complainants then offered in evidence from the deposition of R. Carter Pittman the examination in chief, one question and answer on cross-examination, the redirect examination and Complainants' Exhibits 380 to 389, inclusive; from the deposition of R. H. Bandy the examination in chief; from the deposition of Mrs. Nellie Armington the examination in chief, seven lines of the cross-examination and Complainants' Exhibit 390; from the deposition of Chester Gause the examination in chief and the redirect examination; from the deposition of Quincy L. Caughman the examination in chief; from the deposition of R. C. A. Kittridge the examination in chief and Complainants' Exhibits 391 to 393, inclusive; from the deposition of

A. B. Haswell the examination in chief; from the deposition of T. L. Bonner the examination in chief and Complainants' Exhibits 394 to 397, inclusive; from the deposition of J. F. Towry the examination in chief; and from the deposition of E. W. Carmack the examination in chief and Complainants' Exhibits 398 to 408, inclusive.

Counsel for defendants made certain objections to the admission in evidence of the following depositions, portions of depositions and exhibits: Pages 99 to 114 of the examination in chief of R. Carter Pittman and Complainants' Exhibits 384, 386, 387 and 388; the entire deposition of Mrs. Nellie Armington and complainants' Exhibit 390; the entire deposition of Chester Gause; the deposition of Quincy Caughman; the deposition of R. C. A. Kittridge and Complainants' Exhibits 391 to 393, inclusive; and, in connection with the deposition of E. W. Carmack Complainants' Exhibits 398 to 406.

Counsel for defendants then offered in evidence the entire cross-examination of R. H. Bandy, E. W. Carmack, A. B. [fol. 637] Haswell, T. L. Bonner and J. F. Towry; and the cross-examination of R. Carter Pittman, except pages 135 to 143 and 165 to 169, inclusive. At the same time defendants offered the depositions of R. D. Cowley and K. T. Hutchinson who had been summoned to testify before the Special Master on behalf of complainants but whose depositions had not been offered in evidence by complainants.

Ruling on Questions of Depositions

"Judge Allen: The Court will, at this time, rule upon the questions of the depositions. Certain depositions have been offered in evidence by the Complainants and by the defendants. The Court, in ruling upon these depositions, adheres to certain rulings heretofore made. Evidence of operation by or of competition with The Georgia Power Company is excluded, because under the injunction in force against that company, such evidence is irrelevant and immaterial to any issue in this controversy. Evidence of the speeches and pronouncements made by these subordinate officials of the Tennessee Valley Authority is immaterial and irrelevant. The Court applies these rulings, as well as

the ordinary rules of evidence, in deciding upon the admissibility of these depositions. The Court excludes the following depositions or parts thereof:

I

Upon the ground that the testimony deals solely with operations by or competition with The Georgia Power Company. (a) That part of the deposition of R. Carter Pittman, beginning at the middle of page 99, and extending to the top of page 114, and also exhibits Nos. 385 and 386, attached to said deposition. The portions of the deposition excluded are also objectionable for the reason that they offer immaterial testimony. (b) The entire deposition of R. H. Bandy.

II

Upon the ground that they relate to meetings and speeches delivered thereat: (a) The entire deposition of Mrs. Nellie Armington, together with exhibit No. 390 thereto attached. (b) The entire deposition of Chester Gause. (c) The entire deposition of Quincy Caughman. (d) The entire deposition of R. C. A. Kittridge.

The deposition of E. W. Carmack is admitted upon the ground that it presents a typical case of the organization and operation of a cooperative.

The other depositions and parts thereof, and exhibits attached thereto, including the depositions introduced by the [fol. 638] defendants taken by the complainants, if not hereby excluded, are received in evidence, subject to objections for competency. The parties may have their exceptions to this ruling.

Mr. Bemis: It is not quite clear to me, if the Court please, whether or not the depositions of the prospective witness Hutchinson and the prospective witness Cowley are admitted at this time.

Judge Allen: They are.

Mr. Bemis: If I may, I would like briefly to state the various objections which we have to this evidence, the depositions, so that the record will clearly show. I believe it appears in the record the grounds upon which the complainant makes objection.

Complainants object to the offer by defendants of the depositions of R. D. Cowley and K. T. Hutchinson as a part of

Complainants' case. In offering these depositions defendants make these prospective witnesses their own witnesses with the right thereby arising on the part of complainants to offering rebutting testimony. Therefore, the acceptance of this testimony at this time creates the anomalous situation of defendants offering evidence as a part of complainants' case in chief, thereby requiring complainants to offer rebutting evidence as a part of their own case in chief.

We further object that these depositions are inadmissible at any time for the following reasons:

1. The cross examination in each instance is entirely beyond the scope of direct examination and is thus inadmissible under the general Federal rule. Conceding for the sake of argument that the Court may, in its discretion, relax the general rule as to the scope of cross examination where witnesses are called in open court, this ruling should not be made retroactive so as to apply to depositions particularly where, as here, the witnesses are obviously hostile.

2. It is clear from all of the decisions that the scope of cross-examinations in depositions must be confined to the scope of the direct examination. Any other rule would penalize a plaintiff desiring to call an unfriendly witness for a limited purpose, and would enable a defendant to put in his defense as a part of the plaintiff case to consume the entire time allotted under the rules for taking depositions in alleged cross examination of witnesses actually partisan to the defense.

3. Where all of the testimony of a witness on direct is incompetent and irrelevant as in the case of the witness Hutchinson, the entire deposition is inadmissible under the general rule. This is not cured by its being offered by the [fol. 639] cross examiner rather than by the calling party.

4. The testimony of Hutchinson and Cowley respecting their efforts to secure electric service prior to the advent of TVA is entirely irrelevant. There is no showing in either case that at the time of the alleged request for service The Tennessee Electric Power Company could have extended its lines under the minimum requirements of any then existing tariff or commission regulation, or that there was any discrimination in refusing service, if indeed service was refused. Complainants admit that in the past there have been

such line was being built, and Mr. Beauchamp replied that he was sorry they were building that line, but that that cooperative had gotten so enthusiastic they were disregarding his instructions, and that he would see it was stopped, and thereafter it was stopped.

Judge Allen: The offer is excluded. You may have your exception."

[fol. 720] The City of Cullman has a line extending along the Bee Line Highway to Mt. Vernon Church, a distance of approximately 1.4 miles.

"Q. Was any other utility offering electric service along that route at the same time the city started that line?

Mr. Fitts: I object to that question on the ground it has nothing to do with the issues in this case, has nothing to do with the complainants, so far as I know, or with the defendants.

Judge Allen: Who is the competitor? I am asking you, Mr. Bouldin?

Mr. Bouldin: Yes, your Honor.

Judge Allen: I am asking you, who is the competitor?

Mr. Bouldin: I can just state——

Judge Allen: Is it the TVA?

Mr. Bouldin: It is the Cullman County Electric Membership Corporation.

Judge Allen: Objection sustained.

Mr. Bouldin: And we except and offer to show that there was no service along that line until the city started construction of its line. Then the Membership Corporation, a line was built and operated by the Cullman Electric Membership Corporation and is now competing with the city along that route."

(The witness was excused.)

Gary M. Freeman was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live 6 miles from Center, Alabama, on a farm. In the spring of this year I attempted to get electric service for

my residence and applied to the Alabama Power Company for that service. I attempted to assist the Alabama Power Company in getting right of way permits for that line, and came to Chattanooga to get one of those permits from Mr. [fol. 721] Hamilton, who was acting in the capacity of purchasing agent, so he informed me, for the TVA. His office was at that time in the Pound Building. I asked him to give me a permit for the Alabama Power Company in order that its line might pass over his property to my place. This was a right of way permit involving property owned by Mr. Hamilton in his individual capacity and not by TVA. He would not give me the permit at that time, but invited me to come back and see him later. I did go back and see him later.

"Q. Tell what occurred?

Mr. Fitts: We object to that. It is not shown Hamilton was acting in an official capacity. So far as the testimony goes, he is an individual, talking to him about a line.

Mr. Bouldin: Shall I tell the Court what we expect to prove?

Judge Allen: In the first place, what land was this permit asked for?

Mr. Bouldin: Across Mr. Hamilton's land.

Judge Allen: Where is Mr. Hamilton's land, how does it affect the situation?

Mr. Bouldin: I can bring that out, your Honor. I can tell you, it lies between Mr. Freeman's land, that is his residence, and the source of power of the Alabama Power Company, that the Power Company intended to get a line across his property in order to get to Mr. Freeman's property.

I would like to state, if your Honor please, what the remainder of the testimony will be of this visit.

. . . . . .

Mr. Bouldin: We expect the witness to testify that he asked Mr. Hamilton, and that Mr. Hamilton did go in and call for Mr. Morgan. Just before he got him, he called a man named Sturdevant, and he said, 'Are we going to build that line down in Cherokee County.' Of course, he could not hear what that man replied. Just as he finished that conversation, the other telephone on the desk rang. He talked over that. He said, 'Are we going to build that line down in

Cherokee? Have we got the materials for it?' Of course, he could not hear the reply. He will testify then that Mr. Hamilton hung up and said, no, he would not give the Alabama Power Company any permit, that the Alabama Power Company——

[fol. 721a] Judge Allen: Just a minute please. Objection sustained.

Mr. Bouldin: We except.

Judge Allen: The testimony offered is purely hearsay, apart from other objections. The Court will sustain the objection at this time.

[fol. 722] Mr. Bouldin: That is the last sentence, that he would not give the Alabama Power Company a permit, that the Alabama Power Company was building that line as a spite line, and that, 'We are going to build those lines in Cherokee County and you should not worry about getting service.' "

(The witness was excused.)

Offers in Evidence

Thereupon counsel argued the question of the admissibility of the deposition of Horatio B. Hackett, Deputy Administrator of the PWA in Washington, D. C., which deposition was to be offered by the complainants and which consisted in the identification and authentication of documents attached to the deposition as exhibits. The documents were applications to the PWA and contracts for loans and grants to municipalities in the TVA area, copies of correspondence and memoranda passing between the TVA and its officers and the PWA and its officers, dealing with those applications and contracts, and other documents relating to said applications and contracts for loans and grants for the construction of municipal electric distribution systems to distribute TVA power. Before the particular documents attached as exhibits to the deposition had been offered in evidence by the complainants, the Court ruled:

"Judge Allen: Mr. Jackson, the Court rules that the contracts are admissible. We consider that testimony as to discussion, and that sort of thing, is not admissible. Now, so far as this deposition identifies and proves the contracts,

the Court will admit it. We are stating our ruling to you so that you may understand how to proceed, and of course you may have your exception to it.

Mr. S. D. L. Jackson: Please give us an exception.

Mr. S. D. L. Jackson: Then may it be stipulated, Mr. Fly, to meet your precise point, that the exhibits attached to Colonel Hackett's deposition were each produced by him in response to a subpoena, identified and authenticated by him?

Mr. Fly: As to the contracts we will so stipulate.

[fol. 723] Mr. S. D. L. Jackson: I am asking you about the exhibits attached to the deposition, to get them authenticated. Then we will present them to the Court and make our record as to the admission, or exclusion, if any, if the Court should feel that any should be excluded.

Judge Allen: That is, all of the exhibits were authenticated?

Mr. Fly: Yes, we will concede the mere point of authenticity."

The applications to PWA by various municipalities within transmission distance of the TVA power pool, (offered and received in evidence as Complainants' Exhibits 419, 421, 423, 426, 430, 433, 436, 439, 442, 444, 451, 453, 456, 459, 467, 470, 472, 474, 476, 478, and 479), and the actual loan and grant agreements and contracts between PWA and said municipalities, (offered and received in evidence as Complainants' Exhibits 420, 422, 424, 427, 431, 432, 434, 435, 437, 438, 440, 441, 443, 445, 452, 454, 455, 458, 460, 468, 471, 473, 475, and 477), for the construction of electric distribution systems to distribute TVA power, are more particularly identified by the names of the respective municipalities and the dates of the applications or contracts as follows:

Complainants' Exhibits 419 and 420 are an application dated August 30, 1933, and a revised application for a loan and grant of $200,000 and the contract, dated Dec. 28, 1934, of Sheffield, Alabama.

Complainants' Exhibits 421 and 422 are the application for a loan and grant and the contract of the City of Tuscumbia, Alabama.

Complainants' Exhibit 423 and 424 are the application for a loan of $29,255 and the contract dated November 24, 1936, of Courtland, Alabama.

Complainants' Exhibits 426 and 427 are the application for a loan of $285,000 and the contract, dated December 6, 1934, of Decatur, Alabama.

Complainants' Exhibits 430, 431 and 432 are the application for a loan and grant of $95,500, the contract, dated October 16, 1935, and the supplemental contract, dated January 18, 1936, of the City of Hartselle, Alabama.

Complainants' Exhibits 433, 434 and 435 are the application for a loan of $150,000 to construct a waterworks and an electric distribution system, the contract, dated October 16, 1935, and the supplemental contract dated March 16, 1936, of the town of Muscle Shoals, Alabama.

[fol. 724] Complainants' Exhibits 436, 437 and 438 are the application for a loan and grant of $148,000, the contract and the supplemental contract, dated February 11, 1936, of the City of Russellville, Alabama.

Complainants' Exhibits 439, 440 and 441 are the application for a loan of $190,000, the contract, dated November 2, 1935, and the contract, dated December 16, 1935, of the City of Guntersville, Alabama.

Complainants' Exhibits 442 and 443 are the original and revised applications for a loan and grant of $184,400 and the contract, dated December 17, 1935, of Tarrant City, Alabama.

Complainants' Exhibits 444 and 445 are the original and revised applications for a loan and grant of $636,000 and the contract, dated December 18, 1935, of Bessemer, Alabama.

Complainants' Exhibits 451 and 452 are the application for a loan and grant and the contract of the City of Starkville, Mississippi.

Complainants' Exhibits 453, 454 and 455 are the application for a loan and grant, the contract, dated November 16, 1935, and the contract, dated April 3, 1936, of the City of Okolona, Mississippi.

Complainants' Exhibits 456 and 458 are the application for a loan and grant and the contract of the City of Aberdeen, Mississippi.

Complainants' Exhibits 459 and 460 are the application and the contract, dated April 2, 1934, for a loan and grant of $2,600,000 of the City of Knoxville, Tennessee.

Complainants' Exhibits 467 and 468 are the application for a loan and grant and the contract, dated October 29, 1936, of the City of Newbern, Tennessee.

Complainants' Exhibits 470 and 471 are the application for a loan and grant and the contract, dated December 19, 1935, of the City of Paris, Tennessee.

Complainants' Exhibits 472 and 473 are the application for a loan and grant, dated November 2, 1935, and the contract, dated June 13, 1936, of the town of Somerville, Tennessee.

Complainants' Exhibits 474 and 475 are the application for a loan and grant and the contract, dated November 24, 1936, of the City of Jackson, Tennessee.

Complainants' Exhibits 476 and 477 are the application for a loan and grant and the contract, dated December 5, 1936, of the town of Fayetteville, Tennessee.

Complainants' Exhibit 478 is the application for a loan and grant of the City of Chattanooga, Tennessee.

Complainants' Exhibit 479 is the application for a loan and grant of the City of Murfreesboro, Tennessee.

[fol. 725] Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 425 the form book called "Terms and Conditions" prepared by the PWA and incorporated by reference into each of the PWA contracts for loans and grants.

Counsel for complainants offered in evidence as Complainants' Exhibit 418 the report of the Electric Power Board of Review, a board created within the Public Works Administration to consider applications for loans and grants for the construction of electric systems, which report deals with the application for a loan and grant of $371,743.00 by the City of Decatur, Alabama, for the purpose of constructing a distribution system including the low side of the substation and equipment. The exhibit was rejected by the Court and an exception was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 428 a copy of the letter from the TVA to R. H. Elliott, Director of Public Works Administration, dated April 6, 1934, and as Complainants' Exhibit 429 a copy of the letter dated April 10, 1934, to David E. Lilienthal, Director and General Counsel of the TVA, from R. H. Elliott in reply to the preceding letter, both of which letters deal with the application for a loan and grant for the City of Decatur, Alabama.

Counsel for defendants objected separately to each of these exhibits on the ground that the evidence contained

in them was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute. These exhibits were excluded by the Court and a separate exception to the exclusion of each of the exhibits was allowed the complainants. [fol. 725a] Counsel for complainants offered in evidence as Complainants' Exhibit 446 the memorandum from O. M. Rau, a member of the Electric Power Board of Review of the PWA to Henry T. Hunt, Deputy Administrator of the PWA; as Complainants' Exhibit 447 a copy of the letter dated August 31, 1934, from Henry T. Hunt to David E. [fol. 726] Lilienthal; as Complainants' Exhibit 448 a copy of the letter dated September 11, 1934, from V. D. L. Robinson of TVA to Henry T. Hunt; as Complainants' Exhibit 449 a copy of the letter dated September 22, 1934, from David E. Lilienthal, Director of the TVA, to Henry T. Hunt; as Complainants' Exhibit 450 a copy of the letter dated October 8, 1934, from David E. Lilienthal of the TVA to Henry T. Hunt. Complainants' Exhibits 446, 447, 448, 449 and 450 all deal with the applications for loans and grants of Bessemer and Tarrant City, Alabama.

Counsel for defendants objected separately to each of these exhibits on the ground that the evidence contained in them was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute, and on the additional ground that these exhibits involved internal details of the Public Works Administration. These exhibits were excluded by the Court and a separate exception to the exclusion of each of the exhibits was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 461 a copy of the telegram dated February 18, 1934, from B. W. Thoren, Assistant Finance Director of PWA, to Joseph C. Swidler, Power Attorney of TVA; as Complainants' Exhibit 462 a copy of the letter dated February 16, 1934, from B. W. Thoren to Joseph C. Swidler; as Complainants' Exhibit 463 a copy of the letter dated February 17, 1934, from B. W. Thoren to Miss Owen of TVA; as Complainants' Exhibit 464 a copy of the letter dated March 8, 1934, from H. N. Waite, Deputy Administrator of the PWA, to David E. Lilienthal of the TVA; as Complainants' Exhibit 465 a copy of the letter dated March 23, 1934 from P. M. Benton, Finance Director of the PWA,

[fol. 726a] to David E. Lilienthal, Director and General Counsel of the TVA. Counsel for defendants objected separately to each of these exhibits on the ground that the evidence contained in them was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute. These exhibits were excluded by the Court and a separate exception to the exclusion of each exhibit was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 466 the excerpt from the minutes of the meeting of the Board of the Light and Water Commissioners, Memphis, Tennessee, which recites that at a meeting of the Board held on July 31, 1935, a resolution was duly [fol. 727] adopted authorizing application to be made in behalf of the Memphis Light and Water Division to the United States of America for a loan and grant in the aggregate sum of $10,000,000 to aid in financing the construction of an electrical distribution system. This resolution waived the loan and merely applied for a grant of $3,000,000. Counsel for complainants stated that this was the only document Colonel Hackett produced in response to complainants' subpoena duces tecum asking for the production of an application by the City of Memphis, Tennessee. Counsel for defendants objected to this exhibit on the ground that the evidence contained in it was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute, and on the additional ground that it was cumulative. This exhibit was excluded by the Court and an exception was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 469 a copy of the letter dated June 30, 1936, from David E. Lilienthal, Director of the TVA, to Kenneth Markwell, State Director of Public Works at Nashville. Counsel for defendants objected to this exhibit on the ground that the evidence contained in it was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute. This exhibit was rejected by the Court and an exception was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 480 a copy of the letter from the TVA over the signature of Joseph C. Swidler, Power Attorney of

the TVA, to K. S. Wingfield of the PWA; as Complainants' Exhibit 481 a copy of the letter dated September 22, 1933, [fol.727a] from K. S. Wingfield to Joseph C. Swidler; as Complainants' Exhibit 482 a copy of the letter dated October 24, 1934, from Henry T. Hunt, Chairman of the PWA, to V. D. L. Robinson, Administrative Assistant of the TVA. Counsel for defendants objected separately to each of these exhibits on the ground that the evidence contained in them was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute. These exhibits were excluded by the Court and a separate exception to the exclusion of each exhibit was allowed the complainants.

Counsel for complainants offered in evidence as Complainants' Exhibit 483 a copy of the resolution of the Special Board of the PWA, which refers to the application of the City of Decatur, Alabama, showing the Board's approval August 15, 1934, and Presidential approval August 16, 1934. Counsel for defendants objected to this exhibit on the ground that the evidence contained in it was irrelevant and immaterial and related to the activities and actions of the Public Works Administration proceeding under a different statute, and specifically upon the ground that the exhibit dealt with internal matters of administration and the reasons and purposes of the Public Works Administration. This exhibit was excluded by the Court and an exception was allowed the complainants.

[fol. 727-b] Mr. Fitts: May it please the Court, without waiving the objections to the materiality and relevancy of this evidence, but still reserving those objections and exceptions, since this other material is now in the record, we would like to offer exhibits that were produced on the cross examination of the witness Hackett:

They are in general, divided into three classifications, they are either terminations of the same contracts that were put in by Mr. Jackson, or they are new agreements, or they are amendatory agreements, relating in each case to one or more of the contracts that have been put in by Mr. Jackson.

And, Mr. Jackson, can we have the same agreement that it will not be necessary to read the cross examination, that you will stipulate that those were produced and are authentic?

Mr. S. D. L. Jackson: Certainly, the ones produced by Colonel Hackett.

Mr. Fitts: The ones produced by Colonel Hackett on cross examination.

Mr. S. D. L. Jackson: Yes."

Counsel for defendants then offered in evidence and the court received as Defendants' Exhibits 17-27, inclusive, the following documentary exhibits:

Defendants' Exhibit 17, being a waiver to be attached to the loan agreement dated April 2, 1934, between the City of Knoxville and PWA;

Defendants' Exhibit 18, being a loan and grant agreement between the City of Knoxville and PWA dated April 30, 1937;

Defendants' Exhibit 19, being an amendatory loan agreement between the City of Decatur and PWA dated May 21, 1935;

Defendants' Exhibit 20, being an agreement terminating the loan and grant agreement between the City of Decatur, Alabama, and PWA dated September 17, 1935.

"Judge Allen: It may be received.

Mr. S. D. L. Jackson: And may we save an exception. The reason for that, if your Honor please, the last record we have available shows there is still in existence a contract of loan and grant to the City of Decatur.

Judge Allen: This contract was identified?

Mr. S. D. L. Jackson: But it was produced by Colonel Hackett, no doubt about that.

[fol. 727-c] Judge Allen: Your objection goes to the weight?

Mr. S. D. L. Jackson: That is right."

Defendants Exhibit 21, being a contract between the City of Decatur and PWA dated December 7, 1935;

Defendants' Exhibit 22, being an amendatory loan agreement between the City of Tuscumbia, Alabama, and PWA dated April 2, 1935;

Defendants' Exhibit 23, being an agreement terminating the loan and grant agreement between the City of Tuscumbia, Alabama, and PWA dated February 5, 1936;

Defendants' Exhibit 24, being the contract between PWA and the City of Tuscumbia dated December 9, 1935;

Defendants' Exhibit 25, being an amendatory loan agreement between the City of Sheffield, Alabama, and PWA dated May 29, 1935;

Defendants' Exhibit 26, being an agreement terminating the loan and grant agreement between the City of Sheffield and PWA dated December 14, 1935;

Defendants' Exhibit 27, being the contract between the City of Sheffield, Alabama, and PWA dated December 6, 1935.

[fol. 728] KENNETH MARKWELL was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I am 38 years old and live at Chattanooga, Tennessee. I am employed by the Public Works Administration and my office is in Chattanooga. I have been connected with the PWA for slightly over four years and have been in Chattanooga since November 1. My present position is that of Chief Project Engineer.

The document (offered and received in evidence as Complainants' Exhibit 484) is a list of PWA loans and grants which I believe I have seen in the central office of the Public Works Administration at Washington but I cannot positively identify it.

"Mr. S. D. L. Jackson: I might state, if the Court please, my purpose in calling Mr. Markwell and identifying this document is merely to bring the situation of the Public Works Administration's loans and grants in this territory as nearly up to date as we possibly can. If you will notice they are set up there by states on that document."

On Complainants' Exhibit 484 for identification there are nine projects listed under the State of Alabama, eight of which are under the supervision of my office. The project at Muscle Shoals, Alabama, is not under my supervision. Of the projects listed in the State of Mississippi, those at Starkville and Aberdeen are under my supervision. The project at Okolona, Mississippi, is not under my supervision. There are 15 projects listed under the State of Tennessee, 11 of which are under the supervision of my office. The

other 4 projects at Memphis, Nashville, Somerville and Knoxville, Tennessee, were completed some time ago. The other 11 projects for the State of Tennessee, the 2 projects in Mississippi and the 8 projects in the State of Alabama have not been completed and are still under construction.

[fol. 729] (The witness was excused.)

(Thereupon Senate Document 184, 74th Congress, Second Session, was offered and received in evidence as Complainants' Exhibit 485.)

L. B. Lefferson was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I reside in New York City and my occupation is head of the Rate Department of Ebasco Services, Inc., which is the successor to the service organization of Electric Bond & Share Company. It performs the function of rendering advisory and technical service to the client utility operating companies in the United States and abroad which have contracted for such service.

I am a graduate of Lafayette College, with the degree of Electrical Engineer. For three years after graduation I was associated with the Lehigh Valley Light & Power Company, which was one of the several companies which have since merged to form the Pennsylvania Power & Light Company. For the first part of that three years I was in the rate department and for the last 18 months of that time I was construction engineer. Since April, 1918, I have been assistant head of the rate department of Ebasco Services, Inc. and its predecessor, and for the past four years I have been head of that department.

The functions of my department are to offer rate advisory service to our client companies. In the performance of those functions, I make frequent visits to the offices of the client companies as also do other members of my staff. The Memphis Power & Light Company, the West Tennessee Power & Light Company, the Holston River Electric Company, the Tennessee Public Service Company, the Caro-

[fol. 730] lina Power & Light Company, the Birmingham Electric Company and the Mississippi Power & Light Company are among the client companies of Ebasco Services, Inc. I am familiar with the rate structures and practices of those seven companies. For many years I have either personally rendered or have supervised the rendering of rate advisory service to all of these companies. In the performance of this work I have had maintained in my office in New York a complete file of the rates and rate changes of all these companies. I have consulted with the rate engineers and the executives of these companies from time to time in reference to practically every important rate change that they have made in recent years. I and other members of my staff have made frequent visits to the offices of these companies to discover the general characteristics of the business in the particular areas. I have also kept generally informed as to the rates of others operating in contiguous territory, and am familiar with the rates of the TVA as they have been publicly announced. I have made a study of what effect, if any, the completion of the TVA Unified Plan, as outlined in the report to Congress of March 31, 1936, and in subsequent hearings before Appropriation Committees, would have upon the rates of these companies.

"Q. What, in your opinion, would be the effect of the completion of the TVA unified plan and offering for sale of the power to be developed thereby under the schedules announced by the Tennessee Valley Authority upon the rates of these seven companies?

Mr. Fitts: May it please the Court, we object to that question on the ground it calls for irrelevant, immaterial evidence in this case. I might say that here is where if seems to me to lead, that if the complainants are permitted to prove, aside from all of the other grounds that have been argued here at length, if the complainants are permitted to prove that there has been a tendency for their rates to come down, then we are permitted to show all of the different reasons, possible circumstances and also I don't see why we would not be permitted to go into the valuations of their property to see whether or not their rates were reasonable and right in the first place, to show that maybe they should come down.

[fols. 731-732] It is just opening the door into the whole problem, and it is a part of a legal argument which I think we have had here, and trying to prove an ultimate issue which is itself irrelevant in this case.

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Mr. R. T. Jackson: First I may say this, it has been conceded on the record in response to inquires from the Court that the Tennessee Valley Authority schedules for the sale of all classes of power are substantially below the corresponding schedules for the same class of power of each and all of the plaintiffs. I do not here propose to ask this witness to go into any discussion of the extent of that difference.

I want to prove through this witness the effect of that difference for two purposes: First, it is, I think, plainly relevant and material upon the question of damages, and in that connection I think we should keep in mind that we have here a suit in equity for injunctive relief, in which it is conceivable that the scope and extent of relief, if any, to which we are entitled may to some extent be affected by the comparative situation, the relative equities of the parties.

I offer this however, primarily for another purpose, and that is for the purpose of proving that we have here an unconstitutional invasion of state rights.

I want, through this testimony, to prove that the Tennessee Valley Authority Act in its operation does de facto regulate the rates of privately owned and operated utilities, within the several States in the areas in which TVA power is to be offered and made available for sale.

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The question of whether or not there is a regulation of the complainants' rates, through the operation of the Tennessee Valley Authority Act and through its administration by these defendants, is a question of fact. Manifestly if what I have said about the character of this question is true, then any evidence which proves or tends to prove that the practical operation of this statute results in Federal regulation of intrastate rates, or even that its administration by these defendants results in Federal regulation of intrastate rates is competent and material to be received in this court.

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[fol. 733] While it would not be material I know to this Court, the fact is that it can be presented in a very few minutes because we are not going into details. It is only the question of the effect on the situation conceded for the record, that is that we have the TVA power available at substantially lower rates than the rates of the plaintiffs and the question of whether under those circumstances the rates of the plaintiffs will in fact be measured and fixed by TVA or by the State Commissions within the constitutional power to regulate them.

Judge Allen: Mr. Jackson, the Court has had this question, the question as to the regulation of the States' rates under consideration for many days. The Court has not decided, and it has not in making this rule decided any question as to the alleged regulation of States' rates by the rates of the Tennessee Valley Authority.

The Court has assumed the existence of substantial damage to these complainants from the competition of the Tennessee Valley Authority. This is the only ultimate fact which could be established by entering in detail into the evidential facts as to rates. To go into these details would lead us into a remote and collateral inquiry which would not affect the ultimate result.

The objection is sustained and you may have your exception.

Mr. R. T. Jackson: In order to make perfectly clear what, in view of what was said in the ruling—I am afraid I have not made clear—I would like to say my purpose in offering this testimony is not to go into details, but it is to show that in fact, taking merely what is already in the record, the concession that the rates of TVA are substantially below these rates, then the rates of these plaintiffs will be regulated by TVA.

* * * * * * *

Judge Allen: The ultimate fact is in the record. The questions of law, of course, will be decided by the Court, and have not been decided. The Court adheres to its ruling and you may have your exception.

[fol. 734] Mr. R. T. Jackson: May we have an exception, because as we view it the ultimate facts upon which at least our argument or contention depends are not in the record.

We offer to prove through this witness the following:— Shall I read it, if your Honor please?

Judge Allen: How many pages do you have?

Mr. R. T. Jackson: It is a little over two pages, and I will state frankly to your Honor our position is that when we are offering expert testimony we cannot reduce that to a point where it is so emasculated that it would not mean anything to a reviewing court.

Judge Allen: The Court in general agrees with you on it.

Mr. R. T. Jackson: The complainants having excepted to the ruling of the Court, now offer to show that the witness Lefferson, on the stand, if permitted to answer would say— I am omitting anything that he has already covered, which is in the record.

I have made a study of the effect of the completion of the TVA unified plan, as outlined in its report to Congress of March 31, 1936, and in the hearings on the deficiency appropriations bill of 1937, upon the rates of these companies. As a result of such studies and my familiarity with the rates of these companies I have formulated the opinion that the completion of the TVA unified plan outlined as above stated would require each of these companies to establish rates not higher than the rates at which the TVA power would be offered for sale. The maximum rates of these companies would be fixed by the level of the TVA rates.

The reasons for my opinion are that the completion of the TVA unified plan would result in the development of a large TVA grid or power pool, which in years of minimum [fol. 735] water flow and without the use of the steam electric plant at Muscle Shoals, would produce and make available for the market in the Tennessee Valley Area, 660,000 kilowatts of firm power at 100 per cent load factor, or 1,100,000 kilowatts of firm capacity at 60 per cent load factor, and a minimum of 5,780,000,000 kilowatt-hours of firm energy, and, with the use of the steam electric plant at Muscle Shoals, 6,307,000,000 kilowatt-hours of firm energy. In addition, it would result in placing on the market nearly 2,000,000,000 kilowatt-hours of secondary energy. In an average year it would make available for the market more than 10,000,000,000 kilowatt hours of energy.

The statistics of the industry show that in 1936 the entire generation of electric energy for public use, both firm and secondary, in the entire seven Tennessee Valley States, that is Tennessee, Kentucky, Mississippi, Alabama, Georgia, North Carolina and Virginia was 9,300,000,000, kilowatt hours.

The power and energy which would be produced by the TVA power pool must spread out over an area sufficient for its absorption. As the TVA markets its power in certain areas, and the existing utilities are necessarily compelled to establish rates equal to those of the TVA, there will be some division of the market between TVA power, and the power made available by existing utilities. The offering of available power by TVA at the TVA rates will have the effect of regulating the rates of the utilities downward even though some division of the market should result. The TVA power which is not marketed as a result of the retention by the utilities of a certain amount of business in any given area is available for subsequent offering in other areas. With the same regulating effect upon the rates of the utilities in the area in which it is subsequently offered.

In my judgment, the direct determination of rates through the offering of this TVA power would extend over the entire Tennessee Valley area or at least beyond the area within 150 miles from the TVA power pool. The rates of utilities within such area will be fixed by the TVA rates and not by state commissions. The availability of this vast amount of TVA power, and the probability of transmitting it to any place within 250 miles of the TVA power grid will definitely operate to regulate the rates of the private utilities to the levels of the rates at which such TVA power is made available. The uncertainty of the location of points at which TVA may choose to make this power available is in itself an effective means of regulation of the rates of the utilities in all areas within transmission distance of the TVA power grid.

Mr. R. T. Jackson: Now, I want to say further, if the Court please, that I have one other point with this witness, which I had asked the witness, as to his study of the effects [fol. 736] of the application of TVA rate schedules to these specific seven companies, which is a different question, and what I thought might come within what I have previously understood the ruling of the Court to be. I will proceed with that examination or I will make the offer

to prove on that if the Court feels it is not necessary to ask the questions.

Judge Allen: Make the offer to prove, Mr. Jackson.

Mr. R. T. Jackson: We offer to prove that this witness now on the stand, Mr. Lefferson, if permitted to testify, would further say:

I have made an extensive study of the effect upon the gross revenues of the seven companies if their rates were regulated downward to the level of the Tennessee Valley Authority rates. By application of the TVA rates to the actual power and energy sales of the seven companies for the year 1936 there is indicated a loss to these companies of electric revenues of approximately $10,000,000 per year, or a reduction of approximately 41 per cent in their electric general business revenues."

(The witness was excused.)

Frank A. Newton was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Summit, New Jersey, and am employed by The Commonwealth & Southern Corporation of New York as chairman of the rate committee of that Company. That Company is the service company.

I received my technical education at the College of Engineering of the University of Wisconsin. I then spent several years with the U. S. Geological Survey, surveying tunnel construction work on conservation projects and doing reclamation work in Colorado. Then I spent several years with the Railroad Commission of Wisconsin, now known as the Public Service Commission of Wisconsin. From there I went to Hodenpyle & Hardy. My work with the Railroad [fol. 737] Commission of Wisconsin had to do with rates. While I was with Hodenpyle & Hardy of New York, they were interested in financing and the operations of the companies embraced in the Commonwealth & Southern group, being power, electric, gas, street railway and interurban properties in Wisconsin, Indiana, Ohio, Illinois and Michigan. Upon the addition of other companies in Ohio

and Pennsylvania, that Company later became the Allied Power & Light Corporation. Subsequently, when the Southeastern Power & Light Corporation was added, the Company became known as The Commonwealth & Southern Corporation. I have been with that Company and its predecessors during that time and have been actively interested in rate matters for over 25 years and have been in charge of rates and related matters for The Commonwealth & Southern Corporation and its predecessors for nearly 20 years.

As chairman of the rate committee of The Commonwealth & Southern Corporation, I act in a supervisory capacity in rates and related matters for all of the operating companies in the Commonwealth & Southern system and have had familiarity with the rate changes made by those companies. I have been chairman of the rate committee of the Edison Electric Institute for over four years. I have been chairman of the rate committee of the American Gas Association and am now a director of that association.

I render advisory rate service to The Tennessee Electric Power Company, Alabama Power Company, Mississippi Power Company and Southern Tennessee Power Company. The latter company has no customers and no rates, it being simply a transmission company. I am familiar with the rate bases and schedules of the companies I have mentioned and have been familiar with them for The Tennessee Electric Power Company for 15 years and for the other companies for about 7 years. I acquired my familiarity from frequent visits to these companies and from continuous [fol. 738] contact with the executives of these companies on rates and related matters. I also have an office in Birmingham with a staff there which devotes its entire time to rate matters of the Southern companies.

The tabulation (offered and received in evidence as Complainants' Exhibit 486) shows the total amount of electric energy generated by the electric light and power utilities in the States of Kentucky, Virginia, North Carolina, Georgia, Alabama, Mississippi and Tennessee in the year 1936. The figures are taken from statistics compiled by the Edison Electric Institute and are generally recognized throughout the electric industry as being accurate. The total reported amount of electric energy generated by the utilities in those seven states in 1936, including both firm and secondary power, is approximately 9,300,000,000 kilo-

watt-hours. The total amount of electric energy generated by electric light and power companies in the States of Alabama, Mississippi and Tennessee during 1936 was approximately 3,730,000,000 kilowatt-hours.

The amount of energy which would be generated by the TVA Unified Plan is 5,780,000,000 kilowatt-hours of firm energy and 1,880,000,000 kilowatt-hours of secondary energy in a dry year. In a typical year there would be generated somewhere in the neighborhood of 10,000,000,000 kilowatt-hours of firm and secondary energy.

I have made a study of the effect on the rates of the utility companies in the Tennessee Valley area, which would follow from the completion of the TVA Unified Plan and the marketing of that amount of energy in the area under the TVA rate schedules.

"Q. Mr. Newton, assuming that upon the completion of the TVA Unified Plan the TVA should produce 1,100,000 kilowatts of firm energy at 60 per cent load factor and approximately 5,780,000,000 kilowatt hours of firm power annually and 1,880,000,000 kilowatt hours of secondary energy annually in a low water year, and offer it for sale in the Tennessee Valley area at rates substantially lower than those of the privately owned and operated utilities in that area, what effect, if any, would that have on the rates of the privately owned utilities operating in that area?

Mr. Fitts: We object to the question, upon the ground it calls for irrelevant and immaterial evidence and for the reasons heretofore stated.

[fol. 739] Mr. R. T. Jackson: Merely because I want to be wholly fair to the Court, I do not know that it affects it, but I invite the Court's attention to the fact that the question is phrased somewhat differently, and is phrased solely with reference to the language of the concession in the record on rates.

Judge Allen: The Court noted that.

Mr. R. T. Jackson: Not wanting to argue it, I did want to bring it to the Court's attention in case it affects the Court's ruling.

Judge Allen: Objection sustained. You may have your exception.

Mr. R. T. Jackson: An exception please.

Now, complainants offer to prove at this time that if the witness, Mr. Newton, now on the stand, were permitted

to answer the question, to which the objection has just been sustained, he would say in his answer that, under the circumstances stated in the question, the maximum rates of the plaintiffs and other utilities operating in the Tennessee Valley area and within an area larger than would be defined by a radius of 150 miles from the proposed TVA grid system or power pool, would be regulated, fixed and determined by the rates prescribed by the Tennessee Valley Authority and not by the rates fixed or determined by the State Commissions having jurisdiction.

* * * * * * *

Mr. R. T. Jackson: Now, without exhausting the patience of the Court I want to ask one or two more questions, which I think are clearly within the ruling, and then make my final offer to prove.

Q. A moment ago you said you had made a study of the effect upon the rates of the Utility Companies in the Tennessee Valley area which would follow from the completion of the TVA unified plan, and the offering of the power to be produced thereby for sale at TVA rates.

Will you explain in general the results of your study?

Mr. Fitts: We object to that upon the grounds previously stated.

Judge Allen: Do you expect to bring from this question testimony along the lines which you have already tried to elicit?

Mr. R. T. Jackson: I hope to do that, your Honor.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: That is the purpose of the question. An exception if you please.

[fol. 740] I would like to ask two or three questions and then make one offer to prove, if I may, rather than making separate offers to prove. There is no objection, I take it.

Q. Will you please state the considerations upon which you based your opinion as to the effect upon the rates of privately-owned utilities including plaintiffs in this area.

Mr. Fitts: We object to that question on the same ground.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: Exception, please.

Q. In formulating your opinion as to the effect of the completion of the TVA unified plan, and the offering for sale of the amount of power proposed to be produced in this area at TVA rates as publicly announced, what effect, if any, did you give to the presence or absence of state regulation of rates of the competitors?

Mr. Fitts: We object to that question upon the same ground.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: Exception noted, please.

The plaintiffs now offer to show that the witness on the stand, Frank A. Newton, if permitted to answer the questions to which objections have just been sustained by the court, would say:

As a result of my study of the effect upon the rates of the utility companies in the Tennessee Valley Area of the carrying out of the TVA unified plan, I am firmly of the opinion that the availability of the great volume of power generated, to be generated by the TVA will compel the utilities operating in the Tennessee Valley, and even beyond that territory, to reduce their rates to the levels of the TVA rates.

The maximum rates of such utilities in the area will be fixed and measured by TVA rates, and not by rates prescribed or established by state commissions or other state regulatory authorities.

While the power to be generated by the TVA power system will not equal in volume the total amount of power generated by the utilities in the entire area within practical transmission distance, that is within 250-mile radius of the TVA grid system or power pool, this great volume of power will flow out from the TVA power pool in constantly widening areas until it is finally absorbed.

To the extent that the TVA fails to secure the entire [fol. 741] market in the vicinity of the power pool because of the meeting of TVA rates by private utilities. It will proceed from the pool to more distant markets.

It is unnecessary that the TVA have available power in sufficient quantities to meet the entire requirements in the Valley in order to control the rates in the entire area.

Those utilities such as the ones I have mentioned particularly have rates which are uniform for similar classes of service all over their service areas. These rates have

been established by the regulatory authorities of the states wherever such regulation applies. This presents another reason for my opinion that the rates of these utilities will be controlled by the rates prescribed by the Tennessee Valley Authority.

I base my opinion that the TVA rates will control, measure, fix and determine those of the private utilities in particular upon my knowledge that for many years in the electrical industry, where there has been competition between two private utilities, or between a private utility and a municipal utility it has been almost the invariable rule that the rate levels of the two utilities become equal in all areas in which the competitive power is available, whether actually being supplied or not. I base this on my personal observation, and upon rate studies published by the Federal Power Commission.

The presence or absence of state regulation of rates of the competitors would have no effect, and in cases such as these where the state regulatory body has no jurisdiction over the rates of TVA, such regulation would have no effect whatsoever on my opinion that the Tennessee Valley Authority rates would control, measure, determine and fix those of the private utilities in the entire Tennessee Valley area.

This regulation would be effective beyond an area measured by a radius of 150 miles from the TVA grid system or power pool which would result from the completion of the TVA unified plan."

I am familiar with the rate schedules of these companies and the revenues received by the companies from rendering electric service as they exist from time to time and I am familiar with the connection which exists between the revenues and the rates for service rendered by these companies. I am familiar with the electric rates published by the TVA.

"Q. What classes of rates does the Tennessee Valley Authority have?

A. It has wholesale power rates for municipalities and [fol. 742] others which buy from it wholesale; it has power rates for power customers that it supplies directly; and it prescribes the rates which the municipalities and others which buy from it at wholesale shall sell to its customers.

Mr. Fitts: I move to strike the statement of the witness that the Tennessee Valley Authority prescribes the rates. The contracts are in evidence and speak for themselves, and that is a mere conclusion of the witness as to the effect of a contractual provision, which in my opinion, is improper. That is a legal conclusion.

Mr. R. T. Jackson: There is no dispute about it.

Mr. Fitts: There is a dispute. There is a dispute about the use of that term, a very definite dispute.

Mr. R. T. Jackson: It is in the statements to Congress that are in the record, I believe. They certainly did not mislead Congress, or at least didn't attempt to.

Judge Allen: The objection is sustained as to that part of the answer which states that the Tennessee Valley Authority prescribes the rates.

Mr. R. T. Jackson: And we may have our exception, I assume.

Judge Allen: You may have your exception."

The TVA resale rates cover the following classes of service: residential, rural, commercial and industrial power.

"Q. Are these resale rates of TVA for domestic, rural and industrial power, and rural service the same all over the TVA area?

Mr. Fitts: We object to the question as immaterial and irrelevant. It doesn't make any difference to the issues in this case whether they are same or not.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: We may have our exception?

Judge Allen: You may have your exception.

Mr. R. T. Jackson: We offer to show that if the witness were permitted to answer he would say that the TVA resale rates for domestic, commercial and industrial power and rural service are the same all over the TVA area, that is, the basic standard rates are uniform, subject to certain surcharge provisions which appear in the contracts in evidence here in this case."

I have made a comparison of the rates of the Mississippi Power Company, Alabama Power Company and the Tennessee Electric Power Company with those of the TVA [fol. 743] for the same classes of service, by applying the TVA rates for the various classes to the same classes of

customers of those companies. I have applied those rates directly to the bills and the consumption of the customers in these various classes and I have made this comparison several times.

"Q. How did the TVA rates for these same classes of service compare with the same classes of service of the three companies?

Mr. Fitts: We object to that question, may it please the Court, upon the same ground.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: I think if I may ask one or two questions, and make my final offer to prove, it will show it in simple form. Exception noted, please."

I have made or supervised several times a determination of the effect upon the revenues of these three companies which would follow from the making available of the substantial amount of TVA power in the service areas of these companies.

"Q. What, in general did these determinations indicate?

Mr. Fitts: We object to that question upon the same ground.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: We note our exception and offer to prove that if the witness had been permitted to answer the last two questions to which the Court sustained objections he would say in substance that he has applied the TVA rates for each class of service to the bills and consumption of customers of the same service class of the three companies, that is the Alabama Power Company, the Tennessee Electric Power Company and Mississippi Power Company, and as a result, has determined that the reduction of the rates of the companies to TVA rate levels would result in a loss in revenue to these companies of between nine and ten million dollars per year."

Cross-examination:

With reference to the figure given by me as to the total amount of firm power that would be generated by the TVA Unified Plan, as I remember the statement submitted by

[fol. 744] Mr. Lilienthal, was under the heading "The Ultimate Stage of Development." That was with the installation of whatever generators were stated in the table. I do not recall whether Fontana was in the table or not, but it includes all installation that was stated in that table. I do not know how many generators are now installed in the various dams or for how many generators there has been an actual appropriation or authorization by the Board of Directors of the TVA. I could not give any figures as the amount that could be generated by the use of the generators installed or authorized for installation.

To the extent that the power companies secure power from interconnections with companies in other states, it is necessary to consider the capacities in those other states to get a true picture of the capacities available on the various systems. The figures are what I have stated. The total generation of power in the various other states for the year 1936 is as follows: Arkansas, 140,238,000; Missouri, 1,466,000,000; Illinois, 7,755,000,000; Indiana, 3,387,000,000; Ohio, 7,612,000,000; West Virginia, 2,616,000,000.

Redirect examination:

I do not know how much, if any, power comes into the seven states from any other states or how much goes out.

Recross-examination:

I do not recollect whether at least parts of all those states which I have mentioned are included within 250 miles of one of these dams.

(The witness was excused.)

[fol. 745] HARRY M. ADDINSELL was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Glen Cove, New York, and am in the investment banking business. I entered the old firm of M. W. Harris & Company in 1905 and continued with their successors, Harris, Forbes & Company, of which I became Vice President and Director, until 1931, when it was changed to

Chase, Harris, Forbes Corporation, of which I was President and Director. Since the spring of 1934, I have been chairman of the executive Committee of the First Boston Corporation. My office is in New York City.

In our annual report to stockholders for the year 1936, we stated that we had participated in marketing or in syndicates involving $3,900,000,000, of which our direct underwriting interest was some $318,000,000. Our house was a leading banker in getting a number of these issues. We majored in bonds and the larger part of our business has been in public utility bonds. I know the names of the companies which are complainants in this case. Harris, Forbes Company has participated in underwriting for the Appalachian Electric Power Company, the Birmingham Electric Company, the Memphis Power & Light Company and the Mississippi Power & Light Company, and the First Boston Corporation participated in the underwriting of the Tennessee Public Service Company, the Carolina Power & Light Company and the Mississippi Power & Light Company.

"Judge Allen: Mr. Jackson, the Court is wondering whether the testimony of this witness will be directed to the same points that were elicited from Mr. Frothingham.

Mr. R. T. Jackson: Not quite, your Honor, I do not think. It will not be an offer to prove, but I will briefly explain to your Honor what the testimony is.

Judge Martin: We thought if it was cumulative, you might state about what the witness would prove. I do not mean an offer to prove.

[fol. 746] Mr. R. T. Jackson: I believe he can state it more quickly than I can. It will not take but a few minutes.

Mr. O'Brian: If the Court please, I desire to interpose the objection, I think the purpose of the testimony is quite clear, that it must fall in either of two theories, the first theory, the witness is offered to undertake to testify to specific companies, the Tennessee Electric Power Company, I believe. In that case it would fall in that ruling, and if not it would fall in the ruling it would be cumulative, because this is relating to general conditions as distinguished from one or two particular companies and was covered by Mr. Frothingham. I desire to interpose the objection at

this time to further questioning on the ground it is irrelevant and immaterial.

Mr. R. T. Jackson: I think when the questions are asked Mr. O'Brian will regret he has been misled into making the objection that he has made.

(By Mr. R. T. Jackson:) I want to invite your attention to the Alabama Power Company, the Appalachian Electric Power Company, the Birmingham Electric Company, the Carolina Power & Light Company, the Memphis Power & Light Company, the Mississippi Power & Light Company, the Tennessee Public Service Company, the Tennessee Electric Power Company, and ask you to state if you know whether or not each of these companies had an established credit in the money market prior to 1933?

Mr. O'Brian: To that I object as irrelevant and immaterial, and as a matter incompetent, for this witness to deal with the established credit of any particular complainant in this case.

The purpose of the question is in relation to some opinion of the witness, that he may choose to express. I understood the Court in ruling upon Mr. Frothingham's testimony, to confine it to his own opinion and not as to the attitude of the investment market. I understood that to be the Court's ruling, upon which the narrow permission was given to obtain his opinion.

Mr. R. T. Jackson: This is the opinion of this witness and it deals specifically with these companies, with a specific asset of the company.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: Exception noted. We offer to show if the witness were permitted to answer the question, he would say that each of these companies had an established credit in the money market in 1933. And in view of the fact there was an objection made that the witness was not competent to express an opinion, I want to ask the Court if they will indulge me by stating whether their ruling is in any manner based upon that? Because, if this witness is not competent, Mr. O'Brian will never be able to find one.

[fol. 747] Judge Allen: That was not the basis of the Court's ruling.

By Mr. R. T. Jackson:

Q. In your opinion was that an asset of the various companies?

Mr. O'Brian: Object to that.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: We note an exception and offer to prove if the witness were permitted to answer, he would say that this established credit was an asset of very substantial value to each of them, and would enable them to secure funds with which to build additions, and meet the growth of their business.

By Mr. R. T. Jackson:

Q. Mr. Addinsell, in your opinion has there been any change in the character and extent of that established credit of the named companies, or any of them since 1933?

Mr. O'Brian: To that I object on the same ground, also on the ground it is cumulative.

Judge Allen: Objection sustained. You may have your exception.

Mr. R. T. Jackson: That is the ruling of the Court, as I understand, is based upon the circumstance that two witnesses cannot express an opinion in the same field.

Judge Allen: It is based upon the proposition that the questions that preceded it were objectionable.

The Court had some doubt of the relevancy and materiality of the testimony of Mr. Frothingham, and he gave opinion testimony covering general conditions. The court ruled out the testimony of the banker,—I forget his name—with reference to investments of a specific company.

Judge Martin: The Nashville banker.

Mr. R. T. Jackson: I would like the record to show the purpose of offering this testimony is both on the issue of damages, to show their nature, type and extent also upon the question of invasion of states' rights and direct interference with the power of states to regulate their local utilities. But, I assume that makes no difference in the ruling of the Court. And I want to show clearly in the record that it is offered for both purposes.

Judge Allen: Objection sustained. You may have your exception.

Mr. R. T. Jackson: We offer to show if the witness [fol. 748] were permitted to answer the question propounded to him, he would say the established credit of each of the complainants has diminished materially since 1933.

By Mr. R. T. Jackson:

Q. Will you please give your opinion of the extent to which the credit of these companies has diminished since 1933?

Mr. O'Brian: To that I object on the same ground.
Judge Allen: Objection sustained.
Mr. R. T. Jackson: I note an exception. We offer to show that if this witness were permitted to answer the question he would say that the established credit of each of these companies has diminished to the extent that, with the possible exception of the Appalachian Electric Power Company, each would be unable to do any substantial financing, except at rates which would be exorbitant.

By Mr. R. T. Jackson:

Q. Mr. Addinsell, have you given consideration to the cause or causes of the impairment of the established credit of these companies?

Mr. O'Brian: I object to that on the same grounds.
Judge Allen: Sustained.
Mr. R. T. Jackson: Note an exception.
We offer to show that the witness would answer that he has given consideration to that factor.

By Mr. R. T. Jackson:

Q. Mr. Addinsell, will you please state briefly the results of that consideration?

Mr. O'Brian: I object to that on the same ground.
Judge Allen: Objection sustained.
Mr. R. T. Jackson: We note an exception and offer to show that if the witness were permitted to answer the question he would say from his own observation of the securities of these companies and the financial results of their operations; and also of the situations in which they operate, he has definitely become of opinion that the cause of the im-

pairment of the established credit of these companies is the threat of destructive competition of the Tennessee Valley Authority which confronts these companies.

By Mr. R. T. Jackson:

Q. Mr. Addinsell, has this impairment of the established credit of these companies been occasioned by the change in the financial condition of these companies, or the position of——

Mr. O'Brian: To that I object on the grounds previously stated.

[fol. 749] Judge Allen: Objection sustained.

Mr. R. T. Jackson: We note an exception. We offer to prove the witness, if permitted to answer, would say that the impairment of the established credit of these companies has not been occasioned by any change in their financial condition; that the coverage of fixed charges of the companies mentioned has improved from 1933 to 1936, within the average of light and power companies generally within the United States, and there have been no other changes in the physical conditions of the companies which might account for the lowered prices of their bonds. And there was no change in the earnings which would account for the impairment of the established credit.

By Mr. R. T. Jackson:

Q. Mr. Addinsell, would the fact that the Federal Trade Commission had alleged that a write-up had occurred in the fixed capital account of any of these companies, in your opinion, bring about a change in the established credit?

Mr. O'Brian: To that I object, to the extent of the witness' opinion.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: We note an exception. We offer to show that this witness, if permitted to testify would say that the existence of alleged write-ups, or the charge of alleged write-ups by the Federal Power Commission, the charge of write-up in fixed capital account of any of these companies would not bring about this change in established credit with investment bankers.

That investment bankers to a large extent provide the market for these companies, and similar companies. That

they make their own investigation for the basis for the issuance of the bonds, and do not give much weight and study to book values of fixed capital items."

The charts, (offered in evidence as Complainants' Exhibits 487 to 496, inclusive), are designed to show the fluctuation in price, interpreted in terms of yield because of the variations in base rate, maturity, etc. of the different bonds involved of the 9 complainant companies with Standard Statistics Company's average yields of public utility bonds by quality groups beginning with A-1 rating, and running down to the B-1 rating. Complainants' Exhibit 487 is a chart comparing the composite graph of the 9 companies as compared with the background of fluctuations and interest yield on various grades of bonds. The subsequent exhibits, Complainants' Exhibits 488 to 496, show the variations in change of the separate 9 companies as compared with the [fol. 750] same background of fluctuations and interest yield on various grades of bonds. These charts were made up under my direction and I obtained the data from the Standard Statistics. Standard Statistics, as pretty nearly everybody knows, is possibly the largest statistical agency for the dissemination of analyses of securities, and their rating and financial reports of various characteristics with regard to the companies whose securities are in the market. It also publishes from month to month a book in which those ratings and quotations are revised from time to time. The definition of the different ratings as shown in their book are the A-1 bonds, or the high grade bonds; A bonds are sound; B-1 plus bonds are good; B-1 bonds are fair. The B-1 plus bonds and those which are better are bonds which are generally acceptable for bank investment. Standard Statistics' services go all over the country to banks, insurance companies, dealers, investment dealers, investors, etc. It is generally accepted in the investment banking business as one of the most reliable, if not the most reliable of statistical agencies.

"Mr. R. T. Jackson: We offer in evidence exhibits 487 to 496, inclusive.

Mr. O'Brian: If the Court please, we object to the receipt of any and all of these exhibits. The comparison shown would be meaningless so far as the issues in this case are concerned, because the witness has testified that this is

based upon market prices of these bonds at various times as indicated on the exhibit.

And the Court may take judicial notice of the factors which affect fluctuations in the price, market price of securities from day to day or from month to month.

Furthermore, this is simply a comparison with the average yield of utility bonds of companies apparently all over the United States, many of which must have very different conditions of operation from those of the nine companies shown here.

The legend reads that it is a comparison with the Standard Statistics Company's average yields of public utility bonds by quality groups.

[fol. 750-a] Now, to ascertain whether that would be a fair basis of comparison would involve our looking into the conditions of the other companies. It is not a comparison with a neighboring company. It is not a comparison with utilities claimed to be operating under identical conditions in the same market.

This is a comparison with an average, an average yield of the entire United States, including for example such companies as the Consolidated Edison in the highly populated vicinity of New York City, including other companies of very slight moment, and the basis of comparison would be entirely a matter of opinion in that degree, and I therefore object to the receipt of these as involving elements of speculation, remoteness, and being immaterial and irrelevant to the issue here.

The Court has already excluded the opinion of this witness as to the cause of any discrepancy in price between these bonds and other general utility bonds.

For all of those reasons I object to the receipt in evidence of these charts.

Judge Allen: The objection is sustained and complainants' exhibits from 487 to 496, both inclusive, are excluded.

Mr. R. T. Jackson: I take an exception and ask one or two more questions, because among the numerous statements of objection there are some that might go to the technical qualification of the exhibit and I want to cover those.

Q. Will you explain how, without giving the results, the comparison is made between the average, is made between the nine complainant companies, or each of the individual companies, on the exhibit, following 487, and the B-1 and

other ratings that are shown on these exhibits, and whether or not there is any shift in the basis of comparison between the period shown at the beginning on the left hand side of the chart and the period on the right hand side?

[fol. 751] A. But the curve shows for example, the red line showing the average of the nine companies shows that the bonds of these companies sold at a lower interest rate, and therefore theoretically higher price than bonds having an A rating. That begins at the beginning——

Mr. O'Brian: Is this going into the record?

Mr. R. T. Jackson: Certainly.

Mr. O'Brian: If so, I want to object to it.

Mr. R. T. Jackson: I think he is entitled to explain how it is made up.

Mr. Fitts: He is testifying as to the facts.

Mr. O'Brian: I ask to have the answer stricken.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: I don't see how otherwise he can qualify it.

Judge Allen: The objection is sustained and the answer will be stricken from the record.

Mr. R. T. Jackson: May an exception be noted, please? I think I noted an exception severally to the rejection of each of the exhibits. I don't know whether this is really a proper question in view of the ruling of the Court, but I will state the question to make the record clear.

Q. In connection with an offer of proof, Mr. Addinsell, it was stated that you would testify that with the possible exception of the Appalachian Electric Power Company these companies which have been named would be unable to do any substantial financing except at probably exorbitant rates.

I now ask you whether you will explain your reference to the Appalachian Electric Power Company in this connection?

Mr. O'Brian: To that I object as irrelevant.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: Note an exception. And we offer to show that if the witness were permitted to answer he would say that the effect of threat of TVA competition has varying degrees of intensity; the larger part of the property of the Appalachian Electric Power Company being located at a

greater distance from the center of the TVA activities than any of the other complainant companies, and is in a region where cheap coal is available, and that according to his information no TVA transmission line has been projected into the company's territory.

[fol.752] Q. Mr. Addinsell, has this impairment—with one or two more questions to complete the record, your Honor—has this impairment of the established credit of the companies in your opinion resulted in pecuniary loss to the companies mentioned?

Mr. O'Brian: To that I object.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: We take an exception and offer to show that if the witness were permitted to answer he would say that it has caused a pecuniary loss to the companies mentioned in the sense that if this credit impairment had not arisen, in his opinion these companies could have refunded and brought about an annual savings to the companies of more than $2,000,000.

Q. Mr. Addinsell, in forming your opinion of the impairment of the credit of these companies, have you taken into consideration all factors which are usually taken into consideration by you as an investment banker in determining the quality of the security?

Mr. O'Brian: To that we object as immaterial.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And we note an exception and offer to show that the witness if permitted to answer would say he has taken into consideration all factors which he ordinarily would take into consideration as an investment banker."

(The witness was excused.)

Barney E. Eaton was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 59 years old and living in Gulfport, Mississippi, and am president and general counsel of the Mississippi Power Company.

"Q. Mr. Eaton, were you present when the Judiciary Committee of the House of Representatives and the Senate of the State of Mississippi conducted hearings on a series of utility bills in March of 1936?

[fol. 753] Mr. Fitts: May it please the Court, we object to that question as calling for immaterial and irrelevant testimony. It can lead only to an attempt here to prove what has gone on in state legislatures, passage of bills, purely political in nature. If we are going to try a political controversy here, as to the reasons for the legislature passing legislation, we can be here several years.

Mr. Bemis: If the Court please, I think it would simplify the record and the procedure here if these preliminary questions would be permitted to be answered, and then we make very brief offers.

Judge Allen: Let's find out about this hearing. Where was it held?

The Witness: The State Capitol at Jackson, Mississippi.

Judge Allen: Was the hearing upon a proposed enactment, to be enacted by the Legislature of Mississippi?

Mr. Bemis: Yes. It was a hearing relating to certain enabling acts to permit rural cooperative associations and municipalities to contract with the Tennessee Valley Authority and REA and other Federal agencies; and the bills in question were bills which had been prepared, as we expect to show, by the Tennessee Valley Authority counsel in collaboration with counsel representing the other agencies.

Judge Allen: Were the bills enacted?

Mr. Bemis: And the bills were in fact enacted.

Judge Allen: Objection sustained. The Court will permit you to show that such a statute was enacted, and to prove the statute. The Court will not receive testimony as to what was said at hearings, preceding the enactment of such legislation.

Mr. Bemis: An exception. And we would like to have the record show that our purpose is to show the activities of the defendants in promoting the legislation, preparing, sponsoring and supporting legislation in the promotion of its electric power business, and in its promotion of its activities in disposing of its power through its transmission and distribution system.

Judge Allen: The Supreme Court of the United States has held that the motives of the legislature cannot be inquired into, even if they were bribed. That is a pretty

drastic holding, but we think that it has great point here. For that reason, we will not inquire into the motives which led up to the enactment of legislation.

Mr. Bemis: If the Court please, I am not seeking to prove motives.

[fol. 754] Judge Allen: You may have your exception. The ruling stands. Now, from time to time the Court says with some emphasis that "the ruling stands" because we are trying to get this ox out of the ditch.

Mr. Bemis: We take our exception, if the Court please, and we offer to show that the witness if permitted to answer would state in response to appropriate questions that he was present at a meeting of the Judiciary Committee of the House of Representatives and Senate of the State of Mississippi in March of 1936, that Mr. C. G. Davidson, an attorney for the Tennessee Valley Authority was present at that committee hearing, that Mr. Davidson stated that he had been assigned by the Tennessee Valley Authority to urge the enactment of the pending bills, and gave two reasons for their enactment, that the rates of the private utilities in Mississippi were exorbitant, and that the Tennessee Valley Authority rates and service would both result in great savings to the consumers of electricity, and induce the location of new industries, that the Federal Government had made an appropriation of $420,000,000 for rural electrification, that the attorneys in Washington representing the Tennessee Valley Authority, the PWA, and REA had jointly proposed these bills, and that if they were passed Mississippi would be able to secure the advantages of Tennessee Valley Authority rates and service, and participate in the allotment of REA funds.

And the witness would testify further that in the hearings before the Senate Committee in addition to Mr. Davidson, Mr. Dennis Murphree also appeared, Mr. Murphree being the coordinator of Federal agencies in Mississippi, and that Mr. Murphree also supported this legislation.

Now, in order to identify the legislation which was before the Legislature, we would like to, for the convenience of the Court, have identified the particular bills which were in fact passed at this session of the Mississippi Legislature. (By agreement of counsel the following was inserted in the record at this point): Let the record further show that the bills under consideration at this hearing before the Judiciary Committees referred to in the offer to prove are as follows:

House bill No. 575, later enacted as Chapter 183, laws 1936 of Mississippi; House bill No. 578, later enacted as Chapter 184, laws 1936, of Mississippi; House bill No. 577, later enacted as Chapter 185, laws 1936, of Mississippi; House bill No. 576, later enacted as Chapter 187, laws 1936 of Mississippi; House bill No. 579, later enacted as Chapter 271, laws 1936 of Mississippi. All the above acts were approved March 26, 1936."

(The witness was excused.)

[fol. 755] REQUEST FOR SUBPOENA DUCES TECUM

Counsel for complainants then requested the Court to issue a subpoena duces tecum (marked for identification Complainants' Exhibit 497), requiring for the production of the copy of the telegram dated between January 1 and January 15, 1935, sent from the TVA to the Governor of Alabama, stating the terms and provisions of a proposed statute to be submitted to the legislature of Alabama.

"Mr. Fitts: We object to the granting of that order upon the ground stated before, that the evidence, if produced, would be entirely immaterial and irrelevant, and the Court is not called upon to issue a subpoena for immaterial evidence.

Mr. S. D. L. Jackson: As I understood it, you said we might show the statute. I take it that is the one that is presented to the Legislature.

Judge Allen: You can show the statute which has been enacted. When I speak of a statute I——

Mr. S. D. L. Jackson: Might we not show the bill that is introduced in the Legislature?

Judge Allen: Speaking for this member of the Court, you may not. That is my single ruling now. The matter will be taken under advisement.

Judge Martin: I concur in that ruling, so it is the ruling of the Court now. Further than that, as far as the statute of Mississippi is concerned, which was enacted in the law, isn't it a fact that this Court takes judicial notice of that statute? It is not necessary to prove the statute of a state in the United States Court. You may merely point to the statute so that the Court can consult the statute, and of course, consider it.

But it is my understanding that it is not necessary in the United States Court to prove a statute, law or state statute.

Mr. S. D. L. Jackson: That is my understanding that the Court does take judicial notice of state statutes that are enacted. I might state the purpose of this, and as I understood your Honor's ruling, we might show what was presented to the State Legislature. I also submit if it was presented directly by TVA, we might show that fact as I understood it.

Judge Allen: That was not what was said, according to the words of the ruling. Neither was it the meaning of it. You are entitled to show the statute, whether it be proven or whether judicial notice be taken of it, you are entitled to show the statute. The Court considers and has ruled that you are not entitled to show the negotiations, speeches, telegrams, letters, conferences, picnics and other gatherings which preceded it.

[fol. 756] Mr. S. D. L. Jackson: If the Court please, it was not my intention to try to go into any of those matters. But we do earnestly desire, it is in our bill, to show the lobbying, and as I honestly understood your Honor's ruling it would permit us to have this particular telegram produced. Now, if I have been under a misapprehension I must apologize.

Judge Allen: That was not the meaning of the ruling at all, Mr. Jackson, and that is not the words of the ruling, and we do not feel that this is covered by the ruling. But irrespective of that, this particular demand simply comes under the heading which we have ruled out.

Mr. S. D. L. Jackson: Well, now, if that telegram does state or set forth verbatim a bill that was introduced in the Alabama Legislature, which was subsequently enacted into law by the Legislature of Alabama, it would certainly seem to me that even under the Court's prior rulings we would be entitled to it.

Judge Allen: Taking your statement at its full face value, Mr. Jackson, the Court considers that evidence immaterial, because if the act of a responsible State Legislature intervenes it makes no difference, this Court cannot inquire into the motives which induced the Legislature to enact a statute.

Mr. S. D. L. Jackson: This doesn't go into that.

Judge Allen: That is not the subject of judicial inquiry.

Mr. S. D. L. Jackson: We are not seeking to inquire into

the motives of the Alabama Legislature, we are seeking to show the activities of the TVA.

Judge Allen: The Court cannot, in these offers, for this purpose,—this Court cannot inquire into the persons who suggested statutes. It is immaterial. It has nothing to do with this controversy in the view of the Court.

Mr. S. D. L. Jackson: May we have an exception to your Honor's ruling?

Judge Allen: You may have an exception."

[fol. 757] Homer Townsend Harle was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Cleveland, Tennessee, and am Secretary-Treasurer of the Cherokee Hosiery Mill. I attended a meeting of the Southwest Tennessee Membership Corporation about December 5, 1936, held in the City Hall in Jackson, Tennessee. Mr. Wall and Mr. Halsey of the TVA were in charge of the meeting.

Examination by the Court:

The meeting was not in progress when I went there. The meeting was called to order by Mr. Wall.

"Mr. Fitts: Is that what you mean when you say that Mr. Wall was in charge of the meeting, that it was called to order by Mr. Wall:

The Witness: That is right."

Direct examination continued:

I believe his full name is Earl R. Wall. He was District Manager of the TVA in Jackson. Mr. Halsey's full name is William Halsey and he was commercial Manager of the TVA in Jackson. Mr. Wall stated that the Southwest Tennessee Membership Corporation had approximately 1,000 members signed up from Madison, Haywood and Tipton Counties. He also stated that the REA had agreed to furnish $290,000 for the construction of TVA lines in those Counties, but he stated that not one pole could be sunk or

one line constructed until the members were signed up 100 per cent.

[fol. 757a] "Mr. Fitts: I would like to see the written paper when you finish, that you are testifying from.

The Witness: All right."

Mr. Wall stated that since the 1937 model electric appliances had not come on the market yet, he would accept [fol. 758] papers leaving the name of the appliance and the cash value of the appliance blank, but it must be filled in with the dealer's name from whom the consumer proposed to purchase the appliances, which we would install in his home, and that they must also have signed contracts from electrical contractors to provide wiring for their homes. Mr. Brock, who is the County Agent for Madison County, stated he would be able to see each one of these members the next week in his official rounds and proposed that there be a meeting held in each community as he went around, and that the dealers of Jackson and the surrounding towns and counties accompany him on these rounds and converse with the rural applicants for electrification, and try to sign them up for electric appliances to be installed in their homes. This was discussed at some length by the members and by Mr. Wall and Mr. Halsey, who answered questions from the members as they were asked, and it was finally agreed that Mr. Halsey would go out and have a meeting in each one of the communities, would present the proposition to them and that two days later Mr. Brock, the County Agent for Madison County, would take all of the dealers in Jackson or any other electrical dealers from Memphis or surrounding towns or counties that wished to accompany him, and that they would then attempt to sign up each member of the Southwest Tennessee Membership Corporation 100 per cent for house wiring and for the electric appliances which they had agreed to install.

"Q. All right. Now, Mr. Harle, Mr. Fitts has asked you about some memorandum to which you have been referring. Is that a memorandum which was prepared by you?

A. Yes, I wrote this myself.

Q. Can you state at what time you prepared the memorandum?

A. Yes, I wrote it on the same day that I attended the meeting."

[fol. 759] Cross-examination:

This was the Southwest Tennessee Electric Membership Corporation./ Mr. Wall stated that it had approximately 1,000 members signed up at the time of the meeting. I could not say whether any of those people did have electric service from any of these complainant companies before. I happened to be at that meeting as I was living in Jackson at that time. Mr. Wisdom of the West Tennessee Power & Light Company asked me to attend the meeting and at his request I made that memorandum.

(The witness was excused.)

[fol. 760] CHARLES C. MCWHORTER was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

My residence is in Moulton, Lawrence County, Alabama, and I am in the banking business. I have been city clerk of Moulton since 1932 and am also a councilman.

The resolution, (offered in evidence as Complainants' Exhibit 498), was brought to my office in the Bank of Moulton by Mr. Spencer Latham, who was an employee of the TVA at that time. Mr. Latham's activities, so far as I knew, seemed to be out among the people of the rural districts lining them up for TVA power. I do not know exactly what his real duties were or what his title was. He drove a car with a TVA license tag.

"Q. What did Mr. Latham ask you to do with that resolution, if anything?

Mr. Fitts: We object.

Judge Allen: Was this resolution passed?

The Witness: Yes, ma'am.

Mr. Fitts: It seems to me anything that happened prior to its passage is incompetent.

The Witness: It was not passed in a regular session.

Judge Allen: Objection sustained. The Court considers that resolutions or ordinances of the councils of towns or

municipalities are of the same class as statutes of a legislature. They are enactments of a legislative body, and the Court will not hear testimony as to how they were induced to be passed, or who suggested them, or as to the discussion in connection with them. You may have your exception.

Mr. Bouldin: We except. We offer to show, your Honor, that Mr. Latham requested Mr. McWhorter to sign the resolution. Mr. McWhorter did sign the resolution. Mr. Latham then took the resolution from his office and that the witness does not know thereafter what became of the resolution. May I ask the Court this question? Would it change the Court's action if we could show there was no passage of the resolution at a convened meeting of the city council?

[fol. 761] Judge Allen: It would not change the Court's ruling.

Mr. Bouldin: That is all, I have said that is all. May I offer this exhibit, your Honor.

Judge Allen: Complainants' Exhibit 498 is excluded.

Mr. Bouldin: We except."

Cross-examination:

The Alabama Power Company sells power to the Town of Moulton and the Town of Moulton does not have any contract with the TVA or with the Joe Wheeler Electric Membership Corporation. Moulton is in Lawrence County, but I do not know whether that is in the ceded area under the contract of January 4, 1934. The TVA owns the transmission line that serves the Town of Moulton. I think the Alabama Power Company owns the sub-station, but I am not certain.

(The witness was excused.)

L. W. Gentry was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Moulton, Alabama, and am a banker. I am a director of the Joe Wheeler Membership Corporation. The TVA built some of the electric distribution lines of

the Joe Wheeler Membership Corporation. I do not know whether they built them all or not. The Joe Wheeler Membership Corporation now operates the lines built by the TVA. I do not think the Joe Wheeler Membership Corporation advanced any funds to the TVA for the construction of the lines, but I think it took them over and contracted with TVA to pay for them. The Joe Wheeler Membership Corporation has not advanced any cash that I know of.

(The witness was excused.)

[fol. 762] Roy A. Smith was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

For 14 years I was City Clerk of the City of Athens, Alabama, and I left that employment in October, 1936. During the time I was City Clerk of Athens, the City of Athens made a contract with the TVA. Prior to the date of that contract, the electric distribution system in Athens had been owned by the City. It was my duty to render electric bills, to collect them and to purchase material for the electric plant of the City and I kept the books. I was Clerk of the City Council of Athens.

After the TVA contract, the bookkeeping of the light plant was segregated from the water plant. It had previously been connected with the water plant. The receipts from the light plant were also kept separate. As to what, if any, supervision or auditing occurred with respect to the bookkeeping of the light plant after the TVA contract, the books were kept as before but TVA had auditors to audit the books. There was a general audit every twelve months and there were men there oftener than that. I would say they were there about one-fourth of the time.

"Q. Prior or at the time this segregation was made, was there any dispute between the TVA and the City of Athens concerning the valuation to be placed upon the electric properties?

Mr. Fitts: We object to that, may it please the court. It is impossible for us to see how the dealings on a matter of

that kind between the Tennessee Valley Authority and the City of Athens, where the Tennessee Valley Authority is selling to the municipal system, can have any bearing on the issues in this suit.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If the witness were [fol. 763] permitted to answer he would state that the city council of the city of Athens valued its electric properties at something in excess of $100,000; that immediately after the contract was made with TVA, the TVA engineers caused an appraisal to be made and refused to permit a valuation for the property to be set up on the books in excess of $72,000.

By Mr. S. D. L. Jackson:

Q. With respect to the operations of the electric property after the TVA contract, Mr. Smith, was there any set place as between the water and the light, which had produced the greater revenue?

Mr. Fitts: We object to that question, may it please the Court, on the ground it is irrelevant and immaterial.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer he would state that the revenues from the electric end of the business were about three times those from the water operations of the city.

By Mr. S. D. L. Jackson:

Q. With respect to the charges for operations, Mr. Smith, will you state please, whether there was any disagreement between the city council of the city of Athens, and the Tennessee Valley Authority as to the amount of charges that should be made to operations of the electric part?

Mr. Fitts: We object to that, may it please the Court, as irrelevant and immaterial.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer, he would state that the City Council of the City of Athens were convinced that something over two thirds of the total cost of operation of the water and light service should be charged to the electric

properties, but that the Tennessee Valley Authority refused to permit more than approximately 50 per cent of the charges for operations to be so charged.

Judge Allen: The contract between the city and the TVA, was one of those introduced this morning?

Mr. S. D. L. Jackson: This morning?

Judge Allen: Yes.

Mr. S. D. L. Jackson: No, if your Honor please. I think that the contract between the TVA and the city was introduced some time ago. Those were PWA contracts this morning.

[fol. 764] Judge Allen: Yes, that is true.

Mr. Fitts: The contract is in evidence, though.

Judge Allen: The contract is in evidence. The contract provides, I presume, for resale rates?

Mr. Fitts: It does. It contains the provision as to certain supervision over the method of bookeeping and auditing.

By Mr. S. D. L. Jackson:

Q. Did the Tennessee Valley Authority, Mr. Smith, ever render the city of Athens a bill for the appraisal of the property that was made, or for any of the auditing supervision that took place while you were city clerk?

Mr. Fitts: We object to that, may it please the Court, — immaterial and irrelevant. It can only go to a question which involves the question of whether or not the rates that are charged by the city of Athens took into account what the complainants claim are all the elements of cost that should go into those rates. It is our position, as stated previously, that the complainants are not in position to question what rates the City of Athens may charge, or any part of the elements of cost that go into the making of that rate.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception? The witness, if he were permitted to answer the question, would state that the Tennessee Valley Authority never sent the City of Athens bills for anything except power consumed, and specifically, no bills for the appraisal or engineering services, or the auditing services that the witness has previously described were furnished by the Tennessee Valley Authority.

By Mr. S. D. L. Jackson:

Q. Will you state, Mr. Smith, whether or not after the TVA contract was signed, if there were any promotional or advertising activities designed to increase electric consumption that took place in the city of Athens.

Mr. Fitts: We object to that question, may it please the Court, as irrelevant and immaterial.

And there is one other point, I think I have made, but I have not made explicit, and that is, that it already appears from the testimony of this witness that the Alabama Power Company, or no complainant, ever served within the city of Athens; that the only relationship to any of these complainants is at one time the Alabama Power Company served the city of Athens at Wholesale, and that the company sold this very transmission line leading to the city of Athens under the contract of January 4, 1934, which was approved by the Supreme Court in the Ashwander case.

[fol. 764a] Mr. S. D. L. Jackson: If it please the Court, counsel is misinterpreting this evidence that we are offering to show some of the subsidies in the retail set-up that have been furthered by TVA.

Mr. Fitts: And for what purpose, to go to the allegations of your bill that the rates being charged are not sufficient?

Mr. S. D. L. Jackson: To go to the allegations of the bill, sir, that the so-called yardstick set-up is a sham, not a true yardstick but a flannel one.

Mr. Fitts: Exactly.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: We may take an exception. If the witness were permitted to answer he would testify that employees of the Tennessee Valley Authority and possibly of the Electric Home & Farm Authority came into the City of Athens, display rooms were opened, and that there was a great deal of promotional advertising activity designed to increase the sale of electric facilities, to increase the consumption of electricity. And if I may ask one additional question.

[fol. 765] By Mr. S. D. L. Jackson:

Q. Did the City of Athens ever receive a bill from the Tennessee Valley Authority for any promotional or advertising expense, Mr. Smith?

Mr. Fitts: We object to that question upon the same ground.

Judge Allen: Sustain the objection.

Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer he would testify that no such bills had ever been received."

(The witness was excused.)

[fol. 766] EDWARD L. MORELAND was called as a witness on behalf of complainants and, having first been duly sworn, was examined and testified as follows:

Direct examination:

I reside in Boston, Mass., and am a consulting engineer, senior member of the engineering firm of Jackson & Moreland. I am also head of the Electrical Engineering Department of the Massachusetts Institute of Technology at Cambridge. My principal engineering office is in Boston and I have a subsidiary office in New York.

I graduated from the Johns Hopkins University with the degree of Bachelor of Arts in 1905 and from the Massachusetts Institute of Technology with the degree of Master of Science in Electrical Engineering in 1908. In the fall of 1908 I entered the employ of Dugald C. and William B. Jackson, Consulting Engineers, with offices in Chicago and Boston. I was an employee of that firm from 1909 until the end of 1915, during the latter part of the time being manager of the Boston Office.

At the beginning of 1916 I was made a general partner in the firm and remained a partner until the firm was dissolved at the time of the war. During the war I served as Captain and Major of Engineers with the A. E. F., during most of which time prior to the Armistice I served on the Technical Board, which was a board charged with the responsibility of procurement and coordination of power supply for all A. E. F. activities. I was technical executive of that board in charge of all its technical operations. After the Armistice I served with the War Damage Board which was organized under Brigadier General C. H. McKinstry to advise the American delegates to the Peace Commission as to [fol. 767] the damages to physical properties in the coun-

tries of the allied nations. I was technical executive of that board, the organization at its maximum reaching a number somewhat in excess of a thousand specialists, who were investigating damages caused by the war to physical property in the allied countries. After the war and our return to this country, I entered into a partnership with Dugald C. Jackson, who had been the senior member of the old firm of D. C. and William B. Jackson, a partnership operating under the firm name of Jackson & Moreland. That partnership continued until the end of 1929 when Mr. Jackson retired. I then formed a new partnership, continuing the business under the old firm name of Jackson & Moreland, and I am senior partner of that firm, and have as my partners Frank M. Carhart and Ralph D. Booth.

The major activities of our firm and of the predecessor firm are related to the electrical industry and quite largely for the public utilities companies, but to some extent they are in connection with the larger industrial companies who have plants of their own, and to some extent in connection with public bodies. We render consulting advice on developments and on operating programs to the public utilities and also to the larger industrial organizations, and we design and supervise the construction of new facilities. At times we are engaged in activities in connection with valuations and rate cases, sometimes for the utilities and sometimes on behalf of regulatory bodies. Illustrations of the type of work we do are: when the Philadelphia Electric Company was considering the desirability of developing the hydro electric plant on the Susquehanna River, which is known as the Conowingo Plant, we made an exhaustive study of the economic advisability of that development, including preliminary designs and estimates, and advised the Phila- [fol. 768] delphia Electric Company in connection with that proposed undertaking. When the undertaking went forward, we determined the economic number and size of generating units to be installed and made some study of the suitability of the 220,000 volt transmission lines from the Conowingo Plant to Philadelphia, a distance of approximately 70 miles, and advised on methods of assuring electrical stability of that line. When the New England Power Company was developing its plant at Fifteen Mile Falls on the Connecticut River, we determined the electrical characteristics of the generator, of the existing equipment and turbine governing equipment, and of the 220,000 volt trans-

mission line to insure stable operation of that system. We were also consulting engineers on the design of the Somerset Station of the Montaup Electric Company, near Fall River, Mass., with an ultimate capacity of 180,000 kilowatts. We did not make the detailed designs of any one of those three stations that I have referred to.

We are at the moment engaged in the design and supervision of the construction of an enlargement of the generating facilities of the Boston Edison Company of Boston, Mass. At one station we are installing a high pressure steam turbine to be operated at a pressure of 1200 pounds, and at a temperature of 950° Fahrenheit, and are installing two large boilers to supply the steam requirements of that new turbine. At another of their stations we are supervising the rebuilding of the 1200 pound boilers already in that plant to increase their capacity by about 40 per cent.

We were the consulting engineers in responsible charge of the design and supervision of construction of the electrifica- [fol.769] tification of the Great Northern Railway through the Cascade Mountains. We were also consulting engineers in responsible charge of the design and supervision of construction of the suburban electrification of the Delaware, Lackawanna & Western Railroad outside of New York. We have also been engaged in a great many activities in connection with valuations and rate cases.

I am a fellow of the American Institute of Electrical Engineers, a member of the American Society of Mechanical Engineers, a member of the American Society of Civil Engineers, a member of the Boston Society of Civil Engineers and I think of several others.

Of the 10,000,000,000 kilowatt hours estimated total energy available from the TVA Unified Plan in a typical year, I have estimated 7,670,000,000 kilowatt hours would actually be generated in a normal water year, which includes 778,000,000 kilowatt hours of dump power, leaving 6,892,000,000 kilowatt hours of firm power and secondary power with definite guarantees as to the amount of time during which it would be available.

Examination by the Court:

Secondary power is guaranteed as being available during certain times. The TVA contracts with respect to that type of power are of two kinds, one in which they guarantee

that the secondary power will be available at least 75 per cent of the time during each year. With that type of power a manufacturer can schedule his operations, for he will know that he is going to get his power at least 75 per cent of the time during the year. In a normal water year he will get it all the time. This type of power is quite useful to chemical [fol. 770] manufacturers and establishments of that kind. TVA has also contracted for a somewhat lower grade of secondary power, which they guarantee will be available 75 per cent of the time during the contract period; but it might be shut off for a whole year, for example. Dump power is power which TVA sometimes calls fugitive power. It is only available during some seasons of the year and no guarantees can be given as to the time when it will be available or whether it will be available at all. On that type of power, a manufacturer cannot depend for his manufacturing processes, but if he has a steam plant of his own, or if a utility has a steam plant of its own, if the dump power is offered at a price less than the operating costs of their systems already installed, then the manufacturer or the utility company can purchase that power and either shut down or reduce the operation of its own plants and save fuel. Dump power is really only useful to save fuel in existing plants, and that is the reason I have estimated that only 778,000,000 kilowatt hours of that type of power can be sold, although a great deal more would be available in the normal year. The market for it is limited.

Direct examination continued:

The table (offered and received in evidence as Complainants' Exhibit 499) shows, as its title implies, the annual sales by existing utility systems to ultimate consumers in the year 1936 within three different zones. The first zone is that covered by a radius of 100 miles from any TVA generating plant included in the so-called Unified Plan, which includes all dams existing, under construction or recommended for construction by the TVA and with all of the ultimate installations as indicated by the reports of the [fol. 771] TVA to Congress completed in each of the 11 developments.

Examination by the Court:

It is customary, and the TVA is following the customary plan, when making a hydro development, to provide certain

parts of the foundations and the footings for as many units as they think may ultimately be required at the station. There is initially installed only such generating equipment as will be required to meet the power demands in the near future. The reasons for making provisions for later installations are that they can be made so much cheaper at the time the construction work is done and before water is impounded behind the dam. In speaking of the ultimate developments of the projects, we mean the installation of the number of units which have been designated in the hearings for the First and Second Deficiency Appropriation Bills as to the number of units which will ultimately be installed at the various developments. Without knowing by personal investigation, I assume that TVA is making provision for the installation of all units which they now refer to as ultimate installations, which is simple economics to do it.

Direct examination continued:

However that may be, my testimony deals with what is described as the ultimate installation in the TVA reports to Congress.

The table (Complainants' Exhibit 499) shows the actual sales by all utilities and municipal plants within a 100 mile radius, a 150 mile radius, and a 250 mile radius of any of the present or proposed 11 TVA dams. These are the actual total sales, excluding sales by TVA and its contractors. In the first column is given the direct sales by [fol. 772] complainant companies to their own customers whom they serve directly. In the second column, under the heading "Indirect Sales", there is given the total sales made by distributing companies or municipalities of power purchased from other utilities. The third column in the first line of each group shows the total sales directly or indirectly by complainant companies and the fourth column shows the total sales by non-complainant companies within these same zones. There is also set out in each zone the total of all sales and the percentage of the total sales which are made by the complainant companies.

Within the 100 mile zone in 1936, the complainant companies sold 60.9 per cent of all kilowatt hours sold, excluding TVA sales to direct customers or through wholesale contractors. In the 150 mile zone, that percentage was

37.3 per cent of the total and within the 250 mile zone it was 33.7 per cent of the total. Complainants' Exhibit 327, which is a map showing by colored areas the territories served by complainant companies, shows why that percentage varies in that a much greater proportion of the area within the 100 mile zone is covered by the territory of the complainant companies than of the outer zones.

Referring to the map (Complainants' Exhibit 327) which shows the service area of each of the complainants and the geographical relation of their respective service areas and the dams included in the TVA Unified Plan, constructed and to be constructed, and which are to be interconnected to form the TVA grid system or power pool, it would be commercially feasible to transmit power in substantial quantities from that power pool for distribution in the [fol. 773] service area of each of the complainants. If the TVA Unified Plan as set forth in its report to Congress under date of March 31, 1936 and as set forth in the subsequent statements of its Directors before the Appropriations Committees of the Congress is completed, and if large quantities of TVA power are transmitted and sold in the territory of any one of the complainants, it will in my opinion result in rendering partially or totally useless considerable portions of the complainants' properties and will cause losses of markets, business and income.

I have made a study of the areas surrounding the TVA power pool, which will result from the completion of the TVA Unified Plan, to determine how widely such power would have to be offered for sale in order to find a market for the amount which I estimate will be produced. That area is already served by utility companies to a very great extent. There are some minor unserved areas, not minor in square miles so much as minor in potential ability to use electric service. This means that TVA will be in competition with existing utility service, and consequently, unless it takes all of the business of those utilities in the area, it will have to spread out over a wider area in order to find a market for all of its power output than would be necessary if it were taking all the service within the area it serves, for the same reason that where two agencies are serving an area in competition with each other, the area required to absorb the product will be larger than if there were only one agency. My study leads me to the opinion that TVA, in order to find a market for its entire output of salable power,

will in general extend beyond the 150 mile radius. I do not expect that TVA's zone of activity will be confined by any regular line such as the circumference of the circles drawn [fol. 774] on the map. I assume that this boundary of their zone will be irregular, that it will be influenced by available markets at varying distances from TVA plants; but in general I am of the opinion that TVA's active territory will extend somewhat beyond the 150 mile zone shown on the map, Complainants' Exhibit 327.

I have made a study and formed an opinion of the extent of the transmission system which would be necessary to market the 7,670,000,000 kilowatt hours of firm and secondary energy which will be produced by the completion of the TVA Unified Plan in a typical year under conditions of utility operations which obtain in the southeastern part of the United States. It is my opinion that between 12,000 and 15,000 miles of transmission lines will be required for that purpose. I do not know how many miles of transmission lines have actually been constructed, but in the hearings for the Second Deficiency Appropriation Bill of 1937 the mileage expected to be constructed by 1937 is stated as 1079 miles. The reasons for my conclusions as to the total amount of TVA transmission lines which will be necessary are that the southern division of the Commonwealth & Southern had in 1936 approximately 9600 miles of transmission lines for the service of their area and this utility system serves substantially all of the business in the area. TVA will have a much greater output to dispose of than the southern division of Commonwealth & Southern had in 1936. TVA will be in competition with the utilities throughout this area, and consequently, it may be expected to require probably considerably more mileage of transmission lines in relation to the power sold and certainly as much. The ratio of power available for sale on the TVA system after its ultimate development and on the Commonwealth & Southern system would indicate that the TVA, even if [fol. 775] it served the whole area, would require in the neighborhood of 15,000 to 16,000 miles of transmission lines, so that I feel that my estimate is on the low side rather than the high side.

The table, (offered and received in evidence as Complainants' Exhibit 500), shows on its face that it sets forth the miles of transmission lines of all of the complainant com-

panies, which total is 11,314 miles. That includes the mileage of these complainants lying outside of a 250 mile radius from any TVA dam in the Unified Plan.

I have made a study of the adequacy of all of the major utility systems operating within the zone defined by a 250 mile radius of any dam in the TVA unified grid system, which would result from the completion of the TVA Unified Plan as outlined to Congress. Previous witnesses have testified to the adequacy of all of the complainant companies, except The Kentucky-Tennessee Power Company, The East Tennessee Light & Power Company, and the Tennessee-Eastern Electric Company, and have also testified as to the adequacy of all non-complainant companies within this zone which are associated through holding company relationships with any of the complainants, with the exception of the Central Illinois Light Company, the Southern Indiana Gas & Electric Company, the South Carolina Electric & Gas Company, and the Lexington Water Power Company. We have taken the results testified to by previous witnesses for all of the companies considered. As to the other companies within this 250 mile zone which have not been covered by previous witnesses, my own organization under my direction has studied them, with the exception of the South Carolina Electric & Gas Company and the Lex-
[fol. 776] ington Water Power Company which have been studied by representatives of those companies along methods outlined by my engineering firm under my direction.

I have made a summary to show the results of my study of the adequacy of all major utilities operating within the 250 mile area, including in that summary the data as to the associated non-complainant companies presented by other witnesses.

The table (offered and received in evidence as Complainants' Exhibit 501) summarizes the results of the study of adequacy which I have just described. Each of the columns under headings, with dates running consecutively from 1929 to 1939, shows the conditions obtaining or expected in the respective years. We divided the zone covered by the area within the 250 mile radius into 12 sections which we have designated as integrated groups. These groups vary largely in size, but each group was selected in such a way that the companies serving the area covered by that group are closely interconnected by tie lines and function normally as

one integrated group within the area. At the top of the page there is summarized the results of the first five groups. Lower down I have summarized the results for groups 6 to 12, inclusive, and at the bottom of the table I have summarized the totals for all groups. The reason for splitting the table into two sub-totals is that five of these groups are not only closely interconnected within each group, but the groups are also closely interconnected. The data on this exhibit up to and including the year 1936 is actual and historical.

This set of seven tables (offered and received in evidence as Complainants' Exhibit 502) is the underlying exhibit to [fol. 777] the summary exhibit marked Complainants' Exhibit 501. Sheet 1 of Complainants' Exhibit 502, shows the companies integrated within the group which we have designated on Exhibit 501 as "Integrated Group 1."

The map (offered and received in evidence as Complainants' Exhibit 503) shows the 12 integrated groups delineated by green boundary lines with the large figures in green indicating the number of the group as shown on Complainants' Exhibit 502. The fact that these integrated groups vary greatly in size is apparent from the map. For instance, Group 1 covers a very large section of the southeastern territory, whereas Groups 7, 9, 10 and 11 cover very small areas. The reason for making Group 1 cover a large area is that the companies operating within that area are so heavily interconnected and actually operate substantially as a single unit. On the other hand, Group 11, for example, north of Nashville is a small area that is served by a system that is not interconnected with any other systems through any transmission lines of sufficient capacity to make the interchange of power possible, and Group 12, which lies wholly within the City of St. Louis, consists of one small isolated electric company which operates entirely independently.

In Group 1 the following companies operate: Alabama Power Company, Birmingham Electric Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, South Carolina Power Company, Southern Tennessee Power Company and The Tennessee Electric Power Company. The map, Complainants' Exhibit 503, clearly shows the territory of the integrated groups within 250 miles of the TVA Power pool. (Thereupon the Court called [fol. 778] attention of counsel again to its rulings that it

would not consider any evidence concerning the operations of the Georgia Power Company).

I will not mention the Georgia Power Company other than in the same category in which I refer to other non-complainant companies, as I have been instructed that the Georgia Power Company is a non-complainant and my figures are set up on that basis. Our study of adequacy includes all companies within the 250-mile zone, and consequently includes a large number of noncomplainant companies.

On Complainants' Exhibit 502, under the side caption "General Capacity Owned and Leased, Name Plate Rating, in the year 1929", there appears the entry 1142. The top of the table shows that these figures are all in thousands of kilowatts so this, of course, is 1,142,000 kilowatts, which is the installed generating capacity within Group 1 having a name plate rating of 1,142,000 kilowatts. That is the total sum of the name plate ratings of all generating units, regardless of whether or not there may be other limitations on the operation of the generating stations in which the capacity is installed which would reduce the available capacity. For the companies for which testimony has been given by other witnesses, we have taken their figures as to the generating capacity owned and leased. For the companies for which we have made the determinations, we have taken our figures from copies, furnished to us by the companies, of reports made by those companies to the Federal Power Commission, in connection with its surveys, with the exception of one company where we got the information from the reports of the company to the Department of Utilities in the state where it operates.

The next item on Complainants' Exhibit 502 under the side caption "Load Carrying Ability in Addition to Stand-
[fol. 779] by", which for identification shows 746,000 kw. in the column for the year 1929, is the generating ability of these generating systems after making allowance for such restrictions on operations as insufficient boiler capacities to operate all of the generators in the station, and in the case of hydro plants making allowance for low water conditions. It includes only the firm capacity of the company in the extreme low water seasons. The data for this item was secured in exactly the same way as for the previous item, from testimony of witnesses as to certain of

the companies and from the reports to the Federal Power Commission for the others, with the single exception that I have noted. This item of load carrying ability also includes, in addition to the company's own generating capacities, the firm power contracts which the companies may have for power coming from outside of the group under consideration. In stating this figure, a deduction of capacity has also been made to provide for stand-by which I will discuss a little later.

The next item on the table (Complainants' Exhibit 502) under the side heading of "Firm Peak Load" for the year 1929 shows 718,000 kilowatts which, in the case of the years from 1929 to 1936, is the actual peak load carried by the utilities within the integrated group. Our studies include all of the major utilities and all subsidiary utilities purchasing their power from the major utilities.

Examination by the Court:

The figures for the years 1937, 1938 and 1939 were forecasts.

Direct examination continued:

Within these zones there are certain small isolated systems, mostly municipal plants which are not included be-
[fol. 780] cause information could not be readily secured for them. From a study we have made, we have determined that we have actually included in our tabulations approximately 95 per cent of the total electric generation within the 250-mile zone, so approximately 5 per cent is supplied by small isolated units not included in our study.

The next item on the table (Complainants' Exhibit 502), "Surplus Capacity Available Over and Above Actual and Predicted Loads, in Addition to Stand-by", for 1929 is 28,000 kilowatts, which figure is shown increasing through the years 1930, 1931 and 1932, and which figures were abnormal because of the depression conditions which brought not only a decrease in the expected growth that the companies had provided for but an annual decrease below the actual output for the year 1929, as is shown by the way in which the firm peak load had dropped off. The final item in each group, that of stand-by, is in some respects one of

the most important items in the group. A stand-by is necessary because a utility company has the obligation to furnish continuous service to its customers so far as it is humanly possible. The owner of an industrial plant supplying his own power is likely to depend upon a single generating unit, and if that unit fails, he must shut down his factory until the unit is repaired. Stand-by is reserve generating equipment which is used in case of emergencies and is either steam or hydro. In the case of steam plants, it is necessary to make the full allowance for the largest unit in the plant or in the system. If you have, for example, a 50,000 kilowatt steam turbo-generator as one of the units, you then have to assume that that unit is out and you have to be in a position to carry all of the other [fol. 781] load without that largest unit.

"Judge Martin: In all these growths, Mr. Moreland, or increase from 1929 through 1936, isn't it somewhere, broadly or approximately around 22 per cent in load carrying capacity in the areas?

The Witness: That is correct."

In the case of a system supplied entirely by hydro plants, it is not necessary to make the deduction for outages of the largest unit, for the reason that substantially always, for economic reasons, and in order to take advantage of the power that is available during part of the year, the installation of equipment in hydro plants is materially in excess of the firm power available from the water supply. In low water seasons,—and it is only the low water capacity of hydro plants that we have included in the load carrying ability—there will be idle generators available in stations anyway, so if one unit fails the idle unit is merely substituted. In the case of a system depending entirely upon hydro, it is not necessary to make a deduction for the outage of the hydro unit, because the available capacity will be there. In the case of a system which has a combination of both steam and hydro, the available capacity in the hydro plants can be made to offset the loss of the steam unit, provided the company in its reservoirs holds reserved water. We have assumed, in determining this surplus over and above the actual predicted load requirements under the pessimistic assumption that we will lose the stand-by, the loss of generating capacity equivalent to the amount

of stand-by provided, at the time of the system peak load, which is for a relatively few days during the year, and that coincident with that we will have at all of the hydro plants connected with the system extreme low water conditions of a character which occur only once in every ten years or more. The figures that we have given are pessimistic and [fol. 781a] the capacities that we show as surplus capacity available are capacities which a prudent management would be justified in selling to the market if it had the customers available.

This whole question of reserve capacity is very important for many reasons. The utility is faced with two [fol. 782] obligations, the obligation to give uninterrupted service to its customers so far as humanly possible, and the obligation to cut its cost as low as possible. Transmission lines do fail at times and that difficulty is obviated as much as possible by having loop connections to make it possible to supply power from some other source, although that is not always possible. The second obligation is to cut the cost as low as possible. The utility cannot afford to install a tremendous surplus of capacity over and above that which will be required to provide the capacity anticipated and to provide adequate stand-by, and if the utility company does, it will run up its costs. Some of the utilities were severely criticized for the excess capacities that they had in the years 1930, 1931 and 1932. A utility company has to provide its capacity somewhat in advance, and particularly it has to begin its construction well in advance. It takes from a year to two years to build a steam plant and from two to three years to build a large hydro plant. Consequently a utility must determine what its load conditions are likely to be two or three years in advance and meet those expected conditions. When there is a condition such as existed in the depression in 1930, the utilities had already made provision and were in process of expanding their plants to meet loads they expected to develop, and when the loads actually fell off, there was a surplus capacity. Complainants' Exhibit 501 makes this situation very clear. In some cases utility commissions refused to allow utilities to earn on the large amount of surplus capacity for which provision had been made with the expectation that the load growth prior to 1930 would continue.

[fol. 783] The operating efficiency of stand-by units is not important. The important thing about stand-by units is that

they shall be available for service if needed. The probability of needing stand-by units is small, because they will not be needed unless some other unit fails at the time of the system peak and at the time of extreme low water conditions if there is any hydro-generating system in the particular group. If a stand-by unit operates only a relatively short time over a long period of years, perhaps not operating at all for years at a time and then operating for only a few weeks, it does not make very much difference whether the unit requires one pound of coal per kilowatt hour or takes three pounds of coal per kilowatt hour, because it does not run long enough to use very much coal. If the old stand-by unit were replaced by a new unit, there would be fixed charges to carry on that new unit, year in and year out. As a matter of fact, if a utility company put in a new unit to replace some of the older units which are on the stand-by line, the company would actually operate those new units and push up some of those older units into the stand-by reserve. In other words, the utility always operates its most efficient units and puts in reserve the least efficient. A turbine 20 years old is just as good for stand-by capacity as a new one, providing it is in condition to operate when needed. That is a question that I do not think is fully understood and that is why I have emphasized it so long.

We have made studies of each of the 12 groups, as stated in Complainants' Exhibit 502, and the results are summarized on Complainants' Exhibit 501. This summary shows that groups 1 to 5, inclusive, which, as I have already explained, are so interconnected by transmission lines that they actually operate in synchronism, have sufficient transmission capacity between the groups to transfer large blocks [fol. 784] of power from one group to another. The results show that at no time during the period from 1929 to 1936 has the surplus capacity been less than 346,000 kilowatts, and that was in the starting year of 1929. During the periods from 1931 to 1934, inclusive, the surplus capacity was a great deal larger. For the years 1937, 1938 and 1939, the capacities shown are the present capacities plus the capacity of installations already scheduled by the utilities. The loads are the estimated peak load requirements during those years, and the surplus is the difference between the capacities and the peak load requirements, plus the stand-by reserve. The total shows that for the first five groups in this current year the surplus capacity will fall to 241,000

kilowatts, but the capacity already scheduled to be brought into operation in the year 1938 will increase the surplus capacity of these five groups together to 416,000 kilowatts in spite of an estimated load growth in that period of nearly 300,000 kilowatts at the peak. In 1939 the surplus capacity will be 285,000 kilowatts.

In integrated Group No. 4, which is on this first list and is shown in detail on Sheet 3 of Complainants' Exhibit 502, in the year 1939 there is an indicated overload condition of 4,000 kilowatts which has no significance at all. It is less than ½ of 1 per cent of the firm peak load on the system and would occur only if 89,000 kilowatts of capacity were out of service at the time of the system peak and if the hydro plants had their minimum water conditions. This group is heavily interconnected, not only with other groups within the 250 mile zone, but also with utilities outside of that zone. The figures given for these first five groups are the sum of the [fol. 785] figures for the five groups individually and do not take into account the fact that there may be some diversity of time as to when the peak loads occur in one group as compared with other groups with which it is connected, so there is actually a greater surplus capacity available than we have indicated.

Examination by the Court:

As to the distribution in percentage between steam and hydro of the installations already planned by utilities for 1938 and 1939, I think I am correct in saying that there are only two major hydro developments being undertaken by utilities within this 250 mile zone. One of those is in the Appalachian Electric Power Company system and has approximately 100,000 kilowatts capacity. The other is a development in the Arkansas system. Both are scheduled to be brought into operation in 1939.

Direct examination continued:

The first five groups are the major units and as shown by the summary cover more than 90 per cent of the total capacity within the area. In the other seven groups there are not sufficient interconnections with any adjoining utilities to provide for the transfer of a substantial block of power, though they may not be completely isolated. In a very few cases, as is seen from Complainants' Exhibit 502,

there is a theoretical indicated deficiency or overload requirement in past years under the extreme combination of circumstances that we have used in determining adequacy, but in none of these cases is there any overload indicated for the years 1938 or 1939.

There are three major advantages of interconnected operations. One is that it permits the companies so interconnected, assuming that they have operating agreements, [fol. 786] to utilize the most efficient generating units within the group, regardless of where they may be located, and thus bringing about further economies. The second important advantage is that it permits the operation of smaller total floating reserves. In addition to stand-by reserves which are not operated but are available to operate in case of failure of some other unit, power companies also have to have a certain amount of floating reserve actually connected to their system so that in case of loss of a unit the load can be carried by the remaining units. This is ordinarily taken care of by having enough units on the line so that the units in operation are not loaded up to their total capacity, and then if a unit fails, the other units can carry the load, perhaps running some above their rated capacities until a new unit can be brought into operation. The utility companies always have enough units connected to their system so that if the largest unit is lost, the remaining units can carry the load. If there is an interconnected group, the floating capacity can be reduced below the total floating capacity that would be required if each generating plant or each company operated in an isolated condition. There is a similar third advantage in the case of stand-by reserves, as the same stand-by is available for any part of the interconnected system. I have referred several times in connection with this stand-by to making provision for the loss of the largest steam unit. In Goups 4 and 5, we allowed for the loss of additional capacity over and above the largest steam unit, equal to 3 per cent of the peak requirements of the group.

Our reason for carrying our study only through 1939 is because that was the time within which new facilities in our opinion could be provided. Our study does not show any inadequacy of the facilities of the utility systems within [fol. 787] this 250 mile zone for the years immediately preceding the passage of the TVA Act in 1933. As I have

already pointed out, the surplus capacity available during the years 1931, 1932, 1933 and 1934 was abnormally high due to recessions in business. There is no question that the utilities can build to meet any requirements which they may face in future years, unless of course they are unable to obtain necessary regulatory approval of proposed extensions, or unless threatened competition from TVA or something else so weakens their financial status that they cannot finance construction. From the technical and engineering standpoint there is no question whatever that the utilities can build to meet any requirements that they may face.

"Judge Allen: The exhibit, 503, is received under the limitations heretofore stated by the Court, and the Court wants to make it perfectly plain that its ruling with reference to the Georgia Power Company is not merely a ruling that the Georgia Power Company simply has the status of a non-complainant in this case. The ruling of the Court is more definite than that, as made unanimously. The ruling of the Court was not merely that the Georgia Power Company would not be considered a complainant, but it was that no evidence would be received or considered with reference to competition or alleged competition by the Tennessee Valley Authority with the Georgia Power Company.

Mr. R. T. Jackson: We do not offer the map for that purpose, Your Honor."

I have made an estimate of the total cost of TVA power upon the completion of the TVA Unified Plan.

"Q. Mr. Moreland, will you tell us briefly what you have found with reference to the cost of TVA power on the completion of the TVA Unified Plan, and describe briefly the methods you have used in making your estimates?

Mr. Fly: I object to it on the ground that it is irrelevant and incompetent.

Mr. R. T. Jackson: And I want to say that I am offering this line of testimony, which of course, is not fully exhib- [fol. 788] ited by this question, but which perhaps the Court will generally understand the nature of, for three primary purposes, contending that it is relevant and admissible for each of them, and of course if I am right about any one of them, why it would control the admissibility of this testimony.

The first purpose for which I am offering this testimony is to show that the defendants have announced rate schedules and offered for sale the TVA power at a price very substantially below the cost of generating and transmitting that power to the point or points of sale, in violation of the TVA Act. In that connection I want to make clear that the testimony which it is proposed to offer is not affected by any discretion that may be claimed to exist with reference to fixing prices on the assumption of a normal loading of the TVA system. There is, as Your Honors of course will appreciate, a recognition in the statute that it is possible that the TVA might not be able to get the markets away from the utilities, and to sell this power as rapidly as they increase their generation towards their ultimate goal.

And the statute, therefore, says that these defendants may in determining a price which will yield a profit to the Government take into consideration the fact that the system is not fully loaded, and that to fix the price for a partial loading might presumptively result in too high a price or prevent them from engaging in effective competition with these Complainants.

Now, our testimony is going to be based upon the assumption that TVA sells all of the power, firm and secondary, within the practical limits of the utility operation, and by that I mean assuming that they get as much load as they could practically carry, upon the completion of their unified plan outlined to Congress, and the installation of the ultimate power capacity which they have suggested might be provided.

And we intend to show that upon that hypothesis there would be a very large deficit in the receipts from the sale of TVA power in comparison with the cost of producing that power. So we are not concerned with this discretion to take into consideration the fact that in the early days the plant may not be fully loaded. We are giving it the benefit of every doubt, in the testimony which we propose to offer.

I also suggest the further point that if it be said that the defendants might retard the installation of the ultimate number of generating units which they have told Congress would be proper to be installed in these plants, it again does not affect the admissibility of our evidence on the question under the statute, for that could only increase the per unit cost of the power actually produced as Your Honors will readily perceive and make the deficit in receipts at sales

under TVA rates even greater than it would be if they in-
[fol. 789] stalled the full amount." (Counsel for complainants then stated that this line of testimony was also offered to show further (1) that if it be conceded that the Federal Government has a right to regulate the intrastate businesses of the complainants, such regulation by rates fixed far below the cost of production is confiscatory and in violation of the Fifth Amendment to the Constitution; and (2) that because the TVA is offering power for sale in competition with the complainants at rates far below the cost of production, the extent and imminence of the damages and destruction with which complainants are threatened is immeasurably increased.)

"Judge Allen: The matter is before the Court upon objection to the question asked. The Court sustains the objection. You may have your exception.

Mr. R. T. Jackson: Exception noted, please."

The table (offered in evidence as Complainants' Exhibit 504) was prepared under my direction. It correctly states the factual data and information which it purports to show and in so far as it contains matters of opinion or estimate, it correctly states my opinions and estimates.

The table (offered in evidence as Complainants' Exhibit 505) was prepared under my direction and correctly portrays what it purports to show.

The table (offered in evidence as Complainants' Exhibit 506) entitled "Summary of Annual Deficit from TVA Operations, Unified Plan, and Ultimate Development Excluding Initial Stage at Wilson," was prepared under my direction and correctly states what it purports to show.

"Q. Does that exhibit include a great deal of data which was not available when the Tennessee Valley Authority announced its rate schedules in September, 1933?

Mr. Fly: I object as irrelevant and incompetent.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: Exception noted, and we offer to show that this witness, if permitted to answer, would testify that these exhibits marked 504, 505 and 506, contain a great deal of data which was not available when the Tennessee Valley Authority announced its rate schedules to the public in September, 1933,—was it, Mr. Fly?

[fol. 790] Mr. Fly: Yes, that is right.

Mr. R. T. Jackson: I think that is the date given to the press at that time. At this time I assume first that the Court does not want me to ask the witness to explain these exhibits in view of its general ruling that material of that character would be excluded.

Judge Allen: Are they offered in evidence?

Mr. Jackson: Well, I am trying to protect the record and not burden the Court any more than I can help, and that is the reason I have not offered them. And I wanted to know, if the Court would indulge a further question, whether any objection will be made that I do not take the time of Court or counsel to further qualify the exhibits by showing the methods and studies that were made which underlie them.

Judge Allen: Is there any objection on that ground?

Mr. Fly: Yes, Your Honor. I object to all of the questions regarding the exhibits and the data on them.

Judge Allen: Well, do you contest the fact that these exhibits are based upon studies made by Mr. Moreland in his office, the kind of studies I assume which were testified to with reference to the others?

Mr. Fly: No, I don't believe so.

Mr. R. T. Jackson: I could ask a great many questions to qualify the exhibits, but I was trying to avoid taking the time of Court and counsel further on that.

Judge Allen: There is no objection on that ground, I assume.

Mr. Fly: I assume that he will then state the exhibits represent his opinion.

Mr. Jackson: He will state that they represent historical data in so far as they do, and his opinion and estimate in so far as they are not historical data.

Mr. Fly: Well I will concede he would so testify, and I would like to object to any and all other questions regarding these exhibits, and object to each of the exhibits themselves as incompetent and irrelevant.

Mr. R. T. Jackson: I have just been trying to avoid asking those other questions, Mr. Fly. We, upon this statement of counsel, with the permission of the Court, offer separately Exhibits 504, 505 and 506, Complainants' Exhibits.

Mr. Fly: We object to each one.

Judge Allen: Exhibits 504, 505 and 506 are rejected and you may have your exception, separate exceptions.

[fol. 791] Mr. R. T. Jackson: We take exception to the ruling of the Court in excluding each of these exhibits, separate exceptions.

And we offer to show or to prove by the witness E. L. Moreland now on the stand, that were he permitted to answer the question to which the Court has sustained an objection and were permitted to continue his testimony upon this line,—and I assume there is no objection either by Court or counsel that I do not develop that line by merely follow-up questions,—is that right?

Judge Allen: The Court appreciates that.

Mr. R. T. Jackson: The witness would say, upon the subject of the cost to TVA of power generated and transmitted by it to wholesale contractors, and as to a comparison of that cost to the cost which would be sustained by a private utility in the generation and transmission of an identical amount and quality of power and energy, reserving all our exceptions, as follows:

I have made an extensive analysis of the total cost to Tennessee Valley Authority of the generation and delivery of power after completion of the TVA Unified Plan which I have previously defined in my testimony in accordance with my understanding.

The first part of my analysis consisted of determining the investment of the Tennessee Valley Authority in property properly chargeable to power generation. For the purpose of this analysis I accepted as basis the figures presented by the TVA during the hearings on the Second Deficiency Appropriation Bill for 1937. In this analysis I have determined the investment in the total development over and above that portion of the Wilson Dam Development which was in existence at the time it was turned over to TVA.

I am familiar with the testimony of the previous witnesses Putnam, Kurtz and Kelly on respective subjects about which they testified relative to the amount of investment requisite for the degree of navigation improvement and a much greater degree of flood control than could be incidentally accomplished, or would be accomplished by the TVA Unified Plan.

For the purpose of this analysis only, I have accepted the estimates of Putnam and Kurtz as representing the maximum possible value of the TVA facilities made available for navigation and any flood control purposes.

many persons who wanted service before line extensions were made to give such service. Each year line extensions have been made and many new customers served. All we are claiming is that we have reasonably extended service wherever this—in the light of the facts existing at the time—was reasonably justifiable. Whether or not any claimed failure on our part in this respect is relevant, it is clearly not relevant merely to show that an unsatisfied demand existed without showing that at the time the demand was such as to justify or require extension of service.

5. There is no materiality in proof that an unserved demand existed in 1935 or 1936 which fell within the minimum requirements of the TVA Neighborhood Plan or within the minimum requirements of any State regulation, where, as is shown here, the demand was for TVA power; and not for service from any privately-owned utility complainant in this case. No failure of obligation appears from the failure to respond to a demand which was a demand for TVA and not for Complainants' service. Nor is there any legal justification for the Federal Government going into the power business merely because members of rural cooperative corporations desire TVA power rates rather than other available service.

Mr. Fly: May we have the grounds of objection, rather than all the argument?

Mr. Bemis: I think the grounds for objection ought to be stated fully. I understand that is the rule.

Judge Allen: Well, they are being stated fully.

Mr. Bemis: Proof offered by complainants that there is no substantial demand servable under TVA minimum requirements at the present time, is material, and was offered to show that TVA power to be sold in this area must be sold to the existing customers of the complainant companies.

Judge Allen: The Court in no way indicated in this ruling that evidence could not be offered if it was material, relevant and competent, to contradict the testimony of Cowley and Hutchinson contained in these depositions.

[fol. 640] Mr. Bemis: In other words, the Court's ruling is that we may not rebut the testimony of those two witnesses?

Judge Allen: No, that is not the ruling of the Court. The ruling of the Court is contained in the ruling read, and there was nothing stated in that ruling to the effect that you could

not contradict the statements of Cowley and Hutchison, if you did so by competent, relevant and material evidence.

Mr. Bemis: Must that be done as part of the Complainants' case in chief?

Judge Allen: We will leave it to complainants?

Mr. R. T. Jackson: Of course it seems to us that if the defendants are to be permitted to put in part of their case as part of the plaintiffs' case, then that we ought to be advised as to whether that is going to shift the usual rules of order as to when we would have to offer rebuttal. It is our understanding they have no right to offer evidence until their case is on.

Judge Allen: I think you will concede, Mr. Jackson, that the Court has a very wide discretion in the offer of proof and the order of proof. That is the general rule. This is not a jury case. This Court is capable of following the proof, and sifting it out, and to decide what proof is offered by what party, and what constitutes the complainants' case, and what constitutes the defendants' case.

Mr. R. T. Jackson: There is no apprehension of any difficulty of the Court on our part that leads me to make that remark. It is that ordinarily one hears his adversary's case, and then has an opportunity to prepare and present rebuttal if he deems it necessary. But if his adversary's evidence is interposed with his case and he is required to also put in his rebuttal before the close of his case, he has little opportunity for it.

Mr. Fly: I know you are surprised, Mr. Jackson.

Mr. R. T. Jackson: I am very much surprised to find——

Mr. Fly: You cannot be surprised at anything in your own deposition.

Mr. R. T. Jackson: I am very much surprised to find you offering evidence as a part of our case.

Judge Allen: The Court considers this matter rather immaterial. The Court ruled upon the depositions as they were offered. Incidentally it accepted in evidence the depositions of Cowley and Hutchinson, which the complainants did not offer, but the defendants offered.

Judge Allen: You may have your exception and we will proceed with the case.

Mr. R. T. Jackson: If we are to be required to rebut it during our own case in chief——

Judge Allen: The Court does not require you to do any- [fol. 641] thing, Mr. Jackson. The Court merely indicated

that the ruling of the Court did not preclude you from doing that. The Court leaves to complainants the conduct of their own case.

Mr. R. T. Jackson: I only want to make the record clear, and I certainly do not want to annoy the Court. My only point is if we must rebut it at all, that testimony, during our case in chief, then we want a specific exception to that ruling.

Judge Allen: The Court has made no such ruling.

Mr. R. T. Jackson: That is the only point I was not clear on, your Honor.

Mr. Bemis: If the Court please, I understand that these depositions may be transcribed in the record as though read?

Judge Allen: Yes."

(The depositions of the witnesses Cowley and Hutchinson, offered by the defendants, are set forth at side folios 1760a to 1760y, inclusive, of this record.

The deposition of R. Carter Pittman is as follows):

R. Carter Pittman was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

[fol. 642] Direct examination.

(Offered by complainants:)

I reside in Dalton, Georgia, and am attorney for the North Georgia Electric Membership Corporation. I do not hold any other office. As attorney for the North Georgia Electric Membership Corporation, I have the custody of practically all of the records and papers of the corporation. To my knowledge none of the corporate records other than those in my possession are in the possession of the executive officers of the corporation.

The mimeographed contract (offered and received in evidence as Complainants' Exhibit 380) is a copy of an agreement dated April 6, 1936, between TVA and the promoters of the North Georgia Electric Membership Corporation. I have not seen the original agreement in some time. At one time I think the original was turned over to a Chattanooga reporter to keep in connection with the litigation

pending between the Georgia Power Company and the North Georgia Electric Membership Corporation. If I have the agreement, I do not know it, and I have looked for it. The agreement was subsequently assigned to the corporation.

The document (offered and received in evidence as Complainants' Exhibit 381) is a copy of the petition for the charter of the North Georgia Electric Membership Corporation.

The document (offered and received in evidence as Complainants' Exhibit 382) is a copy of the order of Whitfield County Superior Court granting the charter to the North Georgia Electric Membership Corporation. The original of that document is on file in the Superior Court of Whitfield County and I do not have any duly executed copy.

[fol. 643] The document (offered and received in evidence as Complainants' Exhibit 383) is a carbon copy of the assignment of the so-called promoters' agreement with TVA to the North Georgia Electric Membership Corporation.

The Corporation subsequently entered into a contract for the construction of a line with TVA, but I don't recall the date of the first of such contracts. As to whether I can produce a copy of the first construction contract between the Corporation and TVA, I have been unable to find a copy of any construction contract between TVA and the North Georgia Electric Membership Corporation earlier than August 24, 1936. I gave a deposition in a case between the North Georgia Electric Membership Corporation and the Georgia Power Company, but I don't know the date that it was given. The copy of the construction contract of June 15, 1936 between TVA and the North Georgia Electric Membership Corporation, set forth in that deposition, is a true and correct copy of that contract.

Subsequent to June 15, 1936, there was a second contract for construction made between the Corporation and TVA. I have a copy of it. I do not have the original. I do not recall any other contracts made between the Corporation and TVA relating to the construction of lines. The map (offered and received in evidence as Complainants' Exhibit 384), shows the lines of the North Georgia Electric Membership Corporation, and was attached to the construction contract of June 15, 1936. The map referred to in the August construction contract is attached to that contract.

I have in my possession a carbon copy of the contract for power, dated June 15, 1936, between TVA and the North

Georgia Electric Membership Corporation. (This contract is set forth in Complainants' Exhibit 118). Subsequent to June 15, 1936, the Corporation did not, that I recall, enter [fol. 644] into any other contracts with TVA for power.

The Corporation has some other contracts with TVA in addition to those I have produced here. I have some of them here. There is a construction contract which was entered into at a later date, but I have had no notice to produce it. I have a copy of it in my file here, but I decline to produce it without notice, and the reason I state that is because I have only one copy in the office at the present time and it is needed to close up the matter of the final payment to TVA. I have the original in my hand. (The Special Master directed the witness to produce this contract). I do not know of any other contracts between the Corporation and TVA. If there were any other contracts, I very likely would know about them.

I have contracts in my possession between the Corporation and REA. I do not have a copy of an application for a construction loan contract. There is no copy in the possession of the Corporation and there is no such copy in the minute book of the Corporation. I have mimeographed copies of contracts which were made on August 24, 1936, and June 15, 1936, with the REA pursuant to the application. I do not have the original signed copy of the June construction loan contract between REA and the Corporation. This copy which I have says "On the — day of June" — it was June 15, 1936. This is a true copy of that contract. I have also produced a mimeographed copy of a construction loan contract between the Corporation and REA dated August —, 1936. I do not have the original of that contract in my possession nor do I have a signed copy. The Corporation does not that I know of have the original of that contract, and if it did, I would know of it. The map (Complainants' Exhibit 384) was attached to the August 24 construction loan contract.

The document (offered in evidence as Complainants' Exhibit 385) is a mimeographed copy of a construction loan [fol. 645] contract between the Corporation and REA dated September 2, 1936. In answer to whether the Corporation has the executed original of that contract in its possession, I cannot find the executed original. We did have the executed original, but the REA called on us for additional

copies and we apparently sent our original. As far as I know, this is a complete and accurate copy of the original executed contract. (Complainants' Exhibit 385 was excluded by the Court and an exception was allowed the complainants).

The document (offered in evidence as Complainants' Exhibit 386) is a copy of a mortgage deed of trust between the North Georgia Electric Membership Corporation and the First National Bank of Dalton, but I do not have the original. The cover of this document bears the legend "Identified as form of mortgage and deed of trust presented to and approved by stockholders of the North Georgia Electric Membership Corporation at a meeting held on August 24, 1936," and this was the document presented at that meeting. (Complainants' Exhibit 386 was excluded by the Court and an exception allowed the complainants).

The document (offered and received in evidence as Complainants' Exhibit 387) is a copy of the by-laws of the North Georgia Electric Membership Corporation.

The document (offered and received in evidence as Complainants' Exhibit 388) is a circular entitled "Here are the Answers."

(At this point the witness Pittman testified before the Special Master that the circular, Exhibit 388, was prepared by the witness himself and not by the Corporation; that it was sent to every newspaper in the seven counties served by the Membership Corporation; that the copy so sent bore the names of R. H. Bandy, President, North Georgia Electric Membership Corporation, and J. C. Johnson, Secretary-Treasurer, North Georgia Electric Membership Corporation; that the circular was published in the Dalton News, Dalton Citizen, Murray County Herald, Calhoun Times and Walker County Messenger, but that many typographical errors occurred in the publication by the Murray County Herald.

[fol. 646] The witness also testified that on the day prior to the taking of his deposition he went to Chattanooga in response to a call from some employe of TVA; that he there met Mr. Fly, Chief Counsel for TVA, and other TVA representatives; that he discussed with Mr. Fly the subject of his own testimony and the subject of the testimony to be given by Mr. Bandy, President of the North Georgia Electric Membership Corporation; and that at the time of such

conversation with Mr. Fly he knew that Mr. Bandy had been called to testify on behalf of the complainants in this case, and was told by Mr. Fly that he himself would probably be a witness, although at the time he had not been served with a subpœna. This latter testimony was received by the Special Master for the purpose, as stated by counsel for complainants, of showing the close relationship between the North Georgia Electric Membership Corporation and TVA and for the further purpose of showing hostility on the part of the witness. Thereupon the Special Master ruled that the witness was hostile and that complainants had established their right to cross-examine the witness and the further examination of the witness as hereinafter narrated was conducted under such permission and ruling.

The testimony and record of proceedings as summarized in the two preceding paragraphs was excluded by the Court over the objection and exception of complainants upon the grounds that "the testimony deals solely with operations by or competition with The Georgia Power Company" * * * and "for the reason that" the portions of the deposition excluded "offer immaterial testimony." The balance of the deposition of R. Carter Pittman which was received in evidence by the Court was as follows:)

Complainants' Exhibit 380, the copy of the agreement between TVA and the promoters of the North Georgia Electric Membership Corporation, was not executed at the meeting held in the TVA office on April 6, 1936. So far as my present memory goes, it was not called to my attention at that meeting. I do not know by whom it was prepared.

"Q. I have had occasion to call your attention to the testimony which you gave on September 11, 1936 in a deposition taken on behalf of the Georgia Power Company and at page 4 of the deposition there appears this question:

'Q. Do you know whether the contract was prepared before that meeting, or during the progress of the meeting, or what do you know about the preparation of the contract?'

and your answer was:

'A. Well, I do not know anything about when it was prepared, nor where it was prepared. I just know that it was prepared there, and apparently it must have been prepared before the meeting.' "

[fol. 647] If I stated that in September, 1936, my memory was probably better then than now. I do not wish to correct my testimony or my answer in September any further than to say I don't remember now, and if I stated it was true in September, it was true. I do not have any doubt that what I said in September was true. I have not tried to fix those details in my memory. I had nothing to do whatever with the preparation of this agreement except to approve it before execution.

"Mr. Fly: I will state for the record, Mr. Special Master, that the first draft of a contract of that general nature would be made at our own offices and thereafter in the course of negotiations changes that were thought necessary after that were likely to be made anywhere."

Complainants' Exhibit 381, the copy of the petition for the charter of the North Georgia Electric Membership Corporation, was not prepared by me nor by anyone under me. Mr. K. Wilde Blackburn, attorney for the REA, presented to me a draft of a petition for a charter at the meeting in Chattanooga and at that time Mr. Martin, an attorney for the TVA, asked certain questions about it, and it was discussed, and then I asked Mr. Blackburn to send me a draft of what he thought would be a proper application for the charter, which he did, and I penciled it up and changed it about and struck out certain portions and added certain portions to the petition as filed.

"Q. Now in your former testimony to which we have referred you were asked this question:

'Q. And did you prepare the petition for the incorporation of the North Georgia Electric Membership Corporation?'

And to which you appear to have answered:

'A. Yes, sir. Mr. Blackburn, Attorney for the Rural Electrification Administration, sent me a draft that followed somewhat the form of application for charters used in the mid-west, and in other states, and then also there [fol. 648] was one form furnished me, a copy, rather, of an application for charter of some corporation in Tennessee, from Meigs County, or some other corporation, and from those he made suggestions; then I took his suggestions and

took those petitions and whipped them into one that would conform to the law of Georgia, and made the application.'

Is that correct?

A. Yes, that is substantially correct."

Mr. Blackburn was counsel for the REA and was present at the meeting in April, 1936. His office at that time was in Washington, D. C. When I talked to him on April 6 he had just come from Washington and was down here I believe temporarily. Later on I forwarded it to him addressed at Knoxville. The address used at Knoxville was in care of the TVA, where he got his mail.

Complainants' Exhibit 383, the copy of the assignment of the promoters' agreement to the North Georgia Electric Membership Corporation, was prepared by me. If it was submitted to the TVA for approval, I do not recall it. It could have been, but I don't think so. The contract was pursuant to the Promoters' Contract. The construction contracts between the North Georgia Electric Membership Corporation and TVA of June 15, 1936, and August 24, 1936, were not prepared by me. Both of those contracts were prepared and submitted by TVA. Complainants' Exhibit 384, which is the map attached to the June construction contract, was prepared by TVA.

The power contract dated June 15, 1936, between TVA and the North Georgia Electric Membership Corporation, with attached schedules and rates and charges, was not prepared by me, but was presented by me to the Board of Directors of the North Georgia Electric Membership Corporation. The contract of September 2, 1936, between TVA and the North Georgia Electric Membership Corporation, was not prepared by me. I merely examined it and sent it [fol. 649] back again. The application for a loan, of which I did not have a copy, was prepared by me. I received some assistance in its preparation. I did not merely follow a form submitted to me. In answer to the question from whom did I receive assistance, the application was in the form of a letter and T. R. Hunnicutt of TVA looked it over and gave me some suggestions about it. I do not recall that anyone else assisted in the preparation of the application. None of the officers of the Corporation assisted in the preparation of it. I don't think Mr. Bandy assisted in the preparation of the contract or had anything to do

with assisting and supplying the facts. I did not receive any assistance from any attorney for the REA. After the application was prepared, I did not submit it to the Board for approval. I made the application without submitting it to the Board. The application was granted and the construction loan contract of June 15, 1936, between REA and the North Georgia Electric Membership Corporation, was prepared by REA. The construction loan contract of August, 1936, between REA and the North Georgia Electric Membership Corporation, was not prepared by me, but was prepared by the attorney for the REA. I had nothing to do with its preparation, but merely submitted it to the Board. That is also true of the construction loan contract of September 2, 1936, which was also pursuant to the first application for a loan. So far as I know there was only one application made for a loan.

Complainants' Exhibit 386 (excluded by the Court), a copy of the mortgage deed of trust from the North Georgia Electric Membership Corporation to the First National Bank of Dalton, was not prepared by me, but was prepared by the REA attorney. I merely examined it and submitted it to the Board for approval.

[fol. 650] In the preparation of the application for the loan from REA, the County Agents of the various counties made most of the preparation. I don't know whether any of it was done by the TVA or not. I know the County Agents turned over their sheets to Mr. Hunnicutt of TVA, and that information was given to me on the prepared application. Most of it was actually turned over by Mr. Hunnicutt to me and not by the County Agents. Most of it was gotten up by the County Agents before I was employed and these County Agents gave me a little after I was employed, but I think most of it came from Mr. Hunnicutt or through him. I did not state that I was requested by the officers of the Corporation or the Board to prepare such an application. I stated I did not submit the application to the Board for its approval, on the theory that I was requested to go to Washington and was sent to Washington with it. Our engineer, T. R. Hunnicutt, accompanied me on that trip to Washington. He was also employed by TVA but our contract called for them to furnish an engineer as well on the construction.

Complainants' Exhibit 387, the by-laws of the Corporation, were not prepared wholly by me but partly. I re-

ceived assistance and advice in the preparation of the by-laws from Mr. Blackburn of the REA. I cannot say positively whether I received any assistance or advice from TVA or its officers. I think that Mr. Martin of TVA advised with Mr. Blackburn or someone, I cannot say positively. I don't know who prepared Article IV on page 3 of the power contract dated June 15, 1936. That contract provides that the Corporation will not repeal or alter the provisions of Article II, Sections 4 and 6, and Article IV of the by-laws adopted by the Board of Directors of the Corporation during the term of the contract. I don't think it is a fact that those sections of the by-laws were prepared and submitted [fol. 651] by one of the attorneys for TVA. I think they came from the hands of Mr. Blackburn to me and were presented at the meeting at which they were adopted. I don't know what Mr. Blackburn did in connection with those by-laws before they came into my hands, and I cannot say whether they were submitted to TVA for approval. The power contract between the Corporation and TVA, dated June 15, 1936, was not prepared by me but by TVA attorneys and, therefore, TVA must have had a copy of the by-laws to which the contract refers.

The Corporation keeps books of account. They are kept by Mr. Farris Hassler. The superintendent of operations is Mr. John Thigpen. I know of my own knowledge that those books and records are kept in accordance with the request and in the forms supplied by the REA.

[fol. 652] Cross-examination.

(Offered by defendants:)

I participated in the work leading up to the granting of the charter to the North Georgia Electric Membership Corporation. I was joined in that work by a number of farmers in the vicinity. The members of the present Board of Directors and the County Agents of all these counties were the leaders in the movement. In the spring of 1935 some of the citizens of Catoosa County, Georgia, did, by its County Agent, Mr. Nicholson, apply to the Rural Electrification Administration for funds to build approximately 87 miles of Rural Electrification Lines in Catoosa County, Georgia.

I am acquainted with the men who petitioned the Superior Court at Whitfield County, Georgia, for the articles

of incorporation as set forth in Complainants' Exhibit 381. All of them are farmers except two. None of them had electricity on their farms at that time. I have lived in the vicinity of this project all my life. The area covered by the North Georgia Electric Membership Corporation had local service prior to this project. The Georgia Power Company had rendered service for a number of years to the municipalities in this area, but had not rendered service to any farmer or any person living in the rural areas throughout the counties served by the North Georgia Electric Membership Corporation at the present time. The Georgia Power Company has served some of the small cooperatives having a line 3 or 4 miles in length outside the city limits of Dalton and LaFayette. In these instances the farmers themselves owned their own lines and purchase electricity from the municipalities of Dalton and LaFayette, and the services rendered by the Georgia Power Company were wholesale to the cities and no contractual relations existed between it and these farmers who lived along the cooperative lines, all of which were adjacent to the city limits. I am familiar with the electrification of this area and I believe I have given a great deal of study to it during the past year and three months.

There were three REA contracts which were actually project contracts. The August 24 construction loan con- [fol. 653] tract for $375,000 has figured in it the $137,400 loan appearing in the June 15 construction loan contract. So when they did not comply with our request and the Rural Electrification Administration had before it the application for a loan from us,—they are all in the same group,—it had before it the application from the farmers of Catoosa County, Georgia, that is at the time our application went there. One part of that application was Catoosa, Georgia No. 7. We were granted our application and some moneys were paid to the North Georgia Membership Corporation. That was the Catoosa County one, but later they agreed that they would pay that whole amount to the North Georgia Membership Corporation. The $137,400 cash given us was initiated in the spring of 1935 by Mr. Nicholson, the County Agent, and Mr. Bandy, who is the President of the Corporation, and a number of other farmers. As to whether the TVA participated in that work, I don't know of my own knowledge, but as far as I know, it did not. I only know

the first contact I made with TVA. There is a history of other contacts probably preceding that, though I was not present and I know nothing of that of my own knowledge. I went to Chattanooga at the request of the County Agent of this County and the County Agent of Murray County, Georgia, in one of their cars, but I could not state whey they told me. When they came and told me they were going I went to Chattanooga with them and there was a meeting there of the County Agents of all the counties in this area where we have existing lines, except the agent from the County of Floyd was not present, and each of the agents had with him one or more farmers from his county. This meeting was on April 6, 1936. I don't know who arranged the conference. I did not go at the request of the TVA. I met Mr. Martin, who was with the legal division of TVA, and I met Mr. Hunnicutt, who was a TVA engineer, and [fol. 654] I met a man by the name of John Britton and another by the name of Williams. That is all I can remember. It was at that time that I had my first discussion of the proposed arrangement and possibility of getting TVA power. It was the first discussion I had participated in when any member of TVA was present. Long before that I had discussed the subject with certain County Agents. In the earlier discussions the County Agents came to me for advice on the question as to farmers' cooperatives that were organized in Georgia and farmers' cooperatives entering into contracts with REA for the construction of lines and for rural electrification generally, and that was a point that was brought to me some time before we met in Chattanooga.

The Corporation serves approximately 1600 customers. I know of none who were formerly being served by the Georgia Power Company or any other utility. Our practice in regard to serving customers of the utilities has been not to serve them at all and we are not serving any of them at the present time. As to what the practice in the future will be, of course, I don't know.

In addition to handling local affairs of the Corporation, I have handled a great many of its policy matters and business matters, and I am generally familiar with the business practices and policies of the Corporation and have done more of the work than anyone else. TVA has done things to interfere with the practices and policies of the Corpora-

tion. After the execution of the power contract between the Corporation and TVA, the Corporation began to serve a number of customers in Catoosa County, Georgia. The city of Ringgold built a pumping station outside the city limits. It was a new station that had never been serviced and it applied to us for service. We entered into a contract with the town of Ringgold to furnish it service and after we started furnishing that service, off our main line, TVA objected to it and notified us that the service to us at the [fol. 655] station at Ooltewah would be discontinued if we did not disconnect the pumping station of the town of Ringgold from our line. We did disconnect that pumping station from our line and Ringgold has bought a Diesel motor and independent generating equipment and we now have a claim against TVA for the loss we suffered by reason of having the service suspended with our own facilities. The reasons given as to why TVA would not be willing to furnish that power was that it considered it to be a violation of a separate contract between TVA and Commonwealth & Southern to serve that facility over our lines.

No one connected with TVA has directed me or the Corporation, so far as my knowledge goes, to initiate solicitation with any particular customers. The only solicitation of residential customers on behalf of the Corporation has been on the part of the people themselves who are without electric service. As to industrial customers, the prospects themselves made the first application to our Corporation for rates and schedules, except that I got hold of some rate schedules myself and handed out about six or seven, so that the industrial customers in this area might know what the rate schedule was. No one with TVA has ever insisted upon the Corporation making such industrial contacts against its policy. TVA did give us assistance in the way of engineering or rate studies in connection with possible industrial customers. I wrote a letter to Mr. Hunnicutt at the Chattanooga office and asked that rate analyses be made for certain named industries in our area. I made such a request in regard to the Yates Bleachery, because some of our customers who resided just a little ways from the station at Ooltewah wanted service. and on account of the lightning and storms over which we had no control affecting the service to those distant customers, we applied to

[fol. 656] TVA by oral request to furnish us a substation more centrally located, and TVA replied that the load did not justify it. We then asked about how much the load would have to be increased in order to justify a high tension line, and the estimate we received was such that if there was placed one large industrial customer in that area, we could get that high tension line. We desired to increase our load so as to amortize our indebtedness to REA more quickly. Subsequent to that request, a study was made of the situation at the Yates Bleachery and I received a copy of the analysis from Mr. Hunnicutt. I thought that the proposed contract could be made an obligation of the Corporation and later I learned from Mr. Carmody, the Administrator of REA in Washington, that that was not permissible. We thought the Yates Bleachery could be served as we understood it had no existing service. We expected this Corporation to contact the Yates Bleachery direct and to take over all the rights and obligations under that sales contract.

Mr. Bandy, the President, and Mr. Johnston, the Secretary and Treasurer, execute contracts on behalf of the Corporation and no one else has that power. The governing board of the Corporation is composed of the President, Secretary and Board of Directors. At the present time there are 7 members of the Board and it has regular meetings. The Executive Board is composed of 4 members that meet twice a month. The regular Board of Directors meets on call, but we have not called one for over 6 months. The President calls the meetings. Usually I do the actual calling or Mr. Hassler, a member, sends notices out under the direction of the President or myself acting for him. Mr. Bandy presides at the meetings. Representatives of TVA very often attended those meetings during the construction period. Since the construction has been over, they do not attend those meetings unless they are invited [fol. 657] and then they don't sit in on the executive activities.

I am retained by the Board as an attorney to look after the various aspects of the corporate business, such as these contracts. I handle all of its legal affairs and a great amount of its business affairs. The Board also employs to carry on the Corporation work a bookkeeper, 2 stenographers and a head lineman, an assistant lineman, a meter

reader and several members of a ground crew. We buy our equipment from jobbers in Chattanooga and Atlanta. The Executive Board passes upon the purchases on the recommendation of the Superintendent and then the Superintendent is directed and authorized to get the lowest bids and make the purchases. Mr. Thigpen makes the arrangements for new rural customers and our linemen connect them up. We carry on our own construction of extensions and our line crew has connected up something like 140 additional customers in the last few weeks. No one connected with TVA directs any of that construction. TVA does make a check-up in connection with the obligations to it under the accounting pursuant to the power contract with TVA.

We made no complaint about these documents being drafted by TVA. I naturally expected TVA would draft them and I read them all over before presenting them to our Board of Directors.

I never heard of any discrimination among private utilities unless it was a secret understanding. I knew that TVA was making contracts of this same nature with rural electrification associations or corporations.

Mr. Bandy has not had any detailed supervision of the business of the Corporation and is not a lawyer. He lives 17 miles from the office on a farm and only attends meetings as a member of the Board of Directors. He is a member of the Executive Board and consequently the onerous details are handled by others.

[fol. 658] Redirect examination.

(Offered by complainants:)

We have a superintendent in charge of the management of the lines who was until recently Mr. Graham. As to whether he is now employed by TVA, I don't know who he is employed by. The last I heard of him he was in Florence, Alabama. If TVA owns the distribution system in Florence, he might be there at the present time. If it does not he must be working for the City of Florence. As to whether he was employed by TVA prior to his employment by the Corporation, he was superintendent of the cooperatives down in Alabama or Mississippi, according to what he stated in his application. I don't recall that he made the statement when he testified in another proceeding that his

last employment was with TVA, though I was present when he gave his deposition.

The letter (offered and received in evidence as Complainants' Exhibit 389) is the letter dated March 31, 1937, which as I have testified was sent by me to T. R. Hunnicutt, Division Manager of TVA.

(The witness was excused.)

[fol. 659] (The deposition of A. B. Haswell is as follows:)

A. B. HASWELL was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants:)

I live in Birmingham and am Assistant Vice President in charge of the engineering and construction of the Tennessee Coal, Iron & Railway Company. My company has been in the market recently for a large quantity of power. We have had inquiries from a power producing concern with respect to furnishing us our required quantity of power. On June 2, 1937, we had a long distance call from Mr. Derry of TVA who was at that time in Chattanooga. He discussed briefly the serving of power to us on a small operation up in Tennessee, at our Universal Exploration Company, which had some time ago communicated with TVA about obtaining power information as to that project. We discussed that project and he told me he had understood down at Birmingham, as I recall, a few days previously, that we were in the market for a large block of power and that they would be glad to figure with us on it. He said that their intention was to figure it further and I really did not answer his question relating to the Tennessee proposition. He finally asked me if he could call me within a couple of weeks and find out the status of the whole situation and I told him surely he might and that we would be glad to talk to him. In about two weeks he telephoned me again, I presume from Chattanooga, and asked me the status of it, and I discussed the project up in Tennessee with him in a general way. He

wanted to know what had been done with the program pro-
[fol. 660] posed. That, however, was after the time we had already signed the contract with the Alabama Power Company.

We were in the market for a large block of power at the time Mr. Derry discussed the matter with me. That block of power was a minimum of 31,000 kw. and a maximum of 70,000 kw. and was for our works in the Birmingham district and in the entire system, all of which are interconnected.

Cross-examination.

(Offered by defendants:)

I did not bring the contract with me. Our company is a subsidiary of the United States Steel Corporation and the Universal Exploration Company is a subsidiary of our company.

I don't know whether it is correct or not that a substantial period before this discussion our people had gone to TVA and made inquiry regarding the possibility of obtaining power for the plant of the Universal Exploration Company. When I said "our people", I spoke of the Steel Corporation. The Steel Company did not take over the Universal Exploration Company until a short time ago. I am not familiar with what transpired before the time the Steel Company took over that Company and the history as I got it was that there had been negotiations with TVA regarding the possibility of obtaining power for the plant of the Universal Exploration Company. It was looking toward the possibility of TVA furnishing power after the expiration of the contract which the Universal Company then had. I don't know what Mr. Derry's particular object was for his call on June 2. Mr. Derry talked with me about the Universal Exploration matter at that time. I did not tell Mr. Derry that I expected to have occasion to take on power for the new plant of the Tennessee Coal, Iron & Railroad Company in that conversation. It was discussed by him but I did not answer that question at all in connection with taking
[fol. 661] power for the Birmingham plant. If I remember correctly, I said in answer to that, "You can hear anything on the street", or words to that effect. He said he had heard that and I passed it off in that way to the best of my recol-

lection. In the conversation a couple of weeks later I told him the other arrangement was made and that ended it and he did not ask us to break our contract.

(The witness was excused.)

(The deposition of T. L. Bonner is as follows:)

T. L. BONNER was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination.

(Offered by complainants:)

I am 38 years old, reside in Fayetteville, Tennessee, and run an electrical and plumbing shop. In connection with my electrical business I wire houses for electricity. Over a period of several months or more I have wired many houses in Lincoln County which were going to get electricity from TVA over the lines of TVA. I have wired a house for electricity from TVA where the customer purchased a range or an electric water heater.

The mimeographed form marked "TVA 211 DE, Tennessee Valley Authority, Chattanooga, Tennessee", (offered and received in evidence as Complainants' Exhibit 394), is a form that I fill out in applying for allowances for wiring. The allowances by TVA for the cost of wiring a house for a customer come through the TVA office here in Fayetteville. I procured this form from the TVA offices in Fayetteville. I have at times in the past filled out these forms and handed them to the TVA office here. I have received from TVA [fol. 662] payment of the cost of wiring houses where a range or water heater or both were installed.

The check of TVA No. 861,381, dated July 21, 1937, payable to my order in the amount of $15.00 (offered and received in evidence as Complainants' Exhibit 395), was received by me and is a part of the payment of the wiring bill on the house of Robert Lee Farrar. I completed that wiring job approximately a month ago.

The slip marked "TVA 1034-C" and in the middle in bold type the words "Remittance Advice", (offered and received

in evidence as Complainants' Exhibit 396), came to me in connection with the check and in the same envelope with the check.

The brown envelope (offered and received in evidence as Complainants' Exhibit 397), in the upper left-hand corner of which appears the words "Tennessee Valley Authority, Knoxville, Tennessee," and the postmark "Knoxville, Tennessee, July 21, 1937," is the envelope that the check and remittance advice came in.

I have at other times after wiring houses or residences in this county and installing ranges or water heaters received like refunds from TVA which was applied on the cost of the operation. Those payments I credited to the customer's cost of wiring the house.

Cross-examination.

(Offered by defendants:)

I am not employed regularly by either TVA or the Power Company. I am an independent contractor. I have now and have had since March of this year an agreement with The Tennessee Electric Power Company to do all their house wiring.

They pay the whole cost. They do not limit it to $15.00. By "they" I mean The Tennessee Electric Power Company. It pays the whole cost on appliances, water heaters and the wiring of meter boxes.

[fol. 663] I have been engaged in my present business in Fayetteville about four years and have observed that the installation and use of electrical appliances, such as refrigerators, ranges and hot-water heaters, increase the consumption of electricity.

The business I get is over the lines of both TVA and the Power Company and I know generally where they are located. I do not know of any lines that were constructed by TVA which are located in instances parallel with or duplicate the lines of the Power Company, covering the same general area or running towards the same customers. The lines that were constructed by TVA are in new territory not previously served.

(The witness was excused.)

(The deposition of J. F. Towry is as follows:)

J. F. Towry was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants:)

I am 36 years old and reside in Fayetteville and am a farmer. I ran the Towry electrical shop until I sold out, but I do not run it at the present time. I sold the electric shop on February 1, 1937. While engaged in operating the Towry electric shop, I wired houses in Lincoln County that were to receive electricity over the lines of the TVA. I could not give the exact number of those jobs which I have done, but it is approximately 75. I have wired houses for ranges or water heaters. Complainants' Exhibit 394 is the form which I followed in wiring a house where a range or [fol. 664] water heater or both were installed, and when I turned those forms in, I would receive from TVA payments to be credited on the cost of the job. When I first learned of this arrangement whereby this money would be refunded, I was wiring a house for a Mr. Hogden and a lady, I cannot recall her name, came out on the job and talked to me about the arrangement and that they would pay $15.00 on a range or water heater which was installed. I do not know by whom the lady was employed. She said she was employed by TVA which proposed to build the line. I would not say that she told me she was employed by TVA. I don't know whether that was a Miss Stewart who is now Mrs. Gertrude Flautt. She appeared at the Hogden home when I was wiring the house. I saw this young lady on other occasions when I was wiring houses. I just met her at various places on the road, but I had no appointment with her at all. She would usually stop at various residences and talk with the housewife.

I talked with TVA employes about the installation of water heaters and ranges in these houses. I talked with Mr. Metcalf and Mr. Peavey. Both of them were with TVA. I also talked to Mr. Rogers of TVA. I do not recall being out on any other wiring job where any employee of the TVA would appear and talk with me about the installation of the ranges or water heaters.

Cross-examination.

(Offered by defendants:)

During my wiring work I would get around the territory a good deal and would see where these lines were constructed by TVA. I suppose those lines were located in new territory and I did not see any Power Company lines right along there in the same territory. I did wiring work for the Power Company at the time I was in business. It [fol. 665] paid for all the inside wiring on all major appliances, ranges, water heaters and other things. I do not know how much electricity the different homes consumed. I am a member of the Lincoln County Electric Membership Corporation and I get rural service now. I was not out in the rural section before the Corporation was organized but moved there the first of 1937. The place where I am now located did not have any service before the Corporation was organized.

(The witness was excused.)

(The deposition of E. W. Carmack is as follows:)

E. W. Carmack was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination.

(Offered by complainants:)

I am 38 years old, reside in Murfreesboro, Tennessee, and am publisher of a newspaper. I am Secretary of the Middle Tennessee Electric Membership Corporation. As Secretary I have custody of the books and records of the Middle Tennessee Electric Membership Corporation. I do not personally keep the books but I have official charge of them. I am one of the original incorporators of that Electric Membership Corporation and I have produced here itrecords and books.

The minutes (offered and received in evidence as Complainants' Exhibits 398 to 406 inclusive) are the minutes of the meetings of the Directors of the Middle Tennessee Elec-

tric Membership Corporation of June 24, 1936 (Exhibit 398), November 4, 1936 (Exhibit 399), November 13, 1936 [fol. 666] (Exhibit 400), March 4, 1937 (Exhibit 401), March 17, 1937 (Exhibit 402), April 6, 1937 (Exhibit 403), June 4, 1937 (Exhibit 404), June 16, 1937 (Exhibit 405), and July 8, 1937 (Exhibit 406).

I have produced a copy of the certificate of incorporation of the Middle Tennessee Electric Membership Corporation (which appears in the record as Complainants' Exhibit 688); a copy of the contract for power dated August 13, 1936 between TVA and the Corporation (which appears in the record as Complainants' Exhibit 138); and a copy of the construction loan contract dated October 16, 1936 between REA and the Corporation. There are no other contracts in existence between REA and the Corporation.

The document (offered and received in evidence as Complainants' Exhibit 407) is a copy of the by-laws of the Middle Tennessee Electric Membership Corporation.

The document (offered and received in evidence as Complainants' Exhibit 408) is a copy of an application made by the Middle Tennessee Electric Membership Corporation to the REA for a loan.

Cross-examination.

(Offered by defendants:)

Mr. Hutchinson, President of the Corporation, executed the construction contract with TVA and the construction loan agreement of the REA on behalf of the Corporation. They were considered by the Board of Directors and the President was authorized to execute them by the Board. There was a Board resolution to that effect and the contracts were turned over to counsel for the Corporation for examination and approval in every case before being executed. I have available copies of the Board resolutions [fol. 667] authorizing the execution of these contracts. Prior to executing these contracts the Corporation authorized their execution by Board resolutions and discussed them with counsel and had them examined by counsel before they were executed.

I have lived in this County for three and one-half years. Before that I lived in Maury County. During the time I have been here, I have had the opportunity to become ac-

quainted with rural electrification service in the rural areas of this section. Prior to the formation of the Middle Tennessee Electric Membership Corporation, there were considerable areas in this County that were not receiving electric service. Those were the same areas which are now being served by the Corporation. I am familiar in a general way with the location of the lines now operated by the Corporation. To the best of my opinion in talking to those people who now have service from our Corporation, those lines are located in territory that was not previously served by any power company. None of the members of the Corporation were served by The Tennessee Electric Power Company prior to the organization of the Corporation, according to my investigation.

As to what contacts the Corporation has had with representatives of TVA within the past six months, we have invited some of the employes working for TVA to come to our directors' meeting occasionally. The Board of Directors of the Middle Tennessee Electric Membership Corporation makes the determination as to whether or not the Corporation is going to build a line to a particular community and the Board does not take orders on that from any outside agency. The Corporation now has approximately 210 miles of lines in operation and had about 706 customers when I last checked it fifteen days ago.

(The witness was excused.)

[fol. 668] The Court having excluded the deposition of R. H. Bandy on the grounds that it "deals solely with operations by or competition with the Georgia Power Company" later stated:

"The Court has given further consideration to the offering in evidence by complainants of the deposition of the witness R. H. Bandy. It is not controverted here that the North Georgia Electric Membership Corporation operates in Georgia and operates some miles of electric line in Tennessee. So far as this operation is material as evidence of competition by the TVA with any complainants other than the Georgia Power Company it is not necessary further to prove the operation. As bearing upon the competition of the Georgia Power Company, the deposition falls within

the ruling of the Court as to inadmissibility of evidence dealing with operations by and competition with the Georgia Power Company. As evidence of the organization, method of operation and activity of a cooperative within this territory, it is purely cumulative in view of the admission of the depositions of the witnesses Pittman and Carmack. The Court adheres to its ruling that the entire deposition of the witness Bandy is excluded."

(The excluded deposition of R. H. Bandy is as follows:)

R. H. BANDY was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants—excluded:)

I live in Catoosa County, Georgia, and am President of the North Georgia Electric Membership Corporation, which office I have held since its incorporation. I hold no other office with the Corporation. I am also a member of the Executive Committee and one of the Directors of the Corporation.

I attended a meeting in Chattanooga at the TVA offices about April 6, 1936. At that meeting there was pre-
[fol. 669] sented a form of agreement between TVA and the promoters of the North Georgia Electric Membership Corporation. I suppose the Corporation was organized sometime subsequent to that meeting,—I didn't keep the dates,—I was not in it. I signed all of the contracts, papers and documents which the Corporation entered into relating to various subjects and which were produced by Mr. Pittman. Mr. Pittman is our attorney. Mr. Pittman got them and studied them and I had to make a living some other way. I did not go to the trouble of informing myself about what they were. That was Mr. Pittman's duty. He got all of these documents, looked them over, stated what they were and I signed all of them I reckon. In each case, Mr. Pittman explained what the contracts were about to the officers and directors and he read some of them, but I did not take time to study them. I don't know very much about them. I read some of the contracts which I signed, but I could not state what contracts, if any, I read before

I signed them. I testified in a suit between the Georgia Power Company and the North Georgia Electric Membership Corporation about September 1, 1936, that I read some provisions of some of the contracts but I did not read any of them through. Concerning whether I was not right in my testimony there or whether I want to change my answer as to whether I read any of the contracts which I signed, I read some parts of them—I don't know that I read them all. As I stated, I depended upon Mr. Pittman to kind of keep us straight. To a great extent I took Mr. Pittman's word with respect to what contracts I should execute. I don't know whether or not Mr. Pittman prepared or drafted any agreements or contracts which I signed.

[fol. 670] Cross-examination.

(Offered by defendants—excluded:)

The contracts would be presented at the meeting and at that time Mr. Pittman would explain and discuss the terms of the contract. I read a portion of them after the discussion and explanation by Mr. Pittman and upon the recommendation of Mr. Pittman and the consideration of them at the Board meeting, I signed them.

(The witness was excused.)

(The excluded deposition of Mrs. Nellie Armington is as follows:)

Mrs. Nellie Armington was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants—excluded:)

I live in Birmingham and am employed by the Alabama Power Company and was so employed on May 6, 1936. On that night I attended a public meeting at Cullman, Alabama. I am Secretary to the Engineer of Power Sales, Mr. T. L. Bissell, of the Alabama Power Company. I have

studied typewriting. I completed my commercial course in Bellgrade Business College at Bellgrade, Kentucky. I received my B. C. S. degree in commercial work there in 1924. Then I taught commercial work in the Cullman County High School two years. By commercial work I mean shorthand, typewriting, bookkeeping and business arithmetic. [fol. 671] I then taught at the Wheeler Business College in Birmingham. Next I did some statistical work for the Tennessee Coal, Iron & Railroad Company in Birmingham and I did some stenographic work for R. A. Brown Insurance Company in Birmingham. I went with the Alabama Power Company in March, 1927, and I have been there ever since engaged in stenographic work.

At the meeting at Cullman, Alabama, which I attended on May 6, 1936, the discussions were on Rural Cooperative Associations. Speeches were made there at that time and I took down those speeches in shorthand. Mr. Beauchamp, Dr. Falck, Mr. Clement and Mr. Nichol made speeches on that occasion. Mr. Nichol is the Mayor of Athens. I took down as much of everything that was said as I could possibly get. Mr. F. F. Beauchamp made a speech on that occasion and I took down as much of his speech as I could get. I later transcribed my notes.

The transcript of my notes (offered in evidence as Complainants' Exhibit 390) contains the speech of Mr. Beauchamp on p. 1; the speech of Mr. Nichol on pp. 2 and 3; the speech of Mr. Sears on pp. 4 and 5; the speech of Dr. Falck on pp. 5 and 6; and the statement of Mr. Nichol on pp. 6, 7 and 8, including the questions asked Mr. Nichol by members of the audience and his responses. (Complainants' Exhibit 390 was excluded by the Court and exception taken by complainants.)

Cross-examination.

(Offered by complainants—excluded:)

The meeting about which I have testified was a meeting of the Cullman County Cooperative Association and was presided over by Mr. Clement. Mr. Clement was Chairman of the meeting and I understood he was President of the Cooperative Association.

(The witness was excused.)

[fol. 672] (The excluded deposition of Chester Gause is as follows:)

CHESTER GAUSE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants—excluded:)

I live in Birmingham and am employed by the Alabama Power Company. I was employed by it on May 6, 1936 and December 12, 1935, and have been employed continually by it since December 12, 1935 as Power Sales Manager.

On March 9, 1936, I attended a meeting of the City Council of Cullman at which Mr. F. F. Beauchamp was present. The first time I saw Mr. Beauchamp was at this meeting, when he and Dr. Edward Falck appeared before the City Council. Dr. Falck is Director of Rates, Research, and Economics for TVA. The occasion for this meeting of March 9 was that there was to be a discussion by the City Council of Cullman. T. L. Bissell and W. M. Stanley of the Alabama Power Company were at that meeting too. They have to do with the sale of power. At that same meeting Mr. F. F. Beauchamp and Dr. Edward Falck of the TVA and Mayor J. H. Dunlap made some suggestions and representatives of TVA were heard first. Mr. F. F. Beauchamp spoke to the Council and discussed the matter of TVA supplying the City of Cullman with power. He said that TVA was interested in serving Cullman's electric load, but TVA could not make a definite proposition at the time on account of the Court's injunction. He then said Dr. Edward Falck could explain the rates and the program of TVA. Dr. Falck then made a statement to the Council with respect to the [fol. 673] manner in which TVA could supply power and the rates to be charged and he discussed the contract that the City would enter into to obtain TVA electric service.

I attended a meeting of the Cullman County Rural Electri--cation Association on May 6, 1936 at which Mrs. Armington was present. Mr. F. F. Beauchamp, William Nichol and L. A. Sears were also present. I arranged to have the speeches taken down in shorthand by Mrs. Armington, my stenographer, and I took her to Cullman with Mr. Bissell

on that occasion. Mr. Beauchamp, Mayor Richardson of Athens, Alabama, Mr. Sears, Mr. Nichol and Dr. Edward Falck made speeches on that occasion.

Redirect examination.

(Offered by complainants—excluded)

In explanation of my statement in cross-examination that we went to the Cullman County meeting to get evidence I mean simply this: We desired to know the extent to which the Cooperatives intended to build lines to the City of Cullman and we desired a transcript of the meeting and Mayor Dunlap advised me that this meeting was going to be held and that is my reason for going. I examined Mrs. Armington's transcript of her notes on this Cullman County Meeting of May 6, 1936, and made no changes in them. I heard the speeches which she reported in her transcript. As I recalled at the time I examined the transcript, the speeches made were substantially as I found them in the transcript.

(The witness was excused.)

[fol. 674] (The excluded deposition of Quincy Caughman is as follows:)

Quincy L. Caughman was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants—excluded:)

I live in Birmingham, Alabama. I am employed by the Alabama Power Company and was so employed on November 5, 1935. On that date I attended a public open meeting at Altoona, Alabama, in Blount County. I would estimate there were approximately 400 or 500 people present. Congressman Starnes of that District and Mr. Rogers and Mr. J. H. Aldridge were present at that meeting and made speeches. I did not know Mr. Aldridge before that time, but both he and Mr. Rogers were introduced by Congressman Starnes. Mr. Rogers made a speech as to TVA. The

primary purpose of the meeting was a discussion of TVA and the proposition to form a cooperative in Etowah and Blount Counties. Mr. J. H. Aldridge made a speech. Mr. Starnes spoke first and he, in turn, introduced Mr. Rogers, who explained to the people how to go about forming a cooperative and all about what they would have to do and the requirements for these cooperatives. He discussed the operation from a cooperative standpoint, and he discussed the Alcorn County Cooperative in Mississippi. Mr. Aldridge stated in his speech that he was with TVA, but I do not recall what he stated his business was. He stated he was a native of Blount County and was especially interested in Blount County and in forming these cooperatives. I don't believe he stated anything with respect to the willingness and ability of TVA to supply power to cooperatives there.

(The witness was excused.)

[fol. 675] (The excluded deposition of R. C. A. Kittridge is as follows:)

R. C. A. KITTRIDGE was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination.

(Offered by complainants—excluded:)

I live in Gadsden, Alabama, and I am now in the employ of the Alabama Power Company as District Manager at Gadsden. I was so employed on June 4, 1936, on which evening I attended a meeting at the high school at Turkeytown, Etowah County, at which there was a discussion of rural electrification of that County. It was an open public meeting and there was a discussion with reference to the formation and organization of a county cooperative. I know Mr. B. S. Robinson and he was present at that meeting. I never saw him until that time. I met him at the meeting when he came up to me and said: "Have I not seen you somewhere before?" and I said, "You might have—my name is Kittridge and I work for the Alabama Power Com-

pany," and I shook hands and went back. At the meeting he made a speech discussing the organization and formation of electric membership corporations. He passed out some inquiries in printed forms to members of the audience and to me, and explained those forms to the audience and told them that the forms would be available whenever they had perfected their organization. I noticed that the forms which he had were application blanks and service sheets, and he said that he would see that there would be some handy whenever they were needed. He gave me copies of those application blanks and the other papers about which I have testified.

[fol. 676] The paper (offered in evidence as Complainants' Exhibit 391) is headed "Rural Electrification Survey, Neighborhood Plan, Customers' Application Agreement". In the left hand corner appears "TVA 189-DE". (Complainants' Exhibit 391 was excluded by the Court and exception taken by complainants. An identical sheet was subsequently received in evidence as part of Complainants' Exhibit 918.)

The paper (offered in evidence as Complainants' Exhibit 392) is a form which was passed out at that meeting headed "Rural Electrification Survey, Neighborhood Plan, Canvasser's Mileage Sheet", bearing in the corner "TVA 231-DE". (Complainants' Exhibit 392 was excluded by the Court and exception taken by complainants. An identical sheet was subsequently received in evidence as part of Complainants' Exhibit 918.)

The pamphlet (offered in evidence as Complainants' Exhibit 393) entitled "Rural Electrification Survey, Neighborhood Plan, Information Sheet" was also handed out at the meeting. (Complainants' Exhibit 393 was excluded by the Court and exception taken by the complainants. An identical sheet was subsequently received in evidence as part of Complainants' Exhibit 918.)

(The witness was excused.)

[fol. 677] Colonel William Kelly was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Buffalo, New York, and I am President of the Buffalo, Niagara & Eastern Power Corporation. I received

my preparatory education in the public schools of Yonkers, New York, and Superior, Wisconsin; my technical education at Sheffield Scientific School of Yale University and the U. S. West Point Military Academy. I graduated from West Point in 1899 with the degree of Bachelor of Science. I subsequently took a post graduate course in the Engineers School of Application at Washington. I belong to the American Society of Civil Engineers, the American Society of Military Engineers, the Association of Applied Sciences, and I am a fellow in the Institute of Electric Engineers, and a past president of the Buffalo Society of American Civil Engineers. I am a licensed professional engineer in New York State.

I was commissioned a lieutenant of the Corps of Engineers, U. S. Army, upon graduation. My first assignment was on fortification work at San Francisco, building defenses at the entrance to San Francisco Harbor. From there I went to the Philippines and spent approximately three years, mostly on military engineering, and during that time I made a survey of the Harbor of Ilo Ilo and plans for its improvement. Upon returning to the United States, I entered the Engineers School of Application in Washington. From there I went to New London, Connecticut, as assistant to the U. S. Army Engineer in charge of that district. That district was engaged in building defenses at the eastern entrance to Long Island Sound, and in making river and harbor improvements on the north shore of Long Island [fol. 678] Sound from the New York State line up to the Atlantic Ocean. I had charge of the fleet work in that district, and, among other things, a considerable floating plant to operate. From there I went to Fort Leavenworth on military duty and subsequently to San Francisco. In 1906 I went from San Francisco to Washington as assistant to the engineer commissioner of the District of Columbia in charge of the departments of sewers, water, buildings and electricity and spent four years on that job. I then went to the Philippines again for about three years, engaged most of the time on the building of defenses at the entrance to Manila Bay. Upon return from the Philippines in 1913, I was assigned to duty as assistant to the Chief of Engineers in Washington. I retained that position until I went to France in the War.

During the War my services consisted in, first, serving on the general munitions board in Washington; subsequently

as chief engineer of the 42nd Division, chief engineer of the Fourth Army Corps; base commander of base sections 9 and 7 in France, and deputy chief of staff of the American Expeditionary Forces in France. I was awarded the Distinguished Service Medal for services during the War, and also the Legion of Honor of the French Government. While in France, I was delegated to duty with the Peace Commission to make a survey of the five rivers internationalized by the Versailles Treaty. My duty consisted in making an inventory of the floating plants and river and harbor improvements on these rivers for the use of an American arbitrator who was to make an allocation of these in accordance with the new boundaries fixed by the Treaty.

Upon return from France, I was assigned to duty on the California Debris Commission. Among other things, I had charge of the flood control projects and navigation improvements on the Sacramento River. In 1920 I was appointed chief engineer of the Federal Power Commission and served in that position for five years. After being relieved from [fol. 679] that, I was granted an extended leave of absence and became directing engineer of the National Electric Light Association. In 1926 I became vice-president and chief engineer of the Buffalo, Niagara & Eastern Power Corporation. In 1929 I became general manager of that corporation and in 1933 I was elected to the present position I now hold, that of president of the Corporation.

I resigned from the Army in 1928. After 1924 I was a member of the Joint Engineering Board on the St. Lawrence project, and I was also chairman of the Board of Engineer Officers that reported on the use of the reservoir for flood control on the Mississippi in 1927 to 1928. After the 1927 flood, there was a great deal of agitation about the Mississippi flood condition. General Jadwin, who was then Chief of Engineers, started a very thorough investigation to make recommendation to Congress as to what should be done. The question of reservoirs had been studied from time to time for 85 years or so. But, in view of changing conditions, General Jadwin thought that it should be reviewed and a determination made as to whether or not reservoirs on tributaries should form a part of the main project. He appointed a board of seven engineer officers, of which I was chairman. The time allowed was very short, because Congress was insisting on having another report. But, the Board had placed at its disposal all of the facilities of the

Corps of Engineers, and they made an investigation of a good many reservoir sites, and made a report on the subject which was published in a Committee document, No. 2, 70th Congress, First Session. I personally directed the work on this Board.

The flood control project on the Sacramento River was on a much smaller scale, of course, because the river is smaller and very much like the project that was adopted for the Mississippi River in what is called the Jadwin plan. It consisted in a leveed channel on the main river with by-[fol. 680] pass flood channels to carry the water which should come beyond the capacity of the main channel.

My principal duties as chief engineer of the Federal Power Commission were to examine the applications that came befor the Commission, and determine the action that should be taken upon them by the Commission, and recommend to the Commission what action it should take. The principal function in carrying out that work was to conform with section 10-A of the Act, which charged the Commission with the duties of satisfying itself that any project for which a license was granted was in conformity with the complete development of the water resources and would lead to the ultimate maximum public use of those water resources. During the five years that I was with the Commission, there were about 600 applications made to the Commission and the Commission granted 83 licenses for power development, which covered an installed capacity of about 2,650,000 horsepower.

During the period from 1920 to 1928, my work and my studies were not confined to projects in any particular part of the United States. I was connected with projects that were pretty well scattered over the entire United States during that time. During the time that the Jadwin plan was being formed, General Jadwin called me into consultation on it a good many times and I was quite familiar with that plan. Prior to that, while I was in the office of the Chief of Engineers, as assistant on the River and Harbor desk, I had a good many occasions when I had to pass on projects connected with the previous plans on the Mississippi River. During the time I was an assistant to the Chief of Engineers, I was principally engaged on navigation projects of one kind and another. That is, I was an assistant to the Chief on what they called the River and Harbor desk, which is a [fol. 681] branch of the Chief's office, which handles all

water power problems. The projects which came within the field of my duty as assistant to the Chief of Engineers involved projects for both the Mississippi and Tennessee Rivers.

Since I resigned from the Army in 1928, I have kept in touch with the work that has been done and studies that have been made in connection with flood control on the Mississippi River, by reading the various reports that came out since that time and by conversation with officers of the Corps of Engineers that were engaged on the work. I am personally familiar with the general topography of the lower Mississippi Valley. I have visited that section a number of times since 1913. I have been in the Valley at practically all stages of the river, from low water to flood, and I have been down the river at one time or another practically all the way from St. Paul to the Passes. I am familiar with the reports that have been made by the Engineer Corps in the last five years relating to floods on the Mississippi River and its principal tributaries. I am also familiar with the general program of the TVA, the so-called TVA Unified Plan, as it is set out in the report of the TVA to Congress under date of March 31, 1936. I have visited all of the projects on the Tennessee that are included in that plan, including the sites that have been recommended or considered. I have had some contact with Wilson Dam long before the TVA existed. I saw it under construction, and after it was constructed.

The drainage basin of the Mississippi covers an area of about 1,240,000 square miles. It covers parts of about thirty-one states and a couple of provinces in Canada and it occupies about 41% of the area of the United States. The map, (offered and received in evidence as Complainants' Exhibit 409) shows the Mississippi drainage basin divided amongst its principal tributaries, each tributary being shown by a different color. The lower Mississippi Valley, [fol. 682] which is the general point of interest for flood control, from Cairo down to the Gulf, is shown in dark blue, and the other part of the main valley, which is usually referred to as the middle section of the Mississippi, is shown in lighter blue. The Ohio drainage basin, which includes the Tennessee, occupies about 16% of the drainage basin. The Tennessee basin is about 3.3% of the total drainage basin. The lower Mississippi Valley from Cairo to the Gulf, which is about 900 miles, following the river, occupies an

area of about 50,000 square miles. In original condition, about 30,000 square miles of this area were subject to inundation. The construction of levees and other improvement works in the river have reduced that amount of overflowed land to about 10,000 square miles, or it will be when the so-called Jadwin Plan is completed. And a considerable part of that remaining area, that in the floodways, will only be flooded periodically, on certain—we do not know just what periods, but averaging perhaps once in 14 or 15 years.

The floods on the lower Mississippi, on account of the very large drainage area, receive water from all these tributaries, and that causes them to extend over a very long period. The flood stages in general—they call it a serious flood stage when the gauge at Cairo goes above 50—have lasted in large floods for as long as 30 days, even twice that time in one or two floods. The inflow from the major tributaries is not in proportion to the area of the watershed. The western part of the drainage basin is semi-arid and the run-off from that part of the basin is very much less than it is from the eastern side. It is not usual that all tributaries are discharging at the same high stages. In a river as large as the Mississippi, or even the Ohio, a flood in the Ohio rarely has had, or it never has up to date, all of the tributaries in flood at one time. Usually the flood is caused by one or two or three tributaries, which are receiving a very high run-off. The [fol. 683] others may be at a normal stage or even below a normal stage. The big floods in the Mississippi River usually come between the first of January and the first of June, the first five months in the year. There have been floods that exceeded the flood height in almost every month of the year, except August or October.

Considering the general problem of flood control for the lower Mississippi, the river will carry about a million cubic feet per second within its banks. The main channels have been straightened and levees built in such a way that under the present project the river will carry 1,900,000 cubic feet per second. Anything above that has to be taken care of through these floodways. The maximum flood that is being provided for will be somewhere in the neighborhood of three million second feet.

With respect to the benefits which should result from any project designed for Mississippi River flood control, the obvious thing is that flood control projects must protect against the damages that are done by flood to life and prop-

erty and incidental damages to suspension of business and to the interruption of communications. It should also be dependable in great floods. That is the critical time for any flood proposition. They should also be designed so that the protection is obtained with the minimum cost. In order to achieve these benefits, the works must be designed in accordance with well-tried engineering principles that will give dependable results and the most economical solution that can be obtained. No flood project is of any real value unless it protects against the maximum flood to be reasonably expected.

There are several ways in which estimates of the size of the flood which may be reasonably anticipated on the lower Mississippi River can be made. They have been made a number of times by the Mississippi River Commission and by the Chief of Engineer's office. Usually such estimates are [fol. 684] based on the past records, taking into consideration the topography of the drainage basin, contributions by the different tributaries and various other factors that make it possible to arrive at some idea of what the maximum probable flood will be. In the case of a large river, with a large drainage basin such as the Mississippi, and the diversity factors such as exist in the case of the Mississippi, I think it is possible to make a more reliable estimate than in the case of a smaller river with a smaller drainage basin. Assuming that the works included in the TVA Unified Plan on the Tennessee River and its tributaries were constructed, it certainly would, in my opinion, still be necessary to construct flood control works on the lower Mississippi River to provide adequate flood protection to take care of the maximum anticipated flood.

The map, (offered and received in evidence as Complainants' Exhibit 410), shows the lower valley of the Mississippi from Cairo to the Gulf. The main river and the main tributaries are shown in blue. The principal cities are marked on the map. The main levees are shown in a full red line and the so-called fuse plug levees are shown by dotted red lines. If you will look at the upper part, starting at Cairo, going down the River, you first come to Birds Point, just below Cairo. At that point the dotted red line shows the location of the old levees. The channel capacity between this levee line and the bank on the opposite side of the river is not sufficient to carry the water without excess heights at Cairo. Consequently, the Jadwin plan provided a levee

from Birds Point to New Madrid. The old levee, slightly reduced in height, was left in place. In the ordinary year the river stays within the old levee and the bank on the opposite side. In a flood year, such as last year, the old levee is overtopped, and the river covers the area out to the main levee. [fol. 685] As you go down the river, we come next to the Arkansas river. There the old levee line along the south side of the Arkansas and west side of the Mississippi is shown in a dotted line. A new levee is projected from the high ground at Pine Bluff on the South side of the Arkansas, running down to the vicinity of Harrisonburg, and the levee on the opposite side of this Tensas Bayou forms the floodway. The old levee shown by the dotted line is left in place some three or four feet lower than the main levees. When the flow in the river becomes more than the main channel can carry, this old levee will be overtopped and the water will pass down through this floodway, which is now called the Eudora Floodway. That Eudora floodway is a slight modification of the Jadwin Plan. Originally the Jadwin Plan put the floodway over in the Boeuf River Valley, on the other side of Macon Ridge.

As we go down the river from there, the next point of diversion is in the Atchafalaya River, which is represented by the two red lines close together along the river. There are floodway levees built so as to enlarge this flood channel down the Atchafalaya Valley, and the water comes into that area through a fuse plug levee at the upper end shown by the dotted red line. In addition to these levees, the outlets have been enlarged, one at Morgan City, and the other just west of that. There has also been an outlet provided above New Orleans on the main river called the Bonnet Carre Spillway, which discharges excess water into Lake Pontchartrain, and lowers the flood heights of water passing New Orleans. This, in a general way, comprises what is called the modified Jadwin Plan. The project is pretty well towards completion at the present time. In fact, practically all of it is completed except the Eudora Floodway.

Examination by the Court:

The channel of the river has been straightened in certain [fol. 686] places and dikes are built for the protection of the banks. Sometimes the protective facilities are in the form of a mattress that covers the bank and sometimes there is a dike projecting out into it for the purpose of preventing the

river from leaving its channel. That is one of the integral parts of the Jadwin Plan. The straightening of the river and the protection of the banks constitutes a real part of it, both for increasing the flood capacity of the main channel and for improving the navigation conditions.

Direct examination continued:

When the flow gets to approximately 1,900,000 second feet, it will start running out of the spillways slightly before that stage is reached or that quantity of water comes in. Anything below that would be carried by the main river without going through the floodways. The Atchafalaya probably is an old mouth of the Mississippi. It used to be called the "old river", that joined up with the Atchafalaya there, and I am not certain about the history of it, but it looks as though it might very well have been the original main channel.

Prior to 1928, there had been about $150,000,000 spent by the Federal Government on the flood control works of the lower Mississippi. The Jadwin Plan, as modified, included certain improvements on the St. Francis and Yazoo basins and will cost about $500,000,000. It is practically completed, except for the Eudora Floodway. The improvements in the Yazoo and St. Francis basins are not finished yet either. The modified Jadwin Plan does not recognize or include tributary reservoirs as being essential or economical for flood control on the lower Mississippi River. Obviously the protections should not cost more than the benefits to be derived from flood protection.

In my opinion, storage works on tributary streams are not practicable or effective for the control of floods on the lower Mississippi River. That is based on considerable study of the subject. The subject has been up many times [fol. 687] and the fact of the matter is that with all of the studies that have been made, there are no satisfactory reservoirs that have ever been built with that primarily in view. I have studied the effect of a good many tributary reservoirs on the Mississippi River. I might mention the reservoirs of the Miami Conservancy District. Those are detention type reservoirs. That is, they are built so that they automatically fill as the water run-off increases and then discharge themselves automatically after the flood has passed. Detention reservoirs are what you might call fool-proof, and are very effective on a small area. These Miami reservoirs

are very satisfactory as protection for the Miami Valley, including the city of Dayton, but their effect on the Mississippi is very uncertain. What they do is to reduce the maximum outflow from the river, but they increase the duration of the high water period. What the effect is on the Mississippi or some other stream at a considerable distance away depends upon the timing of the water out of that river with water coming from other tributaries. It may decrease the flood height on the Mississippi. Out of five floods that I have studied, in one of them it decreased the flow; in two of them it increased the flow of the Mississippi; and in two it had no effect. There are no power projects operated in connection with these Miami reservoirs. They are empty most of the time.

The size of the drainage basin of the Tennessee River is 40,600 square miles. The flood characteristics of the Tennessee River are not similar to those of the lower Mississippi River. The Tennessee, of course, is a very much smaller stream. The valley has much steeper slopes than the lower Mississippi, and the result is that the floods on the Tennessee are more flashy than they are on the Mississippi. On the upper river, they rarely last more than a few days; in [fol. 688] the lower river, they may last as much as two weeks; whereas, on the Mississippi, the large floods last thirty days or more.

I am familiar with the projects included in the TVA Unified Plan as outlined in its report to Congress of March 31, 1936. I have also examined later information given before the Congressional Committees or in annual reports with reference to its projects. At the time the TVA Act was passed in 1933, there were two dams on the main Tennessee River, Wilson Dam built under the National Defense Act and Hales Bar Dam, which was built by private interests. Starting with the dams included in the TVA Unified Plan that are finished, there are Wheeler and Norris; there are four under construction, Pickwick, Guntersville, Chickamauga, and Fowler's Bend on the Hiwassee. There are others that have been recommended, Gilbertsville, Watts Bar, Coulter Shoals and Fontana.

There is a conflict between storage for power and flood control in the projects included in the TVA Unified Plan. When you are using the reservoir for flood control, the reservoir should be kept empty until the danger period arrives. It should then be filled to reduce the flood waters. As soon as the flood has passed, it should be emptied again to be

ready for the next one. When you use the reservoir for power purposes, the reservoir should be filled as early as practicable and kept full as long as possible for two reasons: first, to conserve the water for the low water period, and second, to get the maximum head out of the reservoir for power purposes. In the case of storage for power, the availability of any capacity for floods is a matter of chance. If you start to fill the reservoir when the high water season arrives, and you need to do that if you are running it as a power project, there may be no capacity left when the large flood really comes along. Whether there is any capacity and, if so, the amount of capacity, is contingent upon the power operations.

[fol. 689] Tributary flood control reservoirs cannot be operated for local flood protection and, at the same time, be operated so as to provide a reduction in peak stages on a distant river into which the tributary flows. If they are operated for local flood protection, they would be used to store water when the local flood came along, and as soon as that flood was passed, they would release it without regard to the conditions in the main river. On the other hand, if they use it for flood protection for the main river some distance away, they would be held empty regardless of local conditions until a dangerous condition or dangerous stage in the main river arrived, at which time they would start storing to protect the main river.

Valley storage is the natural storage of the valley itself as it is filled when the water rises in the flood. It really amounts to having the water as it rises in the river overflow low lying lands, back up into the small creeks, and as it gets higher on a river like the Ohio, for example, it will back up into main tributaries like the Tennessee and the Cumberland, and taken altogether, there will be a tremendous amount of water stored in the valley proper. That storage has the same effect as detention storage reservoirs. It has the effect of holding the water back so as to reduce the maximum crest and the maximum flow at points below, but it also has the effect of extending the period of high water.

The diagram, (offered and received in evidence as Complainants' Exhibit 411), is drawn to show the effect of valley storage, or how the valley storage is affected when dams are placed on the river. On the left, there are three figures showing the valley storage at different stages of

flow. On the right, there is a diagram showing a dam with the dead storage marked in light blue, being that that is below the minimum pool level, and considerable storage is [fol. 690] shown in dark blue, being that storage between the minimum pool level and the top of the gates. If on this longitudinal section of the reservoir, we place the valley storage diagrams on the left, you show in red how much of the valley storage is eliminated by the construction of the dam. That is eliminated because the dam creates this dead storage, which is filled with water at all times, and when a flood comes along, it cannot be filled again. The diagram on the right also shows what will happen to the controllable storage as the river flow increases. The controllable storage is reduced, and if the flow in the river is great enough to drown out the dam, there will be no controllable storage at all. If the river is completely canalized by high dams, it will have lost practically all of the valley storage and all of the benefits of flood reduction due to it.

Complainants' Exhibit 411 indicates that in case a large flood happens, the only value which the dam has from the standpoint of flood protection is the small section marked "Controllable Storage" in the upper left hand corner of the lower right hand figure. That would be a very small proportion of the total storage area of the reservoir. I am speaking of or referring to the TVA Unified Plan when I am making these comments. They would be different for different rivers and different projects. In the 1926 flood, the amount of valley storage on the Tennessee River was about 8,000,000 acre feet. In a large flood, such as may be expected, it would be about 14,000,000 acre feet. Referring to the area on Exhibit 411 marked "Dead Storage", that means that when you build a dam across the river, water forms behind that dam and that pool remains there all the time without any change, and that is what is normally referred to as dead storage, being the part of the storage behind the dam, which is below the spillway. The effect of that reduction in valley storage would increase the stages below the reservoir. The dead storage forms a head for power development.

[fol. 691] The present flood control works system on the Mississippi River at and below Cairo consists of levees and by-pass channels for extremely high floods, and certain other lesser things, like straightening channels, widening

outlets, stuff of that sort. In my opinion, this system of levees and by-pass channels, when completed, will be large enough to take care of the largest flood which may be reasonably anticipated at and below Cairo. The construction of dams and reservoirs, as indicated in the TVA Unified Plan as set forth in its report to Congress under date of March 31, 1936, would not decrease the size or cost of the flood control works which have been adopted and which are nearing completion for flood protection at and below Cairo. In my opinion, no expenditure is justified on the Tennessee River for flood protection on the Mississippi River at and below Cairo. There comes a point in the case of any large river where it is cheaper and better to get the water to the sea than to hold it back in reservoirs. A river like the Mississippi has so much water coming into it, it is impossible to hold it anyway, and the best thing to do with it is to open up the natural drainage channels and drain it off. Prior to 1928, there had been about $150,000,000 spent on the Mississippi flood control works. The Jadwin Plan, as modified and when fully completed, would cost about $500,000,000, in addition to the $150,000,000.

I am familiar with the low dam program for the improvement of navigation on the Tennessee River as outlined in House Document 328, 71st Congress, Second Session, adopted in the Rivers and Harbors Act of 1930. This document contemplated the building of about thirty low dams in addition to the navigation works already in the river, to produce a nine-foot channel from Knoxville to the mouth of the river. I am familiar with the navigation channel between the mouth of the Tennessee River and Knoxville which would result from the completion of the TVA Unified Plan. [fol. 692] There are already in existence Lock and Dam No. 1, just below Wilson—Wilson Dam and Hales Bar Dam, which will all be a part of the navigable channel either under the low dam navigation plan or under the TVA Unified Plan. Then, there is Colbert Shoals, Riverton Lock and Widows Bar Dam which would be in the low dam project as well. In my opinion, there is no material difference from the standpoint of practical navigation between the benefits to navigation under the two plans. One of them has certain features that the other has not; and the other has advantages that the first has not, and when you balance it off, I believe that the practical navigator would find very little preference for one over the other. In my

opinion, no additional expenditures over and above the cost of the low dam plan would be justified from the standpoint of navigation under the TVA Unified Plan.

To determine whether a proposed navigation improvement is practically or economically justified, the cost of savings in freight cost due to the project should be greater than the fixed charges on the cost of the project, plus the cost of operating and maintaining it. The construction of Norris, Hiwassee and Fontana Dams and reservoirs on the headwaters of the Tennessee would not benefit navigation under the TVA Unified Plan for improvement of the Tennessee River. When the river has been canalized, the only water required is that necessary for lockage, leakage and evaporation; and the natural flow of the river in the Tennessee is more than ample to supply those needs without reservoirs. Reservoirs at Norris, Hiwassee and Fontana would have a great effect on increasing the firm electric power on the main river projects.

Cross-examination:

I do not recall offhand the duration of the critical period of the flood crest of 1937 at Cairo. I understand that the flood crest for a day or two was slightly in excess of the [fol. 693] regular levee height, above which there had been placed temporary reinforcements, at least at a portion of the levee. I recall that the crest at Cairo stayed at about the same elevation for something over two weeks after the Bird's Point-New Madrid floodway went into operation. I do not know how many days it remained within two feet of the top of the levee. I have not got those figures in mind. I would not estimate, I would look it up. I have made a study of a good many of these extreme floods. I have not studied that one closely. In some respects, perhaps, it was the worst one at Cairo. It was the worst one in the lower valley of the Ohio River.

I was Chief Engineer of the Federal Power Commission for five years. I first started to work for private industry after I left there in 1925. I resigned from the Army in 1928.

"Q. Now, you mentioned a system of low dams, as discussed in House document 328; and as discussed by Colonel Putnam. Are you also familiar with the scheme

of detention basins, dams and detention basins as suggested by Mr. Kurtz in this case?

A. I have not made any particular study of that, no. I saw his testimony, but that is all.

Q. Well, in your opinion, does either of those schemes satisfy the Federal Power Commission's standards for the full development of the resources of the river?

A. Well, I would not say that there was any reason why——

Q. I did not ask you the reason why. I say do they, in your opinion, do either one of those plans satisfy the full plans for development of the resources?

A. I think they would.

Q. Well, take the low dam plan, singly and alone, and explain how that would develop the full resources of the river?

A. It does not prevent anybody that wants to come along and build a high dam for power purposes afterwards doing that, in conjunction with that; and that was a part of the project, that the economic power development could be made in conjunction with it if they were permitted.

Q. On the main river?

A. On the main river.

[fol. 694] Q. And that would in turn flood out the low dams of the system?

A. Yes, take the place of some of those low dams.

Q. So, in fact, Colonel, the low dams themselves, would make no attempt to develop the resources of the river, according to the Federal Power Commission's standards?

A. Of course, you understand the Federal Power Commission would have no jurisdiction whatsoever over a Federal project such as was contemplated by the low dam plan.

Q. And you appreciate also, don't you, that a scheme of detention basins, such as that suggested by Mr. Kurtz would not accomplish the aim of those standards of the Federal Power Commission?

A. It depends on what is the most important use of the water. If it is for local flood protection——

Q. I am talking about the development of all resources, and not a single purpose.

A. (Continuing.) If it is for flood protection, local flood protection, they might very well be the comprehensive development of the project to fit into such a development.

Q. Oh, you mean that they would not,—sort of like the low dam scheme, that they would not obstruct the future development, is that what you mean to say?

A. No, sir, I don't mean that. I mean they might form a part of it.

Q. You do not mean to say that they would accomplish the full development, but that by properly supplementing, these might be considered a part?

A. Well, I don't mean that at all.

Q. Well, you don't testify, do you, Colonel, that either of those schemes taken singly develops comprehensively the resources of the river?

A. They are not complete streams. They don't cover the entire river, nor could they.

Q. And they do not at any particular point develop the full resources, do they?

A. They develop the resources for certain purposes, and they may—I am not familiar with the details of this detention reservoir plan, as I told you. I don't know just to what extent that forms flood protection, but I do know that that sort of a project might be of great value as a flood protection for Chattanooga, and the local Tennessee River. It might be part of a comprehensive development of the river.

[fol. 694a] Q. Accomplishing a single purpose, is that right?

A. I don't know what you mean by that. They might—you are talking about the detention reservoirs?

Q. I am talking about either plan taken singly, they accomplish a single purpose do they not?

A. Yes, they are built, or undoubtedly would be built for a definite purpose.

Q. A single purpose, I said, Colonel?

A. Well, I think they would be for a single purpose.

Q. All right. Colonel, when you referred to the dead storage for power at the TVA dams, did you mean to say that on the series of dams on the main stream of the Tennessee, take Wheeler and Pickwick, for example, that dead storage would not, so-called dead storage,—would it not in fact be the navigation channel itself?

A. Well, of course it would, but it is not necessary to have it there to get navigation. If you build the low dam project you would not have it there.

Q. Well, you mean you could get navigation in another way?

A. Yes, you can get navigation without it. It is not necessary to navigation.

Q. I am sure you are opposed to the high dam scheme of navigation as a matter of principle Colonel?

A. I am not.

Q. You think it is a good scheme of navigation and would afford a feasible navigation channel?

A. The only thing I have got against it is the economics of it."

I have not examined the gates of the dams, such as Wheeler and Pickwick, in detail. I know the kind of gates they are. When I spoke of the dams destroying storage up to the top of the spillway, I took into consideration the fact that a lot of water could be released through those gates. It is those gates that give the control of storage that they are talking about.

I outlined the Jadwin Plan of the levee system for the lower Mississippi flood control in a general way. I didn't go into any details about it. I am familiar with the modifica- [fol. 694b] tions of the plan that were made in accordance with the recommendation of General Markham, Chief of Engineers. I am not sure that the Morganza Spillway, [fol. 695] which replaces a part of the Atchafalaya Floodway, is shown here in detail, but it is intended to be there. It is marked "Control Works", if you will see the legend on the righthand side, with an arrow pointing to the left, below Smithville Landing. That is the Morganza Spillway.

I testified that the adopted projects, that is, the channel plan of levees, etc., would take care of the maximum predicted flood, and that you might expect a flood flow of about 3,000,000 cubic feet per second. I do not know that the maximum flood for which the adopted project is designed from Cairo to the Arkansas City site is only 2,250,000 cubic feet per second. Of course, the flow from Cairo to Arkansas City is always on a maximum flood going to be less than what it is below. The figure, 3,000,000, I am talking about is from Arkansas City down. My measurement of the 3,000,000 cubic feet per second was about the latitude of Helena.

I am not assuming anything about it. I am stating what the project is. It is stated in the official report and if you want to get at any more detail, I would like to take it out of the report. On Page 24 of House Document 90, 70th Congress, First Session, it states that the predicted stage at Arkansas City of 74 feet is the result of the above stage at Cairo and the Arkansas and White at their maximum predicted stages; below the Red the same flood reduced by a river channel reservoir capacity, and with flow from the Yazoo and Red added gives a project flood which is taken at 3,000,000 second feet. In this document they do not give the second feet at Cairo, at least I didn't put my hand on it right away. It says that the flood used in the design of this plan is that predicted by the Weather Bureau as the maximum possible and by the Mississippi River Commission as the maximum probable. The stages predicted by these two bodies were practically the same; when there was a difference, the higher stage was used. This resulted in a project flood with the stages if confined of 66 feet at Cairo. I don't know that I have got right here the flow in cubic [fol. 696] feet per second at a stage of 66 feet at Cairo. I have an extract of notes that I have made here that states that the maximum flood discharges are estimated as follows: At Cairo, 2,250,000 cubic feet per second; at Arkansas City, 2,850,000 cubic feet per second, and Old River, 3,000,000. Those are the estimates made and used by the Chief of Engineers. Old River is down there near Morganza at the mouth of the Atchafalaya, in Louisiana, just below the Red.

The flow reached at Cairo in 1937 was in the neighborhood of 2,000,000 c. f. s. I don't understand that there was any overtopping of the levee at Cairo. Temporary additions to the levee at that point are a usual precaution whenever your flood comes near the top to prevent wave action and one thing and another from going over it. I don't know what they used. I saw in the paper that they generally used sand bags. I know that there would customarily be only one foot of freeboard on the levees on the Mississippi River when you get to a full channel capacity. But the fuse plug levees are more than that below the top of the main levee.

"Q. Are you familiar with the statement in Committee Document No. 1, 75th Congress, page 6, which contains the report of the Chief of Engineers on Flood Control?

You know there the report says 'A review of all data indicates, however, that due prudence should provide for a flood which, without reservoir control, would reach 2,600,000 cubic feet per second in the Mississippi between Cairo and the Arkansas?' Did you read that?

A. I take it that is a slight revision in the previous report as to what was necessary in that location.

Q. Then, you are not prepared to dissent from it?

A. No sir.

Q. Also, I find paragraph 21 as follows:

'The present levees on the Mississippi are about as high as it is desirable to construct them. An increase in the height accentuates the danger of a crevice, and its consequences, besides presenting the serious hazard of subsidence in the soft ground which they must occasionally cross. Additional safety should be sought rather in the [fol. 697] continuation of the program of improving the flood discharge of the river channel and in reducing peak discharge by the construction of reservoirs.'

Do you agree with that statement of the Chief of Engineers?

A. Well, I have no reason to disagree with it. I do not know what reservoirs he is talking about, but I know that the project as outlined, modified in this plan, contemplates straightening of the channel and the enlarging of its capacities at certain places by setting certain levees back at certain places by getting rid of bends, so that the water will flow through at a more rapid rate, making cut-offs, as they call them. That project is going on. I do not know of any reservoirs that have been adopted as a part of the Mississippi flood project, or recommended.

Q. You do know that the Mississippi River Commission has in recent years recommended reservoirs on the tributaries of the Mississippi, do you not?

A. No sir; I do not. Not for the Mississippi, I am sure they have not recommended to Congress any appropriation for such reservoirs."

They usually refer to the measurement of the discharge at Columbus, just below Cairo. I have not made any computation which shows that the contribution of the Ohio to the Mississippi floods at Cairo has been from 52 to 80 per cent of the great floods of the years 1903, 1912, 1913, 1916,

1922, 1927 and 1929. I do not know it but I would not be surprised if your figures are correct.

Referring to Complainants' Exhibit 409, I made the statement that the run-off had no particular relation to the area, that the run-off on the eastern side was very much heavier than it was on the far western side. At the time of flood, most of our storms are storms coming up off the Gulf, a very heavy rainfall travelling in a general southwest-northeast direction. They do not always stick to a direct route. It is true that the increase in the stage due to the contribution [fol. 697a] of the Ohio persists quite substantially at least to Helena, Arkansas. It certainly makes a substantial contribution to the river all below Cairo. It is the largest contributor, undoubtedly, down to that point. The Ohio flood of 1937 was primarily an Ohio River flood. I do [fol. 698] not think that anybody would have considered the condition very serious below the Arkansas River. From Cairo to the Arkansas River it was a big flood.

Examination by the Court:

If the Missouri River had cut loose full strength simultaneously, it would not have increased the flow in the Mississippi above the maximum they expect. It is always too bad when you get up to a big flood like that to have any more.

Cross-examination continued:

The report of the Chief of Engineers in House Document 306 of the 74th Congress, Paragraph 108, "Nature of Study", states: "It is apparent that reservoirs for the control of floods on the Ohio River must be situated on the tributaries of the Ohio;" and if you are going to try to control it by reservoirs, I do not see where else you could put them. The nearer you get flood storage to the Mississipi, the better it is for the Mississippi control. That is true for any reservoir project for the protection of a location, the nearer it is to that location, the more accurately you can get your control worked out. I do not think it is true that the sites developed or recommended for development on the Tennessee River are closer to Cairo than most of the other sites which have been or could be considered for flood control of the lower Mississippi.

Referring to my map, Complainants' Exhibit 409, the mouth of the Tennessee is not very far from Cairo, about a

day and a half. I thing a large flood control project on the lower Tennessee, say in the location of the Gilbertsville site, would have a greater utility for lower Mississippi flood control than one up in the region of Pittsburgh, assuming equal capacities. That is also true, to a certain [fol. 699] extent, as you move up through the Tennessee and the other streams in selecting your sites. You might possibly find reservoirs on one river like the Arkansas where you could get reservoir capacity enough to control the entire run-off. In that case, you are in a different position to what you are with a reservoir, no matter where it is located, that only has partial capacity.

Paragraph 216 of House Document 306, 74th Congress, First Session, at Page 127 states:

"While it is beyond the scope of this report to draw conclusions, in this connection it is believed that further consideration of reservoirs in the Ohio basin to provide flood control of the lower Mississippi should be confined to the lower Ohio River tributaries, namely, the Tennessee, Cumberland, Wabash and Green Rivers."

I have no objection to consideration of reservoirs anywhere. That is all it says, is consideration of them, and they should be confined to that point, probably because they have exhausted the sites on the other fronts. I do not see that it has anything to do with it, whether they were actually looking for the most efficient locations in point of time. I would look for reservoirs where you can find them. I do not see any objection in looking for them on the Tennessee and Cumberland and it has been done many times, as reported in the 308 reports. They have got full reports on all those reservoir sites. Assuming that the interest there is on the point of controlling floods to the best advantage, due to the time factor, I do not disagree with that statement.

When I need to use the gauge heights at Cairo and the variation in gauge heights with the variations in stream flow, I get the record from the Mississippi River Commission, which shows the flows at various gauge heights. They are not always the same at each gauge height, but within limits that flow is really a gauge height.

The following statement from my paper entitled, "Reservoirs for Mississippi Valley Flood Protection", in Volume [fol. 700] 93 of the transactions of the American Society of Civil Engineers, represents my opinion:

"The effect on gauge heights of this production depends on the increment of discharge corresponding to a change of stage of one foot near the crest of high confined floods. The increment of discharge varies considerably in different floods due principally to changes in the slope of the river caused by variations in relative contributions by the tributaries. Studies on this subject are still in progress, but it is believed that the following discharges can be taken as fairly safe: (a) 65,000 second feet at Cairo; (b) 80,000 second feet at the mouth of the Arkansas River."

"Q. Now, Colonel, assuming that it will be possible to store a minimum of 150,000 c. f. s. on the Tennessee River throughout the peak of the flood on the Mississippi, that is in relation to Cairo, upon that assumption, such a reduction in flow would bring about a reduction on the Cairo stage of upwards of 2 feet, would it not?

A. Well, you have left out one assumption there that seems to me——

Q. Well, will you take my assumptions first?

A. Yes.

Q. All right.

A. But I cannot answer you on that. It is not complete. I have got to know how long that period is.

Q. I am assuming, Colonel, that at least 150,000 c. f. s. will be retained in the Tennessee throughout the danger period at Cairo.

Mr. R. T. Jackson: I object to the question as there is no basis in the testimony for it. That would require 150,000 second feet for 30 days or more, and there is no such testimony in the record.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May we have our exception, please.

Q. If that were retained throughout the danger period at Cairo, there would be a reduction on the Cairo gage of upwards of 2 feet, would there not?

A. Well, if you can take out that much water, wherever you take it, I don't——

Q. Just assume it, will you, Colonel?

A. Over the entire flood period?

[fol. 701] Q. Throughout the peak period?

A. It might take off about 2 feet, yes."

There is a concrete levee at Cairo. I do not know what height it is. I do not recall what the top elevation is. I do know that it is designed to have one foot freeboard over the maximum flood. The stretch between Cairo and Arkansas City does not include any substantial contribution from any other river.

Mr. Fly:

"Q. How do you calculate the levee will be adequate for such a flood of 2,600,000 cubic feet per second?

A. I do not know what the elevation is. I told you I did not know what it is. I think it is higher than 60, though.

Q. But, if it is 60, it is not adequate, is it, Colonel?

A. Well, I think that the maximum flood will go higher than 60 feet, at that point.

Q. Colonel, we had some discussion of the recommendations for reservoirs on the tributaries of the Mississippi, and I think I referred you to one or two documents. Are you familiar with the recommendation of the Mississippi River Commission, House Document 259, 74th Congress, First Session, and particularly the statement there set forth as:

'Best suited for control of lower Mississippi River floods.'

A. Well, House Document 259 is a comprehensive report on the reservoirs of the Mississippi River basin. I am familiar with that.

Q. And you are familiar with that part on page 18, paragraph 23, plan 1:

'With the above principles in mind, this office, in collaboration with the district and division offices in the entire Mississippi Valley have selected the system of reservoirs which, from the information now at hand, appear to be best suited for the control of the Lower Mississippi River floods.'

Had you observed that recommmendation of the Commission?

A. That is not a recommendation, that is a statement as I see it.

Q. You had observed that statement, however?

A. Yes, sir.

[fol. 701a] Q. As to the system of reservoirs best suited for the control of the lower Mississippi River floods?

A. Yes, but that is not recommended."

I do not recall that Plan 1 sets forth a scheme for 27,100,000 acre-feet of storage on the Ohio and its tributaries, including the Tennessee. The statement in Table 1 on page 40, calling for 27,100,000 acre-feet on the Ohio and its tributaries, including the Tennessee, is the estimated capacity of the reservoirs in that plan. The report states the total of the reservoirs on the Tennessee to be 10,589,000 acre-feet. It lists reservoirs that were included here.

Examination by the Court:

This plan estimates that by using this number of reser-
[fol. 702] voirs, about 20 odd reservoirs on the Tennessee with a storage capacity of 10,589,000 acre-feet would be obtained. The plan is based upon using the complete storage in those reservoirs for the control of floods on the Mississippi.

Cross-examination continued:

I have not added it up, but there is somewhere near 4,600,000 acre-feet of storage that is spotted on or near the sites of Gilbertsville, Pickwick, Wheeler and Chickamauga.

I should think that the sites of Norris Dam and Hiwassee would also be in the same plan. I don't see them on the list, however. Referring to Table 1 on Page 40, there is one mentioned on the Clinch River, that is the Cove Creek project, and there are three on the Hiwassee. I do know that Cove Creek is the former name for the Norris site. I don't know how near the three sites on the Hiwassee, small storage dams, are to the present Hiwassee Dam site. I presume they are in the vicnity of the present Hiwassee Dam site. I know where the Hiwassee is, not very far from Charleston. I know that the Mississippi River Commission found that a comprehensive system of reservoirs in the Mississippi River Valley could be constructed and operated to reduce the maximum probable flood on the Mississippi River so that it could be carried to the Gulf of Mexico within the existing levee system. They did not recommend them, however, as being economically advan-

tageous. The Commission, in the same report, said that an alternative plan known as Plan 2 might be used. It listed a number of reservoirs on the Tennessee River on Page 46, including Cove Creek on the Clinch, with storage capacity of 2,600,000 acre-feet. There are also three dams proposed on the Hiwassee with approximately 500,000 acre-feet. Pickwick Landing is listed with a capacity of 9,990,000 acre-feet, Wheeler with a million acre-feet and Chickamauga with 864,000 acre-feet.

I referred to the dams on the Miami Conservancy system and said that their effect on the Mississippi floods [fol. 703] was uncertain and in some cases I had calculated that it in fact increased the flood heights on the Mississippi and in fewer cases that it had decreased the flood heights. Sometimes they have one effect, sometimes another, sometimes no effect at all. I took the rate of discharge that they are designed to produce. They are automatic and there is only one rate at which they can discharge. The total storage is 841,000 acre-feet. I haven't with me the actual discharge that those reservoirs produce under a maximum flood, but I would assume the maximum rate of discharge. I took the discharge from those reservoirs during the period that the Mississippi was at a serious flood stage at Cairo. That allowed for the time that the water would come down from the Miami River to the Mississippi. The length of time that I allowed from the Miami dams to Cairo is all in the report. I do not have the figures in my mind right now.

The following statement in my article in the Transactions of the American Society for Civil Engineers, Volume 93, Page 727, is about right:

"The effect of the floods on the Mississippi is dependent on the time required for the effect at the mouth of the Miami to be felt at Cairo, Illinois. This has been taken to be nine days."

The following statement from page 725 of the same article article represents my opinion and applies to tributary reservoirs:

"In order to determine the effect of reservoirs on Mississippi flood flows, it is necessary to establish some rule for reservoir operations. Practically all large Mississippi floods have occurred during the 90 days from February

15th to May 15th. While there have been a few fair sized floods both before and afterwards, it is believed that this period fairly covers the time within which disastrous floods will occur.

"The time consumed by water released from reservoirs on tributaries in traveling to the Mississippi varies from three days to five weeks, with an average of more than two weeks.

"Large Mississippi floods are produced by widespread heavy rainfall occurring throughout the valley when the river is already running full.

[fol. 704] "The Board has been unable to find any means of predicting a large flood on the Mississippi as much as two weeks in advance of its occurrence. Hence, on the average, the best dependable results from reservoirs will be obtained by filling them as uniformly as the stream flow will permit so as to hold water back from the Mississippi during the 90 days of probable flood, from February 15th, to May 15th.

"In its studies the Board has adopted such a procedure as the rule for reservoir operation. It is possible that for some of the reservoirs a more efficient rule of regulating might be found as the result of experience in their operation, but it is not likely that the increased efficiency would more than offset the probable error due to determining the dependable effect from only five floods, as the Board has been forced to do."

I believe we set up another rule for reservoirs within a certain distance there. That is, if they are in prediction distance, that would conform to the system of discharging ahead of the peak, emptying, and storing at a time corresponding to the peak.

I do not think you can say that ordinarily the peak on the Tennessee either precedes or succeeds the peak on the Ohio. It is a matter of chance as to which way it goes. Sometimes there is no flood on the Tennessee at the time of flood on the Mississippi, and sometimes when the Tennessee is in flood there is no flood on the Mississippi. But the general season is approximately the same, that is, they both are liable to flood during the first five months of the year.

Referring to what would be the same general rainfall and particularly to the fact that the Tennessee is located

near Cairo, I would not think it was ordinarily certain that the peak on the Tennessee will not in fact precede the peak on the Ohio. It does not follow that if you have got a shorter river and a smaller drainage basin the run-off is going to reach there before the run-off from the more distant portions of the Ohio basin, because they may not be [fol. 705] floods caused by the same storm. Assuming the same rain, the same precipitation in the basin of the Tennessee and of the Ohio, whether or not the crest from the Tennessee will reach Cairo sooner than the crest from the Ohio depends on where the rainfall is in the Ohio. If you take a storm like this last one where most of the rain fell right in the valley of the Ohio River, that crest will reach the Mississippi quite promptly. If the flood of the Ohio comes from rains that are up in the upper tributaries, that will be very much later. It generally would be later than the Tennessee if you are taking the run-off from the same storm. When you are talking about a definite storm and assuming that the run-offs in the area drained by the tributaries of the Tennessee and the Ohio, respectively, are the same, it is true that the run-off of the Tennessee will peak at Cairo some time ahead of the peak of the Ohio. I testified that ordinarily the storms move from a southwesterly to a northeasterly direction.

Valley storage, of course, is not still storage. It is water that is moving down the river, and to get the volume, I had to take the figures that were reported in official reports of the War Department. Those were the figures that I got. Valley storage may be a flood and it may not, depending on how high the flow is. In other words, the more valley storage you have, the more flood you have got. The water that may be coursing through the streets of Chattanooga, for example, is valley storage. That is, in a special type of flood. You can pick the peaks at different points and calculate it on the water surveys at some particular time. Valley storage reduces the peak and reduces the maximum flow coming out of the river. It increases the time in which the high water will last. Of course, all this water has to run out. It is just a question of running it out at high speed or slow speed. If it goes slower, it will take longer. Instead of having a great volume of the flood run out on a high peak, you will have a great portion of it run out after the peak, due to this slowing up proc-

[fol. 706] ess. If it happens that that large volume of water slowed up, and running out after the peak on the Tennessee, happens to coincide with the peak at Cairo, the condition might be such as to increase the flood there at Cairo, depending on the question of time.

In answer to the question of whether it would be better to stop the peak of the flood above Chattanooga and keep it under control by means of dams rather than permit the so-called valley storage to flow through Chattanooga, I think that depends upon whether you can do that or not, whether there are reservoir capacities sufficient. The principle of holding the water back, equalizing the flow throughout the year, is one to be desired and to be accomplished, if practicable, from almost every point of view. In other words, controlled without reference to any specific projects, control of flow is desirable. The trouble is that you cannot get it at a reasonable cost, generally. The cost figures on the Miami project averaged about $18.40 per acre foot of storage capacity. The cost of that flood storage varies with the different reservoirs and some of it is substantially higher than that.

The height to which Pickwick, Guntersville and Chickamauga Dams are being built is in the TVA reports. I have them tabulated, but I do not carry them in my head. The depth of the spillway gates at those three dams is also in the 1936 report. Assuming that the depth of the spillway gates is 40 feet, I presume they would be wide open at the time of a great flood. I have not seen any rules of operation that have been adopted by the TVA and I cannot tell you what would be done. My testimony on this point, of course, depends largely upon how the dams will be operated.

My exhibit 411 is just a diagram. It does not profess to show what the flow over the crest would be under these conditions. It is simply as I explained, imposing the conditions without a dam on the conditions with a dam. Supposing you got the dam there and you have a depth of flood of 40 feet, that would discharge a lot of water. I don't [fol. 707] see how it would take out the dead storage. It would remove a great quantity of water, but the dead storage is all below the crest. Opening the gates won't affect that. I have assumed that the gates would be open. Even assuming that if you do discharge that great quantity of

water through the open gates, when the flood starts receding at the particular dam, you can close the gates and you have got to keep the dead storage, but whether the surcharge is kept is a matter of operation of the gates. You can control it within limits. Again it comes down pretty much to the manner in which the dams are operated. Nobody can tell what the answer is going to be until you fix the rule of operation.

Redirect examination:

If the Tennessee River normally peaks ahead of the Ohio, it would be a very logical thing to let the peak water of the Tennessee run out and get rid of it instead of holding it in storage and taking a chance on being able to release it later without increasing the stages of the Ohio, if you could count on it. If you assume that the peak of the Tennessee would normally be ahead of the Ohio, that would be a reasonable method of operation.

Assuming that the Tennessee River would normally peak ahead of the balance of the Ohio system, it might happen that the detention of the flood waters of the Tennessee River so as to retard its peaking through flood storage on the Tennessee River would increase the probability that it would finally be discharged so as to coincide with the peak of the Ohio and increase its stages over what would prevail in a state of nature. It would tend to do that. It would depend upon the operation, of course, on the amount of storage available in the dams.

On cross-examination, I was referred to House Document 259, 74th Congress, First Session, and asked about [fol. 708] certain data shown in a table under the heading "Plan 1" on Page 40. That is merely a study of reservoir sites and their effect upon two different plans on the Mississippi River. The reservoirs referred to from House Document 259 were under the assumptions of that document to be operated solely for flood control. Even when so operated solely for flood control, they were not recommended for construction by the engineers in that report. I would not say that Plan 2 was recommended in that report It was given preference over Plan 1 and was recommended for consideration at such times as any part of it might be worked out for local benefits. Plan 2 was based on using the reservoirs in question primarily for local benefits and

an estimate was made as to what effect, when so used, they would have on floods on the Mississippi River.

Referring to Complainants' Exhibit 410, the purpose of the Bird's Point-New Madrid Floodway is to reduce flood heights at Cairo. My understanding is that the main levee starting back from Bird's Point to New Madrid is practically finished, but the reduction in height of the old levee along the river has not been accomplished. It is my understanding that that had not been completed at the time of the 1937 flood.

I agree with the following opinion expressed in the report of the Chief of Engineers in House Document 328, 71st Congress, Second Session, Paragraph 19, Page 5, (Complainants' Exhibit 105):

"The report of the District Engineer has been referred to the Mississippi River Commission as required by law. No prospective benefits of importance to the works on the Mississippi River by the system of works contemplated in the Tennessee Basin were found by the Commission."

Detention reservoirs on the tributaries of the Tennessee River and low dams on the Tennessee River could together [fol. 709] accomplish the primary purposes of navigation and flood control on the Tennessee River.

(The witness was excused).

[fol. 710] L. E. Willson was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Sheffield, Alabama, and am engaged in the business of operating dredging and towing equipment under the name of Tennessee Valley Sand & Gravel Company. I have been engaged in that business over 10 years and have operated on the Tennessee River during that time.

The equipment we have been operating on the Tennessee River consists of 3 stern wheel towboats and we own and operate and lease about 30 barges and 1 dredge. One towboat is 18 feet by 70 feet with 75 hp. capacity, one 24 feet by 100 feet with 150 hp. capacity and one 26 feet by 125

feet with 300 hp. capacity. We employ licensed pilots on our towboats. We use wooden barges 20 feet by 90 feet and steel barges 26 feet by 100 feet.

We generally transport sand, gravel, lumber, ties, steel and cement and operate on the Tennessee River from Paducah to Chattanooga. When our barges are loaded to a full 6 feet of draft, the steel barges handle 300 tons. We cannot load them over 300 or 350 tons with zero on the Florence gauge, which means 5 foot depth in the channel. Except for the limitations by the depth of the water at the present time, we could load 6 or 6½ feet.

When we started operations, Wilson Dam, Hales Bar Dam, Riverton Dam and Widows Bar Lock and Dam were already in existence. The headquarters of our Company is at Sheffield, Alabama. Our boats have operated on Wilson Lake above Sheffield and they have recently operated on Wheeler Lake. In my experience in 10 years I have had difficulties only once on the Tennessee River below Wilson [fol. 711] Dam by reason of high waves. We have lost some 5 to 10 days in navigation on Wilson Lake every year on account of high waves. When the waves are high, we go into some hollow and hide until the wind goes down. The waves have to be 2, 3, or 4 feet high before that happens. A downstream wind need not be a very heavy wind to make high waves of that size on Wilson Lake, but upstream it takes more wind. It does not take anything resembling a hurricane to produce waves of that size.

We always check with the lockmaster at Wheeler Lake to see if there are any waves before we go above and if there are many waves, we make arrangements to delay the tow. Wilson Lake, where we have had the danger from waves, is about 15 miles long and from 1 mile to 3 miles wide. Wheeler Lake is something over 80 miles long but I do not know how wide it is at its widest place. Our pilots report that at times they have been unable to see the bank on both sides at the same time. The banks on Wilson Lake are hills and bluffs. Wheeler Lake is wider and has no high bluffs until you get into the vicinity of Guntersville, near the upper end of the Lake. This difference in the topography makes the waves rise more quickly and stay more violent in the open lake than in the closed lake.

I am familiar in a way with the dams the TVA is building and has recommended for construction on the main Ten-

nessee River. It is reported in the paper that the lake at Gilbertsville Dam will be about 160 miles long, but I have no idea how wide it will be. Pickwick Pool is about 3 to 3½ times as long as the Wilson Pool.

We know we are going to have to get rid of our stern wheel wood equipment because of the effect of the waves upon the TVA lakes such as those back of Pickwick and Gilbertsville Dams. That is the equipment which has been in use on the Tennessee River and Ohio River for years and is still in use on those rivers. A storm occurred in the [fol. 712] vicinity of Wheeler Lake in the latter part of April, 1937, when one of our towboats was going to Decatur to pick up a tow of 4 barges to bring them to Cairo, Illinois, for the barge line and we were delayed 4 days at Wheeler Lake because we could not go through.

We prefer the low-lift navigation locks to the high navigation locks, such as have been placed in recent TVA dams, as to feasibility and convenience of towing barges, because it takes less time to lock through and less difficulty in getting the boat in the lock. We also operate on the Ohio running into 3 ports there, Joppa, Brookport and Cairo.

Cross-examination:

Our Company is the Tennessee Valley Sand & Gravel Company. It has no connection with the Birmingham Slag Company. Our Company in April of 1934 bid on the Wheeler aggregate job with the TVA, and when the contract was not awarded to our Company, we filed a protest with the NRA and there was quite an argument on the ground that the successful bidder had not complied with the code. We did not get the contract which involved 1,400,000 tons of aggregate. I do not know the exact language of the decision. The Birmingham Slag Company made a protest to the TVA as to the award of the contract for the Pickwick aggregate job to the Cumberland River Sand & Gravel Company, and I went to Knoxville with representatives of the Birmingham Slag Company to protest that award, but I represented myself as I was going to sublet some equipment for that job. I had nothing to do with any lawsuit filed over that contract.

I had a disagreement with the contractor for whom I was working about the payment of demurrage on certain

shipments of cement at Sheffield during the flood in April, 1936, which involved certain discussions and correspondence with the TVA.

I never navigated the Muscle Shoals section of the Ten- [fol. 713] nessee River before Wilson Dam was constructed and I believe it could not have been navigated. I have navigated the section of the river covered by the Wheeler Pool before Wheeler Dam was constructed. There were difficulties involved in navigating that section of the river in its natural condition in low water seasons when the minimum depth was about 3 feet. The channel was not narrow and winding from the Wheeler Dam Site to Decatur and Guntersville but it was along Lock A and Lock B. We had to go through 4 low-lift locks. It would take about as long to go through those locks as it would to go through 1 high lock. It takes about 35 minutes to go through the first lift at Wilson and 45 minutes to go through the second, and it would take about 20 or 30 minutes to go through a low-lift lock. If you multiply that by 32, it will take more time than it will to go through 7 high-lift locks.

We could navigate the stretch of the river covered by the Pickwick Pool before Pickwick Dam was constructed. In that stretch of the river there was only one spot about 100 yards long where there was any difficulty. The minimum gauge in low water was 4½ feet. Zero on the Florence gauge meant 5 feet in the chutes.

If you have 9 foot barges, a channel providing a minimum depth of 9 feet is a better channel for navigation than one with a minimum depth of 4½ feet. In ordinary navigation on the Tennessee River with a minimum depth of about 5 feet of water, we could use barges to 6½ feet. That would not be helped any by a 4½ foot draft.

My pilots reported at one point on Wheeler Lake they could not see both banks at the same time. It was in the daytime. There was some fog.

At one time we were delayed at Wheeler Lock for 4 days [fol. 714] is going to Decatur for our tow because the lock was not operating. I am not a confidant of TVA to such an extent that I know whether or not the lock has been changed or altered. I do not know that the Army Engineers are fixing the lock. The four day delay was due to the fact that the waves had caused the lock operating machinery to get out of order.

Redirect examination:

On this occasion we were informed we could not get through the locks at Wheeler Dam. I sent my superintendent up there to find out why, because we were unable to get thorough information by telephone. He reported that the waves had washed over the bulkheads, into the machinery, that there were no spare motors, and that they had to dry out the motors that were there. The only way they could dry the motors out was with low voltage current and that would take several days.

We try to operate our boats all the time, when there is fog and rain or when there is sunshine.

I do not think the trip from Paducah to Chattanooga would be delayed to vary more than 15 hours at the outside in going through low-lift dams, if they had been installed on the Tennessee River; and a lot of other delays, such as fogs, winds, tie-ups and one thing and another would offset that. The lock delay would be of no practical significance in navigating the river.

Recross-examination:

I do not know whether or not it is a fact that the ordinary water level of the pool was only 15 inches from the operating machinery in the lock as originally built and at the time of this so-called high wave.

(The witness was excused.)

[fol. 715] J. F. Burleson was called as a witness on behalf of the complainants, and having been first duly sworn was examined and testified as follows:

Direct examination:

I live in Haleyville, Alabama, and am the Mayor of Haleyville. I have been Mayor a little more than a year. Last summer I paid a visit to the offices of the TVA at Wilson Dam and was accompanied on that visit by J. T. Bachelor and W. R. Rutledge, two of the city councilmen, J. A. Posey, City Attorney and C. L. Webb, City Clerk. We saw Mr. Beauchamp at the TVA offices. We had some folks in our town who became interested in the TVA power and

lights, so we made this trip to see if we could get it and on what terms. While we were there, we discussed with Mr. Beauchamp calling an election for municipal ownership of an electric distribution system in Haleyville.

"Q. Did he make any suggestion with reference to the conduct of that election?

Mr. Fly: I object to the advice as to elections. I think, your Honor, that is going far afield.

Judge Allen: Objection sustained.

Mr. Bouldin: And we except, your Honor, and offer to show by this witness that Mr. Beauchamp advised the city officials not to hold their election until they circulated among the residential consumers of electric energy in the city of Haleyville a contingent power contract, and stated that his reason for advising that circulation was that if they would the people who would sign those contracts would vote for municipal operation, and the election would carry in favor of such election."

We had a discussion with Mr. Beauchamp as to how the system might be financed.

"Q. I will ask you what suggestions he made in that regard.

Mr. Fly: I object to the advice on the financing, your Honor. I think we can see what is coming here.

[fol. 716] Judge Allen: The objection is sustained.

Mr. Bouldin: We except, your Honor, and offer to show that Mr. Beauchamp suggested that the city go to Mr. Hogan, Mr. Frank Hogan of the Universal Electric Construction Company of Sheffield, Alabama, who would buy the bonds, and suggested as a reason why they should see Mr. Hogan was that he was the only person who would buy the bonds, as the Alabama Power Company had the rest of them scared off."

Mr. Beauchamp stated to us that the TVA would cooperate in any way with the engineering establishment of our system.

"Q. What did he say the TVA would do in that regard?

Mr. Fly: I object to this.

Judge Allen: The objection is sustained.

Mr. Bouldin: And we except, your Honor, and offer to show that Mr. Beauchamp said that a TVA engineer and Mr. Hogan would come to Haleyville together, and make a survey of the city system to determine what the cost of such a system would be, and whether Mr. Hogan would purchase the bonds, but before the TVA would do such a thing that the city must write to the TVA and request such a system, and suggested to Mr. Burleson that he write to Mr. Martin Glaeser of the Tennessee Valley Authority, the Chief Power Planning Engineer of the Tennessee Valley Authority, and request such assistance."

I wrote to Mr. Martin G. Glaeser of the TVA requesting his assistance. I do not have a copy of that letter. I searched for it, but was not able to find it, and I don't know just what happened to it. The substance of what I stated to him was that the people of Haleyville were interested in TVA power and that we would appreciate his sending an engineer or somebody to help us figure the feasibility of putting in such a distribution system.

The letter (offered and received in evidence as Complainants' Exhibit 412) is the reply received from Mr. Glaeser in response to my letter. In our meeting with Mr. Beauchamp there was a discussion of the purchase by the City of the Alabama Power Company distribution system in Haleyville.

[fol. 717] "Q. What suggestion did he make, what did he suggest that the city do in that regard?

Mr. Fly: I don't think that is material, your Honor.

Judge Allen: Objection sustained. You may have your exception.

Mr. Bouldin: We except, your Honor, and offer to show that Mr. Beauchamp advised the city to write to the Alabama Power Company and offer to buy their system, that the Alabama Power Company would not sell it, but he thought the city ought to do it, as the Power Company would put up a fight if the city began municipal ownership."

Cross-examination:

The City of Haleyville does not have a power contract with the TVA.

(The witness was excused.)

JOHN A. DUNLAP was called as a witness on behalf of complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in and am Mayor of Cullman, Alabama, and also am the Cashier of The Leeth National Bank in Cullman. I have been Mayor of Cullman since October, 1932. The City of Cullman owns and operates its own electric distribution system and has its own generating capacity for that system, which has been operated for 25 or 30 years.

"Judge Allen: Is this witness going to testify to the same general effect?

Mr. Bouldin: This witness will testify that without solicitation on the part of the city of Cullman that he received a letter from Mr. F. F. Beauchamp of the Tennessee Valley Authority stating that Mr. Beauchamp had been to Cullman and had made a survey of the needs of the city of Cullman in the way of power supply, and Mr. Beauchamp's letter, in closing——

Judge Allen: Will you let us see the letter?"

[fol. 718] The letter dated February 12, 1935, with documents attached (offered in evidence as Complainants' Exhibit 413) is from Mr. Beauchamp of the TVA to the City of Cullman. The City of Cullman had never invited Mr. Beauchamp or the TVA to make any survey of Cullman's properties to ascertain their generating capacity and the need for electrical capacity.

"Mr. Fly: We object to that as irrelevant. The City of Cullman was not a customer of the Alabama Power Company or any of the complainants.

Judge Allen: Exhibit No. 413 is rejected, and you may have your exception."

The letter dated April 13, 1936 (offered in evidence as Complainants' Exhibit 414) came to me as Mayor of the City of Cullman from Mr. Beauchamp, TVA Division Engineer at Wilson Dam. (Thereupon counsel for defendants stated that they had no question about this being the correspo- nce that went from the TVA to the City of Cullma

"Mr. Bouldin: We offer complainants' exhibit 414 in evidence.

Judge Allen: Exhibit 414——

Mr. Fitts: Objection.

Judge Allen (continuing): —is rejected. You may have your exception."

The copy of the letter, dated May 27, 1936 (offered in evidence as Complainants' Exhibit 415) was sent from me as Mayor of the City of Cullman to Mr. Beauchamp.

"Mr. Fitts: We object to that.

Judge Allen: The objection is sustained to Exhibit 415. You may have your exception."

[fol. 719] The copy of the letter signed by F. F. Beauchamp, dated July 9, 1936, (offered in evidence as Complainants' Exhibit 416), addressed to me as Mayor of Cullman, was received by me through the mails.

"Mr. Fitts: We object to that exhibit on the same ground.

Judge Allen: Objection sustained, the exhibit is excluded. You may have your exception."

The copy of the letter dated August 4, 1936, (offered in evidence as Complainants' Exhibit 417), was sent by me to Mr. Beauchamp.

"Mr. Fitts: We object to that letter.

Judge Allen: The same ruling, the objection sustained and the letter excluded. You may have your exception."

The City of Cullman serves St. Bernard College, which is one of the City's largest commercial customers.

"Q. Has anybody ever threatened, or competed with the city for that service?

Mr. Fitts: We object to that, may it please the Court. The city is not suing, and I understand it cannot hurt the complainants any.

Judge Allen: Objection sustained. It has nothing to do with the complainants.

Mr. Bouldin: We except and offer to show that the Cullman County Membership Corporation did start to build a line to serve that customer, and that Mr. Dunlap protested to Mr. Beauchamp of the Tennessee Valley Authority that

I have also accepted the statement of the witness Kelly that no part of the investment in the TVA Unified Plan has any practical value for flood control on the Mississippi River. I have determined the investment which should properly be charged to power development as the differ- [fol. 792] ence between total investment, excluding the expenditures made for Wilson Dam, prior to May 16th, 1933, and the value of navigation and flood control facilities as testified by the foregoing witnesses.

I determined the operating costs for the generating facilities in the Unified Plan. In doing so I accepted and used as a working basis for my estimate, figures of TVA presented during hearings in First Deficiency Appropriation Bill for 1936.

I next determined the investment in the transmission system which would be required to transmit to market the power to be produced by the facilities contemplated by the Unified Plan.

I predicated my estimate of this investment upon analysis of the transmission system of the Alabama Power Company, including its large customer, Birmingham Electric Company, because of the characteristics which it possesses in common with the one which would be required in the TVA Unified Plan in order to determine at unit cost of transmission system per unit of load.

In determining the cost of this transmission system I included only the cost of the system needed to deliver TVA power to TVA customers, and have included nothing for the facilities which would necessarily be owned by TVA wholesale contractors, and I have included no facilities for the delivery of dump power.

I made a determination of the cost of operation of the transmission system which would be required to carry out the TVA Unified Plan. By analysis of the operating costs of the transmission system of Alabama Power Company, I determined unit cost of operation per unit of energy transmitted, and applied those units of cost to the operation of the system which would be required to carry out the TVA Unified Plan.

In making this application I made what I deemed proper adjustment for higher load factors which I estimated would obtain on the TVA system.

In determining this TVA cost I have given effect to annual charges for interest during construction of generating

plants and taxes lost through displacement of existing utility systems, and to commercial and metering expense and general and administrative expenses.

As a result of this analysis I have estimated that the total increment yearly cost for the generation and transmission of power under TVA Unified Plan will be $32,557,000 per year, excluding all costs associated with the investment in and operation of the facilities installed at Wilson Dam at the time it was turned over to TVA.

[fol. 793] In addition to these total increment yearly costs I have not given the full effect to the items of interest and depreciation expense and taxes (excluding 3 per cent Federal Sales Tax) which would have been paid by a private utility company operating the same system, as would be operated by TVA. These items to which I have not given effect total approximately $10,510,000.

Thus, I have estimated that the total out-of-pocket expense, plus items of expense which would be incurred by a private utility if it operated the TVA system, would be approximately $43,000,000.

I have also made a detailed study of present and potential markets within the area surrounding the TVA developments, and have estimated that the total yearly revenue which TVA would derive from the sale of its power would be $23,551,000 over and above the revenue of $2,253,000 which would have been available from the Wilson Dam development as it existed at the time it was turned over to TVA.

On the basis of extensive analyses to which I have testified, in my opinion the power operations of the TVA as contemplated in the Unified Plan, ultimate stage, would result in an annual deficit amounting to at least $9,000,000 per year, and taking into consideration the additional cost which would be sustained by a private utility if it were operating the proposed TVA system, the annual deficit from TVA power operations will amount to approximately $19,516,000 per year. This is upon the assumption of full normal loading of the TVA Unified system within the limits of practical utility operations.

I have had prepared under my direction and supervision a tabulation entitled 'Summary of Annual Deficit from TVA operations Unified Plan—Ultimate Development Excluding Initial Stage of Wilson Dam,' which has been marked for

identification Complainants' Exhibit 506. This exhibit correctly states the results of my study and analysis, and reflects my best judgment on the subject which it purports to treat.

The costs and deficits set forth in this exhibit do not include any costs or deficits associated with the operations of wholesale contractors when they purchase TVA power for resale, and they do not include any allowance for the Federal 3 per cent Excise Tax on residential and commercial electric sales which private utilities are now obligated to pay. My estimates of the costs and deficits set forth in this exhibit do not give effect to any government loans and grants to wholesale contractors for distribution of TVA power.

[fol. 794] "Q. Mr. Moreland, please state whether, in your opinion the completion of the TVA Unified Plan and the marketing of the amount of power which you have estimated in your previous testimony could be generated for sale, would inflict any damages upon the plaintiffs.

Mr. Fly: I object to any such general either factual or legal conclusion as to whether or not it would inflict damage. I don't think the witness is qualified.

Judge Allen: He may answer. I remind counsel that the Court has assumed the existence of substantial damage growing out of the competition here shown to exist between the Tennessee Valley Authority and these complainants.

A. Such sale would cause substantial damages to the utilities within the 250 mile zone."

I have made a study of whether under those circumstances any damages would result to the complainants by reason of duplication and loss of use of facilities; and I have also made a study as to whether there would be damages to the complainants upon the hypothesis of the completion of the TVA Unified Plan and the marketing of the power which I estimate might be generated under that Plan at TVA rates through loss from reduced rates.

If the TVA Unified Plan is carried out, there will be two types of displacement of the facilities of the complainants. There will be permanent displacement of certain types of facilities, including distribution facilities in local area, if the TVA takes over the service of supply, and permanent displacement of the transmission lines and some substa-

tions supplying those service areas taken over by TVA. These displacements will in some instances be complete and permanent and the utility can remove the equipment and salvage as much of the cost as possible. There will also be a second class of displacement where facilities will be rendered either temporarily idle or will be forced to operate at capacities far below the capacities for which they were intended. This type of displacement may be temporary, because future growth of the utility system's load [fol. 795] may absorb some of the capacity thus rendered idle by loss of load to TVA. As TVA expands, the period during which the temporary idleness may occur may be increased. In making our estimates, we have taken a period of idleness that we think reasonable for TVA's program, and if TVA markets more and more power in any particular community, the idleness may become so long that it will be permanent.

Our general method of computing the damages due to loss of facilities has been to determine the amount of business in millions of kilowatt hours that the utilities will lose to TVA, and then to determine the loss to the utilities per million kilowatt hours of sales lost to TVA, and the total loss is the product of these two figures.

As I have suggested, permanent loss of facilities or of the usefulness of the facilities is the cost of the facilities which are lost less whatever can be secured from the salvage of the equipment. Temporary loss is the loss due to the carrying charges and such maintenance and operating expenses as may be associated during the period of idleness. In making this analysis, we have used the unit of millions of kilowatt hours lost rather than the unit which is frequently used in the electrical business of the kilowatts of capacity, simply because it is more convenient and accurate. We do not estimate that all of the TVA sales will go to present customers of the utility companies. We estimate that a very considerable part of the TVA sales will go to other customers, and our estimates of the loss to the utility companies deal only with the losses associated with the part of the TVA's production which will go to the replacement of customers served by the utilities.

[fol. 796] In determining the millions of kilowatt hours of sales taken from the utilities by TVA, we have first had to estimate the amount of power available for sale by TVA. From the total amount available for sale, we have deducted

the sales to present TVA special customers and their sales to present ceded areas. We have also deducted the transmission losses from the point where the power is developed at the generating stations to the point of delivery to the customers. The total salable output of TVA will be 7,670,000,000 kilowatt hours. This is the available output at the generating stations. The amount actually sold to customers will be less than this by the amount lost in transmission.

The table (offered and received in evidence as Complainants' Exhibit 507) shows the total power available at the generating plants of TVA under the Unified Plan in the ultimate development in a typical water year and the amount of power in kilowatt hours and the corresponding kilowatts at 100 per cent load factor with the various classifications of power, firm power, two classes of secondary power and dump power which we estimate will be used, and the additional energy available but not marketable. The first figure shown under the heading "Primary Power Available" comes from the hearings for the first Deficiency Appropriation Bill, and was verified by Mr. Kurtz in his testimony, and the kilowatts at 100 per cent load factor corresponding to those kilowatt hours also comes from the same source. In order to describe the way in which the next figure was determined, I refer to the item of 917,000,000 kilowatt hours in the first column under the main side heading "Annual Sec-
[fol. 797] ondary Power Guaranteed 75% of the Time in Every Year." That figure is our estimate of the amount of power of that class which will be sold to certain large industries for electro-chemical and electro-thermal use when the TVA has reached its ultimate development and has marketed its firm power and high class secondary power output. This estimate is based on a consideration of the amount of power of this class which TVA has already committed itself to supply under existing contracts which it has with a number of large industrial concerns which are entitled to purchase certain proportions of this type of secondary power which is guaranteed for 75 per cent of the time each year. The total permissible takings under present conditions for the customers, if they take all of this output of power that they might take, is 611,000,000 kilowatt hours at the generating stations, and something less than that at the customer's premises due to transmission losses. We have estimated that TVA will probably make some other contracts of this same type. This estimate is based upon

our opinion that in order to dispose of the very large amount of power which TVA will have for sale, it will be necessary for TVA to procure as customers additional large industrial buyers of the type which could use this kind of secondary power, and in order to secure these customers, it will have to offer some secondary power of this class.

We have estimated that this amount is likely to be such that the total actual consumption of this type of secondary power will be 50 per cent greater than the permissible consumption under contracts already in force. On this basis it would require at the generating stations 917,000,000 kilo- [fol. 798] watt hours of this type of secondary power to meet the customers' requirements, and the corresponding kilowatts of capacity would be 104,700. Mr. Kurtz in his testimony stated that in order to guarantee the availability of 100,000 kilowatts of this type of power in the occasional extremely dry year, it would be necessary to reduce the firm power output by 35,000 kilowatts, because it is necessary in those years to hold water in the reservoirs in order to make this type of secondary power available nine months of the year. The dry period in those extreme years is of such long duration that the period of shortage, unless water were held in the reservoirs for that purpose, would be longer than the permissible shutdown for 25 per cent of the time. We have estimated that if, as Mr. Kurtz says, it will take 35,000 kilowatts of firm power to guarantee 100,000 kilowatts of secondary power during all years, then by proportion it would take 36,700 kilowatts of firm power to guarantee the required 104,700 kilowatts. Firm kilowatt hours corresponding to the 36,700 kilowatts of firm capacity that will be sacrificed is 322,000,000 kilowatt hours and that is the figure which is shown as the second item on the table from the total available of 5,780,000,000 kilowatt hours, which leaves 5,458,000,000 kilowatt hours as the net firm power available. As a matter of practical operation, it is not possible to sell right up to the limits of the available capacity and, in my opinion, 95 per cent is as near the top as it is practical to go. We have, therefore, deducted 5 per cent of the net firm power available, which is 273,000,000 kilowatt hours, and so the balance after that deduction is 5,185,000,000 kilowatt hours, which is the amount of power [fol. 799] salable at the generating stations as firm powe.

The next item on the table is 917,000,000 hours of secondary power guaranteed 75 per cent of the time, to which I have referred.

The next item under the side heading "Other Secondary Power Guaranteed 75% of the Time" is shown as 790,000,000 kilowatt hours. This is the amount of this type of power now required under present contracts. We have not estimated any increase in the sale of this type of secondary power, although there may possibly be some. We have estimated it at the amount required under the present contracts, including requirements for TVA fertilizer works, which may not strictly be under a contract, because in our opinion if the amount of this type of power which is sold is materially increased, it would also require a reduction in the amount of firm power available.

The sum of all the figures I have referred to up to this point is 6,892,000,000 kilowatt hours of firm and secondary power available for sale at the generating stations. 778,000,000 kilowatt hours of dump power can also be sold. Dump power may be sold without any guarantees at all and is sometimes known as run-of-river secondary power. Our reason for estimating that only 778,000,000 kilowatt hours will be sold out of a total available supply of this type of power of over 3,000,000,000 kilowatt hours is that the market for this type of power is limited. Such power can be used by organizations which have their own power facilities, to replace steam generation. Also, in view of the very low rate at which this type of power must be sold, if it is sold at all, it is ordinarily not economical to build transmission lines for its sale and delivery alone, and so it must be sold over existing lines through connections to [fol. 800] existing customers or to customers which can be easily reached from lines established for other purposes. The total is 10,000,000,000 kilowatt hours as testified by Mr. Kurtz, but we estimate that only 7,670,000,000 kilowatt hours, including dump sales, is salable.

Examination by the Court:

There was no figure on Complainants' Exhibit 507 which was not estimated by somebody. The first figure of 5,780,000,000 kilowatt hours is estimated by the TVA, being taken from the report in the hearings on the First Deficiency Appropriations Bill of 1936. The final total figure of 10,-

000,000,000 kilowatt hours was estimated by Mr. Kurtz, and we have made the intervening estimates based partly on Mr. Kurtz' figures and partly on the contracts already in force. The figures for the firm and secondary power are calculations made by hydraulic engineers upon the basis of stream flow records, and known or assumed heads. (The Court then asked counsel for complainants to insert the word "Estimated" in the legend on Complainants' Exhibits 507, 508 and 509).

Direct examination continued:

The table (offered and received in evidence as Complainants' Exhibit 508) shows our estimate of the way this 7,670,000,000 kilowatt hours of marketable output will be used. The first column shows the estimated station output required to provide the various requirements. The first three items at the top of the table are our estimates of the requirements in 1943 of customers now being served by TVA, and of TVA government operations, which amounts to 2,805,000,000 kilowatt hours. I have already referred to [fol. 801] the next to the last item in this column, the sales of dump power of 778,000,000 kilowatt hours. Deducting these two figures from the total amount of marketable output leaves 4,087,000,000 kilowatt hours of power available for sale in the competitive market. Not all of TVA's available power will go into the competitive market and not even all of this figure will go to taking away customers that the utilities now have.

The division of that 4,087,000,000 kilowatt hours between various classes of contractors and customers is estimated on the division of power sales between various classes of customers on a typical system in this general vicinity. We looked at several systems and decided that the Alabama Power Company, for which complete information was available, was reasonably representative of the territory throughout which TVA may be expected to operate. The only use we have made of it is to determine how much of that 4,087,000,000 kilowatt hours may be expected to be sold to wholesale contractors for resale, and how much may be expected to go to industry. We made a further estimate that approximately one-third of the power used for industrial purposes would go to mixed power customers utilizing some secondary power as well as firm power, and oper-

ating at a high load factor, and that the balance of approximately two-thirds would go to normal industrial uses. The next column shows the station output in kilowatt hours required to produce these sales. The second, third and fourth columns show the kilowatt hours delivered to TVA's customers, and in those columns we have divided between power sold to customers taking only firm power and power sold to mixed power customers taking both firm and sec-
[fol. 802] ondary power. The last two columns at the right of the table do not relate directly to TVA's operations, and are not really used in our figures at all, but are presented to complete the accounting for the power generated. The customers who buy power wholesale from TVA, such as municipalities, will have certain distribution losses on their own systems and the amount they buy will be more than the amount they actually sell to the ultimate consumers, and that is reflected in those two last columns, the final column showing the actual total kilowatt hours reaching the customers' premises, including indirect sales as well as direct sales by TVA.

The table (offered and received in evidence as Complainants' Exhibit 509) shows the detail of the estimate which is summarized on Complainants' Exhibit 508 and lists the present TVA special customers to whom I have referred.

The table (offered and received in evidence as Complainants' Exhibit 510) present a summary of the estimates of the sales in the same zones of 100, 150 and 250 mile radii. These are the estimated sales if served by existing utility systems under their present sales policy. The make-up of the table needs no detailed explanation as it is exactly similar in form to the table, Complainants' Exhibit 508, previously described. The load predictions for the complainant companies were in general made by the companies themselves and we made the estimates for the companies which are not complainants. At the bottom of the table there is shown the arithmetical average for the years 1937 to 1943 of the two sets of figures above. The purpose of this will appear later.

[fol. 803] The table (offered and received in evidence as Complainants' Exhibit 511) is an estimate of load displacements to be expected by complainant companies from TVA operations. I changed the legend in line with the Court's

suggestion to read "Estimates of complainants' load displaced."

Examination by the Court:

(On Complainants' Exhibit 511 there appears as a subheading:

"Estimated annual sales to ultimate consumers if TVA rates and TVA sales policies were applied throughout the territory, after exclusions noted in the title for the year, 1943, millions of kilowatt hours.").

The table previously presented shows an estimate of the amount of sales in this territory that would take place if the utilities went ahead as they had been, making occasional rate reductions when they felt they could be made or when ordered to make them by some regulatory body. Then I recognized that if TVA had this territory, without considering the competitive situation with private utilities, at its own rates, which, of course we all know are lower than the normal utility rates, and if the type of sales efforts were pursued which they have introduced in territories which TVA serves directly or through wholesale customers, then the sales would be somewhat greater than they would be under the continued utility policy. That difference is reflected between the difference of the figures shown in this table and the table shown in Complainants' Exhibit 510. The reason we are taking that into account is that if TVA induces more business in that area than there would have [fol. 804] been if TVA had not been there, then TVA should be charged with taking from the utilities only the proportion of that larger market which they took, and not the proportion of the smaller present market. The heading "Estimated annual sales to ultimate consumers" refers to total sales in the whole 100 mile zone or 150 mile zone, or whatever the case might be, by all utilities operating in that particular area, excluding the TVA sales, as shown in the title.

Direct examination continued:

In Complainants' Exhibit 511, by "if TVA influence were uniformly distributed", I mean uniformly distributed over the area where TVA is selling power, and, by "sales

policies", I was assuming that TVA or TVA wholesale contractors continued their aggressive sales policies of influencing customers in the utilization of electric facilities which have been exhibited by present TVA wholesale customers. I think we all recognize that TVA and TVA's wholesale contractors have shown perhaps even more interest and enthusiasm in arousing the customers to the possibilities of utilizing electricity in their homes. I refer to a program of promotion by the distributors of TVA power.

The first set of figures across the table, Complainants' Exhibit 511, shows for each of the three zones the estimated sales in 1943 to ultimate consumers, excluding TVA government operations and present TVA special customers and wholesale contractors now served and present direct service areas now served by TVA, divided between areas which now have electric service from the public utility companies and areas which have no electric service from the [fol. 805] public utility companies. It shows, for example, that the total estimated sales in the 100 mile zone, excluding TVA operations and other sales to which I have just referred, in the year 1943, would be 6,265,000,000 kilowatt hours. The next line of figures below, under the side heading "TVA Power available under the Unified Plan for sale to ultimate consumers", after the exclusions of TVA government operations in the 100 mile zone, shows 3,272,000,000 kilowatt hours, and that figure comes directly from Complainants' Exhibit 508. The final Column on Complainants' Exhibit 508 is the sales to ultimate consumers of TVA power of this certain class which would go into the competitive market and that is shown as the item of 3,272,000,000 kilowatt hours of power available from TVA. The next line of figures shows the percentage which that available power from TVA bears to the total available market and shows that of the total available market that there would be in 1943, if the market had the benefit of all of TVA's rate inducements and progressive policies as to customer expansion in the 100 mile zone, would be 52.3 per cent. That is, the TVA power available will supply 52.3 per cent of all the power that could be sold in that zone and it relates to all of the utility business in that zone. But we are dealing only with the business lost to the complainant companies. I am not interested in the losses to non-complainant companies.

The lower part of the table, Complainants' Exhibit 511, shows first the prospective annual sales of complainant companies, if uninfluenced by TVA as shown on Complainants' Exhibit 510. At the bottom of Complainants' Exhibit 510 [fol. 806] in the first set of columns relating to the 100 mile zone, it is shown that the direct sales by complainant companies and the average between 1937 and 1943 is 2,976,000,000 kilowatt hours, and that is the figure that is shown on Complainants' Exhibit 511 under the heading "Direct Sales", and similarly the indirect sales and the total sales. We then apply to those sales the percentage derived just above, which for the 100 mile zone is 52.3 per cent, and if the TVA is to get 52.3 per cent of all markets in that zone, it must get 52.3 per cent of the utilities' market, and the number of kilowatt hours lost therefore is 52.3 per cent of what the utilities would have had, which amounts to 1,571,000,000 kilowatt hours. Now, by that method of computation, TVA is given credit for any increase in customer consumption that results from TVA policies, because the 52.3 per cent which we are applying was determined from the base figure of the total kilowatt hours that would be sold if TVA policies applied throughout the whole territory. Therefore, in estimating the loss to the complainant companies we are estimating only the loss of the business they would have had under their own rate policies, and not saying that they would also lose the greater business they might have had if they had had TVA rates.

The reason I use the average between 1937 and 1943, rather than the 1943 figures themselves is this, that presumably the taking over of business by TVA, whether in the 100 mile zone or the 200 mile zone or any other, will be a progressive taking. If business is taken over uniformly from 1937 to 1943, for example, the average condition is represented by the average between 1937 and 1943. The [fol. 807] customers that they take over in 1943 will experience the normal customers' growth during that period and the ones that they take now will not have experienced any growth. So if we take the average between the 1937 and 1943 figure, it represents the average condition not only as to the customer size but as to the number of customers. In my opinion, it is the fair way to estimate the actual losses to the utility companies in kilowatt hours and that is the method which we have followed.

The chart (offered in evidence as Complainants' Exhibit 512) was prepared under my direction and accurately portrays what it purports to show. It is a summary of our estimate of the total loss to the utilities per million kilowatt hours of sales displaced. The two essential figures on the sheet are the $29,590,000. shown under the heading "Grand Total" and the second figure of $14,320,000., which is the total excluding the distribution system losses. The reason for having two figures is because we must compute two kinds of losses. This is the estimate of damages in money from idleness of equipment. It is the figure we are now going to apply to the estimated kilowatt hours that we expect the utilities to lose in order to arrive at the total money damages.

"Q. Have you completed your description of exhibit 512?

A. Well, I have not really said very much about it yet. I am not going to go into it, I think, in any great detail. I would like to say a little about the general principle, on which the estimates were made.

In determining the money value of losses occasioned——

Judge Allen: The Court does not care to hear you, Mr. Moreland, upon that question. It does not care to hear any estimates of money damage. You may have your exception. [fol. 808] Mr. R. T. Jackson: Note an exception, please. I now produce a further exhibit which has been submitted by the witness and ask to have it marked Complainants' Exhibit No. 513. I will at this time offer exhibit 512, as to which the Court has just made a ruling.

Judge Allen: Yes, the Court excludes exhibit No. 512.

Mr. R. T. Jackson: And we may have our exception.

Judge Allen: Do you want to offer this right away? I wanted to ask the Authority if they concede the qualifications of this exhibit.

Mr. Fly: I would not concede that any witness is qualified to render these opinions, your Honor, with all deference to Professor Moreland. I think he is as near qualified as anybody. I think it is so speculative and remote as to be entirely valueless. I think moreover the subject matter of the thing is quite irrelevant and immaterial to this case. I object to it on that ground.

Mr. R. T. Jackson: May I raise another point which is suggested to me because of the Court's present inquiry?

The Court just stopped Professor Moreland from describing the methods by which he arrived at the opinions disclosed on exhibit No. 512 just excluded. Now, I don't want to burden the Court with an explanation of that. The only thing I do want the record to do, and to be clear upon is that the exclusion is not based upon the failure of Professor Moreland to explain the processes by which he arrived at the figures and opinions and estimates based on exhibit No. 512, and that counsel for defendants join in stating that they do not urge any objection upon that ground, and will not hereafter assert that it was incompetent because there had not been any proper foundation laid through an explanation by the witness.

Judge Allen: The Court did not exclude this testimony because of any such lack of proof. The Court excluded the testimony because it did not care and does not care to hear testimony of money damage in this case.

Mr. R. T. Jackson: That was what I understood the Court to be doing.

Judge Allen: That was the sole ground.

Mr. R. T. Jackson: It did not matter how good Professor Moreland's reasons might be, the result was such——

[fol. 809] Judge Allen: Yes.

Mr. R. T. Jackson: —that the Court was excluding it upon that ground.

Judge Allen: Yes.

Mr. R. T. Jackson: And we therefore lost nothing by failure to amplify the foundation for the exhibit.

Judge Allen: That is the ruling of the Court.

Judge Martin: May I ask this question, Mr. Jackson, just in the interest of time saving? Exhibit 513 is another money damage estimate opinion of this witness, Mr. Moreland.

Mr. R. T. Jackson: It is.

Judge Martin: Wouldn't that be more or less self-explanatory without very much statement from him? Couldn't you offer it and let it be rejected, and except, and save a good deal of time that way?

Mr. R. T. Jackson: I had only intended to ask him if he made it, and whether it accurately reflected his estimates and opinions.

Judge Martin: That is what I had in mind that we might get along quickly if the follow-up was the same as to the

money damage estimate, if it was not any different from exhibit No. 513; it would be excluded.

Mr. R. T. Jackson: Certainly so, your Honor."

The document (offered in evidence as Complainants' Exhibit 513) was prepared under my direction and, with the amendment in the title to show total "Estimated" damage by displacement, it accurately portrays the data and estimates which it purports to show.

"Mr. R. T. Jackson: We now offer exhibit No. 513 with the understanding that no objection is taken by counsel for defendant, and no reliance is placed by the Court in its ruling upon the circumstance that I have not asked Professor Moreland to take the time to go through and explain the reasoning and processes and data, from which he arrived at the opinions and estimates shown on the exhibit.

Judge Allen: Exhibit 513 is excluded upon the sole ground already stated. The Court does not care to go into the question of estimated money damages.

[fol. 810] Mr. R. T. Jackson: Please note an exception to the rulings on each of the exhibits rejected."

The document (offered in evidence as Complainants' Exhibit 514) was prepared under my direction. The estimates of annual and capital damages of each of the complainants shown on that document represent accurately my opinion and estimates as a result of the study which I made.

"Mr. R. T. Jackson: Now again with the understanding that no exception is taken by counsel for defendants, and that the court in ruling does not rely upon the fact that I have not had the witness explain in detail the foundation for this exhibit 514, I offer it in evidence.

Mr. Fly: We object to it, on the ground that the question of the amount of money damages as to each of the companies is irrelevant and immaterial, and upon the further ground that this estimate of capital damage which refers to the assumed loss to investors is also quite irrelevant, even on a point of damage to the company.

Mr. R. T. Jackson: I am a little confused by the last point of the objection as to whether or not that requires me to go into a development of the exhibit.

Judge Allen: I don't think it does.

Mr. Fly: The exhibit speaks for itself.

Judge Allen: The court sustains the objection upon the grounds heretofore stated with reference to exhibits 512 and 513. The Court might say that this is an Equity case. You are praying for an injunction here.

Mr. R. T. Jackson: That is correct.

Judge Allen: The Authority has conceded that its rates are substantially lower on all classes of service than those of the complainants, and the Court feels that so far as damage is concerned, substantial damage is shown, adequate for relief, if the complainants are entitled to relief under the law applicable to the case, so that the Court considers it unnecessary to go into details of money damage.

[fol. 811] Mr. R. T. Jackson: The Court appreciates we are merely making the record, in the event any court should entertain the view that it had some material value. May we have an exception?

Judge Allen: Yes."

Assuming that TVA were to postpone its ultimate installation as described in its reports to Congress beyond 1943, that in my opinion would not greatly affect the amount of damages which would be sustained by complainants by reason of duplication and loss of use of facilities, but would defer the time when the full effect of those damages was felt.

"Q. What is your estimate of the damages to the complainants by reason of duplication and loss of use of facilities and your estimate of damages to the complainants severally, in the event they are forced to adopt TVA rates?

Judge Allen: That is a question calling for an answer in money damages.

Mr. R. T. Jackson: Estimates of it, yes.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And we note our exception and offer to prove that if the witness were permitted to answer he would say that:

As a result of my studies (which have been in part described in testimony admitted from this witness) of determination of the damages through the rendering idle of facilities, I have estimated that the loss within the 100 mile radius to the complainants would be upwards of $46,000,000; within the 150 mile radius, upwards of $27,000,000; and within the 250 mile radius upwards of $24,000,000.

Because of the influence of transmission costs it seems unlikely that TVA will extend its service generally over an area as large as the total area involved within the 250 mile radius of any of the TVA plants or proposed plants.

On the other hand, it seems probable that it may extend service well beyond the 100 mile radius. For this reason, and my opinion of the likelihood that the TVA will proceed to serve areas of greater density somewhat nearer the points of production, I have estimated that the major part of displacement will take place somewhere within the [fol. 812] 150 mile radius, and on the basis of these probabilities estimate then that the minimum probable loss from duplication and loss of use of facilities, will be something in the order of the arithmetical average of the losses in each of the three zones, or about $33,000,000.

In making my estimates of the displacement of sales and resulting idleness of facilities, I have considered only the amount of displacement which would be caused by the quantity of power which Tennessee Valley Authority will have available upon completion of the unified plan over and above the set requirements of its present business, including therein TVA government operation and present TVA customers.

I have made a study of the type of damage which would result to the complainants from being forced by competition with TVA to reduce their rates to TVA levels, and I have found from this study that the gross revenue of the complainant companies will be reduced approximately $21,000,000 per year, and that the number of KW. hours sold, and the number of customers served at the reduced rates will be increased to such an extent as to involve an additional cost of approximately $5,000,000 per year for service, making a total annual damage to complainant companies amounting to approximately $26,000,000; that the capital value of this annual damage is approximately $433,000,000, this being the capital value of utility company securities owned by investors upon which an income equal to the annual damage would have paid an average rate of 6 per cent per annum; that I have caused to be prepared an exhibit reflecting the estimated damage to the complainant companies which would result, if forced by competition to reduce rates to TVA levels; that in my opinion the companies will be forced to reduce their rates to these levels;

that the data reflected upon this tabulation which was offered as Complainants' Exhibit No. 514 and excluded by the Court correctly reflects my estimate of this damage.

I have not made any specific estimate of damage of this nature to the Southern Tennessee Power Company, but in my opinion, indirectly through the displacement of loads for which its facilities now transmit electric power it will sustain substantial damage."

The sketch (offered and received in evidence as Complainants' Exhibit 515) indicates pictorially the various elements in a generating, transmission and distribution system. Electric energy is ordinarily generated at voltages in [fol. 813] large power stations of 13,000 to 20,000 volts. It is then stepped up through transformers to a higher voltage for transmission. This sketch indicates a hydro plant and steam plant with a transmission line between them, "A primary transmission line", which is a transmission line at relatively high voltage used for bulk transmission of power. This sketch is necessarily so condensed that it does not indicate that primary transmission lines are ordinarily relatively long, as compared with secondary transmission and rural lines.

The voltage is stepped down from the primary voltage in some cases directly from the high voltage to low voltage suitable for distribution, but more frequently to a lower transmission voltage which is called on this sketch "secondary transmission". From the secondary transmission it passes through step-down transformers at substations, which transform the voltage from transmission voltage to a voltage suitable for distribution. When power is sold on the secondary or low voltage side of a substation, it means it is sold at the lower voltage and that the selling agency bears the expense of providing the step-down transformers and the losses taking place in the transformers. Some large industries are served directly from primary lines and some industries are served from secondary lines. From secondary sub-stations there are both rural lines for rural service, distribution lines for villages and so on. The pictures around the margin of Complainants' Exhibit 515 indicate examples of various types of substations and transmission lines.

Stepping down the current is the process which induces a lower voltage on the low voltage side of the transformer [fol. 814] and the current that is served from that transformer is at the lower voltage. The usual distribution systems in a town or village, or in any except the smallest size towns, consist of circuits that are commonly known as primary distribution circuits, usually operated at 2300 volts or at 4000 volts, and customers' transformers are located along these lines. They serve customers direct, by stepping the voltage down to a 230 or 115 volt service for direct connection to the smaller customers.

To give the meaning of an induced current involves a somewhat technical explanation. A transformer consists of a series of windings or coils. The current flows through one coil, inducing a magnetic field, and that magnetic field passes through another coil and produces voltage, and as the circuit is closed, the current flows through the second coil, and the transformed current is induced. A single phase transformer has two coils, one with many turns and one with few turns, and the voltages are in direct proportion to the number of turns. If there are, for example, 1,000 turns on one side and one hundred on the other, if the coils with 1,000 turns are connected across a line that had 1,000 volts potential, on the other side you would get a potential voltage of one-tenth, in direct ratio to the number of turns. That is the theoretical ratio, but actually there is a little variation on account of losses. It is the flow of current in the first coil that produces a flow of current in the second. It is an entirely separate circuit, but one induces the flow in the other, and one supplies power to the other, although the current itself does not flow through it. The low side is where it comes out after this process has taken place.

(The witness was excused.)

[fol. 815] OFFERS IN EVIDENCE

"Mr. S. D. L. Jackson: If the Court please, in accordance with the statement made by the defendants early in this trial that they would furnish us with copies of certain resolutions, we have been furnished copies of certain resolutions by the defendants, and have selected from those resolutions

certain documents which we now desire to offer as exhibits in the record. The documents which I have, and which have been numbered, are the actual documents furnished to us by the defendants, and I understand there is no question about the authenticity of them.

Mr. Fitts: There is no question about the authenticity."

Thereupon counsel for complainants offered in evidence and the Court received as Complainants' Exhibits 516 to 567, inclusive, copies of the following resolutions of the TVA Board of Directors approving allotment releases attached thereto:

Complainants' Exhibit 516, being a resolution dated July 23, 1935 approving an allotment release for $12,127.00 for the construction of four miles of rural line in Lee County, Mississippi.

Complainants' Exhibit 517, being a resolution dated July 25, 1935 approving an allotment release of $11,495.00 to construct 7½ miles of transmission line in Union County, Mississippi.

Complainants' Exhibit 518, being a resolution dated August 29, 1935 approving an allotment release for $1,891.00 for the construction of a rural line in Prentiss County, Mississippi.

Complainants' Exhibit 519, being a resolution dated October 10, 1935 approving an allotment release of $102,770.00 for the construction of a 44 K.V. line from Tupelo to New Albany, Mississippi.

Complainants' Exhibit 520, being a resolution dated November 18, 1935 approving an allotment release entitled "600 K.V.A. Transformer at Corinth Steam Plant."

Complainants' Exhibit 521, being a resolution dated January 11, 1936 approving an allotment release for $189,587.00 for the construction of the "Pulaski-Columbia-Dickson Line and Substation."

Complainants' Exhibit 522, being a resolution dated January 11, 1936 approving an allotment release for $597,420.00 for the "Wheeler Dam-Columbia Transmission Line and Columbia Substation."

Complainants' Exhibit 523, being a resolution dated January 11, 1936 approving an allotment release for the construction of rural lines for the City of Dayton, in Rhea County, Tennessee.

[fol. 816] Complainants' Exhibit 524, being a resolution dated January 11, 1936 approving an allotment release for the "Bodenham Extension from Pulaski, Giles County, Tennessee."

Complainants' Exhibit 525, being a resolution dated January 11, 1936 approving an allotment release for "Construction of Substation west of Ardmore, Lincoln County, Tennessee."

Complainants' Exhibit 526, being a resolution dated January 11, 1936 approving an allotment release entitled "Mantachie-Kirkville-Marietta Line, Itawamba County, Mississippi."

Complainants' Exhibit 527, being a resolution dated January 11, 1936 approving an allotment release for the "Construction of a rural electric line in Lee County, Mississippi.

Complainants' Exhibit 528, being a resolution dated January 11, 1936 approving an allotment release for the "Construction of rural electric lines in south half of Lincoln County, Tennessee."

Complainants' Exhibit 529, being a resolution dated January 18, 1936 approving an allotment release for "Gravel pit line extension to Bigbee, Monroe County, Mississippi."

Complainants' Exhibit 530, being a resolution dated January 18, 1936 approving an allotment release for "Rural electric line construction in Hardin and McNairy Counties, Tennessee."

Complainants' Exhibit 531, being a resolution dated January 18, 1936 approving an allotment release for "Bedford County, Tennessee, Rural Electrification Project."

Complainants' Exhibit 532, being a resolution dated March 17, 1936 approving an allotment release for "Extension of transmission system to Milan, Bolivar and Somerville, Tennessee."

Complainants' Exhibit 533, being a resolution dated March 17, 1936 approving an allotment release for the "Rural electrification project in Gibson County, Tennessee."

Complainants' Exhibit 534, being a resolution approving an allotment release for the "Pratt Single-phase Rural Line Extension for Prentiss County Association, Prentiss and Lee Counties, Mississippi."

Complainants' Exhibit 535, being a resolution dated April 14, 1936 approving an allotment release for "Rural line con-

struction in Catoosa County, Georgia, for the North Georgia Electric Membership Corporation."

Complainants' Exhibit 536, being a resolution dated June 19, 1936 approving an allotment release for the construction of the transformer station at Ooltewah, Tennessee.

Complainants' Exhibit 537, being a resolution dated June 29, 1936 approving an allotment release for rural line construction for the North Georgia Electric Membership Corporation.

Complainants' Exhibit 538, being a resolution dated July 1, 1936 approving an allotment release for "Cullman County, Alabama, Rural Electrification Project."

[fol. 817] Complainants' Exhibit 539, being a resolution dated July 6, 1936 approving an allotment release for the construction of the transmission line from Pickwick Landing Dam to the City of Memphis.

Complainants' Exhibit 540, being a resolution dated July 14, 1936 approving an allotment release for the construction of rural lines for the Meigs County Electric Membership Corporation.

Complainants' Exhibit 541, being a resolution dated August 21, 1936 authorizing an allotment release for the construction of a substation in the south side of Memphis.

Complainants' Exhibit 542, being a resolution dated September 5, 1936 approving an allotment release for the construction of additional rural lines in Lincoln County, Tennessee.

Complainants' Exhibit 543, being a resolution dated September 21, 1936 approving an allotment release for "Rural electrification project, Rutherford and Wilson Counties, Tennessee,—Transmission line construction for the Middle Tennessee Electric Membership Corporation."

Complainants' Exhibit 544, being a resolution dated September 23, 1936 approving an allotment release for the construction of rural lines for the City of Athens in Limestone County, Alabama.

Complainants' Exhibit 545, being a resolution dated September 25, 1936 approving an allotment release for the engineering survey and the right of way of the Jackson-Trenton 44 K. V. line and substation.

Complainants' Exhibit 546, being a resolution dated October 6, 1936 approving an allotment release for the construction of rural lines in Cullman County, Alabama.

Complainants' Exhibit 547, being a resolution dated October 22, 1936 approving an allotment release for the construction of an extension of the Mimosa rural line in Lincoln County, Tennessee.

Complainants' Exhibit 548, being a resolution dated October 26, 1936 approving an allotment release for rebuilding the rural line of the city of New Albany, Mississippi.

Complainants' Exhibit 549, being a resolution dated December 7, 1936 approving an allotment release for the construction of rural lines for the Gibson County Electric Membership Corporation.

Complainants' Exhibit 550, being a resolution dated December 7, 1936 approving an allotment release for the construction of rural lines for the Southwest Tennessee Electric Membership Corporation.

[fol. 818] Complainants' Exhibit 551, being a resolution dated February 5, 1937 approving an allotment release for the construction of rural lines for the Duck River Electric Membership Corporation.

Complainants' Exhibit 552, being a resolution dated February 16, 1937 approving an allotment release for the construction of rural lines and for repairs for the Tombigbee Electric Power Association.

Complainants' Exhibit 553, being a resolution dated April 9, 1937 approving an allotment release for the construction of rural lines in Franklin County, Alabama.

Complainants' Exhibit 554, being a resolution dated May 15, 1937 approving an allotment release for additions to the Tupelo and Pontotoc substations.

Complainants' Exhibit 555, being a resolution dated May 15, 1937 approving an allotment release for the construction of rural lines in Lawrence and Morgan Counties, Alabama.

Complainants' Exhibit 556, being a resolution dated May 15, 1937 approving an allotment release for the construction of an extension of the rural line to New Harmony for the City of New Albany, Mississippi.

Complainants' Exhibit 557, being a resolution dated June 3, 1937 approving an allotment release for the construction of the Pontotoc-Sardis transmission line and the Sardis substation for the U. S. Army Engineers.

Complainants' Exhibit 558, being a resolution dated June 3, 1937 approving an allotment release for additional changes to the Hartselle substation.

Complainants' Exhibit 559, being a resolution dated June 3, 1937 approving an allotment release for the extension of rural lines and substation which is for the Tishomingo County Electric Power Association.

Complainants' Exhibit 560, being a resolution dated July 2, 1937 approving an allotment release for the construction of the North Side Memphis substation.

Complainants' Exhibit 561, being a resolution dated July 2, 1937 approving an allotment release for the construction of additions to the South Memphis substation for service to Arkansas.

Complainants' Exhibit 562, being a resolution dated July 2, 1937 approving an allotment release for the construction of a 110 K. V. transmission line from Memphis to Arkansas.

Complainants' Exhibit 563, being a resolution dated July 2, 1937 approving an allotment release for the construction of the South Memphis-North Memphis 110 K. V. transmission line.

[fol. 819] Complainants' Exhibit 564, being a resolution dated July 23, 1937 approving an allotment release for $269,000.00 for service to Volunteer Portland Cement Company.

Complainants' Exhibit 565, being a resolution dated August 13, 1937 approving an allotment release for the construction of rural lines for the Duck River Electric Membership Corporation.

Complainants' Exhibit 566, being a resolution dated August 13, 1937 approving an allotment release for the construction of rural lines for the Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 567, being a resolution dated September 13, 1937 approving an allotment release for transmission system reinforcement in Middle Tennessee.

[fol. 820] The power contract between TVA and the Tippah County Electric Power Association dated November 5, 1937 was at this point delivered to complainants by counsel for defendants and was offered and received in evidence as Complainants' Exhibit 224.

"Mr. S. D. L. Jackson: Mr. Fly, may we at this time have the assurance of the Authority that we now have had produced, and there are in evidence here all of the power con-

tracts of the Authority? We have discussed that from time to time.

Mr. Fly: That is correct, sir. We have supplied all of our contracts to him.

Judge Allen: The Court has discussed from the inception of this case, bearing in mind the pleadings filed, and bearing in mind the very helpful briefs that have been filed on both sides, with reference to questions of materiality and relevancy, we have all felt that wherever there is doubt as to the admissibility of evidence, it should be received.

The admission in evidence of such documents and testimony does not constitute a final ruling as to its relevancy, competency and materiality. Nor does it mean that the Court will make findings of fact based upon the circumstances disclosed thereby, if the findings of fact offered by the respective parties are deemed immaterial or irrelevant to the issues in this case, and to its decision such proposed findings will be rejected.

In other words, the Court is not accepting proffered testimony of this kind because we consider there is a doubt as to its admissibility, and it is the policy of the Court to be liberal with reference to its admission."

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibits 568-627, inclusive, copies of the following resolutions and extracts from the minutes of the Board of Directors of TVA together with certain documents and contracts attached thereto:

Complainants' Exhibit 568, being a resolution dated October 16, 1933, approving contracts to supply power to Florence, Tuscumbia, Sheffield, Muscle Shoals and other municipalities along the Tupelo transmission line.

Complainants' Exhibit 569, being an extract from the minutes dated December 15, 1935, granting authority to Mr. Lilienthal to create a corporation under the laws of Delaware to enter the business of discounting commercial paper.

[fol. 820a] Complainants' Exhibit 570, being a resolution dated December 16, 1933, approving the project, (attached to the resolution), entitled "Construction of Rural Electric Transmission Lines in the Five Mississippi Counties of Lee, Pontotoc, Monroe, Alcorn and Tishomingo and in Lauderdale County, Alabama."

Complainants' Exhibit 571, being a resolution dated April 13, 1934, approving the contract for advertising services by TVA with the firm of Young & Rubicam, Inc., at a lump sum payment of $10,000.

Complainants' Exhibit 572, being a resolution dated June 3, 1937, authorizing Dr. Morgan to write the letter dated June 4, 1937, attached to the resolution, to the War Department with regard to the construction of transmission line to Sardis Dam.

Complainants' Exhibit 573, being a resolution dated October 5, 1937, adopting the recommendations of the TVA As-
[fol. 821] sistant Chief Engineer, Carl A. Bock, concerning the construction of power houses at Chickamauga and Guntersville Dams and set out in his memorandum to the General Manager, dated October 5, 1937, attached to the resolution.

Complainants' Exhibit 574, being a resolution dated July 30, 1933, authorizing the construction of a transmission line from Wilson Dam to Cove Creek.

Complainants' Exhibit 575, being a resolution dated October 16, 1933, stating that every constract for power between TVA and municipalities be made to contain certain provisions, set forth in the memorandum attached to the resolution.

Complainants' Exhibit 576, being a resolution dated October 16, 1933, approving the "Wholesale rate schedule for Tupelo," which schedule was attached to the resolution.

Complainants' Exhibit 577, being a resolution dated May 31, 1934, approving the contract, dated June 1, 1934, attached to the resolution, between TVA and the Alcorn County Electric Power Association.

Complainants' Exhibit 578, being a series of resolutions dated July 27, 1934, referring to the contract between the Tennessee Public Service Company and TVA for the sale of the Knoxville properties and the contract between TVA and the Carolina Power & Light Company, attached to the resolution, by which the Carolina Power & Light Company was to supply power to TVA for distribution in the City of Knoxville prior to the time when Norris and Wheeler Dams are completed and in operation.

(Counsel for defendants then offered in evidence and the court received as Defendants' Exhibit 28 a resolution of the Board of Directors of TVA dated March 5, 1936 formally

terminating and rescinding the contract dated July 26, 1934 between TVA and the Tennessee Public Service Co.)

Complainants' Exhibit 579, being a resolution relating to the Young & Rubicam contract referred to in Complainants' Exhibit 571.

Complainants' Exhibit 580, being a resolution dated October 9, 1934, which refers to and has attached thereto resolution No. 767 of the City Council of Knoxville, Tennessee.

Complainants' Exhibit 581, being a resolution dated March 18, 1935, authorizing and approving entry by TVA into a contract, attached to the resolution, with the Electric Home and Farm Authority, Inc.

"Mr. S. D. L. Jackson: Now, the exhibit referred to in that resolution which is attached is an agreement made and entered into as of July 1, 1934, between Electric Home & Farm Authority, Inc., that is the first company, a corporation organized and existing under the laws of the State of Delaware, in its individual corporate capacity, hereinafter called 'Authority'; Electric Home & Farm Authority as trustee under a trust deed executed in May, 1934, as amended, to secure an issue of notes to aggregate not in excess of ten million dollars, hereinafter called 'Trustee'; [fol. 822] and Tennessee Valley Authority, a corporation organized and existing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called 'Utility'.

Now, I might say, if your Honor please, in reference to this matter, in July of this year we took the deposition of Mr. Hobson, who is now either the general manager or head administrative officer or second head administrative officer of the present E. H. & F. A., the District of Columbia corporation which succeeded the original Delaware corporation.

And he produced this contract and said that it was still the contract in existence between the present E. H. & F. A., and the Tennessee Valley Authority. That is the contract carried over. It was made with the original company, and then the successor, E. H. & F. A., carried on, and they are still carrying on under this contract.

Judge Allen: But the personnel of the directorate is different?

Mr. S. D. L. Jackson: That is right. It is no longer identical as to personnel, but it is,—the second company is still carrying on, or at least was at the end of July of this

year, under the contract between TVA and the original company.

Judge Allen: Yes.

Mr. Fly: I believe there is no doubt as to the accuracy of Mr. Jackson's statement. That is a contract setting forth the business relations and the trust agreement between the two parties, and as I understand it the same form of contract is used by EHFA with Mr. Jackson's clients.

Mr. S. D. L. Jackson: I would say all other utilities."

Complainants' Exhibit 582, being a resolution dated May 7, 1935, approving an agreement dated April 23, 1935, attached to the resolution, between TVA and the City of Athens, Alabama.

Complainants' Exhibit 583, being a resolution dated July 25, 1935, approving a contract dated July 19, 1935, attached to the resolution, between TVA and Tishomingo County Electric Power Association.

Complainants' Exhibit 584, being a resolution dated November 16, 1935, approving a contract dated October 19, 1935, attached to the resolution, between TVA and Tombigbee Electric Power Association.

Complainants' Exhibit 585, being a resolution dated November 16, 1935, approving a contract dated November 2, 1935, with the City of Dayton, entitled "Agreement for Cooperation in Construction of Rural Lines."

[fol. 823] Complainants' Exhibit 586, being a resolution dated November 16, 1935, approving a supplementary contract dated August 26, 1936, attached to the resolution, between TVA and Alcorn County Electric Power Association.

Complainants' Exhibit 587, being a resolution dated December 20, 1935, approving a contract, dated December 16, 1935, attached to the resolution, between TVA and New Albany, Mississippi.

Complainants' Exhibit 588, being a resolution dated December 23, 1935, approving the contract dated October 1, 1935, attached to the resolution, between TVA and Lincoln County Electric Membership Corporation.

Complainants' Exhibit 589, being a resolution dated December 31, 1935, approving a supplementary contract dated December 31, 1935, attached to the resolution, between TVA and Alcorn County Electric Power Association.

Complainants' Exhibit 590, being a resolution dated January 10, 1936, authorizing construction of a dam in the Hiwassee River on the Fowler Bend site.

Complainants' Exhibit 591, being a resolution dated December 31, 1935, authorizing construction of Chickamauga Dam.

Complainants' Exhibit 592, being a resolution dated January 18, 1936, approving a sale and loan contract dated January 15, 1936, attached to the resolution, between TVA and Monroe County Electric Power Association.

Complainants' Exhibit 593, being a resolution dated February 1, 1936, approving a contract dated January 24, 1936, between TVA and Dayton, Tennessee, for the sale of rural lines.

Complainants' Exhibit 594, being a resolution dated February 10, 1936, approving a contract dated February 14, 1936, attached to the resolution, between TVA and the City of Amory.

Complainants' Exhibit 595, being a resolution dated February 11, 1936, approving a sale and loan contract dated February 12, 1936, attached to the resolution, between TVA and Pontotoc County Electric Power Association.

Complainants' Exhibit 596, being a resolution dated February 11, 1936, approving a contract dated February 1, 1936, attached to the resolution, between TVA and Monroe County Electric Power Association, concerning the operation of rural lines and the collection of bills.

Complainants' Exhibit 597, being a resolution dated April 27, 1936, approving a contract dated April 21, 1936, attached to the resolution, between Alcorn County Electric Power Association, Pickwick Electric Membership Corporation and TVA.

[fol. 824] Complainants' Exhibit 598, being a resolution dated April 27, 1936, approving the execution of a quit claim deed from the TVA to the Alcorn County Electric Power Association.

Complainants' Exhibit 599, being a resolution dated April 27, 1936, approving a contract dated April 21, 1936, attached to the resolution, between Pickwick Electric Membership Corporation and TVA.

Complainants' Exhibit 600, being a resolution dated April 27, 1936, approving a contract dated April 21, 1936, attached to the resolution, between TVA and Alcorn County Electric Power Association.

Complainants' Exhibit 601, being a resolution dated May 28, 1936, approving an operation contract dated May 18, 1936, attached to the resolution, between Bedford County Electric Membership Corporation and TVA.

Complainants' Exhibit 602, being a resolution dated July 31, 1936, approving an amendment, attached to said exhibit, to the contract dated May 1, 1936, between the Meigs County Electric Membership Corporation and TVA.

Complainants' Exhibit 603, being a resolution dated August 11, 1936, approving a contract dated August 4, 1936, attached to the resolution, between TVA and Cullman County Electric Membership Corporation.

Complainants' Exhibit 604 is a resolution dated August 21, 1936, approving a sale and loan agreement dated August 13, 1936, attached to the resolution, between TVA and Gibson County Electric Membership Corporation.

Complainants' Exhibit 605, being a resolution dated September 5, 1936, approving an agreement dated August 26, 1936, attached to the resolution, between TVA and Pickwick Electric Membership Corporation.

Complainants' Exhibit 606, being a resolution dated September 5, 1936, approving a supplementary contract dated May 25, 1936, attached to the resolution, between TVA and Milan, Tennessee.

Complainants' Exhibit 607, being a resolution dated September 5, 1936, approving a contract for the sale of properties dated October 9, 1936, attached to the resolution, between TVA and the City of Athens, Alabama.

Complainants' Exhibit 608, being a resolution dated December 23, 1936, approving a contract dated December 9, 1936, attached to the resolution, between TVA and Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 609, being a resolution dated December 23, 1936, approving a contract dated October 31, 1936, attached to the resolution, between TVA and Duck River Electric Membership Corporation.

[fol. 825] Complainants' Exhibit 610, being a resolution dated January 8, 1937, approving an operation contract, attached to the resolution, between TVA and Lincoln County Electric Membership Corporation.

Complainants' Exhibit 611, being a resolution dated February 11, 1937, approving an operation contract dated January 26, 1937, attached to the resolution, between TVA and Tishomingo County Electric Power Association.

Complainants' Exhibit 612, being a resolution dated February 11, 1937, approving a supplementary contract dated February 2, 1937, attached to the resolution, between TVA and Holly Springs, Mississippi.

Complainants' Exhibit 613, being a resolution dated March 10, 1937, approving a contract dated March 17, 1937, attached to the resolution, between TVA and Dayton, Tennessee.

Complainants' Exhibit 614, being a resolution dated March 31, 1937, approving a contract dated April 1, 1937, attached to the resolution, entitled "Emergency Operation Contract between TVA and Alcorn County Electric Power Association."

Complainants' Exhibit 615, being a resolution dated April 9, 1937, approving the transfer of certain franchises from TVA to the Southwest Tennessee Electric Membership Corporation.

Complainants' Exhibit 616, being a resolution dated April 9, 1937, approving a supplementary contract dated March 24, 1937, attached to the resolution, between TVA and Okolona, Mississippi.

Complainants' Exhibit 617, being a resolution dated June 3, 1937, authorizing the construction of 110 kv. transmission line between Norris Dam and Volunteer Portland Cement Company.

Complainants' Exhibit 618, being a resolution dated June 3, 1937, approving a contract dated March 20, 1937, attached to the resolution, between TVA and Bolivar, Tennessee.

Complainants' Exhibit 619, being a resolution dated June 9, 1937, approving a contract with the Electric Power Board of Chattanooga, Tennessee.

Complainants' Exhibit 620, being a resolution dated June 23, 1937, approving a contract entitled "Emergency Operation Contract between TVA and Dickson Tennessee," dated June 11, 1937, attached to the resolution.

Complainants' Exhibit 621, being a resolution dated July 12, 1937, granting an extension of time to the Monroe County Electric Power Association for the first payment of principal on its indebtedness to the TVA.

Complainants' Exhibit 622, being a resolution dated July [fol. 826] 20, 1937, approving a supplementary contract dated July 23, 1937, attached to the resolution, between TVA and Athens, Alabama.

Complainants' Exhibit 623, being a resolution dated July 29, 1937, approving a contract dated July 14, 1937, attached to the resolution, entitled "Emergency Operation Contract between TVA and Pickwick Electric Membership Corporation."

Complainants' Exhibit 624, being a resolution dated July, 29, 1937, approving a contract dated May 14, 1937, attached to the resolution, between TVA and Joe Wheeler Electric Membership Corporation for the sale and construction of rural lines.

Complainants' Exhibit 625, being a resolution dated August 13, 1937, approving a letter of that date, attached to the resolution, from Mr. Lilienthal to Mr. Dempster, City Manager, of Knoxville, Tennessee.

Complainants' Exhibit 626, being a resolution dated August 13, 1937, approving a supplementary contract dated June 29, 1937, attached to the resolution, between TVA and Lincoln County Electric Membership Corporation.

Complainants' Exhibit 627, being a resolution dated September 24, 1937, unanimously approving the schedule of generator installations at the various dam projects, and listing the units and dates of proposed initial operation.

"Mr. Fitts: I think we ought to have it appear, Mr. Jackson, that these are just some of the resolutions that we furnished you, and not all, and also with respect to the exhibits to the various resolutions, that they were made available to you, and if any of them are missing there you did have the opportunity to get them, and can get them now if you still want them.

Mr. S. D. L. Jackson: That I think is correct. Mr. Fitts stated that he would furnish to us resolutions relating to the power phases of the TVA.

We received from them some 250, I would say, or possibly more, resolutions. I guess perhaps we received more than that, nearer 400.

From those we selected the group that we have offered in evidence. When the resolutions were first furnished they did not have the exhibits referred to in the resolutions attached, and we thereupon requested that we might see the exhibits and were permitted to see the exhibits, all that we asked to see, of any of the resolutions that had been furnished. Of course, we do not want the record to show that we have

stated that we have inspected all of the records of TVA insofar as they may relate to power.

Mr. Fly: I think we can agree upon that.

[fol. 827] Mr. S. D. L. Jackson: At this time, if the Court please, I desire to offer in evidence an extract from a hearing before the Committee on Military Affairs, House of Representatives, 72nd Congress, First Session, which was a hearing before the Committee on Military Affairs that related to Muscle Shoals in the year 1932. It was prior to the passage of the Tennessee Valley Authority Act.

Mr. Fly: Is this testimony.

Mr. S. D. L. Jackson: Now, wait a minute.

Mr. Fly: Don't get too far.

Mr. S. D. L. Jackson: All right. Now, at that hearing, General Brown, who at that time was the Chief of Army Engineers, and who I believe is the Chief of Engineers that made and submitted to Congress the report which is in this record as exhibit No. 105, the first document we started with, as the Court will recall, he appeared before the Congress to make his report to the Military Affairs Committee, and in connection with that hearing he was asked by certain members of that Committee for certain information with respect to Muscle Shoals.

Now, I have one extract from that book that I desire to offer in evidence. I don't know whether the Court desires me to have the entire book marked as an exhibit, there is just one extract in it, but I will be very glad to submit it to the Court for examination.

Judge Allen: This was prior to the enactment of the Tennessee Valley Authority Act?

Mr. S. D. L. Jackson: Yes, your Honor, it was, the year before the Tennessee Valley Authority Act was enacted by Congress. However, I might say it is the same Committee of Congress, the Military Affairs Committee is the same committee that considered the Tennessee Valley Authority Act and the amendment to it. And of course in our view General Brown's statement to a Congressional Committee is, just as his report to Congress was, an official report that he made as Chief of Engineers which appears in House Document 328, and which is exhibit No. 105. He made a report relating to the Tennessee River.

Judge Allen: The objection is sustained.

The Court is sustaining this objection, not upon the ground that it is offered as an excerpt, although if the

Court considers that this excerpt had any admissibility it would adhere to its former ruling, and introduce the entire report of the hearing. The Court will not extend the ruling which it has made with reference to statements made to committees of the House.

[fol. 828] The Court has already ruled that it will not receive in evidence statements made even by officers of this Board, such as Mr. Lilienthal, before a House Committee which was inquiring into some other subject than the enactment of legislation dealing directly with the Tennessee Valley Authority, such as the Wheeler-Rayburn bill.

Neither will the Court extend its ruling to receive in evidence statements made by other persons than these directors in hearings before House Committees, which, as are shown, have no possible relevancy or materiality to the issues of this case.

Mr. S. D. L. Jackson: May we have an exception to the Court's ruling?

Judge Allen: You may have an exception.

Mr. S. D. L. Jackson: Now, may I ask the Reporter to copy into the record this rather brief statement?

Judge Allen: You may have it copied into the record and you may have your exception. The Court rules it is immaterial and irrelevant and excludes it.

(Said excluded excerpt being in words and figures following:)

'Muscle Shoals

Hearing before the Committee on Military Affairs, House of Representatives, Seventy-second Congress, First Session, Part 1.

Mr. May: Now, independent of any power connection whatever, do you regard the building of Cove Creek Dam as a feasible proposition for navigation purposes only?

General Brown; No; by no means.

Mr. May: Do you not think that the storage of water that would be provided by this high dam at that point would augment the continuous supply of water below the dam clear down to Wilson Dam that would make it a profitable investment as a navigation proposition?

General Brown: I wouldn't think so. I wouldn't ever think of building a reservoir up there for navigation purposes only.

Mr. May: Well, would it justify it as a flood-control proposition?

General Brown: Well, that is another thing that is very difficult for the Federal Government to handle, flood control. [fol. 829] I don't think it is any business of the Federal Government to provide local flood control of waters. If people were suffering from floods up there locally and would contribute to the Federal Government's effort for the benefits that would come out of flood control, I would say, all right. But we have only two flood-control projects in the United States today by the Federal Government, one on the Mississippi River and the other in California on the Sacramento. That is all we have.

Mr. May: You have no plans for the immediate consideration of the proposition of building Cove Creek Dam there, and merely made up an estimate there of the cost of it for the use of this committee?

General Brown: No, sir. We have no plans in the Engineers' Department for building Cove Creek, although we have developed some plans on order of Congress to show what is practicable there. But for purposes of navigation we have no desire to build a Cove Creek reservoir.

Mr. May: The navigation of the river is possible with the low dams that you contemplate?

General Brown: Exactly; and that is the cheapest way to get it, working for navigation only.' "

[fol. 830] WENDELL L. WILLKIE was called as a witness on behalf of complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in New York City and am President of The Commonwealth & Southern Corporation which owns 99% plus of the common stock of The Tennessee Electric Power Company. It is the largest preferred stockholder of that company and likewise the largest bondholder. It owns all of the common stock of the Mississippi Power Company and is the largest bondholder and preferred stockholder of that company. It owns all of the common stock of the Alabama Power Company and is the largest preferred stockholder of that company.

From the latter part of 1935 until the middle of 1936, there were negotiations being conducted for the sale of a block of electric power by The Tennessee Electric Power Company to the Monsanto Chemical Company at its plant at Columbia, Tennessee.

Examination by the Court:

The Monsanto Chemical Company has a large plant at Anniston, Alabama, and for many years was one of the largest consumers of power of the Alabama Power Company. In the latter part of 1935, they located a plant at Columbia, Tennessee. So far as I know the Monsanto Chemical Company is located at St. Louis, Missouri. Its exact legal title I cannot tell. I think it is incorporated under the laws of Missouri. Its principal office is St. Louis. I do not know more than one corporation by that name.

In the fall of 1936, Mr. E. A. Yates, who is directly re- [fol. 831] sponsible to me in The Commonwealth & Southern Corporation, together with James A. Longley, Vice President of The Tennessee Electric Power Company, Mr. Jo Guild, President of that company, together with other engineers, were in negotiations with Monsanto Chemical Company about supplying them power at their plant which they were locating at Columbia, Tennessee.

Direct examination continued:

The telegram (offered and received in evidence as Complainants' Exhibit 628) from Mr. Edgar M. Queeny, President of the Monsanto Chemical Company, was sent me on May 13, 1936 and received by me in my office in New York. This telegram refers to a transaction involving a proposed agreement between the Monsanto Chemical Company and The Tennessee Electric Power Company by which The Tennessee Electric Power Company was to sell to the Monsanto Chemical Company, as I recall, 50,000 kilowatts of capacity of electric power at its proposed plant at Columbia, Tennessee.

I am also President of the Commonwealth & Southern Corporation of New York, which has a mutual service arrangement with The Tennessee Electric Power Company and acts for it. I am not generally an agent of the Tennessee Electric Power Company, but I am an agent of that com-

pany in specific instances. In this particular instance I was specifically authorized to act for The Tennessee Electric Power Company. I was not authorized by a Board resolution. Mr. Guild, who is the General Manager, under the by-laws of The Tennessee Electric Power Company specifically authorized me to act in such transaction.

Mr. Guild reported to me that all of the details of the contract had been worked out with the Monsanto Chemical Company and were completely satisfactory to the Monsanto Chemical Company. All of the terms of the agreement had been agreed upon by both The Tennessee Electric Power [fol. 832] Company and the Monsanto Chemical Company. The Monsanto Chemical Company raised the question as to the financial responsibility of The Tennessee Electric Power Company in view of the operations of the TVA. The contract had not been executed but all the terms had been agreed upon. Mr. Queeny, President of the Monsanto Chemical Company, wired me. Pursuant to that wire Mr. Guild and I talked it over and through me The Tennessee Electric Power Company made the proposal to the Monsanto Chemical Company that there be deposited as a guarantee to the performance of the agreement a million and a half of the first mortgage bonds of The Tennessee Electric Power Company. Mr. Queeny declined to accept that, saying that in view of the situation in regard to the competitive operations of the TVA he did not consider that first mortgage bonds of The Tennessee Electric Power Company were a satisfactory guarantee of the performance of their agreement. His decision was conveyed to me in this telegram, Complainants' Exhibit 628, and Mr. Queeny also talked to me by telephone. Mr. Queeny is President. He may be Chairman of the Board, but he is the Chief Executive officer of the Monsanto Chemical Company.

The guarantee asked by Mr. Queeny in his telegram to the Commonwealth & Southern was not made or offered by me. No contract for power was consummated between The Tennessee Electric Power Company and the Monsanto Chemical Company. The Monsanto Chemical Company made the contract with the TVA.

"Q. Mr. Willkie, there has been a good deal of testimony in this case about actual and threatened competition between the Tennessee Valley Authority and complainants, including the Tennessee Electric Power Company, the Alabama

Power Company, and the Mississippi Power Company. Will you please state what, if anything, you have done to minimize or avoid the effect of this competition?

A. I have proposed repeatedly to the Tennessee Valley Authority——

Mr. Fly: I object. I think it is quite irrelevant as to what [fol. 833] has been done.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And reserving our exception if the Court please, we offer to prove through the witness now on the stand, Mr. Willkie, that if he were permitted to testify in response to the question just asked he would testify that he has repeatedly proposed to the Tennessee Valley Authority and its directors on behalf of these power companies that such power companies by closing down their steam plants, by selling as much of the power presently produced by them as they could to other utilities on the outside of their service areas, and by taking losses on their business, they would purchase the surplus power over and above that required for governmental purposes, and redistribute the same throughout the entire southeast at rates which would recognize any differential between the price at which the TVA sold such power to them and the amount which it would cost the companies to produce such power, and would redistribute the TVA power under appropriate governmental regulations. That offer is declined, and we take our exception.

Judge Allen: The ruling stands and you may repeat your exception.

Mr. R. T. Jackson: I had not stated the purpose fully, and I just wanted to be sure that I apprised the court of everything that I should.

Mr. Willkie, would such an arrangement have resulted in a wide distribution of any power being produced by the Tennessee Valley Authority, and a wide distribution of any benefits that might arise from the low price at which the Authority was offering the power for sale?

Mr. Fly: I object to that as irrelevant.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And we are allowed our exception and offer to prove that the witness now on the stand, Mr. Willkie, if permitted to answer the question, would testify

that such an arrangement would have provided a wider distribution and wider use of any power being produced by TVA than can be obtained by any other process short of ten years, and would have provided the widest possible distribution of any benefits that would inhere in the production or sale of TVA power among the people of Southeastern United States.

Q. Mr. Willkie, what price did you propose that such utilities would pay for such Tennessee Valley Authority power? These are, I assume, within the Court's ruling, but I am just completing the record.

Mr. Fly: I think that is clearly irrelevant, your Honor. [fol. 834] Judge Allen: The objection is sustained.

Mr. R. T. Jackson: We will take an exception and offer to show by the witness now on the stand, Mr. Willkie, that if permitted to testify he would say that they offered to the Tennessee Valley Authority to pay a price fixed by arbitration, by competitive bidding, and after the announcement by TVA of its so-called C-2 rate, at that rate, as might be elected by the Tennessee Valley Authority.

Q. Mr. Willkie, have these companies changed their attitude in the respects about which I have asked you in the preceding three or four questions? I assume that is also within the ruling.

Mr. Fly: I don't know what "attitude" means. If you can explain it perhaps I can understand.

Mr. Jackson: Well, you object to it, don't you?

Mr. Fly: I wonder if the witness understands.

Mr. R. T. Jackson: If he is permitted to answer——

The Witness: I am a little slow, Mr. Fly, but I think I get the point.

Mr. Fly: I suspect you have it, Mr. Willkie. That is what I was afraid of.

Judge Allen: Do you object, Mr. Fly?

Mr. Fly: I object to that question.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: Complainants take exception and offer to show by the witness now on the stand, Mr. Willkie, that if permitted to answer the question he would testify that there has been no change whatever in the attitude of these utilities with reference to the proposal for the distri-

bution of TVA power under the circumstances stated in previous offers of proof.

Mr. R. T. Jackson: Perhaps I had better ask leave to change the question and substitute for the word "Attitude" the word "position."

Judge Allen: The objection is still sustained.

Mr. R. T. Jackson: I understand. I will ask to have our exception and offer to prove still stand for the amended question.

Mr. Fly: There will be no cross examination.

The Witness: I am sorry."

(The witness was excused.)

[fol. 835] F. C. Weiss was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 46 years old, reside in Birmingham, Alabama, and am engineering and construction manager for the Alabama Power Company. I have studied and dealt with the properties of the Alabama Power Company for 25 years and am familiar with the construction of Lay Dam, Mitchell Dam and Jordan Dam. (Thereupon counsel for defendants stated that they raised no question about the qualifications of this witness to testify on this subject.)

I am familiar with the work which has been done by the Alabama Power Company at these dams directly and solely for the improvement of navigation and navigation facilities as distinguished from work affecting both navigation and power generation. No structures were provided by the Alabama Power Company at the Lay Dam project for a future navigation project at that site. No such structures were necessary. The topographical conditions were such that the best location for the lock was some distance away from the structure of the dam itself. The Lay Dam is Lock 12 and was constructed under a special act of Congress.

"Judge Allen: What is the purpose of the question?

Mr. Bemis: We are undertaking to show what was done in the construction of that dam under the special act of Congress, to show the complete facts.

Mr. Fly: I do not see that the details of what has been done is important. They have built the dam and operate it.

Judge Allen: Well, there is no contest between you over the construction that has been done by the Alabama Power Company?

[fol. 836] Mr. Fitts: I do not think so. I think we are perfectly willing to admit the construction of the dam.

Judge Allen: Is that all you expect to show?

Mr. Bemis: We expect to show what navigation facilities have been installed by reason of the act of Congress. That testimony will be very brief and complete with respect to this dam, the question involved.

Judge Allen: You may proceed."

The proposed lock at Lay Dam is on the east bank of the river, the upstream approach being in the second bay above the east abutment and extending through a natural draw some distance from the structure of the dam to the downstream pool below Lay Dam. The approaches to the Lock are some 2000 feet long. About 40 acres of land owned by the Alabama Power Company will be used at Lay Dam. To provide a navigable channel between Lay Dam and Mitchell Dam, it will be necessary to excavate an approach channel to the lower sill of the Lock around Lay Dam in order to secure proper depth of water to get into these lock facilities and into the lower pool. With reference to the nature of excavation required it will be necessary to remove some 80,000 yards of rock to excavate an approach channel. The company has made surveys in connection with the required excavation.

I am familiar with the work done by the Alabama Power Company directed to the construction of locks and channels for navigation at and above Mitchell Dam. The document (offered in evidence as Complainants' Exhibit 629) has plotted on it the soundings made at the upper reaches of the pool above Mitchell Dam and a study of the approach channel and the locks at the head of this reservoir. There were other like studies made in connection with that work. This is just one of the sheets. In the construction of Mitchell Dam provision was made on the east side of the river and in a part of the dam itself for the later construction of a lock through the dam. This construction included [fol. 837] the building of a rock fill on which there were

erected timber cribs, also filled with rock, which construction was for the lock channel approach on the upstream side of the dam. A portion of the lock was also installed in this east section of the dam and the excavations for the passage of the lock itself were closed with temporary structures. These improvements cost some $80,400. About 40 acres of land owned by the Alabama Power Company at Mitchell Dam site will be necessary for the maintenance and operation of the navigation facilities.

At Jordan Dam the provisions for lockage through the dam are on the west side of the river. The topography is such that an extensive approach channel had to be excavated in the structure of the dam itself. A section of the lock wall was installed and a large amount of excavation of the lock chamber itself was done by the company. This construction work involved the excavation of some 190,000 or 200,000 yards of earth and 41,000 yards of rock and an equal amount of back filling and 9300 yards of concrete. This construction work at Jordan Dam cost slightly in excess of $334,000. The proposed lock, together with the house for the lock keeper, will probably utilize about 40 acres of land owned by the Alabama Power Company.

In addition to these three dams, the Alabama Power Company has installed stream gauges upon the Coosa and Tallapoosa Rivers, solely for the aid of navigation, at a cost of slightly over $5,400. The Alabama Power Company operates and maintains the gauges and weekly sends the readings to the Montgomery Office of the U. S. Geological Survey.

[fol. 838] Examination by the Court:

The Federal Power Commission licenses are for 50 years and the earliest construction under those licenses was started in the early 1920s.

Direct examination continued:

The table, (offered in evidence as Complainants' Exhibit 630), summarizes the cost of installation of these facilities devoted solely to navigation and the data set forth on that exhibit is correct to my knowledge.

The document, (offered in evidence as Complainants' Exhibit 631), contains a part of the application for the license for Jordan Dam. (The application from which the

excerpts in Exhibit 631 are taken was delivered to defendants and authenticated under the stipulation dated August 14, 1937.)

The tabulation, (offered in evidence as Complainants' Exhibit 632), shows the annual payments to the United States on account of licenses issued by the Federal Power Commission to the Alabama Power Company and the totals of those individual payments. The data shown on this exhibit is correct and is taken from the records of the Alabama Power Company.

"Mr. Bemis: If the Court please, we offer in evidence complainants' exhibits 629, 630, 631 and 632.

And I state further for the information of the Court that at the time these licenses and applications were offered through the witness, as I recall, Mr. Barry, the Court asked the question, what if anything had been done or paid for these licenses, and this testimony, among other things, answers that question.

Mr. Fly: I object to each and every one of these exhibits, your Honor, on the ground they are immaterial, irrelevant and incompetent, and tending to confuse the issues in this [fol. 839] case, and I think in a very burdensome way, that this sort of material will clutter up this record.

Judge Allen: Objection sustained to exhibits 629, 630, 631 and 632. They are excluded. You may have your exception."

(The witness was excused.)

[fol. 840] Counsel for complainants offered in evidence as Complainants' Exhibit 633 the press release entitled "Power Policy of the Tennessee Valley Authority", and as Complainants' Exhibit 634 the press release entitled "Electric Rates Announced", both of which press releases were delivered to complainants by defendants and authenticated under the stipulation dated August 14, 1937.

"Mr. S. D. L. Jackson: And in reference to these two exhibits, I might add that exhibit 113, which has been received in evidence, the First Annual Report of the Tennessee Valley Authority, refers to each of these exhibits. I think one of them is quoted and the other one is referred to.

Mr. Fly: I think as a separate document, your Honor, it is not admissible. It is merely a declaration of policy.

It represents no concrete transaction. In fact, it was never translated into concrete transactions unless it can be urged that some of these specific transactions approved here were pursuant to it.

Judge Martin: What is the source of Exhibit 633, Mr. Jackson?

Mr. R. T. Jackson: It was given to the public as a press release, to the newspapers.

Judge Martin: Press release.

Mr. R. T. Jackson: Distributed publicly. On that subject I would like to be heard briefly before there is any adverse ruling on it, at least.

Judge Allen: Mr. Jackson, we have read the brief and considered it, and the Court, the whole Court has considered the brief carefully and discussed it. The Court adheres to its ruling.

Mr. R. T. Jackson: I take it that that carries with it also the implication that no further argument is desired at this time on that point.

Judge Allen: No further argument is necessary because we have very carefully considered your views expressed, not only at length, but excellently expressed. We have given it very careful consideration over a number of days. Exhibits 633 and 634 are excluded. They are excluded upon the ground that both of them are shown to constitute press [fol. 841] releases. It appears upon the face of exhibit 634 that that is a fact, and by the statement of counsel it is shown to be the fact with respect to exhibit No. 633.

Mr. R. T. Jackson: We not only concede but are anxious to show that they are press releases, and we want to show our friends advertised that. An exception please. I don't know that there is anything we could do in the situation, but would the Court regard it as impertinent for me to inquire whether the ruling is based upon the ground of incompetency or irrelevancy?

Judge Martin: Both.

Mr. R. T. Jackson: I assume that there is no contention that they are not properly authenticated.

Judge Martin: Oh no, no. That has been conceded throughout, repeatedly.

Judge Allen: Yes.

Mr. R. T. Jackson: So I am at a loss to know whether there could be anything other than irrelevancy. If there

was any question of competency I would want, if possible, to cure that. I cannot cure any question of relevancy.

Judge Allen: The Court accepts these exhibits as authentic. That is, that they are what they purport to be.

Mr. R. T. Jackson: Issued by the Tennessee Valley Authority.

Judge Allen: Issued by the Tennessee Valley Authority. The Court considers these exhibits incompetent, irrelevant and immaterial and you may have your exception.

Mr. S. D. L. Jackson: If the Court please I have a number more of press releases which I would like to have numbered, and the record may show that we offer each of them, and offer each of them separately in evidence, and I take it the Court will rule in conformity with its former ruling, and the record may show our exception separately to each one. They are all press releases.

(These press releases were numbered as Complainants' Exhibits 779-902 inclusive.)

Mr. R. T. Jackson: Yes. The one point I want to make really is this. I want the record to show we tendered to the Court each and every one of these press releases for examination, and that that ruling of irrelevancy is made pursuant to the examination of each document, at least to our tender of each document.

Judge Martin: If the record shows that, let the fact be what the record shows.

[fol. 842] Mr. R. T. Jackson: I want to be fair to the Court and I want to be fair to our client. My point is I don't understand that a document can be ruled out as irrelevant merely on the statement it was put up in a particular way but it would require an examination of each one. We do not insist upon the Court examining them.

Judge Martin: I don't agree with your expression. I think if the basis of the Court's ruling, that the press release is not admissible—we are dealing with actions, and not with statements made publicly, and I don't think that your argument is a logical sequence, since you have expressed that. The reason I am giving you my individual view is that if the record is to show that these documents have been inspected by the Court, the Court must inspect them.

Mr. R. T. Jackson: I don't know what the rule is.

Judge Allen: I may say that that was the purpose of the original ruling of the Court on this matter, and that I concur thoroughly in what Judge Martin has said, and also of course we must examine these if the record shows that we have examined them. This also must always be borne in mind, Mr. Jackson, in this case. The Court is ruling on competency, materiality and relevancy bearing in mind the issues of the case.

Mr. R. T. Jackson: I respect that. And the last thing I want to do is to cause this court any inconvenience or any additional work. On the other hand I have known of cases where it was held that the proper offer was not made because the material ruled out as irrelevant was not shown to the Court.

Judge Martin: That's all right, Mr. Jackson, but we want the record to show the fact.

Mr. R. T. Jackson: We tender them to the Court, is my point.

Mr. S. D. L. Jackson: If I may have the reporter place numbers on these I will be glad to hand them to the Court.

Mr. Fly: Let the record show a separate objection to each one.

Judge Martin: Just to save time, pass them up and we will pass them back to you.

(Documents handed to Court.)

Mr. S. D. L. Jackson: I have a selected group of 215 of these.

Judge Martin: You have exceeded our reading capacity in a half hour, I am sure."

Thereupon counsel for the complainants stated that they had marked those portions of the press releases which they [fols. 843-844] desired to offer in evidence in order that the Court might read them.

"Mr. S. D. L. Jackson: Complainants offer in evidence Exhibit 635. I might state this is an authenticated copy, under date of August 14, 1937, of a magazine article entitled "Tennessee Valley Looks to the Future". In exhibit 364 which was excluded by the Court, the excerpts that were excerpts from the hearing before the Interstate Commerce Commission of the House of Representatives were excluded, and in those excerpts that were offered there was a considerable amount of discussion which related to this

book, namely, that Mr. Meyer had been on the payroll of the TVA when he wrote it, and that they bought 60,000 copies for distribution.

Mr. Fitts: We object, irrelevant and immaterial, and an expression of an individual's views.

Judge Allen: Sustained.

Mr. S. D. L. Jackson: May we have our exception?

Judge Allen: You may."

STIPULATION RE STATEMENT BY MR. LILIENTHAL

Thereupon counsel for defendants stipulated that Mr. Lilienthal made the following statement on June 29, 1937, at the Hearings before the Subcommittee of the Committee on Agriculture and Forestry, U. S. Senate, 75th Congress, First Session:

"Mr. Lilienthal: The extent of the Authority's contracts for sales and the number of customers, summarized data of that kind, I should like the privilege of inserting at this point.

The Chairman: It may be inserted at this point:

'The Authority is now selling electricity to 17 municipalities with 14,900 customers, 11,394 of whom are residential, and 13 cooperative associations serving rural territory, with 13,250 customers of whom 10,908 are residential. In addition, it is serving 2,595 customers in rural areas directly, on a temporary basis, as well as 1,317 customers on Government reservations.

In addition to the foregoing, the Tennessee Valley Authority has signed contracts with a number of municipalities where service has not begun. A list of these, showing popu-

[fol. 845] lation and estimated power load follows:

	Population	Load (Kilowatts)
Alabama:		
Decatur	15,593	3,000
Russellville	3,146	1,100
Tennessee:		
Memphis	255,143	46,000
Knoxville	105,802	25,000
Chattanooga	119,798	62,000

Industrial contracts and others, where service has not begun, are as follows:

	Load (Kilowatts)
Aluminum Co.	20,000
Volunteer Portland Cement Co.	2,000
U. S. Army, Sardis Dam	8,000

Total revenue from these contracts where service has not begun is estimated at $3,125,000 annually.

The total number of customers now served is 32,063 of whom 25,643 are residential. Approximately 35 per cent of the residential customers are on farms, 31 per cent are non-farm customers in rural areas, and 34 per cent are urban customers.'

OFFERS IN EVIDENCE

"Mr. S. D. L. Jackson: At this time, if the Court please, we desire to offer the depositions or certain depositions taken in Washington, D. C. in July of this year. I might state that they are the depositions of Michael W. Strauss, David Wolfsohn, A. T. Hobson and J. M. Carmody.

Each of those depositions, just as Colonel Hackett's deposition which we got to a day or two ago, I think are almost entirely identification of documents. And if our friends will [fol. 846] make a stipulation that the documents produced by each of the witnesses, their authenticity is accepted, I can shorten this matter by simply offering the authenticated documents as exhibits in the record as we have for Colonel Hackett.

Mr. Fly: We will agree to that."

Counsel for complainants offered in evidence as Complainants' Exhibits 637 to 643 inclusive, 645, and 646 press releases issued by the Public Works Administration, and as Complainants' Exhibit 644 a letter dated Nov. 8, 1933 to State Engineers from H. M. Waite of PWA. The offer was made as to each such exhibit separately.

"Mr. Fitts: We object to each separately and severally on the grounds stated heretofore.

Judge Allen: The objection is sustained separately and severally as to each offered exhibit.

Mr. S. D. L. Jackson: And may we have a separate and several exception?"

Counsel for complainants offered in evidence as Complainants' Exhibit 647 the compilation made by Mr. Wolfsohn of the power views of Franklin D. Roosevelt.

"Mr. Fitts: To which we object, incompetent, irrelevant and immaterial.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception."

Counsel for complainants offered in evidence as Complainants' Exhibit 648 the press release dated May 13, 1935 of The Electric Home & Farm Authority Inc.

"Mr. Fitts: It is a press release. To which we object.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception."

[fol. 847] Counsel for complainants then offered in evidence and the Court received as Complainants' Exhibit 649 the contract, produced by the witness Hobson, between the TVA and the Electric Home & Farm Authority, Inc., the old company, which, the witness Hobson testified in his deposition, the TVA was still carrying out with the new company.

"Mr. S. D. L. Jackson: As Mr. Hobson testified in his deposition, they were carrying on under the same contract. But he produced from his files a contract, the first three pages of which apparently start out, 'Under a contract made effective as of the First Day of July 1934'. It has some slight modification of that contract. It is still a contract. What it is, it is really a supplemental contract between the Electric Home & Farm Authority, Inc. and the Tennessee Valley Authority. Mr. Hobson testified that was the contract under which the successor company was carrying on with the Tennessee Valley Authority. Now, with the exception of the first three pages this is similar to the contract dated July 1, 1934, which was received in evidence this morning. The first three pages of which are a part of Complainants' Exhibit 649, are now offered as bearing upon that contract received this morning.

Judge Allen: It may be received."

Counsel for complainants offered in evidence as Complainants' Exhibits 650, 651, and 652 circulars prepared and issued by the new Electric Home & Farm Authority, and as Complainants' Exhibits 653, 654 and 655 circulars prepared and issued by the original Electric Home & Farm Authority.

"Mr. Fitts: We object to each of them upon the ground they are immaterial.

Judge Allen: Objection sustained to all six exhibits.

Mr. S. D. L. Jackson: May we have separate exceptions as to each?

Judge Allen: You may."

[fol. 848] Counsel for complainants offered in evidence as Complainants' Exhibit 656 the document dated June 14, 1937 produced by the witness Hobson, which lists the territories in which EH & FA financing facilities are available.

"Mr. Fitts: We object to that upon the ground it is immaterial.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception."

[fol. 849] Thereupon counsel for defendants read testimony from the cross examination of the deposition of the witness Hobson, as follows:

By Mr. Fly:

"Q. In response to a question of Mr. Jackson, particularly relating to Complainants' Exhibit 649, I believe you stated that is the contract with the Tennessee Valley Authority? I believe you stated also that you carried on business in cooperation with the private utilities?

A. Yes."

"Mr. S. D. L. Jackson: If it please the Court, in lieu of reading any portion of the witness Wolfsohn's deposition we have agreed upon a statement that may be made to the Court, just this:

That David E. Lilienthal was a member of the National Power Policy Committee from the date of its formation some time early in the year 1934 until some time early in the year 1937.

Mr. Fitts: We concede that fact is true."

Counsel for complainants then offered in evidence as Complainants' Exhibits 657 to 681, inclusive, twenty-five separate letters and memoranda passing between the TVA and the EH & FA, Inc., the original company.

"Mr. Fitts: We object to each of those upon the ground it is incompetent, and also immaterial and irrelevant.

Judge Allen: The objection is sustained to each and every one of the 25.

Mr. S. D. L. Jackson: May we have a separate exception?"

Counsel for complainants offered in evidence as Complainants' Exhibit 682 the list, prepared by EH & FA, of the dealers as of June 30, 1937, from whom EH & FA had purchased conditional sales contracts on which TVA was collecting monthly installments for the account of EH & FA.

"Mr. Fitts: We object to that upon the ground it is immaterial.

Judge Allen: The objection is sustained.

[fol. 850] Mr. S. D. L. Jackson: Now, may we have an exception. Now, with respect to the exhibits identified in the deposition of Mr. John M. Carmody, perhaps I can reach an agreement. The witness Carmody produced construction loan contracts and amendments thereto for certain cooperative associations.

Judge Martin: Pardon me, Mr. Jackson, I don't want to interrupt your trend of thought, but isn't there already in the record virtually the same thing in connection with the testimony of Carmack for instance, about the Middle Tennessee Cooperative, and also the witness who testified about the Alabama cooperative down there? Isn't it practically cumulative testimony?

Mr. Fitts: Some of them are in. The Middle Tennessee is in, and I think North Georgia is in.

Mr. S. D. L. Jackson: Is it?

Mr. Fitts: Yes."

It was then conceded by counsel for defendants to be a fact that Mr. Carmody produced construction loan contracts between REA and the following cooperatives: Clarke-Washington Electric Membership Corporation, Cullman County Electric Membership Corporation, North Georgia Electric Membership Corporation, Monroe County Electric Power

Association, Meigs County Electric Membership Corporation, Duck River Electric Membership Corporation, the Middle Tennessee Electric Membership Corporation, Southwest Tennessee Electric Membership Corporation, Gibson County Electric Membership Corporation, and Cherokee County Electric Membership Corporation.

"Mr. Fitts: Of course, in entering into that agreement we do not wish to be understood as conceding that the contracts between REA and these cooperatives, or the relationship between REA and these cooperatives has any bearing on the legal question that is here involved. It is just admitted as a fact."

Counsel for complainants offered in evidence as Complainants' Exhibit 683 the press release dated August 7, 1936, prepared and issued by the Rural Electrification Administration.

"Mr. Fitts: To which we object upon the grounds previously stated. This is a press release which just discussed the work of REA on various projects.
[fol. 851] Judge Allen: The objection is sustained.
Mr. Jackson: Exception."

Counsel for complainants offered in evidence as Complainants' Exhibit 684 a copy of the letter dated July 2, 1935 to George W. Kahle of REA from Harry L. Brown, Director of the Home Economics Department, State of Georgia, dealing with the North Georgia Electric Membership Corporation.

"Mr. Fitts: To which we object for all of the reasons, plus the fact that is between parties who are not interested in this suit and have nothing to do with it, and it relates to the Georgia situation furthermore.
Judge Allen: The objection is sustained.
Mr. Jackson: Exception."

Counsel for complainants offered in evidence as Complainants' Exhibit 685 a copy of the letter dated April 28, 1936 from the North Georgia Electric Membership Corporation over the signature of R. C. Pittman, to the Rural Electrification Administration, Washington, D. C., and which accompanied a report.

"Mr. Fitts: We object to it upon all of the grounds stated.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have our exception? And may I have an exception separately to the exclusion of each of the exhibits which the Court has excluded?"

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 116A a photostatic copy of the table on page 359 of the report on the Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 1937, which is Complainants' Exhibit 116.

Counsel for complainants offered in evidence as Complainants' Exhibit 686 a certified copy of the message of the Governor of Tennessee to the Legislature of the State of Tennessee on January 22, 1935.

[fol. 852] "Mr. Fly: Objection, as irrelevant.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception?"

Counsel for complainants offered in evidence as Complainants' Exhibit 687 a certified copy of the message of the Governor of Tennessee to the Legislature of Tennessee on April 8, 1935.

"Mr. Fitts: The same objection.

Judge Allen: The objection is sustained.

Mr. Jackson: Exception."

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibit 688 a certified copy of the certificate of incorporation issued by the State of Tennessee to the Middle Tennessee Electric Membership Corporation.

"Mr. S. D. L. Jackson: And may it be stipulated, Mr. Fly, that there are ten such electric membership corporations now organized in the state of Tennessee?

Mr. Fly: Mr. Jackson, we can agree that there are similar charters for these associations which you will list here. It might be stated that Franklin County and Stone's River and Madison County and West Tennessee, as I undertand it, have been merged with others of this same group, and are not operating independently.

Mr. S. D. L. Jackson: Subject to that statement Mr. Fly, may we enumerate here the ones that have had charters issued?

Mr. Fly: Yes.

Mr. S. D. L. Jackson: Charters have been issued to the Middle Tennessee Electric Membership Corporation, Franklin County Electric Membership Corporation, Stone's River Electric Membership Corporation, Gibson County Electric Membership Corporation, Madison County Electric Membership Corporation, West Tennessee Electric Membership Corporation, Southwest Tennessee Electric Membership Corporation, Bedford County Electric Membership Corporation, the name of which has been changed to Duck River Electric Membership Corporation, North Georgia Electric Membership Corporation, Lincoln County Electric Membership Corporation, Pickwick Electric Membership Corporation, Meigs County Electric Membership Corporation, and East Tennessee Electric Membership Corporation.

[fol. 853] Mr. Fly: That is correct. I don't think there will be any difficulty in the record as to which are in operation. The maps almost demonstrate that. At any rate, we can make it clear by the proof."

* * * * * * *

"Mr. S. D. L. Jackson: Now, at this time, if the Court please, we have certain excerpts from Exhibit K which was filed and made a part of the defendants' answer in this case that we want to introduce in evidence.

Mr. Fly: This is the record in the Ashwander case, I believe. I object to taking any extracts from the Ashwander record as evidence. I think that is going to the wrong place for it, your Honor. It is not the proper way to get it into the record. If we start that sort of thing I don't know where we will be going.

Mr. S. D. L. Jackson: I might say, if the Court please, here is the document that these gentlemen attached to and made a part of their answer. Now, certainly they cannot be heard to say before this Court, having put that document into this record, and the record in this case, that any portion of it that we desire to use cannot be used by us, and they are bound by the authenticity of the document. There just can't be any question about that.

Judge Martin: I see your point about estoppel on the part of the objector or adversary, but suppose that be conceded, still isn't it the function of the Court to pass upon the relevancy and the materiality and competency of a pleaded exhibit.

Judge Allen: And hasn't the Court made that exactly the ruling of which Judge Martin speaks with respect to the exhibits which were attached to the petition in this case, to the bill of complaint? The Court has repeatedly ruled that many of those exhibits were incompetent, irrelevant and immaterial.

Mr. Fly: Let me make clear, your Honor, the only purpose in attaching that was on the plea of res adjudicata, and that applied only to certain specific companies, and certainly has no application generally.

Judge Allen: What is the purpose of these minutes? Is this to get in certain discussions?

Mr. S. D. L. Jackson: No. Some of these extracts are here. They relate to the action of the Board of Directors with respect to public statements that should be made concerning the activities of the Authority. That is one. And perhaps we can save time if I may be permitted just to read these briefly. They are not long. TVA minutes of June 26, 1933.

[fol. 854] Judge Martin: We cannot intelligently rule on this without hearing at least what it is all about.

Mr. Fly: Yes, sir,

Judge Martin: If that is an authentic paper and the defendants admit that, could not we take it as an authentic paper? Then we could pass on its competency, materiality and relevancy.

Mr. Fly: I think it is probably accurate.

Judge Allen: The Court will permit Mr. Jackson to read it and we will rule on it.

Mr. S. D. L. Jackson: In this particular extract, of course, we are offering this from a part of the defendants' answer, offering for the Court's ruling:

'No employee of the Tennessee Valley Authority should make any statements affecting matters of future policies or activities, before such policies or activities have been brought before the Board and action taken.'

That is from the TVA minutes of June 26, 1933.

Mr. Fly: We further object on the ground it is irrelevant.

Mr. S. D. L. Jackson: The TVA minutes of August 25, 1933, relating to the same subject, top of page 533 and page 534—this is exhibit K—'It was decided that all publicity should issue through the publicity department, and that special publicity dealing with special phases of the work should have the approval of the Board before issue.'

Mr. Fly: I object to that as irrelevant.

Judge Allen: Objection sustained, excluded. You may have your exception.

Mr. S. D. L. Jackson: We note our exception to each.

Judge Allen: The Court considers the statement immaterial.

Mr. S. D. L. Jackson: It is not excluded by reason of the source from which it is offered.

Judge Allen: It is excluded on the ground it is immaterial.

Mr. S. D. L. Jackson: Complainants offer in evidence from exhibit K, attached to defendants' answer, the tables set out on page 419, being a Tennessee Valley Authority five year program, condensed statement. Does the Court care to see these?

[fol. 855] Mr. Fitts: We object to that on the ground it is immaterial, irrelevant and incompetent. It shows on its face it was a projected program for the future, and this record already shows what the present program is. That has been superseded by the unified plan of which these complainants have spoken so much, and it is apparent from the record already.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may.

Mr. S. D. L. Jackson: Complainants offer in evidence the extracts from the TVA minutes of July 11, 1933, appearing at pages 531 to 532 of exhibit K attached to defendants' answer. Would the Court prefer for me to offer several of these at once? I expect to offer extracts from minutes of subsequent meetings which appear here. Would the Court prefer me to offer these separately?

Judge Allen: They do not embody resolutions, but embody discussions.

Mr. S. D. L. Jackson: Some of them embody each.

Mr. Fitts: They were the very minutes before the Supreme Court in the Ashwander case. This is the record, discussing plans, policies and programs by the Board.

Mr. S. D. L. Jackson: I will offer these separately.

Mr. Fly: I want again to make it clear, this Ashwander record was attached to our separate answer as to the Alabama Power Company, alone. It was not brought into the record in this case as to the other 17 complainants. It was on the plea of res adjudicata, separate answer to that company alone.

Judge Allen: This is the minutes of July 11, 1932?

Mr. S. D. L. Jackson: Yes, your Honor, that is what I now offer.

Judge Allen: Sustain the objection.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may have an exception.

[fol. 856] Mr. S. D. L. Jackson: Complainants further offer in evidence the extract from the minutes of the meeting of the Board of Directors of the Tennessee Valley Authority of July 30, 1933, appearing at pages 532 and 533.

Mr. Fitts: To which we object upon the same grounds.

Mr. S. D. L. Jackson: Just a minute. I might say that the resolution which is shown there in the middle of page 533 is a resolution that you gentlemen furnished us, which is now in evidence.

Mr. Fitts: That is right. We left out the discussion.

Mr. S. D. L. Jackson: You left out all the other part of the minutes, whatever it is.

Judge Allen: Objection sustained. You may have your exception.

Mr. S. D. L. Jackson: Exception.

Judge Allen: How many more do you have?

Mr. S. D. L. Jackson: I have got about—I can shorten this a good deal. They are in similar meetings of October 16, and some in the meeting of December 16 are in. But, aside from that, I want to offer all the rest of the corporate minutes.

Judge Martin: Mr. Jackson, it is clear they are programs of their operations, discussions, all sui generis of that type which has previously been excluded by the Court. You want to preserve your record, is that correct?

Mr. S. D. L. Jackson: Not all of these. At that time they related to things the Authority was proposing to do, planned to do and policies they had adopted. And of course there is other evidence which shows those which have actually been carried out.

Mr. Fly: But, you have every minute reflecting the corporate action. These are discussions, considerations of the Board members.

Mr. S. D. L. Jackson: I cannot accept that; I have seen nothing except what you have turned over to me. I do not know that I have got everything.

Judge Martin: We are trying to admit words followed by action, put into effect by action. We have, therefore, admitted actions by the TVA but excluded discussions of programs about a lot which were not put into effect.

Mr. Fly: When we furnished you the resolutions we took [fol. 857] out the discussions.

Judge Allen: We will be here until midnight, gentlemen, unless we hurry along."

Counsel for complainants then separately offered in evidence as Complainants' Exhibits 700 to 721, inclusive, and 770 to 778, inclusive, each of the following excerpts from the corporate minutes, and certain other documents which appear in Exhibit K attached to defendants' answer:

Complainants' Exhibit 700, being a table entitled "Tennessee Valley Authority, 5-year program condensed statement," appearing on page 419 of Exhibit K;

Complainants' Exhibit 701, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated June 26, 1933, appearing on page 531 of Exhibit K;

Complainants' Exhibit 702, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated July 11, 1933, appearing on page 531 of Exhibit K;

Complainants' Exhibit 703, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated July 30, 1933, appearing on page 532 of Exhibit K;

Complainants' Exhibit 704, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated August 5, 1933, appearing on pages 533-534 of Exhibit K;

Complainants' Exhibit 705, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated September 18, 1933, appearing on page 534 of Exhibit K;

Complainants' Exhibit 706, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated September 21, 1933, appearing on page 535 of Exhibit K;

Complainants' Exhibit 707, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated September 29, 1933, appearing on page 539 of Exhibit K;

Complainants' Exhibit 708, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated October 13, 1933, appearing on pages 540 et seq. of Exhibit K;

Complainants' Exhibit 709, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated October 14, 1933, appearing on pages 547-548 of Exhibit K;

Complainants' Exhibit 710, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated October 24, 1933, appearing on pages 551-552 of Exhibit K;

[fol. 858] Complainants' Exhibit 711, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated October 24, 1933, appearing on pages 552 et seq. of Exhibit K;

Complainants' Exhibit 712, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated November 27, 1933, appearing on pages 554-555 of Exhibit K;

Complainants' Exhibit 713, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated December 16, 1933, appearing on page 557 of Exhibit K;

Complainants' Exhibit 714, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated January 19, 1934, appearing on page 557 of Exhibit K;

Complainants' Exhibit 715, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated March 30, 1934, appearing on pages 557 et seq. of Exhibit K;

Complainants' Exhibit 716, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated April 13, 1934, appearing on pages 563-564 of Exhibit K;

Complainants' Exhibit 717, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated June 30, 1934, appearing on pages 564 et seq. of Exhibit K;

Complainants' Exhibit 718, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated July 17, 1934, appearing on pages 566 et seq. of Exhibit K;

Complainants' Exhibit 719, being an excerpt from the minutes of the meeting of the TVA Board of Directors

dated August 7, 1934, appearing on pages 570-571 of Exhibit K;

Complainants' Exhibit 720, being an excerpt from the minutes of the meeting of the TVA Board of Directors dated September 18, 1934, appearing on pages 571 et seq. of Exhibit K;

Complainants' Exhibit 721, being a copy of a letter dated May 10, 1934, from Arthur E. Morgan, Chairman of the TVA Board of Directors, to President Roosevelt, appearing on pages 575 et seq. of Exhibit K;

Complainants' Exhibit 770, being a synopsis of a letter from Henry T. Hunt of PWA, to David Lilienthal, and the letter in reply thereto from Mr. Lilienthal to Mr. Hunt dated November 22, 1934, appearing on page 661 of Exhibit K;

Complainants' Exhibit 771, being a telegram dated June 19, 1934, from Mayor Farr of Tuscumbia to David Lilienthal, appearing on pages 662-663 of Exhibit K;

Complainants' Exhibit 772, being a telegram dated June 20, 1934, from David Lilienthal to Mayor Farr, appearing on page 663 of Exhibit K;

[fol. 859] Complainants' Exhibit 773, being correspondence between PWA and TVA concerning a PWA allotment to Hartselle, Alabama, appearing on page 664 of Exhibit K;

Complainants' Exhibit 774, being a budgetary statement "Estimate of appropriations, fiscal year ending June 30, 1936" and the justification thereof, appearing on pages 664 et seq. of Exhibit K;

Complainants' Exhibit 775, being the answers of TVA to certain interrogatories concerning its corporate functions, appearing on page 669 of Exhibit K;

Complainants' Exhibit 776, being the stipulation concerning the testimony of Harold L. Ickes, appearing on pages 683-684 of Exhibit K;

Complainants' Exhibit 777, being the opinion of the PWA Electric Power Board of Review concerning Decatur, Alabama, appearing on pages 686 et seq. of Exhibit K;

Complainants' Exhibit 778, being the order of the Public Works Administrator establishing the Electric Power Board of Review, appearing on page 691 of Exhibit K;

"Mr. Fly: I think these extracts are objectionable on other grounds heretofore stated.

And, unless there be some misunderstanding about the status of the Ashwander record in this case I want to point

out to the Court it is attached only to the separate answer to the separate complainant Alabama Power Company, as to the plea of res adjudicata to that company, based upon its participation in that case, on page 310 of the record (of this case in the Circuit Court of Appeals)."

REQUESTS FOR SUBPŒNAS DUCES TECUM

Counsel for complainants then requested the Court to issue a subpœna duces tecum (marked for identification as Complainants' Exhibit 689) requiring defendants to produce documents and records showing the number of employees in the Department of Electricity as of October 1, 1937, the headquarters or offices of each of said employees as of that date, and the names of any additional employees in the Department of Electricity earning compensation at the rate of $1500 per year or more who are now employed in that Department, other than those published in the annual report of the TVA for the fiscal year ending June 30, 1937.

"Judge Allen: The Court thinks that we might be able to supply that, the number of employees in the Department [fol. 860] of Electricity and consider the rest of the request rather immaterial, remote, and does not bear on the controversy. The Court will ask the Authority to find out and state in the record the number of employees.

Mr. Fly: We shall be glad to do that.

Mr. S. D. L. Jackson: May we also have their locations?

Mr. Fly: Why do you need the locations?

Mr. S. D. L. Jackson: To show you are spread out all over the country.

Mr. Fly: You have that in the annual report?

Judge Allen: The Court requests the Authority to give that information. Otherwise the application for this subpœna is refused in other particulars. You may have your exception.

Mr. S. D. L. Jackson: Very well."

Counsel for complainants then requested the Court to issue a subpœna duces tecum (marked for identification as Complainants' Exhibit 690) requiring defendants to produce a copy of the letter dated on or before October 15, 1934 from Mr. Lilienthal of the TVA to Mayor Overton of

Memphis, relating to the possible purchase by TVA of the steam plant of the Memphis Power & Light Company.

"Mr. Fly: It has never resulted in any action of any sort.

Mr. S. D. L. Jackson: If we are going to get into facts here as to what happened I will be glad to recite the circumstances under which I think this letter was sent.

Judge Allen: What are the facts?

Mr. S. D. L. Jackson: Of course the date is quite illuminating, October 15, 1934. I might state about September 19, 1934, TVA sent a letter to the officials of the City of Memphis, advising them in effect that the Memphis market was sufficient so that the TVA would construct a transmission line to Memphis within a short time. Then a short time later, at or about the 15th of October, 1934, they advised the city officials of Memphis that under certain circumstances, to-wit, if they began supplying the City of Memphis with power that they would be willing to consider the purchase of the steam plant of the Memphis Power & Light Company and use it for stand-by purposes.

[fol. 861] The election in the City of Memphis had been called shortly after the receipt of the letter of September 19th, and shortly before this letter which we are now subpoenaing and the election, I believe, was held in November 1934. Both these letters preceded the election a short time.

Mr. Fly: The director writes a letter to Mayor Overton. No transaction took place. It is not urged here any transaction took place.

Mr. S. D. L. Jackson: If there is any doubt about it, we will state it is our position in this case, of course, that the TVA has not any authority to buy the steam plant.

Mr. Fitts: Does that have any possible bearing on this case?

Mr. S. D. L. Jackson: I think it does, just before the election.

Mr. Fitts: Oh, it is the election you are interested in.

Mr. S. D. L. Jackson: That is one thing. I might state further, if the Court please, it is further our position that the TVA has not any right to build lines or own property, anything else over in Memphis. Those are the reasons we are asking for the subpoena.

Judge Allen: The application for leave to issue subpoena duces tecum as to this letter is denied. The Court feels that where no transaction has resulted, that correspondence

necessarily has no bearing on the immediate issues in this case.

Mr. S. D. L. Jackson: May we have an exception to the Court's ruling?

Judge Allen: Yes."

Counsel for complainants then requested the Court to issue seven additional subpoenas duces tecum (marked for identification as Complainants' Exhibits 691 to 697, inclusive) requiring defendants to produce various documents in their possession.

"Mr. S. D. L. Jackson: Each of these subpoenas duces tecum is a breakdown, separating rather distinctly by subject matter documents which were described in our original subpoena duces tecum. I don't believe there is any new document there. These others which we had, there was some difficulty about.

[fol. 861a] Judge Martin: Mr. Jackson, you used virtually the same descriptive language with respect to each that you did in the Spreadeagle or broad subpoena?

Mr. S. D. L. Jackson: Yes.

Judge Martin: These are simply collating the pertinent subjects.

Mr. S. D. L. Jackson: Yes.

Judge Martin: Logically arranged.

[fol. 862] Mr. S. D. L. Jackson: If the Court will recall, in the original subpoena that we filed, we arranged a great mass of correspondence largely in chronological order, have broken all of that down and collated it by subjects.

Judge Martin: It is collated matter.

Mr. S. D. L. Jackson: It is collated matter. Each of those subpoenas relates to a rather narrow subject now.

Judge Allen: The Court has in its hands seven applications for subpoena duces tecum. The court denies each of these applications and you may have your exception severally and separately.

Mr. S. D. L. Jackson: May we have an exception, separate exception to the denial of each."

Counsel for complainants then offered in evidence the following excerpts from Complainants' Exhibit 365:

Beginning on p. 379 with the question of Mr. May, "I have a memorandum here", and extending to the end of the fine

print at the top of p. 380; the last question and answer on p. 380 and the first two questions and answers on p. 381.

The Court excluded the excerpts as such. Counsel for complainants excepted to the Court's ruling and without waiving the benefit of their exception had copied into the record for the attention of the Court as part of the whole document the excerpts excluded as excerpts.

"Mr. S. D. L. Jackson: May it be stipulated, Mr. Fly, that the Electric Home & Farm Authority, the District of Columbia Corporation, succeeded to all the property and all the rights and liabilities of the original Delaware Corporation, Electric Home & Farm Authority, Inc.?

Mr. Fly: That is correct."

Counsel for complainants and defendants then argued the motion, renewed by complainants in accordance with the Court's ruling at the opening of the trial, to take the deposition of Harold L. Ickes.

[fol. 863] RULINGS ON CERTAIN EVIDENCE, ETC.

"Judge Allen: The application for leave to take the deposition of Secretary Harold L. Ickes is denied. In addition to the reasons heretofore stated for refusing this application, the Court considers that the testimony proposed to be produced is irrelevant and immaterial to the issues presented herein under the law applicable to the case.

The Court excludes all exhibits offered from exhibit K, attached to the answer herein, (Tennessee Valley Authority vs. Ashwander, page 419, 2691, in the Record of the Circuit Court of Appeals of the Fifth Circuit,) with the exception of the letter from Dr. Arthur E. Morgan to President Roosevelt, dated May 10, 1934. This exhibit is admitted upon the ground that it constitutes a report from the Chairman of the TVA Board to the President. Complainants' Exhibit 701, dated June 26, 1933, is also admitted. Whatever of the proffered evidence in the other exhibits as may be relevant, the Court considers to be cumulative. The proffered evidence which is not cumulative in character the Court considers to be immaterial and irrelevant under the law applicable to this case.

The Court has examined and considered each and all of the press releases offered in evidence by the complainants. Complainants strenuously contend that these numerous items, exhibits 779 to 902 are relevant and material. Obviously, questions of relevancy and materiality cannot be considered and properly decided in vacuuo. Certain classes of evidence may be relevant and material in one case, and totally irrelevant and immaterial in another case. Thus a decision which holds that press releases are competent and material upon the question of notice has no bearing whatever here, where notice is not an issue.

The Court has been more than liberal in the admission of doubtful evidence. We do not, however, consider that all facts pleaded and proven, will necessarily form the basis of proper findings of fact. Bearing in mind the decisions cited by complainants, we hold that these decisions do not establish materiality and relevancy of this proffered evidence under the issues of this case.

The matter embodied in the releases falls generally into three classes. Assuming its competency, it presents evidence (1) as to specific rates, (2) as to operations and activities of the TVA in the generation, transmission and sale of electric power, (3) as to statements of plans and programs of the directors of the Authority.

In so far as the releases embody evidence of rates they are inadmissible under the previous ruling of the Court. [fol. 864] The defendants do not controvert the fact that the TVA has actively promoted sales in territory served by complainants of electric power generated at these various dams, and has done all lawful acts necessary and incident to that purpose. The ultimate facts on this subject which might possibly be established by these pres. releases therefore require no further proof. Upon this phase of the case the releases are purely cumulative.

In so far as the releases embody statements of purpose, plans, program, pronouncement, desire and motive of the directors, they are irrelevant and immaterial. Exhibits 779 to 902 are therefore excluded.

Exhibit 721 is admitted upon the ground that it constitutes a report from the Chairman of the TVA Board to the President.

Complainants may have exceptions to all these various rulings.

Mr. S. D. L. Jackson: A separate exception to the exclusion of each of the exhibits.

Mr. Fly. If your Honor please, we offer Defendants' Exhibit 29, the resolution rescinding the so-called statement of the power policy.

Mr. S. D. L. Jackson: Complainants object to it for numerous reasons. In the first place it is a self-serving declaration.

Judge Allen: Do you make any objection upon the ground of authenticity?

Mr. S. D. L. Jackson: No.

Judge Allen: You are conceding the authenticity of this exhibit?

Mr. S. D. L. Jackson: I have in my hand what purports to be a certified copy. I do think, if the Court please, of course the resolution of the Board of Directors original adopting the power policy was never turned over to us. Dr. Morgan testified before Congress that it was so adopted. Consequently I do not feel like conceding too much as to what the defendants' records truly show, without an opportunity of examining the record myself. Yes, and we have no means of knowing that this is full and complete.

Mr. Fly. We will put someone on the stand.

Mr. S. D. L. Jackson: And as stated, it certainly can be nothing more than a self serving declaration.

[fols. 865-890] Mr. Fly: It is action by the Board of Directors.

Mr. S. D. L. Jackson: It is still self serving.

Mr. Fly: It does not make it inadmissible.

Judge Allen: Objection overruled. It will be received."

Counsel for complainants offered in evidence and the Court received as Complainants' Exhibits 698 and 699 two resolutions of the Board of Directors of TVA as follows:

Complainants' Exhibit 698, being a resolution dated August 21, 1936, concerning pool level elevations at Chickamauga Dam;

Complainants' Exhibit 699, being a resolution dated November 18, 1933, authorizing Mr. Lilienthal to continue cooperation with the manufacturers of electrical appliances.

Thereupon complainants rested.

[fol. 891] **Evidence for the Defendants**

COLONEL LEWIS H. WATKINS was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

My name is Colonel Lewis H. Watkins, Corps of Engineers, United States Army. I am 55 years old and now reside in Washington, D. C. I am a commissioned officer in the Corps of Engineers of the United States Army, at present detailed on the War Department General Staff. My duties are chief of the Geographic Branch of the Military Intelligence Division. I am a graduate of the United States Military Academy in 1907; I graduated from the Army Engineers' School at Washington Barracks in 1913 and from the Army Field Engineers' School at Fort Leavenworth in 1916; from the Army War College in 1925, and from the Naval War College in 1926. I have had 30 years service in the Corps of Engineers.

I was in charge of the United States District Engineer's office at Chattanooga from 1926 until 1931, and also at Nashville, Tennessee and Florence, Alabama, in addition to my duties at Chattanooga. During that period I prepared the report on the survey of the Tennessee River printed in House Document 328.

In Chattanooga I had charge of the construction, operation and maintenance of the existing projects for navigation on both the Tennessee and the Cumberland Rivers. I had charge of the investigation and reports upon application for permits for power projects under the Federal Water Power Act in both the Tennessee and Cumberland Rivers. I had charge of the Wilson Dam project and of the survey of the Tennessee River and its tributaries leading up to House Document 328.

The Acts of Congress covering the survey of the Tennessee River and its tributaries were the Acts of September [fol. 892] 22, 1922, March 3, 1925, January 21, 1927, and May 15, 1928. The Chief of Engineers furnished me a copy of the Acts for compliance in carrying out the survey and issued similar instructions to the other District Engineers. In respect to the Act of 1928, all District Engineers and the Division Engineer were instructed to furnish data to the

President of the Mississippi River Commission for making his estimates and plans on the lower Mississippi. In response to those instructions I took charge of the survey of the Tennessee River which had been begun in 1922 and I submitted a partial report on the survey in December 1927 and a final and complete report on the survey in December 1928. This report contained a plan for guide in the development of the river, both present and future, and a project for the improvement of the main stream from its mouth to Knoxville. This report was approved by the Division Engineer and by the President of the Mississippi River Commission.

My report was approved by the Division Engineer and by the President of the Mississippi River Commission, except that they recommended that the improvement for the present be limited from the mouth to Chattanooga instead of all the way up. It was approved by the Rivers and Harbors Board and by the Chief of Engineers and forwarded by the Secretary of War to Congress.

"Mr. R. T. Jackson: Now may I move to strike all that the witness has just said stating what was done with reference to approval, because in the first place it is not exactly right, and then in the second place what are the facts, or the best evidence, is the document itself, which is before the Court, and which states just what those officers did by way of approval.

Judge Allen: The objection is overruled, Mr. Jackson. The Court bears in mind that the Court was very liberal in permitting questions that were asked of your expert witnesses and permitting answers that they made. The Court has tried to get light from those witnesses, and from time to time, if the Court overrules a technical objection it feels that it treated your witnesses in exactly the same way. [fol. 893] Mr. R. T. Jackson: May we have our exception, and in order that I might not——

Judge Allen: You may have your exception.

Mr. R. T. Jackson: —be misunderstood by the Court, let me say this, so far as I know all I have asked our experts about was to state their understanding of what certain projects were."

The Secretary of War approved the report and forwarded it to Congress on March 24, 1930. Congress adopted

the project in 1930 for the improvement of the river from its mouth to Knoxville.

I studied the Tennessee River system for five years and am familiar with the dams constructed and under construction by the TVA and the projects recommended in the report of March 31, 1936. From my studies of the Tennessee River during the survey, I am very familiar with the purposes governing the layout and design of each project and of the part that it plays in the improvement of the river as a whole. I have personally inspected the dams which have been constructed or are under construction now by the TVA. On September 17, 1937, I received orders from the Secretary of War to proceed to Knoxville on temporary duty, and with an Engineer of the TVA I inspected the Chickamauga project and the Guntersville project on September 19th, and the Wheeler project and the Pickwick Landing project on September 20th. Returning to Knoxville by airplane, I observed the sites of the Watts Bar and Coulter Shoals projects, and I inspected Norris Dam on the 21st.

I read the Unified Report to Congress of March 31, 1936, setting out the projects recommended by the TVA. The report gives a very clear explanation of the work being done and the purpose and design and operation of the various projects.

In my opinion, the projects set forth by the TVA in its unified report have a substantial advantage for navigation over the low dams set forth in the report in House Document 328, in four important respects. In the first place, [fol. 894] the low dams have 32 locks, while the high dams which cover the same area have only 7. There is considerable delay in passing through these locks so much so that boats travelling in the high dam system can travel at about 12 per cent higher speed than in the low dam system. In the second place, boats with the same power can travel much faster in deep water than in shallow water. The low dam system is much shallower throughout than the high dam system, and that is especially important in connection with the upper end of the pool. There are 32 of those in the low dam plan, whereas there are only 7 in the high dam plan. In none of the 32 have you the advantages of increased depth due to stream regulation, so that the 7 pools of the high dam system are more advantageous. Where the pool

is very shallow, as it becomes in the upper end of the pools, it greatly restricts or impedes the velocity there, so that I roughly estimate that boats in the high dam system can travel approximately 15 per cent faster than in the low dam system. If you combine this with the delay caused by the locks, we will find that the speed of the boats in the high dam system due to those two factors alone, that is, delay due to locks and the better speed due to the deeper water, you have the boats in the high dam system travelling about 27 per cent faster than in the low dams. That is very important when you consider the cost of transportation, because it means strictly that much greater saving in transportation.

In addition to those complaints in the low dam system, you have no flood control. During all high water periods the boats carrying commerce are delayed and two per cent of the time they are actually stopped. Furthermore, you require boats of more power and have six months of the year with appreciable velocities in the low dam system which has the effect of taking greater time and of destroying the dependability of the service. Boats can not keep their [fol. 895] schedule as they should, and are delayed. In addition to that, you have the great fluctuation in the stages at the terminals for loading and unloading, as much as 40 or 50 feet. That is with low dams as compared with the high. All the terminals are located on the water front where they are exposed to damage by flood, and not only the terminals but the properties and the cost of the terminals are much greater.

While in the high dam system, with effective flood control, the long pools are more or less like lakes, so that so far as velocities are concerned the only places where there is any velocity that will interfere at all is in the upper end of the pool, and with the increased stream flow you have greater depths, so that interference is not so great as in the narrow, crooked channel. In the low dam pools, without flood control, they do become handicaps to navigation, especially in the part where the channels are crooked and narrow in the upper end, with cross-currents, etc. There is an increase in these high stages for about 6 months of the year, and of course there are floods occurring throughout the year.

The flood control of the TVA's system and the greater ease of loading and unloading will materially reduce the cost of transportation over the low dam system and avoid flood damage.

As to whether in my opinion navigation would be more seriously handicapped by wind and wave action in the low dam pools or the high dam pools, I will say that when you have waves, you have winds, and so the two always go together. In the low dam system, especially in the upper ends, the channel is generally narrow and it is not as wide as the river itself—it is only a part of the river. It is crooked and the wind will blow it out of this channel, if it becomes large enough to create waves of any extent. It is my opinion that the winds will interfere with the movement of commerce in the low dam system much more than the waves in the high dam system. In my judgment the low dams do not have any advantage for navigation, as compared to the TVA's high dam projects.

[fol. 896] "Q. Please state if you know whether the Army Engineers have constructed and recommended high lift navigation and power dams as a substitution for other low lift dams on other inland waterways?

Mr. R. T. Jackson: I object to that question. An expert witness may qualify and express an opinion as to the subject before the Court, but he cannot go further and testify as to other projects. That is so on direct, while our rights are not limited as to cross examination. If we want to, we can cross examine about things of that character and take chances on what he says.

Judge Allen: He may answer.

Mr. R. T. Jackson: May we have an exception?

Judge Allen: You may have your exception.

Mr. R. T. Jackson: And I assume we will have ample opportunity to rebut whatever he says?

Judge Allen: The Court bears in mind that the good faith of the Authority has been challenged by the complainants. Overrule the objection. You may answer.

A. Yes, in general the Corps of Engineers is replacing the low dam systems with high dams, and in a number of those where the opportunity affords it, they are providing for power.

Mr. R. T. Jackson: I move to strike out the statement also on the ground the witness is not qualified to pass upon what the Corps of Engineers' policy is.

Judge Allen: Objection overruled. The answer may stand."

In my opinion, the waterway system as proposed to be developed by the TVA projects would give a high standard of efficiency for the purpose of commercial navigation. The low dam plan would in no way contribute to flood control on the Tennessee and the Mississippi. In fact, on the lower part of the Tennessee and Ohio and Mississippi, it would slightly increase the floods. In my opinion, the projects necessary for the most effective improvement of the main stream include the high dams on the main stream which the TVA is constructing and reservoirs on the major tributaries and surcharge storage on all the high dams. I am referring to the type of projects being constructed by the TVA on the main stream and on its tributaries.

[fol. 897] In my opinion the projects which are necessary for the most effective improvement of the tributaries for navigation and flood control are the same reservoirs which I have mentioned for the improvement of the main stream, and eventually when navigation demands it, a series of high dams covering the navigable portions of the tributaries. That includes the present dams constructed or under construction—that is, Norris and Hiwassee on the tributaries. The reservoir projects are storage dams, while high dams, like those on the Tennessee are for navigation. But we had provided surcharge storage on those also, and you would do the same thing on the tributaries, perhaps not so much.

The projects on the Tennessee River should be laid out for improving the river for navigation so that there is a continuous series of overlapping projects. Where there is a gap between projects, or where the overlap is not sufficient for navigation, it creates an obstruction to navigation which would require the construction of a low dam to carry navigation through there, and such low dams are expensive, in the first place, and as I have already explained, for the low dams of the Tennessee, they are not so satisfactory for navigation because of delays and interference.

The surcharge storage in the main stream dams is located on the dam throughout the length. It is close, therefore, to the point which you desire to provide protection for or re-

duce the flood. With it you are able to eliminate the peak of the flood all along the main stream, all the way down. It will also make more effective the storage held out by the reservoir projects on the head waters. In the third place, it makes it possible to assist materially in reducing the crest of the flow on the lower Ohio and also the Mississippi.

[fol. 898] Reservoirs on the tributaries of the Tennessee are needed for flood control on the Tennessee and Mississippi basins. The storage on the main stream is insufficient for effective flood control, even on the main stream itself, so that reservoirs on the tributaries are essential. The tributary reservoirs also have an effect on the effectiveness of the main stream reservoirs for flood purposes. The water that they hold out will make more effective the action of the storage on each of the high dams on the main stream, in eliminating the peak.

In my opinion, the provision of surcharge storage to be provided in the dams recommended by the TVA's Unified Reports would be preferable from the standpoint of flood control to the so-called valley storage in the natural river. The natural storage is uncontrolled. It simply goes down the river. While it does help to prevent the flood waters from increasing the floods so rapidly on the lower river, it is absolutely uncontrolled. On the other hand, the surcharge storage on the high dams, while if they were not so constructed, the high dams might increase floods below, by providing this it prevents that increase, and it proves a very effective means for the controlling of these flood waters.

In general, the sites for which the power companies applied for permits on the main stream of the Tennessee River did not provide for continuous overlapping pools sufficient for navigation on the river. In a number of cases they left gaps. For example, there would have been one at Pickwick Landing and another at Chattanooga. Some of their plans, although not applied for, provided for leaving in Widows Bar. In that connection I might state in general the power companies desired to pick out the most favorable site for a project, rather than to make the series continuous and overlapping. Furthermore, they did not desire to have them overlap at all, because they would cause a loss of head.

[fol. 899] "Q. Did any of those companies offer to provide reserve flood control storage?

Mr. R. T. Jackson: I object. The question is irrelevant and immaterial.

Judge Allen: He may answer.

Mr. R. T. Jackson: We take an exception.

A. Of the 41 projects for which 12 different power companies had applied for, and were awaiting action when the report was submitted, none of them provided for surcharge storage."

I think most of those 41 projects were submitted by the complainants. There was only one of those companies that applied for storage of appreciable quantity, of large capacity, and that company endeavored to have the storage of large capacity constructed by the Federal Government.

Cross-examination:

All these applications for projects by private companies on the Tennessee and its tributaries were for construction by their own funds. In none of these projects did they supply flood control. None of these companies, except one, provided for an appreciable storage. Some did not provide for any storage at all. Others that did not provide for it, except the one, asked for only a small amount of storage for their own local use. In other words, it was not storage to assist in the development of the resources of the river as a whole. It was just for local use.

Direction examination continued:

The Act adopted by Congress for the improvement of the main stream of the Tennessee River from its mouth to Knoxville provided for cooperation by the power companies with the Federal Government in carrying out those projects. I refer to the Rivers and Harbors Act of 1930, adopting the project for the improvement of the river and not to the TVA. [fol. 900] In this statute the power companies were required to take out an application under the Federal Water Power Act for the project. While some of them had applications covering parts of the river, no action was taken on it and the District Engineer and the Division Engineer took up the subject with all the power companies interested, and while they expressed a willingness to coöperate, they offered no effective means. That was the situation when the

TVA was passed. At the time the TVA Act was passed, none of the power companies had undertaken construction of any of these proposed projects.

In my opinion, it is reasonable to provide a slack water pool below the minimum draw-down level for navigation at the storage dams on the navigable tributaries. It is the only reasonable thing to do. My report on the survey provided for a maximum draw-down for all reservoir projects on the navigable portions of the tributaries, in order not only to provide for local navigation in the pool of the dam, and for passing loose logs through the pool of the dam, but also for prospective future development for carrying a 6 to a 9-foot waterway through the pool. The reservoir storage in the lower part of the dam is very small, and it does not produce much from the available storage, if you set a maximum draw-down. Most of the storage is in the upper part of the pool, so by prescribing a maximum draw-down you make it practicable to provide for navigation in the pool and at the same time provide for storage from the reservoir proper. By that means you have both navigation and you have storage.

Examination by the Court:

When you build a reservoir project and collect storage in it, the water comes up to or near the top. Then, when you draw the water out for increasing the flow below, that lowers the elevation of the water in the dam down to a point for a [fol. 901] maximum draw-down. That is what the object in prescribing maximum draw-down is, to prevent it from being drawn all the way down and making navigation impractical. Draw-down is simply drawing off water in the pool. Minimum draw-down level is the same thing as maximum draw-down. The idea is the extent to which you can draw it without interfering with the navigation program.

Direct examination continued:

The so-called dead storage, so called by Mr. Kurtz, referring to the Norris Reservoir, provides the navigation that I have just mentioned. It is very useful for that purpose. In my opinion, the fluctuations in levels resulting from the operation of Norris Dam would not constitute a serious impediment to the use of the channel above the dam for navigation purposes, for the simple reason that the fluctuations in the elevation of the pool are very slow and

gradual throughout the year. Whereas, you take fluctuations in the main stream with the low dam system, they rise and fall very rapidly. In the pool of the dam you could very readily provide facilities for extending down a little further each day, and each day and each day. You would not have to change this position throughout the whole day. You simply move the facilities so that you could unload or unload on the lower depths, whereas on the main stream, without flood control, those variations in height would vary greatly throughout and seriously interfere with the loading and unloading.

On the non-navigable streams, the lower part of the storage of the reservoir is not very valuable for reservoir storage. On the other hand some provision should be made for silt to prevent it from interfering with your operations. I examined all dams and their pools in the basin when I was in charge of the survey and it was observed from those [fol. 902] examinations that the upper ends of the pools were filling up, and gradually filling up down toward the dam, up to a height below the maximum draw-down, about equal to the old, former channel, so that this space on the non-navigable tributaries where you did not even need to prevent it being drawn down for navigation, it can be utilized, and I think it should be set aside for that purpose, in other words not attempt to pull the reservoirs all the way down, unless there is urgent need for it. That would be true of both the reservoir types on the navigable and non-navigable streams. On the navigable type you must prescribe a maximum draw-down for navigation. In the non-navigable type it is useful to keep that lower part of the reservoir which is not of much value for storage purposes, for collecting silt and preventing it from interfering with the project. That storage would be useful for silt purposes on the navigable tributary portion also.

In my opinion, there is a serious difficulty in operating a flood reservoir by keeping it empty in advance of floods and emptying it after each. That is the normal operation for a flood control reservoir, where it is desired to obtain flood protection immediately below the dam. However, in a stream like that on the Tennessee River and its tributaries, where such reservoirs are operated on the head-waters, the release of that flood control water immediately after the flood endangers floods on the lower river, so that you do

have difficulty in releasing it without injury below the dam.

In a system like the Tennessee which is some 600 miles long, and with the additional length down the Ohio and Mississippi, your reservoir storage on the headwaters should be operated so that they will collect flood waters during the season of major floods on the Tennessee and Mississippi, which extends from about the middle of December [fol. 903] to the middle of May. And they should be released during the low flow season when there is no danger of increasing the floods below. This provides the only reliable means of providing flood control for the lower Tennessee and for further flood control on the lower Ohio and Mississippi. It is then feasible to release the flood waters collected during this flood season, during low water season to build up navigable depths below. It can be utilized then for increasing the low stream flow for the benefit of navigation and other uses—the conservation of power.

"Q. Will you state what method of operation in your opinion should be adopted for the Authority's main stream dams?

Mr. R. T. Jackson: Well, I object to that question. There is no showing that what this witness says will make any difference. They have not provided any method of operation.

Mr. Fitts: We expect to.

Mr. R. T. Jackson: It seems to be a little out of order.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: You mean you are just going to make the plans in the course of the trial, are you?

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Exception.

A. The surcharge storage on each of the dams along the main stream should be utilized to eliminate the peak of the flood as it comes down, and make more effective the reservoir storage. For that purpose it should be lowered so that it will be ready to take care of and eliminate the peak as it arrives, and should be emptied afterwards so that it can catch the next peak which comes along. Now in this case I explained how reservoir storage endangers floods. In this case they are distributed all along the stream where they did effectively eliminate it without endangering the river below."

[fol. 904] With the long series of projects and the flood gates in each and the surcharge storage in each, you have very effective control over the flow of waters throughout the length of the main stream, so that it is practicable to let out the water ahead of a peak, if it were not already drawn down, and without failure utilize the storage on the Tennessee to assist in reducing the crest of the flood on the lower Ohio and lower Mississippi.

In my opinion, the projects set forth in the TVA's Unified Report of March 1936 comply with the standards which I recommended as most effective for the development of the Tennessee River and its tributaries for the combined purposes of improving the navigation on the Tennessee River and controlling the destructive floods in the Tennessee and Mississippi River valleys. These projects and the method of operation outlined in the report are consistent with the development of a substantial amount of firm power. Having held out the water during the season of major floods, it can be utilized for increasing the low flow for the benefit both of navigation and for developing firm power.

Reservoir projects on the tributaries such as Norris and Hiwassee, and surcharge storage on all main stream projects play an important part in the most effective improvement of the Tennessee River and its tributaries for navigation and flood control, and further flood control of the lower Mississippi. They are essential for that purpose, in order to assist in the control of floods, not only on the main stream, but also to assist in reduction of floods on the lower Ohio and Mississippi.

Reservoir projects on tributaries such as Norris and Hiwassee, and the surcharge storage on the main stream dams will provide a substantial increase in the navigable depth of the main stream of the Tennessee before the dams [fol. 905] in the main stream of the Tennessee are completed. They will materially increase the navigable depth in the upper part of the main stream and on the Mississippi, that will be of substantial benefit to navigation. Such tributary reservoirs and surcharge storage will materially increase the navigable depth in the upper end of the pools of the high dams after they are constructed. This is the critical part of the pool in any canalized river improvement, and a little increase there does make a substantial benefit to navigation.

In my opinion, such reservoir, and surcharge storage will provide very effective flood control on the Tennessee River and its tributaries. And more or less effective flood control on the tributaries, and in some cases, the report indicated that the storage capacity of the reservoirs was not great enough to completely reduce all floods on tributaries, but in general they did.

"Mr. R. T. Jackson: As a matter of information, will you state whether you are referring to all reservoirs in the TVA Unified Plan or in the 1930 report?

The Witness: I am referring to the reservoirs on the tributaries as indicated by counsel's question.

Mr. R. T. Jackson: Which is it, the report of 1928, or the TVA Report?

The Witness: Those on the tributaries, the TVA are constructing those projects.

Mr. R. T. Jackson: Might I have definite information whether the Colonel refers to the reservoirs on the tributaries included in his report of 1928 or the TVA Unified Plan.

The Witness: Answering your question, the TVA projects are not enough yet to bring about the protection throughout the whole stream. I mean complete protection.

Mr. R. T. Jackson: Your reference is to the 1928 report?

Mr. Fly: Oh, let us not go into so much detail as to what his statement is based upon.

Judge Allen: You may proceed. The Colonel has answered."

[fol. 906] I did not mean to testify that Norris and Hiwassee would provide complete flood protection on the Tennessee, but I say that type of project is the very type that is necessary for it. It is my testimony that they will afford a substantial control of flood protection. From my studies in the report of the flood survey on the Tennessee River, especially when Norris Dam alone is constructed, I know that they will make a very substantial reduction in flood heights throughout the length of the main stream. Norris and Hiwassee reservoirs and the surcharge storage should materially assist in the reduction of the flood crest on the lower Ohio and the Mississippi. The function of the surcharge storage being erected on each of the dams along the main stream is to eliminate the crest of the flood as it goes

down stream and make more effective the storage held up by reservoirs on the tributaries.

I have examined and considered the proposed system of detention basins, as outlined in the testimony in this case of Mr. Kurtz. In my opinion, Mr. Kurtz' system would provide for local flood control immediately below the dams only. It would not provide reliable flood control on the lower Tennessee and on the Mississippi, and it would not even provide the most effective flood control for Chattanooga. In that connection I may say that a detention reservoir that is placed on the site of a valuable reservoir like that of Norris or Hiwassee precludes its use for storage reservoirs necessary for the development of the resources of the waterway for the benefit of navigation, flood control and other public beneficial uses. Those useful and desirable storage sites are very limited in number, and if we utilize them for detention reservoirs, it does not provide effective flood control for the river and further flood control on the lower Ohio and Mississippi, and we will not be able to secure the necessary reservoir storage for that purpose.

[fol. 907] In order that we may secure and develop the resources of the river and its tributaries to their maximum usefulness, it is essential that we control the floods and regulate the flow of the stream. For this purpose it is essential that we have the reservoir sites and that they be developed for reservoir projects instead of detention reservoirs. If so developed, as Mr. Kurtz recommended, they would greatly interfere with the development of the resources. In the second place, if we build low dams on the main stream, as advocated by the claimants, we would prevent the use of dams on that stream for flood control on the main stream itself, and for further flood control on the Tennessee and the lower Mississippi. The two combined would practically eliminate the bringing about of anything like the full development of the resources of the waterway and the great benefits which may be derived therefrom.

I had personal charge of the study of the Tennessee River. I personally laid out, designed and proposed a method of construction and operation of all the projects shown in House Document 328. With the assistance of a large number of good engineers I personally laid out and proposed the design and the proposed method of operation of each project. Those projects shown in my report on the Tennes-

see River were not primarily power projects. They were primarily for navigation and flood control, as I was specifically directed in the Acts of Congress governing the survey.

"Mr. R. T. Jackson: I move to strike out he was specifically directed in the Acts of Congress. It speaks for itself.

The Witness: Those were the instructions that I was carrying out.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Exception noted, please."

[fol. 908] The projects now being constructed by the TVA are substantially the same as those recommended in the report on the survey. The report of the survey did not make detailed core borings for the various sites. We did not have the funds, so the lay-out was tentative, and it was contemplated that when they were actually built, detailed core borings would be made, and that project still would be laid out and designed to meet the situation when they were built. Now, the TVA has gone ahead and made the detailed investigations, and they have gone ahead and constructed the dams as it was contemplated would be done. After having studied and personally inspected the work being done by the TVA it is my opinion that the layout, design and general method of operation now proposed for the projects of the TVA conform to the best engineering methods of securing substantial navigation improvement and flood control.

The chart, (offered in evidence as Defendants' Exhibit 30), shows the information collected on the commerce on the inland waterways of the United States from 1919 to 1934. I requested the Chief of Engineers for data on the inland waterways of the United States. I explained the information I desired, and he had this information compiled by the statistics section of the River and Harbor Board, and furnished me for this purpose. It is based on data contained in the annual reports of the Chief of Engineers, which are public documents. In my opinion, this chart is an accurate representation of the information that it purports to convey. It is compiled by our most reliable source for furnishing information of this kind.

"Mr. Fly: We offer this chart in evidence as defendants' exhibit No. 30.

Mr. R. T. Jackson: We object to it upon the ground it is

outside of the scope of any issues in this case, the question of all inland waterway traffic in the United States.
[fol. 909] Judge Allen: Objection overruled. The exhibit will be received. You may have your exception."

This chart shows that between the years 1919 and 1929, commerce on our inland waterways increased from about 148,000,000 tons to approximately 280,000,000 tons. In other words, within the ten-year period it had increased approximately 100 per cent. The same thing applies to the commerce on the Mississippi River and its tributaries. It increased during this same period from about 38,000,000 tons in 1919 to approximately 80,000,000 tons, an increase of over 100 per cent. While there was an appreciable drop during the years 1919 to 1932, due to the depression, commerce on our inland waterways again began to increase before the depression was over, and it is increasing now at a more rapid rate than it increased in the period 1919 to 1929. While due to the depression the increase in commerce was set back about ten years, in 1932, in 1936 due to additional data which the Chief has given me, it had recovered already in the four year period about three years of this. Some people are under the impression that our waterways are declining and becoming disused. I think that this chart shows very clearly and very effectively that that is not the case. One reason that some people believe that it is falling into disuse, is due to the fact that they do not see a large number of packet boats on our waterways. They may see only a barge and a tow. They do not realize the load that that barge is carrying amounts to about the same load that you ordinarily see carried on 250 to 300 freight cars, or five to six freight trains of 50 cars each. By barge and tow, I mean a towboat and eight barges.

This applies particularly to the requirements of modern industry for economical transportation of large volume and heavyweight freight. That is a common method of transporting heavy freight required in industry.
[fol. 910] At the time of the survey as reported in House Document 328, in spite of persistent demands by people of the Valley for the improvement of the Tennessee River for navigation, the navigable depth on the Tennessee River from Knoxville to Chattanooga at the lowest controlling point during low water was about 1.3 feet; and between Chattanooga and Florence, about 1 foot; and on the lower

river about 4.5 feet. During the period, however, between January and June, better depths were available, about 3 feet on the section between Chattanooga and Knoxville, and about 3½ feet, I believe it is, between Chattanooga and Florence, and about 6 feet on the lower river. The river at that time was subject to fluctuations of floods of 40 to 50 feet or more. In spite of all these handicaps in our report on the survey, when submitted, there were about 2,000,000 tons of commerce carried on the river. There were 61 tow-boats, 183 barges with a total capacity of over 42,000 tons. There were numerous terminals throughout the length of the river, and there were arrangements for transfer from rail to water.

I made a very thorough commercial survey to determine the amount of commerce which may use the waterway and the amount which may be obtained for power and potential minerals, which may be developed if the development of the Tennessee River and its tributaries are developed as indicated in my report. It was sufficient to determine beyond a reasonable doubt the economic feasibility for the development for navigation.

In the first study which I made, I made a study of the statistics of the basin, including the products of agriculture, forestry, manufacturing and minerals; the population, the wealth, the tonnage and the power entering into the manufacture of various products. I made a study of the coal, mineral products in the basin. I sent out questionnaires to [fol. 911] chambers of commerce and manufacturing interests, water transportation companies and utility companies, and so forth, who I considered would be interested in the matter. This study was not completed. However, from this incompleted study, it was estimated that at least three million tons would utilize the waterways, based on the statistics for 1926, and as those were projected into the future on the rate of increase of power,—on increase on our inland waterways, this would have amounted to 16,000,000 tons by 1950. This study was not completed for the simple fact that I desired to secure an estimate based on fundamental facts, to get down to the real facts of the case, and determine beyond a reasonable doubt the practicability of the commerce utilizing the waterway. So I adopted a method which would show this beyond a reasonable doubt.

In this method I decided to determine the amount of com-

merce which was actually travelling across the basin, within the basin, to and from it and across it; take that commerce, tabulate the origin, from whence it came, where it went to, and make a study, determine its cost by rail and determine the possibility of transporting it on the water, either by direct water transportation or by rail and water combined, and from that determine whether or not it would be possible for the commerce to be transported on the waterway more economically than on the existing transportation facilities. It was also contemplated that I would make a study of the prospective increase due to increase resulting from increase in industrial developments. I also planned to take the commerce which is indicated by the 1926 traffic and extend it into the future by the indicated increase in railway commerce during the past preceding ten years, to determine what would be the commerce which could economically utilize the waterway from 1940 to 1950.

At the time I made the survey on the Tennessee River, I [fol. 912] was also making a preliminary examination for the improvement of the Cumberland River and its tributaries in a similar manner to that of the Tennessee River. For both surveys, I sent an engineer from the Nashville district to the headquarters of the railways which are transporting freight in this region, at Louisville, Cincinnati and Washington. Through the courteous consent of the railway authorities I examined every bill of lading, and every shipment of freight to and from, and across the basin, tabulated those, segregated them to agricultural products, forestry products, mineral products and manufactured products, and we noted also the actual point that each shipment was from.

It covered practically the whole of the year 1926, except in a few instances where there was one or two months we did not quite complete, and we extended the estimate of that. We eliminated at that point all shipments of articles of a class that we did not believe would utilize the waterway. From the results obtained, it was found there was 27,000,000 tons of commerce transported within, to, from and across the basin of the Tennessee River for 1926.

In the final report submitted, and a supplemental report published in House Document 328, it was estimated that approximately 9,000,000 tons of this total could have been transported more economically on the waterway than on

the railway, and that this would have resulted in a saving of approximately $12,000,000 in the cost. The average saving was about $1.31 a ton. The comparison of savings in cost to costs on railroads was approximately 30 per cent. The calculated saving on traffic from the mouth of the river to Chattanooga only was approximately over 3,000,000 tons and approximately $5,000,000 per annum. This indicated that approximately one-third of the commerce transported within, to, from and across the basin could have [fol. 913] been transported more economically by water than by rail, which indicates beyond a reasonable doubt that the waterway would, if constructed, play a very important part in the economic transportation of freight, not only in the southeastern part of the United States, but in the entire Mississippi Valley basin, because a great deal of that commerce was transported through the mouth of the Tennessee River into the Ohio, and to points on the Mississippi and other parts of the Mississippi basin. It is realized that due to the fact that existing manufacturing plants are already provided with rail transportation, and have the switches right up to the plant, and are not readily located for shipment by water, and due to the fact that terminals would have to be constructed, and that transportation companies would have to be organized for shipping commerce, like those now on the waterways of Germany, it is realized that these benefits could not or would not be obtained as soon as the waterway was constructed.

In order to obtain a conservative estimate, it was decided to take 60 per cent of the amount which the 1926 traffic estimated could be transported more economically. Taking 60 per cent of that indicated as that which could be transported economically, and adding to it the approximately 2,000,000 tons already on the waterway, we would have for the 1926 traffic about 7,700,000 tons per annum, with an annual savings in the cost of transportation of approximately $10,000,000 per annum. By increasing that amount by the ratio of increase of rail commerce, we would have for 1950 about 17,700,000 tons, and approximately $23,000,000 per annum in savings. On the tributaries we would have had in addition thereto, if and when they are developed, approximately 6,000,000 tons for 1926 and about $7,000,000 per annum [fol. 914] savings, and approximately 16,000,000 tons for 1950 and about $17,000,000 per annum savings. That is in

addition to that on the main stream, and of course assumes that six to nine foot navigation would be provided on the tributaries. That is something which we may consider for future development.

It was contemplated, when I decided on a method which would get down to the fundamental facts of the case, and establish beyond a reasonable doubt,—after having completed the study on the commerce that was actually going to, from and across the basin, that I would make a very thorough study to determine the probable estimated increase in industrial development which would be brought about by the much more economical transportation of commerce by the waterway and by the abundant amount of power, both of which enter into the manufacturing problem, but it became so very self-evident that there was no question of the economy of the waterway that I had to determine, that I did not fully complete that. I did collect enough information to indicate undoubtedly that the cheap transportation furnished by the waterway and the abundant power would bring about a great increase in the industrial development.

I collected for that purpose, in addition to data which I have already mentioned, the products of manufacture, agriculture, forest and minerals, and the tonnage which entered into manufacture, and power which entered into the manufacture of various products and the actual factories and plants which were existing at that time, a mineral survey of the map showing where all of the minerals which were then being developed were, and the reserves and the location of plants, and so forth. It was intended to continue that, and show just to what extent the waterway would assist in assembling the raw materials, and in distributing it to the consumers.

[fol. 915] "Q. Can you give a reasonable estimate of the increase in commerce which may result from the increased industrial development?

Mr. R. T. Jackson: I object to that.

A. Yes.

Mr. R. T. Jackson: Pardon me. I object to that question as altogether too speculative. He has now disclosed that

he made a speculative answer about increasing commerce, speculative answer about increasing mining and industrial activities. While I have heard of five year plans, it seems to me a plan that goes 25 or 30 years into the future is altogether too speculative.

Judge Allen: The objection is overruled. The Court understands that it is the witness' opinion.

Mr. R. T. Jackson: Note an exception. I think it has gone too far.

A. As I have already stated the studies were carried far enough to indicate beyond a reasonable doubt that it would play an inportant part in our industrial development. Now, that being the case, I have a good example of the increase which could be expected by industrial development by making a study of the increase in our waterway transportation of the United States; and also in the power, the two elements that go into and help to bring about an industrial development. That is very clearly shown on the charts that the Chief Engineer furnished me, because a great part of the commerce carried on our waterways are iron ore and coal and forest products and petroleum, and those very things which went into it. So they do undoubtedly bring about a very good estimate of the increase."

It is an estimate, but I think it is a very good, reasonable one. It is the best estimate that I think that any one can make. These charts show that the rate of increase of commerce on our inland waterways through recent years, when we were turning more and more to industry, is approximately 100 per cent in 10 years. The same thing applies to [fol. 916] power, so that instead of increasing the estimates of the commerce which could economically utilize the waterway in 1926 by 2.31, as I did in my former estimates, we would increase this by 3.4 per cent. That would be a big increase over what I have already given. I should not have said 3.4 per cent, but that you may multiply the 1926 figures by 3.4 to obtain the 1950 estimates.

The curves which I have already shown indicated that the depression following 1929 set back the increase of commerce on our waterways about 10 years between the period of 1929 and 1932. However, between 1932 and 1936, including data that I got from the Chief of Engineers for this purpose, in that short four-year period it had made

back 3 years of the 10 years set-back, so that this indicates that by 1950 the estimates which I have already given would be approximately correct. In other words, it would have made up the set-back caused by the depression.

The ratio of the average savings for all products to the present cost of transportation, using rail rates as the measure of cost, was about 30 per cent. Of course, in some cases, the same article, the saving would be much less because it was not so favorable, the points between which it was shipped was not so favorable, so that it varied even for the same item, but taking them all, I struck an average which was about 30 per cent.

The common practice in the Corps of Engineers in determining the amount of expenditure which should be made for navigation alone is to determine, first, the savings in the cost of transportation which would probably be brought about by the waterway as compared to existing means of transportation, whether it is railway or waterway, or what. This estimate takes into consideration the expenditures for loading and unloading, and also the terminal charges. If they are not actually in the rates, we put in the cost of loading. We balance that against the annual charges for [fol. 917] the cost of construction, operating and maintaining the waterways. These fixed charges include interest on the cost invested in the project. It varies somewhat from period to period on account of the changes in the rates that you expect. We generally use a figure like 4 per cent for that, and I always added to that ½ of 1 per cent for liquidating or amortizing the investment making, say 4½ per cent. In addition to that we add to the fixed charges the cost which experience has shown would be necessary to cover what is normally covered by depreciation and replacement of equipment, and the maintenance and operation, plus dredging and everything else in the vicinity of the project. That is added to the interest and amortization. Based upon this method of analysis, the expenditure which would be justified in my opinion for navigation alone on the main stream of the Tennessee River, based on the 1926 traffic, would be approximately $200,000,000, and based on the 1950 traffic approximately $500,000,000. Where we are making the waterway for not only navigation but also navigation and flood control in combination with the development of power and other public beneficial uses, it

would not be necessary, of course, to expend that amount for navigation alone.

In my opinion, it is reasonable to expect a greater volume of traffic on the Tennessee River due to the TVA's high dam plan of navigation rather than the low dam plan. On account of the greater speeds that a boat could make, and due to the lack of delays caused by dams and by interruptions, undependable service of the low dams, etc., unquestionably you would be able to secure a greater increase in commerce on the waterway than that which I have stated in the report, for the simple reason that the estimates used in the report were based upon those obtained by actual experience on low dam waterways, and upon open river waterway river sections.

[fol. 918] "Q. Based on your studies in connection with the survey, please state what benefits would result from flood control on the Tennessee River and its tributaries.

A. You mean for communities, and navigation purposes?

Mr. R. T. Jackson: I object to the question unless it specifies whether it is referring to the projects included in the TVA unified plan, or to the vast number of projects which this witness says he considered in his 328 report.

Q. Well, it refers, Colonel—let's take up the tangible property losses. What is your estimate of the loss of property on the Tennessee River and its tributaries due to floods?

A. My estimate indicated that with effective flood control the actual savings of property loss, placed on an annual basis, would have been approximately one million six hundred thousand dollars or seven hundred thousand dollars per annum. As I recall now——

Mr. R. T. Jackson: Just a moment. I object to this. I think he was going—I move to strike out that answer. The question asked him for flood damages, as I understood it. I think we are entitled to have the question specific as to whether he has been asked for his estimate based upon the projects included in the TVA Unified Plan, or whether he is making an estimate based upon these same hundreds of odd projects which he studied and set forth in his report, House Document 328, because manifestly it does not mean anything unless we know which it is.

Judge Allen: The objection is overruled. You may have your exception.

Mr. R. T. Jackson: Please note our exception.

Q. The answer is $1,780,000 per annum?
A. Yes. I might add that also indicates what would be the average annual flood damage, the same thing practically."

That is the damage, or savings in damage, to property alone. It does not take into consideration the losses due to death and disease and unsanitary conditions, and the loss of their homes during considerable periods of time due to the floods, to interruption of commerce for long periods of time, having the railroads flooded and bridges washed [fol. 919] out, and all that kind of thing, or effects. That is purely property damage and did not take into consideration the decrease of property values in areas exposed to floods or the discouragement of industrial growth or population increase.

In my opinion, each of the dams constructed, under construction, or recommended for construction by the TVA constitutes the most effective means of improving navigation upon the Tennessee River, controlling destructive flood waters in the Tennessee Valley and for further flood control in the Mississippi Valley. The studies which I made for the betterment of the river indicate that they are. If I were instructed to create a minimum navigable channel of 9 feet on the Tennessee River and to control destructive floods in the Tennessee and Mississippi River Valleys by means of the construction of dams upon the Tennessee River and its tributaries, I would build substantially the same dams as those now being carried out by the TVA on the main stream and on the tributaries. From my very thorough study, made during the survey, I am convinced that all of these purposes could not be accomplished by any other type of dam.

[fol. 920] Cross-examination:

"Q. Colonel, I gather from your last two or few answers that nobody ever mentioned water power to you while you were engaged in the preparations for testimony in this case, but limited it to flood control and navigation?

A. Well, you see in the order which I got from a higher authority—and I happen to be in the Army and they are obeyed,—I was instructed to make a survey of the Tennessee

River and its tributaries for the most effective development of navigation, flood control, in combination with power and its other beneficial uses. So naturally I carried it out."

The power was mentioned by someone somewhere along the line and I included that in my survey. There was no desire to waste the resources of the waterway.

I am now connected with the general staff of the Army. My duty is that I am in charge of the geographic branch, Military Intelligence. It is a little more than a map room. It is the same duty I was performing last summer when I testified for the Government at Roanoke. I am not now acting in a special employment from TVA and I have no connection with TVA whatsoever.

There were 41 applications by private power companies for power development on the Tennessee River and its tributaries which were pending during my term of duty in this district. With one possible exception, where they were trying to get the money from the Federal Government, none of these power projects provided any surcharge storage, that is, storage over and above that which they would not operate, so that it would not increase the flood below. They failed to provide flood control over and above that which they would normally operate, in order to cut out the floods below. In my opinion, if operated for power plants, they would have been beneficial to control floods below to a cer- [fol. 921] tain extent, but not reliable, for at times, instead of reducing floods, they would have been fully operated as normally done by power companies, not only as normally done but as they must be to secure the most economical returns from their investment. They would at times not only have not reduced the floods but increased the floods below the project. They provided no dependable flood control.

Most of these projects did not have reservoirs of some kind. Some did have reservoirs and one, I think, had a large amount of storage. Not all of these projects provided storage. They were all for power purposes. Some of them did provide storage. In those cases where there was provided power storage, in accordance with the usual custom there was some proposed maximum draw-down level. They all did indicate, I think, the extent to which they contemplated utilizing the reservoir practically for storage, indicated by their useful storage.

"Q. Well, Colonel, you have had sufficient familiarity with power reservoirs to know that ordinarily there is a line designated as the maximum draw-down line, is that not true?

A. Yes, I am very familiar with that. Now,——

Q. All right——

A. (Continuing.) —the point is the power companies normally are not fixed at that elevation. If an emergency arises where it does make it desirable to draw down further during a very dry year, they not only could but they would, and must draw down lower than that in order to get the most economical returns from their investment. And that is why it is necessary for those who are looking after the interest of navigation to absolutely prescribe and fix the draw-down limit, beyond which it will not be drawn for the purposes of power.

Mr. R. T. Jackson: I move to strike out all but the first sentence of the answer.

Judge Allen: Motion overruled.

Mr. R. T. Jackson: Exception noted. I will say this——

Judge Allen: You may have your exception, and this witness will be permitted to explain his answers, just as the other witnesses have.

[fol. 922] Mr. R. T. Jackson: I have no objection to his explaining his answers. The only thing is I would like to get his answer and get on.

Q. Now, Colonel, is it true that the maximum draw-down in a pure power project is determined in general by the economic point to which the head may be feasibly reduced?

A. The power projects, when they submit their application for it, they submit a plan for the utilization of that project for power. Now, they indicate on that the amount which they desire to use for storage. Now, it may be possible at times, like some cases which I have known, that that storage is—and would be used for the purpose of carrying heavy peak loads by that project, if operated with a steam plant, which would greatly interfere with a large project's power. And possibly at times if they were operated by large steam companies, this storage would be utilized as a regulating storage by means of which they could regulate the power, and meet the actual commercial demands without any relation whatever to the needs of regulation of stream flow below.

Q. Well, Colonel, I am glad to have your advice on all these subjects. I ask you again if you know, and if you do not know, will you please say you do not know, whether, as a matter of engineering, the maximum draw-down level of a pure power reservoir is determined as a question of economics, having relation to the point to which it will not be economical to reduce your head and thereby reduce your power? Is there any relationship like that or not, or do you know?

A. Naturally, there is a relation like that. Certainly there is a relation, and I will explain a little bit more. I am here to tell the truth, the whole truth, and nothing but the truth. When you take up a question of that kind and ask the question, I desire you and the Court to know exactly the situation.

Mr. R. T. Jackson: I protest to the Court, I am entitled to an answer to my question.

Judge Allen: He had answered.

Mr. R. T. Jackson: I have got an answer now, plus a speech, which is the first one in fifteen minutes.

Judge Martin: I do not think the witness is subject to that criticism.

Judge Allen: I think the witness is trying to answer the question. It is the most unusual thing in the world for a man or a woman on the witness stand, I do not care how expert they are, directly to answer a question yes or no. It is the usual thing to start an explanation, and the witness is entitled to make his explanation. He has, in this case, answered your question.

Mr. R. T. Jackson: Yes, the only thing is I do not want to be charged with a great number of questions I have to ask to get an answer."

In a pure power reservoir you also have above the maximum draw-down level, a part of the storage reservoir which [fol. 923] represents the live storage used for power, and the top of that is ordinarily designated as the normal pool level. It happens, however, in my report or survey I use the term, the normal pool elevation for the maximum draw-down. In operations for power that part of the reservoir between the normal pool level and the maximum draw-down is ordinarily filled up during the high water season and released during the low water season. It will ordi-

narily be kept as nearly to the top of the normal pool level as the water conditions and other conditions affecting the operation will permit, and the difficulty in the situation is that it does fill at times and would be full at times of maximum, major floods.

"Q. Now, then, at that time if a flood comes along when this reservoir is up to its maximum or normal pool level, and there has been no flood control dam provided above that, will the result be that the flood will be augmented below the dam?

A. Yes, that is true, if it is operated and full at the time the major flood comes along, and is operated with a fixed crest, and you would have no surcharge on it——

Q. Yes.

A. As the Tennessee Valley Authority is constructing, it would not increase flood conditions below."

It accelerates the passing of the flood waters through the pool of the dam and it causes the flood waters below to bank up higher and increase their height. It makes the floods concentrate more quickly below and makes them higher, and the reason is that under those conditions there has been destroyed a certain volume of valley storage.

"Q. And hence the result is if you have a dam which produces power, it will not furnish any dependable flood protection unless it has surcharge capacity over and above its normal pool level for power purposes, which exceeds the amount of valley storage which will be destroyed by the reservoir when filled in each flood, is that right?

A. Now, your question is one of those questions I cannot answer yes or no. For the simple reason that you have not made it specific enough for me to say yes or no. In the first place——

Mr. R. T. Jackson: Let me make it more specific, if there is any doubt about it.

The Witness: All right.

[fol. 924] Q. Assuming you have a reservoir constructed to operate a generating power plant, and that the reservoir is up to its normal or maximum level for power purposes; is it not true that that reservoir under those conditions will not reduce floods below, unless it has a surcharge capacity

over and above the top of the power storage, which exceeds the volume of valley storage destroyed by the reservoir up to the top of the power storage?

A. That depends upon the manner of operation of the project, and also upon whether or not—if there is a lone reservoir upon the system, or whether or not it is one in a great long system of projects, like those on the main stream."

Assuming a reservoir project with power storage to be alone and not related to any other project, and that the reservoir was full to the maximum pool level for power operation, as to whether there would be any flood control provided by that reservoir under those circumstances unless there were built above the power pool a surcharge flood capacity exceeding the valley storage destroyed by the power reservoir, if it is alone, where it is not related to other projects, and if it does not have sufficient flood storage—it depends upon the amount of the flood storage that it has got. The amount of the flood storage is the controlling factor in there.

If it had none, it would increase floods below. If it had an appreciable amount there, enough to balance or hold back an amount equal to that which it had before, yes, it would prevent flood increase, increase in the height of the flood below.

"Q. Well, it would just be a stand-off, would it not, if the surcharge equalled the valley storage displaced?

A. Depending upon the amount, and method of operation too, don't forget that.

Q. I have assumed, Colonel, that the power reservoir is full.

[fol. 925] A. All right.

Q. If that is true.

A. Yes.

Q. Would it not also be true, if the amount of flood surcharge provided above the power pool were exactly equal to the valley storage displaced, there would be a stand-off, and no effect below?

A. And there would be a stand-off if it were less than that at times.

Q. Why is that?

A. For the simple reason that if there were no surcharge

pondage or reserve flood storage, it would increase the floods below.

Q. Yes.

A. Now that is that, too, isn't it? If there were sufficient flood storage there to balance the amount it had increased it, that is, to hold back enough water to balance against the advance, then it would not increase it. Furthermore, if it were controlled, controlled with gates in the dam, you could utilize that to help to reduce the floods. So that it depends entirely upon the amount available as compared to the total displaced, and upon the method in which you would operate those gates."

If the reservoir were full to the top of the maximum pool level or power storage and no flood surcharge had been provided above, if you attempted to draw your water storage down for power purposes in advance of oncoming floods after the floods started, so that it was a component part of the floods, it would increase the floods if it were a lone project.

"A. But now you are not trying to apply that to the high dams on the main stream, are you?

Q. Don't worry about that Colonel, until we get to it.

A. Because if you do I can explain that also."

[fol. 926] Examination by the Court:

In so far as the dams on the main stream are concerned, the method of operation is to draw them down so that you obtain a sufficient amount of storage to effectively control the floods. In a series that water that is advanced below can be carried on down by the next dam below. They have a large project on the lower end of the river which is contemplated, Gilbertsville, which can readily prevent any increase in the floods, due to the surcharge pondage or due to the lack of a sufficient amount at the beginning of the floods. The proposed method of operation by TVA will be very effective in controlling the floods and eliminating the peak.

Cross-examination continued:

"Q. I intended, Colonel, to suggest to you a draw-down in advance of the peak, in an effort to create some storage space by the power storage?

A. Yes.

Q. You understood that, didn't you?

A. Yes. No, the way it was worded it could have been mixed up with the use of high dams on the main stream, and that is why I had to explain it. These engineering factors, if you are conversant with them, and understand them, and know them like I do, you have to know, you have to ask your question so it cannot be misapplied. And I am not trying to delay by answering as I do. Now, if it were alone, absolutely alone, and there was no other project around it, and you tried to draw it down after the flood water started, so that that flood water was a component part of the flood, then it would increase the flood below, because if you draw it down and then try to catch it, the center of gravity of the waters which go down has been advanced, and it would increase the floods on the river below.

Q. Colonel, I am left a little confused. Now, I want in my question to assume——

A. Yes.

Q. That an attempt is made to empty the reservoir in part.

A. Yes.

[fol. 927] Q. In advance of the crest of the flood so as to leave some storage space which might be filled by flood waters. Now, taking this single reservoir, would that benefit, injure, or leave unaffected flood conditions down stream?

A. Yes; I think I have answered you before. If you had some reserve flood storage, or surcharge storage above, you may ulitize that to balance and to offset the increase caused by drawing it down. If you had some; but if you had none, you could not.

Q. You understand I am not talking about flood surcharge at all, I am talking about drawing down the power reservoir?

A. Power reservoir itself.

Q. Yes.

A. Yes, that is what I am talking about.

Q. And that is the basis of your last answer?

A. Yes, that is if there is some reserve there, reserve there, not full when the flood came on.

Q. It was full, but you drew it down in prediction fashion as you said it might be done in your direct examination by the TVA?

A. You mean if the reservoir was full?
Q. The reservoir was full, to the normal pool level?
A. Yes.
Q. Had no flood surcharge, but you attempted to draw it down in advance of a flood which you had notice was coming down the river above.
A. I think I have answered that question about three or four times already."

I testified in the case of the United States of America v. Appalachian Electric Power Company on July 31, 1936 in the Federal Court for the Western District of Virginia about the Radford project, which was a power storage reservoir on the New River. In that case I was asked the following questions and made the following answers at Pages 2592 et sequi of the transcript:

" 'Q. Assume the Radford project constructed and filled up to its usable storage and a flood came down the river, what would have to happen there with respect to the operation of the project?
[fol. 928] A. If we assume that the Radford project be constructed as shown in the plan submitted by the applicant, and operated as described by their representative before the Power Commission of Virginia, the Radford project would increase the height of flood on the New River below the project and even down to and in the Kanawha, and into the Ohio, below the mouth of the Kanawha River.
Q. Would not these dams down below have some protection so far as flood conditions are concerned, I mean these government dams, wouldn't they break up floods or hold them back?
A. No.
Q. Why not?
A. For the simple reason that they cannot hold out the water to eliminate or alter the shape of the flood.
Q. Do I understand you to say if channel storage is filled by a pool which is more or less stationary, or intended to be as near stationary as possible, that the flood condition will be more serious under the conditions of that kind than if you did not have reservoirs in the river?
A. Yes. May I explain two situations?
Q. Yes, go ahead.
A. Ordinarily power companies operate their projects, even reservoir projects at as near what they call normal

pool elevation as possible. If a flood comes along they endeavor to maintain pool elevation up to normal pool height.

Another situation is that explained by a representative of the company during application for permit, that it may be drawn down as flood approaches, and then catch some storage later. In the first place, if they attempt to operate pools at normal fixed elevation, it will increase height flood immediately below.

Q. How is that?

A. For the simple reason that the river in its natural condition had to fill up its flood channel before the flood waters could pass through 21 mile length of the pool of the dam. When the dam is built the pool of the dam is already filled up, or has already filled up that portion of the channel except a very small portion in the upper end.

[fol. 929] Its flood gates in the dam have a capacity ready to discharge the water equal to that of the maximum possible flood. It can do that at any minute, as soon as the small portion in the upper end of the pool is filled up, which requires very little time, compared with that of filling up the entire 21 miles, the whole body of water within the pool of the dam is ready to move down just like a train pulling out of a station.

The rate at which it moves down will be that of the wave action of 20 to 40, to 60 miles an hour. It is hard for some people to see that, yet I know it is true, even considering that we include wave action and considering the fact that it takes only a short time to fill the rest of the flood channel in the upper end of the pool, when the whole mass of water in the pool is ready to move. That is very short.

Now, as I have already explained, if they are operating and must maintain that pool at that fixed elevation, when that water starts moving, they have got to open those gates, and let it down, if they don't, it will rise up and up and up, and overflow the dam. They must let it out.

Now the river is ready to discharge at the upper end just as fast as the water comes and the gates must let it out at the lower end, so the time of passage of flood through the pool or dam will be shorter after the dam was built than it was before the dam was built. Now if the time of passage is shorter, anyone should be able to understand that it has got to go higher.'

A. I would like to explain to the Court if I may, the

project he is talking about was located upon the New River how far above those navigation projects below? I think it was some—do you recall the distance?

Q. No. It was——

A. Some 200 miles, wasn't it?

Q. No, no, Colonel.

A. Well, 150.

Q. It was about 150 miles above London Pool?

A. Yes.

Q. And interspersed between that——

A. Yes, that is right.

Q. Just a moment. Interspersed between that, in your consideration, was the pool, the Bluestone Reservoir?

[fol. 930] A. Yes.

Q. Which was only about 40 miles below?

A. Yes, but that answer didn't say anything about Bluestone Reservoir.

As I was explaining to the Court, the Radford project, the project we were talking about, was located upon the New River about 150 miles above the series of navigation dams on the river below.

Furthermore, the navigation dams on the Kanawha River below, a series of them, had no surcharge pondage whatever, no reservoir storage with which to help to off-set for their own—not even that—and they would have slightly increased the flood. But they did not have surcharge pondage for eliminating the peak, as the TVA projects do. So there were two elements in that answer.

Q. Colonel, you overlooked the fact that the upper pool on the Kanawha River, London Pool, would have a surcharge of three feet, did you not?

A. No, it didn't have a surcharge of three feet. It had a pondage pool of three feet, however, for regulating power. It is an entirely different thing.

Q. It had it for regulating both artificial and natural changes of flow, didn't it?

A. It was not big enough to affect the natural flow by the amount that you could measure with a microscope."

I also testified in that same trial at the same time at Page 2596 of the transcript as follows:

" 'Q. Suppose in order to meet this storm they let the pool down or let the water out, what happens?

A. All right. In that case, if they drew down as the flood approaches, they could catch the same water at the peak and prevent the flood from being so high immediately below the dam, and it would be a benefit to the Radford project, but in advance of this flood, opening of gates to draw it down in advance, that quantity of water, much greater than it was even after the dam was built, they have advanced the center of gravity of the mass of the flood, with the result that as this bulk of water in the flood went downstream, was combined with waters flowing in from all of the lower tributaries, the height of the flood below would be not only that equal to the natural—may I change that? Caused by the natural disbursement of the natural flood channel of the [fol. 931] reservoir, also due to advancing the center of gravity of the body of the flood, it would, therefore, cause flood height on the lower river even greater than that of operating at normal pool elevation.' "

I would like to call attention to the fact that that was for the Radford project 150 miles above the series of the projects on the lower river, and that series had no surcharge pondage whatever, but they themselves would have slightly increased the height of floods below. I think I did use the words "slightly increased" in my testimony about the Radford project although I do not find it in the record of my testimony.

A single dam, if it destroys more valley storage than its flood surcharge, will increase rather than decrease the floods below that dam. It depends upon the amount of the flood storage which you have available and whether or not it will balance that advance which it would cause.

"Q. Now, Colonel, assuming that you have going down a stream a chain of dams, creating reservoirs which, in each instance, destroy more natural valley storage than they have flood surcharge under operating conditions, wouldn't that chain of dams, unless aided by some other expedient also increase the flood damage, flood flow, flood heights at the end, the lower end of the chain of dams?

A. We have a wonderful example of that now laid out by the TVA.

Q. Well——

A. A very good example.

Q. I agree with you.

A. A very good example of the very question that you have asked.

May I explain now the effect of their proposed method of operation? Their proposed method of operation is to drawn down, if not already drawn down, the water in each of these chains of dams, so as to secure an amount of surcharge storage sufficient to very effectively handle the flood waters in the river, eliminating the peak. Now, they can very effectively do that for the simple reason that below each of the dams where there would be a banking and piling [fol. 931a] up of water there are flood gates in the next one below, and it can be very readily transported along without increasing the height of floods; and on the lower river, they have got the large Gilbertsville project which will prevent any advance in the floods down below, where they bank and pile up, say down on the lower end of the Tennessee below Gilbertsville, in the height. In other words, there would be no piling and banking up there.

Q. How you finished Colonel?

A. Yes.

Mr. R. T. Jackson: Now, Mr. Reporter, will you read my question, and please answer my question.

(Record read as follows:)

'Q. Now, Colonel, assuming that you have, going down a stream, a chain of dams creating reservoirs which in each instance destroy more natural valley storage than they have flood surcharge under operating conditions, wouldn't that chain of dams, unless aided by some other expedient, also increase the flood damage, flood flow, flood heights, at the end, the lower end of the chain of dams?'

A. Yes.

Mr. Fly: I think the witness answered that very question, may it please the Court. I don't see any reason for going over the same question six times in a row.

The witness has explained that an operation of drawing down in advance of the flood would make that space available and has shown just how the operation would be carried on.

Mr. R. T. Jackson: I am entitled, I think, to an answer.

Mr. Fly: Not to your answer, but his answer.

Mr. R. T. Jackson: He has refused to take mine. I have made no complaint about that.

Judge Allen: Can you answer that question yes or no?

The Witness: It would be impossible, your Honor, to set forth an explanation to the Court and make it very clear just what would be the effect. Now I said such a chain as that, of the Tennessee Valley Authority, because it is an excellent example, exactly fits in with his question as I understood it.

Judge Allen: Mr. Jackson didn't ask you about the Tennessee Valley chain.

[fol. 931b] Mr. R. T. Jackson: No.

The Witness: Yes. Very well then, let me eliminate what I have said there, if you will provide a chain of dams and operate them properly, to bring that about.

Q. Of course you have not answered my question, Colonel. I know you mean to.

[fol. 932] Q. My assumption is that you have a chain of dams going down the river, each one of which destroys more valley storage than it has flood surcharge under operating conditions upon which you answer this question, would the flood conditions at the dam farthest downstream be worse or better than if those dams were not there?

A. Well, now, you are still leaving me just where we were in a lot of these questions you have asked.

Q. I have assumed eveything you have, Colonel.

A. Now wait a minute. Now, it depends on the amount that you have got there, and how you operate it.

Judge Allen: In other words, your answer is——

The Witness: You didn't give me—excuse me, your Honor.

Judge Allen: Well, let me ask you this. Your answer is that it could be operated so that floods would be increased, but that it could be operated so that the floods would be decreased.

The Witness: It depends, your Honor, upon the amount of flood storage, you see. In other words, he has not put that in, any time.

Judge Allen: Well, is your answer that you have to take the operations into consideration before you can answer that question?

The Witness: Yes, ma'am, your Honor, not only the operation, but the amount of storage. He has not given me

the amount either time, and that is why in order to answer it as quickly as possible I said 'For example, the TVA projects,' meets this——

Judge Allen: Now, tell me, Colonel, whether you can answer this question at all the way it has been asked?

Mr. R. T. Jackson: May I make this one suggestion, that the Colonel assume that I did assume that the valley storage destroyed is greater than the surcharge at each dam under the conditions.

Mr. Fly: May I inquire, do you assume that there will be no draw down?

Mr. R. T. Jackson: Absolutely, I am not talking about a draw down.

Judge Allen: Now can you answer the question?

[fol. 933] The Witness: I cannot answer it, your Honor, unless I know the amount of flood storage that has been displaced and the amount provided to regulate it.

Q. Suppose the amount of flood storage displaced, valley storage displaced, really, by those lakes is 10,000,000 acre feet, and that the amount of flood storage provided by the dams is 5,000,000 acre feet under operating conditions, if you will, to answer?

Judge Allen: Can you answer that?

The Witness: I think that I can give an answer that will be about right. Of course it is a theoretical thing and I have not actually sat down to run the operation and determine, but I did on my Tennessee River report run the factors of what would be the equivalent of that, downstream, and I think I can give a fairly good answer to it.

Judge Allen: All right, suppose you try it.

The Witness: All right. Now, under that condition, under that condition if properly operated, in order to control and draw down, which the question——

Q. That is not to be done; just what was not done, Colonel. You are trying to change the question submitted to you.

A. No, I am not. I am trying honestly to answer it.

Q. Please do not assume there is a draw down—I did not.

Mr. Fly: You are assuming there is no draw down?

A. Assuming there is no draw down, with this pondage? All right.

Judge Allen: There is no draw down in any dam.

Mr. R. T. Jackson: That is right, your Honor.

A. Well, if you get this 5,000,000 acre feet in surcharge pondage there, is that available?

Q. That is available in your whole string of dams, and they have destroyed 10,000,000 acre feet of valley storage.

A. All right. Very well. First, we will assume there are no reservoirs in the river above,—understand—there are no reservoirs in the river, and all we have is this series of projects there, they are wholly alone, not operating in a system. All right, in that case, what would happen is you can go ahead with the gates in the dams and with this pondage which is there, you can control the flow in here so that [fol. 934] the 5,000,000 acre feet available, can be assumed to be available to be utilized in eliminating the crest at the head. There would be a definite tendency for advancing and piling up of the flood, but this surcharge pondage there would be able to hold back an enormous amount and prevent such an increase."

If you have a flood of 20,000,000 acre feet going downstream in a period of six days and you still only have 5,000,000 acre feet of surcharge storage, you have still got to utilize that surcharge to help eliminate the peak all along the series. At the lower end while there will be a tendency due to utilizing the gates and getting the water down out of the way to keep from piling up along the stream, there would be a tendency to increase but the amount held back, if properly operated, which would probably balance it. It would probably entirely balance the tendency to increase so you would have along the series the advantages of flood control and you would have the value of those eliminating all the peak and in the control of the flood through there.

When you have utilized that 5,000,000 acre feet, you would not also have to shove out the 10,000,000 acre feet of valley storage at the lower end. The amount of water going down there at the peak would depend on whether you have reservoirs above and that is why I was going to answer that. I would like to explain that. You would hold it in reservoirs above and it would never get down. Let us stop and consider the thing for a while. You have the reservoirs above, you have these projects, you are bringing about an effective flood control along the river. With this flood control along

the river where is all this valley storage displaced? For example, uniformly in a ten day flood, there would not be 10,000,000 acre feet of valley storage displaced because the amount of valley storage would depend upon the height of the flood. If you lower the flood and effectively control it, [fol. 935] the amount of the valley storage that would be utilized would be enormously reduced and you might probably say it would not be in excess of the 5,000,000 acre feet of storage.

It is not the result of my answer that through my series of dams on the tributaries I would have caught the flood water before it got down to the chain of reservoirs on the main stream and therefore they would have been able to take care of the amount of flood water instead of the valley storage which has been displaced by the dams.

House Document 328 (Complainants' Exhibit 105) contains a table on Page 73 setting out the flood storage on the Tennessee River in the 1926 flood and in the maximum flood. The maximum flood shows the natural flood storage in the channel of 7,300,000 day second feet, which is 14,600,000 acre feet for the maximum estimated flood, which is one that is way up high and displaces a whole lot of valley storage. Those are the kind of floods that do the most damage. The next column shows the natural flood storage eliminated and shows 2,140,000 day second feet which means 4,280,000 acre feet. In the last column there is shown the amount of flood storage provided by 10-ft. surcharge which is 1,454,000 day second feet, or 2,908,000 acre feet. These figures are for the main river dams at Aurora Landing, Pickwick Landing Dam No. 2, Dam No. 3, Guntersville, Hales Bar, Chickamauga, White Creek, Marble Bluff and Coulter Shoals. For that flood my table shows that these dams would destroy a valley storage of somewhere around 1,500,000 or 2,000,000 acre feet in excess of the flood surcharge. But remember this project is one which brings about thorough flood control. These figures shown are the amount which would be displaced if you had this maximum high flood. According to that report that reduces it down to a flood height say of [fol. 936] only 20 feet at Chattanooga. Now where would this flood storage be displaced? Now, throughout my whole report I determined the amount of natural flood storage which was displaced and what could be done if you put in the controlled surcharge storage to compensate for that,

and use that as a measure at each project to provide and assist in the general system of flood control. That is why these figures were placed there. When it comes to the actual amount of flood storage eliminated, where you have effective flood control, it is very simple. I have finished.

The following paragraph 39 from House Document 328 at Page 71 correctly states my opinion:

"Regulation by natural flood storage of the flood channel—the flood channel of the Tennessee River between Knoxville and its mouth has in its present condition a capacity of approximately 14,600,000 acre-feet which is used by the river in its natural condition for the regulation of stream flow and the reduction of flood height. If a dam be built in the flood channel of the stream and gates are installed to maintain the pool of the dam at a fixed elevation in order to avoid overflowage, much less time will be required by the river to secure maximum discharge capacity through the pool of the dam because part of the flood storage capacity of the river channel is already filled. This will result in an increase in flood heights below the dam. The effect, therefore, of dams operated with a fixed pool elevation is to eliminate the flood storage capacity of the river channel and bring about an advance and increase in heights of floods below the dam."

Where the parties operate with fixed pool levels just like those applied for by the 41 power companies, it would have materially increased the floods at Chattanooga.

"Q. As a matter of fact, that applies to the 1926 flood, that paragraph, rather than the maximum, does it not?

A. Yes, applies to any flood.

Q. Specific figures would hardly deal with any flood?

A. Yes."

[fol. 937] Examination by the Court:

Whether normal floods last ten days to a month depends upon the part of the river. In the upper river, about Chattanooga, that would be a normal period for a flood. For effective flood control at Chattanooga or any point along the river you would want to control a sufficient amount of water so that the heights will not rise above a certain amount. It does matter what time you do that. You would want to do it at a time when the water in that dam reaches that height.

That is exactly what the surcharge in the main stream dam is for. You would watch the engineer's gauge and as the water reaches the height beyond which you do not want it to go, you will have this surcharge available and use it in catching all that water which comes along later. Then it holds it back and does not let it go by until the advance of the water has passed on and there is no danger of an increase below.

[fol. 938] Cross-examination continued:

In House Document 328 (Complainants' Exhibt 105) I have designated the maximum draw-down as normal pool level. In House Document 328 at Page 50, which is Table B, I have shown for instance the normal pool elevation of Cove Creek of 1050. As to whether that is the maximum draw-down, I had in mind at that time the fact that I had surcharge pondage on all projects and throughout my report it was my intention to utilize the normal pool elevation as that beyond which the project would not rise. It would be raised above that in order to provide the surcharge storage. The maximum draw-down is the lowest point to which the reservoir is drawn down.

In Vol. II of House Document 328 at Page 74 I have dealt with Norris Dam or Cove Creek Dam. The cross-section shows the low pool elevation at 930 and that apparently represents the maximum draw-down. The full pool elevation is shown at 1050. That is what I have listed in this table as normal pool elevation. Above that, however, you see surcharge storage in order to provide protection for local floods.

The report of the Hearings on the Second Deficiency Appropriation Bill of 1937 (Complainants' Exhibit 116) shows on Page 403 a column indicating the volume of the reservoirs under the heading "Tabulation of Principal Features of Present and Proposed Dams and Reservoir Projects of Tennessee Valley Authority". The total volume of reservoirs as shown there is 15,310,000 acre feet. Under the column headed "Controlled Storage" the total controlled storage is shown to be 8,731,000 acre feet.

[fol. 939] "Q. Now, will you tell me whether the difference between those two figures, amounting to some 6,700,000 acre feet, as I compute it, is not dead storage?

A. This is speaking of reservoirs here.

Q. As shown on that table, is not the difference between the volume of reservoirs and the volume of controlled storage, dead storage?

A. Yes.

Mr. Fly: May it please the Court, the witness has never seen this document before.

Judge Allen: He may answer. He may make his own answer.

The Witness: This is the first time I have ever seen the book. I do not know what is meant by the term 'controlled storage'. I always used the term 'useful storage', is that the same in this book."

The term, controlled storage, is applied to a great many different kinds of storage. For example, a very important factor in this case is the controlled storage which our surcharge holds along the main stream. That is an entirely different thing to useful storage in reservoirs. If the term "controlled storage" in this table is that which is normally used, which I used on this survey for "Useful Storage", the difference between the volume of the reservoirs and the volume of controlled storage is dead storage. That is it is dead storage according to the way you use it.

Whether or not of the difference in the TVA Unified Plan between the total capacity of the reservoirs and the dead storage, which amounts to some 7,600,000 acre feet, 4,365,000 acre feet is power storage, or storage which is drawn down for power purposes, is among the details of the TVA Unified Plan that I have not gone thoroughly into. I am [fol. 940] sure that the engineers of TVA who work with those figures can give you better detailed information than I can. I do say, however, that on account of my thorough knowledge which I gained during the survey of the Tennessee River, I am thoroughly familiar with the fundamental purposes for which each of these projects is laid out, designed and operated and the part that they play in the system. I think it would be better to have this detailed information of the projects which I have never studied before obtained from the engineers of the TVA.

"Q. Let us get this straight, Colonel, now am I right in understanding from your testimony just now, that you yesterday expressed an opinion upon the efficiency of the project in the TVA Unified Plan for flood control purposes,

without knowing the amount of dead storage in those projects, the volume of power storage in those projects, or the volume of surcharge for flood control, if any?

A. I have looked at the plans and studied them enough, I have read the proposed method of operation as shown in the 1936 report. I am so familiar, so thoroughly familiar with what various projects of certain quantities can do, that I can answer without hesitation as to the general effect they will have. Now, of course, to determine the exact effects, it will be necessary to do exactly what I did do on the survey, take all these figures set down and work them out carefully, taking into consideration the volume of the floods, the characteristics of the river, the type and layout of each dam and so forth, then I can give you an exact answer, but to try to utilize these figures which I have never seen, I do not know the reports, but I will be glad to give you the best estimate I can on it."

I know the way they propose to operate it from reading the report to Congress in 1936 of the TVA. I also know [fol. 941] what the various storages and elements in the system can do and how they may be operated. There are a number of ways you can operate them. I know their possibilities. I can give a reasonable estimate as to the effect of reservoirs without knowing how much dead storage, how much power storage or how much surcharge storage they have by a simple mental comparison with the system which I have worked out and with which I am very thoroughly familiar. I make a simple mental comparison between the system I have worked out and one that I do not know what it is by taking the projects which TVA is now constructing and seeing that they are substantially the same as those which I recommended in my report. Therefore, while there are changes and adjustments here and there, I can tell what the general effect is. I cannot give the exact figures.

"Q. Assuming that the total control flood storage in the TVA Unified Plan over and above the dead storage, and the power storage, is only a little over 3,000,000 acre feet, is that in accordance with the plan which you say you laid out in House Document No. 328?

A. Frankly I don't get the connection because I don't remember using that in my plan. If you can show me my own record, show me the place in my own data, and show me

theirs, I can look at it and perhaps give you a reasonable answer.

Q. I am assuming one figure and asking you whether that is in accordance with the figure in the plan that you personally worked out, and which I presume you know about. Now is it or not?

A. It has been ten years since I worked out those plans. And I came down here, before I came down here I was not given one minute of my official time to prepare for evidence, so that all of the evidence I had to prepare on was to read my own book, and it would be humanly impossible for a man to remember ten years a figure which has been compiled and worked out ten years ago. I haven't seen it.

[fol. 942] Q. I am not criticizing you at all, Colonel.

A. If you will please give me my record, my book, and show me the place in my book where that is, and show me the place in the report, I can answer it.

Q. I don't think there is anything like that in your report, Colonel. I am just asking you whether you knew.

A. Yes. Well now, will you show them to me, and I will be glad to compare them.

Q. Well, you have got as much information about that today as when you gave your direct testimony yesterday haven't you?

A. My testimony yesterday was based upon fundamental principles, and practices, and by looking over their plan and the project and seeing where they had put in dams that I had put in, which are substantially the same, and from my most thorough knowledge of the control and the effects which that would have on flood control, and increasing stream flow, I answered on those."

I provided a 10 ft. surcharge on my main stream high dams. As to whether it is a fact that the surcharge at Chickamauga Dam is 2 feet in the TVA Unified Plan, I have not gone through the whole details. The 1936 report gave 5 feet surcharge along these projects.

"Judge Allen: Do you know whether the surcharge is two feet at Chickamauga? If you don't know, say so.

The Witness: No, I don't know."

I do not know whether the surcharge at Guntersville in accordance with the drawings in the report of March 31,

1936 is one foot. As I recall the 1936 report it gave 5 feet surcharge with a draw-down in the operation of an additional five feet when they needed to assist in flood control.

My testimony about the effect of storage reservoirs giving complete and effective control on Tennessee River floods was not based upon approximately the 150 projects included in my report in House Document 328. It was not based upon the development of the entire system. When I was drawing up the general plan for determining what project was [fol. 943] to be undertaken by the Federal Government, I considered those projects and reservoirs essential for flood control and for the development that should be constructed in combination with the high dams on the main stream. The reservoir projects needed in connection with the high dams and the storage project on the main stream consisted of the major important reservoir storage projects on the major tributaries, very much like that which TVA is now constructing. My study showed very clearly that approximately the total results obtained for flood control could be secured by that system, not quite, but approximately, so it was my idea in recommending for adoption to Congress the project for the main stream with the high dams that the power companies would come in and develop these reservoir projects on the major tributaries which would soon bring about effective flood control.

"Q. Is your testimony that some plan would give complete and effective flood control on the Mississippi River and its tributaries, based upon the projects in the TVA Unified Plan alone, or is it based upon the projects set out in your report 328?

A. No, a study of the various reports and plans for flood control of the Mississippi shows quite clearly that for that plan a system of levees is required in order to prevent overflow of the channel."

All the projects which TVA is now constructing and those indicated in its reports will not give complete control and I believe I stated in one of my answers that in order to obtain effective flood control we should construct on all the major tributaries above Chattanooga the important storage projects. They would together give effective flood control with the high dams on the main stream. It would not be so great as the results indicated in my report but it would

attain practically that effect. All of the projects that I included in House Document 328 on the Tennessee River [fol. 944] and its tributaries I estimated would cost something over $1,200,000,000. A great number of those projects do not play a very important part in the flood control system as a whole. The key projects, that is, the major reservoir projects, and those on the main stream are the vitally important projects and the others help.

"Q. In House Document 328, reading from paragraph 42, page 71, the paragraph is entitled 'Reduction of flood heights by storage reservoirs and surcharge pondage'. It says,—I direct your attention to the statement—'In order to determine the reduction of flood heights which may be secured by storage reservoirs and surcharge pondage, the effect which such projects would have on flood heights on the main stream have been traced downstream from the source of the main stream to its mouth for 10-feet surcharge on Tennessee projects, and for certain reservoir projects for the 1926 flood. For this purpose seven cases illustrating the effects which these projects would have had during the 1926 flood were determined as follows'. And I take only case seven, because the others are not material. Case seven 'Effect of high dams at Chickamauga Dam, Dam No. 3 and Aurora Landing, assuming reservoir full at the beginning of flood, and normal pool elevation maintained'. And that, you will note, is three dams in a chain.

A. Yes.

Q. And then I direct your attention to the effect on flood stages table 1926, case seven, at the bottom, and ask you whether or not you did not there find that under such circumstances the natural flood height at Johnsonville would be increased 19½ feet. There is the figure right there (indicating).

Judge Allen: So that the Court may understand, where is Johnsonville?

Mr. R. T. Jackson: If I may inform the Court, I am told that it is 98 miles above the mouth, Johnsonville.

Judge Allen: Thank you.

A. Case seven, effect of high dams at Chickamauga, Dam No. 3, that is Joe Wheeler Dam, and Aurora Landing, which is now called Gilbertsville in the project, assuming reser- [fol. 945] voirs full at the beginning of flood, and normal

pool elevations maintained, the high dams which this referred to are high dams about 100 feet, I think it was, which I was required to make studies on in connection with the further flood control on the Mississippi, without any relation whatever to the system of projects recommended for the Tennessee Valley. And it is those dams to which he refers. They were absolutely recommended,—not recommended, and not approved—for the simple reason that they prevented the effective development of the resources of the river, and that recommendation was concurred in by the president of the Mississippi River Commission and by the River and Harbor Board, and by the Chief of Engineers, so that these projects which he refers to have nothing to do at all with the system that has been recommended for the development of the river.

Judge Allen: Now, you have made your explanation, Colonel, but what is your answer to the question?

The Witness: The answer is that it would have increased the head of that flood 19.5 feet. However, as I recall, I provided a large quantity of surcharge in those reservoirs which could have very effectively controlled the floods there, instead of increasing them."

All of the higher officers did not concur in this 328 report in recommending the low dam plan. In connection with the improvement of the river there was a system of projects of high dams along the main stream which were considered as the proper dams, and they were so recommended in the final report as it went up to the Chief of Engineers. In that it was contemplated that the government would cooperate with the power companies in actually constructing, I believe, the Joe Wheeler and Guntersville Dams and making core borings at all the other sites, but it was readily foreseen that such a project depended entirely upon the cooperation of the power companies. So, as the good people of the Valley had been trying to get navigation for 100 years, it was decided to adopt a plan which would assure the getting of the navigation by the Valley which they had so long been working for. For that reason we developed a practical method of bringing that about, at the same time doing everything we could to bring about the development of the high dams which [fol. 946] we saw was so desirable. In order to accomplish that purpose we decided to adopt the system of low dams

which gave one basis of justification of the Federal Government in participating in the development of the river, with the proviso that any two or more of those dams could be replaced by high dams to be constructed under the supervision of the Federal Water Power Act. If constructed before the low dams were constructed the Federal Government would pay towards the cost of that construction the amount of the cost of the low dams replaced. That seemed to be a practical method whereby we would give full opportunity for the power companies to come in and participate in the development. In case they did fail, we did have a project whereby we could bring navigation to Chattanooga without that.

Most of the flood damage which has occurred on the Tennessee River during the short past period of record of 50 to 100 years has been at and above Chattanooga. However, my report on the survey shows beyond a reasonable doubt that such floods as the 1000 year flood on the French Broad River and the Emory River are just as likely to occur in any other stream or part of the basin. So that as a matter of fact the probability curves indicate that possibly a larger flood could occur on some of the tributaries other than on the Emory and French Broad so that we cannot take the past short 50 year record as the basis for which we should provide for our flood control.

The estimate in my report to Congress showing that more than 90 per cent of the flood damages occurred at and above Chattanooga took into consideration probable floods which might occur in any tributary or any part of the main stream which is clearly and positively shown in the flood-frequency [fol. 947] curve for each and every tributary and the whole main stream of the river. Those are 500 year floods and any floods.

Most of the flood damage to urban property during the periods of record is confined to Chattanooga and above, but we have it in our records there where it did occur. I think the greatest damage to any one point was Chattanooga and I do know that there was very serious damage to property on the French Broad in those heavy floods. I also know that there was very heavy damage on the Emory River which occurred after the report had gone in and which, if you will look at the frequency curve in the report, predicted that very thing.

I know that the French Broad and the Emory Rivers are above Chattanooga. I did not find any flood protection for the Emory or the French Broad Rivers in the TVA Unified Plan. I do not recall seeing the project which their plan called for but they are carrying out the construction of reservoirs on the major tributaries above Chattanooga. They have gotten only so far at the present. I examined the TVA Unified Plan in its report to Congress of March 31, 1936, and found no flood control plans on the Emory or French Broad Rivers. Their projects have not yet reached the state where they have covered these important and major reservoirs on all tributaries, but they are carrying out the general purposes recommended.

I assumed that TVA in its Unified Plan submitted to Congress was just starting out on the original project. The report on the survey gives a general plan of developing the basin and of developing the flood control and TVA certainly is going ahead and doing just about what I would have done [fol. 948] if I were in charge of it. I did not assume that the TVA Unified Plan was just the beginning and I did not take into consideration the enlargement of that by reservoirs on all those upstream tributaries. I would not call it a beginning exactly because the projects which they have under consideration now will bring about a great effect in the reduction of floods. (After calling for and inspecting the TVA Report to Congress of March, 1936.) I do not find any TVA project on the Holston River.

I did not testify that I had given consideration to the flood control plan proposed by Mr. Kurtz and that it would not give as much flood protection at and above Chattanooga as the TVA Unified Plan. What I testified, if I am not mistaken, is that Mr. Kurtz' plan would not provide the most effective and most reliable flood control for the lower Tennessee. I did not compare it with the TVA Unified Plan.

As to whether I would not say that the Kurtz plan would provide a much higher degree of flood protection for Chattanooga in the case of any large flood than the TVA Unified Plan, if I were really working it out, I would take the figures and actually work it out and tell you. That I have not done, but I think I could give you an answer in some way.

I have not compared the two plans but I compared the layout and the general proposition. I know how they oper-

ate, what you can do with them, etc., and know the figures, about what the Kurtz plan called for and what he said, but I do not remember them now. I do not recall the figures of the relative amount of flood storage that would be provided in a large flood by the Kurtz system and by the TVA Unified system at and above Chattanooga. I looked the figures over but I do not recall whether the ratio is 10 to 1 in favor of the storage as provided by the Kurtz system. I would not say [fol. 949] that is not accurate. It is on record so you can look it up.

"Q. Now, Colonel, assume a storm lasting three days with eleven inch rain, 90 per cent run-off, what would be the height at Chattanooga, with no dam?

A. You are asking me a question now that the best engineering skill at Nashville and the best engineering skill in the Chattanooga district took two and one half years to work out.

Q. Did you work it out in that two and a half years?

A. Yes, I worked it out.

Q. Did you get the answer? What is it?

A. I did not work out the Kurtz plan, because it would destroy the resources of which I testified.

Mr. R. T. Jackson: Read the question and see if that has anything to do with the answer.

By Mr. R. T. Jackson:

Q. Make that the head at Chattanooga with no dam.

A. Eleven-inch rain fall, covering the whole basin above Chattanooga.

Q. That is right.

A. What is the control now, in the uncontrolled area?

Q. What is that?

A. What dams?

Q. No dams at all.

A. The dams are not located at Chattanooga, they are located some as much as 200 miles above, and they do not cover every tributary above Chattanooga.

Judge Allen: We are assuming that there are no dams whatever.

The Witness: Assuming that there are no dams whatever?

Judge Allen: Yes.

The Witness: An eleven inch rainfall over the entire basin above, would make, probably something like the 500 year flood, or maybe larger.

By Mr. R. T. Jackson:

Q. It would make a gage height of probably 73 feet at Chattanooga.

[fol. 950] A. That appears high to me.

Q. Seems high?

A. But I could not tell unless I worked it out, and it would take a whole lot of computation to really give you a close estimate on it.

Q. Assuming the gage heights at Chattanooga would be in the order of 70 or 73 feet under the conditions of such a rain and run-off, what would be the reduction in stage at Chattanooga, that would be produced by Mr. Kurtz' system of flood detention, flood control reservoirs?

A. That would depend a great deal upon the way the rain fell.

Q. If eleven inches fell in three days on the drainage basin up-stream?

Judge Allen: 90 per cent run-off.

Mr. R. T. Jackson: With 90 per cent run-off, exactly.

The Witness: With a 90 per cent run-off, exactly. All right. I picture in my mind about the way that floods come. Let us assume, say about three inches of this rain fall fell the first day, and that it did not rain much for a day or two, or three days, something like that, and then more——

By Mr. R. T. Jackson:

Q. You will never get the eleven inches in three days if you get three inches the first day and no more after that.

A. All right. Let us have three inches the first day, two inches the next day—that is five,—then six inches the last day—that is eleven all together.

Q. All right.

A. Well, what would happen? The flood control reservoirs above will regulate the flow from that first three inches of the first day and spread it out along the main stream. The channel of the river will be full, so that when the rain-

fall on the second day comes along it will be spread along a little more of the channel, the channel will be somewhat larger all along, say up 200 miles above Chattanooga, all the way down to Chattanooga, and probably past. The rain on the third day, what would it be, six inches? Six inches would fall. The stage is set for all of that uncontrolled water that falls on all of the uncontrolled area, to come down the channel of the main stream very rapidly. Why? Because the channel of the river in its natural condition has a regulating effect on the control of floods, and that is caused by the fact that it takes considerable time for water [fol. 951] on the upper tributaries to flow down, go down the river, because as the head of the flood comes along it must fill all these little places, it must circle the banks and run out, so the actual progress of the volume of water is slow.

Now, let us take the system of reservoirs Mr. Kurtz has provided. The channel is full, the whole channel is full, and can bring the water down from the upper river very rapidly. So, I have pictured that in my mind, and I ask, what was the uncontrolled area?

Q. It is all uncontrolled.

A. All uncontrolled, not covered by the Kurtz system. What is the drainage area above the Kurtz system, tell me the total?

Q. I don't know.

A. I have not the figure in my mind, but looking at the map it is clear to me that it does not control all of it.

Q. Did you express an opinion on direct examination without knowing what the Kurtz plan covered, what it controlled?

A. Very well, if you do not want to give me the information I will take, say all of the uncontrolled water, six inches from the basin above, and we have the valley full of water, and bring it down very rapidly, and pile it up further down stream."

Examination by the Court:

That is my answer with the Kurtz system. There is no control with the six inches and none of that which is behind the dams on the third day would be controlled. You see there is a large area between the dams and Chattanooga and a lot of tributaries with low dams. If he would give me what the area was that was under control I would have

a very good idea of how much flood water was behind the dams, but I have a very good mental picture of that controlled area. All right, the valley is full of storage with it all stretched out along the whole channel and the whole channel is full. It is just the same as the dams displacing [fol. 952] the natural flood storage so that it would pile the water from the whole uncontrolled area and would advance very rapidly down to Chattanooga and beyond, plus the water from all of these reservoirs. It being piled up high, it would be coming at the most rapid rate of speed, it could possibly come out of those dams, it not being stopped. That would also add to the water on that day. Every bit of that that ran out would also come down very rapidly. Now compare that with the system which is being constructed by TVA of large reservoir projects on the major tributaries. For the purpose of this question, they would catch and hold back as much as they could of all of this storage. They would not let any of it by if they could help it, while the Kurtz plan just lets it go ahead and pour through and the greatest part of the danger there would be from this situation. Furthermore, we have now the whole of the main stream channel, the high dams with flood control system, it would be perfectly controlled, a very good control, I would say, all along the channel. It would absolutely stop any piling up. So you see my answer to those two projects, it is very simple as to the comparison of the two. As to the exact result, I would have to sit down and figure it out. I do know that the effect which I have described would occur.

Cross-examination continued:

"Q. Now, Colonel, will you answer my question if you can, and if you cannot, tell me; that is on the basis of the rainfall I have assumed and the run-off I have assumed, how much, if at all, would the operation of the Kurtz flood control reservoirs reduce the natural stage at Chattanooga, how many feet would you say it would reduce it, over 19 feet?

A. Let me think a moment. I will put the picture there for you, and I have got to form a mental computation. I [fol. 953] cannot—there is so much—I do not believe it is going to reduce the floods so awfully much here, not the height of them, the volume, there will be some of the volume

taken away, but on account of the situation it creates, it will pile up.

Q. You do think it will reduce the volume?

A. It will reduce some, yes, but I cannot show—I picture the flood peak like that (illustrating with hands) under the Kurtz plan; and when in the natural condition it is like this (illustrating). Do you see what I mean? I figure the flood height under the Kurtz plan, the hydrograph is something like that, whereas the ordinary type of hydrograph is something like that (illustrating).

Q. Colonel, for the same storm could you tell me how many feet, if at all, the TVA Unified Plan would reduce the gauge height at Chattanooga?

A. Considering the results I get from the Cove Creek, which is now the Norris project as given in those reports, I believe that the 1926 flood——

Q. Not the 1926 flood.

A. I am giving that as the basis of my estimate.

Mr. Fly: May it please the Court, I object to this line of questioning. He is asking this engineer to work out a theoretical flood problem that will take any competent engineer months to work out.

Judge Allen: Answer the question, Colonel, if you can, and if you cannot, state your reasons.

The Witness: I would like to answer it as briefly and as clearly as I can and not be interrupted.

From the results which I got in my report on the survey, which shows the results at Cove Creek or Norris Dam, and the series of dams on the main stream with the surcharge pondage, would have had on the 1926 flood at Chattanooga, was approximately 12 feet.

Now, the amount of storage in the Norris Dam is not as great as that contemplated in my report. However, they have the Hiwassee Dam in that program. I can mention the Fontana Dam, and so forth. Now, those are going to have an effect which will be probably greater than the Cove Creek Dam."

[fol. 954] The amount of storage at Cove Creek is not as much as provided in my plan and the flood I was just asked about is very much larger than the 1926 flood. For those other floods my studies indicated that the amount it would reduce the peak from the maximum at Chattanooga would

be approximately similar for larger floods on account of the similar shape of the hydrographs. The reduction would be about the same proportionately. I forget the exact amount of the 1926 flood. Assuming it was 45 or 50, 12 from that is 38. Suppose this larger flood was 60 feet, 12 from 60 is 48. It is then a reduction in feet from the amount of floods.

When I made these calculations from my mental picture, I had in mind that the Kurtz system of storage is ten times as great as the TVA control and I had a picture of approximately what the controlled drainage area under the Kurtz plan and the TVA Unified Plan was. I do not recall well enough without looking at the map to see whether the controlled drainage under the Kurtz plan was 75 per cent of the total area above Chattanooga and only 25 per cent in the TVA Unified Plan. My conclusions would not be affected by whether the controlled storage under the Kurtz plan was ten times that under the TVA plan because I assumed he made it large enough to iron it out. It does not hold the water there and it has no control over it whatever. It lets it out, it flattens it out, which is a benefit for the locality right above or below the dam. It is a danger at times for various parts of the river. I understand that at the peak those reservoirs would be actually holding back a volume of water ten times as great as the volume of water that [fol. 955] would be held back by the TVA Unified Plan reservoirs above Chattanooga in the case of a larger flood. There would be a considerable amount there at that time but I also know that it would have the channel full from 200 miles upstream all the way down and I also know there was this uncontrolled water as compared to the absolute holding out in our reservoirs and the absolutely effective regulation along the main stream. That picture I have in mind.

I also understood that the Kurtz reservoirs had gates as well as certain open sluiceways of limited size but I know the method of operation and if I am not mistaken he bragged about the fact that it was automatic. You would not have anything to do, just let the reservoirs take care of themselves. I thought he said that is the way he would operate them; they could operate the other way. He stated, if I am not mistaken, that the operation would be automatic which means that the greater amount of storage you have got in there, the greater amount of water which would be

coming out. In other words they are effective just below the dam but it does not have that faculty of catching and holding right out of the river so that it will not endanger other areas. It does not hold it out, it lets the water still pour through.

"Q. You didn't understand then that the outflow from those reservoirs would be set at a predetermined rate, and would not increase, no matter what the inflow might be, until the reservoir was full?

A. It would not exceed it, you mean?

Q. Yes, would not exceed that.

A. If it was automatic you couldn't help it. The higher the reservoir, the greater the flow.

Q. Not until it went over a spillway, would it?

[fol. 956] A. Oh, yes, the higher the water, where it is uncontrolled in this exit, or this gate.

Q. It was not uncontrolled, you understand that, don't you?

A. I know that he stated it would be automatic, and the higher the water rises in the reservoir, the greater and greater and greater the amount of water that will run out of that thing.

Q. Didn't you understand he said there would be gates that would be worked on a preconceived schedule that would regulate the outflow as well as the inflow?

A. I don't recall that.

Q. You didn't understand that when you made your answer?

A. No."

I did not testify that Cove Creek alone would have reduced the height of the 1926 flood at Chattanooga by something over 12 feet. Case one in the Table at the bottom of page 72 of my report (Complainants' Exhibit 105) shows that Cove Creek alone would have reduced the flood height at Chattanooga in the 1926 flood by 5.7 feet. Case three on the same page shows that Cove Creek and the ten foot surcharges on the high dams on the main stream above Chattanooga would have reduced the flood height at Chattanooga in the 1926 flood by 12.1 feet. I do not know that if there was a flood of the size about which you inquired (70% larger than the Chattanooga flood of 1867), Watts Bar and Coulter Shoals would be completely flooded out. You have got to

show me, when you get those reservoirs up here, and these projects along the river. I would like to work it out.

"Q. Then you are answering without the benefit of ever having made any study to determine whether a flood 70 per cent greater or higher than the great flood of 1867 would flood out entirely Watts Bar and Coulter Shoals as they are proposed by the TVA?

A. Oh, there is data in the report there that I can point [fol. 957] to, I can give it to you right now. I am rather inclined to think that they would not flood out, those two.

Q. You think they would not?

A. May I look at the date in the report? I can answer it, if it is material to the issue. Frankly, I don't think all that is material to the issue.

Q. All right, just tell me this, is your testimony as to the effect of these dams in a large flood of the size I have asked you about based upon the assumption that such a flood would not flood out Watts Bar and Coulter Shoals Dams?

A. Absolutely not.

Q. All right.

A. I didn't make any such assumption because it doesn't affect anything I was working on in that case, and it doesn't affect this case."

Examination by the Court:

My testimony with reference to the reduction of 12 feet in the flood height at Chattanooga was based upon the proposition that Norris Dam would be operating together with the other dams in the system, and the statement with reference to 5.7 feet was based upon the operation of the Cove Creek Dam alone.

Cross-examination continued:

"Q. But in your present testimony you do not care whether Watts Bar and Coulter Shoals are flooded out or not, is that right?

A. Of course, I care. I don't want them flooded out, but it has reference to that situation as I have stated it.

Q. All right, Colonel, let's go to something else. Now, one question about the downstream situation. When you [fol. 958] get down below Chattanooga, at least in the past, damages have been largely caused from flooding or overflows of land, flooding the lands, haven't they?

A. As I recall, that is true. But now, listen——

Q. Well, you don't need to go any further so far as I am concerned.

A. Yes, I do, in order that the Court may know the truth, the whole truth and nothing but the truth. Now, I think as I recall, most of the damages below are from the overflowing of land. Now, let's think a minute. I am recommending, and the TVA is constructing a project for the development of the resources of our waterways, which I have already testified in the case beyond a reasonable doubt, that it will bring about the industrial development of the resources of the waterways. If that be true—and furthermore, the indications are that it will be a rapid increase. Under those conditions——

Judge Allen: Pointedly, your point is that there would be also damage from obstruction to industrial development?

The Witness: Exactly, which will be developed all along the river, and throughout the area, your Honor. That is the idea exactly.

Judge Allen: All right.

The Witness: So we cannot picture the damage today and say that the damages today have any bearing upon what they will be in 1950 unless we figure what will be the situation of the development of the area in 1950. Do you see the idea?

Q. I am afraid I don't, Colonel, but if you will just keep to the point of time that I can visualize, it will help me on that, and then I will let you go on the other as far as you want to.

Q. Now, you have told me that the principal, at least, actual damages incurred up to this time have been overflowed land down below Chattanooga?

A. That is correct up to the present now.

Q. That is right. I understand that you have a mental reservation about the future. Now, isn't it a fact that the TVA Unified Plan will permanently flood many many thousands of acres more land in the Tennessee Valley below Chattanooga than is occasionally flooded under existing conditions, or under natural conditions?

[fol. 959] A. I think that a very good point to clear up.

Q. Well, just answer it first, and then——

A. No, I don't know it, because your estimate again is

not correct. No, it is not correct. But now, let me clear it up and make clear and explain, which I may, if I may.

Q. All right.

A. The proposed projects in the report, and those now being constructed by The Tennessee Valley Authority will overflow, the pool will overflow a great deal of land. The estimates in my report include full compensation for that land overflowed. It puts that land to use, as an element of the navigable water-way and flood control system, just like buying the land and putting this building on this ground here for certain purposes, so that that land which is being overflowed has fully been compensated for and is being put to a very useful purpose. Now, along that valley, and along that land, throughout the whole of the region there are still large areas which today are overflowed by the floods. When you get the system completed it will not be overflowed, and it will be possible for people who desire summer homes to go and put houses of recreation right along the river bank for the people to live there. They cannot do it today.

Q. No?

A. So now, will you picture the valley now under the TVA Plan and now under the present conditions.

Q. Colonel——

A. Does that clear up that point?

Q. I understand that you have adopted the heroic method, or recommended it, whereby there will be no annual flooding of those lands in the lower Tennessee Valley because you will have premanently flooded them for all time?

A. No. Let's——

Judge Allen: Well, your answer is, isn't it, Colonel, that necessarily the land beneath the pools of the dams will be covered with water.

The Witness: That is true.

[fol. 960] Judge Allen: And underneath the pools will be permanently covered with water, isn't that right?

The Witness: That is correct.

Q. Presently it is farmed, isn't it?

A. May I complete my answer?

Judge Allen: You have really explained it, I think.

Q. Now, the Gilbertsville Dam alone will flood somewhere around 140,000 acres of valley land, won't it?

A. It will flood a large area.

Judge Allen: The Court feels that this matter does not need to be gone into any further. The record shows that the land taken has been covered with the water of these pools; that it will be permanently so covered for the uses of the dams, and for the uses of navigation. Now, we do not need to go into it any further.

Mr. R. T. Jackson: If that is so, I merely want to bring out this, that it is going to be flooded for flood control permanently, that it is going to flood permanently a great many more times as much land——

Judge Allen: That is another question. The Court will decide the question that you are raising here. So far as the facts are concerned, Mr. Jackson, they are in this record.

Mr. R. T. Jackson: I say I was merely trying to make sure they were in the record. I think your Honor is right, that they are in the record at the present time.

Judge Allen: They are abundantly in the record.

Mr. R. T. Jackson: If that is true, I certainly shall not try to get them there by this witness.

Q. Colonel, I invite your attention to this statement at page 79 of Exhibit 105, which is a copy of your report, reading:

'While the amount of water held out by reservoirs in the Tennessee River Basin appears large when compared to flood flows in the Tennessee River Basin, this amount is small as compared to flood flows of the Mississippi, and studies made by the Board preparing plans for flood control of the Mississippi indicate that the waters held out by flood reservoirs of this stream would not have a very great [fol. 961] effect on floods on the Mississippi, and as reservoirs used primarily for flood control of the Mississippi would require the use of sites necessary for the proper development of the Tennessee River for navigation, water-power, and flood control, they would prevent the proper development of navigation, water power, and flood control in this basin.'

And ask you whether you still are in agreement with that statement?

A. As I understand the question was concerning the very——

Judge Allen: Do you agree with it, Colonel?

The Witness: I have to find out what dams they were, your Honor?

Judge Allen: All right, look at it, and then say whether you agree with it, and then make your explanation.

A. Yes, I agree with it. I would like to explain however, what those particular reservoirs are. Those reservoirs are the same three large reservoirs concerning which he asked me the question before. In other words, they are three reservoirs which the Mississippi River Commission asked me to investigate or ordered me to investigate for further flood control on the Mississippi.

Judge Allen: What reservoirs are they?

The Witness: They are the three large reservoirs, one at Aurora Landing, one at Dam No. 3, and one at Chickamauga. They are not a part of the approved plan, and were turned down."

Those three reservoirs involved storage capacity of 7,508,000 acre feet.

I agree with the following statement of the reviewing report of the Board of Engineers in House Document 328 (Complainants' Exhibit 105) at Paragraph 47 on page 23:

"The District Engineer has shown that the construction of large reservoirs on the Tennessee and its tributaries for the primary purpose of controlling Mississippi River floods is physically possible but is entirely unjustified. The reduction in flood heights which could be produced would be of no great magnitude, while the diversion of valuable reservoir sites from their natural use for power development would cause economic losses far greater than any flood control benefits which could be expected."

[fol. 962] I would like to explain again that those are the three high dams which were turned down by everyone and they were destroying the resources just like the Kurtz project and the low dams would.

"Q. All right, Colonel, I direct your attention to this statement of the Chief of Engineers at page 3 of Exhibit 105:

'The operation of the storage reservoirs on the Tennessee for the primary purpose of restricting floods in the Missis-

sippi would have no marked effect on the plans for flood control there, but would seriously injure the value of the power possibilities of the Tennessee basin. If the reservoirs were operated for the primary purpose of power in the Tennessee basin their effect on Mississippi River floods may be taken as negligible.'

And ask you whether you agree with the statement of the Chief of Engineers?

A. That was written at a time——

Judge Allen: Do you agree with the statement?
The Witness: Not now, your Honor.
Judge Allen: All right.

A. If I might explain, the Act of 1928 directed the Chief of Engineers to make a study of reservoirs on all of the tributaries of the Mississippi, with a view to determining whether or not such reservoirs would materially change the Jadwin plan which had been adopted, and they started to go ahead and construct it. There had been a lot of effort made to have reservoirs constructed under the belief that they would,—that this Jadwin plan was unnecessary. So they called upon all of the district engineers to submit information as to what would be held out under two plans. One was big high dams primarily, and the other projects for the development of the river for the purpose of navigation and flood control in combination with power, you see. So that both those plans were worked out. Now here he speaks of,—these that he speaks of are the high dams primarily for the flood control on the Mississippi."

[fol. 963] Examination by the Court:

The Jadwin plan was a separate project but there was a question on account of all of the belief of a great many engineers throughout the United States that if you put reservoirs on here you should not build that plan. The Jadwin plan embraced dykes, mattresses and diverison of the current, and provides for levees to keep the water to the main channel until it would start to overflow and then by-pass it, extending all the way down from the Ohio to the Gulf. It changed the current of the river too and improved the river in spots. That was a large plan. The question was would the reservoirs on the tributaries of the Mississippi make

that unnecessary. The data which I selected was sent to the President of the Mississippi River Commission for his use in determining that question. At the time the report was submitted, the studies had been only partially completed. I asked from the President of the Mississippi River Commission information as to what effect the data which I submitted to him would have upon the flood control of the lower Mississippi. The big question at that time was would it require a change. It was known perfectly well that you would have to carry out the levee system anyhow and the only question involved was whether or not there would be a material change in the plan, so the wording there states that it would not materially affect the plans. Since that day there have been studies on the complete system of flood control and a study on a comprehensive system of reservoirs on the tributaries of the Mississippi for flood control has been completed and gone up to Congress with the recommendation of the Chief of Engineers in it. It is found in that that reservoirs on the tributaries can materially benefit [fol. 964] the flood control of the lower Mississippi and may eventually be so much that it will avoid the necessity of ever sending water down these by-passes. The benefits estimated by the President of the Mississippi River Commission as to the justification of constructing reservoirs on the tributaries was to the effect that the benefits due to that very flood control which these reservoirs on the tributaries would bring about, was sufficient to pay for about one half the cost of these reservoirs, and it recommended that the Federal Government undertake a program for participating, at least, in the construction of such reservoirs. Since that first report there has been a second report in which the Chief of Engineers has recommended to Congress the construction of a large number of reservoirs on a great number of tributaries, which is for that purpose. So you see it does right now constitute a very important element of flood control on the lower Mississippi.

"Mr. R. T. Jackson: I move to strike out the last statement. That is not my understanding of the facts as they have been proven.

The Witness: I said it is a fact.

Judge Allen: The Court understands that the witness is expressing an opinion of all the testimony on that question, and allows that as such."

Cross-examination continued:

"Q. Now, you gave some testimony with reference to navigation by the low dam plan and by the TVA Unified Plan on the Tennessee and stated that boats travelling in the high dam system can travel at about 12 per cent higher speed than in the low dam on account of the delay in passing through the locks. How long did you estimate it would take to make a round trip between Paducah and Knoxville, [fol. 965] using the waterway resulting from The Tennessee Valley Authority Unified Plan, leaving out of consideration the Wilson Dam and the Hales Bar Dam, which would be common to either plan?

A. The total length of the river is about 600 miles, I believe. The length of the Wilson Dam pool and the Hales Bar pool is about, between 40 and 50, something on that nature. Subtracting that from 600 will give you about 560, roughly. You can work it out, put down the actual figures from the book. Now, assuming that boat travelling at 6 miles an hour, in the first place, 6 into 560 is 9—90 hours, a little over. That is right, isn't it? It would require them 90 hours if they were not delayed, travelling 6 miles an hour, to travel through that portion of the main stream to be covered by the new project.

Q. I mean travelling the whole distance, but you are to take no account of the lockage at the two dams for they are common to both?

A. Yes, that is what it is. May I continue?

Q. You have answered as far as I am concerned.

The Witness: No.

Judge Allen: Have you explained your answer?

The Witness: I have not explained where I get the 12 per cent, your Honor. I am trying to make a detailed statement so he will have it, make it clear to his engineers without the shadow of a doubt.

Mr. R. T. Jackson: It will only delay the cross examination.

Judge Allen: The witness must answer the question, but he is entitled to explain his answers. He may proceed.

The Witness: Yes. So that with a boat travelling 6 miles an hour, it would travel through that part of the stream in 90 hours, about. Now, let us take the delay at the locks. There are 32 locks in the low dams. There are seven in the high. Subtracting seven from thirty-two we have twenty-

five. All right. The average delay at the locks considering all things, is about one half an hour. Multiplying that by 25 gives us, 2 times 5, say—that is 50 hours,—no, that is not right.

Judge Allen: 12½ hours.

The Witness: 12½, excuse me. All right. Very well. 12½ divided by 90 is somewhat over 12%, say."

[fol. 966] I estimate that a tow of eight barges in the high dam system will make on an average on the round trip about six miles per hour, and I think that is considered as practical. Under the low dam system it would not be greater. It would not be that great.

It is 650 miles from Paducah to Knoxville. I estimated that the time it would take for the lockage through a low dam in comparison to the lockage through a high dam would be practically the same, that is, the actual time of the boats going through the locks. The delay at the locks will not be the same for a low dam as for a high dam. That is another thing. The delay at the locks is just an average of a number of factors which includes the stopping of the boats, the time it has got to slow down instead of going on at six miles an hour just past the site. You have got to slow down as it comes in. You will take off a great deal of time before you get to the lock.

Examination by the Court:

If you have a dam 30 feet high and a dam 100 feet high, there is very little difference in lockage time for the same boat because the actual time for going through the lock is only a small part of the total time in making the complete lockage. By actual experience we fill the locks in these high dams, up to 50 ft. locks, in about the same time we fill the locks in the low dam system. So you see there is very little difference so far as that element is concerned. The other factors of delay which I might mention is the approach to the lock, the time of actually going through the lock, which is a part of the factors, that is, the tying up [fol. 967] of the boat, the breaking up of the tow, and the tying of the barges and putting them in the lock. There are other things also; when you are approaching at one time a lock from above it will be filled so that you can go right in, and at another time it will be down. Sometimes

there is a boat coming up in the other direction. There is very little difference in time which would be required to go through the locks on a high dam as compared to a low dam. I do not allow any difference in time because I think on the average it will be about the same. Actually, you can go through the high dam lock more quickly than you do the low dam locks for the simple reason they are shorter, the time of actually going through is not so long and you carry only a boat and three or four barges through. In a high dam lock with a big tow, when the big tow gets to the high dam lock you have to send through the first four barges and the last four, and that will require a little longer time.

"Judge Allen: Let me get that straight. Do you mean the high dam will permit more barges to be put through than the low dam?

The Witness: At one loading, your Honor."

Actually a small tow can go through a high dam more quickly than through a low dam, which is due to going through the lock and the delays in going into the lock part of it. The lockage part of it is much more on the low dam than on a high dam, all things considered. I think the usual estimate is to be considered on the average dam for towboats to go through is about the same.

[fol. 968] Cross-examination continued:

Going through these locks 60 ft. by 300 ft. in the TVA Unified Plan above Wilson Dam, there is a breaking up of the tows plus also the filling of the lock and putting the second one in. I am simply taking the general experience and the fact that that part is a very small, minor part of the total delay. It is my testimony that whether you have to break a tow at a lock is an insignificant element. It would not more than double the time of the lockage.

"Q. You have to go through the lock twice, don't you?

A. That factor which we use to consider, and the Court wishes to consider, is the total delay of passing through the lock.

Q. If you will just answer my question, Colonel.

Judge Allen: He has answered. He said no.

A. Yes, that is my answer.

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Vol. III

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

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vs.

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Judge Allen: His answer was no.

Q. Colonel, assuming you have one of the locks 60 by 300 feet, useful length, above Wilson Dam with a towboat towing eight barges as you have described, would you have to break the tow?

A. This is a lock on the high dam.

Mr. R. T. Jackson: Please, may I have a yes or no answer?

The Witness: Before I answer yes or no I would have to ask the question, that is what I was asking.

Judge Allen: Is it a lock 60 feet by 300 feet?

Mr. R. T. Jackson: A lock 60 by 300 feet useful length in the TVA Plan above Wilson Dam.

The Witness: Oh, yes. You have that in the report.

Mr. R. T. Jackson: Please, may I have the answer.

Judge Allen: Can you answer, Colonel?

The Witness: I cannot answer by an exact figure.

[fol. 969] Q. It does not call for an exact figure. Would you have to break the tow or not?

A. Yes, you would have to break the tow."

If you have to break the tow you would not have to go through that lock twice to get upstream. You would go through once with each part. You simply send half through the locks and then put the other half through, you don't come back and get the other half.

"Q. What takes it through, the towboat?

A. Oh, they could run in. When the tow approaches from above, it would shove it right into the lock, the first part, then you break the tow. Then you would either be carried out, you would either take your tow through first and run it out, or else run the boat out and get the other, or else run it by hand or machine or some other means. Now, if there were much traffic on the waterway it would pay to put in a machine to help carry through these breaking up of tows. It is practical and could be done readily, and could be done to help expedite the movement through."

You first break the tow and then after you get the tow through you have to get your tow together again and get

it under way. If you were approaching one of the locks in the low dam plan above Wilson, which would be 110 ft. wide by 600 ft. long, useful length, with a towboat drawing eight barges, it would not be necessary to break your tow.

"Q. That is the reason you recommended locks of that size when you made the recommendation on the low dam plan, wasn't it?

A. It was but a little part of the other delays in connection with the low dams, this balance of time due to double lockage.

Mr. R. T. Jackson: I submit he is not entitled to go over the whole case every time I bring up a point. Otherwise we will never get through.

[fol. 970] Judge Allen: Sustained.

Q. Now, Colonel, I invite your attention to a statement in House Document 328, exhibit 105, page 100, reading as follows:

'It is believed absolutely essential that in any high fixed dam there must be two locks in parallel to provide for dependable navigation.'

Did you ascertain from your examination of the high dams under the TVA Unified Plan whether any of them provide for two locks in parallel?

A. I think that I ought to be shown the book, the book you refer to. Never mind, right now. If I am wrong, why, go ahead.

Judge Allen: Well, do they provide for locks in parallel?

Mr. R. T. Jackson: Yes, the last sentence. My question——

The Witness: They are not now constructed, but the plans do contemplate or provide, if I am not mistaken, they have provision for putting it in whenever the commerce demands."

I have seen all the dams and sites in the TVA plans and I saw the places where you can put in another lock if you want to. There is room and they are great big dams. You can put several in if you want to. I know General George B. Pillsbury. He has been Assistant Chief of Engineers for sometime until recently, and a distinguished engineer.

"Q. Colonel Watkins, I direct your attention to the statement of General Pillsbury, testifying in the Ashwander case, page 670 of the transcript, wherein, after describing the time of lockage through high and low lift locks, he states —and I am quoting, following that through, 'And the Tennessee River between its mouth at Paducah and Knoxville, a very simple calculation shows that the additional lockage time required under that assumption, to pass through the river from its foot to its head would be nine hours and twenty minutes'; and ask you if you agree with that statement?

[fol. 971] Mr. Fly: I object.

Judge Allen: Objection sustained. The witness will not answer. You may have your exception.

Mr. R. T. Jackson: Let the exception be noted, if your Honor please.

Judge Allen: You could have called General Pillsbury, of course.

Mr. R. T. Jackson: I do not believe we could.

Mr. Fly: I will be glad to have you do that, Mr. Jackson. I will cooperate with you.

Mr. R. T. Jackson: I have had considerable experience with the Government for two years, your Honor, and they have refused even the request of the presiding Judge for the presence of an officer in the administration of justice, saying that is a rule the Government had adopted.

Judge Allen: The Court considers the injection into this record of testimony of a witness in another case, between different parties, as offering totally incompetent testimony, a different witness, not this witness.

Mr. R. T. Jackson: I understood that to be the ruling of the Court. I had not anticipated such a ruling, or, of course, I would not have offered it.

Judge Allen: That is the ruling of the Court, and the Court will doubtless adhere to that ruling, if similar situations arise.

Q. Colonel Watkins, you stated in your direct examination that at the upper end of the pools in the low dam plans, the pools would have very shallow water; will you please tell me what the depths in the upper ten miles in the Aurora pool under the low dam plan would be?

A. It is the navigable channel of the river, generally utilizes the greatest depth until it approaches the lock.

There you dredge a channel, from that point into the lock. It is common practice to make the depth of that channel to the lock say two to three feet greater than the navigable depth all the way up to the locks, so the controlling point at the upper end of the pools is generally that. Now, as to whether that applies to the particular Aurora Landing project, I would have to look.

Q. Your direct answer to my question is that you do not know?

A. No, that is not the correct answer at all.

Q. What is it?

[fol. 972] A. The correct answer is the one I gave, that is the usual and common practice, that is the way they do it.

Q. I am not asking about the usual and common practice, Colonel Watkins. Please tell me what are the prevailing depths in the Aurora Dam under the low dam plan?

Judge Allen: Do you know the specific depth?

The Witness: No, I do not, your Honor. I have explained that in my answer, and went ahead and explained."

I do not know the depth in the upper ten miles of the Aurora Dam pool under the low dam plan at low water without looking it up and the answer is the same as before. Depths in excess of 16 to 18 feet are valuable to navigation designed to use a 9 ft. project in increasing the velocity of the boats. Depths in excess of that amount are valuable.

"Q. What difficulties are involved in the salvage of boats, where the depths are 80 to 90 feet?

A. Well, if you have got a good pilot on the boat and anything happens, he sees a barge going down, I think it would be common sense to run to shallow water somewhere. Take the high dams, the deep part,——

Judge Allen: Your answer is that it is harder to get out, the greater the depth is?

The Witness: No, your Honor, it is not harder to get out, for the simple reason that all along the low dam system you have deep pools. You also have deep pools under the high dam system. If anything happens to your boat you would have to go down like that, it would go down in deep water, 80 per cent of the distance. Under both of them there is generally places where you can ground your vessel. I think that answers."

It is customary to allow from 2 to 3 feet over depth in dredging for a channel such as a 9 ft. channel. It is common practice, I think now, to have an additional depth over the 9 ft. up to about 3 feet, making about 12. That is what they [fol. 973] did on the Kanawha, I know. As to how many miles of channel of less than 12 feet would exist on the entire channel under the low dam plan with low water conditions and the amount of dredging which I have stated, there would probably be only the approach to the lock. There may be some bars below, where they approach that measure. Where you have to take the shallow approaches to the pool they constitute as a rule for various rivers,—I have not taken the profile and gone over them all, about 20 per cent of the total length. If we used something over 600 miles in the new section of the river, multiplying that by 20 per cent would give 112 miles under the low dam plan. That is not based upon an actual examination of the profile of the river which might result in a lower figure. It is an approximate estimate but reasonable enough. You can work it out if you want to. It is based on my study of a whole lot of rivers, including this one. It might apply to some other river a little more or a little less. If the river is at a 4 ft. stage the depths at the head of the pools would increase by approximately four feet. I do not think it is exactly true that the river is at a 4 ft. stage or greater for a substantial part of the time, not in its natural condition. In the upper end, just let me figure now, I have found out with re-regulation that we provided about 3 feet additional depth over these critical bars with all of the regulation I had. Now the average annual flow, not available 60% of the time, in the upper part of the river, I don't think is over about 3½ ft. up there over the critical bars. So you see it does not go up so very fast. That 4 ft. increase on the upper river, I doubt if it occurs over about 25 per cent of the time. I would say that it would be fair to say it would [fol. 974] range at least 30 per cent at Knoxville to 75 per cent down by the Aurora pool. We have better flow on the lower river.

I don't recall testifying that the increased towing efficiency that could be obtained with an increase in depth from 9 to from 13 to 16 ft. was 10 to 20 per cent, and I don't recall giving any estimate of increased towing efficiency by

reason of the greater depths that were increased to from 13 to 16 ft. as against 9 feet.

"Q. Well, what would you say that the increase in towing efficiency would be for depths that were increased to from 13 to 16 feet as against 9 feet?

Judge Allen: Now, Colonel, answer that question please, and then make your explanation.

The Witness: His question was what was the towing efficiency. I said we are now—I can show you a curve from which we can get down to the various depths and determine what they are. All right, now, this is the chart, or the curve. In explanation of this curve I will state that before I was on the survey on the Tennessee River and its tributaries I was engaged on the survey of a proposed waterway which ran from Toledo to Chicago. The controlling factor in that case was the speed——

Mr. R. T. Jackson: I object to this.

Judge Allen: Colonel, we are limited in our examination to this case. Now, from that case you doubtless got some experience on which you draw in testifying in this case. But confine your testimony, please to this case.

A. That is satisfactory. This chart shows the speed in miles per hour and in the horizontal line it shows the indicated horsepower——

Mr. R. T. Jackson: I object.

A. For the various speeds of boats.

Mr. R. T. Jackson: I object to the statement of the witness and ask that he be required to answer direct.

The Witness: I am answering it as closely and quickly and as positively as I can.

[fol. 975] Judge Allen: Can you answer the question and then explain your chart?

A. My curve here shows that boats operating at the same horsepower, under the same power, can travel at about—was that 16 feet and 9 feet?

Q. It is 12 to 16, I wanted to know what the differences would be for the range of from 12 to 16 as compared to 9?

A. Well, the whole range from 12 on up to 20, and deep water I have on this curve.

Q. I didn't ask you for that, Colonel.

A. Now, if I can pick it out——

Judge Allen: Give us from 12 to 16, Colonel, please.
The Witness: From 12 to 16 the towing efficiency is—it is 15 per cent."

It would be about 15 per cent for one of the higher speeds. The line I took it from was one using 10 miles per hour because the lines were subdivided. It would be slightly different in the lower one. The lower the figure you take, the less spread there is between the speeds but not necessarily the less efficiency.

"Q. Now, according then, as I understand your testimony on these depths, for somewhere around 20 per cent of the distance, for an average of somewhere around 50 per cent of the time, that is between 30 on the upper river and 75 on the lower, the depths at the heads of the pools will be somewhere between 12 and 16 feet and will probably average around 13, will they not?
A. No, I think I can explain very briefly the basis of my estimate so that it will be in the record.
Q. Please don't do that. You have several times.
A. No, it will not—I said so.
Q. All right.
A. I said no. Now may I explain as quickly as I can, so we won't delay this procedure any longer? I can give you just what you need for your records.
[fol. 976] Q. Please don't explain it again, so far as I am concerned.

Judge Allen: That is all right, Colonel.
The Witness: May I go ahead, your Honor?
Judge Allen: Not right now.

Q. Well, isn't it true, Colonel, that if the average increased speed resulting from this increased towing efficiency would not be over 15 per cent as you estimated, and when you take into consideration the actual depths that there will be over the greater part of the distance between Knoxville and the mouth of the river, the increased towing efficiency over all will be less than 2 per cent as compared with the 15 per cent that you stated in your direct testimony?
A. No, I do not agree with it in the least.
Q. You do not agree with that?
A. I would like, if I may explain briefly.
Q. The Court said——

Judge Allen: Now, just a minute. Well, all right.

A. This curve which I have here shows the increased speed which you can obtain.

Judge Allen: Now, does this relate to the Tennessee River?

The Witness: It relates to depths for any water-way your Honor, various depths. It shows for depths, various depths, the speed you would get for boats with the same power, for depths of 12 feet, for depths of 13, 14, 15, 16, on up to 20 feet, and on up to deep water.

Judge Allen: All right.

The Witness: There is your picture written right in there. You don't need all these detailed questions. They are written right there.

Judge Allen: All right.

The Witness: Now, with that in mind you have got a chart here which shows the efficiency for all these various depths. All right. Now, as I told you before the shallow bars over which the boats have to pass constitute approximately 20 per cent. Very well. 20—I mean now that amounts to about—Well, in the low dam system you have that in every [fol. 977] one of the pools and throughout the pools there are certain shallow depths. If you will notice while the increased depth of 12 to 13 or 14 feet will not be so much greater, the depth of water will be there. In the high dam pools you have got deep water throughout. You see, except in the upper, only in the upper and at seven places, I find seven, we have greater depths, you see.

Judge Allen: All right, Colonel, you have explained this chart."

The low dam system involving the use of movable dams prevailed throughout most of the Ohio River when they were first put in. They do not prevail throughout now, not entirely, because they are replaced with higher dams. I want to testify that we are at the present time replacing the low movable dams with high dams throughout most of the Ohio system. Today they are mostly movable low dams but we are replacing them and we have a few of them in. It is a fact that there are something over 50 low dams along the Ohio River and something like five or six have been replaced.

"Q. And about how many tons of commerce move annually on the Ohio River?

Mr. Fry: I object to all those details of the Ohio River. I wanted to go into that, your Honor, and if he does insist on it, I will withdraw my objection.

Judge Allen: Objection sustained.

Mr. R. T. Jackson. An exception will be noted.

By Mr. R. T. Jackson:

Q. What would be the force of that flood of 1926 on the difference in current velocities just below dam No. 1 under the low system and the Tennessee River Valley Unified Plan?

A. As I recall, the river just below the low dam system is subject—that would be the 1926 flood, the velocities there run approximately eight to ten miles an hour. Yet, we have got it all in the record—why don't we look at that.

By Mr. R. T. Jackson:

Q. Well, the short answer is you do not know?

A. My short answer is I have a very good idea of that from my knowledge of the river. Why is it necessary to ask me that, let us get it out of the book.

[fol. 978] Judge Allen: Now, Colonel Watkins, Mr. Jackson is entitled to examine you.

The Witness: Oh yes your Honor.

Judge Allen: You are supposed to answer the questions and if you cannot answer, say so.

Mr. R. T. Jackson: In many of these it is satisfactory for the Colonel to say he does not know.

The Witness: But I do know, approximately.

Judge Allen: His statement is that he knows approximately, that goes with the other statement.

Mr. R. T. Jackson: Yes. That is satisfactory too. I just want to get an answer.

By Mr. R. T. Jackson:

Q. Colonel, you testified that due to the characteristics of the TVA Plan, substantial economies would result to navigation by reason of the fact there would be less fluctuation in the elevation of the stream, and that the terminal constructions and properties, and their operation would be

more economical. What is the difference in changes in the level of the river, resulting from the low dam plan and the TVA Plan at Sheffield, Alabama?

A. Sheffield, Alabama is in the rapid section of the river.

Mr. R. T. Jackson: For my part, unless the Court wants to know, you can give me the figure. I do not care for the geography.

The Witness: I have to work it out, your Honor. When they ask an engineer a question, we have to work it out.

Judge Allen: You have to work it out?

The Witness: Yes, I am working it out, if he won't interrupt me.

Judge Allen: Do you have it here.

The Witness: Yes, Ma'am.

By Mr. R. T. Jackson:

Q. Have you it in your working papers?

A. I have it right up here (indicating).

Q. Are you working it out?

A. If you do not interrupt me and let me work it out.

Judge Allen: Let him work it out.

[fol. 979] A. That is a rapid section of the river. As I recall from memory, the rises in flood at that point is very small as compared to what it is for the rest of the river, therefore, for the 1926 flood I do not believe it was over, much, about 25 feet, something like that, where as on the lower river it ran about 50, and the mid-section about 40 to 50.

Q. What would be the difference between the range of river stages resulting from the execution of the low dam plan and resulting from the TVA plan at Sheffield, Alabama?

A. That is the upper end of the Pickwick Landing dam, and in the low dam system, I believe of the Colbert Shoals dam, the upper end of the pools will probably be about the same, maybe slightly different. But, bear this in mind, that the high dam plan, you will have materially increased the depth available in the upper end of the pool. And from information which I have worked out on the other survey, of which I have got graphs here, that will materially increase the velocity in that portion.

Judge Allen: The question is as to the difference in stages, under the low dam plan and the TVA plan.

Mr. R. T. Jackson: That is right, at Sheffield.

The Witness: It will be materially greater under the high dam system than the low dam system, due to stream regulation, offered by the high dam system."

I do not know but I can work out immediately the difference between the change in river stages resulting from the execution of the low dam plan and resulting from the TVA plan upon the terminal at Sheffield, Ala. I do not have it in my working papers. We do not have it worked out that way.

The answer to your question is that the engineers of the TVA have given me the answer and that is with the high dam plan it would be 16 feet, and with the low dam plan it would be 16 feet. There would be no difference at Sheffield due to certain backwater stages at that point. I did not have that calculation in any working papers.

[fol. 980] On the same assumption I do not know what the difference would be at Florence, Alabama, but I do know that that is one of the places in the river where the fluctuation is less. It is much greater all up and down the river than at those two points. The difference at Florence would not be very great.

I do not think the difference at Knoxville would be very little. There would be quite a variation there because there is more difference in the natural stages. I have calculated it, it is written in the book. There is the differences in the book. I do not have it among any working papers that I have prepared. Such details as that I did not attempt to bring with me because it is not material to the questions at issue in this case. I do not have them with any working papers anywhere. It is in House Document 328 and I did not have to work it up. The difference between the ranges in the low navigation plan of House Document 328 and the TVA Unified Plan are shown in House Document 328. As to the fact that the TVA Unified Plan was promulgated in 1936, we have plans there that the dams are substantially the same. There is a slight difference. There may be slight differences here and there. The three ports of Knoxville, Florence and Sheffield would be relatively important ports on the Tennessee River.

I am familiar with the terminal at Danville on the Tennessee River. It is about 80 miles above Paducah and is one

of the best terminals on the river. I do not know exactly right now what will happen to the terminal at Danville when and if the TVA Unified Plan is carried out, but I do know that it is practical to provide good terminals all up and down the river, and unquestionably they would be provided. I know it will be lying under possibly 40 to 50 feet of water. [fol. 981] The range on the Tennessee River is something on the order of 40 to 50 feet, maybe higher in some places. The range on the Ohio River is up to 80 feet and may be that high once in a thousand years.

"Q. Colonel, has the Corps of Engineers ever recommended the expenditure of three to four hundred million dollars to avoid any inconvenience to terminal operators upon the Ohio River by reason of fluctuations in the stage of the river?

Mr. Fly: I object to that, immaterial and irrelevant.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: May we have our exception, if the Court please.

Q. Is it not a fact that the Ohio River, the industrial area which it serves and the commerce which it carries are very much more important than the Tennessee River?

Mr. Fly: Your Honor, I want to go into this. I do not want to mislead the Court. I want to go into it, a comparison of the rivers. I will be happy to do it. I won't make any objection to this question. I will leave it up to the Court.

Mr. R. T. Jackson: If I may say so, I asked the question to follow up the previous one, frankly, which the Court excluded, because it seemed to me whether the exclusion was material or not would not be apparent unless I followed up with this question. It may be within the Court's ruling, I think.

Judge Allen: Objection sustained.

Mr. Fly: I do not object, your Honor.

Judge Allen: The Court sustains the objection.

Mr. R. T. Jackson: May we have our exception then, if your Honor please?

Judge Allen: Yes."

Between Paducah and Pickwick Landing under the low dam navigation plan set out in House Document 328, as I

recall, there are bends and crooked channels, it is very straight generally, about every five or ten miles, and there are bars all along there too. I would say a rough estimate of 5 to 10 miles for the crooked channel parts and for the [fol. 982] bars. There would be interference along there. There would be a very few miles of crooked channel under the high dam system between Paducah and Pickwick Landing. With the high dam system boats could run straight.

"Q. As a matter of fact, there is not very much difference in that section, is there, by reason of the fact the crooked channel is largely the result of the river flowing between close bluffs, up to within 110 or 140 miles above the mouth?

A. There is considerable bend in the narrow part, as you go along there, in part as I recall. Of course, I could not sit here and point out all the details right now, but there are interferences in that section, as well as I remember, as well as others. You have all that in the record. You can look that up and see.

Judge Allen: Colonel Watkins, you have to answer the questions even if it is in the record.

The Witness: Yes, Ma'am.

Judge Allen: If the Court permits the question to be asked you have to answer."

The Gilbertsville pool is that one at Aurora Landing and the lake that will be created by it under the TVA Unified Plan will be up over the natural banks of the stream at normal pool level for a distance of 40, 50 or 60 miles, something like that. I have not gone into such minute details as that and could not answer whether it will be at least 85 miles under the TVA Unified Plan. I do not think it should be expressed that I am giving my testimony without having examined the Gilbertsville project, as incorporated in the TVA Unified Plan, to know the size of the lake created by the dam. I have gone into all of the fundamental details. This minor detail is not very important so far as the total is concerned. When I considered the effect of wind and [fol. 983] wave action I did not ascertain how long or how big the lake created back of Gilbertsville Dam would be. I did not look it up because that is not necessary. I am very familiar with that river and I know the channel is very

narrow as compared with the total overflow area. You would not have much wave action on that shallow part.

"Q. Assuming, Colonel Watkins, that the water would be over the banks at the Gilbertsville Dam for a distance of 85 miles, and there are distances of five to ten miles, as you have testified, in the pool above Gilbertsville Dam which are perfectly straight; how is it you find such difficulties under the TVA plan in comparison to the low dam plan as to cross winds blowing tows from their course in crooked channels?

A. For the simple reason that the low dam plan, the channel is generally narrow. There are restrictions, and you cannot utilize the whole width. When you go over the bars you have to keep generally at about one place, and in the high dam plan, like I have explained, in the high dam system you have a great big wide pool with no particular velocities and it makes an enormous difference."

The width of the lake produced by Gilbertsville Dam at miles, 30, 40, 50, 60 and 100 at normal pool level would be about a mile. All of the testimony I have given has been upon the assumption that the width of Gilbertsville Lake will be about a mile at those points at normal pool level. It is immaterial whether it is much wider because it is shallow out on the other part except just about 1,000 feet. Shallowness makes an enormous difference in the size of a wave. It makes them smaller and holds them down. I [fol. 984] am quite familiar with the approximate width of the channel under the low dam plan embodied in House Document 328 at those same points. The width of the river there varies from about 1200 to 1500 feet or something of that kind.

"Q. And therefore,—I presume under the low dam plan, the widths at those stations, miles 30, 40, 50, 60 and 100 would be somewhere between 1200 and 1500 feet, is that right?

A. No. I have got the book. I know what it is. That is what I base my testimony on, is the accurate information. You asked me for an absurd estimate right now, when we get all of this other in. I can give you an approximation of it, but I don't see that it does any good.

Judge Allen: Now answer the question that was asked Colonel, please. Is that your testimony?

The Witness: No, that is not my testimony, your Honor.

Q. Then what is your testimony as to the widths at those places under the low dam plan?

A. My testimony is based on information which I have already given you that there are bars along the river, there are certain points that you have to go over those bars, and the channel bends in certain places, and all of those features, that is what it was based on.

Judge Allen: The question was not what your opinion was based on, the question is what were the widths at those places.

A. I don't know exactly, your Honor, right now.

Q. All right.

A. But I have got it recorded. I don't know exactly what they are."

There is not a substantial difference between the effectiveness of winds blowing across a few miles of narrow channel protected by high banks or trees as in the low dam navigation plan of House Document 328 and that of winds blowing across open stretch of lake two or more miles in [fol. 985] width as in the Gilbertsville Lake in the TVA Plan. In the low dam system that navigable portion of the stream is much narrower and although there may be high trees along the bank, in a boat which sticks up a considerable distance above the water, in general almost as high as the bank in places, it will be blown out and I say that because I travelled up and down that river many a time and very frequently I had to stop and tie up during winds. Protection from higher banks and waters along the shore of an inland waterway will help if the wind is from a certain direction but it will not cut it off entirely because you cannot always keep right along those trees because the navigation channel at points is over on the other side.

I have never personally managed a commercial inland waterway company. I don't think it would be fair to say that actually disregarding the waves, the wind action on the Gilbertsville Lake will be worse for navigation than it would be for the same stretch of river under conditions that would prevail under the low dam navigation plan. I

think it would be a decided advantage in the case of the high dam because you have got a wide enough river to operate on without any fear of being blown out of the channel in the high dam system, but not so in the low dam system. I have heard of harbors of refuge and I never heard of any being placed on a narrow channel or being placed anywhere except along the Great Lakes. Harbors of refuge are for the purpose of giving shipping a place to go during winds and waves. I had worked out a number of these on that project up there. I don't know that it is a fact but it may be that complaints and troubles are now being ex- [fol. 986] perienced and harbors of refuge are being demanded on Lake Peppin on the upper Mississippi River.

"Q. And isn't it a fact that the Lake Peppin is simply an enlargement of the Mississippi River, about 18 to 20 miles long, and 1 to a maximum of 3 miles wide between close-lying, high bluffs, covered with timber?

A. I cannot give you all of the facts. I do know that——

Judge Allen: Just a minute, please. The Court considers that we should confine the inquiry to the Tennessee River.

Mr. R. T. Jackson: I am only making this inquiry to test the knowledge of the witness, as your Honors will appreciate.

Judge Allen: Well, we go far afield sometimes in that test.

Mr. R. T. Jackson: I did not mean to argue, I just wanted to state the purpose of my inquiry. May we have our exception?"

It would not be necessary to load river equipment somewhat lighter on account of wave action on these wide waters under the TVA Unified Plan if you would provide protection to keep the water from flowing over an open barge. In a barge with the top covered, if you load your loading properly, it would not hurt anything for the waves to pass over it. One way of providing protection against waves going over an open barge is to load it lighter. With a little initiative on the part of the manager of the company you will know very readily that that will cause a great loss in the load which it can carry and by simple devices which he can readily provide to prevent these waves from going over he can still maintain the load that he can carry without any loss whatever. I do not know as a matter of fact

in practical commercial operation whether or not they do load lighter under such circumstances.

[fol. 987] I do not really think it would be necessary to increase the structural strength of the river equipment so as to withstand the stress due to excess wave action. I have never had any business experience in obtaining certificates from the American Bureau of Shipping qualifying vessels engaged in commercial transportation operation for marine insurance.

"Q. Colonel, I direct your attention to the testimony of General Pillsbury, at the hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, First Session, on page 302 as follows:

Mr. Fly: May it please the Court——

Mr. R. T. Jackson: May I complete my question?

Mr. Fly: I object right now. It is just another way of getting hearsay before this Court.

Mr. R. T. Jackson: I don't think that is true.

Mr. Fly: There is no proper purpose in reading General Pillsbury's testimony.

Judge Allen: Just a minute. In what capacity was General Pillsbury appearing?

Mr. R. T. Jackson: He was appearing in his official capacity before the Committee to advise the Congress under his oath of office, which, as I understand it, makes his statements perfectly competent in any court.

Judge Allen: The objection is sustained. You may have your exception.

Mr. R. T. Jackson: May I complete the sentence or question for the purpose of having the record show what the question is?

Judge Allen: How long is it?

Mr. Jackson: What I want to read is 3½ lines.

Judge Allen: Yes.

Mr. R. T. Jackson: Carrying on to the other question:

'General Pillsbury: Yes—Oh, yes, high dams'—this is with relation to the Tennessee Valley Authority,—'are very much more costly than the low ones. They are not better for navigation, but the justification for their large expenditure can be found only in the power that they make available.'

[fol. 988] That is the end of the quotation. And I ask you whether or not you agree with the opinion of General Pillsbury. Now, the Court sustains the objection to that question and I ask that our exception be noted."

I testified on direct examination about certain low dams on the Kanawha River which were being replaced by fixed roller gate dams with lifts not to exceed 28 feet, and these dams were quite old and the time had come to replace them. As a matter of fact they were built somewhere between 1888 and 1898 and some of them needed considerable repairing. The width of the pool just above each of the new dams constructed or under construction on the Kanawha River is not much wider than the low dams because it is all confined to the river channels.

The fixed dams that I refer to on the upper Ohio are all low enough that the pool is confined within the river banks. I am not familiar with the exact width of that. I have seen the dams but I did not go along to try to look at the pools. I would not want to testify that any of them create pools that overflow the river banks but, as I recall, the Ohio is much wider than the Tennessee.

I am still in agreement with the following statement in my report in House Document 328 (Complainants' Exhibit 105 in Paragraph 79 on Page 100:

"As indicated above this system of low dams will provide for navigation only. There will be no benefits to flood protection and no power, except a very small amount for the operation of the dams themselves will be developed. The plan, however, will provide a waterway comparable in every way with the improved Ohio and adapted to incorporation with a consolidated inland waterway system of nine foot depth. On such a waterway, large tows of from 10,000 to 16,000 net cargo tons can be transported at costs, depending upon quantities and facilities offered, of from 1 to 2 mills per ton-mile."

[fol. 989] House Document 328 on page 100 at paragraph 80 does not exactly state my opinion correctly:

"The District Engineer believes that no lesser project will provide an adequate waterway for modern barge traffic, and therefore believes that if there be any modification of the plan by the substitution for any two or more low dams of a high dam to develop power or provide flood protection,

that the capacity of the waterway for the economical movement of modern barge traffic, should not thereby in any way be lessened. It is believed absolutely essential that in any high fixed dam there must be two locks in parallel to provide for dependable navigation."

There is a material difference of opinion on that idea. When the report first went up I had the single lock with provisions for additional locks of the same size or 600 feet, but when it went up before the various reviewing authorities, the Chief of Engineers himself mentioned that, without mentioning that it would be unwise to spend so much money now, putting a small lock in at the same time when the size of the single lock, 60 ft. by 360 ft., would meet all present demands, and that the double lock should go in in the future, that is, words to that effect. The Chief did not recommend that the low dam program should only be constructed progressively and with regard to economic conditions. The Chief of Engineers recommended that it be adopted by Congress but he did concur in my recommendation that we have a definite program of ten years in this development.

"Q. When you made the report of which I just read you a part, Colonel, you stated it was not exactly right, did you not, acting under your oath of office, correctly and accurately, report to your superior officer, and to the Congress what you believed to be true?

A. We are required to obey orders of superior officers and the division engineer instructed me to put words in, to approximately that effect. We were endeavoring to get a report up to Congress to be adopted and he instructed me to modify the report. As I informed you, the report had [fol. 990] gone up once, and in order to get a practicable plan for cooperating with the power people in bringing that about, the latter part of my report was changed. I was directed to go up to the division engineer and draw up a plan with him. That was his idea against my very strong objection at that time to putting it in, because it is not wise and economical to spend that much money. However, he told me to put it that way, and I put it that way.

Q. Colonel, I also direct your attention to this statement which is over your signature at the top of page 101:

'It is recommended that a project for the progressive improvement of the Tennessee River from its mouth to Knox-

ville, by a system of movable or low fixed dams and by locks of Ohio River standards be adopted to be completed within a period of 10 years at an estimated cost of $75,000,000 at the rate of $3,000,000 for the first year and $8,000,000 for each year thereafter until completion, with $40,000 for annual operation, care and maintenance for each dam and pool; with the proviso that under the provision of the Federal Water Power Act there may be substituted for any two or more of the low dams herein provided for, a high dam if the resulting cost to the Federal Government will be less than by the estimate herein for the low dams, thus rendered unnecessary, and provided further that the capacity of the waterway for the economical movement of modern barge traffic will not be in any way lessened'.

That was your recommendation to your superior officers and to the Congress, was it not?

A. Yes, that was the project that we adopted in order to provide a simple measure for Federal Government cooperation with the power companies. And the report clearly shows we desired to have constructed the high dam system. There is no question about that. It is shown in the report.

Mr. R. T. Jackson: I move to strike out the last statement as not responsive, and as an argument.

Mr. Fly: I think it is quite responsive and a proper explanation of that sort of excerpts of the witness having been torn out of the book that way.

Judge Allen: The motion is overruled. It may stand.

Mr. R. T. Jackson: May our exception be noted, please?''

[fol. 991] In my direct examination I stated that a restriction should be placed upon the maximum draw-down of reservoirs on the navigable tributaries of the Tennessee so that navigation could be conducted. With respect in particular to Norris Dam I have not looked up the detail in the TVA report as to the difference in elevation between maximum pool level and maximum draw-down. In our proposed dam in the report it was 220 feet. I think our draw-down, was 80, something of that nature. It is in the record. I could not say right now whether it is greater in the TVA Plan. It is in the records. I have not worked it out on any profile and cannot tell what the maximum length of pool at Norris Dam would be at normal elevation and what it would be at maximum draw-down. As to

whether there would be a very considerable difference in the length of the pool, I do not believe there would be in per cent. There would not be a difference of so awfully many miles. I do not know the total length of the pool. I know that the profile between that point goes down very steep and that is why I answered you that way. I don't know exactly what it is.

I stated that wide fluctuation in stage would be a serious handicap to the operation of terminals on the main river and I stated the contrary with reference to tributary reservoirs. It is not a fact that construction and operation of terminals designed to overcome fluctuations of wide variation on tributary reservoirs, which would be as much as 75 to 100 feet, would be excessive and expensive. It depends upon the facilities which you provide for loading and unloading. It would require a special type of unloading equip-
[fol. 992] ment for that purpose and the article which you desire moved. It would not be a serious handicap on the reservoir. It could be readily utilized for navigation. The operation of terminals on the main river with a much lesser fluctuation would not be simple. All you have to do is to look at the hydrograph of the river. You see it bobbing up and down throughout the whole year, whereas in Norris Dam there is only one slow draw-down through to January or February, and then a slow rise. The operation of Norris will be a filling of it during the winter season, then it will be kept flowing during the low water season and it will drain down for power. It will be filled during the major floods in December and January.

Under the operation of Norris Dam they have set aside a zone in the plan of considerable depth for flood storage there. Now just exactly how they will operate that I don't know yet. You can get that from the TVA's. I assure you there will be no such fluctuations in the Norris pool as you have all up and down the river with low dams. Flood storage at Norris is another thing I didn't know about on direct examination and don't know about now, but I refer you to the TVA. In the 1936 report there is information on it. The way I look at these things, engineers do the work, they draw up the plans and there is more ways to kill a cat than choke it to death on hot butter. They all go ahead and work out the things and know exactly how it will work out, according to their plans. They are not worked out accord-

ing to power load. These are primarily for navigation and flood control.

I agree with the statement in House Document 328 (Complainants' Exhibit 105) on page 96 as follows:

[fol. 993] "Power and storage reservoirs which may be constructed on this stream before the 9-foot waterway on the main stream is extended to the mouth of the Clinch should provide for a right-of-way for navigation and be so designed and constructed that they will permit the installation of 9-foot navigation facilities as soon as required, and until such navigation facilities are installed the power companies should pass loose logs over the dam free of cost."

I made an estimate of the cost of construction of a barge lift at Norris Dam and I assume it would not be constructed until navigation went up. I estimated it would cost some three to four million dollars, something like that. It is in the report. I do not remember the exact space lengthwise of Norris Dam which would have been required for the barge lift contemplated by me. The only way it affected Norris Dam was that I contemplated putting in a gate or a place for a gate. Just exactly how it would be handled depended upon the engineer constructing it. It went over the dam. The barge lift would be 60, 70, 80, 90 or 100 feet wide or something like that. I won't say 100 feet would be about right. I do not have the record. I just said it would be somewhere about 60 to 100 feet.

Assuming it is 100 feet wide, there is room for the installation of a barge lift at Norris Dam. They can go ahead and put the barge lift over there, take out a section, or put it inside, there are many ways to provide for that navigation. I cannot say exactly whether or not the location of the power house would necessitate the location of the barge lift in a section of the spillway. I have looked at where the power house is when I was there. I saw it was practicable to put in a barge lift when the time became necessary or other means of putting navigation through. I know where the power house is at Norris Dam and it is on the left side as you come downstream. You could not put the barge lift above the power house. There are different ways you can [fol. 994] put that on there. You can go ahead up a valley a mile or two from Cove Creek, put a barge lift in and bring barges through there.

"Q. Do you mean you might construct a canal f[illegible]m the lock, back of Norris Dam up some ravine to the river?

A. I mean that to illustrate there are plenty of ways to carry navigation from the pool above down to the river below.

Q. The only way you suggest is one that could not be carried out at Norris Dam?

A. We can very well arrange to carry the boat right up over the dam, if necessary, and down on the other side.

Q. Did you find a place for it?

A. You have plenty of space. I have testified there is space you can put it.

Q. You have testified, you cannot put it in the power house.

A. You could put it over the power house, if necessary."

If you installed a barge lift in a section occupied by the spillway, the effect on capacity of the spillway would depend on how high you put it. You can put one to carry the boats right up over the spillway and all. It is a detail any good engineer can do to put one over. A good engineer would fix it up so that depositing the barges from a barge lift in the cross currents resulting from the overflow of the spillway would not bother. That can be done. No great amount of ingenuity would be required at Norris Dam.

The river at the foot of the dam is some 400, 500 or 600 feet wide, maybe less. You have got it in the record. I have to say I do not know the exact figure of how wide it is. I would not want to say it is over 300 feet. It is not necessary to remember that.

[fol. 994-a] The following is a correct reading of the comments of General Spaulding, my superior officer, from page 498 of Complainants' Exhibit 105, House Document 328:

"Consideration of Ohio River statistics indicates that the district engineer's estimates of river tonnage and savings [fol. 995] are too optimistic. While the estimates for the Tennessee River have not been studied in detail, the general method that has been used omits many practicable considerations that enter into the economics of river-rail shipments, some of which are as follows: Collection of freight into large units for barge loads, and barge fleets, giving consideration to regularity of movement and time requirements of shippers. Loss of time by diversion of freight from rail

to river after haul is partly completed by rail. Deterioration due to additional handling at river-rail transfer. Effect of diverting freight from railroads upon their load factor revenues and rates."

I would like to call attention to the above quoted paragraph which reads: "While the estimates for the Tennessee River have not been studied in great detail," and make a little explanation. I do not agree with General Spaulding's statement. In the first place, he indicates that he has not made a detailed study. In the second place, he compares the commerce on the Ohio at a time before the low dam system of the Ohio was completed, by several years. During that time I was there and I would go up to the Division Engineer office and the Division Engineer would be busy all day answering calls from boats which were delayed and asking to please send a wave down to get them off the bars. So that navigation on the Ohio then was not what it would be with the completed system. So, his comparison with the Ohio commerce, into ton mileage and other factors, is not a fair basis for the waterway on the Tennessee, completed with no interruption to traffic and no delay, etc., and with a much deeper channel throughout than with the Ohio with the old low dam system then uncompleted. So, you would have a correct picture of the commerce on the Ohio at that date. Further proof of that is that since 1925 the commerce on the upper Ohio has increased enormously, for the length of haul. For the ton mileage on the upper Ohio, it has in- [fol. 996] creased right along the lines which I have been predicting for the Tennessee River.

The following is a correct reading of the statement made by the Board of Engineers for Rivers and Harbors in paragraph 34 of House Document 328, which reviews my report;

"For the year 1926 the district engineer reports that there was a rail movement of 9,000,000 tons, which could have been handled more cheaply by water or by rail and water if a 9-foot waterway had existed from the mouth of the Tennessee to Knoxville. He estimates that the use of such a waterway for this movement would effect a saving of $12,000,000 in the cost of moving this freight. While admitting that for various reasons, not all of this freight would actually have moved by water, he believes that 60 per cent of it would have moved in this manner and that the

actual saving in transportation costs would have been $7,300,000. The Board concurs with the division engineer in the view that this estimate is excessively optimistic."

I would like to explain that. The Rivers and Harbors Board did not call me before them to discuss any of these details. So, I was not able to give them full and complete information which I had made, when I got down to the fundamental facts in the case. They took more or less the recommendation of the division engineer. In order to indicate how conservative those estimates were and in answer to Colonel Spalding's statement about delays in changing from the manufacturing systems to the waterways and so forth, that estimate of 60 per cent which I made of the total, which I indicated is economically feasible, is about the same thing as to say to the railroads,—you may have all of the 1926 commerce, we will not take a bit of it. You may have two-thirds of the total increase in commerce. All I am estimating for the waterway is one-third of the increase.

The report also shows that the increase with industrial development is going to be much greater, that is comparison 40 per cent to 100 per cent in ten years, so that the railroads [fol. 997] with two-thirds of the increase and the other large percentage of increase, are going to be carrying much more valuable freight than they will be before the development. While at the same time, the waterways can be carrying the heavy commerce for the industrial development, for manufacturing, ores, coal, the other minerals and forest products, and all other products.

"Q. Colonel, I direct your attention to one more statement by the Board of Engineers, on page 20 and top of page 21, 'the industry, agriculture, and commerce now existing or reasonably prospective do not, however, warrant the expenditure of $75,000,000 for a project for the improvement by low dams which is the basis of the recommendation of the district engineer'. I will ask you whether or not I have correctly read that report?

A. Yes, you have. Will you also read the recommendation of the chief of engineers, who was the final deciding authority, or may I read it.

Mr. R. T. Jackson: We read it before the Court, before you came.

The Witness: May I read it.

Judge Allen: It is in the record.

Mr. R. T. Jackson: Yes, we read it the first day, I think, your Honor.

Judge Allen: It is not only in that record, but in this record.

Q. When you testified on yesterday you stated you allowed for interest and amortization 4½ per cent, in computing the justifiable expenditures for improvement of the Tennessee River. What per cent, if any, did you allow for maintenance and operating costs, and what for depreciation?

A. I do not believe I gave that in my report, and in my estimate. I do not remember about the report.

Q. I did not ask about the report, but did you testify that yesterday?

A. Well, I testified as correctly as I can.

Judge Allen: The question is, did you testify to that.

[fol. 997a] Q. The question is did you allow a percentage for maintenance, operating cost or depreciation?

A. We have no percentage, your Honor. The way we work it out in the Corps of Engineers is this way, we get the percentage of interest and amortization, for the replacement of equipment which corresponds to depreciation in ordinary statements, for maintenance, operations and dredging up above and down below the lock we put in a flat sum for it, like it is indicated by experience. Our estimate is clearly shown in the report, 40,000 for each of the dams.

[fol. 998] Q. On yesterday you made an allowance of 4½ per cent for interest and amortization, but you did not make any allowance for maintenance, operating cost and depreciation?

A. We do not work it out in that way.

Judge Allen: Well, did you or didn't you?

The Witness: No.

Judge Allen: You did not make a percentage allowance?

The Witness: No, we do not make it that way.

Judge Allen: You say you make an allowance?

The Witness: Yes, indeed.

Judge Allen: In another way?

The Witness: Yes.

Q. Is that included in the 4½ per cent?

A. No.

Q. Is it additional to the 4½ per cent?
A. Yes."

I testified on direct examination, based on previous increases in railroad traffic, that I estimated by the year 1950 there would be such a growth in transportation that the water traffic by that time on the Tennessee River will be 2.3 times the amount estimated at the time of my report in House Document 328. I had made a study of the rail traffic and my estimate in that report was based on the previous increase in rail traffic. I do not know exactly what the increase in rail traffic has been in the southern region between the time of the preparation of House Document 328 and the end of the year 1935. As to whether there has been a decrease of 45 per cent, I would not be surprised if there has been a decrease. I looked at it for the last few years. Last year I know it did make a decided drop. I had not checked [fol. 999] that before I testified. I had a much better basis than that, the inland waterway system itself showing the commerce right on our rivers. I do not have the percentage of increase right now which would be required from now on to reach the figures I predicted in the year 1950. The figure is 2.4 times the 1926 figure. I estimated the increase by 1950 would be 40 per cent in ten years. It is my testimony now that I estimated the increase by 1950 will be at the rate of 40 per cent in ten years. That makes for the first ten years, 40, the next 80, and the next 120.

"Q. Ten years will take you to 1947, so you will have a little more than 40 per cent, somewhere around 60 would be about liberal, is that right?
A. No, my estimates were from 1926, ten years each.

Judge Allen: The question is, what would be the increase from now.

Mr. R. T. Jackson: Yes, in order to reach his 1950 estimate, taking into consideration his comparison of 1926 has now a decrease of 45 per cent, I want to find what increase in percentage he would have to have to reach the 1950 figure.

The Witness: I don't know exactly. It can be worked out."

I don't know whether 435 per cent would be about right. I testified yesterday the increase on inland waterways indi-

cated that they recovered from the depression and my estimate was approximately correct.

I base my present estimates for increase in traffic to 1950 on the trend shown on Defendants' Exhibit 30, the inland waterways chart, and on the additional information I got from the Chief of Engineers showing the increase in commerce up to 1936.

The total traffic shown for the inland waterways system in 1934, as shown on Defendants' Exhibit 30, is 214,000,000 [fol. 1000] tons. There is some difference in the figures shown in Part II of the report of the Chief of Engineers, U. S. Army, for 1935, which contains on pages 2 and 3 a statement entitled "Commerce of Rivers, Canals and Connecting Channels during the Calendar Year 1934", which reads as follows:

"The gross total commerce on the rivers, canals, and connecting channels was 215,146,078 tons, valued at $3,973,-683,002, which included 608,515 tons of foreign imports valued at $18,983,258, and 644,331 tons of exports valued at $42,937,637. After eliminating all known duplications of traffic between different rivers, canals, and connecting channels, the adjusted total amounted to 194,786,428 tons, valued at $3,462,517,009."

Apparently there is a discrepancy of 20,000,000 tons. I would say offhand that this is likely to be more correct because it has been gone over and compiled by the statistical section of the Rivers and Harbors Board. I would not think that this elimination of duplication in the official report of the Chief of Engineers was incorrect. I do know I was informed by the Chief of Engineers that I could utilize this data and it was correct.

"Q. Colonel Watkins, I direct your attention to the tables in the Annual Report of the Chief of Engineers, Part II, for 1935, as follows: Page 20, Hudson River, 5,696,331 tons; page 21, Potomac River, 2,556,602 tons; page 22, James River, 1,873,471 tons; page 25, Sacramento River, 1,183,654 tons; page 25 again, Columbia and Lower Williamette Rivers, 4,903,508 tons; page 28, Cape Cod Canal, 2,791,846 tons; page 29, Intracoastal Waterway, Calcasieu River to Sabine River, 2,456,823 tons; page 29, Sabine-Neches Canal, 16,472,644 tons; page 29 again, Channel from Arkansas Pass

to Corpus Christi, 4,163,455 tons; page 29, St. Mary's Falls Canal, 42,248,131 tons; page 29, Detroit River Michigan, 30,469,121 tons; page 30, Lake Washington Ship Canal, 1,-466,181 tons, which items total 116,261,767 tons, and I ask you whether it is not true that practically all of the traffic listed for these rivers and canals is deep draft vessel traffic, either Great Lakes or Ocean?

A. Well, the engineers of the TVA during the recess checked it over and stated that the figures were correct as put in your question."

[fol. 1001] All the figures on that list are for deep waterways, as far as the question is concerned.

The total, shown on page 30 of the report of the Chief of Engineers for 1930 as 215,146,078 tons, corresponds to my chart, Defendants' Exhibit 30, for 1934; but may I explain?

"Q. There is no explanation to make.

A. Yes, there is a very important explanation and that is this, if we assume that this chart here does not include, or eliminates duplication.

Q. It is not for that purpose. I am not asking you about that.

A. That is what it amounts to. Or if these are in error, you see, then plotting them so as to eliminate duplications as indicated in there, the rate between 1932 and 1934 would be practically the same as indicated on this chart. Now, the important question at issue in this right now is what would be my estimates for 1950, so that whether this includes the elimination of duplications or whether it does not, it does not change my estimate that by 1950 we will have recovered, so that my estimates for that are correct.

Q. All right.

A. So it does not affect——

Judge Allen: That is clear.

Q. That has nothing to do with the question that I want to ask.

A. It does not affect one iota my estimate of prospects or prospective commerce.

Q. Let me ask my question now, Colonel.

A. All right.

Q. How is it possible to make an analysis of the inland barge waterway traffic on the Tennessee River based on

exhibit 30 showing a total tonnage figure in which well over 50 per cent is found to consist of lake or ocean going traffic, which has no relation to barge traffic on our interior rivers.

A. I have charts which show the nature of the commerce on the Great Lakes. On all of them it consisted primarily [fol. 1002] in the first place, in the order of priority, iron ore, next in order is coal, the next item in priority, I believe was sand and gravel. The next item in the priority list was, I think, petroleum or forest products, the next item grain; all of those are various items that go into industrial development. Now my estimate that we will have this commerce on the Tennessee River is that the waterway will be a very efficient means of providing cheap transportation and that it would carry those various items of commerce needed for industrial development.

Q. That is your estimate was based on the assumption or belief that the navigation route on the Tennessee, and conditions were similar to the Great Lakes?

A. In other words, I looked at the character of the freight.

Q. Will you answer my question? 'Yes', is that the answer?

A. Yes, somewhat, because it differs between the Great Lakes and the Mississippi River System and the other rivers you were talking about. If you investigate those commerces, you see that they vary somewhat in classes, yet they are all just about what it would be."

In my investigation I did not notice that in 1929 the commerce in iron ore through the Soo Canal was over 90,000,000 tons, and I do not know that the reason that commerce moved on the Great Lakes is because there is the greatest iron ore field in the world at the upper end of Lake Superior, and to some extent on Lake Michigan, and that it moves down to the steel districts in the coal fields at the bottom of the lakes. I do not quite agree with the way the thing is expressed. I do know that we have those important iron ore fields up in the Superior region, and that we have the coal in the Appalachian region. I do know that there is an enormous movement both ways for our industrial development. I think it is a wonderful illustration of what the Tennessee waterway may do in bringing together its iron ore and its coal, or bringing together its clays and its coal, or bringing together all of those various items which go to make up industrial development.

[fol. 1003] I am aware that there is no coal in Wisconsin, Michigan, Minnesota, and that that coal is shipped in largely from the southeast and from Illinois. There is coal in Tennessee and also in Illinois; but it is not all right with the iron ore, and not all with these other minerals. There is a separation in a great many places, and this waterway being within 10 miles practically of all the minerals in the basin will unquestionably be utilized for that purpose.

I am still of the same opinion as to the value of this water power as expressed in House Document 328 (Complainants' Exhibit 105) at Page 75:

"Summary of benefits to power by regulation of flood flow. A summary of benefits to power secured by regulation of flood flow is shown in Table C, pages 76 and 77, for each project on the main stream. The increase in output due to increase in normal effective head and regulation of flood flow for all projects on the Tennessee River amounts to an average annual of 121,390 kilowatt-years. The elimination of submergence of projects amounts to a saving of 764,100 kilowatts auxiliary steam installations. Valued at steam prices, these benefits amount to a total of approximately $10,000,000 per annum. In an interconnected system consisting of a large number of hydro-electric projects, it is possible that a large portion of auxiliary steam installations required to supply power during periods of submergence may be eliminated by power supplied by other hydro projects."

"Q. You stated that it has these values and among other things benefits of approximately $10,000,000 per annum, and I asked you whether you are still of the opinion that it has benefits of that order.

A. No, I cannot answer it yes or no, but I can say that I am aware that such statements are in this report, and I do think that the Court ought to know that a great part of this is brought about by the surcharge pondage on these high dams. That was the items you were reading, was it not?

[fol. 1004] Q. Well, I read that paragraph right before you.

A. Now, I think it is well for the Court to know that in making this survey the use of the surcharge pondage on all of these high dams was decided upon as a flood control measure before I realized the benefits that it would be to

navigation and to power, so that although it is a great benefit to power and to navigation, which is a great thing, yet there is no question whatever of the fact that this is primarily a flood control measure."

The main river dams in the TVA plan certainly have tremendous value for power purposes, and it is one of those resources of the waterway which we should conserve, unquestionably, for our industrial development.

"Q. What in your opinion would be the value of these tributary reservoirs for power purposes?

A. Let's express it this way, which I am sure is a correct way. The reservoirs on the tributaries are essential for flood control and regulation of stream flow. That is what they are there for.

Q. You have said that, and I asked you——

A. That is essential for the development of the resources of the waterway and I think it is a fortunate thing that it is of benefit for power, and that we may develop it. But I do not think that on account of that fact we can say that they are primarily for power, for they are primarily for flood control. It is flood control which brings about these benefits.

Mr. R. T. Jackson: I move to strike out the answer. It is not responsive to my question.

Mr. Fly: I think it is a proper explanation.

Judge Allen: It may stand.

Mr. R. T. Jackson: May an exception be noted?

Q. Now Colonel, will you answer my question? What, in your opinion, if you have any opinion, is the value of these tributary reservoirs for power purposes?

A. I think I said already, if I didn't, I will say, that they are very valuable, and it is fortunate that it is, because it helps to develop those resources."

[fol. 1005] I do not know exactly whether the table marked "Schedule 2, page 2" in the first deficiency appropriation bill hearings for 1936, page 279, in which Mr. Lilienthal shows that 660,000 kilowatts of continuous power could be developed, is reasonable. And I do not know exactly whether the statement that there would be a production of 5,780,000,000 kilowatt hours of firm energy annually is reasonable. The TVA engineers can give that information. I

do not know exactly how much storage would be necessary in order to provide 660,000 kilowatts of firm continuous 24-hour power and 5,780,000,000 kilowatt hours of firm energy annually in an extreme low-water year. The TVA engineers can give you that information. As I recall, the development of the reservoirs on major tributaries above Chattanooga would bring about effects perhaps greater than that. I am not sure. I do not know exactly.

I can tell approximately according to the general operations that the TVA tributary reservoirs would gradually rise, collecting the flood storage during the major flood period, and that they will vary from year to year. One year it will be more rapid than the other. Beyond that I am not prepared to give any figures as to what the elevations of those tributary reservoirs would be on Jan. 1, Feb. 1, March 1, April 1 and May 1, in order to produce such quantities of power under the TVA Unified Plan in a dry year. I am sure the TVA can give you a very good answer. In some years it will fill up more quickly than others because there is more water. Any good engineer can know how to handle the situation. I made surveys of them for the TVA report.

[fol. 1006] Examination by the Court:

It is a method of just practical common sense operation.

Cross-examination continued:

"Q. Well, it is a question of physical necessity in producing a certain definite amount of power, isn't it, Colonel?

A. It is essential for collecting flood waters which would otherwise go down into the main stream of the Tennessee River, and into the Ohio, and into the Mississippi during the periods of major flood. That is where it is all caught.

Q. And you must have at the beginning of your low water season enough storage to provide water that will produce this firm power, is that right?

A. No, that is not the purpose. The purpose is to catch these flood waters during the major flood season. That is the fundamental plan of this system.

Q. My question, Colonel, is this, not your purpose, if you are going to have a certain quantity of firm power produced by these projects it is necessary that you should have for low water years a certain definite amount of storage at the be-

ginning of the low water season which can be used to regulate the flow and augment the power production during that low water season, is that right?

A. That is not exactly correctly stated. It is necessary to catch as much of the flood water which would otherwise go down into the river during those floods as you can, and that will vary from year to year. I don't know exactly the stage in which the reservoir must be on June 1st. Some years in my plan it was not full at that date, but I don't believe that they have enough storage right now, and I do think they will have to fill it to whatever they figure is a safe place every year.

Q. In order to get the power?

A. Yes.

Q. That is right?

[fol. 1007] A. Now remember, you said for power during low flow. This is a great benefit for navigation also, all the way down the Tennessee River, and all down the Mississippi. Remember that."

(The witness was excused.)

(Counsel for defendants then read the following comment of the Chief of Engineers in House Document 328 at Page 7:)

"It leaves the project in the air by making navigation dependent on power development, and requires that the matter of the project be referred to Congress continuously. The project should be definite and final, and it is possible to make it so in this case, if ever, because there has never been presented to Congress a more thorough and exhaustive study. Lytle Brown, Major General, Chief of Engineers."

[fol. 1008] GEORGE R. CLEMENS was called as a witness on behalf of the defendants and, having first been duly sworn, was examined and testified as follows:

Direct examination:

I am 37 years old. My residence is Vicksburg, Mississippi. I am a Civil Engineer by profession and Senior Engineer, Hydraulic Staff, Mississippi River Commission. I was graduated in civil engineering from the University of

Michigan. Following this I spent about 5 years in miscellaneous engineering jobs, including surveys, drafting construction, design of buildings, design of highways, and teaching in an Engineering College, namely, Wayne University, Detroit. At the conclusion of this 5 years of preliminary experience, I entered the service of the U. S. Engineers Department at Buffalo, New York. In this office I worked on the report, preparing hydraulic studies, and studies of probable commerce for waterways from the Great Lakes to the Hudson River. At the completion of this work, I went to the U. S. Lakes Survey Office in Detroit and made various hydraulic studies on the proposed St. Lawrence Waterway. On completion of this assignment, I returned to Buffalo and worked on a review of the aforementioned study of a waterway from the Great Lakes to the Hudson River. I had one or two short jobs following this and in June 1927, I went to the office of the Chief of Engineers for work with the Reservoir Board, studying the Mississippi Flood Control Project. I worked with this Board in Washington for the next year. On completion of this work, I was transferred to the office of the District Engineer of Vicksburg, Mississippi. In this office I spent 3½ years in charge of the so-called 308 studies. I went there in June 1928.

On the Red, Ouachita and Yazoo Rivers, I was charged with the preparation of the reports on these streams, involving studies of flood control, navigation, water power and [fol. 1009] irrigation. I prepared the preliminary and project reports on the Yazoo project, which were later used in the plan finally adopted by Congress for the Yazoo system. This same period included various studies of hydraulic problems on the Mississippi River.

Late in 1931, I was transferred to the office of the President of the Mississippi River Commission. In this office I was charged with the preparation of the so-called Comprehensive Reservior Report. In addition to this report, I was in charge of the hydraulic and dredging section in the Commission office. On the completion of that report, I have continued in charge of the hydraulic and dredging section, engaged in many and miscellaneous studies of the flood control and navigation problems on the Mississippi River. This was continued to the present time.

I neglected to mention in my education that I received, twelve years after I graduated, the graduate degree of Civil

Engineer from the University of Michigan, my thesis for that graduate degree being "The Reservoir as a Flood Control Structure." I am a member of the American Society of Civil Engineers, past president of the Mid-West Section, American Society of Civil Engineers. I am also a registered Engineer in the State of Michigan and a member of various other local engineering societies.

The Mississippi River Commission is a body created by an Act of Congress in 1879 charged with the flood control and navigation project, preparation of plans and studies on the Mississippi River. The Mississippi River is the father of waters of the United States and contains 1,250,000 square miles of drainage area or thereabouts. It is formed by a number of major tributaries. The Missouri and the upper [fol. 1009-a] Mississippi, so-called, join at a point a short distance above St. Louis and continue from St. Louis to Cairo through what is called the Middle Mississippi. At Cairo it is joined by the Ohio, which a short distance above its mouth is joined by the Tennessee and the Cumberland. Proceeding on downstream through what is called the Lower Mississippi, the river is joined from the west by the Arkansas, a short distance above Arkansas City. On down- [fol. 1010] stream, above Vicksburg, it is joined by the Yazoo from the east and near Angola it is joined by the Red River. The major tributaries are as I have noted. The length of the river from Cairo to the Gulf is about 970 miles.

The lower Ohio is somewhat different from the Mississippi. The Mississippi is alluvial from Cairo down. Perhaps for a short distance east the Ohio is alluvial. The Cumberland and Tennessee join the Ohio. The Tennessee, about 40 miles above Cairo, is sometimes referred to almost as an independent tributary, it comes in so close to the mouth of the Ohio. Cairo is at the junction of the so-called Middle Mississippi and the Ohio and is about 40 miles downstream on the Ohio from the mouth of the Tennessee.

As regards floods, the most serious problems of the Mississippi Basin are from Cairo to the Gulf. Below Cairo is a wide alluvial plain which must carry in the valley the flow of the Ohio, the Mississippi and the Missouri from above. As we pass down, it must be able to add the flow of the Arkansas, the Yazoo and the Red. The valley ranges in width from 40 to 80 miles, all subject to overflow at some

time. It is a highly developed area in many places and undoubtedly the richest farm lands in the United States.

The Mississippi Flood Control Project is the oldest that we have in the United States. It is outstanding also and it is the greatest flood control project that we have. It has been a very gradual development. The development of the project started with the first settlers. Our first levees were built at the time the first settlers hit New Orleans, about 1717. There has been progressive development of the flood project since that date. As to the progress and development of the valley, I might add the protection of the valley has contributed from 52 to 90% over that range in these of protection afforded.

[fol. 1011] There were floods, of course, prior to 1900, but I will name the great floods of record since 1900 which have done serious damage to the alluvial valley. From 1900 to date, there have been the floods of 1903, 1907,—1907 was not very big—1912, 1913, 1916, 1922, 1927, 1929 and 1937. In the upper river the 1937 flood was the most serious. In the lower river the 1927 flood. The next to that, it is a question of 1912 or 1916, say 1912 to get a figure. 1916 was about the same.

The principal contributor to the lower Mississippi floods is, of course, the Ohio. The past floods have ranged from about 52 to 90% of the contribution of the flow at Cairo. Of the total flow in the Mississippi River below Cairo, the Ohio has contributed from 52 to 90% over that range in these various floods. The remainder comes from the upper Mississippi and the Missouri, varying with each flood. Proceeding on downstream, the next major contributor is the Arkansas and the White, which I neglected to mention in my previous statement. It might be construed a separate tributary or a portion of the Arkansas. It joins the Mississippi partly through the Arkansas and partly through a mouth of its own, but the Arkansas and White together are heavy contributors in certain floods. The Yazoo never put out very much, and the Red only moderate amounts.

In referring to the Ohio, I consider the entire Ohio Basin. In stating how the effect of the contribution of the Ohio is transmitted downstream and the extent of the transmission, I will say that the two flows combine at Cairo and there is relatively little addition between Cairo and Helena. At Helena the St. Francis enters and brings in a small per-

centage and about the mouth of the Arkansas—let us say the [fol. 1012] percentage of the flood contribution is approximately the same as it is at Cairo. Below the Arkansas, in our major floods, take our project floods for instance, we get somewhat over two-thirds—let us say 70% of the flood from the upper river. Roughly, the flood from the upper river is 2¼ million second feet and from the Arkansas is enough to make it slightly over three million. I believe the percentage is approximately that.

In describing the projects that have been undertaken for control of these floods, I will not go into ancient history and take each project from 1717 to date, although there have been many as the valley and the projects developed progressively. At the time the 1928 plan was developed, the valley had just experienced a disastrous flood which had broken levees in many places, caused considerable damage and loss of quite a number of lives and disrupted generally the business throughout the entire Mississippi Valley. There was a widespread demand for increased protection to the Mississippi Valley following this flood, which resulted in the so-called Jadwin Plan, adopted by Congress by Act of May 15, 1928.

The Jadwin Plan combined a system of levees and floodways which I can describe briefly from the map (offered and received in evidence as Defendants' Exhibit 31) of the alluvial valley of the Mississippi River.

The plan described by this map (Defendants' Exhibit 31) is the Jadwin Plan. We have shown the alluvial valley of the Mississippi River from Cairo to the Gulf, and there is indicated thereon the so-called Jadwin Plan for Mississippi Flood Control, which was adopted by the Act of May 15, 1928. The basic feature of the Plan was the enlargement of [fol. 1012a] the existing system of levees extending from Cairo all the way through to the Gulf. There are certain areas that are without levees and are not protected by [fol. 1013] this Plan. In general they are small, although in the case of two backwater areas, namely, that of the Arkansas-White and that of the Yazoo and the third one at the mouth of the Red River, they involve considerable areas.

On the right or west bank of the river, there is a levee that continues, except for a break at New Madrid, from Commerce, above Cairo to Helena, some distance below Memphis. This levee in general protects the so-called St.

Francis basin, being the area to the west of the river extending from a line through Commerce and Cairo to approximately the latitude of Helena. At Helena the St. Francis River joins the Mississippi and there is a moderate backwater area flooded in that vicinity. Below Helena the levee continues on the west bank to the vicinity of Laconia Circle, where there is again a gap in the levee system at the mouth of the Arkansas-White Rivers. Continuing on down the west bank of the river, the levee begins at Pine Bluff, up the Arkansas, to the mouth, follows the Arkansas to the Mississippi, then down the Mississippi a continuous levee to the mouth of the Red, protecting the so-called Tensas basin to the west of the river. Back upstream to Memphis, there is a levee on the left or east bank of the river that is continuous from Memphis to a short distance above Vicksburg, protecting the Yazoo basin. Below the mouth of the Red River, there is a levee on the right bank of the river which is continuous to near the mouth of the river, some distance below New Orleans. On the left or east bank of the river there is no levee from the mouth of the Red to approximately Baton Rouge, at which point the levee begins and continues on down to Pointe a la Floche outlet, some distance below New Orleans. There is also a system of levees down the Atchafalaya River, one on either bank of the river, which river is an additional outlet to the Mississippi water, reaching it through a short connecting link termed Old River where it joins the Red [fol. 1014] River and thence proceeds towards the Gulf through the Atchafalaya basin.

The lower river is termed the Atchafalaya basin. The basin on the west side of the river from the Arkansas to the Red is called the Tensas basin. The basin on the east side of the river from Memphis to Vicksburg is called the Yazoo basin, and the basin from Cairo to the Arkansas on the west side of the river the St. Francis basin.

These levees were in existence prior to 1927 and in generally the same position. The Act of 1928 provided for a general raising and strengthening of this levee system. In addition it was considered that provision should be made for a greater flood than could be contained within the levee system. The first supplementary work was that in the vicinity of Cairo, termed the Birds Point-New Madrid floodway. The flow of the Ohio and Mississippi Rivers is forced into

a rather narrow outlet at Cairo and Wickliffe, and without some relief at that point, as for a flood such as it was supposed to control, would reach a height in excess of the raised levee. The floodway consists of a so-called set-back of the old front line levee, providing an enlargement of the flow area at that point, which by reason of creating a greater discharge capacity for a given stage results in a reduced stage at Cairo for the project flow. Below the New Madrid floodway, it was feasible to raise the levee sufficiently to contain the project flood, down to the mouth of the Arkansas.

From the experience in the 1927 flood, it was obvious that the Arkansas-White rivers together would pour out a tremendous volume of water that would be in excess of any reasonable raising of the levee system below that point. Therefore, under the Jadwin Plan it was proposed to leave the levee from some distance above Arkansas City to some point in the vicinity of Luna Landing at its existing grade, [fol. 1015] without raising the grade of this levee, so that in great floods in excess of the channel capacity, the water would not break out of the levee system at any point in this reach, but would break out over this low levee. Then to prevent the water that left the main river at that point from spreading out over the entire Tensas basin, the so-called Boeuf Protection levees were provided. These levees are shown by orange lines on the map, the westerly line extending from a point above Arkansas City to a point a short distance above Monroe, Louisiana, the easterly line more or less paralleling it, but extending on down stream to a point northeast of Harrisonburg. In addition a ring levee was to be provided for the protection of the City of Monroe, Louisiana.

Thus for the reach from the Arkansas to the Red there was provided an emergency area through which great floods might pass in the event they exceeded the capacity of the enlarged levee system. Below the mouth of the Red River, the combined capacity of the Atchafalaya River and the Mississippi River was insufficient to accommodate the flow of the project flood. It was therefore decided to include in the project similar relief overflow areas to permit the passage of great floods to the Gulf, over sections of levee which would not be raised as the remainder of the levee system.

On the eastern side of the Atchafalaya River, the levee from the head of the river to a point near Morganza was to be left at its existing grade, and with the balance of the levee system raised, a great flood would flow over that levee, thence down through the Atchafalaya basin, and be restricted to an area by a protection levee which would be called the East Atchafalaya Floodway levee. Similarly, on the west side of the Atchafalaya basin, or the Atchafalaya [fol. 1016] river, the levee from the head of the river for several miles was to be left at existing grade, and a protection levee provided along the western limit of an area to limit the overflow in the Atchafalaya basin. About half the flow was considered as passing through the combined Atchafalaya River and the two relief outlets, or floodways as they are frequently called. That left about half of the project flood to go on down the Mississippi River past New Orleans. Even this flow was too great for the city of New Orleans, so that a spillway with gates to be controlled in time of great floods was provided at Bonnet Carre, which would take the flow from the river above the city of New Orleans, dump it into Lake Pontchartrain, and thence flow on out to the Gulf, reducing the probable flood heights that would be obtained at New Orleans in the event of a great flood.

Thus we have throughout the river a system of levees, and a system of relief or emergency outlets or floodways at critical points to take care of floods greater than those that might be accommodated within the levee system. The major portion of the valley is protected from great floods, certain areas, however, being found not feasible to be protected, one of those extending along the east banks of the river from Cairo to Memphis, with the exception of a short section between Hickman and Tiptonville, Tennessee, which is protected by a levee connecting at high ground at Hickman and at Tiptonville. It was not feasible to protect this area because the area is so narrow there that the high levee that would be required would not be justified by the area that would be behind the levee. However, there has been some extension of this levee where there is a wider area between Tiptonville and Ridgely, Tennessee. Similarly, below Vicksburg, extending on down to Baton Rouge there is a narrow area along the east bank of the river. Then, at [fol. 1017] the mouths of the principal tributaries there are

areas that are subject to backwater overflow, the principal ones being that at the mouth of the St. Francis, above Helena, the mouth of the Arkansas-White, above Arkansas City, that at the mouth of the Yazoo above Vicksburg, that at the mouth of the Red above Angola. Then, there will be flooded in times of extreme floods an area within the floodways, that is the Birds Point-New Madrid floodway, between the river levee and the floodway levee, the area in the so-called Boeuf floodway, and the area in the so-called Atchafalaya floodway.

To get some idea of the relative size of the protected areas, and the overflowed areas, this map has shown on it in a blue cross-hatched overprint the area flooded by backwater in the 1929 flood. That is not the major flood of record. It is a relatively high flood, and was entirely confined by levees, but by noting the extent of the blue cross-hatched area in these unprotected areas, and in the backwater areas you get some idea of the relative size of those areas.

With reference to the way the floodways operate, the project assumed, taking the floodways in order, first that the Birds Point-New Madrid floodway would have at its head a levee equivalent to 55 feet on the Cairo gauge. This involved cutting down the existing levee, and necessarily meant that the United States must purchase the right to permit this additional flooding over the land owners within the floodway. After that levee is cut down, this floodway would function by the water merely coming up to the top of the levee and overflowing. Actually in 1937 we had a little different situation, due to the fact we had not acquired all of those rights. In the Boeuf floodway the situation is still [fol. 1017a] different in that this was merely assumed as an emergency outlet to take care of floods greater than those that we have had in the past, and the levee was not to be disturbed, it was to be left at its height as it existed [fol. 1018] at the time of the passage of the 1928 Act. Similarly at the head of the Atchafalya basin the levee was to be left at its height at the time of the passage of the Act, and the water entered the floodway by merely overflowing the levee. There have been modifications which I will come to in a moment. This is still a different system at Bonnet Carre, where the flow into the floodway actually is controlled by gates.

After a rather comprehensive study of the possibilities of various floods, it was decided that a reasonable flood

to take for the project flood at Cairo would be one equivalent to a flow of about two million and a quarter second feet. Carrying this two million and a quarter second feet on down to the Arkansas, and assuming that it was met by a flood equal to that of 1927 out of the Arkansas, there would result a flow of somewhat over three million second feet below the Arkansas. Proceeding from the Arkansas to the Red, the contribution of the Red River about compensates for the storage effect in this region and the flood below the Red River was still considered at 3,000,000 second feet, of which one million and a half would go down the Atchafalaya River and floodways, and a million and a half down the main river, with 250,000 out at Bonnet Carre.

Examination by the Court:

We have a crew of men who are measuring the flow of the river at certain critical points all the time. That is, they measure twice a week and during flood times they measure every day and determine the velocity and depth and from [fol. 1019] that compute the number of cubic feet per second that go by a definite point.

Direct examination continued:

As to what safety factor was allowed, the Levee Board assumed a one foot free-board on the levees on this adopted plan. In my opinion it is not safe to have less than this amount of free-board. I would prefer more. I would not want any less. One foot free-board means the top of the levee would be one foot above the calculated flow line of the flood.

There have been a number of modifications and changes in the plan for Mississippi flood control since its adoption. The people residing within the so-called Boeuf and Atchafalaya floodways objected very strenuously to these floodways and sought to enjoin the United States from constructing the floodway levees, and a great deal of litigation resulted. Studies of other possibilities were continued as the main features of the plan were being constructed. A modification of the Jadwin Plan was adopted by Congress in 1936, called the Markham Plan. I have it shown on the small sheet attached to the map. I might just now note a few of the features if I might. In answer to the question as to whether it was the act of June 3, 1936 that I referred

to, I will say that there were two Acts in June 1936. I forget the dates. There was a general flood control act called the Omnibus Bill and this other Mississippi Flood Control Act.

The major change below the Arkansas was the substitution of the so-called Eudora floodway for the Boeuf flood-[fol. 1019a] way. The Eudora floodway differed in a number of respects. It was assumed that the outlets into the Eudora floodway would be controlled in some manner. I do not mean by that that there would be gates but there would be some kind of structures to permit the flow into the floodway rather than merely to flow over the top of the levee. The United States then would acquire flowage rights over the lands in the floodway, whereas under the theory that they were not lowering the levees into the basin, they did not seek to acquire rights in the Boeuf floodway. Topographically the Eudora floodway is lying east of the Macon Ridge, the Macon Ridge being the white area on the map, extending from Eudora through Delhi to Gilbert, placing the floodway down the valley of the Tensas and Macon Bayous.

However, the construction of this floodway was contingent on the United States securing options for the lands which Congress considered reasonable, a figure which was [fol. 1020] written into the Act, as I recall. They stated that 75 per cent of the options must be secured before the construction would proceed. That has not been done, although the securing of the options is under way. Similarly, in the Atchafalaya basin it was proposed to secure flowage rights over the west Atchafalaya floodway, and alter the head of the east Atchafalaya floodway to exclude a considerable developed area from the head of the Atchafalaya floodway opposite Angola down to the latitude of Morganza, bringing the west levee of the east floodway down stream to Morganza rather than at the head of the basin. Those were the two major floodway changes. In addition, an outlet was provided from the lower end of the Atchafalaya basin to be constructed at some point west of Morgan City. That has since been placed under construction in the vicinity of Wax Lake, that is a supplementary outlet to the Atchafalaya River. The Atchafalaya River at present flows out through a channel to the Gulf at Morgan City. In the modification of the Act, it was considered that this

outlet was insufficient and an additional outlet provided at Wax Lake. In addition to these changes, provision for improvement of the channels from the Arkansas to Angola and the approval of the outlet channel of the Atchafalaya was provided. There are two other major features I would like to mention. It was found that in addition to the flooding of the Yazoo basin from the main Mississippi River, there was also danger of flooding the Yazoo from the tributaries. So that the modified Act provided approximately $50,000,000 for a tributary protection system on the Yazoo tributaries, to alleviate the flood damage from local tributaries. That was a system of seven reservoirs that was provided. On the St. Francis system, a similar tributary protection system was provided, as this area in the St. Francis basin west of the main levee is also overflowed by floods coming down from the headwaters of the St. Francis. [fol. 1021] This system was either to be a reservoir and leeves, or all levees, and the present plans are for a combined reservoir and levee for protection from the tributary floods of the St. Francis basin. The last item was a provision for the so-called emergency reservoir at the mouth of the White River, consisting of a levee extending up the White River from the Mississippi that would be breached in times of great floods to provide some storage for flood peaks at the mouth of the Arkansas.

The project levee height at Cairo is 60 feet on the gauge. The gauge at Cairo in the 1937 flood peak was 59.51. At this gauge height, the flow at Cairo was a little over two million cubic feet per second. I believe our measure was 2,010,000 cubic feet per second at a point below Cairo, on the Mississippi River. There was an unusual situation developed at Cairo, as has been brought out. The flood originated largely in the Ohio basin and produced a slope up the Ohio River that was steeper than had been experienced before. This resulted in a small amount of overtopping of the Cairo wall and Cairo Drainage District Levee at the upper end of the Cairo wall. This amounted to approximately 8 or 9 inches and the flood was as much as a foot over the top of the levee. This was not permitted to enter the City of Cairo by emergency sandbags above Cairo. The Cairo Drainage District was protected as well as Cairo from this flood. Those measures are good flood fighting measures, but I would not want to depend on them as permanent measures.

This result happened at Cairo at a time when the peak flow was 2,010,000 cubic feet per second. There are two things involved in answering the question whether or not the existing levee is adequate for the two and a quarter million feet assumed under the previous plan at Cairo and in the question as to what is my opinion as to the maximum [fol. 1022] probable flood for which protection should be provided at Cairo. I might explain that there were several factors which affected that. In the first place, the New Madrid floodway was not completed to the extent of lowering that levee at the head of the floodway and it was necessary to resort to artificial opening of the floodway. This was successful in that in connection with the bulkheading at Cairo it prevented overflow of Cairo, but did result in a somewhat higher stage at Cairo than in my opinion would obtain if the floodway levee had been cut down and the water permitted to go into it at a lower stage. There has also been some deterioration of the channel in the reach from Cairo to New Madrid which further increased the flood stage at Cairo for a given flow, and the combination of these two factors resulted in that apparent discrepancy between the 2,000,000 and 2,250,000 second feet.

As to what flow I think should be provided for at Cairo in the light of the 1937 flood, I think it reasonable that the 2,250,000 should be increased somewhat. I believe the flow perhaps proposed by the Chief of Engineers of 2,600,000 to be a reasonable figure to consider for Cairo. In the event of that super-flood as now estimated, we would have a big high-water fight on our hands at Cairo, but I am afraid that is a little too much. Probably it would go over the top of the levees if we got 2,600,000 tomorrow. If it will wait just a little while, we will have something fixed up there to take care of it.

I spent the 1937 flood in Cairo and my opinion is I don't want to see those levees any higher. Perhaps you could argue physically it is possible to build them higher but I don't believe we should enter into any project of that sort. My own opinion is the levee should not be raised, but I think all possible means of lowering flood heights should be carried out.

[fol. 1023] Reservoirs for the purpose of controlling the Mississippi floods have been studied a great many times. The Act of May 15, 1928, which adopted the Jadwin Plan, also provided for a comprehensive study of reservoirs

throughout the Mississippi basin and provided that a report on a comprehensive reservoir system be submitted to Congress after the subject had been thoroughly investigated.

"Q. Now, will you describe the character and the extent of that investigation as to the feasibility of flood control reservoirs, and your own participation and responsibility in that work.

Mr. R. T. Jackson: I object to that question; the investigation and report on it is an official report made to Congress by responsible engineers, and by 'Responsible' I mean officially responsible, in behalf of the Army, and it was not under this gentleman's direction.

Judge Allen: The objection is overruled. He may answer.

Mr. R. T. Jackson: May we have our exception, please, particularly as to anything that goes beyond what he personally did?"

I was transferred to the Mississippi River Commission's office from the Vicksburg district in 1931 specifically to take charge of the preparation of this report. The data for this report was to be furnished by the various district officers, charged with the direction of the work on the different tributaries to the Mississippi. We prepared a comprehensive set of instructions regarding the study of reservoir possibilities, and the submission of various data to permit our own studies of combining those data to determine the effect of the different tributary systems on the Mississippi River. The studies made under my supervision were those of computing the effect on the Mississippi River of these various systems of reservoirs studied by the district officers. Generally speaking, we had the districts submit two plans. There were others. There were two that we considered most important. First was that involving the selection of reservoirs [fol. 1024] on each tributary that might be operated in the interest of Mississippi River flood control. Second, reservoirs on each tributary operated in the interest of local flood control.

We combined the first group of reservoirs into a general group which we referred to as Plan 1 in the report, and computed the combined effect of this group of reservoirs on the Mississippi River. The report shows the reduction in figures that might be obtained at key points along the river. Similarly, we took the second group, termed Plan 2, and

combined the effect of these on Mississippi River stages and found the incidental effect on Mississippi River flood control that might be obtained by this second group. The results of these studies were combined into a report submitted by the Mississippi River Commission to the Chief of Engineers, printed as House Document 259—I forget the rest of it. I personally prepared the drafts of the report, directed the studies and presented the report to the Commission for their consideration and approval.

"Q. And the Commission approved the report and forwarded it to the Chief of Engineers?

Mr. R. T. Jackson: I object to that. The report speaks for itself.

Judge Allen: The report does speak for itself, but how does it hurt you to have this witness answer, if you don't contest the fact it was approved. Do you contest the fact it was approved?

Mr. R. T. Jackson: The Commission made a report and recommended certain things, and did not recommend certain things that this witness has been telling about. The general implication that would come from his statement that they approved it would be that they had taken some different course.

Judge Allen: Is the report in evidence?

Mr. R. T. Jackson: It is not.

Mr. Fly: It will be offered, your Honor.

[fol. 1025] Judge Allen: The objection is overruled.

Mr. R. T. Jackson: We except.

Judge Allen: Just a minute, Mr. Reporter. The Court thinks that in the case of these technical witnesses, witnesses both on behalf of the Complainants and on behalf of the Authority, that we get light from their explanation. We don't think either that there is any prejudice to either side in a statement of this kind which we have permitted to be made on behalf of each litigant. We don't think that the technical objections which are applicable to other sorts of testimony should be drastically enforced with reference to expert testimony of this kind, no prejudice appearing.

Mr. R. T. Jackson: If I might merely explain, I don't make the objection as a technical objection, but because I do not wish to have either to cross examine or argue about whether or not the statement of this witness is in accord

with the record which will appear from the document itself, and which must be controlling."

The Commission approved the Report and forwarded it to the Chief of Engineers. There has been so much discussion and misunderstanding of this recommendation and interpretation of the word "recommendation" that I would like to read the exact wording of that recommendation before stating what specific systems of reservoirs were recommended for the control of Mississippi floods.

The document (offered and received in evidence as Defendants' Exhibit 32) is a copy of the Mississippi River Commission Report in House Document 259, 74th Congress, 1st Session. (Thereupon the witness read from paragraph 81, page 33.)

This report recommends that a general policy encouraging the participating in the construction of feasible tributary systems be adopted, and outlined Plan 2 as that general system. You will find Plan 2 reservoirs listed beginning on page 44 and extending through page 49. The total for the entire system was some 98,000,000 acre feet and a billion and a quarter dollars. That plan included various reser- [fol. 1026] voirs on the Tennessee system set forth on page 46. The Commission recommended a total volume of storage of 10,188,100 acre feet on the Tennessee system. The reservoirs in Plan 1 were selected from those that would give the maximum reduction for Mississippi River flood control and those in Plan 2 were those that would give maximum reduction for local flood control with incidental Mississippi River flood control.

"Q. In your opinion, what reservoir sites on the Ohio River system are most effective for Mississippi River flood control?

Mr. R. T. Jackson: I object to that question because we are going into a wide field in the Ohio.

Mr. Fly: I don't think so, your Honor. The witness will say that the Tennessee is.

Mr. R. T. Jackson: If that is true——

Judge Allen: Overruled. He may answer.

Mr. R. T. Jackson: May I state, your Honor, the ground of my objection? The mere fact the witness is willing to

state the Tennessee does not exclude the scope of the inquiry from the whole Ohio River system. Obviously if he is entitled to select that, we are entitled to explore the whole Ohio River system.

Judge Allen: He may answer.

Mr. R. T. Jackson: Exception noted, please.

A. The lower tributaries of the Ohio would be the best. Those reservoirs within prediction distance, including of course the Tennessee; other lower tributaries are also valuable, the Cumberland, Green and Wabash."

About 40 per cent of the storage recommended for the Ohio system is on the Tennessee. In the floods on the lower Mississippi, it is important to avoid the use of the floodways whenever it is possible to do that without jeopardizing the rest of the valley. The present height of the main levee about the entrance of the Birds Point-New Madrid floodway is about 57½ feet on the gauge height. The flood waters were diverted into the Birds Point-New Madrid floodway in the 1937 flood at about that height on the main levee. [fol. 1027] However, the main levees broke and the waters were diverted by natural crevasses in the main levee system. These natural crevasses were followed shortly by additional artificial crevasses to increase the flow. The gauge height at Cairo went up to 59.51 and the flow was 2,010,000 second feet in the 1937 flood. It was not at that height at the time of the initial crevass but it went up to 59.50. The contribution of the Tennessee River at the time of the crest at Cairo in 1937 was about 200,000 cubic feet per second, about 10 per cent. Assuming at least 150,000 cubic feet per second of the flood waters in the Tennessee could have been stored and retained on the Tennessee throughout the period of the crest, that undoubtedly would have been a substantial alleviation of the flood waters at Cairo and the entrance to the Birds Point-New Madrid floodway. Prior to the time when the crevasses opened and the flood waters entered the floodway, the retention of this 150,000 cubic feet per second would have effected a reduction of approximately 2 feet in gauge height.

Studying over those great floods on the Mississippi which I listed, the minimum contribution of the Tennessee was approximately 150,000 second feet at the crest of those floods. In a number of them it was larger. That is, as to the

minimum, the smallest we had. As I remember, one went up to 350,000.

"Q. Now, it appears from the records that there are at least 7,000,000 acre feet of controlled storage at the Gilbertsville, Pickwick, Guntersville, Norris and Hiwassee Dams.

Judge Allen: Is that the combined sum of them?

Mr. Fly: That is the total acre feet of controlled storage there, your Honor, yes.

Q. Will you state whether in your opinion such storage could have been operated in the 1937 flood to reduce the flow at Cairo during the 1937 flood by 150,000 cubic feet per second throughout the crest of the flood?

[fol. 1028] Mr. R. T. Jackson: I object to the question upon the ground that the assumption of it does not appear in the record.

Mr. Fitts: Complainants' Exhibit 15, the 1937 appropriations hearing, there is a table which sets out the controlled storage in all the dams. It is now in the record.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: I think that includes in the first place a good many dams not included in this record, and in the second place it includes power storage.

Mr. Fly: It is denominated controlled storage in the tables which they, themselves, put in the record.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception.

A. With 7,000,000 acre feet available, from the study of flood hydrograph of this 1937 flood, I see no reason why it should not have been possible to store the 150,000 second feet from the crest of the 1937 flood."

Assuming that this 7,000,000 acre feet of storage in the dams which have been mentioned will be operated for Mississippi flood control, this will enable a substantial reduction in all major floods on the Mississippi at Cairo. In forming this opinion, I have made what I consider ample allowance for a safety factor.

In explaining the relative functions of the main stream and tributary dams for flood control purposes, the tributary dams provide seasonal storage and some additional storage

in case of great flood peaks. The main stream dams would be within prediction distance and could take off the water at the proper time and remove it from the flood crest at Cairo. They should be able to regulate any deficiencies that might occur from the tributary dams. I think it is very desirable to have a system which provides substantial storage both on the main stream of the Tennessee River and its tributaries, [fol. 1029] if it is determined that the contributions of the Tennessee to the Mississippi River floods are to be reduced or controlled. I can see no value in a series of low dams on the main stream of the Tennessee River such as that set forth in House Document 328 to control the high water on the Tennessee and aid Mississippi River flood conditions.

The construction of high navigation and flood control dams on the main stream of the Tennessee River displaces the so-called valley storage. In my opinion, the construction of the high navigation and flood control dams on the Tennessee River is of substantially greater aid to the Mississippi flood situation than the so-called valley storage. The so-called valley storage seems to have been here a confused issue. I think it might be that this term "valley storage" is a mysterious term used to give a very simple thing an unduly complicated definition. Valley storage is the space occupied progressively by the crest of a flood wave in its passage down the valley. The valley storage is the valley, and the flood peak in passing down the valley occupies progressively different positions in the valley and the accumulated effect of those positions is the valley storage. It is just the flood.

Examination by the Court:

It is the space occupied by the flood as it goes down the stream in its natural course throughout the valley. It is variable with each flood. That is, if we have a flood height of 10 feet, it occupies certain space as it passes progressively through the valley. If we have one of 20 feet above low water throughout the valley, it will occupy a much greater space. If we have one of 30 feet, it will be still greater. So it is of variable quantity, depending on the flood. When the [fol. 1030] river is at its natural stage, the land flooded by the river is valley storage. Then when the river is higher, it is still valley storage, more valley storage. In time of flood the waters spread out throughout the valley and are

to some extent retarded by that spreading out. It is not controlled but it is retarded or delayed in its passage through the valley. There is no valley storage unless there is a flood. The valley storage is entirely uncontrolled and the water goes out of the storage. There is no valley storage unless the river is out of its bank. A simple illustration of the effect of valley storage might help. In the 1937 flood, the Tennessee River crested ahead of the Ohio River at Cairo. As the flow of the Tennessee passed through the valley storage, it was retarded and the flood peak held back, which brought that peak back closer to the peak at Cairo. However, it was still eventually before the peak at Cairo and was falling at the time Cairo was rising to its crest. As it fell, it was drawing water out of the valley storage of the river and was actually placing valley storage on top of the flood crest at Cairo, so that the valley storage in the Tennessee, uncontrolled this year, increased the flood crest at Cairo.

Direct examination continued:

"Q. Now, Mr. Clemens, I want to ask you one of Mr. Jackson's questions:

Suppose you have a chain of dams which displaces 10,000,000 acre feet of valley storage, but provide 5,000,000 acre feet of flood control storage which cannot be increased by draw-down in advance of the flood. Would that chain of dams increase the flood height at the lower end of the chain of dams?

A. There are too many variables in that answer."

To take an extreme case and set out one of the variables, it is not stated what the flood is. Suppose the volume of the flood which you are going to pass through this new series of dams, which had filled up 10,000.000 acre feet of valley [fol. 1030a] storage, and have a volume of 5,000,000 acre feet, it is obvious that if you start to pass 5,000,000 acre [fol. 1031] feet of flood through a series of dams that has in addition to 10,000,000 acre feet of valley storage, 5,000,000 feet of available storage, you will not get anything through.

If we put in 20,000,000 acre feet, we could reduce that 20,000,000 acre feet of flood and make it a 15,000,000 acre foot of flood, as the height that that flood would reach.

But the height would depend upon the character of the flood wave. It would take about a month with a good corps of men to determine what that would be. I certainly would be able to extract that 5,000,000 acre feet, but it is purely an estimate as to the manner. You would need a hydrograph. I could get along without the rainfall if you gave me the run-off and where it came into the stream. I would have to know where the storage was. You would have to have the rate of flow each day during the flood, so you could take that rate of flow and route it through the successive basins to determine the rates of flow at the lower end. The question of time is in any flood study. We must have the volume and the time. You cannot merely take the volume as an abstract thing without relation to time. You have to have volume and time.

I want to know what the storage is, how much water may be stored in the system. I want to know how much water is in each pool and how much available storage space at each pool. I want to know the capacity of the flood gates at those dams. Assuming that I had all that information and any additional information that would be necessary and sufficient number of slide rules, a corps of assistants, I would want at least a month to give a satisfactory answer to that question of Mr. Jackson's.

[fol. 1032] I see no reason why the provision of a substantial amount of storage on the Tennessee could not be made to fit into any ultimate plan of reservoir flood control, such as that recommended by the Mississippi River Commission, letting it come back to the question of operation. It could be so operated. I cannot state how it could be done, but it could be physically possible to do it.

I see no reason why a suitable method of using the 1,500,000 acre feet of storage capacity in Norris Reservoir between elevations 995 and 1020 could not be worked out for flood control and at the same time to obtain large benefits for low water regulation from this same space.

I have read over Mr. Kurtz' testimony. I would need months of study to give you an exact effect of Mr. Kurtz' study, but I would consider that type of system a distinct hazard to the Mississippi River flood control. I would like to explain my answer this way, that that system of retarding flood flows would necessarily result in delaying the flood crest at the mouth of the Tennessee River. What we are

interested in on the Mississippi River is not so much the greatest floods that come out of the Tennessee, but these ordinary floods that come out of the Tennessee on top of the big Mississippi River floods. Normally those floods are out of the way of the main crest at Cairo. If you put in a system of retarding reservoirs, which delay the Tennessee crest by its proposed system of operation, it will increase the flood crest at Cairo, and I would be very much afraid of that.

If I was instructed to provide a 9-foot navigable channel upon the main stream of the Mississippi River and assist in the control of the flood waters of the Tennessee and Mississippi River valleys by means of dams on the Tennessee and its tributaries, I would construct dams similar to [fol. 1033] Norris on the tributaries and Pickwick, Wheeler and Gilbertsville on the main river. No other type of dams on the Tennessee and its tributaries would accomplish all of these purposes. You need that general type. I am not stating that that would be exactly the dams I would build, but that type of dam, both on the main river and the tributaries.

Cross-examination:

I referred in my testimony to Defendants' Exhibit 32, House Document 259. That is the exhibit in which there is set forth two general plans of reservoirs on tributaries of the Mississippi that have been studied. The total of the storage in those plans is something around 98,000,000 acre feet. The general character of my estimate was that if this entire reservoir system were constructed at a cost of something around a billion and a quarter dollars and operated primarily for the protection of Mississippi floods, it would reduce a super-flood somewhere to the extent of 7 feet in the lower Mississippi under conditions at least that prevailed before the recent modifications in the Jadwin Plan. I also estimated that if these reservoir projects, the entire system, of a billion and a quarter dollars, were operated for local flood protection, the incidental benefit to the Mississippi River in a super-flood would be reduced to something on the order of 4 or 5 feet. Referring to page 58 of House Document 259, super-flood A was 3.6 feet, super-flood B, that is a little different assumption given there on page 60, it showed 5.9 feet. We had two types

of super-floods there, one was A and assumed one build-up from the tributaries and B assumed a little different one. The first figure is the reduction at Columbus for A and the second figure is the reduction at Columbus for B. I would [fol. 1034] say in the neighborhood of 4 feet then—something like that. I testified in the Ashwander case and the following testimony of mine in the record in that case, at p. 775, seems to be in substantial agreement: "If the reservoirs were operated solely for tributary protection, reduction would be approximately 4 feet."

Of course, I don't remember exactly what I said three years ago, but that is the record and I assume it is correct. I would not seriously quarrel with it. In this total of the two plans of reservoirs, there was storage capacity on the Tennessee River of somewhere around 10,000,000 acre feet, about 40 per cent of the Ohio. The 98,000,000 acre feet, of course, includes a great deal of storage below Cairo, which we should not consider in any comparison at Cairo. When you are talking about 4 feet at Cairo, there is no comparison with the 98,000,000 acre feet which includes storage below Cairo. I will state that the 10,000,000 acre feet is approximately one-tenth of the entire system, including both reservoirs above and below Cairo.

As I recall my system of reservoirs that was considered in House Document 259 (Defendants' Exhibit 32), on the Tennessee River was 21 reservoirs. The reservoirs in the TVA Unified Plan I believe are Gilbertsville, Pickwick, Wheeler, Chickamauga, Norris, the dam on the Hiwassee and the dam on the Little Tennessee. I don't know the exact tributary on which the Fontana Dam is located, but it is above Chattanooga.

Plan No. 1 described in Defendants' Exhibit 32 was a system of tributary reservoirs to be operated primarily for Mississippi flood protection. Plan No. 2 was a system of tributary reservoirs to be operated primarily for local flood protection. The Mississippi River Commission recommended the general principle that the Federal Government, in so far as it did anything by way of contribution or [fol. 1035] otherwise, would aid Plan No. 2. In the particular case of the Tennessee, Plans 1 and 2 can be merged, or do merge very easily because of the proximity of the Tennessee and the Mississippi, and frequently it is possible with the Tennessee reservoirs to gain both benefits.

"Q. Yes. Did you understand me to ask whether plans 1 and 2 could be merged?

A. I answered your question and then I explained, so I believe, sir.

Q. Well, you didn't understand me to ask that, did you?

A. I don't understand what you are talking about now."

There was a dam at Aurora included in Plan 1, but there was no dam at Aurora included in Plan 2. A short answer is that in Plan No. 2 there was no dam at Gilbertsville.

July 29, 1935, is the date of the letter of transmittal signed by George H. Dern, Secretary of War, transmitting to Congress the report, Defendants' Exhibit 32. That was before Congress prior to the enactment of the Mississippi River Flood Control Plan in the Act approved June 15, 1936. I believe the Act you are referring to is the Omnibus Act, that is, the Flood Control Act which was approved June 22, 1936. There were two Acts about the same time, both dealt with flood control, one specifically with the Mississippi and the second Act dealt with the country as a whole and includes a number of provisions that affect the Mississippi, that is, 2 or 3 specific provisions regarding the Mississippi. The one that modified the Jadwin Plan is June 15, 1936.

Turning to Defendants' Exhibit 32, I cannot answer specifically that the reservoirs set forth in Plan No. 2 provide for no dead storage, as dead storage is something that has been a very much misused term. With reference to Project No. 74, the Milliken Branch on page 46 of that Exhibit, shows a capacity of 103,400 acre feet, and that is the flood control capacity we considered there. It is the [fol. 1036] capacity that we have of storage there. All of the storage capacities there represent the total storage capacities of those reservoirs. This study considered a certain amount of storage. The results are immaterial as to whether or not that storage would be obtained in that particular reservoir. We might get 10,000,000 acre feet of storage on the Tennessee River in a different manner. We might not get any in that particular reservoir. We might have somewhat greater storage in another reservoir. We might have an entirely new site, but the results would be essentially the same as we show for this particular study.

I am still correct in my statement on direct examination that I could not answer a question because I had to know where the total 5 million feet of acre storage in the chain of dams was located, how much was in each dam and where each dam was. That is not the difference between a hypothetical question and a practical study. I have worked out various schemes here and they substantiate the answer that I gave you. Assuming that my 10,000,000 acre feet on the Tennessee of storage was all on the Clinch River, the result would not be the same. It is obvious that if you put more storage on one reservoir than there is stream flow above it, you would not obtain the same results. But if you have essentially this type of a system with storage distributed between the main river and the tributaries, storage reservoirs placed below where you have sufficient stream flow, you can get essentially the same results as we obtain with this system.

In the estimates in Defendants' Exhibit 32, it is not assumed that the entire storage in acre feet will at all times be available for flood control purposes. The detailed plan of operation worked out assumes a sufficient filling of certain groups of reservoirs and filling on a rather complicated system of prediction for others under plan two so that at any moment——

[fol. 1037] Paragraph 53 on page 26 reads:

"The reservoirs selected as comprising the best system for the control of floods on each of the above main stem tributaries would also furnish local flood control on the minor tributaries, upon which the majority of the reservoirs are located. These several systems have been combined into a comprehensive system embracing the entire Mississippi Valley and its incidental effect upon the lower Mississippi River floods determined. Several reservoirs were added in this office, which were patently advantageous to the lower Mississippi River. This combined system is designated as plan II in the report."

In other words, each separate local system had its own method of operation, which I did not report in this report, and operating under that system the combined results were those that were shown at Cairo. That is a local system of operation described in the paragraph that I read, used to furnish local flood control as distinguished primarily

from flood control work on the Mississippi, but including incidental Mississippi flood control. We found in case of the Tennessee particularly, it was possible to gain a large measure of benefit locally and also Mississippi flood control protection. The storage is merely filled up in flood season in a number of the reservoirs. It might be used for several purposes other than flood control. We assumed that would be filled up during the flood season and then, irrespective of the uses made of the water, the results would be obtained from the space available to store the flood. The way we get one answer for protection from flood if we assume that flood came along in January and that 8,000,000 feet of the 10,000,000 acre feet in these reservoirs was unfilled and available, and in another case a flood came along in April or May on the Mississippi and then there was only 500,000 acre feet available, is because where you lose in one you made up in another.

[fol. 1038] "Q. Your testimony is that if these Tennessee River tributaries were filled up by the first of April, so that there was left only available 500,000 acre feet of storage on the whole system on the Tennessee, out of your assumed figure of over 10,000,000 acre feet, and it so happened in that year the big Mississippi flood came along in May or early June, that would nevertheless be effective to produce the results that you have testified to?

A. We did not find that to be the case from the studies that we made."

We were routing several floods through there and determined from the results of actual floods what we might expect from future floods. In routing the floods through these reservoirs, we assumed 10,000,000 acre feet was available at the beginning of the flood season. I was asked the following question and made the following answer with reference to this flood control system in my testimony in the Ashwander case:

"Q. But, at the critical moment you are assuming the primary use of that space or capacity?

A. That space would be available for use when necessary."

I see no conflict in that answer and in the statement I have just made. The answer, that space would be available for use when necessary, I interpret to be in accordance with my

present statement that at the beginning of the flood season the space would be available for the control of floods.

"Q. You testified that if this ninety-eight odd million acre feet of storage were operated primarily for Mississippi flood control it would reduce the stage of a super flood by seven feet. Assuming that all of these tributary reservoirs were filled by March 1st in a given year, and that you had a super flood in the Mississippi River in May of the same year, how much would that system of storage reservoirs reduce the stage of that flood?

A. Well, that would probably accomplish a very considerable reduction, because if they were filled in March I can see no reason why they could not be pretty well drawn down, at least within prediction distance, before the May flood.

Q. You assume they will be drawn down?

[fol. 1039] A. After the flood season is passed. Take Gilbertsville as a specific example. It is located within about a day or two days travel of Cairo. After the flood crest has passed at Cairo and the river is falling I see no reason why that Gilbertsville storage should not be drawn down. Then the space is available for the May flood.

Q. Well, Mr. Clemens, let's not quibble about the matter. Laying that aside, there cannot be any argument, can there, but that this tributary storage can be useful only to the extent it is empty at the time of the flood, or when it is needed for flood storage?

A. Well, there are two things there, Mr. Jackson, that you have to consider. During the flood season rivers generally rise, building up a base on which the flood crest is eventually placed. Now, if during that flood season we can reduce that base, that eventually reduces the crest in the amount that we reduce the base, and then such storage as we may have available at the crest can be used to further reduce the crest.

Q. Well, I am willing to take any answer. If you will just tell me a flood storage reservoir is as good for flood control purposes when full, as empty, from your point of view, I am willing to accept it.

A. Of course, you are assuming after we control the flood, we have this super flood of yours.

Q. I am not assuming anything. I just want a bare fact. Is, in your opinion, a flood control reservoir that is full just as good as one that is empty? You can answer that yes or no.

A. Let us get it exactly. You want; is the flood control reservoir that is filled, as good as one that is empty for a flood in the future, or one that has already been stored in the reservoir."

Of course, if you are going to assume some kind of a theoretical flood coming along on top of a full reservoir, then the only value of that reservoir in reducing the crest of that flood is that it will create such a pulling down of the base of the flood as has already been accomplished by the reservoir. Whether it will aid in taking care of any character of flood depends on the character of the gates on the reservoirs. For instance, take a super-flood with Norris reservoir full up to 1020, and let the Jackson or Kurtz super-flood come along on top of that full reservoir, we [fol. 1040] could store that flood by letting it flow over the top of the gates and still get a very material reduction in the flood below the reservoir.

I do know that the top at Norris is 1034. I also know we can go up to 1040, some odd feet and control the flood by some thousands of acre feet, just like Mr. Kurtz' detention basin on top of the dam. That is not valley storage at an artificial elevation, it is a retarding basin or detention reservoir on top of the reservoir that they have not taken advantage of.

"Q. You testified a little while ago that a retarding basin would very seriously damage the Mississippi?

A. The system of flood control on the Tennessee with retarding basin plan, I do not think would be—I believe would be disadvantageous to the Mississippi River.

Q. So the effect of this uncontrolled storage that you find on top of these TVA reservoirs is detrimental to the Mississippi?

A. It is not detrimental. It is not of as great value as stored control water. Its value is less than that of controlled water, admittedly."

It has some value if it detains water.

Referring to the effect of the 1927 flood on the Tennessee River shown at the middle of page 59 of Defendants' Exhibit 32, Plan 2, on the assumption of a super-flood during which we placed an extreme low flow period in the Tennessee River opposite the crest of the Mississippi, shows a slight increase in the flow of the Mississippi. The explanation is that this 1927 hydrograph shown on page 59 had been offset to make the low water period of the Tennessee coincide with the crest period at Cairo. Taking the actual 1927 contribution, we found a very considerable reduction. If you go to the actual 1927, which you find at the middle of page 63, hydrographs 1927, "Confined reduction of Plan 2," the crest flow, 192,000, and the modified flow 101,000, a reduction of 90,000. With Plan 1 for the [fol. 1041] same flood on page 57, we would be able to reduce the crest flow of the Tennessee of 192,000 to 6,000 second feet. From an examination of the past contributions of the Tennessee to the Mississippi, we find that the minimum is about 150,000, which is considerably more than the assumption made on page 59 referred to in the question. It was an assumed condition of a low flow from the Tennessee meeting a super flood on the Mississippi. It was not the actual flow on April 5, 1927. Those have been offset arbitrarily in that program to make an assumed condition. It is not an actual condition. The actual condition is the one I gave in explanation. The flow on April 5, 1927, is offset in its combination with other floods.

Assuming 7,000,000 acre feet available for storage in the TVA reservoirs, I answered a question on direct examination whether it would be possible to store 150,000 second feet during the crest of the flood. I understood that the 7,000,000 acre feet of storage would be located at dams such as Gilbertsville, Wheeler, Pickwick, Norris, Hiwassee, with a considerable portion of it at Gilbertsville. I had to know approximately how the storage was distributed among those dams. I had to know there was a considerable volume at Gilbertsville to make it effective. As I recall, it was something like in the neighborhood of three and one-half million acre feet at Gilbertsville.

I stated that valley storage is nothing more than a space occupied by the flood in going down the valley My reason for stating that it was not really storage because it was empty unless there was a flood there was that storage

involves in my mind control, and valley storage is merely an uncontrolled space occupied by the flood. I did not mean to draw the distinction between controlled and uncontrolled storage. I gave a definition of valley storage which I believe is correct.

[fol. 1042] "Q. Of course any flood control reservoir, if used only for flood control, stores water only in time of flood, doesn't it?

A. Oh, it might store water on the advancing wave of the flood, and carry it over to be used at low water. That is possible."

A storage reservoir reserved for flood control will not necessarily only be filled at times when there is a flood or anticipated flood. That is the old theory of the retarding basin, but our more recent studies, and what we have learned after ten years of constant consideration of reservoir problems, leads to the conclusion that the storage should be controlled.

My answer to the question whether it is not true that any reservoir that has its space reserved solely for flood control actually is used for storage only at the time of flood, or when the flood is anticipated, is that if you have storage space available for flood control, it will be more effective if it is held in complete availability for flood crest.

I am in the office of the President of the Mississippi River Commission. It was approximately 1931 when I went to that office. Prior to that time I was in Vicksburg with the District Office. I am generally familiar with the report dated May 1, 1932, which was published on the improvement of the lower Mississippi River for flood control and navigation, prepared under the direction of Brigadier General T. H. Jackson, President, Mississippi River Commission. I was not connected with the preparation of it but I am generally familiar with the contents. I generally agree with the following statement from page 95 of that report:

"No discussion of the river discharge is complete without consideration of the reservoir possibilities of its basin. The function of a storage reservoir is to furnish temporary storage for surplus flood waters which may be released gradually as stream flow. This storage of course reduces

the maximum stages and discharges by prolonging the [fol. 1043] period of high water and distributing the discharge in a more uniform rate, and over a greater time period, than would otherwise be the case. Reservoirs are not necessarily all artificial; lakes, side basins, swamps, backwater areas, and the river channel itself, all provide for the impoundage of upstream flow. In a stage of nature, the entire alluvial valley of the lower river was subject to flood inundation and its enormous reservoir storage capacity retarded both discharge and stage. The erection of levees has greatly restricted the width of the natural floodway with the consequent enormous reduction in the reservoir capacity of the lower river. Backwater areas still exist, however, at the mouths of the lower tributaries (See Table I) and the channel storage between levees is a very appreciable factor in the consideration of flood heights and discharge. Table XX affords an indication of the channel reservoir capacity of the lower river."

I object to one word in the middle of that statement where it says that lakes, side basins, swamps and backwater areas provide for "impoundage" of stream flow. They don't impound anything because that involves control and they don't control it. I can not agree with that word. I may find there is some principle I don't agree with, but generally speaking, I agree with it.

On my direct examination I stated that the plans for the Mississippi super-floods involved somewhat over 3,000,000 second feet at the mouth of the Arkansas and that no increase was provided for below the mouth of the Red River, that is, that the water in flowing through the space between the levees, and the effect of the Yazoo backwater, and the Red River backwater on this crest that comes down the river approximately compensates for the additional flow that may come in from the Red. In other words, the natural valley storage between those points will reduce the peak flow for the additional flood water that comes out of the Red River in time of flood.

The article which I wrote for the American Society of Civil Engineers shows on page 888, Table 2, "Origin of 1927 flood, Red River Basin," that the total computed run-off of the Red River above Denison, Texas, was 716,000 acre feet. Denison is a long ways up above the mouth of

[fol. 1044] the River. The total acre-feet discharged would be a lot more before it got to its mouth. There is a total greater run-off as you increase the total drainage area. The total at the mouth of the Red River above the head of the Atchafalaya is 16,746,978 acre feet, which includes the Red and Ouachita. They come in a short distance above the mouth of the Red, about 90,000 square miles. As I recall this table, that was the volume of the 1927 flood. As I recall the set-up, the super-flood of the Mississippi assumed the same flow out of the Red and Arkansas as came in in 1927. That is, we assumed the 1927 flows from those streams would meet the crest coming down the river.

June floods are not ordinarily very high on the Mississippi. I would limit the period for major floods to say May 1st to the 15th. The June floods are normally Missouri River floods. Sometimes there are contributions from the other tributaries, but they are not normally so high. The table on page 403 of Exhibit 116 shows a controlled storage of 8,731,000 acre feet for the TVA project reservoirs. I don't know exactly what is meant by the term "controlled storage," but we will pass that.

I have not gone into such an exhaustive study of the power resources of the Tennessee as would be required to answer the question as to the amount of power storage there must be in the tributary and other reservoirs on the Tennessee River in a dry year like 1925 by February 1st to March 1st, in order to produce firm power capacity of 660,000 kilowatts, that is, continuous 24 hour capacity, and to generate 5,780,000,000 kilowatt-hours of firm energy in a year.

"Q. So that in answering Mr. Fly's question you answer without any study or consideration of what storage must have been retained in the TVA tributary and main stream reservoirs in order to carry out their announced or reported intention to Congress of creating a hydro-electric system that would have a firm capacity of 660,000 kilo- [fol. 1045] watts and a firm energy output of 5,780,000 kilowatt hours in a low water year?

A. I did not have the detailed figures as to the power output and these other power capacities stated, but I answered based on the studies that I have made of this and

other streams which indicate that it would be feasible to devise some means of obtaining a combination of these various purposes."

In answering Mr. Fly's specific question, he gave me an assumption of 7,000,000 acre feet, and I gave him my conclusion as to what would be obtained. In none of my testimony am I undertaking to testify whether or not any particular volume of acre feet will be available and provide an electric system to produce the quantity of power stated. That is up to the TVA engineers to tell how much they are going to have and how they are going to operate it.

I agree with the following statement in the report of the Chief of Engineers in Defendants' Exhibit 32 on page 3, paragraph 8:

"In the separate reports on the tributaries of the Mississippi River made under the authorization contained in the River and Harbor Act of 1927 in accordance with the provisions of House Document No. 308, 69th Congress, First Session, the most suitable sites for storage reservoirs on these tributaries were developed, and the effect of such reservoirs on the floods of the Mississippi was computed. In each case it was found that the operation of any reservoir, or isolated group of reservoirs, would have small effect on Mississippi River floods."

That paragraph is contained in the report of the Chief of Engineers, forwarding the Mississippi River Commission's report, and is the comment of the Chief of Engineers on that report. I think in a general way, considering isolated projects scattered over the entire Mississippi River drainage basin, that it is correct. But if you have the development of some one tributary that shows consistently that it is a contributor to Mississippi River floods and provided sufficient control on that tributary to hold out some appreciable amount, that it would be of value in itself. [fol. 1046] The Tennessee River, due to its proximity to Cairo and the Unified Plan being carried out on that stream would, in my opinion, fall within that classification, and within the limits that the floods of the Tennessee River could be stored, or the Tennessee River could be so operated as to provide appreciable reduction of flood heights at Cairo. Subject to my comment—the comment of the

Chief of Engineers in House Document 259, Defendants' Exhibit 32, is correct.

I am familiar with the article in Transactions, American Society of Civil Engineers, Volume 100, for 1935. The Transaction is a reprint of the article, including the comments of various engineers thereon. The article was originally prepared as a thesis at the University of Michigan for a graduate degree. The following is a part of my opinion:

"The demands of water power and flood control are more or less contrary. The power reservoir is filled as rapidly as possible during periods of high flow to insure a maximum yearly output. When the reservoir is full and high flows occur they are merely passed over the spillway. On the other hand, the flood-control reservoir is kept as low as possible, in order that the storage capacity may be available to store the peak of the abnormally high floods. A large power reservoir is frequently a very efficient reducer of small floods, but it may have little or no effect on large floods should they occur at the time of year when the reservoir is nearly full. A flood control storage reservoir, even with a minimum draw-down limit, would permit of very irregular development of water power. There would be practically run of river operation through the minimum head during long periods of ordinary flow when it is desired to keep the reservoir low. There might be little or no power development during the storage period, depending on the quantity of water that could be released under the method of operation adopted. During the emptying period after the flood, fairly efficient, but still variable power development might be obtained."

I would like to extend that by reading another paragraph of that same report. That states only a part of my opinion. In so far as it goes, it is correct. There are additional facts in that report that pertain to some exhibit that should be read to complete my opinion.

[fol. 1047] "Mr. Fly: Should not the witness be permitted to read the rest?

Judge Allen: He may.

Mr. R. T. Jackson: If your Honor please, I do not understand on cross examination the witness may read an article.

Judge Allen: The witness may explain his statement.

Mr. R. T. Jackson: May an exception be noted to the witness reading an article he is asked about on cross examination?

Judge Allen: The exception may be noted."

(The witness continued to read from the same page of the report, as follows:)

"By sacrificing some measure of flood protection and power production, a combined use of the same storage is sometimes feasible. Floods can be expected to occur at certain seasons. Power demands for the locality have a certain seasonable variation. Operating schedules for plants in a system with other power producers might be arranged to permit the seasonal use of production from a water-power plant at the flood control reservoir.

"These factors may be combined to develop a rule curve for operating the reservoir to obtain the best possible use for both functions. Such a curve would consist of a schedule of elevations of desired water surface in the reservoir, set arbitrarily, and to be obtained throughout a year. For the conditions set forth in the preceding paragraph such a curve would provide that the reservoir be kept at a low elevation during the flood producing period. As this period closes, increased elevations are permitted to provide increased head and storage for the low water season. During the low-water season this storage is drawn down, regulating the power output and making certain that the reservoir is low at the beginning of the next high-water season. An interesting example of such an operation is a stream in California,"——

"Mr. R. T. Jackson: I object to his going into a collateral question about some other topic."

I think that explains my remark. I would like to call attention to the fact also that this paper was prepared long before any of this discussion over the Tennessee Valley had been thought of.

[fol. 1048] "Judge Allen: It will in general be the policy of course to permit witnesses to state their answers and then explain their answers. When the Court gives such permission to a witness, the permission is given by the Court. Technically, it is not a part of the cross examination. Neither is it a part of the case for opposing counsel.

When the Court permits the witness to explain his statement, the Court has asked for that information, and that privilege is and will be extended equally to both parties.

Q. Mr. Clemens, in the paragraph which you have just read where you said it explained this paragraph, by pointing out what could be done by sacrificing some measure of flood protection and power production, you spoke of operating schedules for plants in a system with other power producers. If you had a situation where all of the plants that you had in the system were flood control projects for the same stream, and to serve the same power load, as well as some flood on that stream, the integration would not help much, would it?

A. The integration of such a system would depend on its extent, the character of your other plants, how the drawdown might be permitted at one place and utilized at another. There are very many complicating factors there. I cannot answer that specifically.

Q. I tried to help you by eliminating those complicated factors.

A. You cannot eliminate them; they are there.

Q. (Continuing.) By saying it was one system of flood control reservoirs to take care of one flood on one water shed."

In the 1937 flood, the amount of water that went through the Birds Point-New Madrid floodway was just slightly under 500,000 cubic second feet at the crest. The floodway was not completed in 1937 to the extent that the levee had not been cut down. The original design figures of the New Madrid floodway contemplated that it would carry in a super-flood approximately what was actually carried in 1937. I do not remember off hand the total estimated cost of the Birds Point-New Madrid floodway. My recollection is that the cost of the right-of-way was about $6,000,000. The levee is additional. I may be somewhat in error.

The Birds Point-New Madrid floodway was considered at [fol. 1049] the time of the passage of the Act to be sufficient to draw down the Cairo stage something a little over 6 feet, between 6 and 7 feet. I assume that the figure of $5,000,000 available for completing the Birds Point-New Madrid floodway in Committee Document 1, 74th Congress, First Session, under date of February 12, 1935, page 3, is

correct. I just don't carry that figure in my mind. I did testify, however, that the estimated cost of this comprehensive reservoir plan was something around a billion one hundred twenty-five million dollars.

Congress has authorized under the Markham Plan works for the completion of the Mississippi flood protection system totaling an estimated cost of $272,000,000, but they have not made those appropriations. The only appropriation we received was this year, $22,500,000, of which $4,000,000 was impounded. They also gave us $7,500,000 of relief funds to expend without restrictions. It gave us about $25,000,000 that has actually been appropriated under the Markham Plan. That is the amount that has actually been made available to us to date. The Act of June 15, 1936, authorizes $272,000,000. We have under the Omnibus Act around a half million dollars additional. There are certain works under the Omnibus Act that are also on the Mississippi River. The Tiptonville-Obion levee is one. There is about a half million dollars in there. There is also some work on the Arkansas.

The present flood protection plan is the modification of the Markham Plan that was authorized by the Act of June 15, 1936. The following from Committee Document No. 1, 74th Congress, First Session, being a letter from the Chief of Engineers to the Chairman of the Committee on Flood Control, House of Representatives, Washington, D. C., dated February 12, 1935, paragraph 21, page 7, is the statement that includes the changes that were made in the so-called Jadwin Plan by the Act of June 15, 1936:

[fol. 1050] "The modifications of the project recommended by the Commission have received my careful consideration, and have my general concurrence. These modifications are as follows:

"(A) A complete revision of the floodway plans between the Arkansas and the Red Rivers to reduce the area submerged in extreme flood, by eliminating the Boeuf floodway and substituting therefor a floodway on the east side of Macon Ridge, with a controlled inlet in the vicinity of Endora, and a back protection levee extending from this floodway north to the Arkansas River.

"(B) A revision of the floodway plans in the Atchafalaya basin to provide for additional protection of the valuable lands at the head of the basin east of the Atchafalaya River, by a floodway with a controlled inlet above Morganza.

"(C) The protection of the developed lands at the southern end of the Atchafalaya basin by an extension of the protecting levees and the construction of a new outlet to the Gulf.

"(D) Acquisition of flowage rights in floodways at reasonable costs within a limitation based on total 1934 assessed value.

"(E) The adjustment of drainage works at Federal cost as made necessary by levee construction.

"(F) A six-year program of work to increase the flood-carrying capacity of the river channel between the Arkansas and the Red in the middle section of the river, and of the Atchafalaya River in the southern section, and a continuation of bank stabilization.

"(G) Flood-control works in the St. Francis and the Yazoo basins to protect against the recurring floods of the tributaries to which these areas are now exposed.

"(H) The construction of roads on levees, to facilitate their better upkeep and to provide accessibility in flood emergency. This in addition to road adjustments agreed upon in connection with floodways."

In addition to those changes, the general flood control Act passed that year by Congress contained certain provisions that followed the recommendations of House Document 259. That Act is Public Act 738, 74th Congress, House of Representatives, 8455, June 22, 1936, page 18, which authorizes under the heading "Ohio River Basin Reservoir System for Protection of Pittsburg", and then further on down, "Reservoir System for Reduction of Ohio River Floods Below Pittsburg." Those two systems of [fol. 1051] reservoirs authorized by that Act were a portion of the reservoirs included in this House Document 259, 74th Congress, First Session. That authorization is in accordance with the recommendations of the Mississippi

River Commission, that the Federal Government adopt a policy of encouraging and participating in the construction of feasible tributary systems which will fit into the ultimate system for control of the lower Mississippi River floods. Those levees for the protection of Pittsburg against floods are not under the Mississippi River Commission, but under the Chief of Engineers.

The Mississippi River Commission is composed of three Army Engineers, three civilian engineers and one member of the Coast and Geodetic survey. Prior to 1928, they made their recommendations direct to the Secretary of War. Since that, they make a report to the Chief of Engineers, who in turn reports to Congress.

The following statement made by me in an article published in Civil Engineering for June 1937, entitled "The Mississippi meets the 1937 Flood" at page 183, correctly presents my opinion:

"Jadwin plan levees and recent cut-offs function perfectly under severe test. It is surprising that there should have been so much hysteria as the flood approached the lower Mississippi Valley. The country had enough confidence in the engineers to give them over $300,000,000 for the Mississippi River flood plan. Why then did people become unstrung when the floods descended upon that plan? Now that the flood has subsided it is clear that the plan worked about as expected—and that the flood was considerably less than the protection provided against it. If the men who know and love 'Old Man River' can now have an opportunity to sew up its wounds caused by the 1937 flood and build up those vital organs which were a little weak—if that is done, I am confident the next flood will be held within bounds as was this one."

Redirect examination:

I stated in my original direct examination and I am firmly convinced that any method for reducing flood heights that can be utilized, meets my enthusiastic approval.

A number of the reservoirs recommended by the Mississippi River Commission under House Document 259 on [fol. 1052] the tributaries of the Ohio are under construction at the present time.

(The witness was excused.)

[fol. 1053] EDWARD H. SARGENT was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

My address is Albany, N. Y. I am a Civil Engineer. I received my technical education in the class of 1907, at the Massachusetts Institute of Technology. From 1907 to 1920, with the exception of the period during the war, I was engaged in various capacities for the New York State Water Supply Commission, such as the Conservation Commission, who were engaged in a comprehensive investigation of the water resources of the various streams in New York State. For the last five years of that time, I was in charge of those investigations. This work required complete field surveys and office studies resulting in comprehensive plans for the full utilization of the water resources of the various rivers in New York State. In 1920 that work was transferred to the State Engineers' Department, and I continued in its charge. For the next two years I was also engineer to the New York Power Commission, which had supervision over the licensees of water power developments at Niagara Falls for the power companies who were using that water under Federal and State supervision. During that time I also designed and began the construction of two hydro-electric plants on the Mohawk River, the principal tributary of the Hudson, of 16,000 horse power each. In 1923 I was appointed Chief Engineer of the Hudson River Regulating District, which position I hold to date. In the last ten [fol. 1054] years I have also done general consulting work on water questions. I have occupied my present position as Chief Engineer of the Hudson River Regulating Commission since 1923, practically since the district was created.

"Q. Will you describe briefly the nature of your work?

Mr. R. T. Jackson: Just a minute, I object.

Mr. Fitts: I have a right to qualify the witness, if not anything else.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception."

The Hudson River Regulating District is a public corporation created under Article VII of the Conservation

Law of the State of New York. The provisions of that statute provide for the creation of regulating districts for the construction of storage reservoirs where required by public welfare, including public health and safety. The Hudson River Regulating District was created under the statute in November, 1922, and the members of the Board appointed by the Governor immediately. The District is a public corporation, entirely separate from the Government of the State of New York, and finances itself entirely independent of the State of New York. Under the law, the District is directed to prepare a comprehensive plan for the regulation of the flows of the rivers within the district, and immediately after my appointment I began the preparation of such a plan which calls for the eventual construction of 16 storage reservoirs, having an aggregate available capacity of over 2,000,000 acre feet. On the completion of that plan, the Board proceeded with the construction of the largest of these reservoirs, the so-called Sacandaga [fol. 1055] reservoir which is located on the Sacandaga, one of the largest tributaries of the Hudson River about 65 miles north of Albany. I prepared the plans for the construction of this reservoir, which was completed in the early summer of 1930. This reservoir has a total capacity of 867,000 acre feet. Since the completion of this reservoir, I have been in charge of its maintenance and operation.

"Q. And what is the nature of that operation?

Mr. R. T. Jackson: Now, I think I have reached the point where I am entitled to raise the question of whether we are going into collateral issues as to another reservoir.

Judge Allen: Just a minute.

Mr. Fitts: I am qualifying the witness to express an opinion upon Norris reservoir, and on his opinion as an expert, that has something to do with it.

Mr. R. T. Jackson: I object to that question because this is nothing more than a back door method of involving us in a collateral issue as to the operation of the Sacandaga reservoir, how it is built, and everything. We bring in the collateral issue if we are going to do that. He has shown this gentleman built the reservoir, and the operation of it, for whatever that is worth.

Mr. Fitts: I want to know whether he operates it solely for flood control or for combined purposes.

Mr. R. T. Jackson: That is an ultimate conclusion that if we are going into, we have to go into the whole operation of the Sacandaga reservoir, and what it is.

Judge Allen: Just a moment, please. He may answer. You may have your exception.

Mr. R. T. Jackson: May I say this, that if the Court is going to permit this inquiry, I wish we could have an opportunity to file some authorities.

Judge Allen: The Court will permit the witness to answer the question. You may have your exception.

Mr. R. T. Jackson: Exception please.

[fol. 1056] A. The Sacandaga reservoir is operated for the multiple purposes of flood control and low water regulation, for sanitary improvement, increase of firm power at power plants, and a benefit to navigation.

Q. Is there any power generated at the dam itself?

A. Yes sir, there is.

Mr. R. T. Jackson: May I understand clearly—I don't want to interrupt, if the Court has reached a firm conclusion. If I am objecting too early, then I want to remedy that.

Judge Allen: The Court expects you to make a specific objection and exception to every question that you deem to be objectionable.

The Court is not at all worried about any objections made.

Mr. R. T. Jackson: It takes the time of the Court, is my concern. I object to this question and move to strike it out and also the previous answer as involving a collateral issue, not within the issues in this case.

Judge Allen: The objection is overruled. The Court holds it is competent to show the experience of this witness in the projects which have been under his direction in order that he may testify as he understands he is asked.

Mr. R. T. Jackson: Under those circumstances may I say that that merely permits the witness to bring in every collateral issue within his memory, in the guise of experience.

Judge Allen: You may have your exception.

He may answer it.

A. There is a power plant that has two 17,000 horse power units in the plant.

Q. For how many years now have you been in charge of the operation of that project for the purposes which you have mentioned?

A. We started to impound water in March, 1930.

Mr. R. T. Jackson: My objection is on the ground it involves a collateral issue.

Judge Allen: Overruled. You may have your exception."

[fol. 1057] I am familiar in a general way with the location and design of Norris Dam and I have seen and inspected its facilities since it has been completed and in operation. The last time I saw it was last Sunday. The particular feature of design incorporated in Norris Dam that is useful for flood control, which is not ordinarily found in dams intended primarily for power development, is that Norris Dam has a larger discharging capacity through its eight sluice gates, and the power plant in connection with the dam, than is ordinarily found in power dams. The eight sluice gates have, as I remember, a capacity of 36,000 second feet, assuming the reservoir to be at elevation 1020, and the power plant has a discharging capacity of approximately 9,000 cubic feet per second. That capacity for releasing water is very beneficial in matters of flood control, because if we shortly had a flood on the Tennessee River and on the Clinch, presumably storage would be impounded in the Norris Reservoir and it would be desirable to get back that impounded storage at as early a date as possible in anticipation of possible subsequent spring floods, so that large capacity facilitates emptying the reservoir quickly. In my opinion, the discharge capacity at Norris Dam is fully adequate.

I have made quite an elaborate study of the Clinch River with respect to the hydraulic conditions. I made some of it in connection with my work in the Ashwander case, and I have supplemented it by work during the past 2 or 3 months.

"Q. Mr. Sargent, is power developed at the Sacandaga reservoir throughout the entire year?

. . . . . .

Mr. R. T. Jackson: We object to that for the same reason, it involves collateral issues.

Mr. Fitts: There is already testimony in this record on that point, may it please the Court.

[fol. 1058] Mr. R. T. Jackson: If so, then the objection is also that it is cumulative.

Judge Allen: The objection is overruled. The Court is conscious that certain testimony of this kind has been allowed to go in without objection.

A. We close down——

Mr. R. T. Jackson: On cross-examination, if your Honor please.

Mr. Fitts: Without objection.

Mr. R. T. Jackson: I understand the rule is very different. On cross-examination I can, if I want to take my chance on the witness' answer, I can cross-examine him on matters that I cannot prove by analogy. If the Court has ruled I will not extend my argument. I want to note my exception.

Judge Allen: You may note your exception.

A. We close down the power plant at the dam during periods of extreme floods on the main stream below, so that we would not increase the flood at those points by any water being released by the generation of electricity at the power plant.

Q. On the average about how much of the time during the year is the plant closed down?

Mr. R. T. Jackson: The same objection, involving a collateral issue at another plant over a period of several years.

Judge Allen: The objection is overruled. The Court feels that testimony of this kind may be elicited, in order that this witness may testify concerning Norris Dam.

Mr. R. T. Jackson: May an exception be noted? And may I say, if your Honor please, I don't want to irritate the Court, but I regard this as so serious that—not from his testimony, but the principle, because if it is true that an expert witness may testify about everything in his experience in order to illuminate his testimony, then we are entitled to recall our witnesses and have them do the same thing, put on every project they ever worked on.

Judge Allen: You may have your exception.

A. The power plant is generally closed down quite continuously from about the 20th of March, which is the ap-

proximate date of the beginning of our spring floods, until [fol. 1059] after the flood peak has passed. It depends a great deal on the elevation, the elevation to which the water has risen in the reservoir, and the stage of the river downstream from the dam. On the average I would say it was from a month to a month and a half each year.

Q. Mr. Sargent, will you tell us whether or not the storage capacity at Norris Dam, in proportion to the drainage area which it controls, is greater or less than the storage capacity at Sacandaga Reservoir?

Mr. R. T. Jackson: The same objection.
Judge Allen: The objection is overruled.
Mr. R. T. Jackson: An exception noted, please."

The storage capacities of Norris and Sacandaga reservoirs are very closely similar, bearing in mind the difference in the watershed tributary to the dams, and having in mind also the difference in the rainfall and run-off at the respective sites. The storage capacity of the Sacandaga reservoir is 867,000 acre feet. The tributary drainage area is 1040 square miles. The capacity of Norris, between the maximum draw-down elevation, which we call low flow line, to get away from the maximum and minimum, the storage at Norris between 955 and 1034 is slightly over 2,000,000 acre feet, and the watershed on the Clinch at Norris Dam site is 3000 square miles, so they are very closely alike. The run-off, the mean annual flow of the Sacandaga is slightly more prolific on a per square miles basis than is the flow on the Clinch. In other words, the mean annual run-off of the Clinch is about 28 inches per year, and the mean annual run-off in the Sacandaga at the dam site is between 20 and 22 inches a year. The rainfalls on the two watersheds are both very closely alike. They are both about 50 inches a year, but it seems in our watershed a little more of the water gets into the river than it does here.

[fol. 1060] "Q. Mr. Sargent, in your opinion, is it possible and desirable in the operation of a reservoir such as Norris, for the combined purpose of controlling floods in the Tennessee and Mississippi River Valleys, and low-water regulation in dry flow seasons, to devise a schedule of gradually filling the reservoir during the flood season.

Mr. R. T. Jackson: Just a moment. First I want to ask whether that question excludes the production of power or not.

Mr. Fitts: It does not.

Mr. R. T. Jackson: Well, then, I object to it unless it does.

Mr. Fitts: I am coming to that in a minute.

Mr. R. T. Jackson: I object to that question unless that is incorporated in it. I further object to the competency of the witness to testify with reference to flood control on the Mississippi River.

Judge Allen: The objection is overruled. You may have your exception.

Mr. R. T. Jackson: Or on the Tennessee River. I want to complete my objection and have my exception noted.

A. Yes, in my opinion it is entirely possible to devise a schedule of operations of a reservoir such as Norris to govern its operation throughout the entire year for the various purposes for which the reservoir was constructed.

Q. Upon what do you base that opinion, Mr. Sargent?

Mr. R. T. Jackson: The same objection.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: An exception.

A. Yes, sir. I base it on the fact that prior to the completion of the construction of the Sacandaga reservoir, after a very elaborate study of the stream flow records of that watershed, we prepared what we call an operation chart, which governs the operation, or which I would say is a guide to the operation of the reservoir throughout the entire year. The fundamental thing shown by this operation chart is that it indicates the amount of water that should be released from the reservoir at any particular time, and the amount is dependent upon the elevation of the reservoir at a given [fol. 1061] time. Second, I base that statement on the fact that I made a sufficient study of the stream flow records of the Clinch River and the Tennessee River to justify me in my opinion to say that there is a sufficient similarity in the hydro-logical characteristics of the two streams, that it would be entirely possible to prepare such an operations chart for the operation of the Norris reservoir.

Mr. R. T. Jackson: I move again to strike out the answer because his answer has been wholly a comparison of the

Sacandaga project and its operation with the Norris, which I could not anticipate from the question.

Mr. Fitts: It is his opinion based on the knowledge that he has.

Judge Allen: Objection overruled. The motion to strike is denied.

Mr. R. T. Jackson: May we have our exception please.

Q. Then, Mr. Sargent, as I understand you the operation of a storage reservoir of this character is not a mechanical process?

* * * * * * *

A. No. This operation chart which I used on the Sacandaga, and I assume a similar one would be prepared for Norris, would be used only as a guide because as exceptional changes occur in the water conditions, departures will be made from the operations chart.

Mr. R. T. Jackson: Now I move again to strike on the ground that the witness has now brought into his answer a comparison with a project which is a collateral issue to this case.

Judge Allen: The motion is overruled.

Mr. R. T. Jackson: An exception, please.

Judge Allen: The Court deems this testimony has a bearing upon the qualifications of the witness to testify with reference to Norris Dam.

Mr. R. T. Jackson: I want to state our objection goes beyond that because whether it is merely a qualification or not, it is the same thing if it is admitted in the record.

Q. Mr. Sargent, in your opinion in order to obtain effective flood control from a dam such as Norris is it necessary to allocate or assign any definite space solely to flood control.

[fol. 1062] Mr. R. T. Jackson: Just a moment. I object to that question because it is not tied to the Norris Dam or the conditions in the Tennessee Valley.

Mr. Fitts: He has testified of his knowledge as to Norris.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: The question leaves him at large. Exception please.

A. I would say this, that I think it is helpful that the storage capacity at Norris between 1020 and 1034 is defi-

nitely allocated to flood control, but I would consider all of the storage above the dead water level available and useful for all of the purposes for which the reservoir was constructed."

I am generally familiar with the Clinch River flows and the flood season on the Clinch and Tennessee and I am generally familiar with the design and storage capacity of the Norris Dam.

"Q. In the light of your experience, Mr. Sargent, will you state whether or not in your opinion, Norris Dam is a desirable and useful structure for both the reduction of flood flows and increasing low water conditions on the Tennessee River?

Mr. R. T. Jackson: May I ask is that increasing the low water flows for power?

Mr. Fitts: For whatever you want.

Judge Allen: The witness may answer.

Mr. R. T. Jackson: May we have our objection noted unless it is specified whether it is for power? If for any other purpose, we object to the competency of the witness.

Judge Allen: The witness may answer.

Mr. R. T. Jackson: We except.

A. In my opinion, it is a desirable structure for those purposes."

In my opinion, the storage capacity in the Norris reservoir between elevations 955 and 1020 of 1,500,000 acre feet can be operated so as to obtain large benefits for low [fol. 1063] water regulation without any substantial reduction in the effectiveness of the reservoir for flood control.

Cross-examination:

I designed and built two power plants for the State of New York on the Mohawk River at the Crescent and Vischer's dam. The two plants were built for 8,000 horse power capacity, each, and we provided in the plans for the installation of two additional units of similar capacity. I did not design the power plant at Sacandaga. I have consulted on the construction of a number of others, but I have not designed and built any other power plants myself.

In stating that Norris Dam has a large discharge capacity through the generating machinery and through the gates, which is not ordinarily found in a power reservoir, what I meant to say was that the capacity was larger than would ordinarily be found if the developments were purely for power. The generating machinery has hydraulic capacity of about 9,000 second feet. The storage capacity between 955 and 1020 is somewhere in the vicinity of 1,500,000 acre feet. I don't understand any part of it is used solely for power. In my testimony I have understood that that part of the reservoir between elevations 955 and 1020 was used for power only incidentally.

I am not familiar with the Radford development on the New River, but know that there is a power development being made on that river. If it be proved that that has a [fol. 1064] generating capacity with a hydraulic installation of 9000 second feet and large gates clear across the top of the dam for emptying usable storage, I would not think that was a flood control rather than a power reservoir. I don't know anything about the power reservoir. If it is a power reservoir, it is a power reservoir, and that speaks for itself. I think that is a very fine thing.

Examination by the Court:

I think it would be a fine thing, because it would be possible to use the reservoir for flood control purposes, supplementing the power purposes.

Cross-examination continued:

"Q. Well, then you would not agree with Colonel Watkins, that if they were to release that storage in advance of the flood it would be detrimental downstream?

Mr. Fly: I object to cross-examining this witnass on Colonel Watkins' testimony in the Radford case. I think that is going entirely too far.

Mr. R. T. Jackson: That is the testimony in this case.

Judge Allen: The Court sustains the objection upon the ground that the question is personal. The Court will not permit questions to be asked which compare the testimony of various witnesses in the case.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: If you want to question the witness about the exhibit, that is a different matter, but leave out the name

of any witness in the case, please. The Court will sustain objections to such questions.

Mr. R. T. Jackson: I understand the ruling, your Honor.

Judge Allen: You may have your exception."

[fol. 1065] I am not familiar with the power installation at London Dam on the Kanawha River in relation to the storage capacity. I am not familiar with that project and would not feel justified in expressing an opinion as to whether it was a flood control project, assuming that the power installation has a hydraulic capacity of 10,000 second feet and that it has large gates across some 300 feet of the dam and has storage capacity which is perhaps 1000 acre feet. I am not familiar with the hydraulic capacity and the storage capacity and the capacity for discharging any storage at the Marmet hydro installation and dam, or at the Wingfield hydro installation and dam on the Kanawha River. I do not know whether it is a fact that the installed capacity of hydraulic machinery in proportion to the entire storage is immensely greater than at Norris Dam.

I am generally familiar with the Muskingum flood control project. A year or two ago I spent about 3 days making an inspection of those projects during the period of construction. Those projects, as I understand, are flood detention projects. They do not include any power problems. As I remember, at some of the dams they were, what are called conservation pools, at which small bodies of water were retained, I assume for recreation or fish life purposes, or maybe for municipal water supply.

I am not familiar with the storage dams at Rock Island, Washington, Martin Dam in Alabama, the upper Tallahassee in Alabama, the storage reservoirs at Blue Ridge on the Ocoee River in Tennessee or the storage reservoir at Waterville on the Big Pigeon. I am not able to draw any comparisons between any of those installations or the one [fol. 1066] mentioned at Radford, London or Marmet, with Norris Dam. I am not familiar with those projects.

There is a hydro plant at the Sacandaga Reservoir, which was built by the New York Power & Light Corporation and which has at all times been operated by the New York Power & Light Corporation under our supervision. They have operated the plant, and they have the contract with our Board, that permits them to use the water as and when we authorize the release for the main purpose for which the

reservoir was constructed. We lease to them the potential water power. We are not under any obligation to supply any firm amount of electricity to anyone. We are not in the power business. We have no contract with the Aluminum Company or the Monsanto or with any of these underprivileged corporations for subsidized power. We have not assumed any obligations to keep the lights burning in any person's homes in New York State at all. Speaking of the power plant at the dam, we simply turn over what power we have, or what raw water we have, to the New York utility to use in an integrated system, and it assumes the headache of having enough to meet demand. Of course, there are power plants downstream, that benefit from water let out at low seasons.

I think the general assumption is that if you build a storage reservoir, you build it to use during the low water season to firm up your power, if you are a power company. It is nothing unusual to find enrichment of flow downstream from storage reservoirs of a power company.

They made an assessment of benefits for this power project in the State of New York. They assessed 4.66% to the [fol. 1067] benefits of flood control and 95.34% to power, and I should like to explain that the statute under which we function provides that the cost of a project shall be assessed against the various public and private corporations in proportion to the benefits inuring as a result of the operation and functioning of the reservoir. But it was held that an interpretation of that meant pecuniary benefits, so that we were unable to assess for the general benefits to the public welfare for protection from disease and illness in the cities of Albany, Troy, Watervliet, and towns along that line, as we were able to assess only for pecuniary benefits.

As a matter of fact, there is a pretty serious sanitary problem in this stream, and in many streams in New York State, arising from sewage pollution and the operation of paper and pulp mills during the low water season. The big sanitary benefits and the big sanitary question is to get enough water in the river during the low water season to prevent unhealthful and unsanitary conditions arising from discharge of untreated sewage and partially treated sewage from cities into these small streams and paper and pulp mill refuse. Paper and pulp refuse is one of the most difficult forms of refuse to deal with.

Sacandaga is about 75 miles above tidewater at Albany. The lowest dam down the river before you get to tidewater is a Government dam leased to Henry Ford. The next dam upstream from the Federal dam which Mr. Ford operates [fol. 1068] under a Federal license is the Waterford Dam, which forms a pool for a connection with the New York State Canal. That is only for the operation of locks. There are a large number of dams of public utilities and manufacturing companies between Sacandaga and the Government dam leased to Ford, that is, about sixteen.

I know that Norris Dam is about 600 miles above the confluence of the Tennessee and Ohio, and we can agree that it would be a long way above tidewater.

I would say there is quite a large difference in snowfall on the watershed above Norris Dam and in the Adirondacks. As a matter of fact, in an average season, we get a pretty heavy snowfall up in the Adirondack country. One type of flood that comes along up there is what we used to call the "spring break-up," with the melting of the snow accompanied in certain cases by a rain. The biggest flood in history was March 18, 1936. We figure to have our reservoir to the point of maximum depletion about the 15th to the 20th of March. That is before the snow starts seriously to melt. There are alternate thaws, but that is the serious break-up, about the middle of March. It varies possibly 2 weeks in the year. The flood season runs about the middle of March until the first of May, sometimes into May, but there is no uniformity in those floods.

"Q. No, that fortunately is true. Do you know what is the flood season on the Tennessee River?

A. Generally speaking I have studied the flood occurrence diagrams, and was surprised to find such similarity between the occurrence of floods on the Tennessee with the floods on the Hudson and Sacandaga, except your floods occur about two months earlier, in other words, your floods start about the middle of December and run to about the first of April.

[fol. 1069] Mr. R. T. Jackson: I move to strike out everything except the last sentence. I ask for definite information instead of which he proceeds with a speech of comparison.

Judge Allen: The answer may stand.

Mr. R. T. Jackson: May we have our exception, please?

Judge Allen: You may have your exception."

In my study of this problem, I have not familiarized myself with the statement of Mr. Lilienthal before the Committee of Congress on the Hearings on the First Deficiency Appropriation Bill, page 279, the table submitted by TVA which shows that this TVA Unified Plan is to be operated so as to produce 660,000 kilowatts of continuous firm power and 5,780,000,000 kilowatt hours of energy annually. In my direct examination I did not assume that this TVA Unified Plan including Norris Dam, was going to be operated so as to produce 660,000 kilowatts of firm capacity, 24 hours a day, and 5,780,000,000 kilowatt hours of firm energy annually, in the dryest years of record. In explaining that answer, my studies were directed entirely to satisfy myself that it was entirely feasible and practicable to operate Norris reservoir for the combined purposes of flood control and low water improvement without having in mind at all what that low water improvement would be applied to. I knew there would be some power development and navigation was to be assisted.

I do not know, in the low water years, such as 1925, how much tributary storage in acre feet would have to be provided in order to produce the 660,000 kilowatts of firm power, and the 5,780,000,000 kilowatt hours of firm energy. What I would say is that in the course of my studies, I in- [fol. 1070] cluded 1925. I took the ten year period, 1920 to 1930, which included two particularly dry years, a number of wet years and a number of years of what we might call semi-normal years over that period of ten years. At Clinch River dam site I took the weekly flows. From these weekly flows at the Clinch River dam site I computed what we call the mass curve, which is the custom to determine the proper storage to have on the stream, to determine the proper reservoir capacity. I say I did that over a period of ten years. Of course to determine the capacity accurately and definitely, you should use a longer period of time. But, I was merely satisfying myself that I had made sufficient study to know I could testify as I have. I have not calculated anything like this particular data.

I cannot tell you at what elevation Norris Dam would have to be, from my studies, in a dry year like 1925, on the first of February, or the first of April, in order to permit the production of that amount of firm capacity or firm power as previously stated.

Redirect examination:

I testified on direct examination that the principal feature distinguishing Norris Dam from the usual power dam was the unusually large sluiceways and the high flood gates. Frankly, I do not think I said anything about the flood gates, but I should have. I did say something about the hydraulic capacity. Neither the sluiceways nor flood gates of the type incorporated in Norris Dam have any usefulness for the production of power. The function of sluiceways is to get rid of the water when you don't want it in the reservoir. [fol. 1071] The spillway gates can take away only the water above the spillway crest, and not below.

"Q. All right. Mr. Jackson asked you as to how the benefits were assessed. Now, I will ask you as to what benefits were derived from the operation of your project in the flood of 1936?

Mr. R. T. Jackson: I object to that.

Mr. Fitts: The question was opened up by the complainants.

Mr. R. T. Jackson: Going into a different question, purely collateral.

Mr. Fitts: May I make one statement. The only purpose of asking that question, that he asked about the assessment of benefits was to attempt to show that this project was beneficial, 95 per cent of power, and this witness is prepared to testify the opposite is the truth. And I think we now have the right to show that. I do not think the complainants can open up a question like that on cross-examination.

Mr. R. T. Jackson: It is purely a collateral issue.

Judge Allen: Objection is overruled. He may answer.

Mr. R. T. Jackson: May we have our exception.

A. Might I see the hydrograph that was submitted?

Mr. Fly: Yes.

Mr. R. T. Jackson: Not unless our objection is overruled.

Judge Allen: He may testify to the facts. The hydrograph is still ruled out.

Mr. Fitts: We are not offering it.

The Witness: Not that one. The other one, sir.

Mr. R. T. Jackson: We object to the use of the exhibit which is excluded from the record, and gotten into the record in another way.

Judge Allen: Mr. Fitts, you are referring to the testimony brought out by Mr. Jackson as to the rate of assessment as to the benefits from flood control compared with the rate of assessment for benefits from power.

Mr. Fitts: And I now wish to show the actual benefits from the rate of assessment——

[fol. 1071-a] Mr. R. T. Jackson: I hardly think this witness can impeach the findings of New York State as to what the benefits were.

Mr. Fly: He testified those were not actual benefits.

Mr. R. T. Jackson: He explained that.

Mr. Fly: He went expressly into that point.

Judge Allen: The witness may refresh his memory, but he may not testify from the exhibit which has been rejected.

The Witness: If your Honor please, I don't need the exhibit. I thought I might better explain it. In the flood of March 1936——

Mr. R. T. Jackson: May I interpose the objection that it is now obvious that we are going to have a recital of the description of a flood?

Judge Allen: The Court considers Mr. Jackson that you brought out this question by your cross-examination, and that the Authority is entitled to go into the matter to the extent indicated.

[fol. 1072] Mr. R. T. Jackson: May we have our exception?

Judge Allen: You may have your exception."

The benefits were quite substantial. There were large benefits from the reduction of the flood at the City of Albany. The flood of March, 1936, was the greatest in the known history of the Hudson and Sacandaga rivers. The Hudson River would have risen about 4 feet higher than it actually rose had not all of the water of the Sacandaga River been impounded during that flood in the Sacandaga reservoir. It decreased the flood at Albany by approximately 50,000 cubic feet per second. In other words, the flood at Albany was about 180,000 cubic feet per second, and had not the Sacandaga reservoir been in operation it would have been approximately 230,000 cubic feet per second, and that difference in volume of flow caused a reduction at Albany of four feet, which, because of the particular geography at that point, means a great deal. That flood oc-

curred on March 18, 1936, so far as Sacandaga reservoir is concerned.

"Q. How much of the capacity of your reservoir did you use to control that flood?

Mr. R. T. Jackson: We note our exception to this inquiry into the collateral issues.

Judge Allen: He may answer.

Mr. R. T. Jackson: We except."

We used about 610,000 acre feet out of a total available capacity of 760,000. I may say that in my previous answer I was supposed to describe the benefits of the reservoir during the flood of 1936. I have only described some of them. It was certainly of large benefit to the cities in the vicinity [fol. 1073] of Albany.

Recross-examination:

The Sacandaga reservoir drainage area is not about 50 per cent of the drainage area above Albany. The drainage area is approximately 1 to 8. It is about 1040 square miles at the dam site and 8100 square miles at Albany.

This flood occurred March 18, 1936. That is just about the time we expected the flood season to come along and we had our reservoir very nearly empty. If we had had it full to supply any firm power contracts or for any other purpose, I could still have used it to reduce floods, but not as efficiently as I did use it. If it were full at the time of the flood, it would be not as effective as an empty reservoir, for flood control, but there is always storage above the spillway crest. We can store up to 7 or 8 feet above the spillway crest. I am talking about a form of valley storage which has been elevated to flow over the spillway crest. It is uncontrolled storage.

(The witness was excused.)

[fol. 1074] James S. Bowman was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 48 years old, reside in Knoxville, and am a civil engineer. I graduated from the University of Iowa in 1913

and was in highway and drainage engineering work for about two years. From 1915 to 1918, inclusive, I was Assistant Engineer and Construction Engineer with the Miami Conservancy District, Dayton, Ohio. In 1919 I was Irrigation Engineer for the Estate of L. Z. Lister, of Clearmont, Wyoming. From the beginning of 1920 to the end of 1928, I was Hydraulic Engineer, later Supervising Engineer, for the Fargo Engineering Company of Jackson, Michigan, engaged in general hydraulic engineering practice. From the middle of 1928 to September, 1932, I was a member of Harza Engineering Company, Chicago, engaged in the general engineering practice, chiefly hydraulic engineering of various types. From September, 1932, until October, 1933, I was teaching hydraulic engineering in the University of Wisconsin, covering hydrology, elementary hydraulics, river engineering, hydro-electric engineering, hydraulic machinery. I came with the TVA in October, 1933, and am at present Head Project Planning Engineer.

The chart, (offered and received in evidence as Defendants' Exhibit 36) is entitled "Tennessee River Drainage Basin", and was prepared under my supervision and direction. The facts shown thereon are correct and accurate to my knowledge.

"Mr. Fitts: We offer the chart in evidence as Defendants' Exhibit No. 36.

Judge Allen: Any objection?

Mr. R. T. Jackson: Yes, if your Honor please, we object [fol. 1075] upon the ground that the—at least the sheet handed to me, if it is a copy, is misleading. It does not show Gilbertsville Dam.

Mr. Fitts: It does on the exhibit.

Mr. R. T. Jackson: Just a minute. It does not show any differentiation between Coulter Shoals Dam and Norris Dam, one of which is constructed and one not under construction. It does not show Fontana Dam at all, which was included in the recommended plan which was handed to the Court by counsel for the Authority the first day of the trial. And there are others I have not got time to mention. For all of which, I think it is incompetent.

Judge Allen: Do you think it prejudices the complainants?

Mr. R. T. Jackson: I do not know for what purpose it is offered, if your Honor please, but if it is offered as in any

way defining the construction program of the Tennessee Valley Authority, then I think it would be misleading and incompetent.

Judge Allen: I believe Gilbertsville is on the exhibit, but it is not taken.

Mr. Fly: Yes. I think your Honor, I think if we wanted to show the stage of each of those dams we could put 'Recommended' under Watts Bar and Coulter Shoals, or 'Appropriations made.'

Mr. R. T. Jackson: Is Gilbertsville down here?

Mr. Fly: Gilbertsville is shown.

Mr. R. T. Jackson: The name is, but not the place. And we object because it does not show—where is Fontana site, on the Little Tennessee?

Mr. Fly: Yes. But this does not purport to be what is covered in any particular document, as I understand.

Judge Allen: The Court sustains the objection to the exhibit in its present form. The differentiation should be shown by the defendants as well as by the complainants, and Fontana Dam should be shown, Fontana Dam site."

(At a later session of the trial, the following occurred:)

"Mr. Fly: We again present Defendants' Exhibit 36, on which we were criticized for not showing the state of construction of dams and so on—I think very properly so. Under Guntersville Dam it is noted, 'Authorized for construction':

[fol. 1076] Pickwick, 'Under construction;' Wheeler, 'Completed;' Guntersville Dam 'Under Construction;' Chickamauga Dam 'Under construction;' Watts Bar Dam, 'Authorized for investigation;' Coulter Shoals Dam, 'Authorized for investigation;' Norris Dam, 'Completed;' Hiwassee Dam, 'Under construction;' and there is a symbol with each one showing the dams constructed, under construction dams for which appropriations for construction have been made, dams for which appropriations for investigation have been made. Then the further note to this effect, 'Project for Fontana Dam site, located on Little Tennessee River, recommended by TVA but no appropriations have been made.'

Mr. S. D. L. Jackson: If it please the Court it seems to me the direction of the Court was that they should show this Fontana Dam site on exhibit 36.

Judge Allen: We do not remember that we directed that Fontana Dam site be indicated on this map. The Court has felt, Mr. Jackson, that both litigants should be entitled to present their respective views in their maps. That is to say, although the colors were not very distinguishable we allowed you to indicate your views of the connections between various lines that really did not belong to the TVA and TVA by colors. Now, this is not misleading in the view of the Court, because in the legend it states the facts with reference to Fontana and you do not dispute those facts, do you?

Mr. S. D. L. Jackson: Do you mean no appropriations have yet been made?

Judge Allen: No appropriations have yet been made. Have appropriations been made.

Mr. S. D. L. Jackson: They do not have to be. All appropriations are authorized in the Act.

Judge Allen: Have appropriations been made for Fontana?

Mr. Fly: No, your Honor.

Judge Allen: I am asking Mr. Jackson.

Mr. S. D. L. Jackson: They have spent money investigating. I suppose they appropriated the money for that purpose, in view of that.

Judge Allen: We think we understand the facts with reference to Fontana. We think the Defendants are entitled to put in their map essentially as they have, so long as it is not misrepresented. We think they are entitled to put in their map their views, the same as you.

[fol. 1077] Judge Martin: We understand your general argument is that money from their general fund might be used for this dam, and this map shows there is no appropriation. Is not that the fact, as Judge Allen has just elicited?

Mr. S. D. L. Jackson: Also, here is a map that purports to show what TVA is doing. Now, TVA has not only once, but repeatedly recommended to Congress, and did it very recently, indicating their full intention to go ahead and construct Fontana Dam.

Judge Allen: Of course, the Court cannot assume that all of the things that the TVA might like to do will be done without an appropriation and authorization by Congress. We understand the facts set forth, and we overrule your objection to this map and it may be received in evidence.

We think that the legend is not misleading, states the facts. You do not dispute, as we understand your objection, that it goes to the weight and not to the competency of the map. There are maps in evidence which show Fontana Dam on the map, although no appropriation has been made for the construction.

Mr. S. D. L. Jackson: May we have an exception. I do state that this copy, the legend which shows, 'Was recommended,' the fact is that it is now, presently recommended. It is not in the past tense.

Judge Allen: When was it recommended, what was the date of the last recommendation?

Mr. S. D. L. Jackson: A week ago, day before yesterday.

Judge Allen: All right, that is past for today, that is a week ago.

Mr. S. D. L. Jackson: It is now pending before the Appropriations Committee.

Judge Allen: The map may be received in evidence. Your objection goes to the weight and not to the competency."

The white area shows the drainage basin of the Tennessee River, rising in Virginia and discharging into the Ohio at Paducah, Kentucky. The drainage basin has a total area of about 40,600 square miles, of which approximately half is above Chattanooga, and the narrow section through here by Chattanooga divides the drainage basin into two portions of about equal area.

[fol. 1078] Starting from the mouth we have first the Gilbertsville Dam site, which will create a reservoir extending to the Pickwick Landing Dam, which is now constructed. The principal tributary entering this reach of the river is the Duck River. The Pickwick Landing Dam will create a pool up to Wilson Dam, and for navigation purposes to the entrance of Lock No. 1 which is at the end of the Florence Canal. That is a canal about two and a half miles long leading from Wilson Dam down to Florence, and navigation passes through that canal instead of right up to the lock at Wilson. Wilson Dam, which has been constructed for quite a number of years, backs up to the Joe Wheeler Dam, 15½ miles. In the Wheeler pool the principal tributary is the Elk River, a short distance upstream from the dam. The Wheeler Dam backs up to Guntersville Dam near the town of Guntersville, Alabama. The Guntersville Dam is now under construction. The Wheeler pool is about 74

miles. There are no tributaries of any particular size in that reach of the river. The Guntersville Dam will back up to the present Hales Bar Dam, a distance of about 82 miles. Below the Hales Bar Dam is the present navigation dam known as Widows Bar, which will be submerged, and which will be removed so as not to create a submerged obstruction to navigation. The Hales Bar Dam makes the link between Hales Bar and the Chickamauga Dam which is located about seven miles upstream from Chattanooga. Chickamauga Dam will back about 59 miles to the Watts Bar Dam site. The principal tributary entering in the Chickamauga pool is the Hiwassee River. Chickamauga Dam is now under construction. I would think that it is something over 50 per cent completed, just as a rough statement. The Watts Bar Dam backs 74 miles to the Coulter Shoals Dam site, and in the pool of the Watts Bar Dam we have the Clinch River and the Little Tennessee River, the [fol. 1079] principal tributaries entering in this pool. The Coulter Shoals Dam site is located a short distance upstream from the confluence of the Little Tennessee. Coulter Shoals Dam will back to Knoxville and the confluence of the Holston and French Broad Rivers. At Watts Bar and Coulter Shoals preliminary investigations have been going on for some time, and some expenditures have been made on those sites, but no construction has been undertaken of any sort. That completes the description of the exhibit.

Gilbertsville Dam is in the same status as Watts Bar and Coulter Shoals. A considerable sum has been spent for investigation of the site, but no actual construction has been made. The Fontana Dam site is located on the Little Tennessee River some distance upstream from the confluence of the Cheoah River and upstream from the present Cheoah plant of the Aluminum Company. Some investigations, very rough, were made in 1936, and in the House Deficiency Appropriation Hearings of 1936, the Board requested that funds be allocated to Fontana so that investigation and construction could be carried on at that site instead of at the Hiwassee site, on which investigations had already been started. Since that time we have been doing no work on the Fontana site.

I have omitted mentioning the Norris and Hiwassee Dams here. The Norris Dam is located on the Clinch River a short distance below the junction of the Powell and the

Clinch, and the Hiwassee Dam is on the Hiwassee River about 14 miles below the town of Murphy and 11 miles above the state line in North Carolina. Norris Dam has been completed and is in operation. At Hiwassee Dam construction has been under way for some time, but the funds which have been expended are rather small. The construction camp [fol. 1080] has been built, the access road is completed, and excavation and erection of construction equipment has been going on for some time.

The photograph (offered and received in evidence as Defendants' Exhibit 37) was prepared under my supervision and direction. I asked that it be prepared and am acquainted with its preparation. I didn't take the photograph. As far as a sort of composite photograph goes, it actually represents what it is purported to represent. It is not an actual photograph of any actual dam, but it is a photograph of a model, with the surrounding countryside superimposed. The model that was photographed is out at Chickamauga Dam. It is a photograph of a scale model of the Chickamauga Dam and is prepared for the purpose of giving a visual picture of what the structure looked like, so far as we are able to give it. By composite picture I mean that that exhibit is taken from the photograph of the countryside and the photograph of the dam was taken from another. It depicts the carrying out of the actual plan for Chickamauga.

"Mr. Fitts: We offer this exhibit in evidence as Defendants' Exhibit No. 37.

Mr. R. T. Jackson: We object to it because it appears it is merely a drawing of some character that is superimposed upon pictures of the countryside, and it is incompetent for any purpose.

Judge Allen: Objection overruled. It will be admitted.

Mr. R. T. Jackson: May we have an exception?

Judge Allen: You may have your exception."

In the center of the picture is the reservoir or pool above the dam; toward the left of the picture being the upstream direction, and toward the right of the picture being the [fol. 1081] downstream direction. In the right center is the water below the dam, showing the tail water, in engineering parlance. The alignment of the dam extends from the bluff in the upper righthand corner and across to the

left. In the immediate foreground on the left is a part of the embankment that extends out at a sort of obtuse angle upstream, and ties to the bluff on the righthand side of the river going down stream.

In the immediate foreground is the navigation lock, showing on the upstream side what we call the upper gates, and on the downstream side what we call the lower gates. Between these two gates is what is referred to as the lock chamber. There is a little structure on the river wall of the lock which is simply the operating house, for operating the gates and valves in the lock. Going onto the righthand side of the picture we come to the spillway in which a number of piers are shown, and there is a spillway gate which you can see between every one of those piers. There is a little detail in a circle, which shows the masonry crest of the spillway and the gate above that. That is abutting on one pier, the nearest pier being removed for convenience of illustration. Above that is the runway with the crane for operating the spillway gates. In this little illustration there is a cross hatched section showing the pool level, about up to the crest of the gate in the cut. Going onto the righthand side of the picture, the power house is shown in the illustration, and on beyond that, very faintly, the substation and the tie into the embankment of the bluff on the far side of the river.

The size of the lock at Chickamauga is 60 feet wide and 360 feet long in the clear. That is, the gates can swing when there is a tow or other equipment inside of the lock chamber of 360 feet. The usable length is 360 feet; that is, at least, what the Army Engineers call the clear dimensions [fol. 1082] of the lock. You will notice the upstream wall on the river side of the lock is extended a considerable distance upstream. That is a guard wall to prevent the velocity through the spillway from catching a boat near the spillway and sweeping it downstream into the spillway. It is a guard rail which extends upstream far enough so that there is a sufficient depth and the velocity of the river is relatively small.

The chart of Gilbertsville Dam (offered and received in evidence as Defendants' Exhibit 38) was prepared under my supervision and direction. The facts shown thereon are correct to the best of my knowledge. This chart on the left hand side represents the reach of the river between

Gilbertsville and Pickwick Landing. That is taken from detailed surveys of that stretch of the river. In the lower central portion is the map of the Tennessee Valley, showing the location of the Gilbertsville Dam site. The large illustration to the right hand side shows in general the arrangement of the dam and the relation of the various pool levels.

Cross-examination:

This exhibit sets forth an approximate plan for the Gilbertsville Dam. The Gilbertsville Dam is still in the preliminary design stage, and no detailed design has been made. This is approximately about the best that can be shown now. I can not say whether the Board of Directors of the TVA has or has not adopted a plan or any plan which is shown on this Exhibit 38. Referring to the two elevations on the right hand side, one with the words "flood surcharge," I can not say whether or not the Board of Directors of the TVA has set those elevations for the Gilbertsville pool. This exhibit shows no power elevation, or power storage; there is nothing indicated there distinctly [fol. 1083] for that purpose. It does not show that any storage can be used for power but it does not show that it can not. There is some storage that could be used for that purpose. That is not storage below 350 which could be used for power. 350 is the lowest elevation to which the pool can be drawn at the dam during the usual winter conditions and at the same time maintain navigation to Pickwick. That is the minimum level. In other words when I say a part of the storage could be used for power, I refer to what I have marked "flood surcharge," some of the surcharge within that volume could be used for power. That is, it would be possible to operate it so that a maximum pool level might be set in between the elevation 350 and 375 and an area for power use defined there. I know of no resolution of the Board of Directors of the TVA either setting apart some of that area, or declining to do so. This is just a cross section of the spillway and does not show any power house. To the best of my knowledge it is a reduction of the actual reservoir map. I think the widths of the proposed pool in proportion to the map are exaggerated. We could hardly have shown a pool of this length. It would simply have been a line.

Direct examination continued:

This is a chart of the spillway section and it represents the present proposed design of that section, that is, the status to date of the preliminary design. That is a fair representation. The making of these designs comes as a matter of course under the duties allocated to my division, to prepare these preliminary designs. They were not prepared by me, but under my supervision. That is a part of my general duties and my position.

"Mr. R. T. Jackson: We object to the map * * * because it represents no authoritative action of the Tennessee Valley Authority according to the testimony of this witness.

Mr. Fitts: It is not offered as such.

[fol. 1084] Mr. R. T. Jackson: Just a minute. And every time that we have made any inquiry it has been stated none of these employees of the Tennessee Valley Authority could bind the Authority in any manner, shape or form, no definite action could be shown in that way, and it seems to me quite obvious if it cannot be shown as an admission, it cannot be shown by way of self serving declarations.

Mr. Fly: Mr. Bowman, Mr. Jackson asked you if some of the waters that might be in the flood surcharge could be used for power. I ask you, could part of the water in the navigation pool as you have outlined it there, be used for power?

The Witness: Yes, that is correct.

By Mr. Fitts:

Q. You could use any part of it if you wanted to?

A. You could use any part of it if you wanted to.

Judge Allen: The objection is overruled. The Court considers that the objection goes to the weight and not to the competency. It may be received and you may have your exception.

Mr. R. T. Jackson: Might I state the basis of the facts? My point is this. My understanding from the testimony of Dr. Morgan is that these elevations were 353 and 357. That is in the exhibit 328, the report on the unified plan, and similar figures in the testimony of Dr. Morgan in the report to Congress, that is here in evidence. And these reports show the installation of power facilities, according to the tables submitted to the Congress in exhibit 115; I think also

in exhibit 116 that is shown. My point was that if this exhibit should go into the record then the Supreme Court or anyone reviewing this case would be justified in assuming that those were the authoritative determinations of the levels for that.

Judge Allen: The objection is overruled. You may have your exception.

Mr. R. T. Jackson: Exception please."

The Gilbertsville Dam site is located near the town of Gilbertsville, Kentucky, about 22.7 miles above the mouth of the Tennessee River at Paducah. The Ohio River is canalized, Dam No. 52 being downstream from Paducah. This backs the water up the Tennessee for a distance of about 40 miles, and creates a navigable depth somewhat in excess of 9 feet up to the Gilbertsville site. When the dam is constructed the length of the reservoir will be 184 miles, reaching to the Pickwick Landing Dam.

[fol. 1085] The navigation pool as shown on this drawing at elevation 350 is the elevation at the dam which must be maintained during the season of high or good water flow in the Tennessee River in order to create a navigable depth of 9 feet at the entrance to Pickwick Landing lock. The flood surcharge elevation 375, is the top of flood surcharge shown on this exhibit. The flood surcharge depth is the difference between the elevation 375, top of the flood surcharge, which is the top of the spillway gates, and elevation 350, which is the top of the navigation pool. That is what we designate the flood surcharge, or the controlled flood surcharge. That depth is entirely behind the gates and can be cut off with the gates. This is the fixed masonry crest of the spillway at this point. The spillway gate reaches from that point up to this elevation 375, when the gate is resting on the crest of the spillway. The height of the gates at the Gilbertsville Dam will be 45 feet, that is, the fixed masonry crest will be at elevation 330. Since these gates can be raised during flood time, that is, in case of maintaining this pool level at this point to discharge floods, the dead storage would be in terms of this, the storage below the fixed crest of the spillway. That is also part of the storage that is necessary to create the navigation depth, but not enough for that.

There will be times in times of high flood when it will be possible to lower the reservoir below 350 and still have the

navigation depth up to Pickwick. That could be done in advance of a flood. If you saw that there was opportunity to release some of the water in this reservoir, it could be drawn down below that on account of the low elevation of the spillway crest.

The table (offered and received in evidence as Defendants' Exhibit 39) was prepared by me, and it correctly represents the statistical information that appears thereon. If it is not adopted by the Board, then the words "tenta- [fol. 1086] tive, not adopted," which we have written in, are correct, and it is tentative in the minds of those who are in charge of the preliminary design, but at the present time it represents our best engineering judgment as to what should be built there.

"Mr. Fitts: We offer this table in evidence as defendants' exhibit No. 39, simply as the easy way of showing the present judgment of those who are in charge of designing the project, as to what will be its physical characteristics and design.

Mr. R. T. Jackson: We object to this exhibit upon the ground that the only adopted and authorized project for Gilbertsville reported to the Congress and in the exhibits here in evidence shows for instance the total reservoir volume of 4,850,000 acre feet, and this, like the one before, has not been adopted by the Board of the Tennessee Valley Authority, has no official standing or status whatsoever, and if we are to have a gentleman come in here and simply say here is something that could be done and offer it, and it is received in evidence, then I think it is impossible to reach any conclusion about the projects whatsoever. Furthermore, I think it would be grossly misleading in this case, as in the previous one, to have this go in, even if tentative and not adopted. It has not been authorized by the Tennessee Valley Authority Board, it has no standing whatsoever, and yet it goes in here as purporting to in some way represent what the Gilbertsville project is. It is grossly misleading to any Court.

Mr. Fitts: If it doesn't go in, it simply means we have to take each one of those figures and ask the witness about them, and I think we have a perfect right to do it, ask him as to what the present judgment of the engineers in charge of the planning of this project is, as to what those figures represent.

Judge Allen: The objection is overruled. The Court thinks it goes to the weight and not to the competency. The Court considers that the complainants based their case partly on what could be done. That is, Gilbertsville is included as one of the main elements in the case of the complainants. Subject to the objection for weight, the Court considers this competent. You can have your exception.

Mr. R. T. Jackson: May we have it noted, please? I don't want us to misstate our position about it, because of course we have based our case upon what the Board of the Tennessee Valley Authority has officially reported to the Congress. And I think we are entitled to rely upon the integrity of that report.

[fol. 1087] Mr. Fly: I know the Court has already ruled, and I think properly. But of course, in projecting a project either at Fontana or at Gilbertsville or at Watts Bar when the Board two or three years ago expressed some sort of judgment as to what would be done there, of course, the Board had not adopted a design. Of course, the Board has never adopted a design for either of those dams. And it simply gave some sort of an estimate about what might be done. Now, this witness is simply trying to give the status of the project as best he can in its present tentative condition.

Mr. R. T. Jackson: Of course, if the Board has changed its position since it reported officially to Congress there must be Board action to show that.

Judge Allen: The Court overrules the objection and the Court bears in mind that complainants time and again have said that they relied upon anticipatory injuries. All that part of the complainants' case which is based upon Gilbertsville, which certainly is a large part of its case, would seem to be to a considerable extent anticipatory. Now, subject to the objection to the weight the Court considers that this evidence is admissible.

Mr. R. T. Jackson: May I point out we are only seeking anticipatory relief against what the Tennessee Valley Authority threatens to do, and not against the engineering concept or imagination of Mr. Bowman, for whom I have the highest regard, both for his ability and his resourcefulness."

The chart (offered and received in evidence as Defendants' Exhibit 40) was prepared under my supervision and di-

rection and correctly represents the facts as they appear thereon, with the exception that the width scale of the river is somewhat exaggerated in order to really show the picture. Wheeler Dam has been constructed, and Pickwick is practically complete.

Cross-examination:

I could not say of my own knowledge whether the elevations shown on Exhibit 40 have been fixed by any resolutions of the Board of Directors of TVA. I do not have knowledge of a Board resolution on that subject.

"Mr. R. T. Jackson: We object as to exhibit 40 upon the ground it is incompetent, because it purports to set forth [fol. 1088] data and determinations of the Tennessee Valley Authority which, so far as the record is concerned, have never been made. And upon the further ground, to have such an exhibit in the record, in such situation, would be grossly misleading to the Court."

Examination by the Court:

It is practical to operate these dams at the level shown on the exhibit.

Direct examination continued:

It represents the elevation at which Wheeler is being operated.

"Mr. Fitts: And, may it please the Court, this subject of the operating levels being set by board resolutions has been raised two or three times here, and in order to clarify that situation I would like to offer in evidence as defendants' Exhibit No. 41, the resolution of the Board of Directors, creating the water control planning department of the Authority, and outlining the duties of the Chief Water Control Planning Engineer in the setting of these levels and the operation of these pools, and Mr. Woodward is the head of that department, and will testify following Mr. Bowman.

Judge Allen: Any objections?

Mr. R. T. Jackson: I have not seen them, your Honor. We tried to get to see these resolutions before. We object to this exhibit because we would like to have the whole minutes if they are going to be offered in evidence.

Judge Allen: Just a minute. Your objection, Mr. Jackson, I would gather runs to this being received as an exhibit?

Mr. R. T. Jackson: Runs to it being received as an exhibit, as an excerpt from the minutes, without the minutes being produced so we may see whether there is anything else which ought to go with it, to make it complete."

(Thereupon, counsel for defendants read to the Court the exhibit stating that it was certified by Charles E. Hoffman under the seal of TVA and that the TVA statute provides that the seal of TVA shall be noticed in judicial proceedings.)

[fol. 1089] "Judge Allen: Is there any question as to authenticity?

Mr. R. T. Jackson: Not as to what is here, your Honor. I think there is a question as to whether it is a complete excerpt from the minutes.

Judge Allen: Specifically, do you question its authenticity?

Mr. R. T. Jackson: I do not question its authenticity. If Mr. Fitts tells me it is true we know that is so.

Judge Allen: If you do question the authenticity, we will have the witness to prove that.

Mr. Fitts: It is the entire resolution on that subject.

Mr. R. T. Jackson: How is that?

Mr. Fitts: It is the entire resolution on that subject, creating the position.

Mr. R. T. Jackson: We object unless we have a chance to see the whole minutes.

Judge Allen: The objection is overruled, and the exhibit may be received.

Mr. R. T. Jackson: We may have our exception, I assume. And, now are you through in connection with defendants' exhibit 40?

Mr. Fitts: I am not through, I don't think, no.

Mr. R. T. Jackson: The point I want to make with the reception of exhibit 41, I think raises additional grounds of objection to exhibit 40, in that it has nothing to show that exhibit 40 has in any way been approved by the Chief Engineer, much less by the Board of Directors of the Tennessee Valley Authority, and the gentleman on the stand is not even the head of the so-called water control Planning Division. Under those circumstances I think those are further objections to its receipt.

Judge Martin: Are you chief water control planning engineer?

The Witness: No, sir; I am not. Mr. Woodward is.

Judge Martin: What is your official position?

The Witness: Head project planning engineer.

Mr. R. T. Jackson: The objection on the additional ground is overruled, is that right?

[fol. 1090] Judge Allen: The exhibit is received. I do not understand the other exhibit has yet been offered.

Mr. Fitts: Exhibit 40 was offered and received.

Mr. R. T. Jackson: I conceive this resolution is additional grounds upon which I wish to make my objection. I am merely trying to get the record straight. If they are overruled, may I have exception?

Judge Allen: The Court wishes to state that since the hypothetical evidence was received, the Court overrules the objection, but not waiving the competency, do you feel that your objection here should be waived and that these exhibits are admissible upon the ground that they show the present status of the work as detailed.

Mr. R. T. Jackson: May we have our exception?"

With reference to Defendants' Exhibit 40, starting at the down-stream end of this reach of the river is Pickwick Landing. The smaller chart in the upper left-hand corner shown in red is the stretch of river between Pickwick Landing Dam and Guntersville. Pickwick Landing is a short distance down-stream from the Mississippi-Tennessee state line. This dam backs up to Lock and Dam No. 1 at the end of the Florence Canal immediately below Wilson Dam for navigation. The pool itself goes back clear up to Wilson Dam. The upper diagram on the right-hand side of the chart is a cross section of Pickwick Landing pool.

In the background is the pier of the dam—those piers being spaced about 40 foot centers in the clear, with a runway from the top of the piers. There is also a part of the diagram shown by stippling, which is a cross section of the dam itself and apron, and superimposed upon that are the spillway gates. The drawing indicates three dimensions on the single section. You have a cross section of the crest, the gates, the aprons and the runway, and the pier is in the background, possibly 40 feet in the back. The top of the gates, when the gates are resting on the spillway at elevation 418, at top of the spillway level, the gates at Pickwick

[fol. 1091] are 40 feet high, making the crest at 378 feet. The navigation level in this case is 408, that is the top of the navigation pool which is required to reach Lock and Dam No. 1. The difference between elevation 408 and 418, a depth of 10 feet, is what we refer to as the flood control storage.

"Q. Mr. Bowman, right there I would like to ask you whether in your opinion it is practicable and reasonable, and proper to operate the dam as shown for navigation, flood control and production of power——

Mr. R. T. Jackson: I object to the competency of the witness to testify as to navigation.

Mr. Fitts: Do you want me to qualify him further? I think he is qualified.

Mr. R. T. Jackson: He can testify as to anything that involves simply a question of hydraulics, in regard to depths, things of that character. But I think the witness has not qualified to testify in regard to navigation.

Mr. Fitts: I am asking him to testify as to the operation of the dam.

Mr. R. T. Jackson: For navigation. I do not understand he can qualify as to that.

Judge Allen: Can this witness answer with reference to the creation of a channel of nine feet or more?

Mr. Fitts: I suppose he can.

The Witness: I can testify of my own knowledge that at this elevation of 408, it will create a navigable depth to Lock No. 1.

Mr. Fitts: By nine feet, you mean over that, to take care of the draft.

The Witness: It will take a nine foot draft.

Judge Allen: Objection overruled. The witness may answer. The objection is overruled, Mr. Fly. The witness may answer. The Court certainly knows by this time that the depth of nine feet has some relation to navigation.

Mr. R. T. Jackson: The witness can testify as to depth, but the question is, he has not qualified to testify for navigation.

Mr. Fitts: At the levels as shown by you?

The Witness: Yes."

[fol. 1092] The Wheeler Dam, the lower one on these cross sections, shows the cross section of the Wheeler Dam in the

same detail as I have explained for Pickwick, Wheeler Dam being located 15½ miles upstream from Wilson, creating a reservoir of 74.1 miles long up to the point at which Guntersville Dam is being constructed. This cross section shows the top of the spillway gates at elevation 556, which is the top of the flood surcharge. The top of the navigation pool is at elevation 548, which is an elevation which will furnish a navigable depth into the Guntersville Lock at the time the flow in the river creates a small backwater effect. The difference between elevation 556 and 548, which is 8 feet, we designate as the depth of controlled flood surcharge. Wheeler Dam is actually being operated at the levels which I show.

The type of the gate on Wheeler is a somewhat different principle than the type of gate at Pickwick and the type proposed for Gilbertsville, Guntersville and Chickamauga. They are simply large vertical leaf gates 40 feet wide, like the sliding trap door in a rabbit trap. They elevate above the spillway and lower. At Wheeler, however, we have what is known as the radial or Taintor gate. We have an upstream section which is shown by the circle, which is supported in this manner, to the piers, being fastened by structural steel arms, which meet in a pin at this point, and the gate is simply revolved upward on this pin as a center, to operate it from the points above the top of the gate.

"Q. Mr. Bowman, I will ask you whether in your opinion it is reasonable and practicable to operate Wheeler Dam at the levels as shown on defendants' exhibit No. 40 for the combined purposes of navigation, flood control and the production of power?

Mr. R. T. Jackson: I object to the competency of the witness to answer the question so far as it involves the operation for navigation purposes.

Judge Allen: He may answer.
Mr. Jackson: May we have our exception?

A. I will say that is my opinion, also it has been operated in that manner for something over a year, I believe."

[fol. 1093] Apart from the foundations, and probably more difficult construction program on account of depth of water and depth of foundation, Gilbertsville provides for a surcharge of 25 feet, while considerably less surcharge is

provided for the other dams. There is considerably more flood surcharge storage provided at Gilbertsville than at Pickwick and Wheeler, on account of the depth of the surcharge as well as the length, which is 3 times as long as the other pools will average.

The table (offered and received in evidence as Defendants' Exhibit 42) contains statistical information with respect to the Pickwick project which I prepared. The information is correct. It represents the actual figures with respect to the Pickwick project, not an estimate.

"Mr. Fitts: We offer this table in evidence as defendants' exhibit No. 42.

Mr. R. T. Jackson: We object to the table upon the ground that the figures that are shown on the exhibit depend upon what elevation, and matters of that character that should have been fixed authoritatively by the Board of the Tennessee Valley Authority, and there is no proof whatever that the Board has fixed any figures for the elevations of the pools, and other matter shown therein.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception.

Judge Allen: It will be received."

The table (offered and received in evidence as Defendants' Exhibit 43) contains statistical information as to the Wheeler project which I have prepared. The information is correct. It represents actual figures.

"Mr. Fitts: We offer this table in evidence as Defendants' Exhibit No. 43.

Mr. R. T. Jackson: We object upon the same ground, that is that there is no showing that the elevations have ever been fixed by the Board, or if they have been that they are the same as shown by the witness. There is no showing in [fol. 1094] reference to authorization which the witness purports to show in the table in regard to generating units, or anything of that character, and it is utterly incompetent.

Judge Allen: The objection is overruled. You may have your exception.

Mr. R. T. Jackson: Exception noted, please."

The difference in the figures shown on Defendants' Exhibit 43 for flood surcharge storage of 440,000 acre feet at Wheeler and the figures contained in Complainants' Ex-

hibit 116, which is a table printed in the Hearings on the Second Deficiency Appropriations Act of 1937, arises from the fact that those figures in the Deficiency Appropriations Act were based on what we call flat pool level. That is elevation 550 for the navigation pool, which is the elevation required at the entrance of the Guntersville Lock, extended down-stream to Wheeler as a flat plane, assuming no flow in the river. The figures on this exhibit are based on the fact that from elevation 550 at Guntersville during the winter and spring season there will be a back-water slope down-stream, which, under ordinary conditions, will mean an elevation of about 548 at the dam. Likewise, at the top of the surcharge there would be a backwater slope which would be parallel, and we have taken the difference between those two planes, using 548 as the lower plane instead of 550.

"Q. Well, are you satisfied that under normal conditions you can operate at the level of 548 and still maintain your navigation channel?

A. Yes, sir.

Mr. R. T. Jackson: Just a moment. I object to the competency of the witness to answer that question.

Judge Allen: Overruled.

Mr. R. T. Jackson: Exception noted, please."

[fol. 1095] Examination by the Court:

Wheeler Dam is in operation; I think it has been in operation for just about a year. The figures are based upon my knowledge of the operation. I have examined the records of pool levels and know that the pool levels had actually fluctuated between those limits in the past year.

Direct examination continued:

Referring back to Defendants' Exhibits 38 and 39, the amount of storage below elevation 350 appears to be greatly in excess of the amount above elevation 350, but that does not correctly show the comparative amounts of storage. Of course immediately above the dam those relative depths are such that it would give the appearance of the volume below 350 being much greater than the volume above. This is not the actual case because in this drawing we could not extend the water above the dam on to the upper end of the

reservoir. The lower portion is in the bottom of the valley where the width is less than at the top. Up at Pickwick Dam, elevation 350 is practically coincident with low water elevation. That lower portion marked "navigation pool," considering it longitudinally of the river, is a triangle which is largely located inside the river banks, except down at the lower end where it is inside of the second banks, while the volume above 350 is of course at the top of the pool and remains that depth on up through the pool, and laterally is spread out for the full width of the valley at that elevation, and into the embayments of the tributaries. The difference in those volumes is brought about in Exhibit 39 in which it shows that the volume of the reservoir at navigation level, at elevation 350, taking it on a flat plane basis, is 1,550,000 acre feet, while in line 9 the controlling flood surcharge—that is, the volume between elevation 350 and 375—is 4,600,000 acre feet, or very close to 3 times.

[fol. 1096] The chart (offered and received in evidence as Defendants' Exhibit 44) was prepared under my supervision and direction, and the facts or estimates that are shown thereon are correct and accurate to my best knowledge. Both Guntersville and Chickamauga Dams are in process of construction and probably are something more than 50 per cent completed, and the cross-sections of the dams as shown are truly representative of the way the spillways are being constructed. The surcharge pool level is fixed physically by the top of the gates, and the gates are being manufactured. I think some of the spillway crest is in, so that level is definitely fixed physically. The top of the navigation pool is physically fixed by the elevation required, in the case of Guntersville to back up to the lock at Hales Bar; and in the case of Chickamauga by the depth required or the elevation required to create a navigable depth at the Watts Bar Dam site, which has now been definitely selected as the next site above Chickamauga.

"Mr. Fitts: We offer in evidence defendants' Exhibit 44.

Mr. R. T. Jackson: We object to the exhibit upon the ground that there is no proof that the elevations shown upon the exhibit have ever been authorized by the Tennessee Valley Authority; on the ground that they are contradicted by other exhibits already in the record, which represent the authoritative action of the Tennessee Valley Authority by its board of directors.

Judge Allen: According to the plans of these dams which are now partly constructed, could they be operated at the levels set out in this exhibit?

The Witness: Yes, they can, your Honor.

Judge Allen: The objection is overruled. You may proceed.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: Yes."

Beginning with the Guntersville Dam, which is at the down-stream end of the reach of the river shown, and which [fol. 1097] is the next dam above Wheeler, which was explained on the previous chart, Guntersville Dam will back water 82.1 miles up to the existing Hales Bar Dam. The cross section of the Guntersville spillway is shown in this water cross section on the left-hand side of the chart. The gates on the spillway in this case will be the flat vertical lift gates, to which I previously referred, 40 feet in height by 40 feet wide. The top of these gates will be at elevation 585, which we have designated as the top of the flood surcharge. The top of the navigation pool shown as elevation 591 is the elevation required to create a 9-foot navigable depth back to the Hales Bar Dam at time of flow in the river which will cause slight back-water effect.

Examination by the Court:

Hales Bar Dam is a dam owned by The Tennessee Electric Power Company, and Guntersville will simply back up to the Hales Bar Dam, at which there is an existing navigation lock. It is somewhat smaller than the locks which are being installed at the present time for Wheeler and Guntersville, but it is perfectly usable at present, and Hales Bar in turn will back the water to a depth of 9 feet into the Chattanooga Harbor. The operation of Hales Bar Dam will not be interfered with at all, except that, with a chain of dams, the conditions after you have built that chain are never quite the same as they were before. The stretch of the river will be affected to some extent, but Hales Bar will still be there in operating condition. Some dredging will be required from Chattanooga to the Chickamauga Dam in order to obtain a 9-foot navigable depth in Hales Bar pool. That fixes a tie then between the Guntersville Dam which is being constructed by the TVA and the Chickamauga Dam. I believe that Hales Bar will be benefited really by the de-

[fol. 1098] velopment of the river under the Unified Plan on account of the release in low water season from Norris Dam and the other dams on the main river upstream, that is, the dependable flow at Hales Bar Dam can be materially increased.

Direct examination continued:

Hales Bar Dam, without some additional work, is not quite sufficient to give a navigable channel all the way back to the Chickamauga pool. We can not get the full 9-foot navigable depth under low water conditions. By increasing the low water flow in the river in the low water seasons, the amount of firm power that can be generated at Hales Bar will be increased. Of course the firm power generated at Hales Bar Dam itself, I believe, is a high-water condition rather than a low-water condition, but the amount of firm power, if you want to call the summer firm power, will be increased.

The cross section of Chickamauga is shown by the upper one of these two cross sections. The minimum navigation pool level is shown as elevation 673.5, which level will be sufficient to create a minimum 9-foot navigable depth upstream to the Watts Bar Dam site, a distance of approximately 59 miles, when a slight backwater effect is existing during the ordinary flow in the winter and spring. The surcharge elevation at Chickamauga Dam is fixed by the top of the spillway gates, which is elevation 685, the difference between these two elevations of 11.5 feet being the depth of the controlled flood surcharge. The location of the pools of these two dams is shown in general on the small photographic print in red. The same general explanation as to principles and the size of the navigation pools and capacities as compared with the storage for that navigation pool that I made with respect to the Gilbertsville Dam, [fol. 1099] applies in a lesser degree, but in the same principles, to all the other dams that are shown. The relative depths that are shown in the charts are no representation of the pool's volume as a whole.

The table (offered and received in evidence as Defendant's Exhibit 45) contains statistical figures on the Guntersville project, which table was prepared by me and which accurately represents the information that is shown there.

These figures are based on the actual design of the Guntersville Dam as it is being constructed.

"Mr. Fitts: We offer the table in evidence as Defendants' Exhibit 45.

Mr. R. T. Jackson: I object on the ground it shows information which could only be authoritatively shown by resolutions of the Board of Directors of the Tennessee Valley Authority and cannot be shown by some employee expressing his ideas.

Judge Allen: Objection overruled. It will be received.

Mr. R. T. Jackson: Exception."

The table (offered and received in evidence as Defendants' Exhibit 46) contains certain statistical information with respect to the Chickamauga project which was prepared by me. The information contained in it is accurate and correct. The figures are based upon the design of the Chickamauga Dam, upon which the dam is actually being constructed.

"Mr. Fitts: We offer the table just referred to as Defendants' Exhibit 46.

Mr. R. T. Jackson: We object to the exhibit on the ground there is not only no proof that this is the design used for the construction of Chickamauga project, which has been approved by the Board of Directors of the Tennessee Valley Authority, but in fact the evidence before the Court shows that the action is in conflict with what the witness stated, and upon the ground it only shows the hopes, plans, desires and wishes of this witness, of policies as to how this particular dam should be operated, and are irrelevant, immaterial and incompetent in this cause.

[fol. 1100] Judge Allen: Now, which particular figure do you say is excluded by the evidence before the Court?

Mr. R. T. Jackson: In the first place the report to Congress, if your Honor please, I think Complainants' Exhibit 115, show different volumes. Complainants' Exhibit 698 is the resolution of the Board of Directors which shows the levels that were fixed by the Board and which are now apparently subject to be changed by this witness.

Judge Martin: Mr. Bowman, I notice on Exhibit 46 of the witness that the elevation of the top gauge is shown 685, while on the resolution you say the height for the surcharge or flood control is 685. Is that merely a different terminology?

Mr. R. T. Jackson: That is the top of the flood control, anything above that would be the top of the gates, and the other elevations could not be.

Judge Gore: Will you read those figures?

Mr. R. T. Jackson: The resolution of the Board, shows a minimum pool elevation of 875.

Judge Gore: Rather low.

Mr. R. T. Jackson: It would correspond to what they have undertaken to call navigation level. Then they have fixed normal pool level of 682, which is not shown at all. The normal pool level, as I understand, would represent the power draw-down, 682 to 675. That is not on the report at all. Then they have fixed one elevation of surcharge for malarial control, which would provide a foot above that, for mosquito control. Then they have a surcharge for flood control, of the remaining 6 feet up to the top, 685.

Mr. Fitts: Of course, I might point out before going further that the Board's resolution creating the department of water control planning, in placing the operation of these dams completely under the control of the Chief of Water Control Planning Engineer, to issue instructions from day to day, week to week, as the levels should be changed, as he thinks they should be operated, it seems to me would supersede any previous action arbitrarily fixing pool levels in the dam.

Judge Allen: What is the date of the action of the Board of Directors?

Mr. Fitts: August 21, 1936, which is prior to the water control planning resolution.

Mr. R. T. Jackson: The time has actually no bearing on my objection, and my objection is not in any way limited [fol. 1100a] by Mr. Fitts' observation, because I think no such power should or could be authorized by the resolution, undertaking as he says, to delegate authority to some man other than the witness on the stand. And I want to make the further observation, if I may, if that is right, then they have delegated authority to fix the pool level at 2 feet, 3 feet, 6 feet, whatever he wants, which is preposterous.

Mr. Fitts: I think they have ——

Mr. R. T. Jackson: I think in no way can the last resolution be right, even if it were to be what you say.

[fol. 1101] Q. Mr. Bowman, referring to those two exhibits which you have before you, can you explain to the Court the difference in the use of terminology, of the term surcharge, as it is used in your exhibits which you have produced here and as it is used by counsel for complainants, in referring to complainants' exhibit 698, which has reference particularly to the pool levels at the Chickamauga project?

Mr. R. T. Jackson: Mr. Fitts, have you any explanation in the minutes about that?

Mr. Fitts: I am asking the witness, who is familiar with the actual operation of the dams and as to the way in which they are designed, and the way in which they will be operated.

Mr. R. T. Jackson: I object to that. That is dealing with an official action of the Tennessee Valley Authority which cannot be shown by the testimony of an engineer.

Mr. Fitts: I am asking him to explain the difference in the terms, if there is any.

Judge Allen: He may answer.

A. On Complainants' Exhibit 698, there is the term 'Surcharge for flood control, elevation 685.' This elevation corresponds and is the same as the elevation of the top gates, 685 feet. The elevation of the top gates, when seated on the spillway crest, fixes the top of the flood control surcharge. The depth of surcharge is determined by the difference in elevation between the elevation of the top of the gates and the navigation level, the navigation level in Defendants' Exhibit 46 being 673.5 feet or a depth of 11.5 feet. On Complainants' Exhibit 698, the normal pool level elevation of 682 refers simply to the highest elevation to which the water will probably be raised during the low water season. That is to a great extent on account of the necessary operations for mosquito and malarial control. There is a surcharge for the malarial control on Complain-[fol. 1102] ants' Exhibit shown as elevation 683. This is the height to which the health and medical section consider it is necessary to raise the pool at the beginning of the malarial season, or the height to which it should be raised. Then, shortly after the start it will be dropped off, and that is what is known on Complainants' Exhibit as elevation 682. Below that elevation there is a depth of probably 3

or 4 feet that during the summer will be required for malarial control fluctuations. In other words, you have some considerable elevation above the minimum flat pool, which is 675, designated on Complainants' Exhibit as 'Minimum pool level,' in order that these fluctuations for malarial control can be performed without impinging upon the navigation pool level. The so-called normal pool level is based to a considerable extent on those considerations."

On Defendants' Exhibit 44, I have used flood surcharge to denominate the space which, in the usual flood season, will be available above the level at which the pool must be maintained to maintain navigation depths. I would say that is what might be termed the normal flow, or average flow of the river during the season in which floods may be expected to occur. I have called "Flood surcharge" all of the space between the top of the gates and the level at which the pool must be maintained at that time of the year in order to maintain the navigable depth. The elevation on Complainants' Exhibit 698, denominated as "Normal pool level," is applied for the 1-foot malarial control surcharge, that is the maximum level at which it is expected to stand during the low season. It is more or less a transitory elevation, but for the purpose of talking about some elevation in there you have to have a term that may designate that point, and we more or less arbitrarily called that the normal pool level. A 675 pool level is required to give a minimum 11-foot depth for the normal pool, and 682 would give 7 feet additional, or a total of 18 feet to the Watts Bar Dam.

[fol. 1103] On Complainants' Exhibit 698 the minimum pool level is stated to be 675. On Defendants' Exhibit 44, it appears at elevation 673.5. The explanation is that Complainants' Exhibit 698 might have been a little more specific. That refers to the flat pool level, assuming no flow in the river, and it is the elevation which you will have to have in the pool in order to create the necessary navigable depth at Watts Bar. That 675 is the depth required at Watts Bar, and if there was no flow in the river, that would be assumed to be low at the dam. On the other hand, if there is a flow in the river and backwater current obtains throughout the distance of the pool, which is a distance of about 59 miles, the water surface at the dam can be pulled very

conservatively a foot and a half lower, and at the same time maintain the elevation of 675 at Watts Bar.

In raising the pool level during the rainy season to an elevation of 682, that is not in general an operation beneficial to the production of power, because if you have a series of dams and at each dam you have an overlap, as we do for navigation purposes, if you operate on the chain principle, when you raise one pool, you raise the other pools, and between the first dam and the last dam you have no change in the total head, which, of course, is the figure, in addition to the flow, on which the generation of power depends.

"Mr. Fitts: We renew our offer that this exhibit be received in evidence, the table containing the figures with respect to the Chickamauga project, as defendants' exhibit 46.

Mr. R. T. Jackson: We renew our objection on the ground previously stated:

Judge Allen: Objection overruled. It may be received.

Mr. R. T. Jackson: Exception."

[fol. 1104] With the exception of minor differences which were brought about by changes in location of dams, and that sort of thing, in general principle the normal pool level referred to in House Document 328 corresponds, not in exact figures, but in principle, and in many cases in exact figures, to what we term the low navigation level. The space between what we call navigation level and the top of the gates as shown on my exhibit is comparable to the 10-foot flood surcharge which is mentioned by Colonel Watkins in connection with the high dam plan set out in House Document 328. At some of the dams it is exactly the same. Take at Pickwick, for instance, our navigation level is 408 and in House Document 328 the normal pool level was denominated 408. In the Pickwick Dam as it is being built, and in House Document 328, the elevation 418 was used in both cases as the top of the surcharge. In some of the other dams, on account of having to vary those levels somewhat, the results are slightly different—in some cases a little less and in some cases a little more.

The table (offered and received in evidence as Defendants' Exhibit 47) headed "Watts Bar Project, tentative" was prepared by me.

"Q. Do those figures represent your judgment and your opinion as to the actual figures that should be adopted in the construction of that project?

Mr. R. T. Jackson: Just a moment. I object to that, because what this engineer thinks ought to be adopted, and what we think or a dozen other engineers think ought to be adopted is irrelevant and immaterial. The question is what the Tennessee Valley Authority has done. They have made their report to Congress. If they have taken any other authoritative action they can show it.

Judge Allen: The objection is sustained to that question. Qualify the witness further.

Q. Mr. Bowman, do those figures represent the tentative recommendations with reference to those projects?

Mr. Fitts: These dams are both in the preliminary in- [fol. 1105] vestigating stage, and it is difficult to get anything very definite in the way of construction figures because the exploration of the sites, as I understand it, is still under way, although I think the Watts Bar site has been definitely selected.

Q. Is that correct, Mr. Bowman?

A. It has not been officially approved, as far as I know, by a Board resolution, but it has met the approval of——

Mr. R. T. Jackson: Just a minute. I object to the witness saying anything more than it has not been officially approved by Board resolution. Whether it has met the approval of someone else, or anything else than formal recommendations are outside of the issues that we ought to have to rebut in this case.

Judge Allen: The witness may complete his answer so that the court may have the information.

Mr. R. T. Jackson: May I have an exception?

A. I might say we have done very extensive foundation exploration at that site over the past two years. It has been investigated, visited repeatedly by the higher officials in the engineering departments."

I am the Head Project Planning Engineer of the TVA. My duties are to investigate the various stretches of the river, determine the feasible dam sites, at these sites to

prosecute the exploration of the various phases which enter into the construction of the dam, carry them to completion, prepare cost estimates of various schemes and alternatives.

Examination by the Court:

This Watts Bar project comes under my direct jurisdiction. We have been studying the project now for something like two years, and consider that we have the preliminary designs refined to the point where they represent what, in our best judgment, should be built at that site. These figures are based on that information and those studies.

Cross-examination:

In my duties I investigate the location of dams and investigate designs for dams, and things of that character. [fol. 1106] After I have done that, I sometimes make recommendations to the board to my superior officers. I never go out and build a $41,000,000 dam without any authorization of the Board, merely because I have been engaged in making designs and explorations of the river. As a matter of fact there cannot be anything done under any design, no matter how long I work on it, unless and until it is authorized by the Board of the TVA. I am not the head, or executive, or managing officer of the TVA.

Direct examination continued:

"Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 47 the table relating to the Watts Bar project as representing the best judgment and estimates of the witness on the stand.

Mr. R. T. Jackson: And we object to it because the witness has no authority whatever, it is utterly incompetent, irrelevant and immaterial. The Board of Directors which does have authority for the Tennessee Valley Authority has made representations and reports to Congress upon this project, and whatever ideas any subordinate engineer may have, whether it varies with those reports of the Authority to Congress or not, is utterly incompetent, irrelevant and immaterial.

Mr. Fitts: We also offer this as showing the present status of the plans as produced by the witness, who is in charge of the plans.

Mr. R. T. Jackson: We object on the same ground because there is no approval of the plans by the Board, and no adoption.

Judge Allen: The objection is overruled. And the Court considers that the objection goes to the weight rather than to the competency, and that this testimony from a man actually engaged in this work, on these particular projects is surely at least as competent as the hypothetical testimony which has been permitted to be introduced on behalf of the complainants with respect to these projects.

Mr. R. T. Jackson: May we have our exception, and in order that I may not be charged with having been obscure in my statement to the Court, a I fear I have, we are not here asking an injunction against the hypothetical plans.

Judge Allen: The Court understands that.

[fol. 1107] Mr. R. T. Jackson: I just wanted to go a step further, if I may. That testimony was offered as bearing upon the character of the plan actually adopted by the Tennessee Valley Authority and actually recommended to Congress.

Judge Allen: The objection is overruled. The Court is not ruling upon the weight of this testimony. It considers it competent, and that your objection goes to the weight. You may have your exceptions."

The table (offered and received in evidence as Defendants' Exhibit 48) entitled "Coulter Shoals Project, Tentative," was prepared by me. The Coulter Shoals project and the Watts Bar project, concerning which I have just testified, are in the same general status. These figures are based upon my investigation and the studies that have been made under my general supervision and control.

"Mr. Fitts: I am offering in evidence the table referred to as Defendants' Exhibit No. 48.

Mr. R. T. Jackson: We make an objection to this exhibit 48 upon all of the grounds which I have stated with reference to exhibit 47, and I will ask the witness to say with reference to my qualifying questions that they apply as fully to this project as the one covered by exhibit No. 47. Is that right? I asked you several qualifying questions with reference to exhibit 47 which you offered on Watts Bar, as to whether or not this project had ever been adopted by the Board of the Tennessee Valley Authority and as to

your position with reference to investigations and recommendations. Now, without repeating these questions can you say that the situation is just the same with reference to Coulter Shoals, shown on exhibit 48?

The Witness: Yes, to the best of my knowledge it is just the same.

Mr. R. T. Jackson: Now, I want to avoid asking the same questions again.

Judge Allen: Is it understood that the same qualifying questions may be considered as asked of the witness by Mr. Fitts?

Mr. Fitts: Are you willing to have the record show it is understood that the same questions asked, would be asked and answered?

[fol. 1108] Mr. R. T. Jackson: Those that you asked after I asked the qualifying questions, if that is what you mean, I am willing to agree that each of those questions, if put to the witness, he would make the same answers.

Mr. Fly: May I have 30 seconds. I do not think it is contended here that the Board of Directors adopted these plans or details for any of the projects. The non-justiciable issue which the complainants have presented is not one that we brought up, that is one that they have to contend with. And if they want to attack the dams in their present tentative state, they ought to proceed, and if not they should withdraw their charge.

Judge Allen: The objection has been made and overruled."

The photograph (offered and received in evidence as Defendants' Exhibit 49) is of Norris Dam, which is already constructed and in operation. This is a photograph of a perspective of Norris Dam, the section being that from the east bank of the river over to the west bank, with two sections of the masonry removed in order to show the sluiceways and penstocks leading to the power unit.

Examination by the Court:

As I stated, this is a photograph of a perspective drawing of the Norris Dam with sections of the dam removed in order to illustrate more clearly the mechanical operations. The drawing is made looking from the east over across the top of the dam and in the general direction of Coal

Creek. To the right is the upstream side of the dam, or the pool, and to the left the down-stream side of the dam is, of course, the natural stage of the Clinch River. Taking the portion of the dam shown to the left, that is the first section in the background, this shows the spillway gates on the top of the dam, the complete gate shown in the background being taken with the greatest elevation of 1020, [fol. 1109] which we refer to as the fixed crest of the dam. The gap in the foreground which is shown in the cross section in red, with the tow of the pool underneath it, showing the water in the operating chamber under the gate. The gate is raised to its full height, which is elevation 1034.

The lower part of this section shows in a wide blue line, which represents water passing through the sluiceways. The sluiceways are eight in number, 10 feet high by approximately 6 feet wide, and having a total discharge capacity of 36,000 cubic feet per second. The flow is controlled by two gates near the upper end of the conduit, one the operating gate, the other an emergency or sliding gate, which simply slides down across the conduit and shuts off the water.

These sluice gates permit the draw-down of water from the lower part of the pool. After the water in the pool is drawn down to elevation 1020, of course the spillway at that point is fixed and no water can be discharged over the spillway at that time. So the sluiceways are provided to draw the pool down to an elevation lower than can be drawn by the spillway gates. In the section in the foreground is shown the power house with the generating unit in section. Approaching the power house from the upstream side of the dam is a wide blue streak which is the water in the conduit approaching the unit. That conduit is continuous as indicated by the dotted line and leads into a spiral conduit which surrounds the turbine, which is the mechanical part of the equipment shown, and from that spiral down through the turbine it goes out to the water below the power house.

[fol. 1109a] Direct examination continued:

I want to correct a misstatement in an answer I made earlier. The correction is with reference to whether the adding of water to the normal pool level would have any effect on the power output, and my mind was running in a groove on the additional head which might be created,

which, I said there would be no additional head. However, there would be the possibility of additional power through the draw-down from that normal pool to the low pool [fol. 1110] level. Of course, that would increase the flow at each plant below, and consequently the possible output.

Referring again to the water going through the conduit into the turbines, I might add that down at the lower part is shown the turbine, with the turbine blades, and at the upper part of that equipment a flat disc-shaped object is the generator. The generator is connected with the turbine on the same vertical shaft so that the turbine revolves at a certain speed, which is fixed, and the generator revolves at the same speed as the turbine.

There is another element which might be explained, that is the operation of these spillway gates. This gate is what is known as the drum type gate, which is 100 feet long and 14 feet high, somewhat triangular in shape, although the sides are not planes. It is hinged to the masonry crest at the upstream side, and the gate itself is water tight; in other words, it is simply a large float. When it is down it falls into this chamber underneath the gate. When you raise it, water is admitted into this chamber to any depth, which is controlled by valves, and the gate simply floats up on top of that water, and is held at the desired elevation. Of course, if you want to let it down, the outlets are opened and the water flows out on the downstream side and the gate floats down on the surface as the water goes down. The difference from the top of the gate to the top of the dam is 14 feet in elevation. When the gate is folded clear down and when fully raised, it is 14 feet. By that operation it is possible to get additional storage behind the gates above the dam.

The chart (offered and received in evidence as Defendants' Exhibit 50) was prepared under my supervision and direction. The information shown there is accurate and correct to the best of my knowledge. The figures and the design are actually as shown for Norris Dam. The figures [fol. 1111] and design for Hiwassee are taken from the designs, on the basis of which Hiwassee Dam is being constructed. It is now actually under construction, on the basis of the designs which are represented on this exhibit.

"Mr. Fitts: We offer in evidence Defendants' Exhibit No. 50, about which the witness has just testified and identified.

Mr. R. T. Jackson: We except, so far as it relates to Hiwassee storage because there is no showing there has been any particular action of the Tennessee Valley Authority Board of Directors, which has formally approved any figures or has formally approved these figures, or has changed anything in the plan which they submitted to the Congress.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May we have our exception, please?''

The two diagrams on the right hand side of the chart are what we call storage volume curves, which simply show by the figures which are given there, or at any other elevation which might be scaled,—that scale is an exact scale, or proportional scale,—the volume at any particular elevation can be obtained.

I might describe briefly for the Court the means of preparation of these. The topographic map of the reservoir is used. This topographic map gives the contours from the dam site up on one side of the reservoir, and back, at different elevations. The area inside of these contours is measured, and the volume determined by multiplying the height interval between the contours selected, which of course gives the volume. Then, adding the different volumes up from the bottom of the reservoir at the dam successively to whatever height is desired gives the cumulative volume to a particular elevation from the bottom of the reservoir at dam up to any surface elevation selected.

3,140,000 is the cumulative volume up from elevation 820, which is the stream bed at the dam site, up to elevation [fol. 1112] 1047. The figure 900 is an intermediate elevation at 900 for 80 feet above the stream bed. At that point the chart shows the cumulative volume is 108,000 acre feet. If I remember Mr. Kurtz' testimony correctly, the space between 820 and 955, which is shown as cumulative 554,000 acre feet, is the space that was denominated by Mr. Kurtz in his testimony as dead storage. The 1005 level is the level 15 feet below the fixed crest of the dam. It is simply an elevation, and at that point the storage volume given was 1,578,000 acre feet. That is the total volume from the stream bed up to that elevation. I believe that the space in here which Mr. Kurtz denominated ''power storage'' was from 955 to 1020, if I am not mistaken. I think Mr. Kurtz denominated the space above 1020 up to 1034 as ''depend-

able storage". I do not recall that he did anything from 1034 to 1041.

The Hiwassee curve was prepared in the same manner and presents the information in the same manner as the chart for Norris. That is, the stream bed at the dam is approximately elevation 1280. I think perhaps that is low water surface. At elevation 1415 apparently the storage volume is 73,300. At elevation 1465 the volume is 172,600 acre feet, and at elevation 1526 the volume is 434,800 acre feet. I think the elevation 1526 is 6 inches below the top of the gates.

The table (offered and received in evidence as Defendants' Exhibit 51) is entitled "Norris Project". The figures are actual and not estimates.

Cross-examination:

The table does not show any minimum draw-down level or normal pool elevation, or anything of that kind.

[fol. 1113] Direct examination continued:

The table (offered and received in evidence as Defendants' Exhibit 52) entitled "Hiwassee project", was prepared by me from figures prepared under my supervision. They are figures taken from the design drawings under which the dam is being constructed, and they are not actual figures.

"Mr. Fitts: We offer in evidence the exhibit just referred to as Defendants' Exhibit No. 52.

Mr. R. T. Jackson: May I ask one question? Has the design, insofar as it is reflected by the data shown on exhibit 52, been adopted by the Board of Directors of the Tennessee Valley Authority?

The Witness: Well, I presume it must have been because they are spending appropriations for that, and certainly it must have had the approval of the Board.

Mr. R. T. Jackson: Will you produce the resolution later then?

Mr. Fitts: I don't think there is any.

Q. Mr. Bowman, using your definition of controlled flood storage as you have given it in your testimony, I will ask you to state what the total amount of controlled flood storage is in the combined dams, taking the following dams,

Gilbertsville, Pickwick, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris and Hiwassee?

A. I will have to refer to my notes.

Mr. R. T. Jackson: We object to the question because—first I want to ask is this question based upon any designs that have been adopted by the Board for Gilbertsville, Watts Bar, Coulter Shoals, Hiwassee? I object to the question insofar as it involves an estimate or computation based upon some designs that this witness has drawn up, but which have not been adopted by the Board of the Tennessee Valley Authority.

Mr. Fitts: I would like to state the complainants have elected in this case, in the bill of complaint, to challenge the constitutional authority to construct these dams. Since they have done so, the best I can do is present to the Court the present plan for the construction of these dams. If it is too vague to be presented in evidence, it is too vague to be litigated. It seems to me it follows as a matter of course.

[fol. 1114] Mr. R. T. Jackson: Of course, Mr. Fitts has completely misconceived or misstated the position. We have a very definite program submitted to Congress by this Corporation and by the Board of Directors. And the question that is here involved is whether that may be changed and another program substituted by any employee of the TVA who chooses to take the stand and say that he conceivably might do something else if he were doing it.

Judge Allen: The objection is overruled. He may answer.

Mr. R. T. Jackson: Exception noted, please.

Judge Allen: Exhibit No. 52 is received."

Using my definition of controlled flood storage, the total amount of controlled flood storage in the combined dams, Gilbertsville, Pickwick, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris, and Hiwassee, based on the elevations which have been shown, is a total controlled flood storage of 8,925,000 acre feet. That includes a slight amount for Wilson Dam, 43,000 acre feet.

Cross-examination:

Defendants' Exhibit 37 is an artist's conception of a dam and lock superimposed upon the site of Chickamauga,

showing a towboat and barge in the lock. It is obviously not drawn to scale. I do not think a barge and towboat of that size would carry 100 tons. They would have to be pretty deep.

Referring to Defendants' Exhibit 38, the drawing of Gilbertsville Dam, I think the sketches for it were prepared sometime last summer. I do not know exactly when the draftsmen completed this. It was prepared under my direction. I prepared the rough pencil sketches for the layout, then the artists completed them when they got around to it. I think it was sometime last August when I gave him the information to go ahead with that. The glow just back of the dam has no significance. It is an artistic touch. I [fol. 1115] gave the data to the artists sometime in the summer of 1937. Of course, the preliminary designs have been hashed over, rearranged, for the last year and a half or two years. They have been in the process of evolution, but as I remember, I gave the artists the data sometime last summer. This evolution had been completed sometime last summer. This has been prepared in the regular course of business. But for the last year, our consulting board has made trips to Knoxville and advised us on what pool levels we could consider, all that sort of thing. At the time this information was given out, it was the best information our design men and our consultants had worked out, up to that date, to represent the present status of their recommendation. It reached the stage shown on this exhibit in 1937. It was then that we finally came around to this data, and I should say that in July or August, some time, we arrived at these conclusions. I was doing practically nothing in preparation for this lawsuit at that time. I had given out a little information. I talked with the lawyers a little bit, and I devoted 8 or 10 hours to the whole case prior to that time.

Information of the character shown on Defendants' Exhibit 38 comes to my attention. I have a squad of men assigned to preliminary design of the Gilbertsville project, and they are working under my supervision.

I stated in Defendants' Exhibit 39, the typed table, that under this design there would be 6,150,000 acre feet of storage. In the course of my duties, I knew that the TVA had a hearing and submitted data to the sub-committee of the Appropriations Committee of the House of Represen-

tatives on Monday of this week in support of an application for appropriation of money for the TVA. I did not know that at that hearing the data submitted to the sub-committee of the Appropriations Committee of the House stated that the total volume of storage at Gilbertsville would only [fol. 1116] be 4,850,000 acre feet. I assume it was the official presentation of data by the TVA to Congress in request for an appropriation. That sounds like the figure used a year or two previously.

"Q. Yes, as matter of fact it is exactly the same figure the Tennessee Valley Authority in appearing before the Committees of Congress told the Committee of Congress that was the capacity of storage of Gilbertsville Dam, isn't it?

A. If that is correct, that is what they told them.

Q. Well, I have not asked about whether it was correct.

Mr. Fitts: He has not seen the figures.

The Witness: I have not seen the figures.

Mr. R. T. Jackson: Well, I will show you the figures. I thought you were familiar with all those figures.

A. Well, I have had nothing to do with those, yet."

4,850,000 acre feet is the figure previously presented. I am familiar with that. I furnished the figure. That was the figure at the time of the study of the preliminary plans, which has gone forward, and since then that has gone forward.

The ninth item on Defendants' Exhibit 39 shows that the controlled flood surcharge in acre feet at Gilbertsville project is 4,600,000. I do not know it to be a fact that the TVA in submitting data to the Committee of the Congress on Monday of this week told Congress that the controlled storage of all kinds at Gilbertsville really would be only 3,700,000 acre feet.

For a flat pool level, that is with no flow in the river, the elevation of what I call the navigation pool at Gilbertsville would be elevation 354. That is the depth required in the Pickwick vicinity to avoid excessive dredging into the lock entrance. The total volume of Gilbertsville reservoir below elevation 354 is, as closely as I can read it off of this curve, 2,000,000 acre feet. I do not believe we have yet fixed any normal elevation. It would be as far above elevation

354 as would be required for the malaria control manipula-
[fol. 1117] tions. That is in the summer time when you have this malaria control surcharge, we are apt to have practically a flat pool, because the flow in the river gets very low. In order to not go below that we would have to raise the normal pool as far above that as would be required for malaria control. I think perhaps finally that would be fixed somewhere between 3 and 5 feet.

"Q. Well, do you not know now, Mr. Bowman that the Tennessee Valley Authority in submitting its data to the Congressional Committee Monday, asking for an appropriation, fixed the normal reservoir elevation at Gilbertsville at 359?

A. Well, you take 54 and add 5 feet, which I just stated, I said 3 to 5 feet, makes elevation 359. And in all probability that is very close, although that has not been officially fixed.

Q. Well no, I understand there is nothing officially fixed about these figures that you have given, but did you recommend that 359?

A. I think any recommendations that we have made so far have been somewhere between 357 and 359, and somebody took the 359 figure apparently in this report.

Q. Now, will you tell me the volume of the reservoir—

Judge Allen: Were you present in Washington at this hearing?

The Witness: No, your Honor, I was down here in the Court room.

Judge Allen: Have you read any figures?

The Witness: I have not read the figures, and I didn't know in advance what figures they were going to present.

Judge Allen: Do you have any knowledge of the figures there that were presented?

The Witness: The only knowledge that I have is apparently from what Mr. Jackson says, that a table from last year's hearings was presented by the Comptroller, or somebody without realizing that some of these projects were in the process of evolution during the last year.

[fol. 1117-a] Q. Mr. Bowman, to set your mind at rest on that, the table is dated September 29, 1937.

Mr. Fly: I move to strike that remark of counsel. He is not on the witness stand here, your Honor.

Mr. R. T. Jackson: Well, you have made a great many without being sworn. Do you want to produce a copy of the data, Mr. Fly?

Mr. Fly: I haven't got it, but I will be happy to produce it after this goings-on.

Mr. R. T. Jackson: I am glad to hear it.

Judge Allen: The objection is sustained. The witness [fol. 1118] has said that he was not there and he has no knowledge of the figures except what Mr. Jackson has given him and Mr. Jackson is not a witness.

Mr. R. T. Jackson: I want the same ruling against Mr. Fly if I can get it. Exception please."

The figures about which you have been asking me fall within the field of what I said were my duties. I furnished the figures which have been quoted a year ago for the Appropriations Hearing, and apparently the same figures have been carried over. Because I was down here, apparently I was not asked to check those tables this year again, when they were submitted. I have not seen such a table at any time since September 29, 1937. I have seen none of the material which was prepared for this hearing.

I can not give the scale of the outline of the Gilbertsville pool on the left-hand side of Defendants' Exhibit 38. The scale is not given on and does not show the original chart. We might find out from the artists what scale they used in plotting that. I don't know. There is a map showing Gilbertsville reservoir at normal stage. I have an extremely small scale map here entitled "Permanent capacity of the Gilbertsville reservoir and surrounding territory", (marked for identification Complainants' Exhibit 903) showing the Gilbertsville reservoir at normal stage. The maximum width of the Gilbertsville pool measures about 2½ miles. The elevation on which this tabulation is drawn, this contour line, shows elevation 370. In Defendants' Exhibit 39 I show elevation 375. That would make some difference. I can explain that elevation. This map was prepared last April, and at that time we had not completed our topography up as high as 375, so we sketched on there the best that we did have as of that date. I have not here a contour map showing an elevation 375 for the Gilbertsville pool. I don't know whether I have one. I can

find out. If we did not have a contour map, the volume [fol. 1119] of the reservoir at the top of the gates in acre-feet may have been taken by cross-sections of the pool above the 370 contour. I can find out whether it was a map or whether it was cross sections. I know that there was some information of that sort taken, but I don't recall whether there was either one or exactly the nature of it. This was a year ago that that field work was done. This 6,150,000 acre-feet figure was made under my direction.

When this Gilbertsville pool is at what I call navigation level, the depth in the upper end of the pool is at 50, except for dredging over some of the shoals in the upper end. At the time the 350 would be used at the dam, the elevation at the Pickwick Lock would be 354. It will require some dredging in that vicinity to get the full 12-foot gross depth into the Pickwick Lock. There would not be 12 feet at that elevation in the upper end of the pool without a minor amount of dredging. There are some bars and Big Bend Shoals downstream from the lock. It would obviously be cheaper to take out the bars than to do anything else.

I have a curve here that shows the surface area of the Pickwick Landing pool at the maximum draw-down and at normal pool levels. I don't have a map which will show the width of the pool at various places. Defendants' Exhibit 40 on Pickwick Landing Dam and Wheeler Dam is not to scale and is not subject to being read. The artist has exaggerated the width. The brush was too wide, I guess.

I do not believe I can furnish the figure right now as to the estimated cost of Gilbertsville at elevation 375 with the extra five feet of elevation, but I can give you a rough approximation. As Gilbertsville Dam was previously reported to Congress by the TVA, it carried an estimate of [fol. 1120] $112,000,000 for completion with a complete power installation. The addition of 5 feet to the height of Gilbertsville Dam would increase that estimate of cost very little, if any. You would have to increase the elevation of the top of the gates and a slight amount on the embankments. The clearing in the reservoir is taken care of in the previous estimate. It would flood more 5 feet higher, but as I remember the clearing has been estimated about up to level 380 in the previous estimate, which for some reason or other got by. We found out, if my recollec-

tion is correct, that bringing that clearing down to elevation 375 about offset the additional cost of the height of the dam. So, the estimate stands about where it did, although there would be an actual difference between the 370 and the 375. This results simply because there was a little overpadding in the previous estimate.

The TVA did not previously report to Congress that they were clearing something beyond the edge of the pool at high-water elevation. Normally what we clear is up to the top of the malaria surcharge, in order to eliminate the brush and leaves of trees, and that sort of thing from the shore line, which will be occupied by the pool during the mosquito-breeding season. My testimony is not that raising a dam 5 feet does not require widening the base. What I stated was that the over-estimate in clearing in the previous estimate approximately made up for the additional cost of the dam. I do not have the figures as to the amount of over-estimate in mind. I would not say that I do not know what they are, but believe they are about equal. There would actually be a difference in the cost between 370 and 375, but, as I remember, the revised estimate for 375 does not exceed the original estimate of 370. The original estimate for 370 was too high. I do not know now what would be the cost of raising the original dam or the cost of clearing. That is just my estimate.

[fol. 1121] The length of the dredged channel which will be required between the head of 9-foot navigation in the Hales Bar pool to Chickamauga will be roughly 7 miles. It will be from Chattanooga Island upstream, from the Walnut Street Bridge in Chattanooga, up to Chickamauga Dam. That is the total distance, but the dredging consists of dredging in isolated bars, and between those bars are places of considerably more than the required navigable depth.

I do not believe that I could tell you offhand for what percentage of time what I call the navigation pool level will be maintained at each of these TVA main-river dams. I can tell you approximately; it will be maintained at that level with minor fluctuations from the beginning of the flood season, say the middle of December, up until—it varies in different places, perhaps slightly—along toward the first of May. That is fairly accurate for each of the pools.

It is difficult to answer what per cent of the year the normal pool level would be maintained at each of these main-

river reservoirs, for the reason that the normal pool levels are purely an arbitrary definition and are sort of average points. Perhaps the top point in there is very transitory, because of fluctuations. You would have to make a tremendous number of assumptions, saying it might not be released in actual operations, to get that figure. For the purpose of malaria control you would fill up beyond the normal pool level a foot about the first of May, and you would hold it there until about the first of June to kill out the vegetation along the margin. Then you would release that, drop the pool a foot, and from there on it would have rather steady fluctuations in order to keep the drift stranded along the pool, and at the same time draw away from that level.

[fol. 1122] Directing my attention to the normal elevations of the main river dams shown on the TVA Report to Congress under date of March 31, 1936 (Complainants' Exhibit 328), and illustrated by the normal elevation of 595 shown for Guntersville in that report, it is extremely difficult to answer what per cent of the year the normal level would be maintained at each of the main river dams, for the reason you are surcharging floods when you get a flood above that elevation, and then letting the flood stay until it can be released. And during the summer season you build up above that a foot and drop as soon as the vegetation is killed. Then the fluctuation below that, sometimes up to it. So that it is a rather difficult job to combine all of those things and say what percentage of the year it would be right at that elevation.

"Q. You have already told me the time of the year during which these pools will be at what you call navigation level. Now, that gets rid of a part of the year. Now, you have said that you will try to make your best estimate of the part of the year during which the pools are at normal pool level—that takes another part of the year. Now, I am asking you if whatever part of the year remains, the elevation of the pools will not be between normal pool level and maximum pool level?

A. If I get your question correctly, Mr. Jackson, during the time when you might have sufficient floods to raise the pool above normal pool level, there would be a time that if the floods were sufficient the surface of the pool would be surcharged somewhere between low level and maximum level. That might either be below or above the so-called

normal level, depending on the size of the flood which you catch. So it seems to me that your conclusion is not correct.

Mr. R. T. Jackson: I am afraid you do not understand my question.

Judge Allen: Has he answered the question? Is the answer no to the question?

The Witness: As I understand the question, my answer is no.

Mr. R. T. Jackson: I do not want to impose on the Court, but I am sure the witness does not understand the question. I assume it is my fault.

[fol. 1122a] Judge Allen: Read the question.

(The question was thereupon read by the reporter.)

Judge Allen: Do you understand the question?

A. I think I do, your Honor, but it is a little bit involved. I have to look at this, if I might. It is about like a Chinese puzzle. My answer still is, Mr. Jackson, that it seems to me under your question there would still be a percentage of time left in which the pool would be between low and normal and not above normal. Of course we will have to draw some diagrams of this thing between us, I guess."

At the mouth of the Tennessee River and going up, excluding Gilbertsville, the level in the navigation pools during the low flow would be: At Pickwick, 408; Wheeler, 550; Guntersville, 593; Chickamauga, 675; Watts Bar (estimated), 736; Coulter Shoals, 805. The normal pool elevation at Pickwick is 413; Wheeler, 555; Guntersville, 594; Chickamauga, 683; Watts Bar (tentatively), 740, and Coulter Shoals (tentatively), 810. These latter are not elevations that are fixed by any physical thing that you can tie [fol. 1123] to, but more or less average elevations which represent about the highest elevation in the low water season, except the malaria surcharge of 1 foot above normal. I will supply the total volume of each of these reservoirs up to the normal headwater elevations after recess.

The condition with reference to the depth at the upper end of these pools on the main stream would be substantially the same condition as I have described at the upper end of the Gilbertsville pool. All of these elevations which I have given at the dam of either slack pool level or low pool level

will be the same elevation at the next lock upstream—that is, a minimum depth of 11 feet over the lock sill.

On Defendants' Exhibit 40, the figure 549 was substituted for the figure 550. In checking over we found that the artist had another figure of 550. Referring to Defendants' Exhibit 50, the figure that was eliminated at the upper right-hand corner still remains in two places on the original chart. The artist put the scale of these lines on the original chart. That was not my instructions, although I had given him the scale to draw it to. Then of course, when it was reduced that scale no longer applied to here. So just to save time we wiped both out. I left instructions to have those stricken out on the big map. I thought they were until I noticed when it was put on the stand.

With reference to Defendants' Exhibit 50, which contains a diagram of Norris and Hiwassee Dams, we show a line 955 with storage of 554,000 acre feet. That line has sometimes been indicated as the maximum draw-down line in previous reports to Congress. We just gave the information on the report. The elevation 1020 is what has been designated as the normal pool level in previous reports to [fol. 1124] Congress. That is the fixed crest of the spillway. I don't recall that that was also the elevation to which the TVA advised Congress they hoped to have the dam filled at the beginning of the low-water season, but I do believe it has been referred to as "normal pool level". We show space between 1020 and 1034, which actually has storage capacity of slightly over 500,000 acre feet. That has been designated in those reports to Congress as the storage capacity that was reserved exclusively for flood control, the intention being that that should not be filled up or encroached upon for power purposes, or anything except flood control. The other lines running finally up to elevation 1047 are merely the space above the top of the gates.

I suppose we could have shown an elevation as much higher than 1047 as we wanted to in order to get a still larger capacity in acre feet. We could have completed the capacity up to the top of the roadway maybe. That is not this much discussed valley storage on stilts. I think that statement is based on an assumption that you could go on and on, up and upwards. As to whether the storage capacity which I show between elevations 1034 and 1047 is really this much discussed valley storage on stilts, it gives the same effect as a detention basin would for that type of storage—that is,

there is no control there, no gate to hold it, it can pond up and fill, and then gradually bleed out. I don't claim to be much of an expert on valley storage but it would be approximately something of that sort.

To the extent that the figures and data I have given on these various main stream and tributary dams of TVA are not in accordance with the data submitted by TVA to the Congressional Committee last Monday, I have no information about it. I am not familiar with, and know nothing about, what TVA put in last Monday for Gilbertsville Dam, [fol. 1125] and that situation is true with every one of these dams as far as that report is concerned. I know nothing about what was submitted except what you have told me, and I judge from that that it must have been a table prepared last year that was inadvertently included with the Comptroller's request.

"Mr. R. T. Jackson: I move to strike out his judgment about the matter, with which he is not familiar.

Judge Allen: It may stand.

Mr. R. T. Jackson: May we have our exception, please? I understand Mr. Fly is going to furnish us with a copy of that data. Is that right, Mr. Fly?

Mr. Fly: When the—I don't have a copy of it. I understand that——

Mr. R. T. Jackson: Well, I understood you to say you would furnish us with a copy of this table that was submitted to Congress last Monday.

Mr. Fly: I will say this, when the Committee releases the information, whatever it is, I will be glad to see that it is submitted. If the Committee has retained it confidential for the time being, I of course cannot violate that confidence. But as soon as it is released I will be glad to see that it is produced here.

Mr. R. T. Jackson: You have copies. Did the Committee impose any restriction on TVA?"

As to whether the table on page 59 of Complainants' Exhibit 328, being the Report of the TVA to Congress under date of March 31, 1936, shows that the minimum flow at Wilson Dam was to be regulated so as to increase it from 4300 second feet to 18,900 second feet during the dryest year without any use of Fontana, that table shows the possibilities of regulation. It does not mean to show that that is precisely the regulated flow that will be obtained. That is

the potentiality. The graph on page 201 of my article in Civil Engineering for April, 1935, indicates that in order to [fol. 1126] have produced that regulated flow at Wilson Dam under conditions of 1925 it would have been necessary to have storage of something over 3,200,000 acre feet to draw upon. That was a preliminary calculation. I am not sure of its final correctness today, but that is what the graph shows. I do not intend to disavow the graph published in that article, but I mean in the light of more detailed studies which have been made, I can not vouch for its exact accuracy. I think it is approximately correct. Assuming that my graph is correct and that it would require at least 3,200,000 acre feet of storage at the beginning of the low water season in order to produce or maintain such a regulated flow during a year such as 1925, I can not tell the Court in what reservoirs I would have had that water stored at the opening of the low water season. You understand this graph is not made up by reference to any reservoirs but by taking the hydrograph at Wilson or Florence and figuring deficiency below a certain flow. This has no reference to where you are going to store that. We would not have encroached on the flood surcharge in the main river reservoirs above Wilson for the purpose of storing the water. As far as I can see, probably not. Of course, this does not mean—it might mean that to get the amount which is shown in this potentiality, I can not say without investigating the situation and refreshing my memory, it might mean that you would have to encroach on that somewhat to get the regulated flow. You would not have to get your storage for regulation in the head-water tributaries at Norris and Hiwassee. You can get that on the main stream pools also without encroaching on the surcharge. There is considerable flow after the end of the flood season, which you could store on the main river pools. I could not tell what would have been the elevation of the pools at March 1 and February 1, 1925, in order to provide 3,200,000 acre feet of storage. [fol. 1127] I do not believe I have ever run through that calculation. These are potentialities, and there is no indication there that that will be done. But if it was done, that was what would be required. Now, I don't know it might be that your assumption is correct. I don't believe I have ever run through that particular calculation. It may be possibly correct to say that it would be impossible to enter the low water season with 3,200,000 acre feet of storage to pro-

duce such a regulated flow under conditions existing in 1925 without not only filling the entire reservoirs at Norris and Hiwassee up to what we call the normal pool level for power purposes, but also going even beyond that and encroaching upon the area which should be reserved for flood control without encroachment for any purposes. I do not have charge of the investigation of that phase of the work, and I would have to look the thing up to find out.

You never know whether you are going to have a low water year like 1925 in February or March. You would know some low years perhaps. 1925 had a fairly ample flow in the early part of the year. If you are going to provide a definitely regulated flow during every year on some firm assumption that we are going to get that in spite of everything, it is true that you must provide storage far enough in advance of the worst water conditions to insure that possibility. I do not know of my own knowledge that we would have to have our storage reservoirs at Norris, for instance, up to 1020 or higher earlier in the season. I imagine that you would have to have it almost to 1020. I do not know at what date in the season. I don't have charge of those investigations of storage and that sort of thing. Unfortunately we can not tell what rainfall there is going to be a year ahead and all we can do is base our operating curves upon the worst experience of the past and then take [fol. 1128] that as a general rule and departing from that as hydrological conditions at a particular time justify. I think that is the way reservoir storage is operated. We can not depart from it on the basis of hydrological conditions that are in the future and not yet known, but you do know such elements as exhaustion of ground water levels and that sort of thing.

I testified in the Ashwander case and was asked the following questions and made the following answers:

" 'Q. Now, you are talking now about the effect of Norris below Pickwick Dam?

A. This is all the effect of Norris.

Q. Yes.

A. The present navigable depth, Big Bend Shoals, Indian Creek Shoals, represents about a minimum, particularly, because at those points the improved channel is on rock bottom. So, we have a minimum depth there of about 4½ feet at the present time under low water conditions.

This will be increased to a six foot minimum depth at these points, and, in general, we will have around seven feet or somewhat more during a large portion of the year below Pickwick Landing and to Paducah at the mouth of the Tennessee.

At the present time, almost all the time, we can obtain from natural stream flow at Wilson, 55,000 kilowatts; for continuous, it might be stated, about 50,000 kilowatts. With the release of the water in the Norris storage for low water regulation, all this power at Wilson will be increased from about 50,000 kilowatts continuous to about 90,000 kilowatts continuous. With Norris, and with the proposed inter-tie, or some inter-tie between Norris and Wilson, so that these can function essentially as a system, the continuous power at the two plants would then be 153,000 kilowatts'."

I think that that probably could be done under certain assumptions. I made a study about those storage conditions in the early days and for a time had charge of that. I no longer have charge of those studies which have been considerably revised, and in fact almost entirely done over since that was transferred to another department.

[fol. 1129] The following quotation from my article in Civil Engineering for April, 1935, page 200 correctly states my opinion:

"The major floods may occur from January to April, but the greater number come late in March or early in April. Normally, the depletion period begins in the middle of July and continues, with little replenishment, until early in December. The lowest water is in October or November.

In general the problem of regulation for flood control, navigation, and power involves conflicts of interest that cannot be completely reconciled."

I would like to say in explanation of that that it is my opinion that there is considerable misconception of this question of conflict. It is rather obvious that where you are using a part of the same space in a storage reservoir for two purposes you cannot get a hundred per cent benefit for both. That is the element of conflict. From an economic standpoint or from a feasible standpoint, as good engineering, I don't thing that anyone would say that it was necessary to get results of large magnitude that you realize a hundred per cent, and try to avoid that conflict to the extent

that you get a hundred per cent of the benefits. As a matter of fact, with a small sacrifice one way or the other, a very large and substantial amount of those benefits can be secured in multiple purpose use, and it would not seem to be good engineering practice not to take advantage of that.

The following is a correct statement from the next page of my article of what can be done at Norris Dam under certain assumptions (page 201):

"The normal pool level and the maximum level for power storage will be at elevation 1020, giving a gross head of 194 ft. With a maximum draw-down of 58 feet, 1,500,000 acre feet will be available to regulate power output and navigation. This will mean an average contribution of 5,000 cubic feet per second to the low-water flow and an increase in the flow at Florence of from 10,000 to 16,000 cubic feet per second for 97 per cent of the time. With regulation by the Norris Dam, the extreme low flow will be about 12,900 cubic feet per second."

[fol. 1130] That is a correct statement of what can be done up there under certain assumptions but not a statement of what will or would be done. My statement in the article that "The normal pool level and the maximum pool level for power storage will be at elevation 1020" is all right. That represents the maximum elevation for power storage. That is correct. Except that may have been a little inadvertence there. I called it power storage. I thing it is more probably suitable to call it flood level, for low water regulation. That is not an increase in my legal education but is largely an increase in my engineering education. It is for low water regulation.

The following is a correct statement of the facts from the next page of my article:

"As the storage is progressively increased by additional construction for supplementing low stages of the river, more and more of the flow from unregulated areas is converted to firm power for the generation of primary power. Consequently less and less water can be stored without reducing the flow already utilizable at plants on the main river. The regulated flow equivalent of power produced at storage developments during the low-water season will be additional to this. For instance, the minimum power generated at the Norris Dam during the dry season would be equivalent to a flow of 7,000 cubic feet per second at the Wheeler and

Wilson Dams and to this extent will fill in the valleys of the power-hydrograph of the lower river. In this respect the Tennessee, with its many possible storage sites on the headwaters, and its long main river providing additional sites for low-head development, but with less storage, differs from many of the major rivers of the country."

That is simply pointing to the fact which a hydroelectric engineer knows, that you cannot approach too closely to the point of what some people maintain should be a uniform regulation of the stream throughout the year. That is not feasible from the engineering standpoint, and this is simply pointing out the manner in which that point is approached. Of course, that means for the development of storage water, [fol. 1131] if it is carried too far, you would more and more have to make allocations for power use or floods storage, but up to a certain point, until you get to the point which I bring out here, it is perfectly feasible to use the project for multiple purposes. If you go beyond that point, where obviously all the reserves which you can, or which you already have, you can hold all of the water, which is available in the low water year during the storage season. After that point, if you want a flood control reservoir you have to build a flood control reservoir. Or if you want a power reservoir you have to build a power reservoir. You will get some benefits from both of them. But, after you get to that point it is obvious that if you do not have water enough in the dry season to fill those reservoirs, that they are not power reservoirs and can not be used but for flood control, if you want that.

"Q. That is, if you have an empty reservoir you have a flood control reservoir?

A. I mean the entire space in the reservoir would be devoted to flood control under those conditions. Naturally if you do not have water you will not fill it up."

The following quotation from page 201 of my article correctly states the facts even in the reservoir which is devoted almost entirely to power purposes.

"At present there are only two seasonal storage reservoirs of any great magnitude in the Tennessee Valley: Santeetlah reservoir of the Aluminum Company of America, on the Cheoah River, a tributary of the Little Ten-

nessee; and the Blue Ridge reservoir of the Tennessee Electric Power Company, on the Toccoa River, a tributary of the Hiwassee. Their combined effective storage is 280,000 acre feet. Both are operated to regulate flow for the generation of power, but incidentally they furnish some regulation for navigation and for flood control to the extent of the unfilled power storage. The drainage area tributary to both totals only 407 square miles. During the low season they may contribute an additional flow of approximately 900 cubic feet per second to the river, depending on the method of operation."

[fol. 1132] In fact, this is entirely true until filled with flood water in the spring, and you get a large amount of incidental flood control from that sort of reservoir even though you do not deliberately operate it for flood control. If you deliberately operate it for flood control, you can do still better. Those reservoirs, however, were built and operated for power reservoirs. I don't assume that they intended to operate them for flood control.

The following questions were asked me and I gave the following answers in the Ashwander case at page 965 of the transcript.

" 'Q. Now, explain to the Court how these conflicts generally arise?

A. Well, the conflict in a dam attempting to serve quite a number of purposes usually arises from an attempt to use the same storage capacity for two different purposes which are, from the nature of their uses, antagonistic; that is to say, if you attempt to store water for low-water flow and for high-water flow in the same place, or, I should say, for high-water flow regulation and low-water regulation, and have no provisions which can be made definitely for the separation of the volume of water or a separation as to seasonal use of each space, then, of course, sooner or later you are going to run into a situation where you have too much or too little of one or the other; then when you want it for the other purpose you are handicapped.

Q. Now, in making the draw-down in preparation for floods, suppose that the floods don't come, you don't get the excessive high waters?

A. I might explain a little more fully. If we assume that the floods are coming, say, about the middle of March, as

the peak floods do in the Tennessee Valley and hold our reservoir low, that is, trying to use the same volume for two purposes, hold our reservoir until after the flood season is over, then in dry weather we can't fill up our reservoir in order to have the water to use for low-water regulation. On the other hand, if we are trying to use the same volume and attempt to—in order to have low water regulation, fill up the reservoir before we are sure the floods are over, we might get a flood right on top of a high reservoir level and have very little flood space there. Those, in general, are the two conflicts. You have conflicts in pur- [fol. 1133] poses but they generally arise from working at one or the other, either high-water regulation or low-water regulation.

Q. Will you explain to the Court what you mean by "normal pool level"?

A. Normal pool level, in general—well, I think I can say in the case of Norris and the dams on the main river, normal pool level is the top of the storage space of the pool level which would ordinarily be used for low-water regulation; that is, we do not contemplate storing any water above that level for the purpose of low-water regulation. Everything above that would be reserved for flood control storage.' "

In explanation I would like to say that I was talking there about attempting to obtain the use of that storage, 100 per cent efficient for both purposes at the same time. Obviously, under that assumption you are going to run short on one side or the other. And with more study of the flood control problem and the interesting changes going on in it, in the last few years, I think that engineers in general are pretty well agreed that it would be obviously unsound to attempt to obtain 100 per cent for both purposes, when you can obtain a large amount of either one without a substantial handicap to the other.

I was asked the following questions and gave the following answers in the Ashwander case, page 969:

" 'Q. Just explain briefly to the Court the use of a draw-down on the approach of floods, when you receive notice of a flood approaching; take not only Norris, but take Pickwick, for example, lower down?

A. Of course, in Norris the reservoir—well, the reservoir is so large and the drainage acre relatively so close to the

reservoir that on conditions of very heavy precipitation you could not draw down; you have got to make your drawdown at Norris, in other words, during the low-water season, and keep it down until after the floods are over. That applies to the low water storage space.

Q. And that is to be distinguished from dams that are on the main river, say from Cairo?

[fol. 1134] A. Yes, on the main river. They can be operated, and according to my idea, they will be operated to a considerable extent the same as Norris; that is, you have 5 feet below the normal pool level which you can draw down for low-water regulation.' "

I was asked the following question and gave the following answer in the Ashwander case at page 987 with respect to Wheeler and Pickwick Dams:

" 'Q. Now, had you been interested primarily in power would you have picked out those stretches for ready improvement?

A. I think probably that I would have picked out Wheeler, for various reasons. I would not say whether I would have picked Pickwick or not, if I had not been primarily interested in power.' "

I was asked the following questions and made the following answers at page 1005 in the Ashwander case with reference to Pickwick:

" 'Q. At the Pickwick Landing site you have got 11 feet additional——

A. No; I think it is six feet.

Q. I am just quoting Mr. Barker about that.

Mr. Fly: Mr. Wheeler, Mr. Johnston.

A. I will have to look that up. I think it is six feet.

Q. In any event, it is less likely to be drowned out by the flood circumstances below with the additional elevation?

A. Yes, sir.

Q. And with the additional head?

A. Yes, sir.

Q. And at a slight additional expense?

A. Yes, sir.

Q. So the construction that you have put there does give the maximum head and the maximum production and electric energy as between the two sites?

A. That is correct.' "

I would like to say in explanation that that was with reference to alternative sites which were investigated. The one [fol.1135] at Parkers Landing which is eight or nine miles upstream and one at Pickwick Landing, which was finally built. According to our analyses, power could be produced more cheaply at Parkers Landing. However, it would have meant a low navigation dam between Pickwick Landing and Parkers Landing in order to overcome a drop of abont 8 feet between the two sites. However, the TVA spent some more money on the Pickwick Landing site, even though power could have been produced somewhat cheaper at the Parkers Landing site, in order to eliminate that low navigation dam. Mr. Johnston asked if that gave more head for power, which is true. That is what Mr. Johnston referred to. But on the other hand, it would cost more per kilowatt hour to produce that at Pickwick Landing site.

I was asked the following questions and made the following answers at page 1012 in the Ashwander case, dealing with that subject:

" 'Q. You were asked also whether or not this would be the most desirable combination of units from the standpoint of the production of power. You were asked that on direct examination?

A. No, that would be the most——

Q. The units that are now under construction, whether they would be the most desirable method for the latest production of energy?

A. Well, I was asked if I would have picked those out, and I said, I might have if I had been considering little power projects, and I said I thought for various reasons I would have selected Wheeler, but I wasn't so sure whether I would have selected the Pickwick site or not. I probably would have selected Pickwick if I had been interested in the ownership of Wilson and wanted to benefit that existing property from the power standpoint. That might have been sufficient cause to make me select Pickwick from the power standpoint.

Q. And the result of this will bring about an increase in prime marketable power from some 55,000 KW, to approx-

imately 202,000 without taking the steam plant into consideration?

A. That is correct' ".

[fol. 1136] One element in the last answer, I might say in explanation, was partly to eliminate the difficulties to navigation below Wilson Dam. Wilson Dam was constructed under the National Defense Act, and to get the full benefit of the operation of that property without interference with navigation below Wilson Dam requires a pool down below so that in the Sheffield Cut the power fluctuations from Wilson do not interfere with navigation in the rather shallow cut. Particular reference there is made to improving the power facility at Wilson, which was built under the National Defense Act.

I should think Wilson Lake would be somewhere between a mile and a half and two miles at the widest point. That is simply an opinion. I judge that from the fact that the dam is approximately a mile long, and I know there are some points in the lake which are wider than the dam is long.

I stated in the Ashwander case, referring to draw-down and conveyors at Norris, as follows:

"This, in general, is the range in which we expect to operate the conveyor system, although I doubt whether the range would go up to 1034 because that would imply as big a flood as we have on record and barges would scarcely be out on the lake during a storm which would contribute any such flood."

In view of everything I made in that statement, that such a storm is a storm which is experienced perhaps once in a lifetime, in general terms, it might be such a storm, that there would be no navigation out on a lake at that time. That is, it would not voluntarily go out on the lake. That is assuming, of course, that an extremely high wind might accompany such a rainstorm that would produce that sort of flood.

I was asked the following question and made the following answer at page 1016 in the Ashwander case:

[fol. 1137] " 'Q. The question is market, is it not?

A. Well, of course, obviously you would have to have a market for the power. There is no argument about that.' "

I was also asked the following questions and made the following answers:

" 'Q. Then, you have not posted yourself as to the probable program of the Tennessee Valley Authority with relation to the acquisition of transmission and distribution systems, and the entry into long term contracts for the marketing of power?

A. I know in general what definitely has been done. I don't know of any of the future plans. I know there was an attempt to serve Knoxville, and I know they are serving Tupelo.

Q. Have they called on you to make estimates as to increase in power capacities with a view to its disposition and to the marketing of that power?

A. No, sir. The only thing I have been called on for in that regard is to say—now, assuming that at such and such a time so much energy. How many units will that take at this plant, or at that plant, or something else. I simply answer the question that is put up to me. I make no prediction as to the time that might be done, or who it might be done by, or anything of that sort.' "

I was also asked the following questions and made the following answers, which I think were a little optimistic:

" 'Q. Mr. Bowman, in your testimony you referred to the question of improving the plants at Muscle Shoals by the characteristics that you mentioned. Your reference was solely to the increasing of the power capacity?

A. Yes; that is, particularly increasing the power capacity and making Wilson Dam that much more valuable to the Muscle Shoals lay-out.

Q. Well, from the standpoint of power?

A. It arises from increase in power capacity.

Q. Yes. Now, in giving estimates as to increase in capacity from 50,000 or 55,0000 k.w. to 90,000, you expressed that in terms of continuous power, did you not?

A. Yes, sir.

[fol. 1138] Q. Now, what would that have on the average load factor of the region—say on a 50 per cent load factor basis?

A. Are you speaking of Wilson alone now?

Q. Well, your figure 90,000, I believe, included the interconnection, did it?

A. No, the figure 90,000 did not include the interconnection.

Q. All right, that is the 202,000?

A. Yes.

Q. Well, the 90,000 is the work of and referring to Wilson alone?

A. That is right. On a 50 per cent load factor that would be 130,000 kilowatts, and the installed capacity at Wilson is 184, so you could carry that all right.

Q. In other words, Wilson alone?

A. That is, you could only peak it providing Pickwick was built so as to eliminate the navigation restrictions?

Q. Yes, we understand that, but on a 50 per cent load factor basis it would carry the existing units to capacity?

A. Yes.' "

I was also asked the following questions and made the following answers:

" 'Q. Fifty is the average load factor of that region, is it not?

A. The curves of the Alabama Power Company, which I have examined are around 62 per cent, I think, on those which I have had access to.

Q. You mean for the system as a whole?

A. Yes.

Q. You don't know what it is in that area?

A. No, I do not.

Q. Now, in the same way, what would be the 50 per cent load factor applied to the 202,000 k.w. resulting from the interconnection?

[fol. 1139] A. Of course, 50 per cent load factor applied to that would be 404,000, but with the capacity which would be installed you could not carry that load, that is, the capacity which we are contemplating at the present time.

Q. Well, that would be at least 300,000 k.w. with only one turbine installed at Wheeler Dam, wouldn't it, on a 50 per cent load factor basis?

A. Yes, although that would depend somewhat upon the shape of your peaks. You could carry some peaks at Norris throughout the year if you had a very slim, sharp peak which didn't require much water. On the other hand if your peak was say a 5-hour peak and very high, that would be too much to carry on Norris, because you are saving

there for low water operations. In other words, it depends on how much water you would have to use to carry that peak, how much capacity you would have on the system. You would have to set up a load curve before you could tell.

Q. Now, in your testimony as to giving those figures you are referring, of course, at all times only to the water power and not taking into consideration the steam plants?

A. That is correct.

Q. And taking into consideration the steam plant have you estimated how much it would have to operate, I suppose in terms of KWH, in order for the plant in its existing condition to be brought to a 90,000 KW continuous as a whole?

A. You mean for Wilson in its existing condition?

Q. Yes, for an average year and for a low year.

A. You say how would it have to operate?

Q. Yes.

A. Well, that would have to operate on storage from Norris.

Q. No, I mean with the assistance of the steam plant to bring it to the continuous figure 90,000 kw. with the aid of the stand-by plant?

A. You mean how much increase you would have over 90?

Q. How much would you have to operate the steam plant in order to have it, carry it from 50 to 90 in an average year and a low-flow year?

A. You wouldn't have to operate the steam plant any.

A. (Continuing.) Oh, without Norris?

[fol. 1140] Q. Yes.

A. Oh, I thought you said with.

Q. No, as it stands.

A. I believe I have some such figure, sir, I will see. No, I don't have the figures with me on the number of kilowatt hours which the steam plant would have to turn out to bring it to 90,000. Essentially you would have to operate that through the summer season, that is, approximately—well, I say through the low water season, approximately five months, you would have to operate that steam plant from nothing to—well, now, that depends upon what peak you are trying to carry, how much you would have to operate the steam plant. That again depends on what load curve you assume. If that is a continuous basis, why then you can

obviously see that the steam plant would have to be turning out 40,000 at the time that Wilson was releasing at 50,000.' "

(At this point the following occurred:)

"Mr. Fly: During the recess I consulted our budget officers of the Authority in Knoxville regarding the matter of the hearings before the Appropriations Committee on last Monday, which were referred to in Mr. Jackson's cross examination.

I am informed by our budget officer that the figure which Mr. Jackson alluded to appears in the confidential budget report which was supplied to the Bureau of the Budget and the members of the Appropriations Committee, and which provides a preliminary basis for the Appropriations Committee hearings. When I say that these budget estimates are confidential I mean that the House Appropriations Committee holds them to such use and disclosure as it may direct. The particular figures mentioned by Mr. Jackson were compiled from data prepared a year or more ago, which was not checked with the Engineers responsible for the latest controlling data. I am told that the Budget officers were not aware of the earlier figures having been succeeded as a result of the constantly evolving process, and the study and development of the plans for the dams. I am also informed however, that the committee were informed that the figures submitted were approximate and tentative and that they were subject to correction, for that reason.

In order that there may be no further misunderstanding I have requested the Knoxville office to send me a copy of the table from the Budget estimates from which Mr. Jackson's figure appears to have been taken. I should like to note again that is the table contained in the budget estimates supplied by the Authority to the Committee, and which by the direction of the Committee are held confidential until released.

[fol. 1141] Mr. R. T. Jackson: I don't agree with that statement, but if there is any answer necessary we will file it tomorrow.

Mr. Fly: We incidentally will prove that, so there will be no question.

Judge Allen: The Court will make no ruling on that at this time."

In the diagram, figure 3 on page 201 of my article in Civil Engineering for April, 1935, (offered and received in evi-

dence as Complainants' Exhibit 904) on which the horizontal scale is designated as "Reservoir Storage Capacity in Thousands of Acre Feet", and the vertical scale as "Water Surface in Feet", I show elevation 962 as the minimum drawdown. That is what the diagram shows. The diagram also shows all of the storage below elevation 962 as dead storage. I also show an elevation of 1020 and have labeled all of the storage between elevation 962 and elevation 1020 as "Power Storage". I also show the elevation 1034 above the elevation 1020 and have labeled all of the storage between elevations 1020 and 1034 as "Flood Storage". I would like to say in explanation of that, at that time it was my personal designation of those various things, without having been with the TVA long enough to give the subject particular study, and that should have been very much qualified. It is not an official opinion in any way, and was purely a personal opinion. At the time this was written I had not been with the TVA but a year. This publication is dated in 1935 and I prepared this article late in December 1934, and came with TVA about the first of November, 1933. I testified in the Ashwander case before this was published, but not before it was written. I would like to state further that investigations which I have made, and which have been made by the TVA since that time, show that in a great many respects this particular figure is essentially inaccurate.

[fol. 1142] I would like to say in explanation of this figure 2, (offered and received in evidence as Complainants' Exhibit 905), taken from my article, that that simply shows the amount of storage required to fill in the depressions in flow at Florence, Alabama, and has nothing whatever to do with the storage which is contemplated, or the dam sites which that storage might be made available at. It simply shows the requirements without reference to reservoirs. It says "Storage Required". It shows how much storage has to be added to the low water level in order to produce the flows shown on the vertical side of the graph, and the bottom of the graph shows the storage. It also shows what Norris and Wheeler could do under certain assumptions of operation. Other assumptions could be made which would show entirely different results.

The following is a correct reading from the TVA Report to Congress of March, 1936 (Complainants' Exhibit 328) at page 59:

"The following table illustrates the effects of water regution in increasing prime power capacity of main river plants. It is assumed in this table that the nine dam system on the main stream has been completed, and that the Norris, Clinch River and Fowlers Bend, Hiwassee River projects are in operation on the tributaries, but no account is taken of the power that could be generated at these tributary reservoir projects themselves."

It simply illustrates, but is not a table showing, what will be done. It simply shows what could be done, in that it is illustrative of this point.

I am familiar with the table showing the continuous capacity of the integrated TVA system of 660,000 kilowatts and an annual primary output of 5,780,000,000 kilowatt hours. I cannot give you the amount of storage in acre-feet which we have to have in our reservoirs to produce that [fol. 1143] much power in a dry year like 1925. I don't know it off-hand. I cannot tell the elevation that Norris and Fowler Bend Reservoirs would have to be at in such a year on February 1st or March 1st in order to have enough storage to meet this amount of power requirement.

On direct examination I testified that the total controlled flood storage in the ten dams in the TVA Unified Plan, excluding Fontana, amounted to 8,925,000 acre feet. The exhibits previously submitted show how much of this capacity is at the various dams. The figure is merely a summation of items in those exhibits, plus something for Wilson. If you would add 43,000 acre feet for Wilson, that would come out to that total. I included 2,020,000 acre feet for Norris and 362,000 acre feet for Hiwassee. In order to have 2,020,000 acre feet available at Norris, it would have to be at elevation 955 or 960. The volume curves will show whether Norris would have to be at the maximum draw-down level. Yes, it is 955. That is not necessarily the maximum draw-down level. That has not always been reported before as the maximum draw-down level that I know of, except that I had indicated that in this diagram of mine which I said is now incorrect. Elevation 955 may have been reported to Congress as the maximum draw-down level, but I am not sure. I don't think it is true that that necessarily represents the maximum draw-down level.

If you had 2,020,000 acre-feet at Norris above the 955 level that would take you to 1,034. The chart shows that

if you had it filled to 1020 in order to provide storage for low water season, there would have been less than 500,000 acre-feet left between the point to which the reservoir was filled and the 1034 or crest level, but the assumption is not in accordance with the facts.

[fol. 1144] I am not in charge of the operation at Norris and cannot give you the figure as to how much of the capacity of 2,020,000 acre-feet of flood storage would be available to impound the floods on December 1st, January 1st, February 1st, March 1st, April 1st and May 1st. I did not give the Court the figure including 2,020,000 acre-feet as available flood storage in ignorance of whether the operating men who know about it would have the reservoir filled at the first of these months, perhaps up finally at least to the 1020 level. I had the assurance that on January 1st or say near the beginning of the flood season the reservoir would be drawn down at least to elevation 955 or 960. What happens in between in operation is up to the operating men. I have seen the statement of Dr. A. E. Morgan to Congress appearing in the exhibits here in evidence that the elevation of Norris would be up to 1010 somewhere around January 1st, but I don't know where it comes from, and there might be an error in that statement. I do not recollect the statement of Dr. Morgan in which he states that the elevation would be up around 1020 by the first of April. It could be up there. It could be operated that way. If it were up there, my statement about the controlled flood storage would not be in error. I do not have a rule curve for the operation of Norris Dam. I am not in charge of operation and that will be produced probably by some other witness.

I am the head of the Project Planning Division of the TVA. I was not with the TVA when the plans for Norris Dam were being matured. The plans for Norris Dam had been fixed before I came with the TVA. I had no contact with the Bureau of Reclamation on their design of the dam. I did not come with the TVA until the 18th of October, 1933, at which time all of the elevations of Norris Dam had been fixed and the plans were well under way. I did [fol. 1145] not have any reports from the Bureau of Reclamation. Later on I was in on some details of the design, but the general drawings had been issued at the time I came with the Authority. I went into the discussion of some things as contraction joints, foundation grouting,

things of that sort, but I did not have anything to do with fixing the dimensions.

There are all sorts of widths in Norris Lake. Perhaps it is not much wider than five or six hundred feet in places. I believe the maximum width, in my opinion, that is crossways of the lake, would be between a mile and a mile and a half up in the Loyston area back up in the bay. If you are familiar with the topography of Norris, it is water gaps between ridges. This big pond is one of the largest basins that existed in a tributary. Outside of that I think it would be three quarters of a mile. On the average I should think it would be less than a mile.

(At this point counsel for complainants requested certain contour maps which the witness previously agreed to produce.)

Examination by the Court:

There are in my office upwards of 10,000 maps. A project of this sort involves a great deal of that work and requires a very large number of sectional maps.

[fol. 1146] Redirect examination:

I have made a correction in the table with respect to the Wheeler project (Defendants' Exhibit 43) by adding 70,000 acre-feet to the volume shown in items 5 and 7. It now correctly represents the facts. A one-foot error was made in taking those volumes off of the volume curve.

"Mr. Fitts: We ask permission to substitute this table as defendants' 43 in place of the exhibit that now appears in the record.

Mr. R. T. Jackson: We want the same objection that we were making to the reception of the original exhibit on yesterday, to stand.

Judge Allen: You do not object on the ground it is a correction?

Mr. R. T. Jackson: No. I will ask leave later to ask the reason for its substitution.

Judge Allen: It may be received.

Mr. R. T. Jackson: An exception.

Judge Allen: And your exception noted.

Mr. Fitts: May it please the Court, this is the exhibit we were requested to correct on yesterday, defendants' ex-

hibit 50. Certain figures appeared up here which had not been marked out and the Court asked us to distinguish between Hiwassee, I believe under construction and Norris actually constructed. We would like to put this in the record as defendants' Exhibit 50. That was the only suggestion.

Judge Allen: It may be received.

Mr. R. T. Jackson: Our same objection.

Judge Allen: Overruled. You may have your exception."

In making a statement on cross-examination with respect to the character of the storage which is above the gates at Norris Dam, I meant to state that that storage was comparable to the storage proposed by Mr. Kurtz. I think that my statement shows that it was comparable to a detention reservoir. My reason for that is that this storage will be held in place above the top of the gates with an outflow limited by the head of the water above the top of the gates, [fol. 1147] and in fact that the 20,000 second feet, which I think was Mr. Kurtz' proposal for release from his Norris project, the pool could rise an additional 7 feet and there would be 280,000 acre feet of this detention storage created, which would be held on the surface of the reservoir with a release of what Mr. Kurtz holds. I believe I testified it might be approximately equal to valley storage, but I wish to point out this difference in comparability. Valley storage moves down the stream without any control over it. Detention storage on the surface of the reservoir is held in place with an outflow or a moving down stream distinctly limited by the depths over the gates. In other words, the whole body of that water cannot move down stream as in the case of valley storage.

"Q. Now, Mr. Bowman, when was the site for the Gilbertsville dam finally selected and agreed upon?

A. The site for Gilbertsville dam——

Mr. R. T. Jackson: I object to this, that the site for Gilbertsville dam had been finally selected. It must have been by an appropriate resolution of the Tennessee Valley Authority.

Judge Allen: Is this preliminary to something else?

Mr. Fitts: It is, your Honor, preliminary to questions to bring out matters with reference to investigations and work that has been done at Gilbertsville in the last six months.

Mr. R. T. Jackson: You cannot say that that site has been authorized?

Mr. Fitts: I did not say authorized.

Mr. R. T. Jackson: I objected to that, as to the competency of the witness to testify.

Judge Allen: Objection overruled.

A. After last August, after we had completed our investigation and drilling of the alternative sites, we had a meeting of the Board of Consultants with our engineering staff, and it was agreed at the time that from an engineering and construction standpoint that the Gilbertsville site was the best of any site which we had investigated, and was the site at which the dam should be built."

[fol. 1148] At the time of the Unified Report to Congress of March 31, 1936, the investigation as to sites was still in progress. Our investigation at that time was with reference to three or four sites in that general area, which were all alternative sites, going on at that time. Since the time I furnished information to the Budget Officials of the TVA with reference to the design and plans of Gilbertsville Dam, a year ago, for use in preparation of Hearings on the last Deficiency Appropriations Bill, and during the last six months, early in that period we were still investigating the so-called Birmingham site as an alternative to the Gilbertsville site, and that was going on until some time last August, I believe, which was the last work we did on the Birmingham site. Possibly it ran over into September, to check up a few points remaining open. Since that time we have concentrated on the Gilbertsville site. There have been extensive investigations consisting of core borings, deep test pits, study of the impermeability of the flood planes of the river, and actual tests as to the practicability of driving sheet piling through it, and reports and studies about preliminary designs, which have proceeded with a force of eight to ten men in the office all during that period, and they are still at work.

"Q. Now, Mr. Bowman, as a result of those studies and investigations have any changes been made in any place as to the general layout of the project?

Mr. R. T. Jackson: I object to that as incompetent and irrelevant, as to what Mr. Bowman's plans are. He has no

authority to make plans to be carried out, and his plans are subject to study by the Board.

Judge Allen: He may answer.

The Witness: Will you read the question?

By Mr. Fitts:

Q. I asked whether or not as the result of these studies and investigations any changes have been made in any plans for the general lay-out of the project?

A. Yes. Changes have been made through this period, that is in the way of refinements, studying alternative locations of structures, intensive study of pool levels, confer- [fol. 1149] ences with the Board and consulting engineers. In other words, all through this period it has been approaching what is, in the manner that it should be used in determining the final engineering feasibility.

Q. Now, will you tell us over how long a period of time any change in the surcharge level has been under consideration and study?

Mr. R. T. Jackson: I object to that unless it is shown that there is something authorized by the Board.

Judge Allen: He may answer.

Mr. R. T. Jackson: Exception, please.

A. We have made extensive investigations with funds that have been authorized by the Board for that purpose, of various alternative sites, including Gilbertsville, Birmingham, Aurora, Shannon and other sites which we did not do much work on but looked at, for a period of over two years, in which the maximum pool level has, or surcharge pool level has been under study, in order to determine the amount of flood control which could be obtained at a site in that vicinity, and it has been in a gradual process of development."

I remember distinctly of four levels, 362, 367, 370 and 375, even 380 has been under consideration. That is the range that we have been working through. One of the difficulties in building a high dam is in finding a foundation which would be satisfactory for building a dam as high as we wish it. At different times it looked as if it was rather a hopeless proposition to build a dam up to the height we have decided on today, and the foundation investigation, and the determination of the maximum pool

level has been very closely related, as to what we could do.

With respect to the statements appearing in my article in Civil Engineering for April, 1935, I also stated in that same article that the final rules for the operation of the flood control facilities at Norris Dam were still being studied, on page 202:

[fol. 1150] "Final rules for the operation of the flood control facilities at this dam have not been fully developed. Obviously the governing principle will be to allow its water shed to add as little as possible to the peak stages of the Tennessee River."

Norris Dam had been under construction at the time this article was written about fourteen or fifteen months, so that I was writing about a dam that was not in operation and considerable study was still going on. The designs had not been fully completed at that time even.

In regard to my testimony in the Ashwander case with respect to the change in the site of Pickwick Dam, I also testified to the following effect, beginning at bottom of p. 873 of the transcript and going over to the top of p. 886:

"Q. Mr. Bowman, why was Pickwick Dam placed at its present dam site as distinguished from the site at Parker's Landing, 18 miles away?

A. We made extensive studies covering the proper location of Pickwick dam, that is, considering their locations in that general vicinity. It appeared that considering power output alone, we could perhaps produce power, produce energy, I should say, a little more cheaply at the Parkers' Landing site. However, for navigation purposes, a low navigation dam would have been required in the vicinity of Pickwick Landing if the high dam was to be built at Parkers' Landing in order to back water to Parkers' Landing, either with Aurora dam built, or with the natural channel conditions of 4½ feet minimum navigable depths, below Pickwick, that is, there is a stretch between Pickwick and Parkers' Landing which would have required a low navigation dam in the vicinity of Pickwick in order to render that stretch navigable. Parkers' Landing is right in here.

Our considering the fact that the Government under the present set-up would have to build both of those dams, it worked out more economically for the one agency to build

the high dam at Pickwick Landing and accomplish the full navigation of the stretch rather than to put in one low dam and one high dam. This might not have been the situation if a private company had been developing the high dam, and they would have naturally built that there at the most economical point.

In other words, the Government cannot require them to go here and there and somewhere else and build a dam at a certain point just for navigation. So that was the general reason we put Pickwick where we did.

[fol. 1151] Q. You mean by that there is no particular means of getting private companies to improve bad navigation stretches, is there?

A. Yes. Well, I mean as refers to this particular section in here. (Indicating.) Now, as to Pickwick as a whole, while we selected that site, we selected this general locality for the reason that from the head of Colbert Shoals to the entrance of Lock and Dam No. 1, just below Wilson, is the worst stretch in the lower river after the head of Muscle Shoals and Elk River Shoals has been improved by the construction of Wheeler Dam, and naturally we are anxious to eliminate the bottle necks near the lower end of the river, that is, pick the worst stretches first and improve them so that craft could use the otherwise minimum depths which existed after the improvement of the worst stretches.

Q. In other words, roughly the idea is to pick out the—to the exclusion of Norris with its big flood control value—the effort has been to pick out particularly bad stretches so far as navigation is concerned and give priority to those stretches?

A. Particularly bad stretches for their improvement and to make possible the general improvement of a big reach of the river, and particularly at the lower end. It would do no particular good to construct your improvements here above Chattanooga, since you had this bad place below, but if Pickwick is built down here and the Wheeler and the Norris and later on they will give you 6½ foot minimum navigable depth into Chattanooga and anything beyond that might come later.

In other words, the improvement of this section is the improvement of the bottle neck."

The facts stated there are true and the matters of opinion expressed there still represent my opinion.

I also testified in the Ashwander case with respect to the operation of Norris Dam for flood control and low water regulation on p. 944 of the transcript as follows:

'Q. Now, what do you consider an appropriate means of alleviating these irregularities of stream flow and the consequences which you have mentioned?

A. Of course, as far as the floods go, among the possibilities that exist in general for flood control or regulation, or about the only thing in which we can do in the Tennessee Valley, is to regulate these floods by means of storage. As far as navigation goes slack water, maybe of some sort, appears to be about the best and only solution.

[fol. 1152] Q. And you consider Norris Dam such a project as would be useful in those regards?

A. Yes, I do.'

By Mr. Fly:

"Q. I also ask you whether you testified to this effect, appearing on page 992 of the transcript of your testimony in the Ashwander case?

'Q. Now, Mr. Bowman, if you were instructed to improve navigation on the Tennessee River, reduce flood waters in the Tennessee River basin, and reduce flood waters in the Mississippi Valley basin, by work on the Tennessee River, could you suggest any combination of structures which would permit those functions as economically and effectively as high dams in the main stream of the Tennessee River such as Wheeler and Pickwick, operating in conjunction with storage dams in the tributaries of the Tennessee such as Norris Dam?

A. No, I cannot think of any structures or combination of structures which would accomplish those multiple purposes as well nor as economically. I doubt whether any system of structures could be designed which would accomplish those purposes as effectively as what you have now. I think your general set up would be essentially to the accomplishment of those purposes.'

Did you so testify in that case?

Mr. R. T. Jackson: I object to that, because it has no relevancy to anything that I questioned the witness about in the transcript.

Mr. Fitts: It certainly does.

Judge Allen: The objection is overruled. You may have your exception.

Mr. R. T. Jackson: Exception noted, please.

A. Yes, that was my testimony.

Q. Does it still represent your opinion?

A. Yes."

The TVA dams on the main stream are located approximately at the sites selected by the Army Engineers for the high dam plan in House Document 328. There has been some variation; I think the maximum is around thirteen miles, but it is the same general region. With other sites it is exactly the same site as far as we could determine. To the best of my knowledge, the seven dams now recommended for construction by the TVA on the main stream of the Tennessee are the minimum number of dams necessary to ob- [fol. 1153] tain a nine foot navigable depth from the mouth of the Tennessee River to Knoxville. There are definite limitations in two ways. One is the availability of feasible dam sites on the Tennessee River. The foundations particularly below Pickwick and above Wheeler are so poor in most cases that you have a very limited number to select from. The other limitation is the presence of large cities and other facilities in the reservoirs which are almost prohibitive, if you would come to the point of attempting to substitute a much higher dam for any of those which we have now planned, that is you are getting too seriously to Decatur or too seriously to Guntersville or too seriously into Harriman or Kingston, or Knoxville, too seriously, if you went higher at those points than what we have gone. Both of those factors, of course, impose a rather definite limit on the minimum number of dams which you can use, and I think we have gone to the full extent of those limitations.

I believe that Norris Dam is on the same site on the Clinch River as that tentatively selected by the Army Engineers in House Document 328, at least as to one abutment. It is on the same site as drilling was being done at the time the Authority took it over. I am not absolutely sure about the other, about both abutments in House Document 328. Hiwassee is located, the dam itself, on the other side of Fowlers Bend from the Coleman site which was the site proposed in House Document 328. The Coleman site did not have the storage, and it had power, a power tunnel through

the bend, with the power house approximately at the same site as the space provided for the power house below the Fowlers Bend Dam, on what we now call the Hiwassee.

I think I am correct in saying that in all cases where there have been departures in the location of sites from those tentatively selected in House Document 328, these sites have been moved down stream. This has largely been [fol. 1154] for the reason that more suitable foundations were found downstream. For instance, Gilbertsville has been moved downstream. Pickwick is at the identical location. Wheeler is at the identical location. Guntersville has been moved either 12 or 13 miles downstream from the site in House Document 328. Chickamauga has been moved one mile, and Watts Bar about 12 miles, or 13, and Coulter Shoals about 4 miles. This had the effect of course of increasing the flood control storage, that is you lengthen the pool at the lower end. That enables you to take advantage of the actual and possible increase in flood control storage without changing the pool level. That has been a general result of that.

"Q. Have any other results followed from the location of Guntersville Dam and Coulter Shoals site and Watts Bar site further downstream from those tentatively selected?

A. In nearly all of these cases the pool level has been maintained at about the same elevation, that is of the next dam downstream. So if we move a dam downstream into the pool of the next dam, it means that the site is at a wider and deeper point in the next pool below, which gives a better navigation depth in that it avoids in some cases as much as four or five miles of dredging in order to get navigable depth. And of course that means that instead of a channel of that length, 300 feet wide, and having about the governing depth all the way through, we now have a channel which may be of that width immediately below the lock, but downstream from that a few hundred feet it rapidly widens into the pool, and it increases in depth. So in general that has resulted in a better navigation facility in the heads of the pools.

Mr. R. T. Jackson: I move to strike out the statement of the witness 'resulting in better navigation facilities.' I think he can give all the hydraulics, depths, widths, but

whether that is better navigation, the witness is incompetent to state.

Judge Allen: That is your opinion?

The Witness: Yes, your Honor.

Judge Allen: It may stand. You may have your exception. The statement may stand as an expression of the witness' opinion.

[fol. 1155] Mr. R. T. Jackson: May our exception be noted on the ground of the incompetency of the witness to testify as to that.

Q. By saying better navigation facilities, I presume you mean a better physical navigation channel?

Mr. R. T. Jackson: The same objection.

The Witness: A better physical navigation channel.

Judge Allen: The objection is overruled. You may have your exception."

The general effect on the production of hydro-electric power of locating dams with overlapping pools is that that does not increase the head in particular, in a system of dams or in a chain of dams, because you are not affecting the tail water below the last one, nor the head water above the first one. There may be minor differences due to fluctuations in the pools, but in general the total gross head on the system is not changed, of course, except it may be changed slightly, a little bit, hold it up at the last one, or the upper one, if this involves a slight change in pool levels, perhaps.

"Q. Now Mr. Bowman, does the general layout of Wheeler Dam substantially conform to the Army plan as tentatively set out in House Document 328?

Mr. R. T. Jackson: We object to this as not proper redirect examination.

Mr. Fitts: You went into the very question of the location and nature of Wheeler and Pickwick Dams on cross examination.

Mr. R. T. Jackson: I don't think so, Mr. Fitts.

Mr. Fitts: I think you did.

Judge Allen: He may answer.

Mr. R. T. Jackson: May we have our exception, please.

A. Yes, it conforms quite closely to the general layout in House Document 328 as to arrangement of structures, as to

pool levels, except we were not able to use the same surcharge pool level on account of excessive damages in Decatur, when we got into a study of that. The power capacity perhaps is somewhere between 90,000 and 100,000 kilowatts greater in the House Document 328 plan than what we have provided for."

[fol. 1156] It generally conforms to the plan for which the lock was being built by the Army Engineers at the time the TVA Act was passed.

I was asked on cross-examination about the figure 3 that appeared in my magazine article illustrating volume capacity at Norris (Complainants' Exhibit 904). The volume which is marked "Power Storage" is also valuable for flood control and for other purposes. That is one of the reasons I stated that that figure did not now represent my opinion, and that my opinion has been changed by the exhaustive studies which have been made by the TVA since that time.

"Q. Mr. Bowman, I ask you to state whether the elevations given for the so-called power storage on that figure was intended to indicate that this storage could not and would not be used for flood control?

Mr. R. T. Jackson: Just a moment. I object to that question.

Judge Allen: He may answer. The objection is overruled.

Mr. R. T. Jackson: Exception noted, please.

Judge Gore: Now, he is talking about the figures in his article?

Mr. Fitts: The figures in his own article, which they abstracted from the article and photostated, and they were offered in evidence.

A. My principal intention in making the subdivision on that diagram (Complainants' Exhibit 904) was to show the storage which was explicitly and separately reserved for flood storage."

(Thereupon counsel for defendants called the attention of the Court to the following statement by Dr. Morgan on p. 374 of the Hearings on the Second Deficiency Appropriation Bill 1937, Complainants' Exhibit 116):

" 'Dr. Morgan: The operation of Norris Dam differs substantially from that of Wilson Dam or the Wheeler Dam.

Norris Dam will be held at low elevations during the winter and during the first part of the flood season, so that the storage it gathers for power purposes will also be valuable [fol. 1157] for flood purposes. That is, during the fall, we run the water down low and use up the power storage, and we hold it down there during the season when floods ordinarily occur, so that the same storage capacity that is good for floods is also good for power to some extent. During the latter part of the high water season we close the gates and store the stream flow. A flood may occur and furnish part of that water supply. If not, the ordinary flow will do so.

Then about the first of April the reservoir will be filled to the summer storage level, because we are almost sure that there will be no excessive floods later than that.

Mr. Taber: That April 1 figure is about what elevation?

Dr. Morgan: 1020. From the spillway level up to the top of our gates—that is, from 1020 to 1034—there are 525,000 acre feet, but from 1020 up to 1055 there are a million and a half acre feet; that is, at the extreme high level.' "

The table (offered in evidence as Defendants' Exhibit 53) shows the volumes of the TVA main stream reservoirs at various elevations. To the best of my knowledge, it is correct. I checked it last night. I prepared it myself. The definitions and statements of fact are correct to the best of my knowledge.

"Judge Allen: The Court thinks that complainants should have the opportunity to check this before it is ruled on, as to its admissibility."

Recross-examination:

It is my opinion that the TVA in planning to construct seven high dams on the main Tennessee River planned a minimum number of dams practicable. As a theoretical proposition, if it were practicable for one to build a single immense dam at the mouth of the river so as to concentrate the entire fall of the river at a single dam, that would produce the largest amount of power that could be produced [fol. 1157a] from that stream. If it were not practicable, as it usually is not, to build a single mammoth dam at the mouth of a stream so as to concentrate the entire fall of a stream at a single point, it is true that the next most

effective method that you could adopt to develop the maximum amount of power from that stream would be to build the minimum number of high dams which it would be practicable to build upon that stream to develop its entire fall. That is correct as to power and a great many other purposes.

I stated that any changes that we made in sites of these high dams which are described in House Document 328 were in the direction of moving the sites downstream. The effect of moving the sites downstream may have been a small increase in head. Of course that would depend upon the condition of the flow. If you had a lot of pondage there, it would also increase the amount of low water pondage which could be used for various purposes.

By Mr. R. T. Jackson:

"Q. Well, as a matter of fact, while the degree would vary any time you moved the dam downstream, in order to keep the upper end of the pool at the required head, you would require a higher dam, and the result necessarily would be a somewhat greater head; isn't that so?

A. No, the result would not be a greater head if you maintained your pool level, which would be also at the same elevation, and simply to slide the dam downstream into that pool, you do not gain head, except at certain times during floods you might get a little less backwater, something of that sort."

If you had a dam site set out in House Document 328 with [fol. 1158] an elevation of its pool at 500 feet, to take an arbitrary figure, and you moved the dam downstream, there would be somewhat more volume. That is correct so far as the one dam itself is concerned. The result would be, as to that one dam, that you would have a higher dam and somewhat higher head.

I said that the layout at Wheeler was the same as the site, plan of dam, and location of structures as the Army Engineers were proceeding with when the TVA took it over. I know that the Army Engineers had a space provided in which intakes were to be built in Wheeler Dam for future power development. There were intakes being built which were enclosed by removable bulkheads. They were not being built, they were in the preliminary designs for the de-

sign of the dam, that was contemplated at that time. There was no setting for turbines, but there were intakes for future turbine settings.

Examination by the Court:

An intake setting is the passageway through the dam where the power house could be built below and put in use, with this passageway so that they would not have to cut a hole through the dam in the future, so that the space was provided, and that space could be closed according to the preliminary plans by the use of temporary bulkheads which could be removed at the time the power house was erected.

Recross examination continued:

I testified on my re-direct examination that the various storage capacities which I figured on top of Norris Dam were comparable to Mr. Kurtz' detention reservoirs rather than the valley storage. I understood that there were gates on the detention reservoirs proposed by Mr. Kurtz that closed as the head went up and kept the discharge as a predetermined amount, in addition to the one or two free [fol. 1159] openings. That corresponds exactly to the limitation placed on the outflow from this storage by the spillway gate. In other words, they both have a limited outflow capacity. The only limited outflow capacity that I show on top of the spillway gate is dependent on how high the water may rise above the spillway gates. But, for a certain volume in the flood, it can only fill so high. I do not believe there are enough conditions stated as to the valley so that I can answer the question whether if you have storage through a swampy valley of a certain size, a certain size flood can only fill the valley so high.

Referring to the change made in Defendants' Exhibit 43 with reference to the Wheeler project, in going over the storage volume curves to pick out the figures which I supplied, I found out I had taken the wrong line in reading across for Wheeler, and that gave me the check in which I found I had read a foot too low when I furnished the information before, and which I corrected. I did not check any other report prepared for the TVA. I found definitely where I had followed through and made the wrong figure, and I checked that against the tables that had been in exist-

ence for several years, and going back to them I found they check with the diagram, and it was simply my misreading the night before when I prepared that. I know nothing about whether my failure to change item 9, controlled flood storage of 490,000, would leave it in conflict with the TVA report. I checked that at elevation 556, as you can readily see, which was wrong on the exhibit which I submitted. That can be told, I think, from information that you have available, that it was 70,000 acre feet at 556. That flood control storage was stated and remains the same. You can [fol. 1160] check the difference between those and find the figures all check perfectly for the flood control storage of the reservoir.

The present site of the Gilbertsville project is 22.7 miles upstream from the mouth of the river. I think that is correct. It might be 22.6 or 22.8. I can not say whether the location that has been reported to Congress for 1936 and 1937 has been 22.5 miles. You are correct in understanding from the table, p. 123 of Complainants' Exhibit 115, that the site for Gilbertsville is shown to be 22.5. If I am not mistaken, that is the location of the Illinois Central Railroad bridge, and our explorations extended from the location of the Illinois Central Railroad bridge upstream a distance of, I would say, a quarter of a mile, and I believe the base line, as we finally shifted it in that area, comes at 22.7,—it may be 22.65. It is correct, however, that the statement on page 37 of this report shows 22.5 from the mouth of the river. I think that was the downstream line of our explorations, but the base line upstream was about three-quarters of a mile.

The initial power installation at Hiwassee is 60,000 kilowatts. I know that the TVA has contracts for the sale of firm power. I am familiar with the ferrying operations of one of the railroads down at Guntersville. I am also familiar with the fact that as soon as the TVA project is completed, in about two months, they will have to use the TVA locks, they will have to break their tows for the first time in 25 years with the present size equipment.

I have sworn to the best of my knowledge this Defendants' Exhibit 53, which we are going to re-enter, is a correct exhibit. We got it out last night under pressure. There may be some arithmetical errors which I will be glad to correct. You call my attention to the fact that the two eleva- [fol. 1161] tions at Guntersville are 593 to 594; Chickamauga

575 and 584; Watts Bar 536 and 540 so that the elevations are getting lower as one goes upstream. That is an obvious mistake by me.

Redirect examination:

In this illustration of Norris Dam, which is the frontispiece on the Report of March, 1936, to Congress, the photograph shows almost the entire face of the Norris Dam with the crest gates raised. I presume it is approximately to elevation 1034—it looks as though they are fully up, which is during construction. The method by which this storage above 1034 will operate as a detention basin is that a flood of a certain volume comes down the river above Norris, obviously to raise to any given elevation above the crest of these gates, assuming the water is filled to the top of the gates at the beginning of the flood, is based on this, that the water cannot rise higher above the gates than the relation of volume of flood to a similar volume in the reservoir. According to hydraulic experiences, that limits the outflow through the gates to a definite amount. Those gates are each 100 feet long, or a total length of crest of 300 feet. We have the space all the way up to the crown of the roadway, which is elevation 1061, in which water could impound behind the dam. Of course beyond that it could not go up and up without overflowing the dam and causing serious damage, perhaps.

The general principle of operation there is very much the same as though you had outlets in the base of the dam which had no gates in them, or which had gates, which are automatically controlled. The only difference being that with automatic control on certain gates, perhaps you could hold them to a constant flow but if you had certain conduits in the bottom of the dam without gates, the flow through those [fol. 1162] would increase in proportion to the square root of the head. As the water built up above the dam and over the gates, the outflow would increase three halves power. In other words, the outflow is the effect of the increase.

Except for a length of 300 feet, we have nothing but dam up to the top of the roadway. That places a definite limit on the length of the dam, up to the top of the roadway, over which the water could flow. The only way water could get out is through those openings in the middle. That is of limited capacity. In order to get out any other way, it has

to get over the top on the roadway, except as to the sluiceways in the bottom, and up to the capacity of those it could flow through those.

Examination by the Court:

The gates themselves have a height of 14 feet. The elevation 1020 is the bottom when the gates are raised and the top when lowered. The top of the gate is approximately at 1034. From the roadway down, it is entirely open. There is 100 foot width between the piers and three openings. If the water is up to the roadway, then if the sluiceways and so on are opened up, the dam will retain the water, except for such water as goes through the three openings just under the roadway and between the piers.

Recross-examination:

That is somewhat the same effect as if your valley spread out into a swamp and then comes into a narrow neck, and the narrow neck limits the flow, and the flood backs up into the swamp area. If that has the same arrangement as the [fol. 1163] capacity and outlets, all that sort of thing, then of course it would be about the same. That is, if you had a swamp the same size as Norris, with a bottleneck at the lower end of about the same size as these openings, you would have this same condition, but there is a definite limit on the outlet which ordinarily does not exist in nature. Of course, if you had a ledge of rock, something like that which made a weir across the valley, you would have something comparable. I can't tell how many feet under water LaFollette, Tennessee, would be by the time we got this water up to 1061. It would be into the low parts of LaFollette. I don't know how high up. I can't answer exactly whether LaFollette would be 11 feet under water pretty well throughout. LaFollette goes a considerable distance up along the mountainside. There are parts of LaFollette which would be submerged. A great many other things would be submerged around Norris.

Redirect examination continued:

I stated on cross-examination that by moving the dam site down stream, if you are dealing with an individual dam, some slight increase in head would result. The same condition would not obtain, of course, with a continuous series

of dams with overlapping pools, because you could not obtain the greater drop from the head of the first dam down to the tail water of the last dam in the series by moving any intermediate dams either upstream or downstream. You would have the same gross head, regardless.

Recross-examination:

I did not promise to produce the TVA Board resolution in connection with the Hiwassee Dam levels. Of course, I cannot produce the resolution you are asking about. I said I [fol. 1164] would make an attempt to calculate the comparison of time at which the normal pool level would be maintained in each of these main river dams. I did make some attempt to calculate it and I simply could not arrive at any figure for that because it depends upon so many factors that I was simply not able to make the assumptions and combine them in a way which would give any result. I have not formulated operating rules myself. I simply know that there will be fluctuations between those. The trouble is it depends on the health and medical section, on their set-up for fluctuation for malaria control, and on the operations of Mr. Woodward for low-water release, and that sort of thing. I didn't have the figures of all those different people so that I could combine them, and I don't know whether they could be combined mathematically. I know in general how the malaria control people intend to fluctuate those pools from descriptions which they have written and specifications they have set up. I stated approximately the variations in those pool levels at certain dates yesterday, but as to the fluctuations in between, it is just sort of a jig-saw, which will depend on the flow of the water in the stream, depending on the season. I have not seen any rule curves or operating rules from the power section. I think this entire operation of those pools is set by Mr. Woodward from time to time.

(The witness was excused.)

[fol. 1165] At a subsequent session of the Court, JAMES S. BOWMAN was recalled as a witness, on behalf of the defendants and, having been previously duly sworn, was examined and testified as follows:

Direct examination:

I prepared the document (offered and received in evidence as Defendants' Exhibit 54) and it is correct to the best of my knowledge and belief. I corrected on it the elevation figures which were pointed out as in error this morning on Defendants' Exhibit 53 and the figure for Coulter Shoals I have added and it is tentative because we do not have the surveys completed yet on that project.

(Counsel for defendants then offered in evidence the maps of the TVA reservoirs which were produced by the witness pursuant to the request of counsel for complainants—Chickamauga reservoir as Defendants' Exhibit 55, Watts Bar reservoir as Defendants' Exhibit 56, Coulter Shoals reservoir as Defendants' Exhibit 57, Norris Reservoir as Defendants' Exhibit 58, Hiwassee reservoir as Defendants' Exhibit 59, Gilbertsville reservoir, dated April, 1936, as Defendants' Exhibit 60, Pickwick reservoir as Defendants' Exhibit 61, Wilson reservoir as Defendants' Exhibit 62, Wheeler reservoir as Defendants' Exhibit 63 and Guntersville reservoir as Defendants' Exhibit 64.)

"Mr. Fly: I believe all of these, your Honor, are at stated elevations in feet, but the particular stated elevation does not precisely conform to other figures. They are taken from different dates and that sort of thing, but they do purport to cover the reservoir area at the particular elevation indicated thereon.

Mr. R. T. Jackson: As to exhibit 59 for Hiwassee we object only that the map should be changed to show the pool elevation for the reservoirs shown on the map. It shows no pool elevation but I assume that can be put on, and we think that should be done before it is received.

[fol. 1166] Exhibit 60, Gilbertsville Reservoir, we object upon the ground that the reservoir should be shown in color, or outlined so that it can be followed accurately. As it is, the reservoir not being colored, and the line is so dim and obscure that it is impossible to follow it. In addition to that, we think that map should show the 375 elevation, which is the one testified to by Mr. Bowman. Now from Mr. Bowman's testimony I understand that he was uncertain whether he had a map of the pool surface at 375, but they did have cross sections, and if it be true that they have no map of the pool surface at elevation 375, then we

think that they should produce certain cross section maps which Mr. Bowman said they had, showing elevation 375, at miles 30, 40, 50, 60, 70, 80, 90 and 100, or near thereto as might be available.

As to Exhibit 61, which deals with Pickwick Reservoir, we object, merely that again we think that the surface of the reservoir should be shown in color, or the outline should be made sufficiently clear so that it can be accurately followed on the map. There should also be added to 61 the scale of the map and the pool elevation at which the reservoir surface is shown on the map.

As to Exhibit 63, which deals with the Wheeler reservoir, we object again upon the ground that the reservoir should be shown in color, or else the outline of the reservoir made sufficiently legible that it can be traced accurately and readily.

Judge Allen: The entire set of exhibits is received in evidence and you may have your exception to the reception of exhibits 59, 60, 61 and 63.

Mr. R. T. Jackson: Your Honor, as I understand, if necessary, and it cannot be clarified by our friends on the other side, I have the privilege of asking Mr. Bowman about these maps. May I do that at this time?

Mr. Fly: I prefer not to do that, your Honor. I prefer to get on with this witness (Woodward) who is here testifying under a great strain. They are right in the midst of his cross-examination. I insist we proceed. I will stay after four o'clock to take care of the formal matters. The obvious purpose is a filibuster.

Mr. R. T. Jackson: I resent the statement.

Judge Allen: The Court rules you will continue the cross-examination of this witness (Woodward), and you may have opportunity to further examine Mr. Bowman later."

(The witness was excused.)

[fol. 1167] SHERMAN M. WOODWARD was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

My address is Knoxville, Tennessee, and I am at present on the engineering staff of the Tennessee Valley Authority.

My title is Chief Water Control Planning Engineer. I graduated from the Engineering College of Washington University, St. Louis, in 1893. I later spent one year in the graduate college at Harvard. For the last 40 years I have been engaged in practical hydraulic engineering work, and in teaching different branches of hydraulic engineering. For eight years I was at the University of Arizona as Professor of Mathematics and Mechanics, from 1896 to 1904. From 1905 to 1908, I was employed by the United States Department of Agriculture as irrigation and drainage engineer. From 1908 to 1935, I was employed in the Engineering College of the University of Iowa with the title of Professor of Mechanics and Hydraulics. During all this time I was employed as a consulting engineer occasionally on different projects. From 1913 until 1920, I was consulting engineer with the Miami Conservancy District, whose offices are at Dayton, Ohio, which District constructed a flood control project costing about $35,000,000. In 1921 and 1922, I was consulting engineer on a flood control project at Pueblo, Colorado. From about 1924 to 1928, I was consulting engineer for the Chicago Sanitary District. In 1934 and 1935, I was employed as consulting engineer with the Muskingum Water Conservancy District.

In 1933 I was appointed a member of a committee under the Public Works Administration in Washington which was called the Mississippi Valley Committee, and I attended [fol. 1168] meetings there during the next year, during which the committee reviewed many of the hydraulic applications that were presented to the PWA. That committee was continued after the end of the fiscal year under a somewhat different name and has been continued by executive order under different names, and is at present in existence and I am still a member of it. It is now called "Water Resources Committee of the National Resources Committee".

In the last 30 years I have served as consultant for a great many hydraulic projects where I was employed by cities, counties, state agencies, drainage districts and private engineers. I have worked on projects in Iowa, Illinois, Missouri, Arkansas, Mississippi, Colorado, Ohio and Kansas. About 1929 or 1930 I was employed as a consultant by the Bureau of Standards in the Department of Commerce in connection with the design of the National Hydraulic Laboratory which has since been built at the Bureau

of Standards in Washington: I am a member of various engineering societies,—The American Society of Mechanical Engineers, the American Society of Civil Engineers, Iowa Engineering Society, and various other ones of less importance. I am a registered professional engineer in the State of Iowa, which has reciprocal rules with about twenty states.

The only books that I have written have been either simple textbooks or obscure technical books that nobody else would learn about. I have written a few articles that have been published in various technical society proceedings, and I have written a good many governmental reports for the Department of Agriculture, for the Miami Conservancy District, and for the University of Arizona and various places, some of them so long ago I could scarcely remember them.

[fol. 1169] I began working with the TVA as a consultant in June, 1933, and worked intermittently for about two years, coming to Alabama and Tennessee occasionally. In the summer of 1935 I resigned my position at Iowa and accepted continuous employment with the TVA, and since that date have been with them with my present title of Chief Water Control Planning Engineer.

Cross-examination:

I entered TVA employment exclusively and resigned my other positions in 1935. I don't know whether it was June 1 or July 1 but it was in the summer of 1935.

Direct examination continued:

That has not entirely excluded the consulting capacities which I have mentioned as continuing, such as membership on the Mississippi Valley Committee. I am still a member of this Water Resources Committee without getting any pay for it now, but I am appointed as a member of the TVA. On one occasion after my employment by the TVA, the PWA did want me to go into South Carolina and Georgia to make a special report on a project that took some time, and they employed me under the old contract as consultant, being paid by the day, and I took time off without pay from the TVA at the same time. But I have not done any consulting work to amount to anything since I have been with the TVA.

I am head of the Water Control Planning Department of the TVA. That Department was organized at the time of the general reorganization of the TVA as set forth in Defendants' Exhibit 41. That exhibit indicates that I am to prepare and issue instructions subject to review by the Chief Engineer, governing the impounding and release of waters at the various dams of the TVA to assure the maximum use of facilities and resources available for flood con- [fol. 1170] trol, navigation and other purposes consistent with the requirements of the Act.

"Q. I note there the reference to the review by the Chief Engineer. Now I believe Mr. Jackson referred to that as being subject to the approval of the Chief Engineer. In issuing instructions for the control of the pool levels do you await the approval of the Chief Engineer?

Mr. R. T. Jackson: Just a moment. Are your instructions from the Chief Engineer in writing, Professor Woodward?

The Witness: I have never had any instructions in writing on this topic from the Chief Engineer.

Mr. R. T. Jackson: You have not?

The Witness: I think not. I don't recall any.

Mr. R. T. Jackson: Have you had any instructions at all?

Mr. Fly: I am asking what his practice is. You can cross examine him.

Mr. R. T. Jackson: I wanted to object to it as incompetent, because I assumed that the instructions would be in writing, and I think they would be the best evidence.

Judge Gore: He says they are not in writing.

Mr. R. T. Jackson: Yes. He didn't have any. It seems to me it would still be incompetent.

Mr. Fly: He has his instructions from the Board, according to this exhibit 41.

Judge Allen: The objection is overruled. The Court considers this witness is testifying, or will testify concerning the actual operations.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: You may have your exception.

Mr. Fly: If your Honor will recall the authority delegated to Professor Woodward is clearly set forth in Defendants' Exhibit 41.

Judge Allen: The Court bears that exhibit in mind and the Court also has some conception of how businesses are managed."

In practice my instructions are not referred to the Chief [fol. 1170-a] Engineer for approval prior to issuance. My practice is to submit copies of instructions and keep him informed as to what instructions go out. So far as my knowledge goes, there is not at present any one occupying the position of Chief Engineer.

[fol. 1171] Examination by the Court:

So far as I know, the instructions issued by me which govern the operation of the water control have always been carried out. There is an Assistant Chief Engineer who has been there from the beginning, and who is the man to whom I report ordinarily in reporting to the Chief Engineer. There is still an Assistant Chief Engineer to whom I report as I always have. When I send it to the Chief Engineer, I have never sent it direct, but it always goes to the office of the Assistant Chief Engineer.

Direct examination continued:

Dr. Arthur E. Morgan was the Chief Engineer of the TVA until approximately early in this year, and Mr. Carl A. Bock was and still is the Assistant Chief Engineer. Mr. Bock had general control of the whole Engineering Department throughout that time. He is the man who is always there at the office and runs it, and Dr. Morgan was not there much of the time. Mr. Bock is the Acting Chief Engineer, that is, the acting head of the Engineering Departments.

I am head of the Water Control Planning Department and under me are several divisions which nominally report to me for all of their administrative purposes, a geological division, a division of maps and surveys, a division of engineering data, a project planning division of which Mr. Bowman is the head, and a division of general regional or Tennessee Valley area planning. I don't remember the name of it. We have lots of trouble in thinking up names to try to distinguish the different branches. I don't take any responsibility for social uplift. We have another regional division and I have to keep my own separate from [fol. 1172] that. I don't remember now just what the name is. All of these divisions report to me in a general way and I am supposed to keep track in a general way of all of it. This water control operation is not in any of those divisions, but was assigned to me more personally than the others,

and I have a small staff under me to carry out the work necessary in connection with that.

The engineering data division in general has charge of all of our measurements of water and related matters that are related to direct hydraulic measurements of streams. It does different kinds of work, including stream measurements, rainfall measurement, silt measurement. It operates a hydraulic laboratory at the town of Norris and it has a staff who make investigations and reports on all sorts of hydraulic questions throughout the whole Tennessee Valley area.

We are now getting reports from over 300 rainfall observation stations in the Valley, and some around the margins, just outside of the edge of the drainage area but close enough to be related. We received those reports monthly. About half of them are regular observers of the United States Weather Bureau, and we have a lot of our own, and we get them from private sources of all kinds. We try to get a report from every place that observes rainfall in the Valley. We also have a number of rainfall stations of the TVA itself. At all our dams and places where we have staffs we put in a rain gauging station and have someone on the staff make measurements for us. We continuously have the information furnished by those stations. We also have river gauging stations. We obtain the results of measurements of stations on the main river and the tributaries at about 150 points in the Valley. Most of those are operated in cooperation with the United States Geological Survey. Their staff does most of the work and we cooperate [fol. 1173] with them and furnish help. We get all of that information that is available anywhere. We get it from utility companies or from our own staff at times where we have engineers located. Whenever the results are issued in any printed form or any form available for distribution, we get all of those reports in the regular way. At times we get special reports by application at any time.

We also get a considerable number of daily reports on rainfall and river stages. We operate what we call the prediction service, which was initiated when our construction operation began on the rivers. That is for the assistance and protection of our construction operations, that is the way it started. Today we receive either by telephone

or telegraph reports on the rainfall and the stream stages from about 36 points, all of our construction jobs, and the others from the main, important points on the river. In addition, we have arrangements with about 30 other observing stations that when a heavy rainfall exceeds a certain amount, then they are to notify us by telephone or telegram, and also when there are sudden flood rises in the streams. In that way we keep in contact every day with all of the matters affecting flood flows in the streams. The degree of intermediate detail in our contacts will depend, in addition to that, somewhat upon the state of the weather and river conditions. We have issued instructions to all of these observers that if there are important sudden changes, then they notify us at once. We are also in contact with the other sources of information, United States Weather Bureau at Knoxville, Chattanooga and Cairo, whenever it is important we call them on the telephone for their latest information, and any place that we know to get it. We are interested in what happens at Cairo, because our operations on the Tennessee River at times depend upon the stages of the Ohio River, and the Weather Bureau observer at Cairo [fol. 1174] is the man who issues to the public the predictions below that are published in newspapers of flood heights along the lower Ohio River.

We issue a daily bulletin based upon the information we get from all of these various sources. We prepare during the forenoon of each day, except Sunday, a summary of the results of all these observations which is duplicated and issued about noon each day. This bulletin gives the names of all the important regions on the main Tennessee River. It gives the rainfall reported that morning, during the preceding 24 hours, the stage of the river and the amount of change from the preceding 24 hours, during the preceding 24 hour period; and in the reservoirs similarly the elevation of the reservoirs. Then we add to that predictions for the three following days, what we estimate the changes will be. That is duplicated and distributed about noon to about 150 persons.

When we are working on dams, or have other power houses, it is sent to them, to all of the important members of the staff, to all of the different branches of our organization that are interested, and to the United States Weather Bureau offices, United States Army Engineers, United

States Geological Survey, all of our cooperating agencies. That daily bulletin also indicates whether the river is rising or falling, or steady, and by these predictions what it will reach within the next 24 hours. We have at times issued additional special predictions to our own station. During the critical period last winter, we issued estimated changes up to five days in advance. The staff that makes up the bulletin estimates as they can, sometimes as far as ten days in advance. Of course that is only a guide, because we do not try to predict what the rainfall is going to be ahead, except we judge in a very general way from the United States Weather Bureau maps and the United States Weather Bureau predictions, but we know that our predictions in ad- [fol. 1175] vance are limited by the uncertainties of the rainfalls. If there would be no more rainfall after we got the predictions any one day, we would know exactly, or very closely, what it is going to be for the next week. In our usual method of predicting three days in advance, we change each day as it is needed for the next day. That is issued for the guidance of our construction forces which are working in the bed of the river in many places, and it is a very important matter to them to know and be prepared for the changes in the rivers, especially during the flood season.

In making our decisions as to the impounding or release of the waters, we frequently need to act very quickly on important changes that have occurred. We make decisions all the time during the day as the necessity arises, and I have been called at night and on Sundays at times, in order to approve the proposed orders. We keep this force on duty night and day when it is in the dangerous part of the season, and on Sunday. Of course I am not there nearly all the time, but I have to approve any instructions that go out before they are issued. The general principles which control my operation of the reservoirs are set forth in the statute and the instructions in the resolution relating to reservoir operation.

"Q. Just to make it clear, Professor Woodward, then, in controlling the waters your effort is to control them primarily for navigation and flood control, is that right?

Mr. R. T. Jackson: Just a moment.

A. That is correct.

Mr. R. T. Jackson: I object to that question. That leaves it for this witness to justify what he does, and why he does it. It is for the Court to determine that.

Judge Allen: The objection is overruled. In this bill bad faith is charged, conspiracy is charged. The witness may answer.

Mr. R. T. Jackson: An exception noted, please.

Q. What principles do you endeavor to follow in your every-day practical operation of all of these reservoirs, [fol. 1176] Professor Woodward?

Mr. R. T. Jackson: I object to that. He has already asked that question and the witness has answered it.

Judge Allen: He may answer.

Mr. R. T. Jackson: An exception, please."

We operate them for the benefit of navigation and for flood control. We have only two reservoirs in operation so far. It is but a small part of the complete projected system and the one that is under construction. There are four more dams under construction about half finished. We have not operated yet on the complete system and the operations that we have made, therefore, are limited and do not entirely represent the final complete system. We have found it necessary to vary our operations in detail in consideration of the construction project and what would happen to the construction projects at different parts of the river. We have had for the last two years these three dams under construction on the main Tennessee River. During the flood season, they are in a very dangerous position so far as financial losses go. Our operation has been very largely influenced by trying to control flood flows for their advantage. We have saved them, so far as I can tell, hundreds of thousands of dollars in preventing them from being flooded out at times. At times they have been in such dangerous condition that there might be possible loss of life if they should be flooded unexpectedly in the cofferdams when they are working down below these high flood levels, outside of their cofferdams. We have been very successful in giving them warning and in actually protecting them by regulating flood flows during the winter. Now, that, of course, is a temporary condition that will not exist after the dam construction is finished.

[fol. 1177] During the last two summer seasons we have operated the Norris reservoir for the benefit of navigation

in the lower part of the Tennessee River by regulating the minimum low flow. In the ordinary detailed operation, we base our releases from Norris on the gauge at Florence, Alabama. That is ordinarily used because that gauge is a very old gauge and has been used by all the navigation interests for a long time as a means of measuring the flow in the Tennessee River. During the summer of 1936 we attempted to operate the dam so as to prevent the water going below 15,000 C. F. S. on the Florence gauge. There was a little variation, but we were practically successful in maintaining that discharge at Norris throughout the whole of the summer season. During 1937 we have maintained it somewhere near 17,000 C. F. S. At times we have raised it above 17,000 C. F. S. for temporary navigation needs.

There have been various temporary navigation needs. There are two excursion steamboats which have made trips up to Alabama. One such steamer was the "Gordon C. Green" from Cincinnati, and the "Golden Eagle" from St. Louis. We attempted to regulate the flow of the river below so as to make it safe for their passage. The boat from Cincinnati is the largest boat and requires the greater depth. Usually when they get about half way up the lower river, they let us know they are there and we make special releases at Wilson Dam in time for them to get up to Wilson Dam and out again, so they will not be stranded. The boat from St. Louis has made frequent trips, and has made it a regular practice to let us know they enter the river and pass Pickwick site. We try to look out for them, and we have been entirely successful. So far as we know, they have not scraped bottom. They have pretty heavy passenger lists. One night one had to tie up on account of the fog and we lost it. We were quite worried, and could not find it.

[fol. 1178] That was not any lake but in the natural stream between Pickwick and Paducah. We have at other times made special releases for barges and for special boats. Whenever they apply to us if we can give them more water we do. In order to affect the Florence gauge by a release from Norris, it has to be made about four or five days ahead. So we have to predict approximately when they will need it at the Florence gauge and release a corresponding amount from Norris Dam.

Wilson is where the final release is made, but now it has to go through the Wheeler Dam and we release it. Ordinarily, Wilson could regulate it a little bit, but I don't think

it has been used for that purpose. We have been able to manipulate from Norris so that it has worked all right. When we release from Norris, we use the sluices. At that time of year all of the water is below the spillway and the sluice is the only way. That was in 1936 and it was also true during 1937, at any time during the low-water season in 1936 or 1937. In 1936 we released first on June 19, and the water had reached the level of only about 1,000, which was still 20 feet below the spillway when we started in 1936. This year it was at 1020 when we began the release. We have carried out that plan of release for navigation through each of the low-water seasons, the only two we have had since Norris Dam has been in operation.

In my opinion it is feasible to draw down the main stream dams in advance of floods to increase their effectiveness for flood control.

By Mr. Fly:

"Q. Will you state how, in your opinion, Professor Woodward, the dams on the main stream of the Tennessee may be operated for the most effective control of flood waters at Cairo?

Mr. R. T. Jackson: I object to that question, because it is not limited to practice.

[fol. 1179] Judge Allen: The witness may answer. It calls for his opinion as to the practicability of operation.

Mr. R. T. Jackson: Our objection is limited to the materiality.

Judge Allen: One of the issues in the case raised very strongly by the complainants. He may answer and you may have your exception.

The Witness: Well, the plan which we have in mind for operating them, in my opinion, is the plan which will be most effective. Shall I describe the plan that I have in mind for these operations?

Mr. R. T. Jackson: I object. I think the witness should limit the testimony to his opinion about it and not undertake to say he is stating a plan of the TVA.

Mr. Fly: Your Honor, Mr. Jackson has chosen to try the case of operations without anything to operate. Here is a man charged with the plan of operation by the Board of Directors of the Tennessee Valley Authority. He can go into these operations, by looking into the future. If Mr.

Jackson wants to hear proof as to operations here is the man to use.

Judge Allen: This witness may testify as to the practicability of operations, what he considers practical of operations on the dams constructed and under construction.

Mr. R. T. Jackson: Our objection now, does not go to his opinion at all. It is just a question of his trying to state the TVA plan."

Examination by the Court:

In my opinion the practicable plan is to hold these main river reservoirs near their minimum level throughout the flood season and on the approach of floods to draw them as low as possible, which may be a little lower than they have been held before. Then when the floods come to close the gates so as to hold back as much water as may be held at each dam. It is impossible to say in advance of the actual case just when that storage should be made. It should depend upon the size of the flood and the apparent prospective length of the flood. We do not intend to have any rigid [fol. 1180] rule for the control of the discharge time. It will depend in every case upon the conditions, and due to climatic conditions. This is the general principle on which we operate the dams that are in operation. Wheeler Dam is the only one on the river so far in that condition.

Direct examination continued:

We have operated Wheeler in just that way. Last winter we operated in that way and are starting to operate that way this year.

With respect to the significance of the location of the main stream dams as regards Cairo and the probable prediction of the flood. Gilbertsville Dam is of course very close to Cairo, about one day away in time. The other dams are not so close, but I think that even up to Chattanooga will be within what is called prediction distance of Cairo, in which they can predict an Ohio flood to reach Cairo. It is also true that having a series of dams, they can be correlated, and if they could not operate a dam near Chattanooga with 100 per cent accuracy, the lower dams will help us to smooth out any variations from proper operation, because they are close and can store the excess of water that might possibly be passed through these dams. If we want to release more

we can release more. They tend to help each other in operation. In speaking of dams up to Chattanooga, I mean to include Chickamauga, and that will be true in a lesser degree even in the higher dams. I think Watts Bar and Coulter Shoals can be operated in conjunction with the others. We expect to learn by experience from this operation, and I am confident that we can do a pretty good job from the start. I don't say anything about the low water part of the year.

[fol. 1181] There is not any distinct line between the low water season and the flood season, one turns into the other over a couple of months, and is different every year. But I think it is practicable that as we approach the spring, and the danger of the biggest flood passes, we can then store water. The pool is then below low water and not as high as the flood water that comes in the spring with the rains. With that flood water we can bring the main river dams up to their maximum level that we would use for flood control during the winter. Then that water that is stored can be released during the low water season to help out the low water flow. It can also be used for malarial control, which is a serious problem in the Tennessee Valley. In actual operation we distinguish in the detailed method of accomplishing our purpose between the tributary stream reservoirs and the main stream reservoirs. We view them quite differently, because the scale of operations is so different. That different system of operation would not be applied to Norris or Hiwassee or Fontana, or any dam that would be built up on the tributaries.

With respect to the method by which we are actually operating the Norris Dam, we draw it down during the summer and about this time in the year leave it down near the minimum level, which will be probably around 960. It will vary somewhat in the different years, and it may vary some from experience. As the winter or flood season comes on, we will hold it low, but not at that minimum level all the time. As the flood season nears its end, we will permit it to be filled partly, and starting April 1st as about the end of the worst flood season, we expect to have it partially filled up on April 1st. After that date, it will be our practice, during April and May and possibly the first part of June, if there is water enough, we will fill up to the spillway level of 1020.

[fol. 1182] That is about the normal ideal operation. Every time a flood flow comes along, we will store that flood in

Norris and it will be filled up much higher than the amount I have spoken of, and after the flood has passed we will let it out to whatever stage we think necessary to have it in the winter and spring.

Examination by the Court:

If there was a flood in May, we would control that also. Suppose it is at 1,000 or 1010 the first of May when this flood would come along, we would not be worried at all with the pool filled up to 1020. If we needed more space to store, then we would raise the gates up and store whatever we wanted to. Of course, if we would have an excessive amount of flood water we would release it when we thought it was safe. It is a harder problem to release flood water than to store it. We might release it at once, in a week, two or three weeks, gradually, depending on the condition down the river, and on the Ohio and Mississippi.

Direct examination continued:

If we have water enough in the latter part of the winter season, we fill the Norris reservoir up to 1020 and hold the water until it is necessary to release for the low water control. Whenever that is necessary, we release all summer. In some summers we would not need as much as others. For example, this last summer was not a dry summer at all and we did not need to release from Norris in any amount as is generally expected for the low water season. So we have let it out, but not to give low water regulation. The reservoir would be at 1020 in the later winter months, about May and the first half of June. That is, we would bring it up to a certain level, say 1,000 or 1010 at the end of the flood season. [fol. 1183] Then we would hope to catch enough to bring it up to about 1020 before the low-water season starts in. It may be once in every five to ten years that the reservoir would not get to 1020 for the summer.

The same principle of operation would apply to other tributary dams such as Hiwassee. Hiwassee will not be operating for a couple of years, and not being very immediate we have not worried about that. It is not so big as Norris either. We do not follow any precise arbitrary rule in filling the Norris reservoir, I do not think we can have any fixed, precise line. There will probably be a variation of at least ten feet in different years of the level on the same dates in the winter.

Examination by the Court:

As to how low we can draw the pool in Norris Dam without affecting generation of firm power, I would state that unless you are having a fixed amount of firm power, there would not be any very definite volume. That is my opinion. I am not a power expert. I have never worked in my life on a power project. I have, of course, made elementary estimates of various kinds, but I have never made any estimate by which I can answer that question.

Direct examination continued:

No firm power is being produced at Norris Dam, considered at the dam itself, because the power plant is not running very much of the time, and we do not contemplate running it much of the time. It would be possible, if it was a separate isolated plant being run by a private utility, to change its operation so as to produce firm power. There must be a discharge of water in order to obtain firm power at Norris Dam. There will be and there are substantial periods at which no discharges are made at Norris Dam. [fol. 1184] In the past the part of the time that these discharges are entirely shut off from Norris Dam is extremely irregular. Perhaps a quarter of the year, sometime in the spring and some in the fall, and there might be times during the winter—there will be whenever flood control is being exercised. It will run into a matter of several months all told.

There are reasons why you should have for flood purposes more empty storage space at the beginning of the flood season than at the end. The demands on the reservoir for storage will often be very much greater at the beginning of winter than there can be at the end of the flood season. We have in this region some years, long continuous wet periods. I think this will be the greatest test on our flood control system. We also have sometimes some very short extreme storms of the kind Mr. Kurtz used in his testimony. I think it will probably be a more severe test in this region to take care of the long, extreme wet periods of which we have had some examples in the past, and that will be especially necessary for the protection of Chattanooga and the assistance of the Ohio and Mississippi. You are apt to have a repetition of floods

in the early part of the flood season and continually need to store water. It is a repetition of rainfall and the floods do not come separately but continuous, with the rainfall coming every day, every few days, or every week. That has happened many times. Under our plan of actual operation, we expect to have still enough remaining storage space at the end of the flood season to take care of floods that could be expected as within the range of probability at that season. At the end of March, which so far as all past records go is at the end of the very extreme peak of flood peaks, we will still have enough to take care of any expected floods. If a flood came along in May, we would con- [fol. 1185] trol it the same as the other. We do not expect any very extreme flood in May, but there may be small floods, as there may be throughout the whole summer. We have relatively small floods all summer. At any time in the year they may come. Under our plan of operation we will have enough space available in May to take care of any flood that we may contemplate at that time.

We have reliable detailed records for about 35 years, and we have less accurate records of the past floods before that for another 35-year period. We have flood records for about 75 years in all which we can use. Our big floods come in the winter. We may have a moderate flood in November, a little more frequently in December, still more frequently in January, then they may come at any time during the winter up to the end of March. We have never had any big flood in the Tennessee that did not start in March. They have persisted in April, but the floods which have arisen in April have been distinctly smaller than the previous months. I think the main flood season is the first of January to the first of March, and the boundaries are not very precise. In the summer it is relatively a flood-free season. We do have small floods in the summer, so that the rivers get out of banks, destroy crops, but not very much. They are not serious though so far as cities and railroads are concerned. The high temperature and growing vegetation in the summer make the ground dry, and a large amount of the rainfall is soaked up by the vegetation and the dry ground and does not go into the stream. The same kind of rainfall which increases the stream flow in the winter makes no appreciable difference in the stream-

flow in the summer. I should have said the major flood season could be assumed to close, roughly, the first of April or the last of March.

[fol. 1186] Having a greater amount of space available in the early part of the winter affects our ability to alleviate floods on the Mississippi. If we have a sufficient space at the beginning of the winter, we can store the water for a long time so as to cover flood conditions on the Mississippi such as existed last winter. Last winter we stored all of the flow in the Norris Reservoir for about six weeks, beginning in the latter part of December and extending until the first of February, and that period was extended so as to keep what we could out of the Ohio and Mississippi Rivers. During that specific time we did block the entire flow of the Clinch River at the point of the dam. The Mississippi flood season is longer in the spring than that of the Tennessee, because it takes a long while for the flood waters from the upper end of the Ohio river and the upper Mississippi and the Missouri to reach down into the lower Mississippi valley. It takes four weeks, I suppose, at least for waters to go from Pittsburgh down to New Orleans or perhaps Memphis. So the flood season is much prolonged down the lower river, because of that longer period of time for flowing down the river. Sometimes we have local floods in the Tennessee Valley that affect only a single tributary, or perhaps one or two tributaries. However, in general the whole valley is covered by floods at the same time, because our winter rains are very widespread and quite uniform over large areas. The summer floods are very erratic. We can have a flood on one stream and not have other streams have any flood.

In my opinion the value and effectiveness of the Norris and Hiwassee storage reservoirs for flood control on the Tennessee River and Mississippi River will not be materially diminished by the method of operation I have described. I think this is the best way to operate them for flood control, the way I have described. For attaining Tennessee and Mississippi flood control only, without reference [fol. 1187] to other uses, it would not be necessary to fill these reservoirs partly. The partial filling is not for flood control, but is for the benefit of low-water regulation. If I include that, then I know of no other way to operate them.

"Q. Does the principle of seasonal filling have any benefit on the Mississippi, that is effectually on the Mississippi, as distinguishable from the Tennessee?

Mr. R. T. Jackson: I would like to say that if this witness intends to express any opinion on navigation I want to object to the question on the ground of competency of the witness.

Judge Allen: Do you object to the competency of this witness as to navigation, Mr. Jackson?

Mr. Jackson: Yes, your Honor.

Judge Martin: He may answer.

Mr. Jackson: May we have our exception, if your Honor please?

Judge Allen: He may answer. The Court bears in mind that under the definition of duties of this witness by the Tennessee Valley Authority, he is to prepare and issue instructions regarding maintaining and releasing water to insure the maximum benefit for flood control, navigation and other purposes, consistent with the requirements of the Act.

Mr. R. T. Jackson: If your Honor please, I want to state our position only, and not argue it. It is my understanding that the accolade of an expert in any field cannot be bestowed by statute. If it could, I would seek one. I think that does not aid the qualifications of this witness in that field, and my objection is to the lack of any showing of qualifications in that respect. My recollection is that the same resolution refers to power, but the witness has disavowed any qualifications on that subject.

Mr. Fly: It just happens that resolution didn't relate to power.

Judge Allen: The witness has testified rather in detail concerning the impounding of water, concerning aid to navigation. That was under your direct orders.

The Witness: It is, yes.

[fol. 1188] Judge Allen: How long have you been doing this specific work for the Authority?

The Witness: Why, this present organization set-up dates from about July 1st, last July. During the preceding year my advice was used all the time. I suppose I directed it more than any other person during the summer of 1936. The release was started at my calling attention to the fact that it was necessary.

Mr. R. T. Jackson: May I correct the record by pointing out that exhibit 41 does not, as Mr. Fly says, omit electric power, but the very end of sub-section B. describing the duties, says that 'Define from day to day the extent to which water may be impounded in the stream flow, the limits within which the impounded water may be used for the generation of electric power.' But the witness has disavowed the conferring of expert qualifications by statute, and I have no objection to his stating anything about hydraulics, that he increased the flow or changed the depth or something of that character, but as to the navigation I think he is not competent.

Judge Allen: He may answer.

Mr. R. T. Jackson: May we have our exception, please to the Court's ruling."

The seasonal filling up which I have described has effectiveness for flood control on the Mississippi as distinguished from the Tennessee. It operates in this way, that the difficult part about operating reservoirs is getting rid of the water after you have got it in there, and it will be necessary at times to hold it for a long time for the benefit of the Mississippi, when we could let it out if we were concerned only with the Tennessee River without reference to the Mississippi. So by having this great amount of storage and being able to store all through the winter, we will be able to take care of successive floods, even if we do not get rid of all the water from the earlier floods. That, of course, gradually fills up our reservoir until we can get rid of the water.

[fol. 1189] We do not maintain Norris at elevation 1020 for a very large part of the year, perhaps a month or so, probably less than that on the average. It might be that some years. Some years it might not be maintained there at all the whole year.

Cross-examination:

I do not mean the average of the two years since it has been operated. I am thinking now of how the reservoir would have been operated during past years. I can tell about what it has been during the last two years. In 1936 it never was at 1020 at any time, but in 1937 it was for two or three weeks, I think, in the spring, at 1020.

Direct examination continued:

"Q. Now what is the so-called normal pool elevation on the main stream dams? Can you state in general what that is, and then state what your operation is in regard to that.

Mr. Fly: I will limit that question to the dams already in operation.

Mr. R. T. Jackson: For the record we would like to note the objection to this question as we did yesterday because those elevations are fixed and determined by the Board and not by subordinate officers.

Mr. Fly: I want to go right into that question.

Q. Professor Woodward, who fixes the day to day, month to month levels on these reservoirs, who is charged with that duty?

Mr. R. T. Jackson: The same objection.

A. I am.

Judge Allen: The objection overruled.

Mr. Jackson: On the ground of competency of the witness.

Judge Allen: You may have your exception.

Mr. R. T. Jackson: Competency of the witness to prove his own authority.

[fol. 1190] Mr. Fly: The resolution established that.

Judge Allen: The objection to the question is overruled. The Court considers the actual practice of operation of these dams is competent to be shown in this case. And you may have your exception.

Mr. R. T. Jackson: I note an exception.

Judge Allen: It may be explained by the men who are in charge of it, that is the ruling of the Court. You may have your exception to that.

Mr. R. T. Jackson: That is not my objection, if the Court please."

To me, the normal pool elevation on the main stream dams has never meant anything definite. It is a sort of average between the highest level and the lowest level at any season, so far as I know. I have never used that normal pool level in my own work. I have been asked many times by people at what level are these dams going to operate, or, what is the normal pool level. They usually do not want any extended

explanation as to the variations, that way, so far as I know, but a kind of average. And if I use it, it is to give them what they want, a general average. Now, regarding the actual operation we pay no attention to it whatever. The reservoirs are fluctuating all the time, nearly every one, one way or another, and it is the limits of those fluctuations that we deal with. We don't endeavor to fix the level at the so-called normal pool level because it is so-called.

During the summer the main stream reservoirs are fluctuated for malaria control. The general plan now recommended by our health service,—and I am not an expert in the health line, I take that entirely from the doctors that we have and the Sanitary Engineers associated with them. They would like for us to start with the reservoir as full as possible in the spring, because vegetation does not start [fol. 1191] growing under the water line, but does start growing very freely just above the water line. They think it is very important to keep that growing vegetation down to a minimum. The reason for that is that the mosquitoes grow in the water along the edge of the vegetation very rapidly. Then they ask us to vary the water level in about a week or ten days, because that seems to sweep out the larvae and very much reduce the number of mosquitoes. To do that, when we can, we drop about a foot, and in the course of a couple of days, it may be that it will stay at the lower level one day, then we bring it back in two or three days to a higher level. We do not try to bring it back to the level it had before, but a little less. Say if we drop one foot, we raise about ten or eleven inches. The next time we drop, we drop a foot and in a few days when it comes back it comes back again ten or eleven inches. In that process the reservoir is going down throughout the summer, also fluctuating as much as we can. That is the present approved plan that we have recommended by our health service.

We have tried at various times to make changes in the plan, but so far as our experience and the experience from other places is concerned, that is the approved plan. This is all in a process of experimentation and development, and we do not know what better details can be found out. Under that system the reservoir is slowly dropping throughout the summer, fluctuating all the time. It is also true that we get these summer floods which may raise the reservoir a foot or two without our planning deliberately to do so. Then we start over on the fluctuation, if it is raised up two or three

feet nearer the top or high level, then we start down on the same plan. That persists throughout the summer, as long as the mosquito season lasts. In winter it is different. As soon as the flood season comes on, we hold up the bottom [fol. 1192] level until the increase in the stream flow requires us to raise it. By bottom level I mean about the minimum navigation level. We try to hold it there throughout the flood season. That is the way we have endeavored to actually operate the dam during the last year. The so-called normal pool level then is the average between the water heights in the low-water season and in the high-water season. I have never fixed a normal pool level myself that I remember of. It is just something that is put on a drawing to make a picture of. The dam is not physically divided off in any way so as to distinguish these different levels for the purpose of operation. I can not think of anything that marks it on the dam.

Examination by the Court:

The time when we fix the levels in the normal routine of our office varies a great deal. We issue our instructions in a written form, and I suppose they average about once a week. At times in the year when there are no problems to be met, it might not be changed for several weeks. We have issued them on almost successive days once or twice where some change had arisen, so we had to change our instructions. We put everything in writing for the purpose of the record, because we have stations over several hundred miles of river. Although we do a great deal by telephone, we always confirm by the permanent record.

Direct examination continued:

I mean in distant stations we transmit the emergency problems by telephone. We read it over the telephone, they take it down in writing, and we tell them they will have our printed copy the next day.

[fol. 1193] Cross-examination:

Referring to Defendants' Exhibit 41, which is a resolution in which it is asserted that I am acting as Chief Water Control Planning Engineer responsible to the Chief Engi-

neer, that is not the date when that department and that duty were created. The department had existed for two years before that. It is true that the resolution says that there is hereby created a Water Control Planning Department. As to whether the resolution speaks the truth as to when the department was created, that perhaps applies to a legal interpretation of the thing. What had happened was, when I went on permanent duty, the Engineering and Construction Department, as it used to be called, set up an organization with my department in it. It was less formal than this, and so far as I know it was never approved by the Board. I think that this last summer, at least so far as I know, was the first time that we ever had as formal an organization as this. We had a general manager appointed in June, and this organization was in connection with the general manager being appointed, and this formal organization I think is extended all throughout the TVA. So far as I know the Board never formally set up my department. Of course the Board approved my appointment and my title some time before July 21, 1937, and my salary. I certainly do not think that the setting up of this department had anything to do with the pendency of this litigation. So far as I know, it didn't.

I have in my department a number of rain gauging stations and river flow gauging stations. These rain gauging stations have largely been maintained by the Weather Bureau for a number of years—about half of them have. The great volume of the Weather Bureau rain gauging records are not published in the papers at all. They are only sent in once a month. So far as the great bulk is con- [fol. 1194] cerned, they are published some time after the end of the month, and annual summaries. There are Weather Bureau stations that have annual employees in the big cities, some 60, perhaps, in the whole country,—one at Chattanooga. They are published daily in the daily papers, but many times, I think about 4000 of them over the whole country, generally in the little towns, do what is called the cooperative observations, and they are sent in monthly. That is gathered in the monthly and annual reports. Persons desiring that information can get it from the other cities.

The United States Geological Survey service is a distinguished and old organization of the Government which prepares and has prepared for many years reports on the

rivers and weather conditions. I think it is a fair statement to say that its records and its stations have been the principal source of information for hydraulic engineers, public and private, for many years. They are still engaged in business, since the formation of the TVA, and they publish their readings and records, and publish papers entitled "Water Supply Papers". These water supply papers cover all, or at least all the principal watersheds in the country and go back for a long period of years. They are very chary of publishing other people's records than their own in magazines. They refuse to publish other people's records because they say they can not guarantee the accuracy. In some cases though they do accept them and publish them. I think they publish all that the TVA furnishes. In some cases they have gone back to the Weather Bureau records which antedate their own records to supplement their records for what they are worth.

In my operations I have been protecting these TVA construction crews in the river. Some private companies have built dams and structures in the rivers for many years. I [fol. 1195] think those companies have utilized the records of the United States Geological Surveys and Weather Bureau with fairly good success in preserving their own lives and their own property.

I do not think that our predictions of gauge heights are used by navigators on the Tennessee River. I do not know how much they use predictions of the Weather Bureau or of the United States Geological Survey, as it does not issue any predictions anywhere that I know of. I have never been in the navigation business, and I don't know whether or not it is a fact that on all inland water navigation in the United States the navigators base their operations upon predictions issued by the Government Bureaus and have done so for many years. I do not see why they should not utilize them as far as they can. I would think that they would utilize the Weather Bureau predictions if they could. Where there are locks on the river, as the Ohio River System, for example, every lock tender gets information more than once a day on the stages at the locks, both above and below, from the Army Engineers under whom those lock tenders work. I know that the vessels in traveling up and down the stream do get the information from the lock tenders as they come through the locks. I think that is most useful information. The fact is that that is part of the service of the Corps of

Engineers of the United States Army on inland waterways. I hesitate to state that this is based on the Weather Bureau information, but in many places the United States Army Engineers and Weather Bureau operate different services on these predictions and they don't agree. In some cities there are issued to the newspapers, if they ask for it, two sets of predictions, which is very confusing to the public. I think they are trying to get together. The introduction of a third one would be just too bad. If we extend our operations into that territory, we would certainly try to cooperate with them and agree, and have it under one service only.

[fol. 1196] I told about these predictions that we make and said in illustration of our practice that we released water during the low season of 1936 and 1937, in order to increase the depths of the river downstream. I think the draft of the steamer from Cincinnati—the "Gordon Green"—was at least five feet and not over six. The draft of the "Golden Eagle" from St. Louis was about a foot or a foot and a half less, as I recall. I think the maximum draft of the two steamers was about six feet. It might be a foot difference. They were plying from Paducah to Florence and did not go beyond. Then they turned back. If we had had these low navigation dams from Paducah to Florence, they would have had ten or twelve feet all the way, but that would not have been quite twice as much as they needed, because they would like to have at least 1 foot more than their draft. It is true, however, that they would have had a great deal more water than they needed. I don't know how long it would have taken to have built those low dams from Paducah to Florence if they had gone at it in 1932 or even 1933. It took about 30 years, as I recollect, to complete the Ohio river dams. I don't know that they ever got them all completed at one time, but they began renewing them before they were finished, I believe. It is not my testimony that it would take 30 years to build one of those navigation dams on the Ohio River. That was the actual time during which they were built. That is, they authorized the plan and they were 30 years in putting up the money and actually carrying it out. I think it depended on the money. If any one had come along with the generosity which the TVA discovered in 1933, in my opinion, although I don't qualify as an expert in that field, I think that those low navigation dams from Paducah to Florence could have been built in three or four

years. If they had been built, the "Gordon Green" and the "Golden Eagle" would have plied that river with the con- [fol. 1197] sciousness of very large factors of safety before this time. They would not have needed our releases.

I spoke something about releasing a little water for a barge, or barges. I do not remember that I ever knew how much water they drew. I don't think they come from the 9-foot channel in the Ohio and upper Mississippi Rivers. I think they were engaged in local transportation on the Tennessee. Some of them may have been hauling material for the TVA. Probably all of them were not, as we have some barges handling ties and sand and gravel for other people, occasionally. They have asked us for help sometimes. It has not been very frequently or very important. I don't always even know about these cases and I don't follow it that closely. I think the sand and gravel movement is mostly local, but it is at all of the cities. It has been going on long before the TVA was proposed.

When we released this water to enrich the flow in 1936, I think it increased the power down at Wilson. In 1937 I doubt whether it did. So far as I remember, they were not operating to capacity in 1937 down at Wilson; and as I said, this last summer was a rather wet summer and there was not much need of low water relief. I do not mean to testify that the low water flow in 1937 was sufficient to operate the installed generating machinery at Wilson Dam at capacity, but so far as I know it was never operated to capacity in the summer of 1937. I do not really know whether the reason for that was because we had not yet been able to sell enough power.

I also stated that when we let this water out, to float the two steamers, we let it out by sluices at Norris Dam. Whenever we are releasing water from Norris Dam, it had to go through the sluices. As to why we did not run the water through the generating machinery, that was not a matter of [fol. 1198] principle. The actual operation of the gates at Norris Dam is done by the staff of the power house. They are not directly under my jurisdiction. It would be too bad if I find they release a lot of water for power that I don't know anything about, as they are not under my jurisdiction, and it would upset all of my other instructions. The power house stations are under an officer who is, I believe, called Superintendent of Power Plant Operation—Mr. Karr. We give our instructions to Mr. Karr. But often we at the same

time telephone them to the power house operatives for their information, but they report to him and carry out his orders. We assume that he transmits our orders to them. The reason why we communicate with Mr. Karr in charge of the power division if we are simply wanting to discharge water through the sluiceways, which has nothing to do with power, is that we have only one staff over there to operate the gates and operate the power house,—the same men. We could not have them operating under two bosses, we think. We might get into trouble. We do not care which way the water is released, whether it goes through the sluices or turbines. We do not even know whether they want to operate those turbines or not. We tell them just how much water to release. It is entirely immaterial to me whether this great power resource runs wasting to the sea through the sluiceways or passes through the generating machinery.

It appears at page 462 of Complainants' Exhibit 116, the Second Deficiency Appropriation Bill for 1937, that in eight months Norris hydro-electric plant generated 91,971,000 kilowatt hours. That was, of course, not run through the sluiceways. That went through the water wheels.

I don't know enough about the firm power capacity down at Wilson to know whether the water discharged from Norris, regardless of how it was discharged, was increasing it [fol. 1199] or not. I do not know what the firm capacity at Wilson is. I was to a certain extent in charge of the flow down at Wilson. I do know, as a hydraulic engineer, that the increase in available flow through generating machinery, so long as it does not exceed the capacity of the generating machinery, would increase the firm power capacity, unless at some other time or point it is restricted. I am inclined to think that this release in the summer of 1936 did increase the firm capacity at Wilson Dam.

We started to fill Norris Dam on the 4th of March, 1936. It is not quite accurate to say that March 4, 1936 was the first time any water was ever impounded in Norris Dam. The water level was raised there about 40 or 50 feet during a considerable part of the construction period. It was a very small pool above. Substantially, so far as maintaining stream flow is concerned, it is true that March 4, 1936 was the first time the dam was put to use. We did not get it full that spring. We stored all of the water, I think, until June 19th, and it was not full. I guess one reason we did

not get it full when we stored all of the water was because we started so late. I have not made the calculation to ascertain whether if Norris Dam had been ready for operation throughout the winter of 1935 and 1936 and we had kept it as low as we had it down to March 4th, we would never have been able to fill the reservoir for low water navigation. It is not correct to state that I do not have to calculate that because we tried it out and found out we could not fill it after March 4th, because it started much lower than it would have been—that is, about 860. We cannot lower it much below that. When we have the sluices all open, it stood around 860, as I remember. There would have been about 400,000 acre feet of water in the reservoir, from there up to 955 perhaps. There is only about 500,000 acre feet up to 955, altogether.

[fol. 1200] I said that we released this water during the summer. I think ordinarily one would release stored water during the low water season if they were in the power business and had a plant down stream. We released this water, however, without generating power in 1936 at Norris. The first power unit was ready for operation in the latter part of August, 1936, so that unit, I think, was producing power. I think it was the second unit which was not ready for operation until about November 1st. I think that that generator was running fairly steadily for two or three months in 1936.

I am sure I do not know whether or not at the end of 1936 we had a contract with the Aluminum Company of America in operation for supplying power. I never have read any of those contracts. They are published in the Annual Report, but I have never read them. In my jurisdiction over the operation of Norris Dam and the reservoir and the use of its water, it was not my impression that it was being used to generate a large amount of power for the Aluminum Company of America at the end of 1936. I thought we were selling it to the Alabama Power Company. I don't remember who told me that. That was just current newspaper rumor.

I have heard of the Aluminum Company of America in the course of my official duties with TVA since I have been living down here, and have visited their plants many times. I knew they were building a transmission line to take power from Norris Dam quite a long time, but I do not know whether it was finished at that time. My impression is that we did not have any connection with them until after that.

I do not know whether it is a fact we started delivering power from Norris to the Aluminum Company of America on December 11, 1936. I do not know anything about whether we were making such deliveries in December, 1937. The increased releases at Norris Dam in December, 1937, [fol. 1201] were not, as far as I know, in any way affected by the delivery of 50,000 kilowatts of energy to the Aluminum Company of America. I did not know that. There has been an increase in discharge from Norris Dam since December 11, 1937. We also discharged a large amount back a month ago, but I can't remember just what date. If there is a large increase in discharge about December 11th and if we started delivering from Norris Dam to the Aluminum Company of America an additional 50,000 kilowatts of power at that time, that coincidence is purely accidental, if it happened. We are discharging at the present time 15,000 cubic feet a second at Norris Dam. The maximum amount that can go through our water wheels, when the water is at the top of the dam, is about 9,000 cubic feet per second. That amount decreases as the head goes down because only so much will enter the wheels. At the present stages, I suppose perhaps 8,000 could go through the water wheel, if both of them were running to full capacity. As a matter of fact we are discharging 15,000 cubic feet per second there. So whether the water wheels are running or not, I don't think it makes any difference. I did not know the Aluminum Company of America had their 50,000 kilowatts. I say it is an accidental flow so far as power is concerned.

The reason why we are discharging 15,000 cubic feet per second is that we are trying to draw the reservoir down to its winter level. We would have had it drawn down before this, but we have had various interruptions. There were a lot of tests made on the water wheels, to satisfy the purchase specification requirements, and this took several weeks. We also held back the stream flow at one time for the benefit of our construction forces at Guntersville Dam, where they had driven their cofferdam clear across the river. And when they were just finishing that construction, they were in a rather precarious position, so for a week or two weeks we pretty nearly stopped all of the flow at Norris Dam. Now, [fol. 1202] we have the way all open and are lowering the reservoir about a foot and a quarter each day in order to get down to our winter level.

I stated that when we started to fill Norris Dam about March 4, 1936, we started, I suppose, with about 860, but I don't remember definitely. That is where the water stood a long time before that. Referring to Defendants' Exhibit 50 offered by Mr. Bowman, which shows that the storage in acre-feet at 900 is 108,000 acre feet, this would be lower than that. I said it might be 100,000, but probably it was somewhat less. I was just guessing that from being familiar with that curve, but I did not have anything before me.

It is not a fact that the water wheels installed at Norris are designed so that they operate at their maximum efficiency when the pool is at elevation 1020. I think the maximum efficiency is when it is about 1,000, but I am not sure. There is a maximum point in there, or a point where the efficiency is a maximum, which is not the highest nor the lowest. When you get away from that point, either water too high or too low, the efficiency is less. It is fairly uniform for quite a long range in the center, and the further you get from that point the less the efficiency is. I do not know how rapidly the efficiency begins to decrease as you drop down towards 955. It does decrease some. I am not an expert in the design or specifications for water wheels.

When you ask whether the third largest flood of record on the Tennessee River reached its peak in April, I think you are probably referring to the flood of 1886. The peak of that flood was in April. I don't remember whether the largest and second largest floods of record occurred after the middle of March. The flood of 1886 started in March, about the last three days of March, and the storm started then and the peak came a week later probably. It is also true that the maximum flood at one point in the river is not [fol. 1203] perhaps the same as the maximum flood at another point in the river. These floods are sometimes more in the upper end of the river system, and sometimes the lower. Speaking of the peaks of the second largest flood or the third largest flood will not definitely locate the flow. I would never use the language, however, that it might be a big flood in the upper end of the river and the valley storage has ironed it out into a small flood at the time it gets to the lower end.

By Mr. R. T. Jackson:

"Q. Mr. Woodward, I would like to invite your attention to a statement on page 132 of the Hearings before the Sub-

Committee of the Committee on Agriculture and Forestry, United States Senate, 71st Congress, First Session, dealing with conservation authority, and being from a document inserted under the heading of Tennessee Valley Authority Water Control operations, January 1937 Floods, and particularly this paragraph:

'Water Control Operations • • •.'

Mr. Fly: I object to going into a hearing on the Conservation Authority's bill.

Mr. R. T. Jackson: It is a resolution of the Board of Directors dealing with Professor Woodward.

Mr. Fly: I object to going into those hearings.

Judge Allen: Is this one of the hearings that is in evidence?

Mr. R. T. Jackson: No, it is not, your Honor.

Judge Allen: Would you mind showing that to us?

Mr. R. T. Jackson: This is as I have stated, a resolution by the Board of Directors, the particular paragraph I want to ask Mr. Woodward about is this one, which is one with reference to his office or department at that time. My purpose, I might say, is to use it to refresh his recollection as to the organization of his department.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: And may we have our exception?

Judge Allen: Yes.

Mr. R. T. Jackson: And in order to complete the record, may I ask the Reporter to copy in as a part of my question, first the material under the heading 'Water Control Operations' at top of page 132, and then show that I ask Professor [fol. 1204] Woodward whether that refreshes his recollection as to the Authority under which his department was operating at that time; and then let the record show the objection, the ruling of the Court and the granting of the exception.

Mr. Fly: I do not think your Honor, that such a way ought to be adopted for getting all of that statement into the record, through the question and therefore into the record of admitted evidence. I think it ought to go just as all others do into the excluded part.

Judge Allen: The Court has ruled that the evidence is rejected.

Mr. R. T. Jackson: I was only trying to save time, as I understand I have the right to put my question, read it and

then have the ruling of the Court on it. I was asking whether that might be copied and the delay avoided. If that is agreeable I will deliver this to the reporter.

Mr. Fly: That goes into the excluded portion, as the Court orders."

(Said excerpt from the TVA Board resolution is as follows:)

"Water-Control Operations

The Board of Directors on June 30, 1936, adopted bulletin No. 1 and approved Bulletin No. 2, as recommended by the Hydro-electric Committee, and established the following procedure with reference to the preparation of subsequent bulletins and the administration of the requirements of these bulletins.

1. A committee on Water-Control operations is created consisting of the Chief Water-Control Planning Engineer and the Chief Electrical Engineer. This Committee shall prepare general regulations as to the control of water through the operation of reservoirs. In formulating these regulations the Committee shall confer with the Chief Construction Engineer, the Chief Medical Officer, the General Solicitor, and the Superintendent of Power Operations, or their representatives. The regulations shall be transmitted to the office of the General Manager in the form of bulletins for submission to the Board of Directors, and for general distribution after approval by the Board.

2. The Superintendent of Power Operations shall be responsible for the day-to-day operation of the gates within the limits of and consistent with the requirements established by the regulatory bulletins of the committee. He shall [fol. 1205] fix the responsibility for load dispatching and gate operation at each dam. On dams under construction a representative of the construction organization shall be designated to operate the gates.

3. The Engineering data division shall maintain current records of rainfall, run-off, and river flow; furnish daily reports, and predictions; and designate a representative who will maintain daily contact with the Chief Load Dispatcher at Wilson Dam for the exchange of information.

In accordance with this memorandum, S. M. Woodward, Chief Water-Control Planning Engineer, and Llewellyn

Evans, Chief Electrical Engineer, compose the Committee on Water-Control Operations; C. L. Karr, Superintendent of Power Operations, became responsible for the day-to-day operation of the gates; and J. H. Wilkinson, Engineering data division, was designated to furnish daily reports and predictions of rainfall, run-off, and river flow."

I testified that I was consulting engineer on the Miami Conservancy dams in the State of Ohio. I think those dams do a very good job in protecting the City of Dayton. I had nothing to do with putting the following inscription on those dams: "The dams of the Miami Conservancy District are for flood prevention purposes. Their use for power development or for storage would be a menace to the cities below". They were put up after the dams were all finished, but I have seen all of these. There is one at each dam. As an engineer I do not think I would agree fully that that is a correct statement of principle to be applied there.

Assuming that the dams and reservoirs in the TVA Unified Plan are as set forth in the Report of March 31, 1936, to Congress and are to be operated so as to produce 660,000 kilowatts of firm capacity 24 hours a day, and an annual primary output of 5,780,000,000 kilowatt hours, as shown in the table on page 279 of Complainants' Exhibit 115, in a dry year such as 1925, I have an idea how much storage would be required to supply this amount of continuous firm power. I can't give the elevations of the Norris and Hiwassee reservoirs on January 1st, February 1st, March 1st [fol. 1206] and April 1st, that would be necessary in order to provide that amount of firm capacity and firm power in a dry year such as 1925. I do not know from my flood control studies that the storage required to supply that much continuous capacity and output of firm power could not be filled at any time after February 1st until the following fall in the case of a dry year like 1925. I do not know that because I do not know how much storage would be required. I do not think I can answer the question whether, assuming that the storage that would be required before February 1st in such a year would be 3,200,000 acre feet, it would be necessary to have the reservoirs included in the TVA Unified Plan filled up to the normal pool level, such as 1020, for illustration, at Norris, and also to encroach very substantially on the storage capacity above that level. It refers to Fontana Dam and I have not made any calculation. Ex-

cluding Fontana Dam I would want a day or two to calculate in what reservoirs we would put 3,200,000 acre feet of storage by February 1st, assuming the flow conditions of 1925. I am able to solve our flood control problems without being able to answer the question, because in studying flood control we take the wettest year. We don't worry about 1925, which was the lightest year of record in that part of the valley. In studying the flood control we take the wettest year and work down until we come down to the smallest, as far as we think it is necessary to go.

It is correct to say that in any testimony I have given with reference to flood control or flood storage, we have disregarded power production and we have given no consideration to what restrictions would be imposed by any requirement that this system would produce 660,000 kilowatts of firm capacity and 5,780,000,000 kilowatt hours of firm energy annually in dry years such as 1925. I have [fol. 1207] had no idea at all that they would impose any restriction on us in operations.

Examination by the Court:

We gave no consideration as to power requirements in the regulations that we issued for the impounding of water. We do permit them to use that water for power and, in special cases when they might want extra water, if they would ask me about it, we would give extra consideration; and if there was extra water available and they wanted it, we would give it weight and consideration. We would do that the same as we do in many other things that come to us, we give them whatever help we can.

Cross-examination continued:

I have given no consideration in any of my work to the report of the TVA to Congress, as shown in Complainants' Exhibit 115, as to the amount of firm capacity that would be produced by this system and the amount of firm output that would be produced annually. I have never even known what those requirements were. I might have heard these figures, but I don't remember now that I knew of them until they came up here at the trial.

According to my best recollection there was not any Water Control Planning Committee prior to June 30, 1937, composed of myself, Llewellyn Evans, Chief Electrical En-

gineer, L. C. Karr, Superintendent of Power Production, and G. N. Wilkinson, Engineering Data Division. There was no committee that had all four of those men on it. Mr. Evans and I, I think, were at one time denominated a committee, but Mr. Karr was never a member of it nor Mr. Wilkinson.

[fol. 1208] The graph (offered in evidence as Complainants' Exhibit 907) is labeled "Norris reservoir filling curve", and it has a Chattanooga curve on it also. It says approximate discharge, but it has one curve so far as I can see looks as if it could be the Norris elevation curve since it has been in operation. I can't tell in detail except at certain critical points. The outer curve says "discharge". That would take a long time to check back to know whether it was discharge at Chattanooga. I don't think I ever saw that curve before. All I can say is it looks like a Norris elevation curve.

"Mr. R. T. Jackson: I want to offer it in evidence. I would like, if it is not sufficiently identified, I would like to ask the witness if he would identify it.

Judge Allen: He said it would take him a considerable time to check it.

Mr. R. T. Jackson: That is the lower curve, and I am only offering it for the upper one.

Mr. Fitts: Are you offering it or not?

Mr. R. T. Jackson: Yes, I am offering it to show the upper curve.

Mr. Fitts: We object to the exhibit as not identified.

Judge Allen: The Court rejects the exhibit at this time, and sees no particular reason why this particular witness should check this.

Mr. R. T. Jackson: I thought he had a curve by which he could readily check it. May our exception be noted."

In my water regulation work, I have had nothing to do with figuring out how we are going to operate these reservoirs in order to supply the demands of cities like Chattanooga, Memphis, Knoxville, etc., when and if the TVA takes over these cities. But I expect, of course, that this winter is going to be used for water power when it is available so far as it does not interfere with our primary object.

[fol. 1209] It takes the water about 4 or 5 days to travel from Wheeler Reservoir to Cairo. I think the peak stage at

Cairo in 1937 was between 59 and 60 from January 31 to February 6. I don't know the precise dates. I am familiar with the operation of the Wheeler and Wilson reservoirs for the last week in January and the first week in February, 1937.

(At this point, at the conclusion of the day's session, the Court announced that pursuant to request made by defendants' counsel the Court would convene at 10:30 A. M. the following morning, Saturday, December 18, and would sit until the cross-examination and any further examination of the witness Woodward had been completed.)

I think the figures of 9,000 second feet for the average net release from the Wheeler and Wilson reservoirs in excess of the inflow into the reservoirs for the seven days previous to February 1, 1937, are a little large. I cannot get it quite so large. I have computed the average figures for the seven days previous to February 1 showing the excess of outflow from Wheeler over the inflow into Wheeler. I took the figures last night from the curves that I had, and the best I could read them is about 7000 second feet. I do not have the total figures for the excess of outflow over inflow at Wheeler Dam for January 25th. What I did do was to read the storage from the curve as nearly as I could at midnight January 24th, when there was 710,000 acre feet in the reservoir and at midnight of February 1, it was 610,000 acre feet, or a difference there of just 100,000 acre feet in that seven day interval. That corresponds to a little over 7,000 cubic feet per second on the average for the week. It is true that the operation of Wheeler and Wilson Dams made a slight increase in the flood stage of the Ohio and Mississippi Rivers at Cairo on February 4, 1937, by reason of releasing more water than the inflow into those reservoirs, if you leave out the effect of Norris Reservoir, and include solely the operation of those two reservoirs.

[fol. 1210] I consider the operation of Wheeler and Wilson reservoirs in the peak period as fairly typical of the operation and practice which I have been testifying to. If I might explain the circumstances the week of which we are speaking was the critical week in last winter's flood, so far as the Tennessee River is concerned. At the same time the Norris reservoir was retaining the whole flow of the Clinch River. Of course, the Norris reservoir is at a distance of

about 4 days flow of the river upstream from Wheeler reservoir. When I talk about the effect of Norris reservoir, that four days is allowed for. Considering that same period, Norris reservoir was retaining, so far as we can tell, 28,000 cubic feet per second out of the river that would have been at Wilson and Wheeler, and later down at Paducah and at Cairo. The operation during that week on the average was that Wheeler and Wilson released about 7,000 second feet more than was coming in to them. So if that 7,000 is deducted from the 28,000 at Norris, the net effect of the system to reduce the flow was 21,000 second feet. I would like to explain why Wilson and Wheeler were operated that way. The peak in the Tennessee River at Wheeler reservoir and Wilson Dam had come a few days earlier, and the Wheeler reservoir had been operated to keep the top off that peak. In doing that it was filled just as full as it could be allowed to fill. It was up to our maximum level. It could not go any higher without endangering a very important railroad bridge across the river used by two big systems, and a long fill, of which we are under great obligations not to interrupt the traffic. So the reservoir was absolutely full. In doing that, we had protected the cofferdam at Pickwick Dam from being flooded. They were in a very dangerous situation, just the same as at Cairo. The water got to the top of that cofferdam and they sandbagged on top. They did keep the [fol. 1211] water out, it was not flooded. It was a very large cofferdam with a lot of machinery. The weather predictions, which we got every day that week, predicted more rain. We were exceedingly worried lest another flood peak would come on top of that and we could not do anything more for anyone. We were making every effort to get a little space in the Wheeler reservoir so we could have a little reserve in there if the flood might come. So, we let out a little more from Wheeler reservoir than came in and lowered the reservoir a little each day, an inch or two a day during that week.

As to whether Colonel Powell, Division Engineer on the Ohio River, protested to me about our releases from Wheeler Reservoir, I heard that he sent a telegram to someone some time. I don't know whether I ever saw it, but I think it was later than that. I testified that I am in charge of the regulation of the water flow. His telegram didn't come to me directly. As to whether a telegram from the

Division Engineer in charge of the great flood on the Ohio River was never brought to my attention, I heard of it and I may have seen it. I know that I heard that he telegraphed. I think it was some time later. I think it was about a week later, but I am not just sure. I presume the telegram was addressed to the Authority and it probably was sent through successive offices down to me. I think probably I saw it, or a typewritten copy of it. I probably advised on the reply that was sent to the Division Engineer and published in all of the papers at the time. I have no record here of that correspondence at all to know whether it is true that the telegram was sent February 1, 1937. If it were February 6th, that is two weeks later than this time after it was all past. Yesterday I said the Mississippi was at the peak at Cairo [fol. 1212] over the period from Januray 31 to February 6. This critical week was from January 25 to January 30 or 31. I can't say now just how much we knew in advance that that was going to be a critical week. We had all of the data, weather predictions, and we knew it was a very critical week on the Tennessee. We did not know very definitely about Cairo. We tried to get in communication with the officers at Cairo every day. Some days there was difficulty about it. All of the railroad transportation was suspended. It was hard to get communications through, but I think that every day during that whole week we did get in communication with the Cairo Weather Bureau, sometimes by direct telephone and sometimes through the Weather Bureau office at Knoxville or Chattanooga. I think we used the office at Chattanooga because they would have a telephone sometime during the day and then they would relay it to us. But the few wires were so crowded that it was hard to get communications through.

Our operations were in part dictated by our construction work at Pickwick. All of the first part was dictated by that. As the Cairo peak approached, then we did what we could for that. But that was not planned very far ahead. I do not think it is a fair statement to say that we regarded the construction material at Pickwick as presenting a more critical situation than the flood situation at Cairo during that time. But it is true that we were as much surprised last winter by that unprecedented flood as any one else. We had not made any special preparations and, of course,

with only the Wheeler reservoir on the main Tennessee, we can not do but a small amount for Cairo with that single reservoir, and we had not contemplated particularly trying to do that. We would have to have the Gilbertsville reservoir really to be of important use on the Ohio River and the Mississippi.

[fol. 1213] We already had these various gauging stations and things that I have described at length to the Court, but nevertheless we were surprised by this unprecedented flood. Our gauging stations don't go to the Ohio River. That is not in our territory. It is more in the hands of the Army Engineers. My statement was that I was surprised by the unprecedented character of the flood.

"Q. Now, Professor Woodward, you said you did have some information that led you to suspect that there might come another flood, a large flood on the upper Tennessee, is that right?

A. Well, throughout the whole basin the weather—with all of those daily predictions——

Q. I just want to know whether I correctly understood it.

A. Over the whole valley the rains were rather uniform, or at least they covered a great extent of territory in the Mississippi Valley and the Tennessee.

Q. The point I am asking is, didn't you say a moment ago that your operations were also affected by the fact that weather information that you had led you to think that you might have another flood coming along, is that right?

A. Well, an addition on the top—that January flood was a succession of heavy rains lasting nearly a month, and it just built up gradually. If another heavy rain should have come after the last heavy one, we would have had a higher flood still, and that was what we were very much worried about.

Q. Now, I would like to have my question asked, and if you will, please answer that question, Professor Woodward.

A. Well, it was not a separate flood, it would be an added peak on the existing flood.

Q. All right. Let's not argue about it. Did you say that you were, your operations were affected by the fact that your weather information led you to believe that you might have either another flood or an increase in the flood, or whatever you want to call it, is that right?

A. That is correct."

[fol. 1214] I said, when I originally described the prediction system, that we did not predict what the advanced rainfall was going to be. I do not think our system broke down. I think it worked just about as finely as it could have from the information available.

"Q. But working as finely as it could, it still missed the peak?

The Witness: I think this is a fair statement, that looking back afterwards we can see that we could have had a little bit better control.

Q. And one of the big difficulties is that if we could operate these theoretical systems by hindsight, we could make wonderful records in comparison to what we do when we undertake to outwit nature in advance, isn't that so?

A. Well, we use all of the hindsight we can on the past as a guide to help us in operating.

Q. Yes, but——

A. We never can be 100 per cent perfect or complete in this operation.

Q. And that is because you cannot operate by hindsight, because no past flood is exactly like the flood that comes the next time, is that right?

A. We do operate that way, and I think very successfully.

Mr. R. T. Jackson: Will you mark this resolution which has been produced by the defendants as Complainants' Exhibit 908, please?

Mr. Fly: What resolution is that?

Mr. R. T. Jackson: The one you gave me last night.

Mr. Fly: I have here and I would like to substitute, a complete resolution on that.

Mr. R. T. Jackson: I can't understand that. There is no precedent for it.

Mr. Fly: I object to the incomplete one."

I was the Chief Water Control Planning Engineer on July 1, 1936, the time when the resolution (offered and received in evidence as Complainants' Exhibit 908) was passed by [fol. 1215] the TVA Board, and I was the official so designated in the paragraph "A Committee on Water Control Operations is created consisting of the Chief Water Control Planning Engineer and the Chief Electrical Engineer".

"Q. Now, Professor Woodward, yesterday you said that this idea of normal pool level was somewhat of an enigma to you, and I want to direct your attention to complainants' exhibit No. 698, which is the resolution of the Board of Directors of the Tennessee Valley Authority passed August 21, 1936, something like six or eight weeks after the resolution that I have shown you, making you and the chief electrical engineer the ones to pass upon how the water should be let out of these reservoirs, and draw your attention to the fact that the Board in that resolution fixed the normal pool level for Chickamauga Dam, and ask you whether or not the Board did not fix that level upon the recommendation of you and the chief electrical engineer who were the committee charged with the duty of making such recommendations for the approval of the Board as shown by paragraph numbered 1 of the resolution appearing on Complainants' Exhibit 908.

A. No sir, I don't think this matter ever came before our committee. I don't recall any such thing."

It is my testimony that although the resolution, Complainants' Exhibit 908, was passed by the TVA Board, made me and the Chief Electrical Engineer a committee to fix those levels or make recommendations, the action of the Board shown in Complainants' Exhibit 698 was taken without any recommendation from our committee. As far as I know it was fixed without regard to anything that I said or that our committee said. I had many other responsibilities besides this water operation, and the usual procedure is that the tentative plans for these reservoirs when they are made by Mr. Bowman in reports on such matters probably go through my hands and have my approval, and they go from me to the assistant chief engineer as a matter of the engineering planning and construction, and probably I approved these personally. That, of course, was being approved three or four years in advance of the completion of the reservoir and the Committee on Operations was not [fol. 1216] considering matters that far off and have not in any case that I know of ever considered these levels so far ahead. The levels are fixed for the construction operations, for buying land, for helping to determine the land that is to be bought and the line for clearing the reservoir.

Examination by the Court:

We do not prepare any regulations for the control of the water until the dam is completed. We had not considered that until it is about ready for use.

ross-examination continned:

Mr. Bowman is the head of a division and one of my most experienced and able members of my staff, and is under me, and reports through me. It is our present plan that these pool levels be subject to rather constant fluctuations and that is our practice so far. I, of course, know it to be true that the reservoir of any public utility is subject to daily and week-end fluctuations as a result of peaking for power purposes; that is, where they are permitted to do that. There are some that are not allowed to.

The daily and week-end peaking was limited at Wilson until the TVA built Pickwick,—that is, their capacity was limited because they could not peak the flow so much at Wilson until Pickwick was completed in view of the shallow navigating conditions below the dam.

Mosquitoes that produce malaria breed in the shallow ditches and comparatively stagnant water. When we get these vast lakes built in the Tennessee Valley, the perimeter of shallow water will be much greater than in a state of nature. The language is entirely too strong to say that we will have incubation space for malarial mosquitoes that will [fol. 1217] infinitely exceed any such space that was provided by nature in the Tennessee Valley. As to whether that would be a very large rather than infinite inorease in incubation space for malarial mosquitoes, I can not speak very accurately. There are a good many lakes along the bottom lands which remain lakes most of the summer and there have been some very bad mosquito places along the Tennessee River. We are hoping to improve that situation very much. This is a little digression. Our health service is making a lot of experiments trying different methods, and in the two or three years of experimentation we have had, we feel we have had very good results. We have improved a lot of places and we are hoping we can relieve the valley of very much of the trouble in that. As to whether the system the Tennessee Valley Authority has been using on malarial control in the reservoirs is simply the methods

employed by the power companies on such reservoirs for a good many years, we are doing a great deal more than they did. In general, we are clearing up the margins fairly, using various poison methods and fluctuating. As to whether the power companies, under the State Boards of Health familiar with the malarial problem, have been using fluctuation, methods of poisoning and methods of airplane dissemination, for a long time before the Tennessee Valley Authority started doing those things, I do not know that any power company has been making experiments of that kind. I do not know just what efforts have been made. I know experiments have been made by the State Health Agencies. It is not true that as we gradually lower these very large reservoirs, all the damp places and isolated pools of water are left and become excellent breeding places. We drain all those.

[fol. 1218] Assuming the dates marked Sundays on this list from August, 1936, through Sunday, October 4, 1936, is correct, the records that I have show that on many of the Sundays the flow out of Norris Dam was entirely shut off. On some Sundays my record does not show it was shut off at all, and other Sundays it was less, it was partly shut off, or shut off for a part of the day according to these charts. My chart does not indicate any shutting off of the dam at all on Sunday, August 16, 1936. It was shut off for part of the day on Sunday the 23rd. On Sunday the 30th there were some fluctuations, but they were very small, and it was almost the same as a constant flow the rest of the time. On Sunday, September 6th, it was entirely shut off; on the 13th only slight fluctuations; on the 20th it was not shut off at all; on the 27th it was shut off a part of the day. On Sunday, October 4, it was shut off part of the day. On Labor Day, which was September 7th, it was closed until about daylight, shut Sunday, the day before, and it was not started according to this, until sometime in the morning of Labor Day. It is my impression that it is customary for power companies to shut down their hydro plants on Sundays and Labor Day. I suppose the reason they do that is because the industries they serve are shut down and they have no market for so much power. That is common knowledge, no expert knowledge about that.

I testified previously that Norris Dam would be kept at low level, not down to the minimum but down much below the spillway crest until April. Early in January, 1937, Nor-

ris reservoir was down to elevation 99C It was during that flood time that it ran to elevation 1010 on the 17th of January. I think it did not go below 1010 after that time until the summer, until it was filled in June, at which time we brought it up to 1020.

[fol. 1219] The photostat (offered and received in evidence as Complainants' Exhibit 909) of page 515 of Complainants' Exhibit 115, the Hearings of the TVA on the Second Deficiency Appropriation bill of 1937, shows in the upper line the installed capacity, and in the next solid line the firm power capacity at 60 per cent load factor. As you go up from the left-hand on that line on the chart, it goes in a straight line until just before the close of June, 1936. Then it takes quite a steep jump. The title is marked Norris storage, and I suppose means that the steep jump in the line is intended to show the effect of Norris storage on Wilson Dam. That is my interpretation as an engineer. I interpret the curve of firm power with a 60 per cent load factor, which corresponds in general with the steps in the upper curve, "installed capacity" which appears at the beginning of this space "Norris 1," "Norris 2," to mean the bringing in of the generating units at Norris when Norris No. 1 unit was ready to operate. This line fluctuates beginning just a little above the figure 100 on the left-hand side, which is marked "maximum system demand". It goes in a solid line up to a certain point in early 1937, and is thereafter a broken line, which indicates an estimated demand as distinguished from historical or actual demand. I think that is so because there is a date on the chart which exactly corresponds to that place where the line changes from a solid line to a broken line.

The Norris storage alone was sufficient to double the firm capacity of the system at that time. The system at that time was the Wilson plant only. Wheeler was not finished at all. It is my understanding that the storage at Norris will firm up the capacity of the system plants at Wheeler and Wilson and any place downstream, both by increasing the low water flow and also by providing for generation of power at Norris through the release of water in low water seasons. I am [fol. 1220] not a specialist in this field of power, but I think that is true.

I can't say positively that I ever saw a copy of this Complainants' Exhibit 909 before. I have seen various charts of that sort and it is likely that I saw this one. There has

been brought to my attention from time to time charts showing the installed capacity and the firm power capacity, and the system load, and estimates for the future. I have seen more or less of such charts, but my knowledge is very vague because I have never used them or given any particular attention to them. It shows this firm power capacity here with two steps at Norris. That amount of capacity could not be obtained without releasing water through the turbines at Norris. The generators can not operate without water going through them.

I commenced consulting work for the TVA in June, 1933. The plans for Norris Dam were completed by the Bureau of Reclamation. It is true that I visited St. Louis three times, I think, before the drawings that were in preparation there for Norris Dam were delivered to the TVA. It is a fact that in the course of the study of plans for the Norris Dam the Bureau of Reclamation made, among other studies, one of the economic height of Norris Dam. I don't remember the exact title but that identifies the document to me. That document was shown to me and I examined it in the course of my work for TVA. I read it all at one time. I do not have any recollection of how much the figure was which the Bureau of Reclamation reported for the cost of a dam and reservoir at Norris for flood protection alone, equivalent to that included in a power and flood control structure, but I think it was some such estimate as $7,150,000, or thereabouts in that document. I don't have any idea what the figure was. I have no recollection of that at all. I don't have [fol. 1221] any copy of this report myself. Copies are exceedingly rare because there were not but one or two copies I think ever delivered.

"Judge Allen: The witness has none and he certainly cannot be forced to produce it.

The Witness: It was a report of one officer, one staff member there, and I don't think it has any more standing than his individual opinion. If I might state when that report was being started I was in Denver and consulted with the man that prepared the report and I did not agree with him very well in many things and I never did agree with his report so it doesn't have very much standing with me and I don't think it has any particular official standing. I never did pay much attention to it, I never used it afterward."

I do not mean to testify that the TVA does not have a copy of the report. I think that the TVA has a copy. I don't know what department it is in. We have a central file that are the permanent records, but a great many of the records that are in use are out in some of the offices.

Examination by the Court:

The report was made in the fall of 1933 by a man named Debler. I don't know his title, but he is a man who makes, I think, economic reports on irrigation projects for the Bureau of Reclamation.

[fol. 1222] Cross-examination continued:

These studies were made by the Bureau and the dam was built substantially in accordance with the drawings made by the Bureau of Reclamation.

"Mr. R. T. Jackson: But I would like to have the record show that page 7 of exhibit 113, annual report of the Tennessee Valley Authority for June 30, 1934 sets forth that the Tennessee Valley Authority arranged for the design of the dam by the Bureau of Reclamation, and adopted the name of Norris Dam for the proposed structure. I want the Court to know that I had a substantial basis for inquiring about this document.

The Witness: May I add, I don't know whether the Authority ever asked to have this economic study made or not?

Mr. R. T. Jackson: I suspect not.

The Witness: They may have asked for it. We had a contract with the Bureau of Reclamation, but I am not familiar with its terms.

Judge Allen: Well, if this report is in the office of the Authority the Court will ask to have it produced."

The documents (marked for identification as Complainants' Exhibits 910 and 911) appear to be copies of the information sent out by TVA with reference to the daily river stages and rainfall. We send those out to power companies and anybody that would ask for them. We distribute 150 or 200 copies daily. Of course I have not examined all of the sheets but they appear to be the file.

"Mr. Fly: May it please the Court, in regard to this report of Mr. Debler, as the witness has testified, the Bureau

of Reclamation aided, or perhaps made the entire design of the dams.

Now, as I understand this report of Mr. Debler is his own study as to the economic feasibility of some sort of structure. Now, I have no objection to producing it. I don't think it is relevant here but——

Judge Allen: Suppose you produce it, and then the Court will decide.

[fol. 1223] Mr. Fly: And we reserve the objection? I will be glad to do that.

The Witness: I would like to tell the Court that certain points about the design of the dam which he recommended were not followed. I cannot say how extensive that was."

The releases sent out by TVA with reference to river stages and rainfall, are daily except Sunday. They are not issued on Sunday and the one issued on Monday covers Sunday.

I don't even know who our industrial customers are. I don't know anything about what they do or whether they shut down on Sunday.

Redirect examination:

The document (offered and received in evidence as Defendants' Exhibit 65) is a correct copy of a release of the Board of Directors of the TVA of July 1, 1936, which is a complete copy of the resolution, together with Water Control Bulletins Nos. 1 and 2. I am familiar with them.

"Mr. Fly: And we can state that the certificate, copy of the bare bones of the resolution which complainants offered was erroneously marked as June 30th. July 1st is the correct date. We checked that this morning.

Mr. R. T. Jackson: It is dated July 1st Mr. Fly.

Mr. Fly: Is it?

Mr. R. T. Jackson: Yes. But it seems to me in view of the statement of counsel here, that if it is insufficient to have the bare bones of the resolution we should have an order requiring the defendants to produce all of their minutes, where they have produced resolutions heretofore, instead of just the bare bones, which, as counsel now concedes, shows nothing.

Judge Allen: Well, the Court sometimes decides on the question of bare bones against the wishes of complainants,

and sometimes against the wishes of defendants. The Court [fol. 1224] has consistently excluded minutes which it deems to be immaterial and irrelevant.

The Court considers that these bulletins which are referred to in the body of this resolution are competent, material and relevant, and the Court has permitted complainants against the objection of the defendants, to introduce various tables which were incorporated in a similar way by reference to various resolutions; against the objection of defendants, that was permitted.

Mr. R. T. Jackson: I had interposed no objection here, if your Honor please. It only seemed to me——

Judge Allen: I am just calling your attention to the fact that under this ruling, consistent with this ruling, you were permitted to introduce many papers attached to resolutions. The ruling is exactly the same in each instance.

Mr. R. T. Jackson: I am not arguing about the ruling of the Court.

Judge Allen: All right, let's proceed.

Mr. R. T. Jackson: Well, may I make this statement? I think the concession of counsel changes the situation. That is my only point, and that whether or not the additional material is relevant could not be known to the Court when it was never submitted to the Court.

Judge Allen: The Court has ruled, and its ruling will stand and you may have your exception to the ruling that is against you, and let's proceed with the testimony at this time.

Mr. R. T. Jackson: May our exception be noted with reference to the other resolutions.

Judge Allen: I call your attention again to the fact that this is an irregular session of Court this morning and that we desire to finish."

Mr. Bowman is not a member of the Water Control Planning Committee at all. In fact that Committee does not exist any longer. He never was a member of it when it did exist. He was never a member of the staff engaged upon work having to do with the operation of reservoirs already in operation. Any reports coming through me as to such figures would pertain to construction rather than as to future operation.

[fol. 1225] The greatest height that the Norris reservoir reached during the 1937 wet season was a little over 1031 on

two or three different occasions at that bad flood time. One of the times came a couple of weeks later and we had quite a flood on the Clinch and we had it the same as we had before. It was a little over 1031. We held the flood waters between 1010 and 1031 for a while, but as soon as it was entirely safe we released as much as we could down the river. We drew it down to this minimum of 1010 from the 1031. We arrived at the end of the normal flood season at about 1010.

The TVA does not take the responsibility for the accurate dissemination of information as to the Cairo gauges. We have no authority there, and we have difficulty in getting the information when we want it. It is a long ways away from our places. It was the United States Weather Bureau which was making the predictions of rainfall which I said was equivalent to a prediction of increased flood heights. We get all of those predictions just as fast as they are made by the Weather Bureau office in Knoxville.

My calculations as to the net benefit of Norris and Wheeler combined in reducing the flow out of the Tennessee at time of the crest at Cairo are based on Paducah, which is at the mouth of the Tennessee River, and it has a net reduction in flow at the peak of 21,000 cubic feet per second. It would be about the same amount at Cairo, which is 40 miles downstream. I mentioned in connection with that particular operation of Wheeler that we had a very serious situation on the construction job at Pickwick. They were using sandbags at Pickwick. In releasing that water which was released under those circumstances out of Wheeler, all of [fol. 1226] that water went over the spillway. The power plant at Wheeler, I think, was not running at that time at all. In my opinion, if we had had Gilbertsville and the other dams in operation, we could have attained very much more substantial benefits in controlling the Tennessee at the time of the crest at Cairo.

My instructions fixing the levels or requiring the maintenance of the pools or in discharging the water have never been overruled by the Chief Engineer or by the Board of Directors.

I stated in regard to the Wheeler operation that the normal operation in wet season is to keep it at the minimum navigation level. We have a general plan as to the rate of filling of the Norris reservoir upon which computations of power output could be made. We have what might be con-

sidered a tentative schedule for flood control, which would be specially applicable to a wet year, which is to have the water level as low as 955 by the middle of December, and to be raised during the winter months to 1005 at the middle of April. In a dry winter we think a tolerance of 5 feet over that is perfectly permissible, and it perhaps might be more at times. In a wet winter, whenever we would have much of a flood, we would be at a much higher level because the reservoir fills up during the flood, and then we have to let it out when it can be done safely, and that takes a considerable period, several weeks at times. The five feet tolerance in dry seasons would be without any sacrifices of flood control benefits. We think that is no injury to the flood control when conditions are unusually dry.

With respect to elevations which we regard as desirable and which are presently contemplated for the Hiwassee [fol. 1227] reservoir, we are using for our preliminary planning the elevation of 1415 at the beginning of the wet season, which might be considered December 15th, and 1465 at the end of the wet season, say the middle of April. It will be two years at least before that reservoir will be in operation. During these two years we will carry out a good many more studies of facts and records than we have now made. So this is just a tentative schedule for the purpose of designing and constructing the dam. In my opinion, the plan of filling for Norris Reservoir is feasible at Hiwassee between those stated elevations for purposes of flood control and control of waters in flood seasons. So far as our present knowledge goes, it is perfectly satisfactory for flood control.

Recross-examination:

I have nothing more than I have said as a rule curve for the operation of Norris Reservoir. Rule curve is an expression, as I understand, in power plant operation. It is not one I have ever used. I have an approximate idea what it means. I do not know that I do know exactly all the intricacies. To the best of my knowledge I do not have one. I don't use any such thing.

I don't know at what elevation in a dry year, such as 1925, we will have to have Norris on January 1st, February 1st, March 1st, April 1st, respectively, in order to produce with this TVA Unified System 660,000 kilowatts of firm capacity and 5,780,000,000 kilowatt hours of firm energy an-

nually. As to whether in January, 1925, I could have told that 1925 was going to be a low-water season, I cannot recall about the fall of the preceding year. I do not operate on the theory if the preceding fall is dry the next summer will be dry, but if the ground has been dry a long time, it [fol. 1228] takes a lot more rainfall to produce floods. That is evident all the time in dealing in flood conditions. It is also true rainfall varies from year to year, and that that makes a tremendous difference in flood conditions. You can not tell a month ahead or a year ahead.

It is true that at the present time if we fill Norris Reservoir to the top of the gates, 1034, we would flood out highways, such as the road from Lafollette to Cumberland Gap. When Norris reached the elevation of 1031 in the spring of 1937, we had flooded that road out in places. We were flooding a good many little things around there, it was just entirely too high for proper operation.

(The witness was excused).

[fol. 1229] Joseph H. Kimball was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Knoxville and am 64 years old. I am a civil engineer. I received my technical education at the Massachusetts Institute of Technology. For the first period of years I was engaged upon municipal sanitary and hydraulic engineering in municipalities in New England. In 1908 I went to Louisville, Kentucky, and became designing engineer for a portion of the time, acting chief engineer upon the design and construction of a new sewerage system. In 1914 I went to Dayton, Ohio, upon the flood control project of the Miami Conservancy District and served as assistant engineer, construction engineer and assistant chief engineer. In 1924 I went to Cumberland, Maryland, and prepared a plan for flood protection for the city from the flood water of the Potomac River. In 1926 I went to the office of Metcalf & Eddy of Boston, Massachusetts, where I was the assistant engineer and was there until 1932. In 1933 I came to Knoxville upon the TVA work. My position with the TVA is that of principal hydraulic engineer in charge of the

flood control section of the Planning Department. The work has involved the study of conditions in the Tennessee Valley as they affect the flood problem, and the examination of past floods and examination of conditions as they tend to promote floods of the future. The work has also involved a general study of the flood program, as floods have occurred upon other systems.

The data on the map (offered and received in evidence as Defendants' Exhibit 66) was obtained from a comprehensive [fol. 1230] map of the Tennessee River basin, which was, I believe, published by the TVA.

"Mr. Fitts: We offer the exhibit in evidence as Defendants' Exhibit No. 66.

Mr. R. T. Jackson: We object to it, because I do not find that it shows Fontana Dam site on the Little Tennessee River. At least not in the photostat that I have.

Mr. Fitts: That is correct.

Mr. R. T. Jackson: Of course, we object to it.

Mr. Fitts: Of course, it has been our theory all along there is no necessity of showing that on the map. The statement on the legend, 'Fontana Dam site located on Little Tennessee River, recommended by TVA but no appropriation made'. The Little Tennessee River is shown.

Mr. R. T. Jackson: I think it should be shown on the map. It is in your most recent report to the Appropriations Committee.

Judge Allen: Objection overruled. The exhibit will be received.

Mr. R. T. Jackson: May we have our exception noted. And I should like to make this observation, that we have been compelled to show completely everything in regard to the maps.

Judge Allen: Of course, what you did with reference to Fontana, Mr. Jackson, was to indicate the Fontana Dam site on your map with no differentiation between that site, which was merely recommended, and for which no appropriation was made, and the site of dams actually being constructed or actually completed. And since you had it on the map the Court asked you to make a differentiation, which was made. We felt the map was misleading without the differentiation, but in view of this legend the Court allows the map to be received, as not misleading.

Mr. R. T. Jackson: Our objection is upon the ground it is misleading without it, and particularly in view of the fact their latest report to the Congress shows it is a part of the program.

Judge Allen: Objection overruled. The objection goes to the weight and not to the competency."

[fol. 1231] The map (Defendants' Exhibit 66) shows the entire Tennessee River basin with relation to the states which are covered in part by it and with reference to the Ohio and the Mississippi Rivers. The main tributaries of the Tennessee River are shown, the Clinch River, the Holston, French Broad, Little Tennessee and Hiwassee Rivers above Chattanooga, and the Elk River and Duck River, tributaries to the lower basin. The drainage areas of these individual tributaries are also indicated. The principal highways are shown by the white lines. The railroads are shown by the black lines. The location of Norris Dam, which has been constructed, is indicated. The dams which have been constructed, or are under construction, are indicated by the circle within which there is a cross. The dams for which appropriations for construction have been made are indicated by a circle enclosing another circle of smaller size. The dams for which appropriations for investigations only have been made are indicated by the open circles.

The information shown on the tabular statement (offered and received in evidence as Defendants' Exhibit 67) entitled "Rainfall and Run-off", was taken in general from the publications of the United States Geological Survey and from the Mississippi River Commission. It shows first the drainage area of the individual tributaries of the Tennessee River and the average annual rainfall, which has been recorded over the individual basins. At the extreme right also is the average annual run-off. The figures for rainfall and run-off are shown in average inches depth over the watershed. It will be noticed from this that the total drainage area of the upper Tennessee Basin, that is, that portion above Chattanooga, is 21,400 square miles; that there is an average annual rainfall over the basin of 51.9 inches, and [fol. 1232] that the average annual run-off is 24.34 inches. On the lower Tennessee Basin the total drainage area is 19,200 square miles, and the average rainfall slightly more, 52.5 inches. The total for the Tennessee River is 40,600

square miles, with an average annual rainfall of 52.2 inches, and an average run-off of 22.77 inches. In the Mississippi River Basin, the Ohio River, including the Tennessee, has a drainage area of 203,900 square miles. The average rainfall over the total Ohio River is somewhat less than that on the Tennessee, being 44.3 inches. The run-off is also less, being 18.28 inches. The Mississippi River, above Columbus, Kentucky, which is the point a little below Cairo on which principal measurements have been made, the total area there, excluding a portion of the upper Missouri River area, which is arid and does not contribute to floods, is 533,218 square miles. The average annual rainfall is 36.3 inches, and the average run-off only 13.03 inches. From the figures collected it appears that the Tennessee River drainage area is 7.6 per cent of the Mississippi drainage area above Columbus, excluding the arid portion of the Missouri River, but that the mean annual run-off from the Tennessee Basin, compared with that on the Mississippi River, is 13.1 per cent, or nearly double the percentage of the area.

The information on this tabular statement (offered and received in evidence as Defendants' Exhibit 68) headed "Contribution to Clinch and Hiwassee Rivers to Tennessee River Floods at Chattanooga", was obtained from the records of the United States Geological Survey. This table indicates for the principal floods at Chattanooga, for which records are available, the relation of the Clinch River flow and the Hiwassee River flow at points near the Norris Dam and Hiwassee Dam, respectively, with relation to the Ten- [fol. 1233] nessee River flow at Chattanooga; in other words, the contributions of these streams to the flood peaks at Chattanooga.

The information on the table (offered and received in evidence as Defendants' Exhibit 69) headed "Contributions of Tributaries to Mississippi River floods", was obtained from the publications of the Mississippi River Commission. This table shows the contributions which have been found in the eight principal floods from the upper Mississippi River at Grafton, which is just above the confluence of that river with the Missouri River; that of the Missouri River; that of the Ohio River as compared with the total flows at Columbus. Between the points of measurement, that is, at Grafton and Hermann, there is an area required to make

the total at Columbus. It will be noticed from this table that the contribution of the Ohio River and the Mississippi floods have varied from 52.1% to 92.1% throughout the latter period, applying to the flood of January of this year.

The information on the table (offered and received in evidence as Defendants' Exhibit 70) headed "Contribution of Tennessee River at crests of more recent Mississippi River floods", was obtained from the records of the United States Geological Survey. This exhibit shows the crest at Cairo for the larger floods as mentioned, and the corresponding Tennessee River flow at the Gilbertsville site. I should say that in making this table the basic data was obtained from the records of the United States Geological Survey, but the estimates as applying to the Gilbertsville Dam site were estimates made by the TVA and the Geological Survey records at Johnsonville. This table shows that the contribution of the Tennessee River has varied from 140,000 cubic feet per second to 475,000 cubic feet per second. [fol. 1234] The data shown on the map (offered and received in evidence as Defendants' Exhibit 71) entitled "Outstanding storms, the occurrence and paths of great rainfall", was taken from the publications of the Government, the United States Geological Survey and the Weather Bureau. The arrows shown upon this exhibit were drawn through the line of principal rainfall during the storms indicated. The length of the line corresponds to the length throughout which there was a rainfall of at least four inches of depth during the storm. It will be noted that the storm of March, 1913, which caused the great floods in Indiana, and Ohio, and Pennsylvania and New York passed north or northwest of the Ohio River. It was most intense over the northern tributaries of the Ohio.

Somewhat in contrast to this was the storm of January, 1937, which passed over the tributaries to the south or southeast of the Ohio River, except on its upper portion. The January, 1937, storm travelled along quite near the axis of the Ohio River, and the rainfall near the river was much greater than upon the outlying portions of the Ohio River drainage basin. Other storms are noted. In October 1910, there was a storm in which the total rainfall exceeded that of March, 1913. This, however, occurred at a time of year when conditions were such as to care for a larger proportion of the rainfall and no damaging floods resulted from it.

That is also true as to the extent of the damage in the storm of November, 1906. That storm was quite similar to that of January, 1937, although it was in a somewhat different location, a little more to the southeast. The storm of March, 1897, is shown as travelling along the Tennessee River basin. That storm produced the maximum flood on the lower Tennessee basin. The maximum flood on the upper Tennessee River occurred in 1867, but rainfall data for that flood was [fol. 1235] not available, so it could not be shown. Then, it is interesting to note, though, that the 1867 flood, which was the greatest in the upper Tennessee River, and the March, 1897 flood, which was the greatest on the lower basin, caused the third and fourth highest stages at Paducah previous to the 1937 flood. Another storm indicated is that of March, 1917, which produced the greatest flood on the upper Tennessee in the last 50 years. The storm of March, 1929, is also indicated. That storm had some definite peculiarities. It was at several points along its course a storm quite different in type to these others. It produced cloudburst rainfalls in the neighborhood of the upper Tennessee where it came nearest to the basin. There were cloudbursts of rainfalls in which at some points as much as 11 inches of rain fell within the period of only about four or five hours. That storm did not cause general flood conditions on the upper Tennessee River basin. There was no flood at Knoxville, nor on the upper Holston or French Broad, or Little Tennessee.

Similar storms of the cloudburst type might be mentioned. There was one which occurred in 1924 in Carter County, which is in the northeastern part of the Tennessee drainage basin. In that case there was a rainfall of about 15 inches in three or four hours. In that storm the rainfall came in such torrents that it caused a number of landslides, and produced scars on the hillsides which are visible today. That washing of material from the hillsides was somewhat like that which occurred in the 1929 flood. In this flood there were landslides which washed a vast amount of earth over the railroad tracks, in one case pushing a locomotive and tender off the track into the river. That type of cloudburst storm is more or less local in nature.

I want to mention also another storm which is not men- [fol. 1236] tioned here, and that is one which occurred in 1916. It caused a rainfall of 22 inches in one day, very

near the divide between the Tennessee River basin and the area of drainage into the Atlantic Ocean. That record, at the time it occurred, was the most intense rainfall which had been recorded east of the Rocky Mountains. As stated, these types of storms are likely to produce cloudbursts anywhere, and without warning. The damage resulting from those would be generally very local. In the case of this 1916 storm to which I referred, the greatest flood was caused at Asheville on the French Broad River, but there was no flood at Chattanooga, at the time when the flood waters reached that point.

The flood season on the Tennessee ranges from about the middle of December to the first of April. There have been no substantial floods at Chattanooga after the first week in April, and all of those were caused by rains which fell in the last of March. The flood season on the Mississippi extends a little later, perhaps a month later, because of the time required for the flow to reach the Mississippi from the headwaters of the Ohio. The upper Mississippi River also contributes generally its largest contribution late in the spring or very early in the summer at the time when the Ohio River floods are much less.

The chart (offered and received in evidence as Defendants' Exhibit 72) is entitled "Chattanooga as now developed under 1867 flood conditions". The flood heights were obtained by data collected by the United States Army Engineers Corps and by the city engineers of the City of Chattanooga. The elevation of the land which was necessary in order to show the extent of the flood waters was obtained [fol. 1237] from surveys of the TVA. This exhibit shows the extent of flooding in the City of Chattanooga, showing the greatest flood of record, that of March 11, 1867. It covered all of the lower industrial area of the city and a large part of the commercial and business section. It will be noted that the flood waters extended over Market and Broad Streets, which are the principal business sections of the city. The industrial section was well submerged. The map on which this flooding appears is a map showing present day Chattanooga. The outline of the water, of course, is the outline of the water as it occurred in 1867.

The data shown on the map (offered and received in evidence as Defendants' Exhibit 73) entitled "Chattanooga as now developed under 1917 flood conditions", was supplied

by the United States Geological Survey, together with surveys of the TVA as indicated for the previous exhibit. This shows in the same general way the extent of the flood water which occurred March 8, 1917. The elevation of the water in this flood was about ten feet less than in the previous flood. This was the greatest flood in the last 50 years.

The photograph (offered and received in evidence as Defendants' Exhibit 74) labeled "Chattanooga, Tennessee, View from Lookout Mountain, Flood, March, 1917". This photograph was taken by a local photographer. In the foreground, about the center of the picture, are shown some industrial plants which are within the flood waters, and these industrial plants are also seen a little to the left, also within the flood. Various spots can be seen on the upper right hand corner representing the housetops as they appeared above the flood. In some cases, following the lines of these houses, the locations of certain streets can be traced. The line extending from the curve at the right hand margin upwards and to the left is the Southern Railway as it appeared in the flood. At the left hand side is the N. C. & St. L. Rail-
[fol. 1238] road. The Central of Georgia Railroad is not visible on the photograph. That was near the margin of the flood water, about the center of the picture. The water that is shown there on the picture is valley storage. In the 1867 flood the water was 10 feet higher than is shown on this photograph.

The photograph (offered and received in evidence as Defendants' Exhibit 75) is a view of Chattanooga from the top of Lookout Mountain showing conditions as they are today. This photograph was taken about a month ago by a photographer in the employ of the TVA.

Cross-examination:

The only significance of the difference in shading to the right hand side of the railroad tracks is that some photographs were pasted together. The camera did not have a wide enough angle to take in the full panorama in one view. There were two or more views taken and those were placed together in this reproduction.

Direct examination continued:

The photograph (offered and received in evidence as Defendants' Exhibit 76) is a view of United States Highway

11, the road running from Chattanooga to Cleveland, and a portion of the highway which I believe extends from Quebec to New Orleans, the main highway from north to south. The view is taken a little east of Chattanooga. The bridge in the center is the bridge over South Chickamauga Creek. The arrow which is held on the pole at the left hand side of the road represents the height of the flood water in the flood [fol. 1239] of 1867. The photograph was taken by a photographer in the employ of the TVA. Some of these photographs were taken a year ago, some recently. The dates are marked on each and this was taken December 7, 1937.

"Mr. R. T. Jackson: My only objection to it is on the ground it is misleading because the photograph is not taken on the level of the supposed mark on the telephone pole, but taken on a lower level, slanting up. The Court would think that the flood very shortly overtopped that next tree, and flooded the landscape from there on. Of course, if they wanted to take an accurate picture, it should have been taken from the level on the flood.

Mr. Fitts: It is perfectly obvious, to show a point on the highway where a flood like that of 1867 would reach today.

Mr. R. T. Jackson: This is 1867?

Mr. Fitts: This is the high water mark of 1867 flood.

Mr. R. T. Jackson: Oh, I didn't realize that. I thought it was the flood of last year, and that somebody was taking an actual picture with some added data there.

The Witness: I might say further that the pole on which the arrow is placed is a graduated pole and the flood depth at that point can be read from that pole."

We surveyed it carefully, levelled from marked points of flood elevation to each point where the photographs were taken and on the flood heights allowances are being made for the slope of the water surface as found from the records of the Corps of Engineers. The survey was made by employees of the TVA under my general direction. I think I stated it was taken from the record of the marks collected by the Corps of Engineers and by the City Engineer. I saw those which had been taken. They were taken by employees under my general supervision and direction.

[fol. 1240] Cross-examination:

I cannot say how close to this telephone pole we had any mark. The allowance for the slope of the water was made

from the point where the marks were available. They knew what the slope of the water was because there were a sufficient number of the water marks recorded and collected by the Corps of Engineers to indicate the slope of the water in this flood. There was a great deal of study made on this subject. The employees of the Corps of Engineers spent a great deal of time and our own employees spent a great deal of time in identifying and getting what was the most reliable data on the depth of this flood. I don't think it is true that no matter how much study had been made that study lead to a wide divergence of opinion among the different people.

Direct examination continued:

This represents my own judgment as to where the water was in the flood of 1867.

Cross-examination:

There is a permanent monument in Chattanooga that shows where the flood was in 1867, but I don't remember the location right now. That permanent mark was placed there by the late Mr. Hooks, City Engineer of Chattanooga. I talked to him previous to his death and he explained to me how that mark was made. It was one of a number of marks. The other marks were selected by the Corps of Engineers. The mark that was actually left in the 1867 flood was on a building which was removed. Mr. Hooke, [fol. 1241] in order to preserve that record, transferred with surveying instruments that mark to the corner of a masonry brick or stone building here at Chattanooga where the mark still exists. Mr. Hooke told me when that was done, but I don't recollect now the date that he gave. Mr. Hooke was quite an old man. I stated that Mr. Hooke was an old man to show his actual information extended over a considerable period. I don't remember when he said he made his transfer of this mark. The building may have been about four miles from the point shown in this picture.

"Mr. R. T. Jackson: I made an objection upon the ground the way the picture as taken is misleading, in the first place, because it is taken with the camera held below the mark, tilting upward. I do not mean purposely to create, but it certainly results in creating, a misleading impression

as to the surface of the flood. Secondly, there is no evidence that this mark upon the telephone pole is reliably fixed in relation to the flood of 1867.

Mr. Fitts: We offer the photograph in evidence as Defendants' Exhibit 76. In my opinion, certainly, the objection as to the misleading character is frivolous and it could not possibly be misleading. It shows the number on the pole and shows the exact location.

Judge Allen: The objection is overruled. The exhibit is received as a demonstration of the witness' opinion.

Mr. R. T. Jackson: Exception."

Direct examination continued:

The photographs (offered and received in evidence as Defendants' Exhibits 77, 78, 79, 80) showing the railroad tracks (Exhibit 77), a factory with highway 41—64 (Exhibit 78), the substation of the Tennessee Electric Power Co. (Exhibit 79), and the Union Depot of the N. C. & St. L. Railway (Exhibit 80) are subject to the same explanation which I gave with respect to Defendants' Exhibit 76.

[fol. 1242] "Mr. Fitts: We offer exhibits 77, 78, 79 and 80 in evidence.

Judge Allen: Any objection.

Mr. R. T. Jackson: Well, I object particularly to 79 because I think again the way the photograph is taken is misleading."

Examination by the Court:

The dimensions of this flood marked as the flood of 1867 are correct according to my knowledge. I have seen and examined this cross, whatever it may be called, with the height of the 1867 flood, and it is correct according to my knowledge of the flood heights.

"Judge Allen: Exhibits 77, 78, 79 and 80 are received in evidence as illustrations of the witness' opinion.

Mr. R. T. Jackson: Exception, please."

Direct examination continued:

The chart (offered and received in evidence as Defendants' Exhibit 81) is entitled "Floods, Chattanooga, Tennessee, types of property, affected, 5 foot intervals of river stage". The chart as to flood heights was taken from the

records of the United States Geological Survey, and the general classification of property was made from an inspection of the areas, and the individual points, such for example, as Seventh and Market Streets, 52.8, were taken from the surveys of the TVA. This exhibit was prepared to show the types of property which were affected with the succeeding increases in flood depths. The flood stage at Chattanooga is called 30 feet. Immediately, as the flood water rises above 30 feet, certain low buildings indicated in the center of the third band from the bottom are reached. The flood of that depth, between 30 and 35 feet, reaches United [fol. 1243] States Highway 41-W, as shown in the left hand side. This stage also affects the Chattanooga and Northern Railroad and the Central of Georgia Railroad. The next band, between 35 and 40 feet, extends so as to reach several of the important industries, and that also reaches other tracks of the Central of Georgia Railroad. Proceeding upward, when the stage between 40 and 45 is reached, Highway 11 becomes flooded, and additional industries are reached, and, of course, to a greater depth for those that had been reached previously. In like manner it is shown that the Southern Railway and the N. C. & St. L. Railroad are reached on stages between 45 and 50 feet. The N. C. & St. L. Railroad station is reached between 50 and 55 feet, and Market Street is pretty well covered through the 55 to 60 foot stage. In Mr. Kurtz' hypothetical flood, which he estimated to reach a stage of 73 feet or more, that depth would be about 12 feet above the corner of 9th and Georgia Avenue, and the first floor of the Patten Hotel would be quite damp.

I have examined Complainants' Exhibit 349, with respect to which Mr. Kurtz testified that it set forth the findings of the Army Engineers as to flood damage in the Tennessee basin and which was used for the purpose of determining the location of the various types of damage and the principal amount of damage. That estimate, which was the estimate of the Corps of Engineers in House Document 328, did not include any elements of intangible damage such as interruptions to business and transportation, sickness, damage to public health, loss of wages, and whatever general depressive effects of floods there may be. There are certain conditions where a statement of the damage to property is a true indication of the damage that the flood causes. In

other cases, that comes very far short of indicating the dam-
[fol. 1244] age that has been caused. The flood causes a certain damage always necessitating cleaning up or removal of mud and the repair of any actual destruction which is caused by the flood, and also loss of furniture or goods or whatever might be spoiled by the flood waters. A flood of the proportions of the flood of 1867 would completely suspend any movement of commerce through Chattanooga.

I have examined Mr. Kurtz' testimony concerning flood damage upon the Emory River and particularly at Harriman. The significance of that is that it illustrates what may happen to any point within the Tennessee Valley where rainfalls of cloudburst proportions occur. The flood at Harriman was, as I understand, the only serious flood which has ever been recorded. That occurred in 1929. The Railroads have been in operation for a period of about 50 years before that time, and have never been seriously affected previous to that time. The railroads, according to the estimates of the Corps of Engineers, were sufferers to the extent of about 50 per cent of the total damage in that flood. That flood, however, is one which may occur at any point, and it has limited significance to the work of the TVA, in which, as we understand it, our duty is to construct dams and reservoirs which will have a general benefit rather than local benefits. In the case of Harriman, if the situation at Harriman were to be corrected, that would be like stopping a leak at any one point which might break out anywhere within the valley at some future time. That storm started as a thunder-shower, and, as is commonly stated, lightning strikes anywhere and seldom twice at the same point.

The Clinch and Hiwassee Rivers are substantial contributors of flood peaks on the Tennessee. Norris and Hiwassee Dams will retain the flood water during the crest of the flood at Chattanooga. Subsequent to the crest, the water can be [fol. 1245] released when it will not do any damage, in order to provide space for further floods.

The function of the main stream dams above Chattanooga, which hold in storage a certain volume of water for navigation, will be to release a substantial amount of this storage at the beginning of the flood, and then later, as the critical time comes, the gates will be closed to reduce the peak, and then the surplus water held in the surcharge area will be released as soon as feasible, the function thereby being to even off the flood crest. The further function is that each of

these main stream dams will clip off the top of the flood peak, and as the flood water progresses, the successive portions of the peak will be taken off and the burden on the lower reservoirs in controlling the Mississippi River floods will be reduced by the removal of such portions of the flood water in all of the dams above.

In my opinion, in order to obtain a substantial degree of flood control upon the Tennessee River, it is preferable to construct combinations of storage reservoirs upon the tributaries of the Tennessee and high dams with surcharge storage upon the main stream of the Tennessee and in my judgment this combination is essential.

I have made studies and computations as to the amount of reduction in flood heights at Chattanooga in the previous floods which could have been obtained by the operation of the dams constructed and under construction, and Watts Bar and Coulter Shoals which are being investigated for construction.

The table (offered and received in evidence as Defendants' Exhibit 82) shows estimates of reductions in peak discharge and reduction in flood crests at Chattanooga for various systems of reservoirs. The estimates were based upon records of stream flow as given by the United States Geologi-
[fol. 1246] cal Survey and the reductions are estimated from data as to the reservoirs under construction, which was procured as noted, and the various characteristics of the channels and the flow therein. The estimates of reductions were made by taking account of the capacities available for storage and applying them to the actual day-to-day flow of the river as recorded, and the effect of the channel capacity as influencing this flow.

The estimate of reduction is made with reference to the 1926 flood, the 1936 flood and the 1917 flood. It is estimated that with Norris and Hiwassee reservoirs in operation, in the 1926 flood, the peak discharge of 252,000 cubic feet per second at Chattanooga could have been reduced to 190,000 cubic feet per second. Similarly, the flood of 1917 could have been reduced from 332,000 cubic feet per second to 265,000 cubic feet per second. With the addition of the Chickamauga reservoir, the reductions would have been further reduced as shown in the table. And with the further addition of the proposed Watts Bar and Coulter Shoals reservoirs, the peak flow could have been reduced to the

figures shown at the bottom of the upper table. The reductions in flood crest are given in the lower part of the sheet. The 1926 flood is shown there as being reduced from a peak of 38.4 to 24.6 feet. Referring to Defendants' Exhibit 81, that would result in a reduction of the height below flood stage at Chattanooga and would make the difference, in other words, between a flood and no flood. The flood stage at Chattanooga is 30 feet as indicated, and in those cases where the reduced stage is below 30 feet, the flood is eliminated. In the case of the 1917 flood, the total reduction is from 47.7 feet to 32 feet. That reduction would eliminate the damage to the various types of property between the [fol. 1247] 32 foot stage and the actual stage of 47.7.

These floods which are noted here, we used because the data was sufficient for the making of the estimate. The greatest floods in the Tennessee Valley occurred before the records were kept to any substantial extent. It was, therefore, impossible to estimate reductions which could have been made in those early floods. The records are scanty for sometime after 1900. The 1917 flood is really the earliest flood for which we could make reliable estimates.

Although the works now provided for will not eliminate the greatest floods which have occurred, such as 1867, these reservoirs will reduce such floods very substantially, and as pointed out in the Unified Report, with desirable storage upon the other three tributaries, the Little Tennessee, the French Broad and the Holston Rivers, a degree of reduction would be atained which would bring the flood problem in Chattanooga within the reach of the City. With the projects now provided for and recommended, that is, Norris, Hiwassee, Coulter Shoals, Watts Bar, and Chickamauga reservoirs, the greatest flood within the last 50 years would be practically eliminated, and I think that is a substantial result. These reservoirs which I have named will be useful in reducing flood peaks or the passage of the wave down the river, and further in modifying the peaks on the Ohio and Mississippi Rivers.

The chart (offered and received in evidence as Defendants' Exhibit 83) entitled "Mississippi River hydrograph 1929 flood", represents the hydrograph of the Mississippi River flow at Cairo during the 1929 floods. This was not one of the very serious Mississippi River floods, and this was not a flood to which the Tennessee River made great contribu-

[fol. 1248] tions. The flood heights at Cairo in the past floods on the Mississippi have almost without exception been influenced by levee breaks below, and in order to get a real picture, this case was taken because this was a flood that was contained entirely within the levees and represents a typical hydrograph of actual flow. It has been thought in the past that in order to control a flood, it is necessary to control or hold back perhaps the entire flood flow. This exhibit is introduced to point out that by holding back a comparatively small amount of the total flood volume, very substantial reductions can be made in the height of the flood. For example, in reducing the Cairo stage from 52.7 feet to 52, it was necessary only to deduct about 710,000 acre feet, or about .24 of 1 per cent of the entire flood volume. To reduce it another foot required the control of only 1.03 per cent; to control it 2.7 feet required only the control of 2.33 per cent; and to control to a stage of 3.7 feet below the crest, 4.4 per cent. Comparing those figures with figures for the recent flood in 1937, the percentages appear quite comparable. To reduce the stage in 1937, .8 feet, requires the control of only about .35 of 1 per cent of the flood volume. To reduce it 1.8, the control of 1.23 per cent; and to reduce it 2.8 feet, the control of 2.45 per cent; and the further reduction to 3.8 feet to control 3.95 per cent of the total flood volume.

"By Mr. Fitts:

Q. Mr. Kimball, I will ask you whether or not in your opinion it is practicable to reduce flood heights on the Mississippi River below Cairo by the provision of a substantial amount of storage on the Tennessee River System under the plan as outlined in the so-called Unified Report to Congress of March 31, 1936?

Mr. R. T. Jackson: I object to that because we have no proof here of any action by the TVA Board as to how the reservoirs are to be kept. It is impossible to answer without that.

[fol. 1249] Judge Martin: Isn't that in the plan?

Mr. R. T. Jackson: I think it is not, your Honor.

Mr. Fitts: The record is full of testimony on the subject.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May we have our exception, please?

A. It is.

By Mr. Fitts:

Q. Would it still be possible to produce that result if you exclude Fontana?

Mr. R. T. Jackson: The same objection, of course.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Exception.

A. It will be possible to produce that result, but to a slightly smaller degree."

The function of the storage reservoirs, such as Norris and Hiwassee, will be to store the water during the critical period, and the function of the main stream reservoirs will be to clip off the crests, as the flood wave passes through the successive reservoirs, removing in each case a portion of the flood volume and reducing the burden on the lowest reservoirs, the lowest of which will be the direct agency in reducing the crest upon the Mississippi. It is my judgment that a very substantial reduction can be made in that way. In my opinion, it is best for Mississippi flood control to obtain the combination of high dams on the main stream of the Tennessee and storage dams on the tributaries of the Tennessee. Each one supplements the other in its effect. The storage reservoirs reduce the volume which has to be handled by the river dams, and the river dams in turn, serve to regulate the out-flow from the storage reservoirs, or the reduction which they have accomplished, and produce more definite results than could be obtained by the use of the tributary reservoirs alone, more certain results.

[fol. 1250] I have made studies and computations as to the amount of reduction in past flood heights on the Mississippi that could have been obtained by the operation of the reservoirs. In the 1912 flood, through the operation of the TVA system, the Cairo stage of 53.94 feet could have been reduced to 51.44, a reduction of 2.5 feet; in the 1913 flood a reduction in the Cairo stage from 62.5 feet to 60.2 feet, a reduction of 2.3 feet; in the 1927 flood, a reduction of the Cairo stage from 58.5 feet to 56 feet, a reduction of 2.5 feet; and in the 1937 flood a reduction at the Cairo stage from 59.5 feet to 57.6 feet, a reduction of 2 feet. I might say in explanation of this that the maximum stages given were crest stages estimated by the Mississippi River Commission. The actual stages, which resulted from the breaks in the levee system, permitted lower stages, but with a com-

plete levee system the stages given would have been obtained. In my judgment, reductions such as those which I have estimated are of very substantial value in protecting the Mississippi Valley. In my judgment, it is wholly reasonable to expect similar reductions can be made in future floods at Cairo, similar to those which have been indicated. The reduction in the 1937 flood was estimated to be 2 feet. That is, from 59.6 feet to 57.6 feet.

I have prepared a study regarding the relative times of the peak flows in the lower Tennessee River and of the Ohio and the Mississippi Rivers.

The tabular statement (offered and received in evidence as Defendants' Exhibit 84), is entitled "Data of Flood Peaks at Johnsonville on the Tennessee River, Paducah on the Ohio River and Cairo on the Mississippi River for past floods exceeding 50 feet at Cairo". The data was obtained from the records of the United States Geological Survey. It will be noted that the peak stage at Johnsonville in the 1884 flood was estimated. The hydrograph of the Tennessee River flood in 1884 as recorded varied somewhat from the [fol. 1251] ordinary relations which the hydrographs have in other floods to the stages above and below, and it was found that those records in that one instance were kept by an attendant who failed to record them correctly, and for that reason we have made an estimate, studying the contribution of the flow from the tributaries and the rainfall and estimated the peak as it probably was in Johnsville at that flood. In my opinion, based upon the information contained in that table, in most cases the Tennessee River peak reaches the Ohio River before the peak on the Ohio arrives from upstream.

The basic data in the table (offered and received in evidence as Defendants' Exhibit 85) headed "Tennessee River flood flow at Gilbertsville Dam site, flood of January-February, 1937", is from the Geological Survey records. The second column shows for each day during the flood period of 1937 the stage on the Ohio River at Paducah. Following that in the next three columns are the Tennessee River flows. The inflow to the river is to be distinguished from the actual river flow.

[fol. 1252] Cross-examination:

This is the Paducah gauge. There is a gauge at Gilbertsville at the present time but this stage referred to is the

Paducah gauge and there is no reference to any Gilbertsville gauge. I do not have the zero of the Paducah gauge here.

Direct examination continued:

I would like to say in explanation of the three columns showing the Tennessee River flows, starting with the low flow in the river, when the increased flow comes down which produces a flow ten times that which was carried previously by the river, in order to take this flow ten times the existing flow, the flow in the river must be increased in velocity ten times, or there must be a volume if the velocity is to remain the same, which is ten times as great. What happens, of course, is that the velocity is increased somewhat, and the volume swells to considerable proportions. In the case of a narrow gorge the principal change is in the velocity. In a broad, open area, the principal change may be in the volume of water. The first column represents the flow as if it were carried in a pipe line, that is, if the velocity were speeded up sufficiently to carry the entire amount. The second column represents the conditions as they actually were, that is, in that case the velocity has been increased and the volume has been greatly increased. As the volume has increased, it causes what has been called valley storage, and that valley storage is indicated in the third column, being the difference in each case between the amounts stated in the first and second columns. As we pass down, we come to the stage on January 28th, when the peak in the Tennessee River was reached. At that time the water over the flood plain was at its maximum height and subsequent to that time the water [fol. 1253] commenced to run out from the flood plain, or in other words, the valley storage was released. In the last column is shown the release of the valley storage. It will be noted that this release ranges between 34,000 feet per second on January 28th, and a maximum of 92,000 on February 3rd, and fell then to 45,000 on February 9th. The Ohio River crest at Paducah was on February 2nd, and the tabulation shows that in this Ohio River flood crest period, the Ohio River was swelled by the release of valley storage from the Tennessee. In my opinion the operation of this so-called valley storage on the lower part of the Tennessee River increased the flow in the Ohio and the Mississippi Rivers by a maximum of about 92,000 cubic feet per second.

The line at the top of the diagram on the chart (offered and received in evidence as Defendants' Exhibit 86) entitled

"Effect of natural storage in Gilbertsville Reservoir area in the flood of 1937," shows the rise in the Ohio River at Paducah from day to day. In the lower half of the diagram in a black line is shown the actual flow, and the red line indicates the flow that it would have been if it had been confined to a pipe line. The red line crosses the black line at the point where the valley storage is at the maximum. On the left of this point the water was increasing in the valley storage and on the right the water was running out of the valley storage, and it will be noted that this release is shown by the area between the black and red lines at the right of the point where the two lines cross. That amount is contributed and forms a part of the Ohio River flood water at the crest at Paducah. In other words, it is fair to state that in this particular flood, the water which had been retarded and held back by the natural valley storage was released and discharged at the very time it coincided with the peak on the Ohio River.

The elevation of the area marked "dead storage" on Complainants' Exhibit 411, which was introduced by Colonel Kelly, is shown to what is designated as "minimum [fol. 1254] pool". The elevation of "minimum pool" is shown on page 82 in the Report on the Unified Development of the Tennessee River System. On this page there is an elevation of water above the dam indicated as "minimum headwater elevation." The illustration represents the Guntersville Dam. Below this elevation there is shown the area which is covered by the small dots, the actual spillway, and the spillway crest is indicated there in this case as at elevation 555. The terms "minimum pool" and "minimum headwater elevation" are synonymous. They mean the minimum elevation in the pool, for when the pool is level, necessary for a 9 foot navigation plan. The spillway is shown in the section of the Report on the Unified Development to which I have referred and this picture shows the difference in elevation between the maximum pool which, in this case, was at elevation 590, and the spillway crest at elevation 555, a difference of 35 feet.

The chart (offered and received in evidence as Defendants' Exhibit 87) is entitled "Elimination of Dead Storage".

"Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 87 the chart entitled 'Elimination of dead storage' which has just been discussed by the witness.

Mr. R. T. Jackson: We object because it shows among other things Gilbertsville at an elevation of 375, which is contrary to the last report in Congress.

Mr. Fly: Do you have the evidence?

Mr. R. T. Jackson: I expect you to produce it. You said you would.

Mr. Fitts: The point is in this case the testimony is that elevation 375 has been decided upon.

Judge Allen: The objection is overruled. The exhibit is received.

Mr. R. T. Jackson: May we have our exception."

In the upper right hand sketch on Complainants' Exhibit 411, described by Colonel Kelly, there is an area colored in light blue which is marked "dead storage". In the lower right hand sketch on Defendants' Exhibit 87, this same area [fol. 1255] is marked in red and there it is indicated "valley storage eliminated". The exhibit which I have prepared, on the upper half of the sheet, shows the elimination of valley storage, as he has portrayed it in the lower right hand sketch. In the bottom half of the diagram is a sketch or drawing which shows the red area restricted and the volume within the reservoir below the top of the spillway as described in Colonel Kelly's verbal testimony. It will be noted that throughout the series of dams there is a very marked difference in these red areas between the upper drawing and the lower drawings, with the exception of Hales Bar Dam and reservoir. In that case there are no gates which may be opened releasing water to a low depth in the reservoir as provided in the TVA dams. The lowest sketch represents that in place of the dead storage indicated above, with the gates open, which extend down to the top of the spillway, the dead storage is replaced by actively moving flood water. When it is necessary or desirable to control the peak, the gates may be closed and the volume back of the gates up to the maximum or surcharge elevation can be retained and stored.

The expression "AF" on Defendants' Exhibit 87 means acre-feet. It is fair to state that what I purport to show on Defendants' Exhibit 87 is that, according to Colonel Kelly's diagram which he introduced in evidence as Complainants' Exhibit 411, the amount of valley storage eliminated by the so-called dead storage would be the amount represented in the upper half of my chart and that when I take his testi-

mony on both direct and cross-examination defining dead storage, the amount of valley storage eliminated is the amount shown in red on the lower half of my exhibit. I testified with respect to the computations of flood reductions on the Mississippi in various floods since 1900. In my opinion those computations properly represent the relative advantage of reservoir storage on the Tennessee against the so-called natural storage in the 1937 flood.

[fol. 1256] "Q. Mr. Kimball, I have handed you Complainants' Exhibit No. 352, which according to the testimony of Mr. Kurtz is the general map of the general layout of the reservoir system proposed by him. I have also handed you Complainants' Exhibit No. 353, which is a tabular statement of engineering data on the system of flood control to achieve a maximum practical flood protection, offered during the testimony of Mr. Kurtz, which shows the streams on which reservoirs are located, the tributary drainage area in square miles, the gross storage volume in acre feet, the net storage volume in acre feet, the estimated construction cost and the lands flooded when water is at spillway level in acres. I now ask you, including the construction and operation of 19 detention reservoirs, four located on the French Broad and its tributaries, five located on the Holston and its tributaries, two located on the Little Tennessee River, one located on the Clinch River and three located on the Emory River and its tributaries, the specific locations being shown on Complainants' Exhibit 352, assuming that these reservoirs would be operated solely for flood control, being kept empty to catch flood waters only in event of floods of certain capacity; assuming further that these reservoirs have two classes of openings, one being conduits which were kept open, the other with gates operated automatically; assuming further that the reservoirs would be operated so as to maintain at all times while the reservoir is being filled a constant flow through the total area of the openings; assuming further an automatic schedule which would cause the gradual closure of the gates, in those openings which are provided with gates, thus closing the flow of water from these dams through those openings; and assuming further tributary reservoirs at designated points where all of the gates would be open and the entire amount of flow would be passing through the openings without gates, assuming for each reservoir the rate of natural emp-

tying would be fixed by automatic schedule not subject to human control; assuming further that the tributary drainage areas and the storage capacity of each of these different reservoirs would be as shown on Complainants' Exhibit No. 353, further assuming that the continuous rates of release when the reservoirs are filling would be as follows: Painter Creek 22,400 cubic feet per second, Solomon Ferry 42,000 cubic feet per second, Dandridge 65,000 cubic feet per second, Kikers Ferry 60,000 cubic feet per second; Island Mills 2,000 cubic feet per second, Bachman Ford 24,000 cubic feet per second; Surgoinsville 36,000 cubic feet per second, Three Springs 35,000 cubic feet per second; Strawberry Plains 40,000 cubic feet per second; Fontana 50,000 cubic feet per second; Davis Ferry 60,000 cubic feet per second; Cove Creek 20,000 cubic feet per second; Frankfort, 2,500 cubic feet per second; Milliken Branch 16,500 cubic feet per second; Wartburg 250 cubic feet per second; Coleman 29,000 cubic feet per second; Apalachia 21,000 cubic feet per second; Austral 16,000 cubic feet per second; Charleston 46,000 cubic feet per second; I will ask you on [fol. 1257] those assumptions to please state whether in your opinion such a system could be successfully operated to reduce flood peaks on the Tennessee and Mississippi Rivers?

Mr. R. T. Jackson: I object to the question on two grounds. First, it does not state the rainfall or the extent of the run-off. Second, it relates to the Mississippi River and Mr. Kurtz' flood control was for the protection of Chattanooga and above, as he testified.

Mr. Fitts: Don't I have the right to ask the witness the question, with the hypothesis for the question being the entire testimony of Mr. Kurtz.

Mr. R. T. Jackson: It does not pertain to the run-off.

Judge Allen: Where is the run-off found in the evidence?

Mr. R. T. Jackson: I have not the page. I know there was an eleven inch rain in a three day period.

Mr. Fitts: You are talking about a super flood. I am asking on the basis of your own evidence.

Judge Allen: He may answer.

Mr. R. T. Jackson: May we have our exception.

A. In my judgment it could not be operated successfully for those purposes.

Q. Will you explain your answer?

A. The reservoirs as indicated cannot be adapted for the varying conditions as they will occur in actual floods. There is no control provided which can be used to operate, particularly for the Mississippi River, the effect upon the Mississippi River would in cases be detrimental, and there would be at no time any certainty as to the possible advantage to the Mississippi. Furthermore, with respect to the Tennessee River, the rates of filling and emptying are not such as are necessary for the situation. The rates are prescribed definitely, but in actual operation it should be possible in some cases to discharge these reservoirs more rapidly than provided in order to make available capacity for repeater floods—by that I mean floods which might occur within a rather short interval.

Q. In other words, do I understand you correctly, that even as to the Tennessee, assuming the operation of this same system of detention reservoirs, in your opinion they could not be successfully operated to control successive repeater floods in the Tennessee Valley, is that correct?

A. That is my opinion."

[fol. 1257a] The chart (offered and received in evidence as Defendants' Exhibit 89) shows in the center, that is, on [fol. 1258] small scale, the location of the system of reservoirs as proposed and described in the question given me. Around this small map there are shown profiles of the individual tributaries on which the reservoirs are located, showing the location of each and the elevation. The capacities are also indicated on this drawing.

Examination by the Court:

The chart shows in each case the reservoirs filled, the reservoirs as if filled, and then at intervals of 12 and 18 days after the reservoirs were filled, the elevation of the water in each reservoir. Those are the reservoirs in the system shown on Complainants' Exhibit 352 based upon the assumed method of operation stated in the hypothetical question. It shows the elevation of the water level in each reservoir at the end of 12 days and 18 days, taking into account the stated capacity of the conduits and the average rate of stream flow which is found by the records to prevail in the case of each stream at the reservoir sites; that is, the average stream flow during the flood season or when

floods may be expected, such as to fill the reservoir. This shows the conditions not as to repeated successive floods, but it shows the condition, assuming a flood which had happened, and then the normal stream flow occurring for periods from 6 to 24 days after the complete filling; that is, normal stream flow in high water season coming along after a flood.

The figures on the top line, 6, 12, 18 and 24 give the number of days after the reservoir had been filled, and on the second line, applying to each reservoir, there are figures which represent the percentage of the reservoir capacity which is available at the time stated. For instance, the Painter Creek Reservoir at the end of 18 days has 100 per cent of its capacity available. At the Cove Creek reser- [fol. 1259] voir on the Clinch River at the end of 24 days there is only 33 per cent of the reservoir capacity available. In other words, those figures are percentage figures applying to capacity available at the time stated.

Direct examination continued:

The figures shown and the representation on the diagram indicate to me that the reservoirs would be filled to a substantial extent for a considerable period after they had once become filled. If greater outlet capacity had been provided in cases of local floods, and the reservoirs were all under control, the flood water which would do no damage on the main stream, may be released perhaps from one reservoir at one time, and reservoirs on another tributary at another time, taking the best advantage of conditions as they were at this particular time. In the flood history, and particularly the 1936 flood, a feature of that flood which extended across the eastern United States, was that there was an example of quick repetition of floods. One case I have in mind was this, that on one stream a flood occurred which was the greatest for a period of 47 years, and only six days after that flood, a flood came along which eclipsed all previous records. It is for that reason that I tried to bring out the fact that it is necessary to have a control over the reservoirs so that they can be operated to the best advantage, or operated as the particular occasion demands. I show here, for instance, that under the method of operation hypothesized in the previous question, the detention reservoir at Kiker's Ferry for at least 18 days after it

had first filled, would not have any space available at all. I made these computations and estimates with the aid of two assistants from my office.

"Mr. Fitts: If the Court thinks it would be more helpful in the future in referring to an exhibit like this, we could, of course, put an explanation in writing on the exhibit as to the meaning of these figures.

[fol. 1260] Judge Allen: I should think you would want to for your own protection.

Mr. Fitts: I think it would be advisable, myself.

Judge Allen: The Court considers the exhibit with this explanation admissible.

Mr. R. T. Jackson: We have no objection to it. We want to talk to the witness about it.

Judge Martin: Couldn't the exhibit be clarified a bit?

Mr. Fitts: If we can have the understanding that it is admitted subject to explanation and correction, we will withdraw it and have it amplified."

(At a later session of the Court, the following occurred:)

"Mr. Fly: We again present defendants' exhibit 89 and at the Court's suggestion the wording has been put in to explain the table on the right, the wording is 'Percentage of storage available in reservoirs at stated intervals of time.' Then other things are listed, and 'Days beginning for storm 6-12-18-24', and then the tables in each column representing the storage space in number of days at the beginning of the storm. I believe that answers the court's inquiry. I offer that in evidence.

Judge Allen: It may be received."

Referring to Complainants' Exhibit 362 which was produced during the testimony of Mr. Kurtz, I have made a study to determine the comparative amounts of storage for flood control purposes that would be available at the Clinch River site under a dam as outlined on that exhibit on the assumptions that were previously given me and the amount of storage that will be available at Norris Dam under the method of operation that has been testified to in this case.

The chart, (offered and received in evidence as Defendants' Exhibit 90), was prepared under my supervision and direction. In so far as it shows matters of fact, I believe the facts to be correct. In so far as it represents matters

of opinion, or judgment, or estimate, they are my opinions, [fol. 1261] judgments and estimates. On the left hand side of the chart the capacity of Norris reservoir is indicated in diagram-atic form or by a graph for the elevations between 820 and 1060, the elevations being shown on the right hand side of the left diagram and the corresponding capacities in acre feet are shown along the bottom line. The dates are shown as to the expected filling of the reservoir. On the right hand side of the diagram is shown in a similar way the capacity at stated intervals of the Cove Creek reservoir suggested by Mr. Kurtz.

"Judge Allen: Is it your opinion those represent the normal curve of operation levels?

The Witness: It is, your Honor, but it should be explained, of course, that when the floods occur the water stands temporarily above these elevations indicated, and that it is also expected that there might be a slight variation, not exceeding five feet in elevation when conditions might warrant a small departure from this curve. But that does represent my opinion of what, or how the reservoir will be operated.

Mr. R. T. Jackson: Your Honor, I move to strike out the statement of the witness that this represents his opinion as to how the reservoir will be operated, for two reasons:

First. Professor Woodward has already been on the stand and testified he is the man who directs the operation of the reservoirs, and he was unable to fix those levels. The other is that the method of operation will be fixed by rules provided by the Tennessee Valley Authority Board and not by opinions of the witness.

Judge Allen: Well, the Court will withdraw the question. I have changed the question, I will withdraw it.

Mr. R. T. Jackson: I did not object to the question but only to the form of the answer.

Judge Allen: I realize that. I think your objection should be sustained. I will withdraw the question.

Mr. Fitts: We now offer in evidence the chart or comparison between Norris reservoir and Cove Creek reservoir as stated by the witness, as Defendants' Exhibit 90.

Mr. R. T. Jackson: We object to it for the reason it is a graphic representation of something that Professor Woodward said is not fixed and cannot be fixed.

[fol. 1262] Mr. Fitts: He says it can only be fixed approximately.

Mr. R. T. Jackson: He said it cannot, and he is the man that operates it.

Mr. Fitts: He says that this is the general approximation.

Judge Allen: Objection overruled. The Court thinks these objections go to the weight and not to the competency.

Mr. R. T. Jackson: May we have our exception?"

This chart represents the comparative capacity of the Norris reservoir and the Cove Creek reservoir as shown on the right, taking the horizontal line, above which, and between that line and elevation 1041 it is indicated that there is 1,312,000 acre feet available, assuming a maximum outflow of 20,000 cubic feet per second. This volume is equivalent to the total capacity of the Cove Creek reservoir represented on the right, as proposed in the testimony of Mr. Kurtz. In addition to the capacities shown between the horizontal dotted line and the line representing 1041, which might be used up in the case of hypothetical flood resulting from a storm of 11 inches in three days, there is available for flood control purposes, particularly for the sake of repeater floods, and for the sake of Mississippi control floods considered in conjunction with the Tennessee River, a volume below that horizontal line, down to the horizontal line indicated as the elevation expected on December 15th. Up until a little bit later than the first of April there is more storage available in the Norris reservoir than the total amount of storage provided in the dam at Cove Creek proposed by Mr. Kurtz. (The date of January 1 on this chart was subsequently changed by the defendants after the cross-examination of the witness to January 15.)

[fol. 1263] Examination by the Court:

In this chart, which says 1,312,000 acre feet available, the elevation referred to is the dotted line to which the arrow points a little above elevation 1,000, the exact elevation is not stated.

Direct examination continued:

When the reservoir reached that point at elevation 1041, 10 feet over the elevation provided by Mr. Kurtz and 7 feet above the top of the gates at Norris Dam, there would be an

outflow over the gates reaching a maximum of 20,000 cubic feet per second, which is the outflow proposed by Mr. Kurtz' plan.

Mr. Kurtz estimated the reduction in his hypothetical flood of 76% at Knoxville and about 40% at Chattanooga. Those percentages apply to the maximum or crest discharge. In my opinion, the reduction at Knoxville is such as to bring the assumed flood stage down to near the flood stage. At Chattanooga the reduction still leaves the flood of 24 feet above the flood stage. The lack of reduction for Chattanooga as compared with that at Knoxville seems to me to indicate very clearly the necessity for additional storage between the two cities, such as might be provided on the main river.

In my opinion storage reservoirs such as Norris and Hiwassee are necessary to provide a retention of the Hiwassee and Clinch and the Tennessee and the Mississippi flood crests. Our investigations indicate that the Gilbertsville reservoir might be maintained at elevation 355 in the winter previous to a flood and permit the amount of reductions which I have stated. At Pickwick this elevation would be between 410 and 412; at Wheeler about 552 or 553; at Gun-
[fol. 1264] tersville it could be at an elevation of 591. These elevations might obtain and still make possible the reductions which I have stated were possible at those dams. My studies show that with these reservoirs maintained at those elevations which I have just stated the reservoirs could be drained down in advance of a flood to obtain additional flood control storage. River reservoirs hold a volume of water at an elevation above the dam substantially above that immediately below the dam. The flood flow at the start of the flood is moderate, and there is a difference in elevation between what we call the headwater, that above the dam, and the tail water, that below the dam, which makes it possible, when the gates are opened, to force out from the reservoir a flow that is substantially greater than the flood flow at the beginning of the flood period. As the flood increases, greater amounts or volumes might be released, and by our computations we find that where it is possible by this means of operation to release water which is in excess of the reservoir in-flow at the start, and then after that as the gates are closed the outflow is reduced and the peak is controlled. Subsequent to the peak, and after the danger is over, the out-

flow again can be increased. The total effect being to even the flood wave and reduce its crest.

The main stream reservoirs above Chattanooga should be maintained at what is called the minimum navigation level during the high water period before an actual flood in order to get the amount of reduction which I have estimated. In my opinion, the filling of the Gilbertsville reservoir to normal pool level between the first and middle of May, and the filling of other main stream reservoirs to normal pool level between April 1 and May 1 would not reduce their effectiveness for flood control. That is because the major floods have passed on that day and the remaining capacity is ample for the control of any flood which might strike there on later dates.

[fol. 1265] The rate of filling which I assumed at Norris and Hiwassee is that Norris reservoir would stand at elevation 955 on December 15 and the filling would increase at a uniform rate with respect to volume reaching an elevation of 1005 on April 15. After that date the flood season would be over and the filling might extend to the top of the spillway if sufficient water is available. Similarly the same operation is assumed at Hiwassee, the elevations being in that case, I believe, from 1415 to 1465, starting at 1415 on December 15 and reaching 1465 on April 15. In my opinion, that character of operation at these reservoirs would not reduce their effectiveness for Tennessee and Mississippi River flood control, for the reason that we have examined and tested out all floods which have occurred within the period of record. The record period on the Tennessee River is about 50 years, and we find no case in which the capacity of Norris reservoir was not able to take care of every critical situation both with respect to the Tennessee and the Mississippi flood controls. We have tested it in all years. I have spent approximately 3 to 3½ years in studying the question of operation which I have assumed in computing these reductions for the flood heights on the Tennessee and Mississippi Rivers.

"Q. Mr. Kimball, if you were instructed to provide a minimum nine foot navigable channel on the main stream of the Tennessee River, and to reduce destructive flood waters in the Tennessee and Mississippi valleys by means of the construction of dams on the Tennessee and its tributaries, what dams would you build?

Mr. R. T. Jackson: I object to the competency of the witness in so far as it calls for what would have to be provided for navigation. The witness has not qualified.

Mr. Fitts: Only the depth, any hydraulic engineer can testify.

[fol. 1266] Mr. R. T. Jackson: That is the theory he goes on.

Judge Allen: Objection overruled. He may answer.

Mr. R. T. Jackson: May we have our exception?

A. I would construct dams that are provided for in the TVA plans at Gilbertsville, Wheeler, Pickwick, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris and Hiwassee Dams, and would, if Congress authorized, provide the additional control stated to be desirable in the Unified Report upon the Little Tennessee, the French Broad and Holston Rivers."

I don't know of any other type of dam that could accomplish all of these purposes.

[fol. 1267] Cross-examination:

I didn't name any dams on the Holston and French Broad. I said that I would include some control on those rivers. When I spoke of control on the Holston and French Broad, I meant control through the construction of dams and reservoirs. I had in mind one on each.

On the chart, Defendants' Exhibit 90, entitled "Comparison between Norris Reservoir and Cove Creek Reservoir suggested by Ford Kurtz", I show elevation 965 or somewhat higher for Norris reservoir on or about January 17. I think it might be raised to 967. I think that would be a fair approximation. I notice that this chart where it states January 1st, that should have been January 15th. If that is true, the elevation on January 17th would be very nearly the same as that on January 15th. That is somewhere around 965 or somewhat higher. I can not state what the elevation of Norris Reservoir was on January 17, 1937.

"Q. Don't you know it to be a fact that it was 1031?

A. January of this year? We had during the month the highest rainfall that is on record over the Clinch basin, and, necessarily, the reservoir was being filled and used for the control of floods below.

Q. Now, you have made your explanation, will you answer my question? On January 17th of this year was the Norris reservoir at elevation approximately 1031?

A. It was at elevation 1031 until some date, I cannot testify as to the actual date."

Norris reservoir reaches elevation 1010 on Defendants' Exhibit 90 somewhat earlier than April 30. Of course, what it would reach would depend upon the amount of stream flow. Held down to 1005 on April 15, there is very much question as to what date it could reach 1010. That is wholly [fol. 1268] governed by the amount of stream flow in the Clinch River. As to whether the curve on this exhibit does not mean anything, the curve which is shown on this exhibit does not indicate the stream flow. It indicates the elevations at which it is assumed, under ordinary conditions, the Norris reservoir might reach on the dates stated. The actual elevation would depend upon conditions. Whenever there is a short flood, the water level rises fast. When there is a smaller flow, it might not reach the elevations indicated. It is true that on my chart I do show that it does not reach elevation 1010 until about April 30. Whether or not it is a fact that in 1937 the Norris reservoir was never below 1010 from January 17 on until the end of the low water season, I can't state when it dropped below 1010. I don't recollect whether it did not drop below 1010 until after June. That may be true. As to whether when I gave my testimony I had no recollection, if it be the fact, and no knowledge that Norris reservoir was in fact maintained at or above 1010 from January 17 on in 1937, at the time I gave my testimony I did not speak of any actual elevations in the past. I did not say that this curve hasn't anything to do with the realities of the situation. With respect to the statement of Dr. Morgan in Complainants' Exhibit 116, page 375, that he would let Norris go up to about 1010 in January, I remember he made some statement which was afterwards qualified.

On Defendants' Exhibit 90 I also show 1,312,000 acre feet between the dotted line and elevation 1041. I happened to select 1041 because that is the elevation at which 20,000 cubic feet per second will flow over the top of the gates if they are closed. From elevation 1041 down to the dotted line there is 1,312,000 acre feet. We showed that storing that

volume of water between those elevations would result in an outflow varying from zero up to the maximum which Mr. [fol. 1269] Kurtz provides in his plan. The purpose of the 1041 was to give the maximum of flow corresponding to Mr. Kurtz' outflow. Except for the purpose of trying to get a figure which was the same as the one shown on Mr. Kurtz' reservoir, I might as well have taken 1040 or 1050. I might have taken 830. If I had taken 830, I would not have gotten any storage in acre feet. As to there being some limit in the manipulation of the figures, I did not understand that you stated that 1,312,000 was to be provided. As to whether, in connection with my elevation 1041 on Defendants' Exhibit 90, I do not know that we spilled Norris reservoir in the Spring of 1937 at elevation 1031 because it was running over the highways up there at that elevation, I didn't understand what you meant by spilling. All water was withheld at that time.

"Q. Didn't you start discharging from Norris reservoir at elevation 1031 or thereabout because you were flooding the highways between LaFollette and Cumberland Gap?

A. We started to release after the danger below was over.

Q. I just want to get it straight. You want to testify that you did not spill out of Norris Dam at elevation 1031 or a little better last Spring because at that elevation you were flooding the road between LaFollette and Cumberland Gap and flooding everything up around Norris reservoir?

A. Well, it is——

Judge Allen: Answer the question, please, and make your explanation afterwards.

A. I hardly think that is exactly true. We released just as soon as possible."

I would hardly say that the following telegram sent to Colonel Powell in response to his request refreshes my recollection as to release of water at Norris at around elevation 1031 because it was flooding highways and other things:

[fol. 1270] "Release at Wheeler had already been reduced before receipt of your telegram on February 6th and is being held to the minimum practicable. Norris and Wheeler reservoirs were filled until great damage to highways, rail-

ways and towns was imminent, in order to give maximum reduction of flood crest at Paducah. It is necessary now to release water as rapidly as safe so as to be able to handle subsequent flood flows. We estimate water from Wheeler reaches Paducah in about four days."

We would have released it regardless of the flood.

"Judge Gore: It would occur to me that it would be sufficient to answer the question and say whether or not the water was at 1031 and did flood the highways around there.

Mr. Fly: If your Honor please, we concede that the highway floods at that level.

Judge Gore: All right.

Mr. Fly: But I want to make clear my point, now you have got into this. The witness is not denying that the highway was flooded, but the witness is asserting that the flooding of the highway is not his major problem, and that is the very testimony he has given twice.

Judge Allen: Mr. Kimball, I suggest that you listen very carefully to the questions and answer them and then you are entitled to make your explanation."

In Defendants' Exhibit 90 I show a comparison between Norris and Mr. Kurtz' flood control reservoir at Cove Creek, which is substantially the same place. I understood that Mr. Kurtz was providing some 19 headwater reservoirs on tributaries of the Tennessee River. I also remember that he testified that his reservoirs would control 78% of the drainage area above Chattanooga, but I do not remember that he stated that this was in comparison to some 14% by Norris. I know myself, however, that Norris controls only about 14% of the drainage area above Chattanooga.

Referring to the right-hand diagram on Defendants' Exhibit 90 where it shows a discharge of 20,000 cubic feet per second, that is intended to mean when the reservoir is filled. It is intended to mean that that is the outflow that is pro- [fol. 1271] vided for the reservoir, both for filling and emptying. It was not my understanding that Mr. Kurtz testified that the controlling outflow during filling would be 20,000 second feet and that after the reservoir was filled the discharge would vary in accordance with the conditions for a particular flood, being arranged so as to empty the

reservoir as soon as practicable to be ready for another flood.

"Q. Mr. Kimball, in giving your testimony, did you understand that the discharge from the system of reservoirs outlined by Mr. Kurtz after the flood would be at the same rate as the rate of flow which had been stated by Mr. Kurtz?

A. I did. He stated that repeatedly.

Mr. R. T. Jackson: Well, I move to strike out the last sentence. The record shows for itself.

Judge Allen: That may stand.

By Mr. R. T. Jackson:

Q. All I want to know is that your testimony is based on that. Now, if it be a fact, Mr. Kimball, that Mr. Kurtz' system of reservoirs was designed so that the discharge did not vary in accordance with the conditions prevailing, after the flood, your conclusions which you have stated here in that respect, would be incorrect, would they?

Mr. Fly: I object to that question being based upon an assumption not borne out by the record. I would like to be heard.

Judge Allen: The Court sustains the objection to the question on the ground that on page 2064 (of the stenographic record) Mr. Kurtz gave the rate of release when the reservoir was filling at Cove Creek, of 20,000 feet per second.

Mr. R. T. Jackson: Yes. We take opportunity to point out to the Court and show it has no relation whatever to the rate of release for the reservoir after it is filled, and this question is directed to the latter point.

Mr. Fly: He says it is the same. Can you point out where it is different?

Mr. R. T. Jackson: The same point this witness tried to make on Exhibit 79.

Judge Allen: The objection is sustained. The Court will say it is not going in general to go into the record. The [fol. 1271a] objection is sustained. You may have your exception.

By Mr. R. T. Jackson:

Q. Mr. Kimball, I direct your attention to this statement of Mr. Kurtz on page 2077 of the (stenographic) transcript:

'During the emptying program, the opening of the lowest reservoir of each of these principal tributary groups would be maintained at a constant and fixed discharge, and that would be such as to keep the discharge below the reservoir [fol. 1272] and all the way down as nearly as possible at banks full stage. The upper reservoirs on each tributary would have their discharge varied within a considerable range, so as to suit conditions obtaining for any particular flood.'

That, I call your attention, is dealing with the emptying program. I now ask you whether, if you had made this assumption which I have quoted from Mr. Kurtz' testimony, your testimony here this afternoon, as shown on Exhibit 89, about that exhibit, would not be incorrect.

A. I am confused about this matter in this testimony quoted. He states that the discharge will be maintained at the constant and fixed rate, then he states the upper reservoirs on each tributary would have their discharge varied within a considerable range so as to suit conditions obtaining for any flood. I am confused as to the meaning of that in view of the subsequent testimony in which he appeared to make it very clear to me that he had no provision for any alteration whatever.''

I think I understand the question whether or not my answer with reference to Defendants' Exhibit 89 would be incorrect assuming merely the testimony read to me in the last question. I will say that my calculations would still stand for this reason, taking this clause quoted alone—it appears that there might be in the upper reservoirs a larger range of discharge but that the lower reservoirs would still maintain the stated discharge. The effect of that would be to retain within each tributary the same amount of storage which I assumed was true. It might vary between the reservoirs, but would still be there, and the system I consider would still be defective in that respect. Bank-full stage, immediately below Norris Dam, is in the neighborhood of 30 or 40 thousand second feet. If you take Norris as the lowest reservoir on that river and release water at the rate of bank-full stage, that would be 43,000 second feet with that figure for bank-full stage. The figures given in Defendants' Exhibit 89 show the results that we would get from releas-

ing 20,000 second feet and the figures were taken with considerable care from the record of Mr. Kurtz' testimony in [fol. 1273] which he stated the discharge was 20,000 second feet for Cove Creek. They were taken from figures read to me by Mr. Fitts. I cannot recall whether Mr. Fitts read the fact that those figures were for rates of release when the reservoirs were filling instead of emptying. I understood they were filling and that is the basis of my answer. That is the basis of every figure and all the information that I showed with reference to the emptying of the reservoirs on Defendants' Exhibit 89; that is, I take the same rate of discharge as the rate stated for filling during the flood.

"Q. And in no case does that reflect any variation for upstream tributaries, and in no case does it represent banks-full discharge for the lowest down reservoirs?

A. I understood that the discharge stated was the discharge to be used regardless of whether it was banks-full stage.

Mr. R. T. Jackson: I move to strike out that answer, and move that the witness be required to answer.

Judge Allen: Will you answer the question and make your explanation, please?

A. It reflects no variation. I do not see any relation between that figure and banks-full stage.

Q. Well, if any one of your reservoirs contained on Exhibit 89 reflect a rate of discharge corresponding with bank-full stage, please tell us which it is.

A. Those discharges have nothing to do with bank-full stage.

Mr. R. T. Jackson: I move to strike that out and ask for an answer to my question.

Judge Allen: Answer the question and then give your explanation.

The Witness: If your Honor please, I don't understand that question requires a yes or no answer.

Judge Allen: If you can't answer the question you don't have to.

[fol. 1274] Mr. R. T. Jackson: I move to strike out his testimony.

Judge Allen: The motion is overruled."

I am to a very limited extent familiar with the plans of the Reclamation Bureau for constructing Norris reservoir.

I am not familiar with the fact they recommended a flood storage there of 1,255,000 feet in comparison with Mr. Kurtz' 1,312,000 acre feet. I don't recall just what was recommended there. I am not familiar with the fact that the Bureau of Reclamation reported to the TVA that a pure flood control project of that size at Norris would cost only $7,150,000.

I cannot say at what elevation Norris reservoir and Hiwassee reservoir would have to be on January 1, February 1, March 1, April 1 and May 1 in order to provide the TVA unified system with 660,000 kilowatts of firm capacity 24 hours a day and 5,780,000,000 kilowatts of energy annually in a dry year like 1925. Our flood control studies were not based upon power requirements.

"By Mr. R. T. Jackson:

Q. Mr. Kimball, if it be true that in order to provide that amount of firm capacity and the annual firm energy output which I have previously stated, through the TVA Unified System in a dry year such as 1925, it will be necessary to fill Hiwassee and Norris at somewhat above their normal pool levels as early as March in each year, if not before, will not there be less storage capacity available after March 1st for flood control than you have assumed in the answers and testimony you have given here today?

A. May I state the question as I understand it, to see if it corresponds with your question?

Q. Well——

Judge Allen: Yes, you may.

A. As I understand your question, as it refers to Norris, you refer to normal pool as at elevation 1020?

Q. 1020.

[fol. 1275] A. And you refer to the elevation that I have stated on March 1st as being about 990?

Q. Oh no, no. I refer to the elevation being 1020 or somewhat above as early as March 1st or earlier, perhaps February 1st.

A. As I understood your question, you stated that the elevation would be at 1020 on March 1st?

Q. March 1st or earlier.

A. Rather than at about 990, assumed by the chart?

Q. That is right.

A. And you asked whether there would be as much flood storage on March 1st as the chart——

Q. No, as you have assumed in making your answers and giving your testimony here today.

A. Well, I understand that to be an equivalent statement, I would say that it is clear that if the water level were at 1020 instead of being as indicated on this chart, that there would not be the space available between those points.

Judge Allen: What do you understand to be normal pool level?

The Witness: I don't understand that there is any such thing as normal pool level."

I produced a photograph which was introduced in evidence as Defendants' Exhibit 79 in which I showed a threatened flooding of the Tennessee Electric Power Company building. I am not sufficiently familiar with the operations of The Tennessee Electric Power Company to know whether that company, when it found that the TVA Unified Plan would not protect Chattanooga, readjusted its operating plans so as to be able to give service to those areas which are flooded out during high floods.

It is desirable to protect against large floods if you have flood protection. The system of flood protection against moderate and minor floods is not necessarily a very disadvantageous thing. It is advantageous as far as it goes. Whether or not a system of that kind is really just a human [fol. 1276] death trap depends upon conditions. It is a human death trap in case of leveed areas in which the levees may be overtopped.

I testified in the Ashwander case and was asked the following questions and made the following answers:

"Q. In other words, you said that, without being supplemented, instead of being helpful they amount to a menace to the community?

A. By 'menace' I would like to quote from a work of Alvord & Burdick, a book entitled 'Relief from Floods'. It is stated here:

'When works are concerned and intended to protect a large population, a half-way measure is nothing less than a death trap. Anything less than to adequately protect a place of human habitation, is worse than no protection at

all, for it creates a false sense of security and multiplies the consequences of failure'.

Q. Does that represent your own opinion?
A. It does."

I would like to explain that. The Alvord & Burdick who wrote this book referred to were the engineers employed by the City of Columbus, Ohio, to devise a plan for the protection of that city. They devised a system of reservoirs which seemed to be very expensive to the people concerned, those who had to pay for it, and they required the engineers to develop a plan of smaller proportions. The plan which was developed involved the construction of levees and protection walls about the city of Columbus at a height which was inadequate to provide for what Alvord & Burdick considered was a flood that would reasonably be expected. The result was that it left the city of Columbus in a basin, and the greater floods coming would go over the rim of the basin and flood the city, and then the basin becoming a death trap, as referred to in the quotation. One effect is that if you simply grant minor relief it prolongs the interval be- [fol. 1277] tween flood visitations and the people become careless and are more likely to be entrapped. It prolongs the intervals, but that is not the essential thing in all cases.

Examination by the Court:

That book discussed the Columbus situation but I cannot say at this time what the context was.

Cross-examination continued:

I read it in the Ashwander case as having a bearing upon flood protection in the Tennessee Valley.

"Judge Allen: The Court has considered the question of recess, and in making its decision has borne in mind not only the necessity of disrupting any more than possible the work in three courts in this circuit, but also has borne in mind that various important phases of this case at least have been litigated and re-litigated in other courts, so that, as previously stated, we feel that there is very little element of surprise in this case.

The Court will adjourn at 4:00 o'clock on Thursday, December 23rd, and it will reconvene at the usual time on

Monday, January 3rd. If it is necessary to take further testimony at that time, the Court will hear such testimony as is necessary. The Court will expect counsel to prepare and be ready to submit findings of fact and proposed conclusions of law when the testimony is concluded, and the Court will proceed immediately to the argument of the case when the testimony is concluded.

We think that we should make this announcement to you in order that you could use the intervening time, the three days that you have, preparing to submit the findings of fact and perhaps conclusions of the law to the Court in accordance with the Court's ruling.

Mr. R. T. Jackson: I should like to crave the Court's indulgence for at least one day after the close of testimony, because we will be working continuously if we have any rebuttal, and I should dislike to have to undertake the oral argument of the case completely exhausted.

Judge Allen: I think that the Court perhaps will hear your application at that time, Mr. Jackson, but we want to make it perfectly plain to you that this Court is going to sit until this case is concluded. We are not going to go away [fol. 1278] from here until this case is concluded.

Mr. R. T. Jackson: I just wanted to get in a plea in the name of humanity.

Judge Allen: In the name of humanity the Court has conceded to you ten days between December 23rd and January 3rd, or more than that.

Mr. R. T. Jackson: We appreciate that, but if we should be exhausted again——

Judge Allen: We will recess now."

The chart (offered and received in evidence as Complainants' Exhibit 912) was my Exhibit 29 in the Ashwander case and shows a cross section of Norris Dam and reservoir in the figure on the right-hand side of the exhibit. The storage space on the lower right hand corner is marked with the legend "Dead Storage". Above that "Dead Storage" is a line which is about 1020. It is marked "1,500,000 acre feet available at times for flood control". I have shown above that another section, 1,400,000 acre feet available for flood control. That is the upper bracket and is above 1034 up to the top of the dam above the gates. I cannot see just how high that goes. There is no elevation marked. I can see that it goes above the top of the gates—

it is impossible to say from my drawing. In the figure on the lower left-hand corner of this exhibit (Complainants' Exhibit 912) I have, at the back of the lower dam, shown a large part of the impoundage space marked "Dead Storage". I think that above that there is a level marked "Maximum level for flood control", over the shaded area. There are some designations within the shaded area. Between the line marking "Dead Storage" and the line marking "Maximum storage for flood control", I have indicated in brackets on the left-hand side the amount available for flood control. The line marking Dead Storage cutting across the gates shown in the drawing is somewhat more than half-way up the gates. In connection with that exhibit in the Ashwander case I was asked the following question and [fol. 1279] made the following answer:

"Q. Well now, do you mean that that is all of Norris Dam that is available for flood control, or is this other also available?

A. This other will also be available when the reservoir has been depleted, for other reasons, such as replenishing for low water flow of the river, it is generally the case, that in a storage reservoir it will be depleted during the fall so as to have a volume at flood time for incidental flood storage."

Defendants' Exhibit 67 is rainfall and run-off data, and I show the drainage area of 21,400 square miles in the upper part above Chattanooga and I show the Clinch River drainage area as 4,400 square miles. As a matter of fact there is only 2,950 square miles of that drainage area in any way controlled by Norris Dam. The Hiwassee shows 2,660 square miles but there is only 977 square miles of that drainage area affected by the dam. The figures for rainfall are typical for that, but that would be unimpede so far as these two storage reservoirs are concerned. I spoke of possible reservoirs on the Holston River and the French Broad River. The extent to which they would affect this drainage area would depend upon their location which would be at some place above the mouth, but not necessarily substantially above.

Defendants' Exhibit 71 shows the outstanding storms, occurrence and paths of great rainfall. Every one of the storms that I show on that exhibit are travelling from the

southwest to the northeast. My failure to show the storm of 1926-27 was not in any way influenced by the fact that that storm travelled from the northeast to the southwest. There is no connection with that. I don't recall that that storm travelled in such an abnormal way. If you have got a storm travelling from the southwest to the northeast, it is true that the rainfall first concentrates on the lower Tennessee basin, but in the general rains the rainfall very often is still quite heavy on the first section touched by the time the heavily rainfall reaches the upper. Whether or not the con- [fol. 1280] centration of rainfall will occur earlier in the lower basin where the storm first strikes than in the headwaters where it strikes much later, would depend on the duration of the storm. In a very long storm, the concentration will be due to the run-off from all parts of the drainage area. The first run-off comes from the lower part where the storm first comes.

"Q. And to the extent that you retard that run-off in the lower basin where the storm first strikes and the run-off first concentrates, you hold it to meet the run-off from the upper basin, do you not?

A. You are speaking of a—you are supposing a case of operation?

Q. I am just saying, to the extent that you retard the initial concentration of run-off in the lower basin, do you not hold it so that the run-off from the upper basin may be superimposed upon it?

A. Well, that would depend upon conditions ordinarily under the operation. At the lower end of the Tennessee basin you would probably discharge the early flow as quickly as possible before the crest on the main stream—by the main stream I mean the Ohio—reached the Tennessee.

Q. I am just talking about the Tennessee now, one problem at a time. I want to get the water out of that river. Now, Mr. Kimball, suppose you have a storm traveling up the Tennessee Valley as you have shown all your storms do, and there is, therefore, a concentration of early run-off in the lower Tennessee basin, if under those conditions you were to dump reservoirs upstream in advance of the oncoming storm, would you not merely dump that storage onto the flood waters in the lower Tennessee?

A. Well, the water released from the upper reservoirs would flow down to the lower portions.

Q. Yes, and it would be added to the flood run-off that was already concentrating in the lower Tennessee River, would it not?

A. Except that corresponding release would be made in the lower region so there would not be that build-up that you suggest.

Q. That is, you would not advise holding any of the lower Tennessee from running off as it would in a state of nature?

A. The operation would be according to the conditions in the individual case. Ordinarily I would say that the operation would tend to release from the lower reservoirs very promptly."

[fol. 1281] Defendants' Exhibit 82 is presented to show what we assume could have been the result of various reservoirs on flood heights at Chattanooga by the operations during the actual floods indicated. On that exhibit I show only the floods of 1926, 1936, and 1917. I have omitted the two or three largest floods that ever occurred on the Tennessee River, but it was impossible to make any computations on the early floods for the reason that we have no measurements of the flow, particularly in the tributaries. The gentleman who took the pictures all over Chattanooga showing the height of the 1867 flood could not have made those computations because he is not a hydraulic engineer. I do not think that the Army Engineers in House Document 328 set out figures for the flood of 1867.

I think I have seen Plate XIX (offered and received in evidence as Complainants' Exhibit 913) from Volume 2 of House Document 328, but I am not sure. It indicates flows for various floods including the flood of 1867 on the Tennessee River from Knoxville down to the mouth of the river. That includes Chattanooga, but does not give any basis for such computations as are indicated on Defendants' Exhibit 82. It shows nothing respecting the tributary contributions to the Tennessee River. That information is necessary for the computation of control. I did not either show on Defendants' Exhibit 82 what reduction, if any, would be effected by these various reservoirs with a superflood. I attempted to confine these computations to actual occurrences. Whether or not when you are designing anything for flood protection you simply base your design upon some historical fact that has happened in the past, and if the only one for which you happen to have data is a small

one, you base it on the small one, would depend on the nature of the problem. The nature of the problem of flood control is usually to protect against damage from a large flood. I would like to explain that if we have cities to be protected and those cities have a levee system, it is necessary to estimate the largest flood which may be reasonably expected, [fol. 1282] and compute the degree of control which is necessary to bring such a flood down to the capacity of the local system. That situation does not exist in the Tennessee Valley. There are no cities or towns, so far as I know, that have any levees on them, and our problem here is to make such reductions in flood heights and in flood frequencies as we are able to do with the projects authorized by Congress.

I think I am largely responsible for the following statement on page 16 of the Unified Report of the TVA to Congress, (Complainants' Exhibit 328):

"An appreciation of the probable magnitude and frequency of future floods on the Tennessee River is generally lacking because the largest floods in the past occurred over 50 years ago. The Tennessee River basin, because of its location with respect to the line of travel of storms of intense rainfall and because of the characteristics of its drainage area and river system, is likely to be visited by extreme floods. Since Tennessee River records have been kept only for a limited period, estimates of probable future floods must take into account flood data relating to all river systems in this portion of the country as well as all the characteristics of the river system and of the Tennessee Valley.

"Consideration of these data leads to the conclusion that in the upper basin a flood should be anticipated 50 per cent greater than the great flood of 1867, which at Chattanooga had a maximum discharge of about 430,000 cubic feet per second."

I still agree with that statement. It is not true that among smaller floods of record that have occurred, I have selected on Defendants' Exhibit 82 the three floods when it happened that the largest contribution was made by the Clinch and Hiwassee Rivers. It is not definitely known that in the flood of 1867 the principal contribution was made by the Holston and French Broad. I told you that Norris reservoir controlled 14 per cent of the drainage area about Chattanooga. The Hiwassee controls about 4 or 5 per cent. Together they

would be about 18 per cent. It would make a lot of difference whether I selected floods in which the major contribution came from the Clinch and Hiwassee. Our studies indicate [fol. 1283] that these two streams have been among the larger contributors. I have not the data here to tell what percentage of the total the Clinch and Hiwassee contributed to the three floods I selected. That data was used in the computation.

"Q. Very much more than the proportionate drainage area, wasn't it?

A. That is the usual case.

Q. Well, was it here?

A. I am not sure about these three specific cases."

Assuming a flood of the character I described in the Unified Report (Complainants' Exhibit 328), that is, 50 per cent greater than the maximum flood of 1867, brought about by rainfall spread uniformly over the drainage area above Chattanooga, we have made some studies as to the amount of the reduction in the flood heights at Chattanooga which would be brought about by the Norris and Hiwassee reservoirs. They were approximate, however, and I have none of those figures here. They were certainly substantial, I can not say how small. I should say more than three feet in stage, but I can not be positive without the figures here. I did not include that on Defendants' Exhibit 82 because we have no data on the tributary flows in the 1867 flood. As I understood, the project flood referred to was 50 per cent in volume above the 1867 flood, so in referring to that project flood I am assuming that it was 50 per cent greater, and you would naturally take your tributary flow and add 50 per cent to that, and I have not that data.

If you had a flood 50 to 70 per cent greater than the 1867 flood without any control on the upper river, I do not think the gauge at Chattanooga would be less than somewhere around 70 or 73. I don't think it would be any less than 73.

"Q. Now, when the gauge is at 73 at Chattanooga, what will be the condition at Chickamauga Reservoir and Dam? [fol. 1284] A. Well, there will be extreme flood flow passing through it.

Q. Well, you know that the flood of that height at Chattanooga, which is even further down stream, would be seven feet over the gates of Chickamauga, don't you?

A. Well, I don't know to what extent that is true.

Q. Do you know what zero is on the gauge at Chattanooga?

A. It is about elevation 621.

Q. And if you had a 73 foot stage, you would have an elevation at Chattanooga of 694?

A. That is correct.

Q. And what is the top of the gates at Chickamauga; 685, isn't it?

A. Yes, I believe that is correct.

Q. Now, under those conditions on a large flood, don't you know it to be a fact that, for instance, Chickamauga reservoir would be absolutely useless for the protection of Chattanooga?

A. With such a flood the depth in Chickamauga reservoir would be reduced below that assumed, because of the reduction from the tributary reservoirs, Norris and Hiwassee, or any others which might have been authorized by Congress at the time such flood occurred."

It is not true that assuming you had a gauge height at Chattanooga of 73 feet, Chickamauga would be utterly valueless. Under those conditions Chickamauga reservoir would raise the flood heights above the dam and would bring in a larger storage above the dam than would otherwise be the case with the storage above Chattanooga. That storage would have a favorable effect to some extent upon the flood, and as the flood subsided the reservoir could retain a portion of the total flood volume. I mean that Chickamauga basin would increase the flood storage or valley storage in the case of a high flood, so that would tend to bring down the flood heights even though Chickamauga were flooded out. The storage would undoubtedly be rather swift if Chickamauga was running over the top of the dam by a depth of 7 feet. [fol. 1285] I made the following statement in an address before a section of engineers, the senior discussion group, Knoxville, Tennessee, January, 1936:

"I would just like to show you for a minute if you can see it, a diagram which shows the past floods on the Tennessee River—taking up diagram—Chattanooga is at this point, and this is Hales Bar immediately below. The upper line represents the 1867 flood. The distinct drop which occurred just below Chattanooga is due to the narrow gorge through which the river runs within the Hales Bar pool. Just above Chattanooga is represented the Chickamauga

dam, with the proposed water level being just like that. A minute's inspection shows that that dam alone would be of no value to Chattanooga, with the repetition of the 1867 flood."

I tried to explain my ideas as best I could. I tried to make a truthful statement about it. If I may, I would like to continue this:

"The function of the tributary dams is to reduce floods from some stage up here—pointing to '67 flood line—down to something more like the '26 flood, so that it will be within the capacity of those river projects."

The purpose of that was to show the mutual relation of the tributary projects and the main stream dams in the lowering of floods. The main river projects contribute far more on the moderate floods than they do on the very extreme floods, and the tributary basins have the purpose, as indicated, to bring down the extreme floods to the size of moderate floods, and thereby make the main river projects more effective.

I would like to make a further statement on my previous testimony that I was still in accord with the view that I expressed in the Ashwander case by reading from Alvord & Burdick to the effect that real flood protection should take care of large floods, and not through creating impressions of false security, create man-traps. In looking over the testimony on that I found that it was referring specifically to [fol. 1286] the suggested levee construction at Chattanooga, certain levee systems had been proposed. Their levees in that plan did not seem to me to be adequate and I felt that the floods which might come without reservoir control above would go over these levees, wash them out, and suddenly precipitate an extreme volume of flood water on to the city, which with the levee around it would in such case be a death trap.

Referring to Defendants' Exhibit 86 which is a Gilbertsville chart, I testified that the effect of valley storage is to reduce the peak on that particular stream, but to prolong the flow. That is true in this case about the discharge of the Mississippi and Ohio Rivers.

Defendants' Exhibit 84 is a table entitled "Date of flood peaks at Johnsonville on the Tennessee River, Paducah on the Ohio River and Cairo on the Mississippi River for past

floods exceeding 50 feet at Cairo." Johnsonville on the Tennessee River is located about at the mouth of the Duck River. In time of flood it is about a day and a half or two days from Paducah. I would think a day and a half is very close. Referring to Defendants' Exhibit 84, it is, of course, true that one would have to make the time allowance of at least a day and a half in order to correlate the Johnsonville peaks with the Ohio peaks at Paducah. In 1882 the Johnsonville peak preceded the Ohio River peak at Paducah by 24 days as shown by the exhibit, 22½ days to make the time factor correction. In 1883 the Johnsonville peak preceded it by 2 days on the exhibit, or something less than half a day after making the time correction. I would say that in 1886 it hit it on the nose. It depends on whether you take the 15th or the 16th. If you take the 16th for the peak at Johnsonville it got to Paducah a half day behind the Ohio peak. In 1903 there was 4 or 5 days' difference. In 1937 there was 8 days difference, without any correction, and just taking the figures on the exhibit. This shows the relation between the [fol. 1287] Tennessee peak at Paducah and the Ohio peak at Cairo as constantly varying. In the 1897 flood, which was not mentioned, there was close agreement. That is the flood which created the big damage on the lower river. There is a variation, but on the average there is a distinct difference in dates on the Tennessee River. That is not a practical coincidence on the average years.

With respect to Defendants' Exhibit 85, on the left-hand side in the upper part, I have shown in the first column the dates; the second, the Ohio stage at Paducah; the third, what I call inflow into the Tennessee River; fourth, the actual flow; and fifth, the difference in cubic feet per second. That fifth column represents, according to my testimony, the extent to which the natural flow of the stream in the Tennessee was reduced by valley storage. I show that that valley storage during the period shown as the peak inflow on the Tennessee River ranges from 111,000 second feet on January 19th to a low of 106,000 second feet on February 25th, the highest being 119,000 second feet on the 21st. In those days each one was over 100,000 second feet. During that period the outflow of the Tennessee was quite substantially reduced by valley storage. The Gilbertsville reservoir reach, I might say, is about 184 miles in length, and in that section of the river there is more valley storage than at any point above.

I have not followed the years to determine whether or not it is a fact that if in 1937 the Ohio peak at Paducah had followed the Tennessee River peak as closely as it did in 1883, 1884, 1886, 1897, 1903, 1907, 1912, 1922, 1927, 1929, 1933 and 1936, this valley storage would have decreased the peak on the Ohio at Paducah, and consequently at Cairo; but I do not see how it is possible to combine that outflow with these other cases, because that upsets the whole thing. It upsets the Ohio River flow. I can't say specifically for the dates [fol. 1288] mentioned whether if I make the correction for the time of a day and a half to two days on the Johnsonville peak, shown on Defendants' Exhibit 84, and compare that with the Ohio River peak at Paducah, I will find for the years mentioned that there would have been a practical coincidence of the Tennessee River peak at the mouth at Paducah and the Ohio River peak at Paducah, because I did not notice them at the time. But I was fully aware that there were some cases where there was synchronization. Taking for instance February 23 and February 25, 1883, it is true that if you allow a day and a half to two days, it is practically coincident. At the times when there is a practical coincidence between the Tennessee peak at its mouth and the Ohio River peak at Paducah, the valley storage, which took up 119,000 second feet from the peak of the Tennessee, would be favorable to the Ohio River flow and reduce the peak in the Ohio at the mouth of the Tennessee and consequently at Cairo.

On the first flood that I show on Defendants' Exhibit 84, I show that the Tennessee River peak preceded the Ohio River peak at Paducah by 22 days and a half in the 1882 flood. I do not know whether under those conditions, if you did not interfere with the outflow from the Tennessee, it would have swept out all of the water that I show held in valley storage to reduce the peak of the Tennessee and subsequently released down to the safety level of the Tennessee on Defendants' Exhibit 85. To determine whether the Tennessee would have run out before the Ohio peak came along in the flood of 1882, you would have to look at the hydrographs of the 1882 flood. If the operation was the same as I have shown on Defendants' Exhibit 85, it is not necessarily true that all of the water of the Tennessee set out on the left-hand side and all that set out on the right-hand lower side would have run out and gone down the river before the peak of the Ohio ever came at Paducah. That depends on

how long the crest remained in the Tennessee. It may have been a very prolonged crest. I do not know whether it [fol. 1289] would have to have been a more prolonged crest than I show in Defendants' Exhibit 85. It would have to have been a more prolonged crest than the 1937 flood. I don't remember that I gave any testimony that the flood crests on the Tennessee are more than 22½ days long. The crests on the Tennessee vary from flood to flood. I can not give a general answer to the question, dealing with a flood where the time differential was 22½ days and I could not tell if the Tennessee would empty before the Ohio flood because the crest might be too long on the Tennessee, whether the flood crests on the Tennessee prevail for longer than 22½ days.

Examination by the Court:

I would have to look over a considerable number of years to give any general statement as to how they do vary in length.

Cross-examination continued:

In 1884 there was a very prolonged high stage in the lower river, more than in some others. There is no definite rule. The high stage prevailed on the lower Tennessee River in 1884 about 25 days. I have not the figure for flood stage here. I was just taking as high stage what appeared to be, with general reference to the hydrographs, an abnormally high stage. I think that the Tennessee River at its mouth has to get 240,000 to 260,000 second feet to reach the flood stage. It is not necessarily true that if the crests of the Tennessee floods may last 25 or 30 days, any one who is undertaking to provide flood protection by storage would have to store over that period in anticipation of this unfavorable condition. Whether they would if they wanted to guard against floods would depend upon the critical period below. If we were not examining historical floods, we would not know in advance whether the flood is going to be 30 days [fol. 1290] long or just what it is going to be; but on the lower Tennessee the prediction system of the Mississippi River Commission enables us to predict for several days in advance.

I do not think that it is true to say that I took for Defendants' Exhibit 85 practically the only incident, if not

the only incident, in the whole history of floods at Cairo, when the valley storage on the Tennessee River did not operate to reduce the flood peak at the mouth and the flood flow on the Ohio and consequently at Cairo. There are two instances on Defendants' Exhibit 84 where the result would have been different, that is in 1912 and 1913. Those were years of very high Ohio River floods. For 1912 it is April 6th, and when you correct that, it becomes some time around April 8th, and the peak at Paducah is between the 8th and the 11th. The peak at Paducah continued about 3 days after the corresponding time. In 1913 the peak at Paducah was reached 7 days after the peak allowing for travel time. Those are just two I noticed.

In the third column on Defendants' Exhibit 85, I show inflow and I stated that the first column represents the flow as if it were in a pipe-line—that is, if the velocity were speeded up sufficiently to carry the entire flow. It is approximately correct to assume that if the total flow into the Gilbertsville pool had been in a pipeline from the period shown on the exhibit, January 16th to February 9th, inclusive, it would have been discharging at the lower end in the quantity shown in the column on the exhibit headed "Inflow". I assumed no definite length of pipeline. I am assuming the river flow, what you might call a flow in a pipeline such as might be in a water-works system, for instance, so that the entire water was carried in a pipeline instead of an open river. In answer to the question whether [fol. 1291] I assumed the length to be the river miles between Pickwick and Gilbertsville or a straight line between the two points, I don't quite see that the length of the pipeline enters into it. The idea is that the flow is as fast as it is being contributed and it is carried out immediately. I used the illustration of the pipeline in an attempt to convey the idea that the water would not spread out but would be carried immediately through the river.

"Q. Well now, will you answer my question, Mr. Kimball?
A. I made no definite assumption as to the length."

I should say that it would not make a very appreciable difference in my results. The river, even if it were a pipeline, whether it had any appreciable amount of valley storage or not, would have to follow its winding curve. I did

not make any allowance for that in figuring velocity, or for friction, or anything of that kind. I simply assumed that the water, as fast as it is contributed, would be conveyed in this pipeline immediately without any delay. There is no assumption as to the diameter of the pipeline in making the computation. I did not compute the friction losses on the idea of curvature or otherwise.

In addition to length and curvature, other factors enter into the determination of velocity of flow in pipelines, including the character of the pipe surface, whether it is rough or smooth, and of course the head under which the flow is operating, the pressure. There is also, of course, the size —that is, the area of the cross section would make some difference. The size determines that. The head or pressure would take care of the slope. If the pipeline had some abnormal features about it, such as enlargements or contractions, those would of course enter into it. The pipeline might be level as far as the slope is concerned, provided it had head enough at the upper end. I did not make any corrections [fol. 1292] for a non-uniform slope. The bed and the banks of the Tennessee River are the same as ordinary river banks. They are not the same as the inside of a pipeline. I did not make any corrections on that account in my computation. As the river widens or contracts, the area of the water cross section varies. I did not make any correction for that. All of these factors that have been mentioned would have a substantial effect in reducing the velocity of flow in the river.

"Q. And if you had made those corrections the results would have been substantially different than shown in your column headed "inflow" on exhibit 85, would they not?

A. Well, you are assuming a method of procedure which is entirely foreign to the problem as I understand it.

Q. Well, regardless of that will you just answer my question, please?

A. It seems to me that is the only answer that I could make.

Mr. R. T. Jackson: Could I have the question read? I think the witness does not understand it.

Judge Allen: He says that is the only answer he can make.

Mr. R. T. Jackson: It seems inconceivable to me, if he

listened to the question that that is the only answer he could make."

I remarked that the Gilbertsville area has a lot of natural storage. I do not think I have the figure as to the elevation above sea level of the Ohio River during the 1937 flood at its confluence with the Tennessee. A record showing the gauge at Paducah on the Ohio River on February 2d as being 60.8 seems about right. The river stations in the report of the weather bureau show the zero of the gauge at Paducah to be 286.26 feet above sea level, so that the stage of the Ohio at Paducah at that time would have been 346.8 feet above sea level. I am not sure what the elevation of the river bed is at the proposed Gilbertsville Dam. I think it is a little below 300, but I am not sure. 295 sounds about right. I could not give the volume in acre-feet between elevation 295 at the bottom of the Gilbertsville Dam and elevation 346.8, which is the height of the backwater from the Ohio River in the 1937 flood, without reference to the volume curves. I do not think I have that here, but it is a very substantial volume. Whether it is more than 1,000,000 acre-feet, I cannot give any figure for it. In answer to the question whether the volume between elevation 295 and 346.8 was naturally stored in the Gilbertsville reservoir during the 1937 flood, I would say that the volume between those elevations, thinking in terms of reservoir levels, is hardly comparable to the volume in the flowing stream. It is the backwater from the Ohio River. The backwater from the Ohio River extended different distances at different times on the flood crest. I am not sure that at the crest in 1937 it extended nearly 200 miles to Pickwick or to what extent it did extend. I can't give the figures of the volume in acre-feet stored at the crest of the 1937 flood by backwater from the Ohio River. There was certainly a very large volume of moving water in the Gilbertsville reach during the flood. I would not say that it was correct to state that as far as this volume between 295 and 347 is concerned, we are just proposing to swap Tennessee water for Ohio water under flood conditions like 1937.

[fol. 1293]

The sketch (offered and received in evidence as Complainants' Exhibit 914) seems to be a photostat of an exhibit which I presented in the Ashwander case. This seems to be a photostat from some Army plan. I think very likely I did introduce this exhibit. I don't recall. I show there in

black at the bottom a large area designated as flood storage displaced by reservoir. I did offer this exhibit with my testimony in the Ashwander case, but I did not make the drawing. I did not offer it in that case for the purpose of [fol. 1294] confusing the court about it. I probably offered it as a helpful exhibit.

The sketch (offered and received in evidence as Complainants' Exhibit 915) I recognize as a photostat of another exhibit which I offered in the Ashwander case with my testimony.

Examination by the Court:

Ordinarily speaking, channel storage would be the amount of storage within the channel itself as the river runs, whereas valley storage would include that and also any upon flooded planes outside of the channel. Channel storage is within the banks but may go on to an abnormal height.

Cross-examination continued:

In Complainants' Exhibit 915, I think that channel storage has been used as synonymous with valley storage. The dotted lines or curves at the bottom of the exhibit show the volume of the valley storage during the flood of 1917 on particular days in particular sections of the river. The solid lines going from Knoxville to Johnsonville show the total amount of valley storage in particular days in that section of the river. That is the top curve that goes up to a much higher elevation.

Defendants' Exhibit 83 is entitled "Volume in peak of Mississippi River, hydrograph 1929 flood". That was a rather moderate flood and was carried entirely within the levees. That was the reason why it was selected. No reduction in peak was needed for any purpose during that flood. In answer to the statement that it is not particularly helpful to know that on a small flood with a sharp peak we could have taken off 1.7 feet by a certain amount of storage when it was unnecessary to take any storage off, I will state that I think it is important to know if that is typical of [fol. 1295] larger floods, and I gave comparisons with the 1937 flood for that purpose. Defendants' Exhibit 83 is nothing more than a mathematical calculation of the volume of peaks of a historical flood. It is a mathematical com-

putation of the peaks down to succeeding intervals of depths below the crest made on the records of an old flood. It is much simpler to make those computations of volumes of peaks of past floods than to predict the volume, duration, or date of occurrence of future peaks.

Redirect examination:

I testified at page 836 of the original transcript of the proceedings in the Ashwander case with respect to Complainants' Exhibits 914 and 915 as follows:

"Q. Well, now, have you available a chart which will illustrate how this surcharge storage is provided to compensate for natural storage, or channel storage, which has been displaced, and how the control of surcharge storage makes it possible to assist in reducing flood peaks?

A. I have.

Q. Now, first, where did that come from?

A. That is (indicating) a reproduction of chart 23 of Appendix B, volume No. 2, House Document 328.

Q. Now, what are they basing their study on there, on the proposed high dams under their plan?

A. This (indicating) is an illustration of the effect of the surcharge of the high dam plan.

Q. Now, explain it briefly, please.

A. It indicates the flood storage in this natural condition, passing down the river, as it would have been if there had been no dam in place. It indicates a sudden volume of flood water, a sort of shunted off or switched off to a high elevation, and held there as long as need be by the gates at the top of the dam.

Q. Now, do you believe that is an accurate picture and representation of how it works?

A. I think it is a good picture of the principle.

[fol. 1296] Q. Now, Mr. Kimball, what is this? Briefly it is entitled 'Tennessee Valley Authority, General Engineering Division, Tennessee River channel storage below Knoxville, storm of 1917, February 4, 1935.'

A. That is a chart which represents the passage of the flood crest, or the passage of the temporary channel storage from Knoxville through to Johnsonville.

Q. Now, is that prepared by you?

A. It was.

Q. And it represents your opinion?

A. It represents the computed storage from the actual 1917 flood and produced by the actual flow records obtained from the U. S. G. S. water supply paper.

Q. Now, what is the particular point that you wish to point out there?

A. This chart represents, by a line which is designated as Knoxville to Chattanooga, the quantity of flood storage impounded within the section between Knoxville and Chattanooga for the successive days indicated in March, 1917; and, in like manner, the storage between the section between Chattanooga and Florence, and Florence and Pickwick, and between Pickwick and Johnsonville are also shown. It will be noticed from this that the maximum storage from the first section between Knoxville and Chattanooga is reached on March 6th. From Chattanooga to Florence it was reached on March 10th; between Florence and Pickwick about March 13th; and between Pickwick and Johnsonville, on March 16th. When the storage reached the maximum between Pickwick and Johnsonville, there was only 48 per cent of the storage retained between Chattanooga and Florence, about 80 per cent between Florence and Pickwick, and only 22 per cent between Knoxville and Chattanooga. The effect of the flood storage, as contrasted with the storage provided by the dams by the surcharge of the river dams, is that the surcharge takes that storage and holds it; whereas in the natural flow of the stream, that storage travels downstream. There was in one of the documents a figure of 83 per cent, as representing the relation between the storage supplied by dams surcharge——

Q. (Interposing.) It was stated the surcharge amounted to 83 per cent of the natural storage.

A. Of the natural storage. That figure really had no significance. It was something like counting as in the population of the cities, those people simply passing through on the passenger trains; because the storage is a moving thing, and the only way to get this capacity throughout the river at any one time is through the operation of the surcharge from the dams."

[fol. 1297] That still represents my opinion. I believe that the 83 per cent of the valley storage which was provided by the surcharge referred to the high dam plan as outlined in House Document 328.

I was asked on cross-examination whether or not by the construction of the Gilbertsville reservoir, for the space between elevation 295 and 347 in the Gilbertsville section, I would not be merely swapping Tennessee water for Ohio water, and I said I did not agree with that statement. In explanation, I can not see any real application of that illustration. The passing of the flood water down the Tennessee at the lower reach was influenced by the valley storage. It was shown that if the peak preceded the peak in the Ohio the valley storage was added to the peak in the Ohio. If the peaks coincided, it would be possible without the valley storage to advance the Tennessee River flood water previous to the peak and thereby get better conditions than are provided through the natural valley storage.

"Q. In other words, Mr. Kimball, in those instances when the crest at Johnsonville on the Tennessee, making the allowance for the day and a half difference in time, and the crest on the Ohio were practically simultaneous in past floods, will you state whether or not it is true that if it had not been for valley storage, if you had had controlled storage instead of valley storage, you could have disposed of the crest on the Tennessee and gotten it by before the crest on the Ohio?

Mr. R. T. Jackson: I object to that question unless it specifies how much controlled storage he had.

By Mr. Fitts:

Q. All right, assuming the controlled storage concerning which you have testified, under the Unified Plan as reported to Congress on March 31, 1936.

Mr. R. T. Jackson: I don't remember that he gave any figure. I still object unless the figure is given.

Judge Allen: He may answer. Overruled.

Mr. R. T. Jackson: May we have our exception, please?

Judge Allen: It is certainly not necessary to repeat the [fol. 1298] figures every time the TVA Unified Plan is mentioned, at this point in this case."

It is true that if you have that assumed amount of controlled storage upon the main stream of the Tennessee, it would be possible to so operate the reservoirs as to either discharge the peak of the Tennessee ahead of the peak on the Ohio, or to hold the peak on the Tennessee until the peak

on the Ohio has passed, whichever under the circumstances was the better.

The reason why I am able to describe the general line of the 1867 flood along the Tennessee River, but was not able to make computations of the reductions in height from storage at Norris and Hiwassee, is that it is necessary, in computations for the reduction possible at the dams, to know not only the stream flow in the main stream but also the stream flow which is contributed by various tributaries, in other words, the day-to-day flow from each tributary to the main stream above the point in question. In order to make those computations, you have got to know the exact flow at the sites of the particular dams involved and on the particular days in question. There are no gauging records at all available for that flood in 1867. The only thing that is available is a record of the flood heights which were gathered from various high-water marks, and some rough computations as to the stream flow on the main river which would correspond to those flood heights. Those, because of variation in conditions between 1867 and more recent times when actual measurements of stream flow were taken, make it impossible to estimate with any accuracy or with sufficient accuracy the reduction by control by reservoirs.

I was asked on cross-examination as to whether my conclusions with respect to the system of detention basins proposed by Mr. Kurtz would be affected if the rate of release during the outflow period were varied from the rate of re- [fol. 1299] lease during the filling period. The fundamental difficulty in operating reservoirs for both Mississippi and Tennessee flood control, especially a reservoir designed with capacity sufficient for local flood protection only, regardless of whether the method of control is automatic or not, is that when required for flood control for local protection, the flows that have just occurred are of the only interest. When the problem is coupled with that of holding back water at remote points, then we have a different proposition, and it becomes necessary to control the outflow from the higher reservoir with respect not only to the local conditions but the remote conditions, and that requires larger storage capacity and control gates. The necessity of providing for repetition in heavy inflows makes it necessary to have a much larger capacity at the beginning of the season, so that we will have the storage space for perhaps

two or three floods between which there may be opportunity to release only limited amounts. As the period progresses, the chance of this necessity for storage decreases, and at the end of the season it becomes a problem of merely protecting for the local points rather than for the local and remote points too.

Defendants' Exhibit 90 is the comparison of the Kurtz Clinch River detention reservoir with the Norris reservoir. As to the levels indicated with respect to Norris, this is prepared from the standpoint of flood control and it represents my opinion as to the necessity of reservoir capacity for flood control without reference to other needs. Any curve for which these points are the basis is a flood control storage capacity curve rather than a filling curve for low water regulation. As to the levels indicated by me on that exhibit for flood control capacity, in my opinion it is feasible to allow a tolerance in a dry or normal year without damaging the effect of the reservoir for flood control.

[fol. 1300] I was asked on cross-examination certain questions as to the elevations at which Norris reservoir was maintained from January 17 through June of 1937. During that period the water in the reservoir was reduced so that the water level dropped from about 1031 to 1009. There were some considerable difficulties in the release, particularly because of the construction work of the TVA going on in the river at Chickamauga and other dams. The water was released as far as appeared necessary, but, at the same time, limiting it so as to safeguard the operations. When it got to the period of about April 1st, there was no further need of reducing because the flood period was over, and a substantial release was not continued late in the season. The crest of the 1937 flood was reached at Cairo on February 4, 1937. The month of January, according to my recollection, was the wettest season on record at Norris. We had operated Norris partially with a view to protecting the construction work in the lower river at the Chickamauga and Pickwick dams under construction. It was estimated that the flooding of the cofferdams during that period might involve an expense to the government of possibly $100,000 or $200,000. There was some inconvenience due to the height of the water in the Norris pool, but no material complaint was made. There have been some demands made on the TVA for damages which aggregate, I believe, something

less than $600 for damages due to the level in the reservoir in that neighborhood of 1031. The existence of the construction works in the main stream of the river was a temporary condition that will not obtain after the system is completed.

The operation of Norris reservoir was very successful in reducing peaks throughout the Tennessee River, including the construction work at the dams, and also in reducing flood heights in the Ohio at Cairo.

[fol. 1301] Examination by the Court:

We do not intend to operate at the elevation of 1031 or greater. 1031 would be reached only on very rare occasions.

Redirect examination continued:

Our contemplation is that under normal conditions it will be under 1031. As I understand Mr. Kurtz' testimony, he did not acquire flowage rights and left the railroads and highways in their existing locations and subject to such floods as would naturally occur by filling the reservoir, without any provision for compensation, as I understood it.

I was asked on cross-examination certain questions with respect to Defendants' Exhibit 29 in the Ashwander case (Complainants' Exhibit 912) which was introduced in connection with my testimony in that case. Referring to my testimony in that case at page 831 of the transcript, I was asked the following questions and made the following answers:

"Q. Well, now, when do floods normally occur in the Tennessee Valley, Mr. Kimball?

A. They occur from December through March, or at any time.

Q. Do you have any opinion, knowing generally the period during which they occur, will they—will more of that space at Norris be available for flood control purposes, generally, than just that top part allocated for flood storage?

A. Yes; it is practically certain that a portion of this lower zone of water will be available."

I would now modify that opinion. I would say that under present conditions that space below that elevation would be dependable, as indicated by this, in the way of flood control. Since the time I testified in the Ashwander case, we have

carried through a very large amount of study and work. We had been working six or eight months at that time. We [fol. 1302] have spent three years on it since that time and have used records in this latter period which were not available in the early period, and our present conception of the problem is, we feel, far superior to that at the Ashwander trial. Referring again to Complainants' Exhibit 912 which is a photostat of Defendants' Exhibit 29 in the Ashwander case, which was introduced during the course of my testimony in that case, I testified at page 833 of the transcript in that case with respect to the main river dams as follows:

"Q. Now, up here you have, still on this figure in the lower left corner of the chart, you have the amount available for flood control. How do you figure that and what does it amount to?

A. That is a depth on the river dams of 10 feet, and which is what we call the surcharge control by the gates on the dam.

Q. Now, what do you mean by 'Maximum leveling of flood control'? You mean that is as high as you can get?

A. That is not as high as it could get. That is as high as probable. There is nothing to prevent it getting higher, if you get water enough.

Q. Yes. Now, how about this probable average level available for Norris there between the red dotted line and the top of the blue space? What is that?

A. Well, that is a probable average water level during the year when there is no necessity for operation for flood control.

Q. Now, is it your idea that all of this space in here (indicating) that ten feet can be used for flood control? Now, if so, how?

A. It is expected that even more than that may be used. When a flood is on the way, the water can be drawn from the pool and the level lowered as far as possible, consistent with a nine foot navigation depth. When the flow is substantial, coming down the river, a flow sufficient in itself to produce a nine foot depth at the upper end, the water at the dam can be lowered below that indicated by the white, lower white line, and when that is lowered to that point or below a depth of ten feet that much more is available for the temporary holding of the flood waters."

That still represents my opinion.

[fol. 1303] Recross-examination:

I testified that Defendants' Exhibit 90 was intended to reflect on the left-hand side my idea of the levels to which the reservoir at Norris should be released after a flood for flood control purposes. On January 17, 1937, it was up to 1031 or a little higher. By February 15, 1937, it had not been brought back to 985 as I show, nor had it been brought back to 995 which I show for March 15th. At no time in the interval, even up to April 15th had it been brought back to 1005, which is the level that I show for 1937. I think it was about 1009 at that time, or about that time. I stated to the Court that this would only reach 1031 on rare occasions. That conclusion was not based on the fact that it exceeded 1031 in the only year it has been in operation, but upon computations of flood during the last 50 years. I also said that I thought this could be operated, if it was drawn down for a dry year. I cannot tell you now whether next summer is going to be as dry as 1925. I do not remember that I said this could be operated if it was drawn down for a dry year. I can not tell on January 15, February 15, March 15, or April 15 of any year whether the next season is going to be as dry as 1925; that is not possible. We can not tell so well in advance when it will be a dry year as we can have a pretty substantial idea as to the conditions affecting floods for some little time in advance.

The river discharge which corresponds to flood stage at Chattanooga is about 200,000 cubic feet per second. With respect to the discharge which corresponds to flood stage in the Clinch River, I know that last winter during the worst period we reached a release of about 40,000 cubic feet per second. That flooded one highway down below. I do not know that under the Weather Bureau records bank-full stage is about 42,000 second feet at Norris dam site. I do not think the Weather Bureau records ever established [fol. 1304] a flood stage at Norris dam site. The Weather Bureau may have established what they considered flood stage at Clinton. I don't remember what the flood stage is at Clinton. It is several miles below Norris. With all the studies I have made of flood control I do not remember whether I ever ran across the flood stage records at Clinton or found out what would be a flood stage at Norris Dam site. I very likely have noted it. 43,000 second feet may be the

flood stage at Clinton. I would not disagree with that being approximately right.

I would not know without referring to the records whether any flood stages were reached at Clinton at any time during the years 1903, 1904, 1905, 1907, 1908, 1909, 1913, 1923 and 1925. Referring to page 674 of the Weather Supply Bulletin, "Water Resources of Tennessee", I find that a discharge of 43,000 second feet was reached twice in 1906.

"Q. Well, I asked you about 1903, 1904, 1905 and then 1907. I am glad to know about 1906, but I didn't inquire about it.

A. No, I don't find it."

I don't find any record of flood stage having been reached at Clinton in 1903, 1904, 1905, 1907, 1908, or 1909. In 1913 the discharge reached 54,000. In 1923 the discharge reached 59,800 in February. The water years begin on October 1st of each year, and I took the figure for February from the year commencing October 1, 1922. I don't find any flood discharge during the year beginning October 1, 1923. Referring to page 290 of the Water Supply Bulletin, I do not find any flows above flood stage at Chattanooga for the water years beginning October 1, 1903, 1904, 1905, 1907, 1908, 1909, 1913, or 1923.

I do not know whether in order to develop the amount of firm power set out in the TVA report of March 31, 1936, the natural low water flow of the Tennessee must be increased [fol. 1305] during the low-water season. I do not remember that. In all the studies I have made of flood control and low water flow in this stream, I made no studies to find out whether it was necessary to store water to add to the low water flow to produce that amount of firm power. I would say that under present conditions a certain part of the storage which I marked as being available at times in my exhibit in the Ashwander case is dependable.

As to whether I have in mind in making that statement the fact that the TVA is not yet serving power under a large number of contracts which it has made with places like Memphis, Chattanooga, Knoxville, etc., I was not influenced by any statement as to power. It is true that my opinion was formed without any information about those contracts or the requirements under those contracts.

I assume that the following is a correct transcript of my testimony in the Ashwander case, page 809:

"The generators at Norris are designed for certain conditions and service. No useful purpose is served by changing those conditions. I am not familiar with power generation, but I suppose that the increase in storage produces an increase in primary power."

I can not say whether it is a fact that the maximum inflow to Norris in 1937 was 43,000 second feet,—or 50,000 second feet. I do not have that record here. The flood flows into Norris may reach 115,000 second feet. That was in the neighborhood of the estimate of the flow at Norris in the flood of 1886.

I also testified that the flood of the Emory was something of an isolated character in which the TVA was not interested or concerned, or something. It is a fact that the flood on the Emory covered a considerable area, but it was of the cloud-[fol. 1306] burst character, as described by the United States Geological Survey reports. It is true that that drainage area of 10,000 square miles is approximately half the drainage area above Chattanooga. I don't remember the amount of rainfall over that area, to what extent it was a heavy storm. The fact that that storm split over the Tennessee and Cumberland watersheds and part of it went down the Cumberland helped prevent the conditions from being more disastrous than they were. It is a fact that the average annual property damage estimated by the engineers on the Emory river is $350,000 per year, or approximately one-half of the annual property damage estimated for Chattanooga. I don't recall what figures they gave. There is practically no basis for an estimate of an average annual property damage at Harriman because there has been only one flood and that is not sufficient for a determination of an average annual damage. There was a substantial loss of life in the Emory flood, which I did not think reached 50. There were only nine lives lost at Harriman. I know three of those lives were the family of the waterworks superintendent. I don't remember about the other six. The remainder of the 50 were on another stream, if I remember correctly. I am quite sure there were only nine at Harriman. I do not think there were at least 21 on the Emory. I tried to make myself clear that that is not the type of thing which the TVA is concerned with.

I said that I could not put on this 1867 flood where I wanted to show the effect of the flood heights at Chatta-

nooga, because I did not have enough data. We made some study of a large flood as to what might be expected in the future and estimated that it might be 50 per cent above the 1867 flood. We did make some studies and develop the project flood enough so that we had data enough to put the results in case of such a flood on my exhibit. We could have given the results of the computations on the exhibit. We did not do it. I would not say that the reason that we [fol. 1307] could not put anything down about the 1867 flood was because we were in just the same situation with reference to that flood that we would be at the start of any other flood that has not yet happened. If you assume a project flood, it would be hypothetical, such as Mr. Kurtz has in his plan. It is nothing definite, it is hypothetical. It is true that we had even more information with reference to the 1867 flood than we would have at the beginning of a new flood that had not yet happened. I don't remember the total storage in acre-feet above Chattanooga that Mr. Kurtz's 19 reservoirs had. Of course, he had 19 reservoirs and the TVA has but six. I think that it is probably true that he had a great deal more storage in acre-feet than the TVA has above Chattanooga. I don't remember his figures.

(The witness was excused.)

[fol. 1308] O. N. Floyd was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in Dallas, Texas, am 59 years old, and am in the private practice of hydraulic engineering. I entered the University of Tennessee in 1900, took two years of Civil Engineering course, dropped out one year and worked about six months on the Tennessee River with the Army Engineers near the vicinity of Rockwood Landing, and the balance of the time with the L. & N. Railroad. I then went back to the University and took the remainder of the four year course, and graduated in 1905. I then went back to work for the L. & N. Railroad and the Southern, and all together, before graduating and after, I had about six years experience in

railroad work, usually in relocation, in construction of some double track work. Then, from about 1910 to 1913, I was engaged on drainage and levee projects in the Mississippi Valley, Western Kentucky, Arkansas and Mississippi. In May 1913, soon after the flood at Dayton, Ohio, I went to Dayton as the local representative of the Morgan Engineering Company in charge of surveys of the Miami Valley, making surveys, collecting flood data, hydrological data, and making a study of the 1913 flood at Dayton and in the Miami Valley, and of course, looking forward to working out plans for the protection of the cities in the valley.

For the first four or five years on this work, I do not remember that I had any particular title, I was more or less chief assistant to Mr. Arthur E. Morgan, who was chief engineer on this project, that later was organized legally into what was called the Miami Conservancy District. I had [fol. 1309] charge of field surveys, investigation of dams, making borings, collection of data, and worked more or less with the designing department in coordinating all this data. After the construction started, I might say that this resulted in the building of five dams in the Miami valley and about five million dollars worth of channel improvement, mostly at Dayton, Hamilton and below, Troy, Middletown, Miami, probably some smaller places between. After the construction started, I was in charge of the construction of one dam, the Taylorsville dam above Dayton, and was on the construction committee that worked with the Assistant Chief Engineer and construction manager on all the principal construction problems that came up anywhere over the project. About the time that this work was finished in October, 1922, I went to Wichita Falls, Texas, as Assistant Chief Engineer on an irrigation project, in charge of constructing two large dams and a hundred miles of irrigation canal.

After that project was completed I went to Dallas, Texas, as principal assistant engineer for the City of Dallas in charge of the studies and investigations for a new water supply for the City of Dallas, which resulted in the building of what was called the Gorza dam about ten miles above Dallas, storing a large amount of water for their water supply. This was a five million dollar project. I had an understanding with the City about the consulting engineering position in which I was, when I went there, that after the work was fairly under way, I would enter private practice.

I expected to make that my headquarters. So before this work was finished I formed a partnership with J. L. Lockridge, and in 1926 we became fairly active in handling engineering projects. During that, the principal dam we built or had charge of as principal engineer- was a dam for the [fol. 1310] City of Waco, Texas, for water supply. The reconstruction of the filter plant and building about five miles of 42 inch pipe line. We also worked and supervised the dam for the West Texas Utility Company, for water supply at San Angelo, Texas. We worked at some smaller dams for the West Texas Utility Company, one at Abilene, and one near Vernon, Texas.—I can not think of the name of the town now. We worked out a water supply for the Dallas Power & Light Company which finally developed into the Mountain Creek dam near Dallas. I did not have charge of that, that was built by their own forces.

I was consulting engineer for the contract on two large earth dams that were built above Fort Worth, Texas, partly for water supply and irrigation, but largely for flood control. I was consulting engineer for the contractors who bid on the Madden dam at the Canal Zone, and who were the low bidders. I designed the cofferdams and river control work for the construction of this job and assisted with the selection of plant and operation of the contractor's work. From August 1930 to January 1st, 1931, I was consultant for the Army Engineers at New Orleans on the Bonnet Carre Spillway, which is one of the principal units for Mississippi River flood control for the city of New Orleans. During this time I helped to make studies in the Atchafalaya basin, which is a short cut from the mouth of the Red River down to the Gulf, for the revision of what is known as the Jadwin plan.

In December, 1934, I became consultant for the TVA and have continued on that work ever since, seeing the work about once a month, certain parts of it, sometimes more or less all of it. I am at the present time consulting engineer [fol. 1311] for the Army Engineers on the Sardis Dam, which is being handled by the Vicksburg office, about an $11,000,000 flood control project. I am also consultant for the Little Rock office of the Army Engineers on the dam on the St. Francis River and several on the Arkansas drainage area in Oklahoma and Colorado. They are all flood control projects. The one in Colorado combines flood control and

irrigation. I neglected to state that in May 1934, I was employed as consultant on what is known as the Red Bluff Dam in West Texas, about a $2,800,000 irrigation project to store water for irrigation and a small amount of power. The dam has been finished and I am still retained as consultant in a way, that is, to make periodic inspections of the project. I have made a number of studies and reports for flood control, drainage, water supply, small projects that I do not think need be mentioned in detail. My work on the St. Francis is largely for the lower St. Francis Valley and helps the Mississippi to some extent. The ones on the Arkansas have some local benefits and some benefits further down on the Mississippi.

I have worked for the TVA as consultant since December, 1934. I was first called in in connection with the construction of the earth dam part of the Pickwick Dam, to give my opinion on that and on the cut-off of the underlying material, and later continued on through the Pickwick Dam on studies of the foundations, and the cofferdams and general problems that came up. Then before the construction started at Chickamauga Dam and at Guntersville Dam, I made examinations of those for reports on the construction of the earth dam and the cut-off's, and have continued to give more or less attention to those dams during construction of the foundation problems and designs, and sometimes plans [fol. 1312] and things of that sort. I have recently given some attention to the Hiwassee Dam. The Norris Dam was very nearly finished before I came with the TVA, but I was on two or three inspections towards the last, and I was on the final inspection before it was decided to go ahead and fill it and use it. In connection with the Gilbertsville Dam, I studied foundation conditions there and made comparisons between the different sites that had been investigated. I have worked somewhat on the tentative designs and I made a special study of the flood control value of Gilbertsville and the heights that should be used for storage, and so on.

In my opinion, it is desirable to provide flood storage in reservoirs on the tributaries of the Mississippi to increase the protection of the alluvial valley of the Mississippi. In my opinion, the system of projects composed of the TVA dams under construction, constructed, and authorized for investigation, constitutes a practical project for the reduction of flood peaks on the Mississippi. There are three par-

ticular advantages for these projects of the TVA for Mississippi flood control. First, the Tennessee is one of the main contributors to all our floods and there has never been one of the higher floods or bigger floods in Cairo without a substantial contribution from the Tennessee River. The Tennessee River system, as proposed and being carried out by the TVA, will control the floods in the Tennessee River down to its mouth, which is very close to Cairo, making a positive control. In other words, there are no particular errors in timing because the last dam, the Gilbertsville Dam, will be about one day's flow away from Cairo.

As a result of my studies as a consultant, I would consider that an amount of storage at a dam with an elevation of 375 [fol. 1313] is feasible to provide substantial flood storage at the Gilbertsville site in addition to that already provided for in projects constructed or under construction. By that I mean the top of the gates will be 375 so that the water may be 375.

I am familiar with Mr. Bowman's estimates as to the amount of flood storage which it would be possible to secure on the TVA's projects, and I have heard Mr. Woodward's testimony. Assuming a seasonal filling of tributary reservoirs from around 960 up to about 1005 on April 15th, and assuming that in all major flood seasons the main river dams will be drawn down to the minimum navigation level, assuming that method of operation, I think Mr. Bowman's estimate as to the amount of controlled flood storage available is conservative. I consider it feasible to draw down the main stream reservoirs in advance of a flood and thus provide additional storage space below minimum navigation level, especially so with a series of dams as you have on the Tennessee. In my opinion, the storage in tributary reservoirs, such as Norris and Hiwassee, will be of substantial value for Mississippi River flood control. They will not only help to hold back the water that would otherwise reach the Mississippi, but they make the main stream dams along the channel more effective. The main stream dams have a limited amount of storage available at all times, all during the flood season. There are certain floods, the larger floods, that go somewhat beyond the efficient capacity of the main stream dams, and the storage on the tributaries reduces these floods to a volume and strings them out as to time, so that the high dams become more efficient in handling it.

"Q. Mr. Floyd, is it also feasible to draw down the main stream reservoirs, such as Gilbertsville, below the minimum [fol. 1314] navigation levels at times and thus increase the amount of flood storage space available at such dams?

A. Yes, it is entirely possible to draw Gilbertsville dam down, in order not to interfere with navigation there will be need for releasing from Pickwick when it is held by it.

Mr. R. T. Jackson: I move to strike out the answer as the witness has no qualifications to testify as to navigation.

Judge Allen: The motion is overruled. The answer may stand.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: The Court considers in view of the statute, in view of the express provision of the statute with reference to the depth of the channel to be provided, that this witness can answer with reference to navigation, so far as the channel is concerned.

Mr. R. T. Jackson: We submit there is nothing in the statute that makes a consulting engineer an expert for navigation.

Mr. Fly: I am referring, your Honor, only to depth of the channel. I am not referring to any of the other details of navigation.

Judge Allen: The Court considers that a lay person could testify that where he formerly had a foot and a half channel or a 3 foot channel, that a 9½ foot channel or a 12 foot channel was better for navigation for a boat having a draft of six or eight feet.

Mr. R. T. Jackson: If the Court please, I do not want to pursue this, but do not want the Court to be under a misapprehension.

Judge Allen: I just want to give the Court's view that has been expressed silently behind the bench over and over again.

Mr. R. T. Jackson: Since it is now expressed publicly and is so far away from what I understand to be the facts of the case, I think I might express our position.

I do not understand when the Federal Government provides a navigable channel that has a limit of nine feet, that some lay person can come along and say that since they provide nine feet for navigation whereas before it was two, it is no harm to navigation to reduce it to two. Nor do I understand such persons are qualified to say whether a question

of hydraulic engineering might make it impossible for navigation.

[fol. 1315] By Mr. Fly:

Q. Will you please explain, Mr. Floyd, what the advantage may be from the stored water in the tributary reservoirs, such as Norris or Hiwassee, making practicable this draw-down of Gilbertsville and other main stream dams below the minimum navigation depth?

Mr. R. T. Jackson: Object to the question on the ground it is one which the witness is utterly incompetent to express an opinion on.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May we have our exception?

A. This water stored in the tributary dams, of course, makes it possible to maintain a navigable depth at the headwaters of Pickwick, in case it becomes necessary to draw down or desirable to draw down for flood control to such an extent that the slack water would not extend all the way up to Pickwick. In other words, it would give you this ability that you will not damage the purposes of the system by draw-downs for flood control."

Examination by the Court:

When we construct this system of dams on the main channel of the Tennessee River, that will give continuous nine-foot channel from Knoxville to the mouth. Below Pickwick it is backed up to Pickwick by Gilbertsville. That channel is maintained if you keep the water in Gilbertsville, to about 354. But it is possible if we know floods are coming down the Ohio River, to open the 24 gates at Gilbertsville and let that water down as low as 350, in a number of cases. In come cases also, when that water gets below 352, it begins to seriously interfere with the navigable depth up at Pickwick, or at the upper end of Gilbertsville Lake. Then is when we need an increase of water from above to create a flowing channel deep enough for boats to get up. The water would come immediately from Pickwick, but might be supplied eventually from the tributary storage or from anywhere above or you might have a little flood.

[fol. 1316] Direct examination continued:

"Q. In your opinion, is it an advantageous and feasible operation to draw down the main stream dam, such as Gilbertsville, below their ordinary slack water minimum, navigation level, and then to build up the depths of the water in the upper reaches of the pool, up to the minimum navigation depth, by means of the releases from the tributary reservoirs?

Mr. R. T. Jackson: I object to the competency of the witness to answer as to navigation; and on the further ground the question has already been put and answered.

Judge Allen: Objection overruled.

A. It is.

Mr. Jackson: Exception, please.

Q. And in your opinion, would the storage available at Norris, and which could be made available at Hiwassee, be useful and valuable for that purpose?

A. Yes, if it is needed it is very important.

Mr. R. T. Jackson: I object on the same ground.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May I have an exception?"

In my opinion, the seasonal filling at Norris and later at Hiwassee during the course of the major flood season is a desirable and feasible operation for Mississippi flood control. We need more flood control capacity at the beginning of the flood season as distinguished from the end.

[fol. 1317] Cross-examination:

The Corps of Engineers, United States Army, have been in charge of the flood control works on the Mississippi River since 1880. It was somewhere about that time that the Mississippi River Commission was legally set up. They have had the authority and responsibility for flood protection measures on the Mississippi River, so far as the Federal Government is concerned, since that time. I do not know how long the Corps of Engineers, United States Army, have had the responsibility for inland waterway navigation and development and operation of navigation works on inland waterways. They have had it farther

back than I know about and ever since I have been in engineering work. I never paid much attention to it before. Before I got into engineering, navigation did not interest me much. I was inland born. Neither before nor since did it interest me much but I had heard some of the discussions.

I have done quite a little construction work in Texas and Arkansas and states in the southwest. A large part of my work has been the planning of these projects and in charge of construction. I would say that most of these projects out in Texas and those places are irrigational or water-supply projects only. Some of them are flood control. There is a good deal of trouble out there with shortage of water for the dry season and the necessity of storing it for irrigation and water supply both. Our rainfall is very irregular. We are liable to have some long, dry periods and then some very severe floods. When I came to Pickwick, which was my first work, I advised with reference to the construction of the earthen part of the dam and the cofferdam construction. I made reports and recommendations about the construction of the earthen part of [fol. 1318] the dam at Chickamauga and Guntersville, and the cut-offs that were made there, and work on foundations. I have inspected the foundations of the dam up at Hiwassee. I came too late to inspect the foundations at Norris.

I stated something about the storage in the TVA Dams but I cannot tell what is the power storage between flat pool and normal pool at Watts Bar or Coulter Shoals. I am not familiar with them. I do not even know what you call "power storage". The flood storage at Chickamauga is 325,000 acre feet, I am not sure that it is between normal pool level and the top of the gates. I do know that part of it is below the top of the gates. I can not tell what the storage is between normal pool level and the top of the gates. I don't know what normal pool level is. I have seen the tables of what the amount of storage is at Hiwassee between normal pool level and the top of the gates, but I don't remember those figures. I have studied those projects and have drawn my conclusions when I had the figures before me. I can not tell what the figure is at Hiwassee without referring to a table. I have not got my working papers with me.

Examination by the Court:

Normal pool level is rather variously used. It is supposed to be an average, as I understand, just as we speak of normal temperature, which is almost never the temperature that we have, or the normal rainfall is spoken of here at this place as being a little less than 52 inches, and out of the whole 70 or 80 years record there will be only a few years, of course, that are even very close to normal. It is a sort of an average, and one man's average might not be [fol. 1319] the same as the other. I don't think of it so much as normal pool. The flood control storage depends on the figures that I used, and in stating flood control and the effectiveness of controlling the floods, it is from the minimum draw-down, that is, the minimum navigation level, the navigation pool level, and the top of the gates. In other words, it is that storage which can be piled on top there during the flood. That is the effective storage in all cases. The storage below that, even down to the top of the concrete, is taken into play as effective storage, especially if we have opportunity to draw that out ahead of the flood and then fill it back up with the flood water.

Cross-examination continued:

As to whether my testimony in response to the questions of the Court expresses my understanding of normal pool level as the term is used in storage reservoirs and power reservoirs, I don't use the term myself. I hear it used.

"Q. I didn't ask if you used it, I asked if that is your understanding.

A. I understand it is a sort of average of the fluctuations up and down.

Q. And that is what you think is meant by normal pool level in a storage reservoir or a power reservoir?

A. Some people I know use it, I don't know just always—it is not a very definite term."

The amount of dead storage at Wheeler would be the amount below the top of the concrete spillway or the bottom of the gates. I would not know how much that is without referring to tables. I don't know exactly what the volume is between the minimum navigation level and the top of the gates at Wheeler. I think it is something over 400,000

[fol. 1320] acre feet. I am not sure about that, I would have to look at the tables. I can't tell how much the total volume of dead storage is in all of these TVA dams constructed, under construction, and proposed, without taking it off tables. I can't tell how much power storage there is in all of these TVA reservoirs constructed, under construction, and included in the plans for construction. I never made any study of power storage and haven't any idea about it,—not anything that would be dependable. It is not correct to say that when I gave my testimony, I did not have any knowledge or idea that could be dependable of how much power storage was included in the storage of the TVA dams and reservoirs. My testimony is based on what I consider to be the effective flood storage, and it has no reference to power storage of any kind. There may be some power storage in that, or power may be gotten out of that; but I never made a study of that.

Assuming that the TVA dams and reservoirs were to provide such storage as would provide 660,000 kilowatts of firm capacity in a dry year such as 1925, and 5,780,000,000 kilowatt hours of firm energy in a dry year such as 1925, I have no idea what would be the remaining storage capacity that would be left after supplying that energy. I never have had any idea at any time during my testimony. I never have considered it. I never heard that until I heard you mention it here in Court. I have been in Court ever since last Thursday, I believe.

When I expressed an opinion about the effect of the storage which I had in mind in these reservoirs as a flood came down the Tennessee River, I did not have a project flood in mind, except, you might say, in a study of Gilbertsville. I considered what we called a project flood, but that was for Cairo rather than for this. Assuming that we had a three-day rainfall of eleven inches with 90 per cent run-[fol. 1321] off over the Tennessee basin, we would get a pretty good-sized flood in the Tennessee River. I have read Mr. Kurtz's testimony on what he would get above Chattanooga, and I see no reason to dispute it. I think it is something close to 700,000 second feet. If it was distributed over the Tennessee basin. I would have to have hydrographs and calculate the acre-feet in volume of that flood that we would have, and to know how many days it was going by, etc. Before I testified as to the volume I

had not calculated what you call a project flood; it was what we designed the spillways from. As to whether such a flood would produce a volume of 20,000,000 or 40,000,000 acre-feet, I would say that both of those figures might be rather large. I think 20,000,000 would be large at Chattanooga; 20,000,000 acre-feet might not be large for the total flood at the mouth of the River. I do not know what it would be.

Assuming that along about the first of March in a certain year we had a number of moderate floods and filled perhaps two-thirds of the storage capacity in the various TVA reservoirs, and that on that date, or shortly thereafter, we had a storm of that character over the Tennessee Valley producing a volume of run-off of 20,000,000 acre-feet, I would let most of it, a good part of it, go by. As to whether I would have to let a great deal of it go by, that is good flood control to let all of the early part of the flood go by. That is just as effective as if we had held it up above. If it is good flood control to let the flood go by, the reason why we spend a lot of money on dams to stop it is that there is a part of it you have to stop to prevent damage, that is the critical part, during the critical peak of the period but that is a small per cent of the total volume of [fol. 1322] the flood. I mean to testify that on the above hypothesis we would take off the peak of the flood. If it is within the reason of probability, such a flood would probably last a couple of weeks at fairly good stages.

I spoke about drawing down pools. On my prediction of a flood with a gauge 18 feet high at Wilson, we could not draw the pool down very much unless we closed the gates at Wheeler. Then we could draw it down very close to 18 feet. If we drew Wilson down 18 feet, I don't know how much water we would have over the upper sill of the lock. If we drew down Wheeler reservoir in the same way, the amount of water which we would have over the upper sill of the lock would depend on how much water was flowing out of Guntersville. I don't know as a matter of fact that we would not have 2 feet. I don't know we would, either. There are other conditions there. You have either got to base it on no flow or putting a certain amount of flow into the reservoir. I did not base it on any flow, that is your problem. It is not that we just pull down the reservoir and take out the water and it is the navigator's prob-

lem whether he gets through or not, I am answering your problem. I don't know what the elevation of the upper lock sill is at Wheeler. I would have to look that up. I don't know what the elevation of the upper lock sill is at Wilson. By the upper lock sill at Wheeler you probably mean the sill of the upstream gate of the lock at Wheeler. I don't know whether you mean that or whether you mean the sill at Guntersville, the next dam up. As to whether I, an expert, do not know what the upper sill of Wheeler lock is, I will have to look those figures up for the upper sill of the lock at Wheeler Dam. I don't try to remember, in fact [fol. 1323] it is very dangerous to try to remember an awful lot of figures. I was not trying to evade. I make it a point not to try to remember. Even if I think I remember I usually want to look it up. In any case it is not good engineering practice to try to tell too much from memory. I am not making it a point not to remember when I am asked questions here.

With respect to what the release at Guntersville has to do with the drawing down at Wheeler, I had in mind that you meant the upper end of the navigation channel, when you said upper sill. If you had meant that, of course, then the volume through Guntersville would—the backwater up there, would increase the depth at the upper end of the pool when the Wheeler pool was drawn down low; otherwise it would have no effect. I can not give exactly the actual velocity at the head of the Guntersville pool when it is drawn down to elevation 350 or less at the dam and water is being released to increase the elevation at the head of the pool to 354, but I remember the figures. It was between four and five feet a second, as I recall. I investigated the velocities for 20,000 second feet and for 50,000 second feet. 4½ feet a second would be three miles an hour. There have been some different plans on the amount of water that would have to be released in order to obtain this increase in elevation to 354, and I might be a little mixed on that, but generally if it is not drawn too low, I think 20,000 second feet. I do not know just how far down that would carry us, but to draw down lower than 350, we may have to raise it more than 20,000. I have forgotten. I would rather look that up, but it is somewhere from 20,000 up to 40,000 or 50,000 second feet. I don't think we would ever have to have 50,000 second feet.

[fol. 1324] The purpose of drawing that out at Gilbertsville in order to dump it out at the lower end is that every bit of the water we get out of Gilbertsville ahead of the crest at Cairo just makes our storage that much more effective for flood control. We are dumping water in right behind that, but at a time when the stages are not critical at Cairo and in the lower river. In other words, we have generally about two weeks warning at Cairo before there is going to be a critical flood. Now, they do not know very close on the gauge that far ahead, but they do know whether a flood is going to be serious or not serious. It is during that period that we would let the water out at Gilbertsville or any of the other dams above to get it on down the river before the water got too high at Cairo. There is no point in controlling the water at Gilbertsville until the critical stage is reached at Cairo. So, if the flood is going to 59½ feet, and we can take off two and a half feet, there would be no point in starting controlling until the flood was on the gauge at Cairo at 57. Then we would do all we could at Gilbertsville to hold it at 57, for anywhere from 10 to 15 days, depending on the flood water at that stage, and also whether we can hold it. All the water we can let out before that time, is that much water out of the way, just as effective as though we had control on the tributaries, anywhere else. Of course if we had not had the dam there, that water would already have been down stream. That water would have gone on, but we would not have stopped the later water, that is the trouble. We release just as little of the later water as we can, for two weeks or longer, depending on the shape of the hydrograph at Cairo. And then sometime after the River at Cairo is beginning to go down, depending somewhat on conditions down below, we begin getting rid [fol. 1325] of the water. How long we would hold it would depend a great deal on how much flood came down the Tennessee. We might hold all of it, if we do not have too much, or hold a part of it. We would always hold some of it. How long we would hold it, if we were going to do any good, would depend somewhat on the peak at Cairo. If we are effective at Cairo, we have got to hold throughout the critical period. In other words, if we decide we can take off 2½ feet at Cairo, we have got to hold throughout the whole time that the River would have risen that 2½ feet and gone back down that 2½ feet. That may be a little

longer so as not to inconvenience anything by turning it out too quick.

"Q. Now, Mr. Floyd, in 1937 the peak at Cairo was over 52 for 25 days, wasn't it?

A. That is probably right. I don't see any point in that, you don't have to control that long.

Q. You didn't understand me to ask you whether you could see any point in keeping it that many days?

Mr. Fly: I move to strike out that remark.

Mr. R. T. Jackson: I think it is perfectly proper cross-examination.

Judge Allen: It is not a very courteous question any way.

Mr. R. T. Jackson: I think it is entirely proper. I am sorry if the Court feels that way, but I think it is a question which is perfectly proper with an argumentative witness.

Q. Mr. Floyd, there is no reason to believe that such a peak of 52 feet might not last more than 25 days, is there?

A. The lower stages could last long, by water coming in from the Mississippi, which has occurred on other floods, but the high peaks are not likely to last very long."

[fol. 1326] I have been told how they operated the Wheeler reservoir during the 1937 flood. I think I read some sort of report on how it was operated during the 1937 flood. I recall it was operated so as to add some seven to nine thousand cubic feet per second to the stage at Pickwick and at Cairo. I heard Mr. Woodward say 7,000 cubic feet per second more was going out of Wheeler than coming in. At the same time Norris was holding back more than that. I think under the circumstances Mr. Woodward described there it would be a prudent and sensible operation at Wheeler. The Weather Bureau had reported there would likely be some rain and they were trying to draw down to get ready for another flood. The other flood did not come, but it might have.

"Q. And in the cases where your prediction fails like that, you simply augment the peak, is that right?

A. Mr. Jackson, you can never operate 100 per cent efficiently in works of this kind, because you have got to depend somewhat on your predictions. That is the reason why we always try to have what we are quite often criticized for, excess storage—so-called excess storage."

The fact is we just can not operate these by hind-sight. We do not know when the rains are going to stop. We can not do that. Nobody has yet perfected a system for predicting rains accurately. I have seen the records as to when the largest flood occurred in Chattanooga. I have heard it stated here that it was March, 1867. I think the second largest flood occurred at Chattanooga in March, 1875. The third largest flood at Chattanooga occurred in April, I think, the first few days in April, 1896. I don't remember that the next largest flood occurred in Chattanooga in March, 1917. I think that is right.

[fol. 1327] If it was necessary to build power storage by March in order to provide 660,000 kilowatts of firm capacity and 5,780,000,000 kilowatt hours of firm energy annually, I could not tell what volume of storage could be relied upon in those upstream reservoirs for a flood coming in March or April. You would have to tell me how far your storage had to run. If that power storage would encroach so far upon the total storage as to leave an inadequate place to take care of the flood, there would not entirely be no dependable flood storage left. Of course if we did not have space for it, a part of it would have to go down.

I am one of the alumni of the Miami Conservancy District. I spent about ten years in that school. Usually we had there during the preliminary stage, I would say, 250 to 300 engineers. Then after the construction started, of course that built up considerably. There was some turnover in the total of engineers who went through the job, but quite a bunch of us were there straight through. That was a system of detention reservoirs with some channel improvement.

(The witness was excused.)

[fol. 1328] CHARLES W. OKEY was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I live at Knoxville, Tennessee, and am principal engineer with the TVA. I am engaged in the Project Planning Division and have been with the TVA since November 1, 1935. My work consists in general of making a study of the in-

fluence of the reservoirs on the land immediately surrounding the margin thereof, in connection with the protection of certain areas from backwater and also in connection with the effect of flood control storage on the Tennessee, the Ohio, and the Mississippi Rivers.

I finished the civil engineering course at the Iowa State College with the degree of Bachelor of Civil Engineering in 1909. In 1914 I submitted a thesis on drainage work and received the degree of civil engineer. The first seven years after graduation I was with the United States Department of Agriculture in drainage investigation work in the Mississippi Valley, stationed principally in Louisiana. This work consisted of technical investigations on the theory and practice of drainage, and surveys and plans for specific projects in the states of Kansas, Mississippi, Louisiana and Florida. As the result of this work, various reports and bulletins were prepared on drainage, both by gravity and by means of pumps. The work also included some investigations in Illinois, Iowa and Missouri. In 1916 I left the Government service to engage in some private work on some reclamation projects on some rivers in South [fol. 1329] Carolina. In 1919 after the close of the War—during which I was engaged on construction work at Nashville, Tennessee, and Mobile, Alabama,—I entered into the private practice of drainage and flood control engineering with headquarters first at Peoria, Illinois, later at Memphis.

I was at Memphis until 1926, the work at that time consisting of general engineering practice, drainage and flood protection work in the States of Illinois, Missouri, Arkansas, Mississippi, Texas and Florida. These projects covered all phases of flood control and drainage work. In 1926 I entered on work in Eastern Arkansas in the management, development, sale and operation of about 50,000 acres of farm and timber land. During that time I was a resident in Eastern Arkansas and the problems that we had to deal with then concerned the Mississippi River flood control along the lower Arkansas River and in Eastern Arkansas. At the close of that work I entered the employ of the TVA and have since been engaged in that work which I have described above.

That 50,000 acres of land which I was engaged in developing and operating as an engineer was very largely in the alluvial valley of the Mississippi. I have made additional

studies or investigations of the nature and extent of the flood problem on the lower Mississippi. From 1926 to 1935 it was necessary to be completely informed about the plans for protection of floods in the Mississippi River Valley, particularly the lower alluvial valley. Since coming with the TVA, I have spent practically a year in making a study of the present status of the flood control problem in the Mis- [fol. 1330] sissippi River Valley, and the effect of flood control storage reducing the flood stage during the maximum peak and at other times. I have referred to and studied the reports by the United States Army Engineers and the Mississippi River Commission covering flood control in the lower Mississippi Valleys; also reports of private engineers, records of the United States Weather Bureau and records of the United States Geological Survey; also the census reports and other official documents dealing with the territory in the lower alluvial valley from Cairo south.

I can give the number of some of the documents concerning that general problem that I have studied. One on reservoirs is House Document 259 prepared by the Mississippi River Commission. Then there is Document No. 1 of the last Congress by the Army Engineers. The other reports deal with the Jadwin plan and the modified project in the report of 1935 adopted by Congress in 1936. I have also studied a half dozen other official documents concerning the alluvial valley flood conditions in the Mississippi, the backwater areas and that sort of thing. I am personally familiar with the geography and agricultural and industrial development of the alluvial valley. I began residing in Louisiana in 1909 and from then on I was residing a good portion of the time in the alluvial valley, and my engineering practice for 19 years had to do largely with the lower alluvial valley. I have had an opportunity to observe personally the effects of floods in the valley. I lived in the valley and observed the floods in 1913, 1916, 1926, 1932, 1927 and 1937—during those years of great floods.

The chart (offered and received in evidence as Defendants' Exhibit 91) shows the levee system, rivers, highways, [fol. 1331] railways, the protected valley land, the unprotected valley land and the backwater area subject to flood waters in the Mississippi alluvial valley. The information set forth thereon was taken from the official reports and maps of the United States Army Engineers and Mississippi River Commission. What the exhibit purports to show is indicated

by the items listed in the legend. This chart shows what is generally considered to be the alluvial valley of the lower Mississippi River, from Cape Girardeau and Cairo to the Gulf of Mexico. The stippled area to the right and left of the middle portion of the map is the upland bordering the alluvial valley. Starting at Cairo, this border goes to the south and west through Poplar Bluff, then on down to the lower end of the map. The white area within the two shaded portions is the alluvial valley, which is planned to be protected by the modified and adopted project of the United States Army Engineers. In this white area there are a few spots of shaded area, which are some ridges or high land which lies within the alluvial valley. The Mississippi River and principal tributaries are shown meandering through the Valley in blue color. The dark brown line is a representation of the location of the levees of the modified adopted project. On the left side the levees start a little southwest of Cairo and then come down the west side of the river to the mouth of the St. Francis River where there is a gap left for the St. Francis to enter. It then again resumes at Helena and goes down the left side until it is cut off for the Arkansas and White Rivers to enter. Then below that, the levee starts at a point near Pine Bluff, going down river, leaving a gap [fol. 1332] just above the mouth of the Red River so that that river can enter. On the east side, the areas of overflowed land are rather narrow from the vicinity of Cairo to Memphis. There is just one small area starting at Hickman, with a levee protecting a relatively small area from Hickman toward Memphis. A levee starts just below Memphis and continues to just above Vicksburg where the Yazoo River is allowed to enter. From there down, there is no levee on the east side of any consequence until you get to Baton Rouge. From there the levee is continuous down that same bank practically to the Gulf. On the west side below the Red River, there is a levee on that bank, then the Atchafalaya River, which is a short river to the Gulf, is taken off from the Red River just above the junction with the Mississippi, there is a system of levees which take the flood waters to the Gulf.

The principal United States highways are shown in and adjacent to the alluvial valley by heavy red lines; the railroads are shown by dark blue cross-hatched lines. These are just the principal railroads and highways. The popu-

lation residing within the alluvial valley is 2,242,000, according to the census of 1930. The total acreage is approximately 20,000,000. In its natural condition without levee protection, this entire valley from Cairo to Cape Girardeau south is subject to flooding, except the small ridges, or darkly shaded line, which I have heretofore indicated.

Examination by the Court:

The population I have mentioned would include the residents of cities below the flood plane of the Mississippi; that would include all of New Orleans and part of Memphis. It includes a part of the population at Memphis of 287,000 and [fol. 1333] the New Orleans population of 450,000.

Direct examination continued:

The white areas on the map depend on the levees for protection, and these white areas are planned to be protected by that levee system. The areas on the east side of the river that are shaded pink are without protection from the Mississippi floods by levees, and the areas between the levees along the river have no protection from floods. 12,000,000 acres of land are designed to be protected by the adopted project.

At the upper end of the map at Cairo, there is first, the Birds Point-New Madrid floodway. This is shown on this map in dark gray. When the floods at Cairo reach a moderate height only, this land is protected by the existing levee system. But when it reaches a stage of 55 feet on the Cairo gauge, the levee across the entrance to that floodway is expected to be overtopped and then the water will flow into that floodway and that land will have the full effect of the flood. The Government acquired only the flowage rights in the Birds Point-New Madrid Floodway. The owners of the land continue to live there, cultivate the land just as they did before the flowage rights were obtained. So when that was flooded last January, these people had to move out and that property was badly damaged. Starting in the vicinity of Eudora at the Louisiana-Arkansas line, is another floodway which has for its purpose relieving the Mississippi River when the river levee system is unable to confine the flood. That purpose is just the same as the Birds Point-New Madrid floodway. Then, below the junction of the Red River with the Mississippi, and

where the Atchafalaya takes off, there is another floodway called the Atchafalaya floodway, which will be used for relief purposes when the flood is too much for the levees of [fol. 1334] the Mississippi to confine. Eudora and Atchafalaya floodways are inhabited and cultivated.

I mentioned that when the levee approached the south of the St. Francis River on the west side, just north of Helena, a gap had to be left in the river levee to allow the St. Francis River to enter the Mississippi. At times of great flood on the Mississippi River, the water backs around the end of this levee and covers the territory indicated on this map as a stippled yellow. The same is true at the mouth of the Arkansas, at the mouth of the Yazoo just north of Vicksburg, at the mouth of the Red River, about half way between Natchez and Baton Rouge on the west side of the river, and then down in the lower reaches of the Atchafalaya floodway there is an area there covered by backwater.

Starting at the north end of the valley, the first city of any magnitude which is subject to flood is Cairo, with a population of about 15,000. It is a railroad and highway center for traveling north and south in the alluvial valley, and in the east and west directions. It is also a river-rail transport point, because Cairo is situated at the edge of the change in railroad rate zones. At that city there are a large number of wood-working plants, whose annual production is about $9,000,000. The City is from 15 to 25 feet below flood stage in the Mississippi River, and without levees the town would not exist. At times of high water the town is entirely surrounded, because Cairo is protected by a ring of levees, so there is water all around it. Coming downstream, Carruthersville is a town of five or six thousand people, wholly below the flood plane of the Mississippi [fol. 1335] River. It is a distributing center for the agricultural territory surrounding it, and also a market center for that territory. Other towns within that part of the valley are New Madrid, Blytheville, and Jonesboro, as shown on the map.

At Memphis, on the east side of the river we have a city which is largely on high land, but whose industrial and railroad territory is on lower ground and subject in part to floods of the Mississippi River. A part of this low area has been protected by levees, but the last flood of 1937

showed these levees to be of insufficient height. Memphis is a great industrial city and the greatest internal cotton market in the United States. It has a population of nearly 300,000 people. It is a center of distribution for the alluvial valley in that part of the country. It is a railroad center and a highway center, and, as I stated before, a good part of its industrial area is below the flood plane of the Mississippi River, and quite a bit of its residential district in the low areas is subject to flooding by the Mississippi River.

Going south we have Helena, Clarksdale, Greenville and Arkansas City, towns of five to fifteen thousand, which are distribution centers and market centers for the territory surrounding them. These cities have cotton gins and compresses, saw mills, and cotton oil mills to serve the adjacent territory. New Orleans is the greatest city wholly within the alluvial valley, about 450,000. It has an industrial production of about $150,000,000 a year. It is a railroad center and a highway center for the lower territory. It is from 5 to 20 feet below the maximum flood stage of the Mississippi River, and since its foundation in 1717 has depended upon levees for its existence as far as floods are concerned.

[fol. 1336] By Mr. Fly:

"Q. What is the total mileage of railroads in the alluvial valley subject to flood hazard?

Mr. R. T. Jackson: I object to that as irrelevant and immaterial.

Judge Allen: He may answer. Objection is overruled.

Mr. R. T. Jackson: Exception, please.

A. The total mileage of railroad within the alluvial valley and subject to flood were there no levees, is 4,200 miles, of which 2,145 miles is main trans-continental lines."

I mean they are interstate lines. That entire mileage is subject to flood hazard. From Memphis south, we have the Illinois Central and the Yazoo & Mississippi Valley Railroad. On the west side of the river from Cairo down, we have the St. Louis & San Francisco line from St. Louis to Memphis, and we have the Missouri Pacific line in the same territory. We have the Frisco from Memphis going toward Kansas City and also towards Texas, and we have

the Missouri Pacific from Memphis to Little Rock. Then in the lower river on the west side, we have the Missouri Pacific from Pine Bluff and Arkansas City towards New Orleans. At New Orleans we have the New Orleans & North Eastern, and the L. & N. coming in from the east, and we have the Texas & Pacific and Southern Pacific coming in from the west, and also the Louisiana & Arkansas Railroad coming in from the northwest.

"Q. What is the total mileage of highways in the valley subject to flood hazard?

Mr. R. T. Jackson: We object to that as irrelevant and immaterial.

The Court: He may answer.

Mr. R. T. Jackson: Exception.

A. The total mileage of U. S. Highways within the alluvial valley is 1950 miles. In addition there are 6,600 miles of improved state and county highways."

[fol. 1337] There are a great number of interstate highways in the alluvial valley subject to flood hazard. These highways, the United States highways particularly, are means of travel across the southern United States. At Memphis we have three highways which are interstate in character. At Vicksburg we have one, and at Natchez one, at Baton Rouge one, and at New Orleans two. Then in a north and south direction, we have two interstate highways on the west side of the river going up through the alluvial valley and two part of the way on the east side.

By Mr. Fly:

"Q. What is the annual value of the cotton crop in the alluvial valley?

Mr. S. D. L. Jackson: Objection for the reasons previously stated.

Judge Allen: Objection overruled. He may answer.

Mr. S. D. L. Jackson: Exception.

A. It averages approximately $250,000,000 a year.

By Mr. Fly:

Q. How is that cotton crop disposed of?

Mr. S. D. L. Jackson: Objection.
Judge Allen: He may answer.
Mr. S. D. L. Jackson: An exception.

A. The most of it goes into interstate commerce.

By Mr. Fly:

Q. By that you——

Mr. S. D. L. Jackson: Just a moment. I move that the answer be stricken. That is an obvious conclusion.
Judge Allen: What do you mean by going into interstate commerce?
The Witness: Well, the records of the Census Bureau show that 55 per cent of the cotton of the United States is exported. They also show that about that percentage goes into states beyond which it was raised.
[fol. 1338] Mr. S. D. L. Jackson: I still move that the answer be stricken. It now appears that he does not know anything about the cotton raised in this alluvial valley and he is just speaking generally of cotton that may be grown over in Texas or in South Carolina.
Judge Allen: Are you speaking of the cotton grown in this valley?
The Witness: I am speaking of both, your Honor. I have resided for a good many years in the alluvial valley and I know from personal observation and seeing it in processing, and seeing how it is shipped out. I worked with a company for ten years which is engaged in the business of cotton exporting.
Judge Allen: You will not deny that the cotton goes into interstate commerce, Mr. Jackson?
Mr. S. D. L. Jackson: I suppose some of it does, but I don't know that this does.
Mr. S. D. L. Jackson: I renew my motion to strike.
Judge Allen: The answer may stand, and you may have your exception.

By Mr. Fly:

Q. What is the total length of telephone and telegraph lines within the valley subject to flood hazard, Mr. Okey?

Mr. S. D. L. Jackson: Objection.
Judge Allen: Overruled.
Mr. S. D. L. Jackson: Exception.

A. The total mileage within the alluvial valley of telegraph and telephone lines is 8,000 miles.

By Mr. Fly:

Q. What is the total number of United States Postoffices in the valley subject to flooding?

Mr. S. D. L. Jackson: Objection.

Judge Allen: Objection sustained.

Mr. Fly: I ask your Honor to take judicial notice of the fact that there are 656 postoffices in the valley in the area subject to flooding. Will the Court take judicial notice?

[fol. 1339] Judge Allen: The Court will certainly take notice that there are some postoffices.

By Mr. Fly:

Q. What percentage of the alluvial valley was under water in the 1927 flood, Mr. Okey?

A. 60 per cent.

Mr. S. D. L. Jackson: The same objection.

Judge Allen: Overruled.

Mr. S. D. L. Jackson: Exception.

By Mr. Fly:

Q. Have any studies been made of the tangible damage suffered in that flood?

Mr. S. D. L. Jackson: May I have an objection and exception to each of these questions?

Judge Allen: Make your objection each time, please. The Court in this case does not want to get lost in a maze of general objections.

By Mr. Fly:

Q. State what estimates were made, Mr. Okey.

Mr. S. D. L. Jackson: Objection, for the same reasons.

A. The United States Weather Bureau in the Monthly Weather Review supplement No. 29 estimated the total damage of the 1927 flood as $255,000,000 tangible damage.

Mr. S. D. L. Jackson: Move to strike that answer. Apparently he is just reading from a book.

Mr. Fly: It is probably better than his own opinion.
Mr. S. D. L. Jackson: Undoubtedly it is.
Judge Allen: The answer may stand.
Mr. S. D. L. Jackson: Exception.

By Mr. Fly:

Q. What particular states were affected by the 1927 floods Mr. Okey?

Mr. S. D. L. Jackson: Objection.
Judge Allen: He may answer.
Mr. S. D. L. Jackson: Exception.

A. The 1927 flood surrounded and isolated the city of Cairo. It also covered a portion of the low-lying areas of Memphis. The crevass in the levees in the east side of the [fol. 1340] river above Greenville, Mississippi, covered all the towns from there south to Vicksburg, about 15 of them, with a population of from 1,000 to 15,000. The crevasses on the west side of the river below Pine Bluff covered all the cities in the alluvial valley on the west side down as far as the mouth of the Red River. The crevasses in the levees on the west side of the river, on the south bank of the Red River, and the west bank of the Mississippi covered a number of cities in the territory from there south, including New Iberia, Morgan City, and other towns in between.

By Mr. Fly:

Q. Please state how frequently floods of substantial magnitude have occurred in the Mississippi Valley.

Mr. S. D. L. Jackson: Objection, for the same reason.
Judge Allen: He may answer.
Mr. S. D. L. Jackson: Exception.

A. In the last forty years floods have occurred of major magnitude in the lower alluvial valley in the years 1897, 1907, 1912, 1913, 1916, 1922, 1927 and 1937, a total of eight in forty years, making the average of once in five years.

Q. Has the levee system been entirely successful in the past?

Mr. S. D. L. Jackson: Objection.

Judge Allen: The Court feels we do not need to go into a general discussion of the levee system. We have heard a good deal about that in time.

Mr. Fly: Your Honor, I think this is of some importance. This witness would testify that in each great flood, with the exception of that of 1937, one or more crevasses have occurred in the levee system, and many millions of acres of land were covered with flood water. I think that is a significant fact, your Honor, and I think he ought to be permitted to testify.

Judge Allen: He may answer that one question.

Mr. S. D. L. Jackson: May we have our exception. I might point out, if your Honor please, we object to permitting this testimony to go in, as it simply necessitates our going into an extensive history of the floods, which I think we would be entitled to do under the Court's previous ruling.

[fol. 1341] Judge Allen: He may answer.

Mr. S. D. L. Jackson: Exception.

A. In each of the great floods, crevasses have occurred on some portions of the river, with the exception of 1922. During that year they managed to get by without any serious crevasses, and 1937.

Q. And covered a substantial acreage of land?

Mr. S. D. L. Jackson: Objection.

Judge Allen: He may answer.

Mr. S. D. L. Jackson: Exception.

Q. Did those floods cover a substantial acreage of land behind the levees?

A. Yes, each flood, on a crevass through the levee, covered large areas of agricultural land.

By Mr. Fly:

Q. State whether or not the discharge from the Ohio at Cairo in the 1937 flood exceeded the predicted discharge against which flood protection had been provided?

A. It did.

Mr. S. D. L. Jackson: We note an exception.

Judge Allen: It may stand."

The existing levee system does not provide flood protection to the entire alluvial valley.

"Mr. Fly: Let me ask the witness what percentage of the alluvial valley is protected by the levees.

Mr. S. D. L. Jackson: I object.

Judge Allen: He may answer.

Mr. S. D. L. Jackson: We have had an engineer from there on the stand. This fellow has not any qualifications—this witness has not any qualifications about those things.

Judge Allen: He may answer.

Mr. S. D. L. Jackson: We note an exception.

A. The modified plan is designed to protect only 60 per cent of the alluvial valley.

By Mr. Fly:

Q. How much freeboard above the maximum flood estimated before 1937, is provided by the levee system?

[fol. 1342] Mr. S. D. L. Jackson: I object for the same reason previously stated.

Judge Allen: He may answer if he knows.

A. The levee grade as planned provided only one foot freeboard, in parts of the levee system it did not provide that much.

Q. Now, is the freeboard at Cairo under the present projects sufficient to protect against the maximum predicted flood?

Mr. S. D. L. Jackson: Objection.

Judge Allen: He may answer.

A. It is not.

Mr. S. D. L. Jackson: Exception.

Q. In your opinion, would the reduction of two feet in the flood heights have any substantial effect upon the safety of the levees.

A. It would have a very substantial effect.

Mr. S. D. L. Jackson: Just a moment, please. I did not know you had finished your question. I object to it, first, immaterial; second, this witness is not qualified; third, there is nothing to show a reduction of three feet.

Judge Allen: What is the objection to the qualifications of this witness?

Mr. S. D. L. Jackson: This witness, I do not think he has shown he knows anything about flood control, anything of that kind, certainly from the recital of his qualifications. He has been down in Louisiana working around for the

Tennessee Valley Authority, working for the Government, but I do not think there is anything further that justifies his giving his opinions as to what might be a flood crest at Cairo, or how much anything on the Tennessee might affect it, or how much a two foot reduction might help the situation."

Examination by the Court:

I joined the staff of TVA the first of November, 1935. Since then my work has been first, as I stated, in connection with the effect of reservoirs on the lands in and around the [fol. 1343] border. Then for the better part of a year I made an intensive study of the effect of flood heights reduction on the alluvial valley or lower Mississippi River which supplemented the nineteen years practice I have had on the flood control and drainage within that valley.

Cross-examination:

My study consisted in part in reading reports:

Direct examination continued:

I visited the valley and saw some of the floods. I was in the valley at the time of the 1937 flood. I viewed a part of the valley a part of that time. I made a study of it then. I have been studying this problem intensively for almost a year.

Cross-examination:

The 1937 flood is one where the levees did not break except to flood the New Madrid floodway and break the levee at Slough Neck near Tiptonville, Tennessee.

"Judge Allen: He may answer. The objection is overruled.

Mr. S. D. L. Jackson: An exception. I would also like to add as a ground of my objection, the question is so indefinite, it does not fix the place. I move the answer given before I could state my objection be stricken.

Judge Allen: The answer will stand. The objection is overruled."

[fol. 1344] Direct examination continued:

"Q. Mr. Okey, do you consider the reduction by at least two feet of the flood heights on the Mississippi at Cairo and below an important safety factor for the levee system?

Mr. S. D. L. Jackson: Objection for the same reasons previously stated to this line of testimony yesterday.

Judge Allen: He may answer.

Mr. S. D. L. Jackson: Exception.

A. Reducing the floods two feet would be a very substantial benefit to these levees because the flow line of the project flood is within a foot of the top of the levee on a portion of its length and above the top of the levee on other portions, and this reduction is necessary to make the present levee safe.

Q. Now, apart from this important safety factor, are there additional specific types of benefits which would result from this reduction of flood heights?

Mr. S. D. L. Jackson: Objection, for the same reason stated.

Judge Allen: The objection is overruled.

Mr. S. D. L. Jackson: Exception.

A. There are in the Valley areas which are not protected by the levees at all, and each additional foot of flood height floods additional land, so that a reduction of the flood heights would relieve a considerable area from flood damage, and that in the aggregate amounts to—the average flood height will reduce two feet, and that amounts to about 100,000 acres annual reduction in the amount flooded.

Mr. S. D. L. Jackson: Just a moment, please. If Mr. Okey is just reading his testimony, I want to object.

Q. Will you tell the Court what you have got there, Mr. Okey?

A. I have some notes on these voluminous figures. I can't keep them all in my memory with certainty, and so I have to make some notes so I can testify.

[fol. 1345] Judge Allen: If you are simply refreshing your memory on figures or dates or items of that kind, that is permissible, but the Court will not permit witnesses to read testimony."

I have not read my testimony in response to any of these questions.

"Q. What effect in protecting additional acreage would the reduction of flood heights of at least two feet accomplish, Mr. Okey?

Mr. S. D. L. Jackson: The same objection for the same reasons.

Judge Allen: The objection is overruled.

Mr. S. D. L. Jackson: Exception.

A. A reduction of flood heights two feet would reduce the amount overflowed about 100,000 acres annually.

Q. Assuming the same reduction in flood heights, would the use of the floodways which you have described be affected?

Mr. S. D. L. Jackson: The same objection.

Judge Allen: Overruled.

Mr. S. D. L. Jackson: Exception.

A. Yes, the modified adopted project contemplates that the Birds Point-New Madrid floodway would be used for releasing the floods in the main river once in ten years. If the floods are reduced two feet, this floodway would be used on the average once in 20 years.

The Eudora floodway would be used, according to the modified adopted project, once in twelve years. If the floods were reduced two feet on the basis of past experience this floodway would be used only once in 19 years.

The Atchafalaya floodway in the modified adopted project would be used about once in 15 years. If the floods are reduced two feet on the basis of past experience this floodway would be used but once in 28 years.

By Mr. Fly:

Q. Would this same assumed reduction of flood heights have any effect upon the backwater areas?

Mr. S. D. L. Jackson: The same objection and exception.

[fol. 1346] Judge Allen: The objection is overruled.

A. Each foot of reduction in the flood heights of the river reduces the height of the backwater going around the end of the levee where the main tributaries enter the river. If the flood heights of the river are reduced two feet, the average annual reduction in amount of land flooded in the backwater areas would be 423,000 acres.

By Mr. Fly:

Q. What effect upon the difficulty and cost of maintaining the levee systems would be produced by this assumed reduction in flood heights?

Mr. S. D. L. Jackson: The same objection.
Judge Allen: Overruled.
Mr. S. D. L. Jackson: Exception.

A. At each great flood on the Mississippi River, high water maintenance expense is encountered to keep the levee in condition to withstand the flood and to raise it in case the water gets higher than the levee. Past experience shows that this expense mounts very rapidly with the increasing flood. For instance, in 1927, a total of $4,180,000 was spent on high water maintenance expense in order to safeguard the levee and take care of the incidental troubles that came with the high water.

In 1936 a total of $11,000,000 was spent by the various Governmental agencies, without including the amounts expended under the direct jurisdiction of the Mississippi River Commission. The average of these experiences in the past shows that if you would reduce the flood heights two feet on the average that would reduce the annual average expenditure about $225,000.

Mr. S. D. L. Jackson: I move to strike that answer. I don't think that it was responsive to the question.
Judge Allen: It may stand.
Mr. S. D. L. Jackson: Exception.

By Mr. Fly:

Q. What effect would this assumed reduction in flood heights have upon seepage from the levees?

Mr. S. D. L. Jackson: Objection for the reasons previously stated.
Judge Allen: Overruled.
Mr. S. D. L. Jackson: Exception.

[fol. 1347] A. When the high water rises above the land and comes against the levees on the Mississippi River the water soaks under the levees because they are largely founded on sand and gravel, and the water rises then in fields back of the levee and affects the land so that crops cannot be raised on it. Sometimes the seepage water appears in the fields two or three miles back of the levee. I have seen the water spouting out of the fields two miles back of the levee. So, any reduction in the average height of the flood will reduce the amount of the seepage.

By Mr. Fly:

Q. In your opinion, would the assumed reduction of at least two feet in the flood heights be an important factor in reducing seepage under the levees?

Mr. S. D. L. Jackson: Objection for the reasons previously stated, including the additional ground that the witness is not qualified.

Judge Allen: Overruled.

Mr. S. D. L. Jackson: Exception.

A. It would.

By Mr. Fly:

Q. Now, the specific items of benefits which you have listed are in addition to what you have termed the important factor of over-all safety of the levee system, is that right?

Mr. S. D. L. Jackson: The same objection.

Judge Allen: He may answer.

Mr. S. D. L. Jackson: Exception.

A. They are.

Judge Allen: Let the record show that Mr. Okey's cross-examination will be deferred until January 3rd, in view of the situation which has developed. Counsel for the Authority have informed us that they have practically no documentary evidence to introduce, except such as may come in explanation of testimony of some witness, and therefore, it cannot be introduced now, the Court will recess at this time, and not take further testimony until January 3rd. We wish to emphasize to you that we expect to carry out the program as announced. We will require counsel to present proposed findings of fact and conclusions of law at the conclusion of the testimony. And we reiterate this now, so that this extra time may perhaps be used in that work.

And we want to remind counsel on both sides again that the Court has requested in connection with every request for finding of fact, which referred to testimony or an exhibit, and of course, they all must refer to some testimony or some exhibit, that the Court be given a citation of the [fol. 1348] page in the record where such testimony is given, or to the number of the exhibit.

The Court will also expect to proceed with the argument upon the conclusion of the testimony. In other words, the

break-down of the case for these two days does not change the necessary program of the Court for this case.

Mr. Fly: I assume, your Honor, any written briefs or written argument, would need to be prepared and presented at the time of the argument.

Mr. S. D. L. Jackson: May I understand aright, what was the question?

Mr. O'Brian: That briefs will be submitted at the time of the final argument.

Judge Allen: The Court will expect final briefs to be submitted at the time of the argument. In other words, the Court, after argument wishes to go into the case and finally dispose of the case."

I have personally made a study of the businesses and industries located within the alluvial valley of the lower Mississippi, particularly in the states along the Mississippi River, with particular respect to the state of origin of the materials used in those industries and businesses and the states in which those manufactured products are normally shipped.

"Q. Will you describe briefly the nature of those industries and business, the sources of the raw materials, and the markets in which those products are normally marketed?

Mr. R. T. Jackson: We object to that, as irrelevant and immaterial and involving collateral matters.

Mr. Fitts: May it please the Court——

Judge Allen: He may answer.

Mr. R. T. Jackson: May we have our exception.

Judge Allen: You may have your exception.

A. The principal industrial businesses of the towns along the Mississippi River consists of woodworking and manufacture of wood products, the warehousing and merchandising of cotton and the processing and manufacturing of [fol. 1349] cottonseed oil and cottonseed products. The first industry, that of woodworking, is in the cities of Cairo, Hickman and Memphis, and Helena and Greenville. The raw material in the shape of logs is brought in by river and rail from the states of Indiana, Illinois, Tennessee, Kentucky, Missouri, Arkansas and Mississippi. The logs are manufactured into lumber and then into finished products, such as flooring, house finishing and furniture. These

finished products are shipped throughout the United States. The second industry, that of cotton merchandising and warehousing——

Mr. R. T. Jackson: We understand our objection also goes to the competency of this witness to testify on this line.

Judge Allen: You may have your exception.

A. (Continuing.) —goes on in these same cities and other smaller river towns, the cotton being brought in from the five states of Missouri, Arkansas, Tennessee, Mississippi and Louisiana, and stored in warehouses and then it is shipped, after being compressed, to the textile mills, in the Eastern and the Southeastern United States and to foreign countries. The cottonseed oil and cottonseed cake industry gets its raw material from the cotton gins of these same five states, and the oil is taken from the seed and the cottonseed oil shipped to all parts of the United States for processing into butter and lard substitute, and into other products where the cottonseed oil is used. The cottonseed cake and meal goes to all parts of the United States for stock feed in interstate commerce.

Q. Mr. Okey, can you state to what extent, if any, these industries which you have described are located within the flood plane?

Mr. R. T. Jackson: Same objection.

Judge Allen: Overruled.

Mr. R. T. Jackson: Exception.

Judge Allen: You may have your exception.

A. (Continuing.) The industries in all the towns with the exception of the city of Memphis are below the flood plane of the Mississippi River and subject to flooding, with the exception of the protection given by the system of levees.

Q. Can you state, Mr. Okey, whether in your opinion [fol. 1350] a reduction in flood height in major floods of two feet at Cairo, Illinois, down to Helena, Arkansas, would be of substantial benefit in reducing flood hazards to these industries and businesses which you have described?

Mr. R. T. Jackson: I object to that because it calls for a conclusion which, if relevant or material, invades the province of the Court.

Judge Allen: Repeat the question.

Mr. Fitts: The question was this, may it please the Court, I will reframe it: Mr. Okey, can you state whether or not in your opinion a reduction in flood height upon the lower Mississippi of as much as two feet, extending from Cairo, Illinois, to Helena, Arkansas, would be of substantial benefit to these industries which you have described.

Mr. R. T. Jackson: I renew the objection.

Judge Allen: Objection overruled. You may have your exception.

Mr. R. T. Jackson: Exception please.

A. It would be of substantial benefit."

[fol. 1351] Cross-examination:

I am an engineer in the Project Planning Division of the TVA and as such am one of the force under the supervision and direction of Mr. Bowman, who testified in this case. My work falls within that division as described by Mr. Bowman on the witness stand. I graduated in 1909 from the Iowa State College, which is in part the Agricultural College of the State of Iowa, and is also the State Engineering College. It is located at Ames, Iowa. It has both an Engineering and an Agricultural Department. Iowa State University at Iowa City has an Engineering Department, and that is where Mr. Woodward was Professor. Iowa State College has a course in drainage. I am not sure about the curriculum at Iowa State University. Iowa State Agricultural College at Ames does have a course in land drainage and what is generally known as drainage engineering. Drainage engineering has to do, in part, with draining sloughs and wet lands with ditches and pumping so that it may be used for agricultural purposes. That would be one activity of a drainage engineer. I have had something to do with drainage engineering of that character in the State of Iowa, most of my practice was out of that state. I haven't any knowledge whether the result of the drainage engineering in Iowa was permanently to lower the water table in the State of Iowa seven feet or more to the irreparable damage of the agriculture there in drought seasons. Of course, when you drain land, you lower the water table sufficiently to grow crops. That is the purpose of the drainage. It has never been conclusively demonstrated to my mind that you also frequently destroy the balance of nature

between sloughs and the other lands that did not require artificial drainage.

From 1909 to 1916 I was a drainage engineer with the U. S. Department of Agriculture and my work had to do with [fol. 1352] the matter of reclaiming wet lands for agricultural uses, and consisted of both investigation of the theory and practice of the science of drainage, and also the demonstration of these principles by sample drainage projects throughout the various states of Mississippi, Kansas, Louisiana and Florida, which sample drainage projects were put in under the direction of the Department of Agriculture engineers to demonstrate the success of that sort of work. The projects ran into several thousand acres at times. I continued with that work up through 1916 and during that time I wrote two bulletins published by the Department of Agriculture over my name on soil drainage. They had to do with draining of wet lands by ditches and by pumping. From 1916 to 1918 I was privately employed as a superintendent of construction on a drainage district at Whitehall, South Carolina. My title was engineer. That was a district to reclaim some of the wet swampy lands there for agricultural uses.

My next experience was as an assistant superintendent of construction at the Old Hickory Powder Plant at Nashville. I was there during the war. That had nothing to do with land drainage or anything of that character. After that I had a job as assistant superintendent of construction in the shipyard at Mobile and that had nothing to do with land drainage at all. It was a shipbuilding enterprise.

After I finished the job with the shipyard, I entered the employ of the Elliot & Harmon Engineering Company at Memphis as Vice President and Assistant Chief Engineer in 1919, and I continued there until 1926. The Elliot & Harmon Engineering Company were consulting drainage engineers in part and also in flood control and reclamation. I am familiar with "Who's Who in Engineering", which is a directory of some 18 or 20 thousand engineers in the United States. The biographical and business data in those sketches [fol. 1353] is furnished by the engineers listed and is corrected and proof-read by them. The senior member of our firm was Charles Gleason Elliot, who had been a drainage engineer with the U. S. Department of Agriculture for some years before he started this firm. In the sketch under Mr.

Elliot's name in "Who's Who in Engineering" for 1925 there is included the statement, "Elliot & Harmon Engineering Company, Consulting Drainage Engineers". That truthfully stated to the public the business of the Elliot & Harmon Engineering Company in part but not in total. I think Mr. Elliot omitted or concealed something in his biographical statement to the public about his engineering qualifications. That states that it is a drainage engineering practice. In explanation, the practice of drainage engineering as handled by the concern with which I was connected, with Mr. Elliot as our consulting engineer, covered the entire field of drainage and flood control by levees, spillways, pumps and dams, reclaiming lands for agricultural uses.

I never constructed any reservoirs personally for power, for flood control or for any other purpose. I was not a power engineer. I did not construct a reservoir for flood control or any other purpose.

In 1926 I went with the Lesser Goldman & Company of St. Louis. They owned some forty to fifty thousand acres of swamp land in Arkansas and were developing it, draining it and selling it and trying to get rid of it to the public. They were trying to sell it to people in 40 and 80 acre lots. I was down there in charge of this development and promotional enterprise. As a part of my duties, what I did was to try to make sales and collect rents and generally manage this enterprise in the promotion and sale of 50,000 acres of timber and swamp land. That land was located in part in the valley of the Cache River and some of it was [fol. 1354] in other parts of the state. The Cache River is a tributary of the White River and the White is a tributary of the Mississippi. My business was trying to get people to come in and agree to buy the land on a contract in return for clearing the timber. That was a part of the terms of the contract. As a part of my activity, if they fell down on cutting the timber, we took the land back and started over again. That was in a drainage district. There was a local drainage district on some of this river. Most of the land was in a drainage district. Most of the facilities in connection with that drainage district had not been constructed before I went there; some additional facilities were constructed after I went there. All the works of the Village Creek Drainage District was constructed after I went there. All of the drainage districts on the Cache River were con-

structed before I went there. As to the most important drainage district, the bond issue of the Village Creek drainage district was about the same as the bond issue for the Cache.

"Q. Each bond issue went bad, or both of them, didn't they have trouble with both?

Mr. Fitts: We object to that, to shorten this thing.
Judge Allen: Objection sustained.
Mr. R. T. Jackson: Exception, please."

In 1934 and 1935 I was engaged in an activity which I neglected to state. That is, I was then in charge of the refuges for migratory birds. I will describe it. The U. S. Department of Agriculture through the Bureau of Agricultural Engineering which I had been connected with for some years in the past, as a survey engineer, put in some water structures on some of the water fowl refuges in the Mississippi Valley, and some in Missouri, Illinois, Arkansas and Louisiana. My work consisted in making surveys and [fol. 1355] plans and supervising the construction of water control works. At the same time I was in the employ of the Lesser Goldman Company. I finished up their work. In 1935 I entered the employ of the TVA and at the same time I was in the employ of the Lesser Goldman Company under a continuing contract which I finished in the last two months of 1935. The migratory wild fowl business did not have anything to do with flood control, except it controlled the water of the rivers and streams that came through the refuges to conserve the water for birds to light on in their flights in dry times.

With reference to Defendants' Exhibit 91, there are 20,000,000 acres in the alluvial valley. I got that figure from reading the reports of the Army Engineers. 12,000,000 acres were planned to be protected by the works adopted by the Army Engineers and by Congress. I also got that from reading the report of the Army Engineers. I included in the figure for land unprotected from floods the land between the main levees on each side of the Mississippi. The land between the main levees has no flood protection. I did not include the land in the channel of the main stream. I would hardly expect land between the levees along the main stream to be protected against flood. I would not make that mistake. I included practically all the land in my estimate

of land not protected, which was above Memphis on the east side of the river and south of Cairo, where the flood plane is too narrow to make it economically feasible to construct a levee. I also included in the land not protected, the land below Natchez where the similar flood plane is too narrow to make it economically feasible to provide flood protection. I did not include in the land which I estimated was without flood protection, the land lying in the flood-[fol. 1356] ways. I did not include the floodways in the 12,000,000 acres. I designated the floodways as being partially protected. The backwater areas I designated specifically as backwater areas. All of that land in a state of nature was subject regularly to overflow.

As I recollect, it is a fact that at the crest of the 1937 flood on the Mississippi River near Arkansas City, a flow of approximately 2,150,000 second feet was carried in the river at a gauge height of 54 feet, whereas in 1929 no more than 1,450,000 second feet were carried at the same gauge height. I could not remember those figures exactly. Throughout the Vicksburg district during the 1937 flood, the flows were relatively lower than for the same discharges in previous floods. The stages were relatively lower. At Vicksburg during the 1937 flood, the rising branch of the rating curve was improved in the carrying capacity of the river since the 1929 flood. I do not know the exact amount of improvement but it was substantial. I do not think the figures for that improvement of approximately 370,000 second feet for stages at and above 45 feet are out of line. It is also a fact that during the 1937 flood the minimum freeboard on levees in the Vicksburg district was 6 feet at the crest of the flood, ranging up to 12 feet, throughout a considerable part of that section of the river. The White and Arkansas, which very often put a peak in this part of the river, did not have a flood in 1937, so it was only the upper river that had to be taken care of. That stage was considerably lower than the stage with corresponding flows in previous years, such as 1929. That was not brought about because of any lesser flood in the White or Arkansas River floods. For the same discharge the stage was lower in 1937 than it was in 1929.

I am familiar with the work which has been done by the Corps of Engineers and the Mississippi River Commission on the Mississippi River below Memphis in the way of increasing the discharge capacity of the river by making

[fol. 1357] cut-offs. Those cut-offs start below Helena. Helena is below Memphis. It is a fact that as a result of making those cut-offs below Helena, about the mouth of the White, the stages were lower in 1937 than for corresponding discharges in earlier years. As to whether these cut-offs, when made, have increased the freeboard on the levees very much in excess of that which might be provided with the best of luck in holding back water in the TVA reservoirs, for floods of the magnitude experienced in 1937, the cut-offs reduced the stage as much or probably more than the TVA reservoirs could reduce it. In additional explanation of that point, if floods are greater, the effect of those cut-offs is not generally considered to be as effective as for a flood the size of that in 1937. When the great floods came in the past, water cut across these bends anyhow, and in that way obtained the relief that the cut-off gave, only at a higher stage. With the floods that get much higher than the flood of 1937, the cut-off effect of the water going across the bends would be there in addition to the artificial cut-offs, and it is generally considered that the effect of the cut-offs is not going to be so pronounced for greater floods. It is a reasonable estimate at Vicksburg, for instance, that these cut-offs had increased the carrying capacity of the stages above 45 feet, approximately 370,000 cubic feet per second, but up until this time we did not know, it had not been tried. I do not know that the carrying capacity of flood water below that stage has been changed, but getting above that stage the rating curves might tend to come back toward each other. I do not know it to be a fact that the effect of those cut-offs, both at Vicksburg and below, in the low and high stages, was that they worked out equally well in both stages. I don't know a thing about those experiments. I know that they have had them.

I am familiar with the fact that it is now proposed to [fol. 1358] extend these cut-off operations so as to cover the section of the Mississippi River between Cairo and Memphis at an estimated cost of only about $15,000,000, but the difficulty is that there is not the opportunity to shorten the river between Helena and Cairo that there is below Helena. The river is straighter. There are only a few opportunities of straightening the river in that section and the percentage of reduction of the length will be very much smaller than in the section we have been discussing. I have been to

Slough Landing Neck and there is an opportunity to shorten the river there. That is the one big cut-off from Cairo to Memphis and it would have a material effect from Slough Landing Neck up towards Cairo, but not down toward Memphis. From there up to Cairo will be where it would get some benefit.

Prior to 1928, flood protection work on the Mississippi River was carried on through the cooperation of the Federal Government, the Mississippi River Commission and local interests, such as levee districts, which were required to make a certain contribution toward the construction of levees in their locality. In many cases, through either inability or unwillingness of local levee districts to finance their own protection, levees were not up to project grade and were not completed, so that there was throughout the Mississippi an uncoordinated system of levees varying in height in relation to project grade, in accordance with the degree of cooperation supplied by local levee districts, states or other local agencies. The 1914 grade of the Mississippi River Commission was entirely inadequate, even if completed, for the 1927 flood. As to whether I understood that I had been asked to express an opinion on the adequacy of the 1914 grade for the 1927 flood, my statement was in explanation of my answer.

The estimates of damages from floods in the alluvial valley which I gave were taken from the estimates of the U. S. Weather Bureau which were for floods occurring in 1927. I [fol. 1359] gave no estimate since 1927. In 1928 the Corps of Engineers and the Mississippi River Commission took over the matter of providing levees and facilities for flood protection on the Mississippi River under the 1928 Flood Control Act, which adopted the Jadwin Plan. The Jadwin Plan was a Federal Plan independent of any local contribution as far as the main stream was concerned. It was later modified by the Markham Plan. Since 1928 the Engineers have proceeded with the construction of those plans and they have not been entirely completed. For instance, in 1937, the New Madrid-Birds Point Spillway levee had not been lowered, the fuse-plug levee had not been cut down. As a matter of fact, when I said it broke, the Corps of Engineers had dynamited it in part in order to make the outlet that was desired. The fuse-plug levee failed at one place a few hours ahead of the dynamite.

"Q. And since the Corps of Engineers took over exclusive control of the levees and flood protection facilities on the Mississippi River, even though they have not yet completed their project, every flood, including the 1937 flood, has been handled by them, has it not?

A. There were some breaks in 1937—at Slough Landing Neck. The levees at Cairo had to be sandbagged and raised two or three feet, and that levee was presumed to be completed. The levee at Hickman was presumed to be completed and it had to be raised. The back protection levee on the Bird's Point New Madrid floodway was completed or presumed to be completed, and it had to be raised in order to avoid failure this year.

Q. Did the back levee fail in 1937?

A. No, they raised it so it did not fail.

Q. Don't you know that the Slough Neck Levee was supposed to be overtopped under the Jadwin Plan?

A. It was a small levee.

Q. Don't you know it was supposed to be overtopped?

A. Yes, I think it was.

Q. Then why did you say that it did not handle it because the levee was overtopped?

A. Well, I described that along with the others.

[fol. 1360] Q. Do you mean to say you were describing failures in the plan of the Army Engineers because it operated as it was designed to operate?

A. I did not say it was a failure of the plan. It was a failure of the levee.

Q. The levee was designed to be overtopped?

A. Yes, and it failed.

Q. And what happened was just what was designed to happen?

A. It failed just as it was intended to."

I do not know how many miles of railroad in the alluvial valley were protected during the 1937 flood on the Mississippi. All the railroads in the valley will be protected when the presently projected works of the Mississippi River Commission are completed—as long as the water does not overtop the levees. The 1937 flood demonstrated that the levees from Cairo down are not high enough for a flood that should be protected against. It would affect it from Cairo to the mouth of the White River. At the height of the flood in 1937, my recollection is that there were four or five feet of

freeboard on the levees at the town of New Madrid. That was enough freeboard for that flood, but that flood is not the maximum flood anticipated which should be provided against.

I don't know the mileage but most of the highways in the alluvial valley were protected during the 1937 flood. I don't know the exact population in the alluvial valley which was protected during the 1937 flood, but most of the land was not flooded. As to whether most of the population was protected that word, "protection" is relative. About 300,000 people were so concerned about the 1937 flood that they fled out of that valley. The Red Cross figures show that they cared for 70,000 families below Cairo. Those people were so concerned about the safety of that levee that they left their homes. I don't know anything about whether that was due to the false radio report that was sent out. It was due to the fact that the water was going to be several feet higher [fol. 1361] than it ever had been before and they did not trust the levees and left their homes. I don't know the mileage of the telephone and telegraph lines in the alluvial valley that were protected during the 1937 flood but most of them were protected. I do not know how many post-offices were inundated in the alluvial valley in 1937. I do know of some. The backwater got in the town of Hughes, Arkansas, and some of those towns down the line. Hughes is on the lower end of the St. Francis Basin, thirty miles southwest of Memphis.

As to what percentage of the U. S. cotton crop in 1937 was destroyed by the 1937 flood on the Mississippi, the 1937 flood came in January and February and at that time no part of the cotton crop was in the field, or very little. The short answer is not that there was none because there was still some cotton in the field up at Birds Point-New Madrid, and still some cotton in the fields in the backwater areas which was not out yet, but I have not figured out what percentage that was. As to whether in my studies I learned that the 1937 cotton crop was the largest in the history of the United States, I read in the newspapers that the 1937 crop was a big crop of cotton. In my study of this problem I made no calculation of how much it would cost the Federal Government to pay people for not growing cotton on this other land if this additional 8,000,000 acres were protected.

I am familiar with the Jadwin Plan as presently modified for Mississippi protection. The 1937 flood was confined as

contemplated in the so-called Jadwin Plan from Cairo to the Gulf, but at a higher stage for the discharge involved. It was not confined as contemplated in that it got higher than the plan contemplated for the same discharge. From the White and Arkansas Rivers down, the stage in the 1937 flood was lower for the same discharge than previously experienced. As to whether the modified Jadwin Plan would [fol. 1362] have safely carried the flood water of 1912, 1913 and 1927 to the gulf as it did the flood water of 1937, in the present state of construction of the Jadwin Plan, I think the 1927 flood, if repeated, would have broken the levees below the White and the Arkansas River on the right descending bank, because they have not been raised since 1927 at all where the reach for the Boeuf spillway and the Eudora spillway are to take off, and I think the levee on the west side there would have failed. That is right there where there is supposed to be a floodway. The Jadwin Plan contemplates in the time of very large floods that the spillways will be used, but I said in the present stage of completion it would have failed there. There is no floodway there now. I mean the floodway is not yet completed.

On the Bird's Point-New Madrid floodway the Federal Government has purchased flowage rights. I believe they estimate that that might be flooded once in ten years and the Federal Government has paid for the right to flood it once in ten years. As to whether the present Jadwin-Markham Plan provides similarly for the purchase of flowage rights and fees in other floodways, the last recommendation of the Chief of Engineers was that because of the bitter experience in the great destruction of property and risk of life in the Bird's Point-New Madrid floodway this last January, they are recommending the purchase of the fee in those other floodways down the river. But there was no recommendation now to go back and purchase the fee at Bird's Point-New Madrid. They have purchased the flowage rights, but that did not keep the people from staying there and cultivating it just as though they had not purchased flowage rights. I don't know whether there was any loss of life in the Bird's Point-New Madrid floodway. There were some narrow escapes. I was there a week after the thing broke and talked to the people. As to the total damage from flooding the Bird's Point-New Madrid floodway after the crop season ranging between $1,500,000 and $2,000,000 once in [fol. 1363] 10 to 12 years, I think the loss was slightly over

$2,000,000 this year. I got that information partly from my own work and from some other employees of the U. S. Department of Agriculture and of the TVA. I was in there and looked at some of that territory. I did not get it out of any official report. It was based on some sample observations taken after the flood went down. If it was flooded once every ten years, the average annual damage on that basis would be $200,000, for which the owners of the land had been paid when the Federal Government purchased the flowage rights.

"Q. Now, Mr. Okey, did the discharge of the Mississippi River at Cairo exceed the estimated maximum discharge under the Jadwin Plan in 1937?

A. No, but for the discharge they had it got higher than they expected it would.

Q. Isn't it a fact that while the Ohio River discharge was higher than expected the Mississippi River discharge was not?

A. Fortunately there was a very small flood on the Mississippi River. If they had a moderate flow or an ordinary flow on the Mississippi it would have meant disaster.

Q. Fortunately or unfortunately, which I happened not to ask you about, the fact is that the flow of the Mississippi at Cairo did not exceed the predicted flow, isn't that right?

A. The discharge in the 1937 flood was less than the discharge predicted in the Jadwin Plan."

I have stated in my opinion it is necessary for the protection of the levees to reduce the stages by 2 feet. So far as the levee system is concerned, a reduction in the stages by two feet could be achieved by raising the levees to give an equivalent protection to the system. If you could raise the levees and make them stay there, that would give the same margin, but the trouble is that the levees are up to their practicable limit of height and some of them are subsiding now. I never built any of those levees along the Mississippi River. I never worked for the Mississippi River Commission. I base my opinion that the levees cannot be raised 2 feet or more, first, on my personal observation of [fol. 1364] seeing the levees subside, and, second, on the statement by the Mississippi River Commission engineers and the United States Army Chief of Engineers in official reports, which state that the levees are as high as they can

build them or are approaching the safe limits. They don't want to raise them any higher. I wouldn't say I principally base my statement on what I have read in these reports. I have been up and down those levees since 1909 and observed the spots where the levees subsided and had to be raised again and subsequently raised again. I was not in charge of any of those levees from 1909 on, but I have lived in the valley and have been up and down those levees during all the high waters.

It is my opinion that the levee at Cairo can be raised, but the character of the sub-soil material on which that levee rests is such that the additional height of the levee would not give any greater security. In the flood last winter they had tremendous sand boils inside of the levee and the raising of the levee would not help the sand boils at all. In the report which I have studied, Committee Document No. 1, 75th Congress, First Session, page 5, the Chief of Engineers says:

"The River wall at Cairo, which was temporarily built up in advance of the recent flood, should be raised to afford permanent protection."

As to whether it is my opinion that the recommendation of the Chief of Engineers is impracticable or could not be carried out, the levee could be raised at Cairo. Assuming that the stage at Cairo is reduced in some fashion by two feet at the time of the great flood, I do not expect the same reduction at New Madrid, Memphis, Vicksburg and New Orleans. The reduction would be practically uniform from Cairo down to the mouth of the White River; from the mouth of the White on down, the reduction in stage would be less. I cannot tell whether the statement I made, that a reduction of two feet would reduce the amount of area of flooded land by 100,000 acres, was based on a two foot reduction through- [fol. 1365] out the entire valley without referring to my notes. That two foot reduction covers the entire river, so that that figure would be inaccurate as to the effect of the two foot reduction in stage at Cairo alone. The reduction would continue down to the White River, which is about 400 miles down, about opposite Greenville, Mississippi.

I am familiar in a general way with the gauge relationship between Cairo and New Madrid. It is my testimony that a reduction in the gauge height of two feet at Cairo

will be reflected in a reduction of approximately two feet at New Madrid. As to whether I know the records show that a reduction of two feet at Cairo will be reflected only in a reduction of a foot and a half at New Madrid, if I recall it is about two feet. At some points along the river there are some variations, but the average is about two feet. Different floods give different stages and the relation between the gauges is not always constant. I do not know whether or not in the model studies it has been tried out. As to when the reduction of two feet at Cairo results in a reduction of more than two feet at New Madrid and when it will result in less, in the past the relation between those gauges has varied somewhat, taking the past floods' higher and lower stages at New Madrid. It is not constant. I do not remember what the figures for the flood stage at Cairo and the corresponding flood stages at New Madrid were during the 1937 flood. I have the working papers of the Mississippi River and the stage at Cairo was at the highest 59.62 and at New Madrid was 47.97. I do not know what the corresponding bank-full stages are at those two places. I do not know that the bank-full stage is 42 feet at Cairo and 34 feet at New Madrid. I could not remember that. I testified that a reduction of 2 feet in stage at Cairo would reduce the frequency of operation of these floodways. If the levee sys-
[fol. 1366] tem were raised by the amount necessary to make it safe for the predicted flood, the flood section levees could be raised so as to reduce the frequency of the use of the floodways by the same amount as would be obtained by the reduction in stage at Cairo. If the levees would stay up there after they built them, that could be accomplished that way. If the effect of reducing the flood crest at Cairo by two feet was less at the other floodways further down stream, the frequency of operation of those lower floodways would not be reduced as much as I estimated for a two foot reduction at Cairo. My estimate was based on a two foot reduction all the way down the river regardless of how it was accomplished, even though it was accomplished by cut-offs. It would not make any difference how it was lowered. My study was based on what the effect of lowering would be, rather than how it could be lowered.

I am familiar with the backwater conditions in the Mississippi Valley. As to whether it is not true that the backwater stages frequently lag several days or a week or more behind the crest stages on the main river, and are frequently

lower than the main river stages when there is little inflow from the tributaries, under those conditions the water runs around the end of the levee and fills the backwater area, and that lagging is only a few days and a few inches, but if the flood stays up very long it levels up. It would not have to stay up but a few days. When there is a large inflow from the tributaries, the stages are higher in the backwater areas than they are on the main river. The lake in the backwater areas is tipped up a little by the inflow from the tributaries. Those two conditions sort of even up. Whether it is true in a flood of long duration that the backwater stages on the floodways are higher for the same maximum river stage than for a flood of short duration would depend on the inflow from the tributaries at that point. It might modify it. Assuming the same conditions as to inflow in both cases, [fol. 1367] it would be a little higher in a long flood than in a short flood. If you take two feet off the crest of a flood lasting perhaps a day or a day and half on the Mississippi, it is my testimony that there would be reflected a corresponding reduction in backwater overflow. The only thing in your assumption of a crest on the Mississippi of only a day or two is an impossible condition. It does not do that, the flood stays up longer than that. The flood itself does last many weeks, but the water stays within a foot or two of crest stage for several days. It rises and falls slowly on that giant stream. It is my testimony that it is impossible to take a foot or two off of the crest of the Mississippi River flood over a period of one or two days because the crest lasts longer than a day or two. As to whether to take one or two feet off of the crest of a Mississippi River flood, you do not have to be able to take off that much water over a period of possibly weeks. Weeks is too long. Depending on the flood, 10 days or 2 weeks would probably be a fair statement of how long you would have to take it off.

To reach the annual average figure for land overflowed by backwater and also my figure for 100,000 acres of reduction in overflow of lands by reason of two foot reductions in flood crest, I made a study of the floods for the last 40 years, and with the flood stage reached in each of these areas, there would be a certain amount of land overflowed. If that flood is reduced by two feet for that particular year, there would be a less amount of land overflowed, and the determination was made similarly for the balance of the 40 years on that figure I gave, which was the average for that

period. I examined the scale for each year for a period of over 40 years, and made a computation for each year. Then I added them up and divided them by the number of years. The Mississippi River Commission has worked out some area elevation curves for each of the backwater areas and [fol. 1368] each of the unprotected areas for each state which is flooded. What I did was to take some curves prepared by the Mississippi River Commission and read the figures off of those and check it in a general way with certain elevations of the topographical map by planimeter work. That is the U. S. Geological survey maps. The backwater areas contain only a small percentage of sloughs and swamps, it is mostly good land, and it is well drained when the river is down. It is mostly cut-over timber land.

I said I had never had charge of any levee construction on the Mississippi River. It is difficult for me to make an estimate of how many miles of levees I have examined under construction. I have been on the river off and on for the last 28 years, seeing the construction work and seeing the finished levees, some hundreds of miles perhaps. I was not working on the levees. As to whether I did examine some hundreds of miles of levees, in the course of my engineering practice, I was through that country frequently and the levee was the most important object with all those people. We kept in touch with the work.

I am familiar with the matter of seepage through and under the levees. It is true that it requires a long and continued high stage of the river to produce an appreciable amount of seepage. When the Mississippi River gets very high, they have seepage. A reduction of the crest stage for a relatively short time during a long continued major flood would have an important effect in reducing the volume of the seepage. The natural law for determining the amount of seepage through levees and under the foundations is that the greater the hydraulic pressure on the permeable strata that underlie a levee, the greater the distance behind the levee the seepage extends. That law has no name, it is just this simple law that water seeks its level. The scientific formula that is applicable is that water seeks its own level. That is the basis of the formula that I, as an engineer, used in making my engineering computations. [fol. 1369] I do not know the name of the formula that does govern. I cannot give you the name of any formula

except the basis is that the pressure of the water forces the water out through the sand and it comes up in the fields. It is not right to say that after all my expert testimony about seepage, all I know is that the water seeks its own level. The amount of seepage in those fields can be observed and measured, and in great floods there is lots more land affected by seepage than in lower floods, so it is a question of actual observation and not theoretical computation. All I am testifying about is a matter of observing the water in those fields.

As an engineer, I know how to compute what, if any, seepage could occur at a levee at a given place. I could go into that theoretically. I can't tell the formula offhand, it is too complicated. I think I have heard of D'Arcy's Law. As to whether it was LaFayette's Law instead of D'Arcy's, I am not arguing with you on that point. I have heard of D'Arcy's Law. I cannot remember what it has to do with. It would not mean a thing to me to know that that formula is Q=KIAT. As a matter of fact I don't know whether that is the formula for computing the extent of seepage under a levee or not. I could not qualify on that formula for computing the extent of seepage through or under a levee. My testimony was based on observations of what happened when the water got up there. I only made observations in a general way of the difference with the stage two feet lower. I know this, I have been up and down those levees all these years, and when the floods get higher the seepage is greater, and when the floods are not so high the seepage is not so great. As to whether it is a fact that in that formula which determines the question of seepage, Q is the quantity of flow, K is the co-efficient of [fol. 1370] permeability in the material, A is the area through which the flow takes place, T is the time of duration of the head and I is the head, I stated a moment ago, I could not qualify on the details of that formula. Your recitation of it sounds reasonable. As to whether, as far as I know, it might be that or something else, as I say, I did not qualify on that formula. My testimony on seepage is not based on that or any other formula. It is a fact that engineers who actually build levees and make responsible estimates with reference to such things have to know such formulas to make such computations. An engineer

could assume responsibility for building a levee and in determining its safety as to the question of seepage without a knowledge of such a formula and without making such computations. He could base it on experience and that is what most of the levee building is based on on the Mississippi, without considering this theoretical computation. They must build the levees wherever they can build them.

In that formula if you reduce the stage for a short period at the crest, you would affect the factor of head only and everything else would remain the same. As you recited it to me that is the only factor you would affect in that law. Flood stage is generally about bank level. The duration of the flood stage upon the Mississippi River varies from a month to two months. During the average great flood, the average stage against the levee above the surrounding land might be in certain sections of the levee as much as 15 feet. If you took 2 feet off the stage and reduce it to 13 feet and you reduce that for, say, ten days or two weeks according to my previous testimony—I could not make the computation with the data you have given me that such a reduction for ten days would have reduced the seepage by perhaps 1/25th. I would not either accept or deny the correctness of that computation. I still think that if you [fol. 1371] reduce the stage two feet for ten days or two weeks out of a month, you would materially affect the seepage through or under a levee. I am still clear on that. But I don't know how to compute it. We watch what happens by observation. I think a reduction of 1/25th of the total amount of water that seeps through would be a substantial reduction. I did not have in mind a reduction of 1/25th. As to how much percentage I did have in mind, my figures were based on area and I don't remember making a percentage computation based on the acres less which were affected.

I said I have seen hundreds of miles of levees built or under construction. I have seen maybe 100 or 200 miles of levees under construction. If I also said that these levees are largely built on sand and gravel, that is my testimony. I now say it is the truth that these levees are underlaid by sand and gravel. I know that by observing the one hundred miles that I saw under construction and by seeing the character of the land along the river bank where the river has cut down so I can see what is under-

neath, and in that way I can say that the hundreds of miles of levees along the Mississippi River are underlaid by sand and gravel. I do not want to create the impression that the sand and gravel is on top of the ground, but they are underlaid by sand and gravel, the deeper strata are very often sand and gravel. It is not my observation that levees built on sand and gravel sink. They do not sink ordinarily and that is what most of them are built on.

My testimony that the reduction in stage of 2 feet at Cairo would reduce the cost of high water fighting by an amount averaging $225,000 annually was based upon past experience, not my experience, but experience on the river. If I may explain, at each time of high water money is expended by the various governmental and state agencies for high water expenses on the levees, and the Mississippi River Commission has kept data on how much they spent [fol. 1372] on each high water and the various levee districts up and down the river have kept account of their expenses. My testimony was based on the average experience of the high water expense for the last 40 years. I took some figures that I had gotten from the Mississippi River Commission and some from other public authorities and they are the official figures that those agencies had spent on the river. The $225,000 was taken not by observation. That was by computation. The expense for the floods when the river became very high was much greater than when the floods were lower, and the reduction of two feet would show a less expense of high water maintenance. My figure is based on the past experience of about 40 years of high water expense on the river. The average experience shows that for each foot of gauge height increase, after you get up into the flood stages, the annual expense increased about $100,000 per foot per year, and two feet less would be a $200,000 annual reduction. Most of these costs in the past were for general high water expense, in part where the levees were not up to the project grade at the particular place. That was a condition which is reflected in this whole situation which I told about where various levee districts were partially responsible for levees in their own localities and either were unwilling or unable to finance raising them to project level, but the greatest expense on the levee system for high water fighting in any

one year was expended in 1937, after these levees had been brought to the higher stages. I never personally had anything to do with nor had charge of maintaining these levees.

(The witness was excused.)

[fol. 1373] C. T. Barker was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 39 years old, reside in Knoxville, Tennessee, and am a hydraulic engineer. I graduated from the University of Minnesota in 1922. For one year and three months immediately following graduation I served as contractor's engineer on a hydraulic project where hydraulic sluicing was the principal engineering problem. From April, 1924, to April, 1928, I was engaged in the investigation of navigation, flood control and hydro-electric problems in preparation of House Document 328, 71st Congress, Second Session, with the United States Engineering Department at Chattanooga, Tennessee. This time was divided about as follows: junior draftsman on hydraulic exhibits, six months; computer and designer on navigation, flood control and hydro-electric structures, one year; first assistant to the Head Engineer in charge of the preparation of all hydraulic, hydrographic and preliminary design data entering into a complete analysis of the water resources of the Tennessee River Basin as applied to navigation, flood control and hydro-electric power production, 2½ years.

From May, 1928, to August, 1932, I was engaged in the preparation of reports authorized by Congress in accordance with House Document 308, 69th Congress, First Session, with the United States Engineer Department, Kansas City, Missouri. This time was divided about as follows: area engineer on Platte River in charge of all field surveys necessary for the study of the water resources of the Platte River Basin, one year; assistant to the chief of the Flood Control Division and in direct charge of the design of flood control projects and the preparation of reports dealing with flood control, irrigation, navigation and water prob-

[fol. 1374] lems on the Mississippi River and its principal tributaries, three years and three months.

From September, 1932, to March, 1933, I was engineer in charge of the U. S. Engineer Office at Sioux City, Iowa, supervising the construction of navigation improvements on the Missouri River at Sioux City and Omaha, Nebraska. From April, 1933, to November, 1933, I was engineer in charge of the hydraulic and civil engineering section of the U. S. Engineer Department at Wilson Dam at Florence, Alabama, and was responsible for the preparation of studies and reports on hydraulic problems, hydrographic surveys, and improvements in navigation on the Tennessee River from Hales Bar to Riverton, Alabama. From December, 1933, until now, I have been engineer in charge of the navigation section of the TVA engaged in the study and preparation of reports on the navigation problems on the Tennessee River.

I was with the Army Engineers from 1924 to 1928 studying all phases of navigation on the Tennessee River and its tributaries. I was also engaged by the Army Engineers in 1933 in charge of navigation improvements between Hales Bar and Riverton, about one-third of the river, and I have been with the TVA on navigation problems for four years. About a year and one-half or two years ago I had prepared a complete list of official surveys and reports which I have studied and referred to pertaining to the Tennessee River. I have studied practically all of these reports except some of the very earliest that were not available. I have studied excerpts in the Chief of Engineer's reports in those earlier years also.

The map (offered and received in evidence as Defendants' Exhibit 92) shows the condition of the Tennessee River before the creation of the TVA as of May, 1933.

It shows the geographical position of the Tennessee River, its course from its formation by the junction of the Holston and French Broad Rivers just above Knoxville [fol. 1375] to its mouth at Paducah, Kentucky, and its principal navigable tributaries, which, starting on the north side of the river and including the tributary furthest down stream, consist of the Duck, Elk, Sequatchie, Clinch-Powell system, the Holston, French Broad, Little Tennessee, and Hiwassee Rivers.

Examination by the Court:

The Emory River is not shown. It comes through Harriman, Tennessee, just to the left of Knoxville, and goes into the Clinch River just above the junction of the Clinch with the Tennessee, a considerable distance below the Powell River. The Emory River is not listed as navigable. (The date, May 18, 1933, the Wheeler Lock and the Emory River were subsequently placed upon the exhibit by the defendants.)

Direct examination continued:

The map (offered and received in evidence as Defendants' Exhibit 93) is entitled "Profile of the Tennessee River Improvement," and shows a profile of the Tennessee River in its unimproved condition before any locks and dams had created slack water pools. On the upper right hand side is Knoxville at an elevation of a little higher than 800. The river then slopes downward towards the left hand side of the chart, passing Chattanooga and Hales Bar, with a very steep portion about in the middle which is Muscle Shoals rapids. There is another slightly less steep place at the left of that point, which is Colbert Shoals rapids, and the profile continues on to the mouth of the river at Paducah, Kentucky. It shows there is a considerable variation in the slope throughout the natural channel of the river. The average slope between Knoxville and Hales Bar is about one foot per mile; between Hales Bar and Brown's Island, about .4 of 1 foot per mile; between Brown's Island and Florence, about 3.6 feet per mile; be-
[fol. 1376] tween Florence and the head of Colbert Shoals, about .6 of 1 foot per mile; and between the foot of Colbert Shoals and Paducah about .34 of 1 foot per mile. That variation in slope has an effect upon navigation conditions and the type of navigation improvement that is possible. The river in its unimproved condition, having great variation in slope, would cause great variation in channel depth and channel velocities and would make the river very difficult to navigate, and practically impossible to navigate in certain sections unless substantial improvements were accomplished. There are a large number of obstructions shown by name over on the left hand side of the exhibit, including the Big Bend Shoals, Colbert Shoals, Tuscumbia Bar and Muscle Shoals, which are only some of the impor-

tant bars and rapids, which are obstructions to navigation in the improvement of the river. In my opinion no satisfactory navigation channel could be obtained through the entire length of the Tennessee River in view of those conditions, without the construction of dams of some character.

The table (offered and received in evidence as Defendants' Exhibit 94) is headed "Maximum and Minimum Rates of Stream Flow, Tennessee River." These great variations in stream flow also cause great variations in channel depth and velocities, and a navigator would have a hard time predicting just what amount of stream flow he might encounter from time to time, and would also have trouble in determining what depth of channel he could count on. He would also be concerned with the great variations in velocity of the unimproved river and with these variations in stream flow.

The map (offered and received in evidence as Defendants' Exhibit 95) is entitled "Previous Projects Tennessee River Basin." The title is explanatory of what the map purports to show, which are the projects previous to the [fol. 1377] 9 ft. channel project. The heading on the right hand corner of the exhibit shows the navigation projects on the Tennessee River and principal tributaries, and shows them with the dates as adopted by Congress prior to the Rivers and Harbors Act of 1930. The table on Defendants' Exhibit 95 shows the previous projects listed by dates from 1852 to 1925. About 12 of the 18 projects listed there were for open channel development without locks and dams, which are referred to as "O. C." Three were for canalized projects with locks and dams, either entirely across the river or partially across the river, such as Elk River, Muscle Shoals Canals, Colbert Shoals Canal, Riverton Lock and Florence Canal, with Lock and Dam No. 1. Then there are slack water developments noted by the symbol "S. W.," with dams entirely across the river providing slack water pools, such as Wilson Dam, the Caney Forks Creek pool and the Hales Bar lock and dam. The lower part of the tabulation shows the total expenditures on the main stream to June 30, 1935, as $25,297,468.03. The figures given on the map refer to the mileage of the particular point upon the river above the mouth of the river. Knoxville is 647 miles and Kelly's Ferry is 442 miles from Paducah. The

figure of $25,297,468.03 for the total cost is purely for navigation projects and excludes Wilson Dam, Lake and power house.

Cross-examination:

As to whether the figure includes all maintenance and operations, I can look that up. When I compiled that figure, I took it to be capital expenditures.

In the lower part of the table on the left hand side of the chart, there is a list of the projects for tributary improvement.

(Thereupon the Court stated that the figure on the exhibit for the expenditures ought to be amended to show "Exclusive of Wilson Dam," which was subsequently done.)

[fol. 1378] Direct examination continued:

The chart (offered in evidence as Defendants' Exhibit 96, withdrawn for correction and later received in evidence as corrected) is entitled "Commerce on the Tennessee River". I would like to make a slight change in the plotting of the years 1930 to 1935. The tonnages are correctly shown, but the artist in drawing that line got about a half of one of these small spaces to the right, so that a slight correction there would help; but in general it shows the correct tonnages.

"Mr. R. T. Jackson: I object to the legend in that it says, 'Tons of freight moved on the Tennessee River, 1892 to 1936.' Those statistics are always a year late, and the ones for 1936 are not yet available, not yet published, and it seems to me to be in error to that extent, that it is a year ahead."

The figures are as reported in the Annual Reports of the Chief of Engineers. For example, the figures for 1936 show the commerce up to July of 1936, and this Report comes out in July.

Cross-examination:

I think it is correct that the reports are for the calendar year.

Direct examination continued:

On checking my table here, I see that the figures were taken from the Annual Reports of the Chief of Engineers from 1892 to 1936. The tonnages would be for the calendar year set back one year, that is, 1935 would be the calendar year shown. I do not purport to show anything for the calendar year 1936.

"Mr. R. T. Jackson: We object because inadvertently the whole graph is misleading because it is shoved ahead on the time scale from what it should be. It actually shows the calendar years 1892 to 1935, inclusive."

Examination by the Court:

That is not up to July, 1936, I think I misstated that. It stops at January 1, 1936, that is my understanding of the figures as they are shown in the Chief's report.

[fol. 1379] "Mr. R. T. Jackson: The result is that for every year the information is six months too far ahead.

Judge Allen: The Court suggests that this legend read 'Up to January 1, 1936.'

Mr. R. T. Jackson: If your Honors please, we object to it because it is misleading then, because, for instance what it shows for the peak in 1900 is not in 1900. That is the middle of the year before, and the whole thing has been shoved six months ahead.

Judge Gore: Does it begin in July, 1892, or January 1, 1892? The graph would show the middle of 1892.

Mr. R. T. Jackson: It should begin January 1, 1892.

Judge Gore: It looks like it might begin here in the middle of 1892.

Mr. R. T. Jackson: But the difficulty is that the statistics of the Chief of Engineers are published by calendar years, and they could not begin at that time. It has to begin with the first of January, and end with the 31st of December, so I take it that what Mr. Barker has inadvertently done, or his draftsmen, is to shove his whole graph six months ahead of what it should be. The first line should start at the extreme left hand vertical line under 1892, and the last should start with the line 1935, and everything should be shoved back to the left.

Judge Allen: This represents groups of five years, and if the graph began at the black line furthest to the left then it would read from 1890, and not 1892.

Mr. R. T. Jackson: The only point we make is that it is all six months too far ahead.

Judge Allen: The Court suggests that this be withdrawn, and the graph indicate the precise time in 1892. It looks now as though it began in July of 1892, and also it does indicate that it goes over into 1936 on the graph."

Prior to May, 1933, the traffic on the Tennessee River consisted of sand, gravel, building stone, forest products, iron and steel, and miscellaneous manufactured articles which moved mostly by short stretches and there was not a great deal of through traffic. Short haul traffic was largely due to the partial improvement of the river and the poor channels available. Through traffic was pretty well blocked by the lack of sufficient improvement on the river.

[fol. 1380] The chart (offered and received in evidence as Defendants' Exhibit 97) is entitled "Existing and Proposed Channel Depths before TVA Act," and was prepared by me or under my supervision and direction and the facts shown on it are accurate and correct.

"Mr. Fitts: I will offer the exhibit on the standard which has just been identified in evidence as defendants' exhibit 97.

Mr. R. T. Jackson: We object to it as utterly misleading and incompetent. It says 'Existihg and proposed channel depths,' and it does not show who proposed the channel depths. As a matter of fact, if the truth is brought out, it will appear that there has been a report that has suggested a possibility of certain channel depths, for instance, in certain tributaries——

Judge Allen: The legend shows that certain tributary channel depths were proposed by the Army Engineers.

Mr. Fitts: Have you looked at the explanation?

Mr. R. T. Jackson: I don't understand that they are proposed by the Army Engineers.

Mr. Fitts: That is what it says.

Mr. R. T. Jackson: I know that is what it says. That is the trouble; it is untrue.

* * * * * * *

Mr. R. T. Jackson: It is not proposed; it does not propose anything.

Mr. Fitts: Do you want to testify on the subject?

Mr. R. T. Jackson: I don't need to, because the document is in evidence, and it shows that the legend is untrue.

Mr. Fitts: I will ask the witness to testify——

Mr. R. T. Jackson: Let me finish.

By Mr. Fitts:

Q. Mr. Barker, is the statement correct that appears on the exhibit?

Mr. R. T. Jackson: I object to the question.

Judge Allen: He may answer.

Mr. R. T. Jackson: May I state the grounds of the objection?

Judge Allen: He may answer whether it is correct.

[fol. 1381] A. I believe it is, as I read the House Document.

Judge Allen: You may have your exception.

Mr. R. T. Jackson: May I have an exception both to the ruling, and to the refusal of the Court to permit me to state the grounds on which I object to the question?

Judge Allen: The witness may testify whether the matter is correct. You may now state the grounds of your objection if you desire.

Mr. R. T. Jackson: The ground of my objection was that the question of whether or not these were authorized or adopted must depend upon the action of Congress and not upon the testimony of this witness. It is utterly incompetent for this witness to attempt to prove anything is authorized by his oral testimony, and the fact is that the evidence in the record before this Court shows that it is not true because the only thing that has been adopted by the Congress is by the Rivers and Harbors Act of July 3, 1930, which is for a low dam plan on the main Tennessee River, and nothing whatsoever on these tributaries. We will have a witness coming in here later to testify that that is correct.

Mr. Fitts: That is not what it says. All that the legend says is that the main river channel depths were adopted in the Rivers and Harbors Act of 1930. You don't dispute that?

. . . . . .

Mr. R. T. Jackson: Just a moment. Let me finish. As far as it is proposed, it only encumbers the record with

utterly irrelevant and incompetent testimony. I can go to Congress and I can bring out hundreds of reports of proposals that have been submitted to Congress and they haven't any more significance than last year's almanac unless they have been adopted and approved by the Congress.

Judge Allen: How much of the noon hour shall we consume, Mr. Jackson?

Mr. R. T. Jackson: I want to consume only enough to make my point and make it clear to the Court, because I think it is highly prejudicial that we should have introduced in this record statements of proposals of someone that have no authority and no effect whatsoever.

Mr. Fitts: I might state that Complainants started trying this case upon the basis of the proposals in House Document 328. Now, they don't like them, they have found out more about them, and they don't like the proposals.

Mr. R. T. Jackson: We are standing squarely upon what is incorporated in the Rivers and Harbors Act of 1930. [fol. 1382] Mr. Fitts: They have offered them in evidence. They were the first to mention them in this case.

Judge Allen: The exhibit is admitted and you may have your objection.

Mr. R. T. Jackson: Exception noted.

* * * * * * *

Judge Allen: Just a moment, Mr. Fitts. In view of the fact that Mr. Jackson was absent two days before Christmas—perhaps not two days, but a day and a half, or parts of two days—we think it well to repeat something that was said in his absence, which was this:

The Court permitted exhibits to be received in evidence which were bitterly protested by the Authority upon the ground that they presented the Complainants' Theory of the case. For that reason we allowed the purple and the red, because it presented the theory of the case, although they are not very sharply distinguishable colors.

Now, with reference to this map which the complainants have protested, we feel that this map presents, and clearly, and without misleading, reading the legend with the title, the theory of the defendants, and we think the objection goes to the competency and not to the weight."

Defendants' Exhibit 97 shows by the blue line and the blue figures the depths of the existing channel before the

TVA Act. For example, between Paducah, Kentucky, and Riverton, Alabama, the existing channel depth was 4½ feet at ordinary low water. Throughout Colbert Shoals canal just above Riverton, it was 7 feet. From the head of the canal at Florence, Alabama, it was 4 feet. The red lines and the red figures indicate the depth of channel along the main stream, as proposed by the Army engineers in House Document 328 and as authorized and adopted in the Rivers and Harbors Act of 1930, namely, 9 feet of depth throughout the entire length of the Tennessee River from Paducah to Knoxville.

The chart (offered and received in evidence as Defendants' Exhibit 98) is labeled "TVA Projects," and was prepared by me or under my supervision and direction and the facts shown thereon are accurate and correct.

[fol. 1383] "Mr. Fitts: We offer in evidence as Defendants' Exhibit 98 the exhibit which is now on the standard, entitled 'TVA projects'.

Mr. R. T. Jackson: We object to it because it is misleading and incomplete. It does not show the Fontana Dam Site, as set forth in the report to Congress last week or the week before last.

Mr. Fitts: We discussed that, if the Court please, just before adjournment, and the Court expressed the opinion that this statement was sufficiently amplified.

Mr. R. T. Jackson: Then if it is, it conflicts with the statement 'TVA project'. It seems to me that it is highly improper that exhibits should be offered here which contradict the reports which are being submitted to Congress at the same time.

Judge Allen: The objection is overruled, and you may have your exception.

Mr. R. T. Jackson: Exception, please."

Each of the projects shown on Defendants' Exhibit 98 is located at or near the sites, with just a little variation in some cases, which were proposed for the high dams in House Document 328. In my opinion each of the dams constructed, under construction or proposed for construction, as shown on Defendants' Exhibit 98, when constructed, will provide a substantial improvement to navigation upon the Tennessee River and will provide a navigation channel for boats with a 9 foot draft and an over depth of around 2 feet.

The most difficult section of the Tennessee River to navigate below Chattanooga, and just prior to the beginning of the TVA's projects, was that section from the head of Wilson pool up stream to the existing Widow's Bar Dam, which is in the upper portion of the Guntersville pool and about 24 miles down stream from the existing Hales Bar Dam.

Examination by the Court:

Widow's Bar Dam is not shown on this map because it will be submerged by the TVA project known as Guntersville Dam.

[fol. 1384] Direct examination continued:

That section from the head of Wilson pool to Hales Bar had a controlling depth of about 3 feet and the channel was very winding and tortuous, and quite narrow in many places. The construction of the Wheeler Dam by the TVA overcame the obstacles and extended the 9 foot channel from the upper end of Wilson pool to the vicinity of Guntersville, Alabama.

The next section that was probably the most difficult to navigate was the one between Riverton, Alabama, and Florence, Alabama, wherein the controlling depth at ordinary low water was about 4 feet, and there were many narrow, dredged cuts. The construction of Pickwick Dam by the TVA, a few miles below Riverton, overcame these obstacles and extended the 9 foot channel from Pickwick Landing upstream to the existing lock and dam No. 1, a distance of about 50 miles. The remainder of that reach below the Widow's Bar Dam will be improved for 9 foot navigation by the construction of the Guntersville Dam in the upper end of the Wheeler pool, which will extend the 9 foot channel from the upper end of the Wheeler pool all the way to Hales Bar Dam, flooding out the existing Widow's Bar Dam.

Above Chattanooga, the entire reach to Knoxville is very difficult to navigate, having a controlling depth at low water of only about 1 foot. Chickamauga Dam would be the first logical step in extending the 9 foot channel from the upper end of Hales Bar pool upstream towards Knoxville. The Chickamauga Dam itself would extend the 9 foot channel from the upper end of Hales Bar pool a distance of about

58 miles to the proposed Watts Bar site, also extending it up the Hiwassee River a distance of about 20 miles to Charleston, Tennessee.

After the construction of Pickwick Landing, Wheeler and Guntersville, but before the completion of Gilbertsville [fol. 1385] Dam, there will be a stretch of open river which will extend from the upper end of the very short pool which is created on the lower part of the Tennessee by Dam 52 on the Ohio River. That open channel will continue upstream to the Pickwick Landing Dam. With the use of releases in low water seasons from Norris and Hiwassee Dams, a channel of the depth of 7 to 7½ feet could be maintained in that open stretch of the river in the lowest water seasons. Before the construction of Gilbertsville and upon the completion of the dams under construction, there will be a minimum 7 foot channel from the Ohio to Pickwick Landing Dam and the 9 foot channel will be complete from Pickwick Landing Dam on up to Chattanooga, with minor improvements at Hales Bar.

Examination by the Court:

When all the dams proposed under the TVA Unified Plan are completed in the Tennessee River, there will be a channel that has sufficient depth for boats of 9 foot draft. It will be 9 feet or better. In fact the minimum depth will be around 11 feet. That will be produced by the dams that are in the Tennessee River alone.

Direct examination continued:

Prior to the construction of Gilbertsville Dam, over considerable periods of the year, the depth in the channel below Pickwick Landing Dam will be in excess of 7½ feet which would be the minimum depth and it would run up to 8½ or even 9 feet as the flow during the winter season increased. Navigable channels of a minimum depth of 7 feet or less have been considerably used by commercial navigation in this country.

I have on a great many occasions personally consulted with the Army Engineers and I have made many field inspections in company with the Army Engineers with respect [fol. 1386] to the navigation features of these projects which are completely in my province. The Corps of Engineers of the U. S. Army has prepared the designs for the locks that

have been put in the TVA dams which have been constructed or are under construction. In the dams either under construction or proposed below Florence, Alabama, we would have the large locks, 110 feet by 600 feet. Above Florence the locks we are constructing or propose to construct would be 60 feet by 360 feet. At the time we were considering the construction of Pickwick Landing we made quite a study of the size of the locks above and below Florence, and we also took it up with the Chief of Engineers of the Army and he wrote to us. I have a copy of the letter and the original laid on my desk for my information for a good many months. It came to me in my official capacity. I made considerable study of economical lock size on the Tennessee River and I concluded that the area around Florence, Alabama, was an important industrial area and had considerable potentialities, and that it would be reasonable to have the large locks to carry navigation up that far. There was also some consideration of digging a channel through from the Tennessee River to the Tombigbee River and the possibility of traffic through that route. That would come into the Pickwick pool. So that was another reason for having the large locks below Florence. Above Florence, there were four small locks existing and it seemed unreasonable to build a large lock at Guntersville Dam when there were three small locks below it and one small lock above it. Likewise above Chattanooga, if we then had four small locks below Chattanooga, it seemed unwise to put any large locks above that point. The determination that was made as to the size of the locks was checked with the United States Army Engineers. On occasions I have discussed with the District Engineer at Nashville or with other respresentatives of the Corps of Engineers the question of the design, [fol. 1387] size and capacity of the locks on these TVA projects.

I have made an estimate of the percentage of theoretical capacity, which existing Lock No. 1, Wilson Lock, and the locks above Wilson, excepting Hales Bar lock, will carry, and I have concluded that if you take 40 per cent of the theoretical annual capacity of these locks, it would represent the suitable, practicable capacity. In the studies which I helped to make in House Document 328, we assumed 50 per cent of the theoretical capacity would be practicable, but I have taken 40 per cent in these studies. Provisions have been made at each of these dams above Florence for

the installation of additional and larger locks, 110 by 600 feet, at a later date.

The photograph (offered and received in evidence as Defendants' Exhibit 99) shows the steamboat "Gordon C. Green" in the Pickwick Lock, and to my knowledge accurately represents the boat and the lock. The "Gordon C. Green" is an excursion boat from Cincinnati, Ohio.

The photograph (offered and received in evidence as Defendants' Exhibit 100) shows a tow of cement barges in Wheeler lock and accurately represents the layout of the lock.

The photograph (offered and received in evidence as Defendants' Exhibit 101) shows the lower approach to the Guntersville lock with the N. C. & St. L. car ferry entering the lock and actually portrays the physical layout of the approach to the lock. It does not show all the lock but the approach.

[fol. 1388] Cross-examination:

The lock is in operation with low temporary gates.

Direct examination continued:

The pile of dirt in the foreground is a spoil bank left there after the cofferdam was taken down. It is temporary and may be removed. Guntersville Dam is still under construction.

Cross-examination:

The car ferries at the time this picture was taken did not go through Guntersville lock without any operation of the gates as they had been doing for the past 25 years, as there was operation of the temporary gates. I think the picture was taken May 27, 1937.

"Mr. Fitts: I would like to make this statement to Mr. Jackson and to the Court, if what is bothering Mr. Jackson is whether or not the N.C.& St.L. ferry can get through the Guntersville Lock, as the Lock will be when completed, we are perfectly willing to state here, definitely, that it cannot get through without breaking tow."

Direct examination continued:

In May, 1933, in the section of the river between Florence and Riverton, Alabama, the controlling or minimum depth at low water was only 4 feet and there was a series of cuts that were dredged through reefs that were quite narrow, 160 feet in width. Between Riverton and the mouth of the river, the controlling depth at low water was 4½ feet and the channel was in somewhat better condition than immediately above, but there was nevertheless a series of dredged cuts in that section also. At the time construction was started on Norris Dam, the plans were quite indefinite as to the development of the lower river. The Army Engineers had investigated the possibilities of a high dam at Aurora Landing and also the possibilities of a series of low dams in that section. There had always been a good deal of doubt about foundation conditions at Aurora Dam site, and there was nothing definite as to whether it could or [fol. 1389] would be built. In my opinion the stream flow regulation that will be provided by Norris and Hiwassee Dams will have a beneficial effect on navigation in the lower section of the river. The release of stored water from Norris and Hiwassee Dams during an ordinarily low water year will be sufficient to maintain the minimum stream flow throughout the entire river below Florence at about 18,000 cubic feet per second and will increase the previously existing minimum depth from 4½ feet to a new minimum depth of about 7½ feet, which would have an important effect toward increasing commerce in the lower part of the river.

Examination by the Court:

I stated a few minutes ago that when we completed the series of dams under the TVA Unified Plan on the main river, there would be at all times a channel depth of 9 feet.

"Judge Gore: Then why release the water at Norris when you have the 9-foot channel?

Mr. Fitts: We are talking about it right now, that may be six or seven or eight years in the future.

Judge Gore: Oh, before it is completed?

Mr. Fitts: Yes, before Gilbertsville Dam is finished."

Direct examination continued:

In 1936 the releases from Norris Dam during the summer were sufficient to maintain the stream flow in the lower

section between Florence and the mouth of the river at a minimum of about 15,000 cubic feet per second, which increased the minimum depth in the lower section from 4½ feet to a minimum depth of about 6½ feet. In 1937 the Norris releases maintained the minimum stream flow below Florence at about 17,000 cubic feet per second, which increased the controlling depth from 4½ feet to about 7 feet. When Hiwassee Dam is completed, it will add to that. [fol. 1390] Those releases are reregulated to a certain extent by operations at Wilson Dam. Prior to the creation of the TVA, when there was a continuous 24-hour flow in the river at Wilson Dam of 12,300 cubic feet per second, the Army Engineers did not allow any fluctuation of the stream flow but passed it right on through the dam. As the average flow increased to 15,000, they allowed the reduction to about 13,800 cubic feet per second, or an increase to a little over 18,000 throughout the 24-hour period. Since the construction of Norris Dam, the TVA has adhered substantially to that rule of the Army Engineers except on a few occasions where there were special reasons for making some adjustment. In my opinion, I believe this rule of operation sufficiently protects the interests of navigation below the Wilson Dam.

Assuming the 9-foot channel is provided throughout the length of the river by the construction of the seven high dams on the main stream as reported in the Unified Report to Congress, in my opinion Norris and Hiwassee Dams will then provide a material benefit to navigation on the Tennessee River. I have noted down a list of what I consider the advantages. The regulation that is provided by those tributary reservoirs will tend to stabilize the pool levels on the main stream. They will reduce flood discharges and flood velocities which certainly interfere with navigation at times. They will increase the navigable depths at the upper ends of each of the main stream pools. The tributary reservoirs will retain silt from the tributaries and thus reduce the silting of the navigable channel on the main stream, and in general will increase the flexibility of the operations of the main stream reservoirs for their multiple purposes and at the same time maintain the navigable channel.

[fol. 1391] The releases from Norris and Hiwassee Dams during low flow periods will have a beneficial effect upon navigation conditions upon the lower Ohio and the Missis-

sippi. There are periods when boats navigating on the Mississippi encounter inadequate depths in low water seasons. In my opinion the releases of storage water from the tributary dams would increase the depth of the navigable channel on the Mississippi River and would certainly be of benefit to navigation on the Mississippi since navigation is considerably handicapped during each low water season.

In my opinion it is desirable, in constructing a tributary storage dam such as Norris Dam, to provide that the navigation channel could be at some time continued. It certainly would be a poor policy to entirely foreclose navigation on an important tributary, and it would be the best way to obtain a navigable channel on the tributary to have that pool so used. The water that is below 955 at Norris Dam, which has been denominated "dead storage," could be used as such a navigation pool.

We made a considerable study of the possibilities of navigation through Norris Dam and the traffic potentialities on the Clinch River, and we decided that the greater part of the potential traffic on the Clinch would be a downstream movement of coal. It seemed to us entirely feasible to move this coal from the upper Norris pool down to the lower pool below the dam by putting it through a coal conveyor rather than by building a lock or barge lift. I am familiar with the plans which the Corps of Engineers had for a dam at the site of Norris.

The chart (offered and received in evidence as Defend-
[fol. 1392] ants' Exhibit 102) is entitled "Coal Transfer and Transit Facilities, General Plan, Norris Project, Tennessee Valley Authority, Water Control Planning Department." It was prepared to show how the coal conveyor could be used in passing coal through from the upper pool shown on the right hand side of the drawing.

The chart (offered and received in evidence as Defendants' Exhibit 103) is entitled "Coal Transfer and Transit Facilities, Section and Elevation through Transit Point and Non-Overflow Section." It was prepared for the same purpose as I stated with reference to Defendants' Exhibit 102.
[fol. 1393] On Defendants' Exhibit 102 the upper pool of Norris Dam is shown on the right hand side of the drawing. There is an item there shown as lake cargo barge containing coal. This barge would be unloaded by the system of conveyors at the wharf barge and the coal carried through a system of belt conveyors through the dam over to the

downstream side of the dam and into the item marked "10,000 ton transit coal bin," and from that by belt conveyors to the barges on the lower side of Norris Dam.

Examination by the Court:

As to what we want to do with the coal after we get it over there, it may be loaded into barges to continue down the Clinch River, whenever the Clinch River is developed to the point where it can be navigated by barges of this size. There is no project authorized to develop the river below the dam so as to make it navigable. There was a proposed or recommended project in House Document 328 covering that, showing the possibilities, but it has not been authorized. It is true that in the low water seasons there is practically no water below the dam, only about a foot or two of depth. This exhibit shows a layout which would be usable if Norris Dam became part of a through navigation system on the Clinch River. I would not say that this could be at once installed and used with the Clinch River in its present condition.

Direct examination continued:

There is not at present any plan to use this sort of a layout, but merely that this is a reasonable sort of layout to be used at Norris Dam if anyone determines to develop the Clinch River for through navigation.

[fol. 1394] Examination by the Court:

As to whether, if we develop the Clinch River below the dam for navigation we are going to destroy the reservoir entirely and will not have enough water above there to assist navigation, for power or anything, we would improve the river below Norris Dam by a system of locks and dams, in other words by a canalized project.

Direct examination continued:

We would have to build other dams on the Clinch River below Norris. Those dams were studied in House Document 328. There is at the present time a tunnel through Norris Dam near the uppermost portion of the dam on the line that is indicated on Defendants' Exhibit 102. That tunnel does not serve any other purpose.

The chart (offered and received in evidence as Defendantss' Exhibit 104) is entitled "Comparison of High Dam and Low Dam plans on Tennessee River." It shows the Tennessee River in profile, Knoxville being at the upper right hand side of the exhibit and Paducah being at the lower left hand side of the exhibit. On that profile I have superimposed the low dams as shown in House Document 328, which are the blue dams on the chart and the black ones on the photostat, and over the low dams I have superimposed the high dams, constructed, under construction or proposed by the TVA. It shows the manner in which the high dams of the TVA would eliminate the necessity for the low dam development—that is, how many low dams would be eliminated by each of the high dams.

In my opinion it would be possible, in times of high flows on the main stream of the Tennessee River, to draw down the main stream dams below the navigation levels that are [fol. 1395] shown on the exhibit and still maintain the project depth. For example, on the Gilbertsville Dam, I showed the minimum pool level at elevation 354. During the early part of the flood season, when it was desired to provide still more capacity in Gilbertsville Dam for flood control, it would be possible to draw that level down to say elevation 350 and depend upon the inflow to maintain the 9-foot navigable depth in the upper end of the pool. That is possible just from the simple hydraulic relationship that increased flow will increase depth in a given channel.

I have made a study of the low dam plan as outlined in House Document 328, and in my opinion the channel provided by the low dam construction would be decidedly inferior to that provided by the high dams. The high dam system as being carried out by the TVA would reduce the lockage time in making a trip from Paducah to Knoxville, would have much lower current velocities than in the low dam plan, would have more stable pools than the low dam pools, and there would not be the great fluctuations in stage. The cost of operation and maintenance of the navigation facilities would be less under the high dam system because of the fewer number of locks, and the high dams would provide additional navigable channels on the tributary streams, which would not be provided by the low dams. The high dam pools would provide much greater navigable depths throughout by far the greater part of the length of each pool than would the low dams, and the width of the channel

would be much greater in the high dam pools and the flood interruption to river commerce would be much less in the high dam pool.

The table (offered and received in evidence as Defendants' Exhibit 105) is entitled "Time Saved in Lockages with TVA High Dam Plan as Compared to a Low Dam Plan, assuming the same size of Locks in each Plan." The table in the upper half shows the time that will be saved in lockages with the TVA high dam plan as compared with the [fol. 1396] low dam plan in making a trip from Paducah, Kentucky, to Knoxville, Tennessee. In the first line of that table, Paducah to Florence, it is indicated that under the low dam plan the navigator would consume 3.62 hours and under the high dam plan 1.3 hours, and the saving in that section of the river due to the high dam plan would be 2.32 hours. Carrying these computations through, the totals show that the saving in time due to the high dam plan throughout the river would be 11.98 hours.

Examination by the Court:

The term "single lockage" means that the tow is of such size that it would go through the lock without breaking tow.

Direct examination continued:

I assumed that it would take 31 minutes to go through the low dam locks and 39 minutes through the high dam locks, except for Wilson lock where I made some further adjustments. That lockage time would be considerably increased if it took longer to go through those locks than that. I think I have assumed a very conservative figure for lockage time, because there are often delays at each lockage that do not have anything to do with operating the lock itself. But the more locks you have, the more delays you will have, so I think the lockage time under the low dam plan will probably be greater than this.

The chart (offered and received in evidence as Defendants' Exhibit 106) is entitled "Comparison of Velocities of High Dam and Low Dam Pools." It shows the ratio of the current velocities in the high dam as compared with the low dam pools. For example, on the 40 per cent of time line, as shown on the lower part of the chart, running up [fol. 1397] vertically on that 40 per cent of time line, the velocity which would be equalled or exceeded throughout

70 per cent of the length of the river with the low dam system, would be 3.25 times greater than the velocities equalled or exceeded throughout that same length of the river with the high dam system. To find that figure you follow the 40 per cent line vertically up to the curve marked "70," and then go horizontally to the left hand scale and it reads 3.25. The vertical scale shows the ratio of velocities in the low dam system to the high dam system. That is, if you go up to the line marked "3," that would be the line on which the low dam velocities are three times the high dam velocities. Likewise, if you go up to the horizontal line marked "4," that would be the horizontal line on which the low dam velocities are four times as great as those of the high dams. The horizontal scale shows the percent of time during which these velocities would be equalled or exceeded.

Cross-examination:

The absolute velocities are not shown on the chart.

Direct examination continued:

The percent of time is very important, because at extreme low water when there is almost no flow in the river, the low dam and high dam velocities would tend to be more or less the same, but as you get a little flow the low dam velocities become considerably greater than the high dam velocities, and it is best to relate the variation in stream flow to the percent of time over which these stream flows exist.

I think the lower velocities provided by the high dam plan would encourage a greater amount of traffic on the river and make it more profitable than would be possible [fol. 1398] under the low dam system. If a tow is progressing upstream, it has to proceed against the velocities which would cause a reduction in the towboat speed and cause an increase in the power output. Going downstream, there is not a complete compensation. You do not add the velocity of the current to the tow, because the navigator must proceed with considerable caution through the low dam system and he does not regain what he lost. Furthermore, there is apt to be considerably greater upstream traffic than downstream, which would mean that high velocities would have a serious effect. In the low dam system when the wickets are down, velocities are quite high. The veloci-

ties throughout the greater part of the low dam pool approach the velocities that would exist in the open river, and the velocity at the navigable pass is quite high and sometimes quite serious. With a bank-full stage it might be as high as five miles an hour and the tow would have difficulty in going through against such a velocity.

High floods at flood seasons increase the velocities in the stretch of the river below Wilson Dam. The high dam plan would cut down the velocities during the flood season, because the high dams provide a greater cross section of flow, and consequently, the large discharge through that section would have lesser velocity.

Floods or high flow conditions upon the main stream of the Tennessee River under the low dam plan as outlined in House Document 328 would have a detrimental effect upon navigation and navigation terminals. The high dam plan would provide a more stable pool level and would make the cost of terminal construction and operation cheaper than with the low dam system.

The greater channel depth under the TVA high dam plan allows a towboat to make a greater speed with the [fol. 1399] same output of power or to maintain the same speed as in shallower depths with a less output of power. The low dam plan of House Document 328 would have provided just barely a 9-foot depth. The depth provided under the TVA plan is 9 feet with an overdepth of 2 feet, which are the controlling depths in the upper ends of the pools. Throughout by far the greater length of the high dam pools, there will be substantially greater depth than in the low dam system.

The graph (offered and received in evidence as Defendants' Exhibit 107) is entitled "Depth Relation, Tow of Six Barges, 7 Ft. Draft." It shows data which was obtained from House Document 857 of the 63d Congress, Second Session, and House Document 108, 67th Congress, First Session. It shows the speed that could be maintained with various given horse power in various depths of water. For example, if you take a towboat of 400 H. P., on the vertical line marked 400 at the bottom of the graph, and follow that line upward to intersect the depth of 24 feet, which is a heavy horizontal line a little below the 25-foot mark, it is there shown that the speed as indicated by interpolation between the mark of 5 miles per hour and six miles per

hour would be about 5.3 miles per hour. Dropping back on the same vertical line to the 15-foot depth line, it is shown that the speed would be 4.7 miles per hour; and at the 9-foot depth line, the speed would be about 4.3 miles per hour. The exhibit shows that there is a considerable variation in the speeds that are obtainable with a given amount of power, as the depth increases from 9 feet up to 25 feet. The advantage of the greater depth would be increased if you have the 9-foot draft. This chart is based on the 7-foot draft because that is what the original data was based upon. This advantage would be of still greater significance if the speeds and the power of the vessel were increased.

[fol. 1400] The table (offered and received in evidence as Defendants' Exhibit 108) shows the percentage of the linear distance of each pool under the TVA high dam plan, which will be less than 20 feet in depth. At Gilbertsville pool, only 2 per cent of the length will be less than 20 feet in depth, and in the Pickwick Landing pool, only 4 per cent. In the lock and dam No. 1, which is the Florence canal, which is an existing improvement, 100 per cent of that will be less than 20 feet in depth. In the existing Wilson Dam pool, about 7 per cent of its length is less than 20 feet, and in Wheeler Dam pool, about 6 per cent of its length will be less than 20 feet; in Guntersville pool, 18 per cent; in Hales Bar pool, 23 per cent; in Chickamauga pool, 6 per cent; in Watts Bar pool, 3 per cent; and in Coulter Shoals pool, 5 per cent. The table does not show the minimum width of the pools. The absolute minimum width reached below each lock would be 300 feet, because there is a dredged cut below each lock, and that is only a matter of a few hundred feet up to a thousand feet as a rule. The 20-foot pool does not reach right below the lock, as that is where the 2 per cent in the Gilbertsville pool would exist, right below the Pickwick lock.

"Mr. Fitts: I offer that in evidence as Defendants' Exhibit 108.

Mr. R. T. Jackson: I object on the ground it does not show the width. The 20 feet depth does not mean anything.

Judge Allen: Objection overruled. It will be received in evidence.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: You may have your exception."

I have prepared a table which shows the percentage of channel distance under the low dam plan as outlined in House Document 328 which is less than 20 feet in depth. In the reach of the river which would be improved by the [fol. 1401] Gilbertsville Dam, if that reach were improved by low dams, 39 per cent of that distance would be of less than 20 feet in depth. In the Pickwick reach under the low dams, 54 per cent of the distance would be less than 20 feet in depth. In the existing Florence Canal, it would be 100 per cent as before, and in the Wilson pool, it would be 7 per cent as before. In the Wheeler reach, if that were improved by low dams, 67 per cent of the channel distance would be less than 20 feet; in the Guntersville reach, 79 per cent; in the Hales Bar reach, 25 per cent; in the Chickamauga reach, 62 per cent; in the Watts Bar reach, 49 per cent; and in Coulter Shoals, 61 per cent.

The chart (offered and received in evidence as Defendants' Exhibit 109) is entitled "Improvement on Tributaries Provided by High Dam Plan". It shows the extent of the slack water development that would be provided on the tributary streams by the back water from the high dams on the main stream, in the case of the Clinch River by Norris Dam. For example, the Gilbertsville Dam on the lower Tennessee River would extend the 9-foot channel up Duck River about 12 miles. The distance which the 9-foot channel will extend on the tributaries is shown on the map by the heavy line and the shading off into lighter colors shows where the 9-foot channel ceases. Pickwick Dam would extend the 9-foot channel up Bear Creek about 23 miles. Wheeler Dam would extend the 9-foot channel up the Elk River to about the state line. Chickamauga Dam will extend the 9-foot channel up the Hiwassee River about 20 miles. The Watts Bar Dam will extend the 9-foot channel on the lower Clinch River and up the Emory River to the vicinity of Harriman. The Norris Dam would extend the 9-foot channel on the Clinch River, with its reservoir in its draw-down condition, a distance of about 56 miles. The [fol. 1402] Coulter Shoals Dam would extend the 9-foot channel up the Little River some six or eight miles to Rockford, Tennessee. The low dam plan outlined in House Document 328 would produce practically none of that improvement on the tributaries. In order to get that improvement on the tributaries with low dams on the main stream, you would have to build low dams on the tributaries also.

For example, the comparable improvement on Duck River would take two low dams, three on Bear Creek, about three on Elk River, at least one on Hiwassee and one on the Emory. On the Clinch River it would depend on the layout there and how high they were. Several would be needed on the Clinch River and one on the Little River. In my opinion that improvement is of practical significance. The Duck River is one of the principal tributaries and it comes from the phosphate field area. If it was advisable eventually to develop that stream for navigation there would be a part of the project already accomplished. If the Tennessee-Tombigbee Canal were developed, the slack water provided by Pickwick on Bear Creek would be of considerable value.

Examination by the Court:

Mt. Pleasant is on the Duck River and is a considerable distance from its mouth on the Tennessee. I am not sure how far it is. Mt. Pleasant is in the center of the phosphate fields. Pickwick will only back the water up that river about 12 miles and that 12 miles will not reach the phosphate fields.

[fol. 1403] Direct examination continued:

It is the Gilbertsville Dam, not the Pickwick. You will get 12 miles of that distance whatever project is required to provide a 9-foot channel. The 9-foot channel provided by Wheeler Dam backs the Elk River up to an existing phosphate field and the slack water from Chickamauga extends up the Hiwassee River to Charleston and Calhoun, Tennessee. The slack water on the lower Clinch and Emory Rivers, as provided by Watts Bar Dam, reaches to Harriman, which is an important town, and the slack water provided on the Clinch River by Norris Dam will eventually be of some navigation value.

There is a relation between adequate terminal facilities and the development of the movement of commerce on the river. It is necessary to have adequate terminal facilities in order that commerce may be taken care of. The ratio of terminal cost to line-haul cost in water transportation is substantial. The high dam pools would provide quite a stable pool level which would make it much cheaper to construct and operate the navigation terminals and would aid in the development of an adequate system of public terminals throughout the course of the river.

"Q. In actual experience has the fluctuations of water levels upon the internal waterway systems had any effect upon the feasibility of the construction and operation of river terminals?

Mr. R. T. Jackson: I object to that as too indefinite.

Mr. Fitts: The Mississippi River system, I will reframe my question.

Mr. R. T. Jackson: I object to that, because the evidence shows that system takes in 40 per cent of the United States and 9,000 miles of waterway. I think that is too much for us to go into.

Mr. Fitts: May it please the Court, it is utterly impossible to consider navigation upon the Tennessee River as an isolated creek. The Tennessee River is connected with other interconnected waterways.

[fol. 1404] Judge Allen: Objection overruled. The river does not operate in vacuo.

Mr. R. T. Jackson: If your Honor please, terminals on the Tennessee River will not be operated on the Mississippi and the Missouri. May we have our exception?

Judge Allen: You may have your exception. The question will be answered.

* * * * * * *

Mr. R. T. Jackson: I would like also to object on the ground of the competency of the witness.

Judge Allen: Overruled.

Mr. R. T. Jackson: Exception noted.

A. Yes, it has had effect on the construction and operation of terminals, upon large operations of the inland waterways. The fluctuation stage is very great, and it has been necessary to build terminals to great height and to handle freight through very great vertical distances, which increases the expense."

I have made a study of the extent of fluctuations in pool levels which would exist in the various pools under the low dam plan as provided in House Document 328 and under the high dam plan as carried out by the TVA. The main terminals to be projected or considered or started at the present time are at Wilson Dam, at Decatur, Alabama, and at Guntersville Dam.

The chart (offered and received in evidence as Defendants' Exhibit 110) is entitled "Comparison of Pool Fluctuations with High Dams and Low Dams."

"Mr. Fitts: We offer in evidence the exhibit which is the chart on the standard, which has been identified by the witness as Defendants' Exhibit 110.

Mr. R. T. Jackson: We object to it as misleading upon the ground it only relates to three selected points on the river and leads to the impression it relates to the fluctuation of the whole river.

Judge Allen: It is a comparison of pool fluctuations with high dams and low dams at three certain points.

[fol. 1405] Mr. Fitts: It shows three points. We can put in the language on there the Court thinks desirable. I thought showing on its face it was at three points, that it would not purport to show anything but the three points.

Judge Allen: Objection overruled. The exhibit will be received.

Mr. R. T. Jackson: May we have our exception to the ruling on exhibit 110?

Judge Allen: You may."

Defendants' Exhibit 110 shows a comparison of pool fluctuations between the high dam and low dam conditions. The higher fluctuations shown in the dark color are the variations between the minimum water surface elevation with the low dam development and the flood levels caused by the maximum flood of record; and the lower elevations shown in white are the variations between the draw-down levels and those which would be reached by the maximum flood of record passing through the high dam system. The figures are in feet and, for example, take Decatur, the fluctuation of pool level with the high dam system would be about 14 feet and with the low dam system about 22 feet. In my opinion I think the lower fluctuations provided by the high dam plan would facilitate the construction and operation of navigation terminals and would encourage the development of an adequate system of terminals.

I have made an estimate of the amount required to maintain and operate the locks and dams and carry on the necessary dredging in the low dam plan as outlined in House Document 328. Under the low dam plan I estimate that the cost of operation and maintenance would be $1,570,000 an-

nually and $330,000 annually for dredging, giving a total for the low dam plan of $1,900,000. I have made an estimate of the annual cost of operation and maintenance of the TVA high dam plan. The estimate for the annual operation and maintenance of the locks in the high dam system would [fol. 1406] be $370,000 and dredging per annum $220,000, giving a total for operation and dredging under the high dam plan of $590,000. The low dam system annual charges for operation, maintenance and dredging would exceed the high dam plan by $1,310,000. As to how I explain the difference between my figures and those given by Major Putnam, I added the figures I could find from Major Putnam's testimony and the sub-total in his testimony was $1,092,730 and that compares with my figure of $1,570,000. His dredging figure for the low dam scheme was $489,000 and mine was $330,000. I believe Major Putnam gave a total for operation, maintenance and dredging under the low dam plan of $1,581,730 and my comparable figure is $1,900,000. In the high dam scheme Major Putnam's total figure for operation, maintenance and dredging was $994,-730 and my comparable figure was $590,000. I think the cost of the operation of the low dams should be increased over what Major Putnam had. I estimate for a low lift lock and dam about $40,000 per dam.

I should think the effect of wind action would be more serious in the low dam channels than in the high dam channels. With a long tow it is quite often the case that the wind forces such a tow out of a narrow channel and it is hard to manage. I think the waves would be higher on high dam pools. On most of the developments the wind action in forcing a tow over to the side of the channel and causing it to ground is one of the most common obstacles or hazards to navigation. In my opinion the existence of a wide channel would be of advantage to the navigator in preventing groundings on reefs and bars because of wind conditions. The navigator likes to have plenty of room in which to maneuver and operate, and I think he would be subject to much less hazards if he had this greater channel width provided by the high dam scheme. I would prefer the wide channels of the high dam plan. I think it is conducive to better navigation.

[fol. 1407] At Pickwick Dam, which is the only dam under construction below Wilson Dam, a provision has been made

for the installation of an additional small lock later, if needed.

The letter (offered and received in evidence as Defendants' Exhibit 111) is a carbon copy of the letter dated September 1, 1934, addressed to the District Engineer, United States Engineer's office, Nashville, Tennessee, signed by James S. Bowman, hydraulic engineer, and later referred to the Chief of Engineers. I conferred with Mr. Bowman on the writing of this letter.

The letter (offered and received in evidence as Defendants' Exhibit 112) is the letter TVA received from the Chief of Engineers in regard to the sizes of the locks that should be constructed on the Tennessee River. It was referred to me in the course of my official duties, and at that time and many times thereafter, I had occasion to examine it. It was the guide in my studies in this matter of lock sizes. This letter (Defendants' Exhibit 112) states the following requirements adopted by the War Department for different sections of the river as the minimum provisions necessary to meet the needs of navigation: Upper Tennessee River, locks 60 feet by 360 feet to be constructed at the time the dams are constructed, with space enough for locks 110 feet by 600 feet; Middle Tennessee River, locks 60 feet by 360 feet to be constructed at the time the dams are constructed, with space enough for locks 110 feet by 600 feet; Lower Tennessee River, locks 110 feet by 600 feet to be constructed at the time the dams are constructed, with space left for locks 60 feet by 360 feet. These requirements have been met.

In the high dam plan, as being carried out by the TVA, the channel width immediately below the locks would be around 300 feet and that would obtain for just a short distance, maybe a matter of a half mile or a mile. Then the channel would widen out to the natural width of the river [fol. 1408] for a distance of several miles, and then it would widen again to a width of from three quarters of a mile to a mile for the greater part of the pool length. As you approach the dam, it would widen again to a width of a mile to a mile and a half and in a few places to perhaps two miles. In the low dam pools, starting at the upper end of the pool, there would be a width in the largest channel of from 200 to 300 feet, and continuing downstream it would widen out somewhat, but not nearly as rapidly as in the high dam system. There would be reefs and bars on either

side of the channel for a very substantial distance throughout the low dam pool, but as you get into the middle and lower sections of the low dam pool, the channel would widen to the width that we now have in the river, which would be from 1200 feet up to half a mile.

The maximum width of the Gilbertsville reservoir is around five miles and the average width is around a mile. The Pickwick pool is comparatively narrow and the maximum width is around a mile and a half, and the average width somewhat less than a mile. The Wheeler pool in its maximum width is about 2½ to 3 miles and its average width about a mile. The Guntersville pool is quite wide just upstream from the dam and is about two to two and one-half miles in width, but it is considerably narrower in its average width than the Wheeler pool, probably averaging ¾ of a mile in width. The Chickamauga pool is a comaratively narrow one, the maximum width being probably a mile or a mile and a half and the average width considerably less than a mile.

The map (offered and received in evidence as Defendants' Exhibit 113) is entitled "Wheeler Reservoir and Surrounding Region", was prepared by me or under my supervision and direction and the facts shown on it are accurate and correct. The heavy black line is the natural river chan- [fol. 1409] nel as it existed before Wheeler Dam was constructed and the shaded area represents the Wheeler pool as it now exists.

"Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 113 the exhibit just identified by the witness.

Judge Allen: Any objection?

Mr. R. T. Jackson: Yes, we object to it because it does not show the elevations. It doesn't mean anything without the elevations.

Mr. Fitts: It is not offered for that purpose.

Mr. R. T. Jackson: It may be offered just for confusion, but it doesn't mean anything without the elevations."

The Wheeler pool is shown at around elevation 555 and any variation of a foot or two or three would not be apparent on the map, as you could not tell the difference in the width of the pool with a magnifying glass on that small scale. The scale is not too small to show anything, but the general outline of the pool is shown at approximately elevation 555.

"Judge Allen: The Court rules that the exhibit may be admitted, but we feel that it would be helpful if the legend showed the distinction between the heavy shaded line and the lighter.

Mr. Fitts: I think the Court is clearly correct and we will see that it is done.

Mr. R. T. Jackson: May we have our exception with reference to the failure to record the elevation on the map?

Judge Allen: Yes."

Defendants' Exhibit 113 shows the comparison of the pool widths with the high dam pool and approximately as the channel would be with the low dams. Starting at the left hand side of the chart at Wheeler Dam, the present Wheeler pool is about the same width as the natural river, because that was the head end of Muscle Shoals, and the river widened out there to about the same width as it now is even [fol. 1410] under natural conditions. Proceeding upstream from that point, the natural river narrowed down considerably as compared with the existing Wheeler pool and it widened out again to approximately the width of Wheeler pool at a point opposite the mouth of the Elk River, which was the first tributary coming in from the north. The wide place in the natural river was caused by Elk River Shoals. The natural river then narrowed down to be considerably less than the width of the Wheeler pool throughout the remainder of the distance to a point two or three miles above Decatur, Alabama, and from there on the present Wheeler pool and the natural river channel become approximately the same width all the way to Guntersville Dam at the extreme right hand side.

In my opinion the high dam channel will be of such substantial width that there will not be the hazard in nearly as great a degree of blowing navigators on to the reefs on either side of the navigable channel. The Wheeler Dam pool has been filled something over a year. During that time word of any disaster to navigation has not come to my personal knowledge. Nothing that I would call a disaster to navigation. During the construction of the Wheeler and Guntersville Dams, the TVA had occasion to use Wheeler and Wilson lakes frequently for the movement of construction material. What you might call old-fashioned Ohio River equipment, in other words, old stern-wheel steamboats with very small freeboard and steel barges of comparatively

small freeboard when loaded were used in that service. There had not been any substantial interference in their movement in these pools by wave action. I know of an incident at Wheeler Lake in April, 1937. In the latter part of April, 1937, there was a heavy windstorm in Northern Alabama which created waves on the Wheeler pool, and these waves drove debris into the machinery recesses where the lock operating machinery is housed, and the waves also we: [fol. 1411] the gate operating motors. The debris had to be cleaned out of the recesses and the operating motors taken out and dried. The Army Engineers put temporary wooden bulkheads into the machinery recesses which will protect the machinery from waves, and they have plans under way for permanent bulkheads which will protect the machinery. The maximum fetch on Wheeler reservoirs is about eight to ten miles.

"Q. Mr. Barker, in your opinion will it be necessary to design new types of equipment to operate on the Tennessee after the improvement is completed?

Mr. R. T. Jackson: Just a moment. I object to the competency of the witness to answer this question.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May I have an exception, please?

Judge Allen: You may.

A. I do not think it will be necessary to obtain different types of equipment. As new equipment is designed and purchased by the boat operators, I believe they are tending toward more substantial equipment, and will continue to do so in the future. But, I have no doubt but what the older equipment can successfully operate on these pools."

Wheeler pool is the only pool that has been put into operation since the TVA was established. The TVA in cooperation with the Army Engineers have carried out an extensive program of stump removal in Wheeler pool on either one or both banks as considered necessary by the Army Engineers. This stumping was done under the supervision of the Army Engineers and with their full approval after it was done. The Army Engineers in connection with the lighthouse authorities have established aids to navigation, such as channel buoys and channel lights. Certain indentations in the shores of the reservoirs have been en-

tirely cleared of stumps for use as safety harbors in case those harbors are needed by navigation. I personally participated with the Army Engineers throughout that work. [fol. 1412] The document (offered and received in evidence as Defendants' Exhibit 114) is a notice to navigation interests of the type periodically gotten out by the Army Engineers in the Nashville, Tennessee, office. This particular notice marked No. 32 pertains to the Wheeler pool and shows the location of the channel and the areas where stumping has been accomplished and the location of such navigation aids as have been installed up to this date. I had been consulted right along as to where the stumping should be done and where the navigation aids should be placed, and the course of the official sailing line. A copy of this notice was sent to me.

In my opinion, adequate protection will be provided to the navigator in case of storms on the Wheeler reservoir.

Examination by the Court:

The protection provided in the construction is the removing of the stumps, the placing of buoys, the marking of channels, the placing of safety harbors, and the clearing out of the coves.

Direct examination continued:

The table (offered and received in evidence as Defendants' Exhibit 115) shows the relative efficiency of the high dam system and the low dam system measured by savings in time of navigation.

Examination by the Court:

This exhibit takes into consideration only the time consumed in lockages and in running up and down the stream with the speeds affected by the velocity of the currents. Miscellaneous delays in the fourth line of the table is any unusual delay in approaching the lock or any minor accident, such as temporarily running aground.

[fol. 1413] Direct examination continued:

I do not believe it fully represents the superiority of the high dam system over the low dam system, because I have taken into consideration here only a part of the factors that

go to make up the differences between the low and high dam plan.

I am familiar with the present practices and standards of the Corps of Engineers with respect to navigable channels upon the rivers of the United States as to the matter of depth, width and physical structures, and I have made a complete study of the low dam system set up in House Document 328.

"Q. I will ask you whether or not in your opinion that system as set up in House Document 328 would meet the present standards of the Corps of Engineers?

A. No, I do not believe it would.

Mr. R. T. Jackson: Just a moment.

Mr. Fitts: Did you want to object to the question that was asked? You had plenty of time.

Judge Allen: The answer was 'No.' He did not believe it would.

Mr. R. T. Jackson: I understand. I move to strike out the answer because I wanted to object to the competency of the witness to answer the question. And I would like to ask a few qualifying questions, if there is any doubt in the Court's mind.

Mr. Fitts: If there is any doubt about it I would like to have the qualifications read.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: May I ask the qualifying questions?

Judge Allen: Yes."

[fol. 1414] Cross-examination:

I am not now a member of the Corps of Engineers. I was never a member of the Corps of Engineers of the United States Army. I was employed by them for about 10 or 11 years. I was a civilian employee working under the jurisdiction and direction of responsible officers of the Corps of Engineers of the United States Army with considerable latitude as to my judgment. Every decision and every recommendation that was made was made by and on the responsibility of the officer of the Corps of Engineers of the United States Army under whose direction I was working. I have not even worked as a civilian employee for the Corps of Engineers since 1933.

"Mr. R. T. Jackson: I don't think there is the slightest qualification to testify as to what the practice of the Corps of Engineers is, and I renew my objection and move to strike out his answer.

Judge Allen: The Court thinks that a man who has worked for eleven years under the Army Engineers, and who states he is familiar with their requirements, may answer the question. The objection is overruled.

Mr. R. T. Jackson: May we have our exception, if the Court please."

Direct examination continued:

The channel as provided by the low dam scheme in House Document 328 would have been just barely nine feet in depth. In fact, if you carefully plot up some of those dams, you will find it does not provide even a scant nine feet in some cases. The width of channel would not be fully adequate in the upper ends of the pools unless they did considerably more dredging than was therein provided. The low movable dams are considered out of date as navigation structures. The Army Engineers are not building any [fol. 1415] more dams of that type, and where they are called upon to build new dams in systems which now have the low movable dams, they are installing a much higher dam of entirely different type. I have made an independent study or estimate of what it would cost to obtain a channel upon the Tennessee River that would meet the present standards of using low dams instead of high dams.

"Q. What is that estimate?

Mr. R. T. Jackson: We object to the competency of the witness.

Judge Allen: The objection is overruled and you may have your exception.

Mr. R. T. Jackson: Exception noted.

A. I have laid out a system of dams with somewhat higher lifts than those shown in the House Document and have arrived at a total initial or construction cost of this system for the development of the river from Paducah to Knoxville of $144,072,700."

The locks I used were the large size locks, 110 by 600, below Florence, Alabama; and the small locks, 60 by 360, above Florence, Alabama.

"Q. Mr. Barker, in your judgment, is that the lowest figure at which you could obtain a navigable channel throughout the length of the Tennessee River, meeting present standards and present requirements?

Mr. R. T. Jackson: Just a moment; I object to the question. There is no definition of what the witness thinks, or if he knows, what the present standards are.

Mr. Fitts: He has already defined them.

Mr. R. T. Jackson: I don't think so. He said he knew what they were, and something did not meet them, and that is all.

Judge Allen: The Court would like to have the present standards amplified.

By Mr. Fitts:

Q. Mr. Barker, will you state what you understand to be the present standards with respect to navigable channels on rivers such as the Tennessee.

Mr. R. T. Jackson: Subject to the objection that the witness is wholly without qualification to state what the stand-
[fol. 1416] ards are.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception, please.

A. Well, I thought that the first requirement would be to get away from the movable wicket dams and to install a dam that would be more rugged and less hazardous in operation. I therefore used fixed dams instead of the movable dams."

Examination by the Court:

As to what the standard is, as I understand it, it is a fact that the Army Engineers are not using the movable wicket dams. They are using what they call a roller gate dam, which is a fixed dam but with a spillway gate in which it will allow the discharge of the river but not allow boats through the gates. They are replacing the wicket dams with these fixed dams with roller gates or Taintor gates on the spillway.

Direct examination continued:

In this layout that I have described, I have provided overdepths of 2 feet, that is the nine foot depth plus a depth

of an additional two feet. There need not be as many lock lifts throughout the river as shown in House Document 328. To avoid having such a large number of locks, it is entirely feasible to have dams of somewhat greater lifts and, consequently, a fewer number. The greater depth of the pool provided, and the greater cross-section of flow provided through the pools, and the fact that the dams are fixed and not movable, would also reduce the velocities in these pools as I have laid out the projects.

"Mr. Fitts: The question was whether or not, in his judgment, the estimate which he had given was the lowest cost at which a navigable channel over the entire length of the Tennessee could be provided by the use of low dams. [fol. 1417] Mr. R. T. Jackson: I object to the competency of the witness.

Judge Allen: The objection is overruled and you may have your exception.

Judge Gore: You mean to have a channel nine feet or more?

Mr. Fitts: Nine feet or more over the entire length of the Tennessee by the use of low dams.

The Witness: I think this is the lowest cost that could be obtained on a suitable project."

The navigation channel on the Tennessee River will be connected with the Mississippi and Ohio systems following the completion of all the dams now under construction, constructed or recommended for construction. A nine foot channel has been adopted in the approval of the upper Mississippi and Ohio Rivers. The type of improvement which has been adopted on those streams is a canalization by locks and dams.

The map (offered and received in evidence as Defendants' Exhibit 116) is entitled "Tennessee River and Interconnecting Waterways."

Cross-examination:

The word "projected" means a project for waterway improvement authorized by Congress.

Direct examination continued:

All of the projects with broken lines, which are noted as projected, are under construction. The upper Mississippi

to Minneapolis and St. Paul is under construction. The Missouri up to Sioux City is under construction and the Tennessee is under construction.

"(By Mr. Fitts:) Mr. Barker, can you tell us how many miles of nine foot waterway there are in that system?

[fol. 1418] Mr. R. T. Jackson: I object to that as irrelevant and immaterial.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Exception, please.

A. If I may do so, I would like to supply that answer from notes which I don't have here."

The barges which have been used on the Tennessee River up to the present time are mostly stern-wheel towboats, either steam or Diesel powered, and barges of either wood or steel construction, drawing four or five feet of draft and carrying from 300 to 500 tons of cargo. After the nine foot waterway is completed, those boats could continue to be used, but in addition, the largest of the towboats and barges used on the Mississippi and Ohio Rivers could also operate successfully on the Tennessee River, that is, propeller type towboats, either single or twin screw, of 1,000 to 2,000 horsepower, and barges drawing nine feet and carrying from 1,000 to 2,000 tons or perhaps even more. In my opinion the creation of this waterway will cause a very substantial waterway traffic to develop on the Tennessee River and between the Tennessee Valley and other regions of the United States connected by water, rail and highway.

"By Mr. Fitts:

Q. Mr. Barker, if you were instructed to provide a minimum nine foot navigable channel upon the main stream of the Tennessee River, and to aid in the control of destructive flood waters in the Tennessee and Mississippi River Valleys by means of dams constructed upon the Tennessee River and its tributaries, what dams would you build.

Mr. R. T. Jackson: Just a moment. I object to the qualifications of the witness. There has been no competency shown to pass upon the question of flood control.

Judge Allen: The objection is overruled and you may have your exception.

Mr. R. T. Jackson: Exception noted, please.

A. I would build the dams upon the main stream as constructed or proposed by the Authority, namely, the [fol. 1419] Gilbertsville and Pickwick Dams below Florence, Alabama, and from the upper end of the existing Wilson Pool, the Wheeler and Guntersville Dams, and then above Chattanooga, the Chickamauga, Watts Bar, and Coulter Shoals Dams, and also the Norris and Hiwassee Dams on the tributaries.

By Mr. Fitts:

Q. Would any other types of dams accomplish all of those purposes?

Mr. R. T. Jackson: The same objection, please.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception please.

A. No, they would not.

Mr. Fitts: This, then, was not accepted. All the others were accepted subject to correction but this was withdrawn and marked Defendants' Exhibit 96 for identification. This was the graph of tons of freight, which was apparently out of line. It has been corrected, shoved over, to show the picture as we understand it.

Judge Gore: You move it to the left six months?

Mr. Fitts: That is correct. It ends now with 1935.

Mr. R. T. Jackson: So the Court will see it, I have another objection to this, and that is the use of a very wide paint brush to mark the graph, the brush being so wide that it blankets a year at a time as the artist swings it up and down. For instance, here a difference of 600,000 or 800,000 tons, depending on whether you take one side of the artist's line, or another. Over here at the time of the second last depression there was a difference of 400,000 tons in 1929. I don't know whether I make clear to the Court what I have in mind, but right here one can see that with the use of this wide line there would be a difference of many thousand tons.

Judge Allen: The objection is overruled. In view of the testimony of the witness we feel that the chart is admis-

sible, and you may have your exception. Exhibit 96 is received. I might say that the same objection could be made to any exhibit, I think, as it is a matter of degree.

Mr. R. T. Jackson: Well, as I understand it, there is no necessity for having it anywhere nearly as wide as that.

Judge Martin: Brother Jackson, after all is it material to the final issues in this case to show exactly the amount on a given date there? It is merely a graph to show in general the trend.

Mr. R. T. Jackson: I do not think the whole graph is material, but when my adversary offers it, and the Court accepts it, I think I have to act on the ground my judgment is not good on that point.

[fol. 1420] Judge Allen: We accept it as a graph, showing the trend. I think that is all that was testified to about it."

Cross-examination:

I am not at the present time a subordinate of Mr. Bowman, who testified in this case. I was a subordinate of his under an organization that we once had. I was in the Division of which Mr. Bowman was head for the first three years that I was with the TVA. That was the Project Planning Division. I am not now in the Project Planning Division. I would not say I act independently of it, because we correlate our work. We are now in the General Planning Division, which correlates its work very closely with the Project Planning Division. The reorganization was in July, 1937, so I left the Project Planning Division on that date.

Shortly after I graduated from Minnesota, I was a civilian employee from 1924 to 1928 in the office of the District Engineer at Chattanooga. At that time there was a considerable number of additional civilian employees in that office by reason of the preparation of one of the 308 reports on the Mississippi River and its tributaries involving an unusual amount of work. That was in connection with the preparation of House Document 328. It is not right that those were studies of the water resources of all characters that were being made on most of the navigable rivers of the United States by the officers of the Corps of Engineers pursuant to a resolution of Congress. House Document 328 was created under various other authoriza-

tions. It finally was accepted as the 308 report but a great deal more work was put on it than on most of the 308 reports. It is a fact that a part of my time, while I was employed at Chattanooga, was spent in working on hydraulic studies and was devoted to a study of river flow, water [fol. 1421] stages and data of that character which the District Engineer desired worked up in connection with his preparation of his report; but I would not say a large part of my time, because I studied navigation, flood control, power and all of the related problems. As to whether I so testified in the Ashwander case, I do not remember what I testified. I am stating it correctly now I think.

From 1928 to 1932 I was a civilian employee of the United States District Engineer's office at Kansas City, Missouri. The work there was under the responsible charge of an officer of the Corps of Engineers of the United States Army who was United States District Engineer. During that period it is a fact that I was very largely engaged in working up data desired by the District Engineer for use in the preparation of the so-called 308 report. From September 1932 to March 1933, I was in charge of the Engineer's office at Sioux City, Iowa. It is a fact that that office was under the jurisdiction of the U. S. District Engineer at Kansas City, Missouri, but I was in personal charge of the Sioux City office and the only one in charge. What I was doing there was to carry out certain local work under the jurisdiction and supervision of the United States District Engineer at Kansas City, but I had personal and direct charge of the work between Sioux City and Omaha, involving about a million dollars worth of navigation improvement. That was under the U. S. District Engineer. He was not there but about once or twice all the time I was there. After that I was employed as civilian engineer in the office of the Corps of Engineers at Wilson Dam, which was then being operated for the generation of power and navigation. From there I went directly to the TVA. I never operated or managed the operation of a commercial barge line. As to whether I ever built, designed or operated [fol. 1422] a commercial water terminal, I have made preliminary designs for them for the TVA. I have never constructed or operated any commercial inland waterway terminal other than for the TVA. The TVA has constructed the inland waterway terminal at Decatur, which

will eventually be used, I believe, for public commercial purposes. The TVA is now using it for its own purposes. It is a building right on the water's edge with all of the structural features necessary for a navigation terminal.

Defendants' Exhibit 94 entitled "Maximum and minimum rates of stream flow, Tennessee River, Knoxville, Chattanooga, Florence and Johnsonville" shows the instantaneous maximum and minimum peak flows. The maximum flow at Florence of 470,000 second feet occurred in 1897. The stage of 32.5 feet was taken from Bulletin 40, "Surface Waters of Tennessee" and the flow that corresponds to that stage was computed by the TVA from its flood rating curves, from flood rating curves that had been prepared by TVA. There are flood rating curves for Florence prepared by the U. S. Geological Survey. As to why we did not use those, we found on the higher discharges there are some variations in the flow. We did not think they were exactly right on the highest discharges. We found that we got a slightly lower figure with the U. S. Geological Survey's curves, but we did not think they were right.

I testified in the Ashwander case and was asked the following question and made the following answer:

"Q. Will you describe the variations in the stream flow and the causes of those variations?

A. The stream flow varies a great deal seasonally from the low water to the high water season. It is due principally to variation in rainfall. The rainfall of the basin as a whole averages about 51 inches, but in east Tennessee and North Carolina, in the mountainous sections, it is extremely heavy. It runs up as high as 80 inches. This vari- [fol. 1423] ation in stream flow in the summer months runs as low as about 8,000 to 10,000 second feet at Florence, Alabama. In the winter months at Florence, Alabama, it commonly runs between 100,000 and 200,000 second feet, and maybe as high as 400,000. The greatest flood record at Florence, Alabama, is 400,000 second feet."

However, I would like to explain those are general figures I testified to there and our subsequent studies show that the maximum peaks I have here on the exhibit are correct.

As to whether the maximum of record is a general figure, that I think was a 24 hour figure and besides we do not think it exactly accurate.

"Q. How long did your instantaneous peak last that you computed?

A. I suppose an hour or so.

Q. Don't you know?

A. Well, let us see if it was, then.

Q. No, we won't 'just let us see', you either know or you do not know. If you know, tell me.

A. No, I don't know exactly.

Q. You do not know?

A. No, sir."

The figure for Chattanooga of 459,000 second feet is for the 1867 flood as computed by the TVA. The records for that flood are not good and it was necessary for us to compute them as best we could. Our flood control unit computed that figure. I think they did it by extensions of existing rating curves. I am not exactly positive as to how they got that figure. As to whether we have shown as the maximum for Chattanooga is a computation that someone has made in a case where there were no gauge heights and no records of what the discharge was, there is a record of the high water marks, with no record of the actual discharge. [fol. 1423-a] I do not know whether it is right or not that the record we used was a record of the kind Mr. Kimball told about where some old gentleman made a mark on a building and then a photographer took a picture four miles away as shown on the exhibit which Mr. Kimball offered in evidence. I would like to point out that the purpose of this exhibit here is to show that there is a very great fluctuation between maximum and minimum discharge. I would [fol. 1424] be perfectly willing to take the discharge as recorded by the Geological Survey if that would be any better. As to whether we could have taken the records of the Geological Survey instead of calculating some higher ones, the records of the Geological Survey would show a very great fluctuation, practically the same thing, and I would be willing to substitute them.

For Knoxville I show a maximum of 290,000 second feet. I testified in the Ashwander case as follows:

"A. Second feet. That means cubic feet of water per second. At Knoxville, Tennessee, the flood has been up around, I believe, 195,000 second feet. So there is a very great variation in the flow in the low water season in the summer and the high water flow in the winter."

I think I was considerably short in that answer, though. I was answering very approximately. I am not sure from my studies that it is exactly right to say that the maximum flow shown at Knoxville by the U. S. Geological Survey is 195,000 second feet. I would have to look it up. It is not exactly right that one of the maximum and minimum flows on Defendants' Exhibit 94 have been computed by me, the maximum much higher and the minimum very substantially lower than that shown by the U. S. Geological Survey and the Corps of Engineers. The maximums are somewhat higher than the record shown by the Geological Survey. I think you will find all the minimum flows in Bulletin 40, "Surface Waters of Tennessee". I testified in the Ashwander case that during the summer months the stream flow runs as low as about eight thousand to ten thousand second feet. That is the average low water flow in a typical dry season. Bulletin 40 on the "Surface Waters of Tennessee" gives this minimum flow at Florence of 4,000 second feet corresponding to Defendants' Exhibit 94, but I do not have that with me. It is not U. S. G. S. Bulletin 40. It was published by the State of Tennessee. It combines the records of U. S. G. S. in Bulletin 40. As to whether I can give a reference to any U. S. G. S. publication which gives any of the maximum figures shown on De-
[fol. 1425] fendants' Exhibit 94, I could refer you to Bulletin 40 for the maximum stages. There is no bulletin of the U. S. G. S. that gives the maximum discharges shown on the exhibit. It gives the stages. I could not exactly get those figures by applying any rating curve of the U. S. Geological Survey to any data in the U. S. Geological Survey Bulletins. You could get them approximately.

Defendants' Exhibit 95, "Previous Projects, Tennessee River Basin", shows a navigation channel on the Duck River three feet deep for six months of the year. As I recall it, that project was to extend up the Duck River to Columbia, Tennessee. It is a fact that all the work that was ever done on that project was completed in 1883 and that it

was abandoned years and years ago. As to whether it is a fact that there has not been any commerce there for many years if ever, I think there has been some commerce on the Duck River. I don't think there was any in 1935.

I don't know the distance offhand of the project on the Elk River that I show for clearing and snagging. I am not sure whether there has ever been any work done on that project since 1899. I don't think any commerce was shown on that project in the Report of the Chief of Engineers for 1935.

I think that some work has been done on the Hiwassee River project since 1915. I don't know the exact date, but as I recall it, the work ran beyond that point. I will try to check it and give you authority for that statement out of the Chief's Report. If the Report of the Chief of Engineers says that the last commerce that was moving on the Hiwassee River was 53 tons in 1934, it is a fact.

I imagine that it is true that there has not been any work done on the so-called project on the Little Tennessee River since 1913. It may be true that there has not been a ton of commerce, even logs, moving on it since 1926.

[fol. 1426] I do not know whether it is true that there has not been any work done on the project on the Holston River since 1908. I would not want to testify that there had been. As to whether it is true that there is no commerce on that so-called project whatever according to the Chief's Report, there is sand and gravel moving out of the lower end of the Holston River. The Chief's Report probably reported that as being on the Tennessee River at Knoxville. I don't claim that there is any commerce shown in the Report of the Chief of Engineers as moving on the Holston River.

It is true that there has not been any work done on the project on the French Broad River since 1923. It is a lot further than 2½ miles up to Leadville. 68 miles is more like it. It is true at the present time that the only commerce that there is there is at this lower end, a little sand and gravel which is carried into Knoxville. In connection with all this, I would like to refer to p. 218 of House Document 328, which is a table showing the head of past navigation on the tributaries of the Tennessee River. It shows that navigation has proceeded very substantial distances up all these streams.

I also show on Defendants' Exhibit 95 the total expenditures on the Tennessee River to June 30, 1934 of $25,297,468.03, exclusive of Wilson Dam. The report of the Chief of Engineers for 1934, Vol. 1, shows the total expenditures on the Tennessee River for all navigation purposes, except for operating and care of canals, locks and dams and except for expenditures on the Wilson Dam, is $18,366,587.74. On page 908 of the same report the net total expenditures for operation and care of canals, locks and dams on the Tennessee River up to June 30, 1934 was $2,798,000. The total figure given by the Chief of Engineers is then $21,165,361.08 as covering all expenditures for navigation on the Tennessee River up to and including June 30, 1934, excepting for Wilson Dam. As to whether I can explain [fol. 1427] the discrepancy between my figures and the figures shown in the report of the Chief, I had a tabulation in some of my notes that showed how I obtained that and it was from the 1934 Chief's report. I don't recognize this tabulation shown here as being the one I used. The figure that I read of $18,366,587.74 is here in this table. I did not recognize it as being the total. Page 908 shows the other figure, $2,798,000 was the total expenditure for operation and care of locks, canals and dams. I can give a breakdown of my figure. I am afraid I do not have the notes in this book. Presently I cannot give exactly any explanation of this discrepancy. I cannot give any explanation at all, no complete explanation, of this discrepancy between my figures for this total expenditure on the Tennessee River and the figures given by the Chief of Engineers.

Referring to Defendants' Exhibit 96, we did not have an official report of the Chief of Engineers for 1937 but we do have a preliminary report. The last reading here for the year 1935 was taken from the 1936 report. The total volume of traffic shown for the year 1900 is taken from the peak of the line on the graph for that year and is about 1,455,000 tons. I read that right off the peak of the white line, the top of the line. The same figure for 1930 is 2,590,000 tons. I testified that the existing traffic prior to May, 1935, was mostly short-haul traffic, because other traffic was prevented by obstructions to navigation. In terms of tons about 70 or 80 per cent of the existing traffic consists of sand and gravel, and in terms of ton-miles, around 50 to 60 per cent. The graph shows the traffic in tons. Eighty per cent of it as shown on Defendants' Exhibit 96 is sand and gravel

tonnage. That sand and gravel tonnage would not be through traffic if we had this glorified waterway I spoke about, but there would be other commodities that would be. [fol. 1428] I never knew sand and gravel being hauled long distances in areas where sand and gravel is generally found, as in the Tennessee Valley.

Defendants' Exhibit 97, entitled "Existing and Probable Channel Depths before Tennessee Valley Authority Act," includes at the bottom the statement "Certain Tributary Channel Depths Proposed by Army Engineers in House Document 328." There is no place in the recommendation of the Chief of Engineers in House Document 328, which is Complainants' Exhibit 105, where the Chief proposes an adoption of the projects which are shown on Defendants' Exhibit 97, such as the Holston River 9 feet, the French Broad 6 feet, Nolichucky 6 feet, Little River 6 feet, Emory River 9 feet, Clinch River 9 feet, Little Tennessee River 6 feet, Hiwassee River 6 feet, Duck River 6 feet. The word "proposed" which I used on the chart I do not find in the report of the Chief of Engineers. In the report of the Board of Engineers for Rivers and Harbors appearing on pages 7 to 25 of House Document 328, it is stated on page 18, paragraph 29:

"Conclusions and recommendations of the District Engineer: The proposed comprehensive plan for the development of the Tennessee River and its tributaries provides for 9-foot navigation on the main stream on the Holston to Kingsport, and on the Clinch to Speers Ferry, and 6-foot navigation on the lower part of other tributaries."

That is one of my authorities. I do not know that that is a mere recital by the Board of Engineers of a statement made by the District Engineer. The recommendation of the Board of Engineers appears on page 24, paragraph 53 of House Document 328 and is:

"The Board is of the opinion that no further improvement of the Tennessee River above Knoxville or of the tributaries of the Tennessee River is worthy of being undertaken by the United States at the present time, either directly or by participation in the cost thereof, other than such maintenance of the existing navigation projects as may be justified from time to time."

[fol. 1429] That is not the reason why I put these projects on Defendants' Exhibit 97, but I am still sticking with what the District Engineer said. On my examination of the report I did not conclude that the statement of the District Engineer was the proposal of the Army Engineers. I did not conclude that his opinion overruled the Board of Engineers and Chief of Engineers. I do not believe it overruled them at all. The District Engineer was the man making the report and he made all the report which he certified to his superiors. I am familiar with the fact that when Congress adopts any project, it adopts the project recommended by the Chief of Engineers and in the final analysis the report of the Chief of Engineers is the controlling thing. It is not a fact that the only suggestion in House Document 328 with reference to these projects which I say were proposed by the Army Engineers in Defendants' Exhibit 97, is the suggestion of the District Engineer that when, as and if there should ever be constructed by combined public and private expense the $1,200,000,000 plan for the development of navigation, flood control and water power on the Tennessee River and its tributaries, such developments on the tributaries of the river might be made and even the District Engineer did not recommend such a plan to be developed at public expense. I am depending upon the recommendations and conclusions of the District Engineer as I read them. The District Engineer says in his conclusions and recommendations on page 100, paragraph 80 of House Document 328:

"It is recommended that the general plan proposed for the combined development of the Tennessee River and its tributaries for navigation, power, and flood control be adopted as a general guide, subject to such modifications as may be found necessary and approved by the Chief of Engineers and Secretary of War, for navigation and flood control on the Tennessee River and its tributaries, and subject further to such modifications as may be found necessary in carrying out the provisions of the Federal water power act. It is recommended that a project for the progressive improvement of the Tennessee River from its mouth to Knoxville, by a system of movable or low fixed dams and by locks of Ohio River standards be adopted, to be completed [fol. 1430] within a period of 10 years at an estimated cost of $75,000,000 at the rate of $3,000,000 for the first year

and $8,000,000 for each year thereafter until completion, with $40,000 for annual operation, care, and maintenance of each dam and pool; with the proviso that under the provisions of the Federal water power act there may be substituted for any two or more of the low dams herein provided for, a high dam if the resulting cost to the Federal Government will be less than by the estimate herein for the low dams thus rendered unnecessary, and provided further that the capacity of the waterway for the economical movement of modern barge traffic will not be in any way lessened."

He refers here to $75,000,000 for low dams on the main river.

In connection with Defendants' Exhibit 98, entitled "TVA Projects," I testified that each of the TVA main river dams would provide a substantial improvement in navigable conditions on the Tennessee River over those prevailing before the time of the TVA Act. Assuming that dams did not create hazards to navigation, any system of dams which provided a 9 ft. channel continuously from Paducah to Knoxville, instead of the lesser depth which prevailed in the state of the limited improvement of the Tennessee River previously existing, would be a substantial improvement to navigation. I would not say any series of dams would provide an excellent navigable waterway.

The elevation of the upper sill at Wilson Lock is 493.06. If Wilson pool is held to 503, there would be 10 feet of depth over the sill, if what you have known as low pool elevation would be maintained. I think what we consider as low pool elevation at Wilson Dam is 503 which would be about 10 feet. The elevation at the intermediate sill at Wilson Lock would just depend on how the chambers are operated. The elevation of the middle sill is 450.14 feet and those chambers can be operated to get slightly more than 9 feet over that middle sill. Just a little more. I am sure we can get more than 9 feet over that sill.

[fol. 1431] It is true that the stretch between Chattanooga and Knoxville is the most unfavorable from the standpoint of navigation under present conditions, if you are referring only to channel depths, because the controlling depth at low water is only about one foot. That practically precludes any commercial navigation at extreme low water. Knoxville and Chattanooga are the two largest cities on

the Tennessee River. It is not at all unusual in developing a river, where the primary purpose is navigation, first to provide channels between the two largest cities and two largest potential centers of commerce. The two largest cities might not need anything. If you look at it the other way, the traffic has to be between Chattanooga and the Ohio River.

"Q. Of course, if you assume you will not have any traffic between your largest cities, and largest potential centers of commerce, I should think that would be all right. But laying aside any unique, and, so far as I know, any unheard of situation of that character, is it not true in developing a waterway for navigation, is it not customary first to connect that stretch of water which connects the two largest centers of commerce and the two largest centers of potential traffic?

A. You are assuming the two largest centers of potential traffic will be Knoxville and Chattanooga. I do not believe that is true.

Q. I am not talking anything about Chattanooga or Knoxville at all, so if you will answer that question directly, please.

A. I would say no, it is not customary, because every project is an entity in itself, and it might be quite desirable on any stream to develop the lower part of it first so that you will be able to go somewhere on that stream."

I do not take the position that and it is not my advice that the very last thing you do will be to improve the part of the waterway which connects the principal sources of potential water commerce. It might be true that the principal water commerce on the Ohio has been between Cincinnati and the Youngstown and Pittsburgh area. I would not be sure. I am quite familiar with the inland waterway [fol. 1432] commerce in the United States, but I have not checked up on that particular table for sometime, but I think there is substantial commerce. I do not know that it is a fact either that the Ohio River was first improved between Pittsburgh and Cincinnati or, if so, that it was because those were the two largest sources of potential water traffic. I would not be sure that the dams were first built on the Ohio from Pittsburgh down to Cincinnati. That

was started sometime ago and I have not checked up on it.

As to my opinion that a river should be developed from the mouth up, the TVA has not developed its 9 ft. channel from Paducah up the next 200 miles. Anyway it has developed the first very difficult section from the mouth. It has developed a section between Pickwick and Wilson and a section above Wilson Lake up to Guntersville, Alabama. I testified in the Ashwander case and the following questions were asked me and I made the following answers:

"Q. Well, the figures that were read here immediately before recess indicate a very much larger tonnage, potential tonnage for the use of the river north of Chattanooga, as I recall the figures. Is that in accordance with your understanding or report in connection with the matter?

A. In the ultimate development probably that would be true.

Q. And you are doing nothing with respect to the actual or practical navigation on that stretch of the river between Chattanooga and Knoxville under the existing program?

A. Well, I have reported on that matter and written memorandums concerning it, not feasible.

Q. Not feasible to improve navigation north of Chattanooga on the river?

A. Well, not as an immediate proposition.

Q. What is that?

A. Not as an immediate project.

Q. Not feasible. Do you mean the dams cannot be constructed that will improve it?

A. They could be."

[fol. 1433] I want to point out that our program has advanced considerably beyond that point, and that the Chickamauga Dam is now under construction by the TVA, which is the first length in the improvement of the channel from Chattanooga toward Knoxville. I do not want to testify that Chickamauga Dam would make it possible to develop this large potential commerce between Chattanooga and Knoxville, but it is the first essential step in the development of that potential commerce. As to whether they ignored my recommendation about it not being feasible, I said not feasible as an immediate proposition. Two years have elapsed since that testimony was taken and probably more years since that report was written. Any change that

has occurred in the intervening two years would not to my knowledge have been in the desire for the development of power. As to whether they always wanted that, I cannot give any answer to that. I am working on the navigation features, and the Chickamauga Dam is certainly an improvement of the navigation channel.

As to whether I testified yesterday that I had studied economical lock sizes and that I had concluded that Florence was such an important commercial center that it would require locks 110x600 feet in conformity with the navigation developments of the Corps of Engineers on the Ohio and Mississippi Rivers, I don't think I made the statement on the ground that Florence, Alabama, was at the present time, such a large and important industrial center. I did state that the Muscle Shoals area was potentially an important commercial and industrial center and that I thought that was one reason why the large locks should be provided between that point and the mouth of the river. I testified that: "I made considerable study of economical lock size on the Tennessee River and I concluded that the area around Florence, Alabama, was an important industrial area and had considerable potentialities, and that it would be reasonable to have the large locks to carry navigation up that [fol. 1434] far." I did not conclude in my study that Chattanooga and Knoxville were relatively so insignificant as commercial and manufacturing centers in comparison with Florence, that locks comparable in size to those for the river below Florence would not be justified. I concluded that because we had the small locks in the middle section of the river between Florence and Chattanooga, as an initial proposition it would not be worth while to put large locks at Chattanooga and Knoxville. However, we have provided space for large locks at Chickamauga, and will provide space for the large lock at Watts Bar and Coulter Shoals so that these large locks can be built parallel to the small locks if the time ever arises when it would be economical to do so.

There are no public terminal facilities at Florence, Alabama. There are some private terminal facilities in the Florence Canal right behind Lock and Dam No. 1. In order to get to those facilities, you have to go through Lock and Dam No. 1. The lock at Dam No. 1 is 60 by 300 feet. It was an existing lock built by the Corps of Engineers before

the TVA started on this new program of lock sizes. There has been no change in the size of that lock as yet. No new large lock is under construction. I testified that there was provision made for constructing locks 110 ft. by 600 ft. in the dams above Wilson, I did not mean to include Norris or Hiwassee Dams in that.

We received a letter from General Markham of the Corps of Engineers in regard to the lock sizes to show that the navigation facilities were approved by the Chief of Engineers. It is a fact that whenever a private power company builds a power dam and reservoir on a navigable stream under a license from the Federal Water Power Commis- [fol. 1435] sion, all the navigation facilities are approved by the Chief of Engineers. We did not do any less here than a private power company would do, about the same thing I should think, in the matter of consulting with the Chief of Engineers and getting his approval.

Defendants' Exhibit 99 shows a steamer in one of the large locks, 110 by 600 ft. Defendants' Exhibit 100 shows some barges in the small lock at Wheeler Dam. They are [fol. 1436] cement barges hauling material for the TVA, and that particular towboat and barges are part of the line operated by Colonel Willson who testified in this case. Substantial amounts of sand, gravel, cement, machinery and steel in the total traffic on the Tennessee River during the calendar year 1936 resulted from the movements of material and equipment for the construction work of the TVA. I don't have that figure. I would not be sure that it is true that the increase in the water traffic, if any, on the Tennessee River during the calendar year 1936 over that in 1935 was largely, if not wholly, due to the construction operations of the TVA. I think the TVA traffic had a good deal to do with that increase. It would be fair to say that about the only additional traffic attracted to the Tennessee River by the low water releases from Norris Dam in 1936 is that involved in supplying the material, machinery and equipment for the TVA construction operations. I believe there will be a different story later on.

I testified that in my opinion low water regulation by Norris and Hiwassee Dams in a low water year would produce a minimum flow of 18,000 second feet below Wilson and increase the controlling depth below Pickwick from 4½ to 7½ feet. As to whether I testified that it might be 5 or 6 years before the Gilbertsville Dam would be completed, I

think that is a short period. It may be eight or ten years or almost any period. It is very indefinite.

"Q. Now, if work had been commenced in 1933, would it not have been practicable to have completed a nine foot channel under the low dam plan from Paducah to Knoxville by the present time with the amount of money which was spent by TVA only at Wheeler and Norris?

A. Well, under your assumption, if it had been started in 1933. I think there is not the vaguest possibility that it would have been started in 1933 or any other year.

Q. If you will just not worry about that—is the answer 'Yes' to my question on the assumptions I made?

A. The answer is 'Yes' on your assumptions."

[fol. 1437] I do not know exactly what the low water flow in 1936 at Florence was without releases from Norris Dam. The official reports do not show the natural flow without the Norris releases because the Norris releases were in the flows at Florence at that time. The best way I could compute it was to check the average releases by weeks from Norris reservoir for 1936, and I computed that the maximum weekly releases in terms of second feet was 7,400 cubic feet per second for 1936, and that would be the average daily release throughout that week. According to the records of the Geological Survey which maintains a gauge at Florence, they show a minimum flow of 8,230 cubic feet per second occurring on August 16, 1936. That was an extremely low flow, which was produced by the running of a flow experiment down there at the request of the Army Engineers, and for three days we cut off the Norris releases. That would be the absolutely minimum flow at Florence for that period. The corresponding figure for 1937 was on July 21, 1937, 6,420 cubic feet per second, which was the low flow produced when we cut off the Norris pool in order to work on the cofferdam at Pickwick. Without the benefits of any releases from Norris, the extreme low flow in 1936 of 8,230 cubic feet per second would have produced a depth below Pickwick Landing of about 4½ feet. That low flow was for two days. Then one more day that was increased up to about 12,000.

As to what depth would generally have been available during the low water season below Pickwick without any releases from Norris, the smallest release that we made

from Norris was an average of only 100 second feet in the week starting July 15. That would be deductible from the natural discharge averaging around 20,000 down there. Since that discharge was so high, the Norris release was correspondingly small. As to what would have been in [fol. 1438] general the depth below Pickwick without any Norris releases in 1936 and 1937 throughout what the engineers call the low water season on a navigable stream, I think it would have gotten down around that 4½ feet I quoted. It would not have continued at that throughout the low water season. It never continues throughout, but for a substantial time.

A 9 foot channel below Pickwick Landing prior to the construction of Gilbertsville Dam will be available from the highest flows during the winter season. There would be a 9 foot depth through a narrow channel width, about 100 feet wide, 70 per cent of the time. The increased current velocities at the head of each of the high dam pools resulting from the increased regulated low water flow would be about 2½ miles per hour. I stated that after the completion of these high dams on the Tennessee River, the operation of Norris and Hiwassee would permit flexible operation for multiple purposes. Using less obscure and elegant language, that does not necessarily mean it would permit manipulation for power production. It would permit manipulation for flood control, and that would be the very important reason for drawing the reservoirs way down. That is, not for drawing down reservoirs like Hiwassee and Norris, but for drawing main stream pools down. As to whether it would permit manipulation for power purposes, that would all be a question of operation. I know it would, if you wanted to use it that way. That would all depend upon the rules of operation. The upstream storage would also help in permitting daily peaking operations for meeting a daily utility load curve, but that would not have anything to do with the value of the increased depth in the main stream pools. If we used our pondage in the main stream pools for peaking for power purposes, we would need to have some way of replenishing it if we draw down too low.

[fol. 1439] The table (offered and received in evidence as Complainants' Exhibit 916) is based on the daily river bulletins of the TVA, identified as Complainants' Exhibit

910, and shows it to be a fact that during 1936 the flow was cut off entirely at Norris during August and up to and including October 4th on each Sunday and on Labor Day. There is no special advantage to navigation during low water seasons in shutting off water on Sundays and Labor Day, but, of course, the navigation improvement was below Wilson Dam and releases from accumulated water in Wilson Dam were made regardless of these shut-offs at Norris Dam over the week-end. I do not want to testify that these shut-offs at Norris Dam over the week-ends and on Labor Day were made for navigation purposes. I do not know whether they were made for power purposes. I would not know anything about that. The navigation was taken care of by the Wilson releases over the week-end because there was enough accumulated water to do that. I am very sure about that. The official records of the Florence gauge show that.

Defendants' Exhibits 102 and 103 purport to show plans for a coal conveyor at Norris Dam and each of these exhibits is dated September 21, 1937. Some such plans and tracings had been made before September of 1937. We had given considerable consideration to this and some preliminary sketches had been made. As to why I did not produce the official plans, if there are any, that were prepared by TVA for coal conveyors over Norris Dam, these are as official as any we have. As to whether I have any earlier plans that had been prepared, we had been studying this matter for some years. As to my willingness to produce any earlier plan, if I have it, I have no earlier plan than these which are dated September 21, 1937, which is drawn up in any understandable fashion. As to whether these two drawings dated September 21, 1937, are the first drawings that were ever made by TVA for this purpose, [fol. 1440] these two drawings are the first ones made completely and in a nice shape, but that does not mean that this was the first time we had seriously considered the matter. I testified in the Ashwander case and was asked the following questions and made the following answers:

"Q. Very well, then. Have the plans as to the making, providing for navigation through Norris Dam, reached the point of any final and definite study and recommendation?

A. No.

Q. You gave as your reason that it was—did you not, that it was so far in the future before any tonnage will move through there that it was not considered necessary to reach a final decision, to make provision now, or have you got a study now, for that?

A. That is the governing consideration, as I see it.

Q. And so far as the present plan is concerned, navigation has not been considered in the design of the Norris Dam, navigation through, navigation of the Clinch River above Norris has not been considered?

A. Oh, it has been considered as an ultimate proposition; yes.

Q. But has not approved existing plan or project?

A. Only we know what we could do when the times comes to do it.

Q. There have been representatives of the Tennessee Valley Authority, in the last few days, going around this district to ascertain about the question of coal conveyors, have there not?

A. Yes."

That was two and one-half years ago, so there is at least two and one-half years that we have been studying it and we had been studying it some time before that. It is an unfair implication in those questions that the fact is we had just started scurrying around and finding out about coal conveyors at the time the testimony was going in in [fol. 1441] the Ashwander case. I do not know that I corrected it at that time. I would not say that this is the first time since this going around about coal conveyors at the time of the Ashwander case that we have prepared anything definite, because in the construction of Norris Dam, we actually left a tunnel through there for the coal conveyor. We certainly gave serious consideration on that because it is there. As to whether we made provision for the tunnel after the testimony in the Ashwander case, well, of course, the construction had progressed to that point only after the Ashwander case. As to whether it is a fact that we incorporated the tunnel for the conveyor in the Norris Dam after our experience in the Ashwander case, I think it came after that, but that still would not indicate it was a new idea with us.

I never had any personal experience directly in the operation of coal conveyors over dams. I have made a study

of it and am convinced it can be done. I know of no coal conveyors similar to the one shown on Defendants' Exhibits 102 and 103, in operation over any dam in the United States. Some coal conveyors are in operation on the Monongahela River, which are quite ingenious and are fully as difficult as this one. Those are simply loading and unloading devices which are in use on the Monongahela River and the Great Lakes. This is the same thing.

Examination by the Court:

This coal conveyor would be somewhat similar to the usual tramway of a mine, the coal would be loaded on an endless belt and the belt would convey the coal to its destination.

Cross-examination continued:

As to whether I mean an ordinary tramway in a mine is an endless belt, I do not know that I understand the ques-[fol. 1442] tion, but there are mines that have endless belts leading out of them. I do not know the definition of a tramway.

Examination by the Court:

As to whether it is a fact such a contraption as shown in Defendants' Exhibits 102 and 103 is contemplated at Norris Dam, I would say that that would be installed if traffic conditions warranted it. As to whether I anticipate such traffic conditions would ever arise to warrant it, I think they would if the lower Clinch River is canalized. I think the lower Clinch River will eventually be canalized. As to where the water will come from, there will be enough water for the locks and dams from Norris Dam, only a minor amount of water will be needed.

Cross-examination continued:

This belt conveyor is about 3 feet wide and is about 300 feet long between the barge and the tunnel through the dam. On Defendants' Exhibit 103 the belt conveyor is shown to be operating at a 30 degree angle to the horizontal. I could not recite any belt conveyor offhand which is used for handling coal at any angle as great as that, but I think it could be done. As to whether it is a fact

that at such an angle the coal would constantly roll down the belt, would be very inefficient and at the same time tend to degradation, we could make a flight conveyor with baffles to keep it from rolling if that is necessary. As to that not being what we have done, I am not sure of the detail, but it can be worked out. The tunnel through the dam is somewhere around an elevation of 1,025 or 1,030. It may be higher than that. It scales on this exhibit somewhere around 1,035 or 1,040. When the coal is turned loose near the top of the dam on the downstream side, it would roll to the bottom of the bin, sliding down the face of the dam about 150 feet. As to what will happen to the coal sliding [fol. 1443] down that 150 or 200 feet, it will be crushed to some extent, but I do not think that will hurt much. They powder coal now, it is excellent for industrial uses. I do not think that will decrease the value of the coal for industrial uses. It might for special purposes. As to what will happen to the coal barges when the spillway is in operation at extreme flood, there will be some danger there, and they might not be able to operate the coal conveyor, but I suppose 95% of the year they could.

The barges at the upper ends of the Clinch or Powell Rivers could be loaded through chutes at low pool stages. During the high water stages they could be loaded through the same chutes, with some adjustments. The chute would be from 80 to 100 feet long.

Under present conditions the barges shown on Defendants' Exhibit 102 would have to be shipped by land transport to get them above the dam, but not below the dam. This whole thing is predicated on the canalization of the Clinch River. Under present conditions there is no way to get the barges below the dam or to take them away after they were loaded, they would not want to. They would be grounded long before they were loaded. There is nothing provided in the TVA Unified Plan to get the barges down below the dam or get them away. I have made some estimates as to the cost of getting the barges loaded, as well as getting them away and including the cost of degradation of coal. I estimated that the conveyor could handle the coal at 16½ cents a ton, including fixed and operating charges on the conveyor installation, and fixed charges on the floating equipment that would be left above

the dam, that is, the barges and towboat that would be necessary above the dam.

[fol. 1444] Examination by the Court:

There are large deposits of coal on the upper Clinch within a short distance from the north side of the Clinch River. The larger fields now are available to railroads. There are considerable areas of undeveloped fields or of fields developed in a small way that are not available to railroads.

Cross-examination continued:

With the water at the elevation I have shown on Defendants' Exhibit 103, there would have to be some short land transfer from the larger coal mines to the pool. The larger developed fields are over 25 miles from the pool, if the pool is at the elevation shown on Defendants' Exhibit 103.

As to how this belt conveyor would operate on the transporation of the large deposits of marble in and about Norris Lake, I do not understand that there are any large deposits of marble in and around Norris Lake. It is not contemplated that this conveyor arrangement could be used for the movement of marble. We believe that the marble movement would be a minor matter. We all agree that we could not move marble on this conveyor.

When the pool is at maximum level, the cargo barge and the wharf barge would float right up with the pool and the tunnel through the dam would stay right where it is. The tunnel would not be full of water, as it is high enough so that it would take a tremendous flood with Norris reservoir away up to the roadway to flood through it. As to whether the scale shows the tunnel to be at elevation 1031, I thought we said 1035 or 1040. I think it is between elevation 1035 and 1040. As to whether it is my testimony that the pool will never be any higher than that, the pool might be higher than that on rare occasions in which cases we just would not operate the coal conveyor.

[fol. 1445] Defendants' Exhibit 104, entitled "Comparison of high dam and low dam plans on the Tennessee River", is distorted as to the horizontal scale. As to whether the distortion is 3500 to 1, I do not know what the distortion is. I used such an extreme distortion or the purpose of showing the comparison of these plans so as to get it on a

reasonable sized chart. The original is on one of those cards on the stand. That was as large a card as will go on the stand. I have shown it on Defendants' Exhibit 98 with much less distortion. That was the one that had Norris and Hiwassee superimposed up in the upper right hand side. We had to leave space to get those in. As to whether we could not distort it as much as we distorted it in Defendants' Exhibit 104, we had to have the space to get the rest of the drawing on Defendants' Exhibit 98. I do not know that Defendants' Exhibit 98 presents a different picture. Defendants' Exhibit 104 shows the true situation of the high and low dams, but it is true that it also shows it with a much more highly distorted scale than Exhibit 98.

On Defendants' Exhibit 105 entitled "Time Saved in Lockages with TVA High Plan", the words "Assuming same size of locks any plan", in different kind and size of type, were added to the title by me almost immediately after preparing the table, because I did not think it was clear without that. I made that table just recently.

"Q. Isn't it a fact that the low dam navigation plan, set forth in House Document 328, and incorporated in the Rivers and Harbors Act of July 3, 1930, provides for locks 110 by 600 feet except at Wilson, Dam No. 1, and Hale's Bar Dam, which were already in existence and common to any plan of improvement?

A. Yes, that is right.

Q. Why, then, did you prepare an exhibit purporting to compare the time saved on lockages upon an assumption of the same size of locks in each plan?

A. Well, if the tow was of a size that it could go through in a single lockage, it would really make no difference as to the size of the locks in the two plans.

[fol. 1446] Q. When you added to your exhibit 105 the words 'Assuming the same size of locks in each plan,' and referred it to the low dam plan, you knew that was not true, did you not?

A. Well, now, we have discussed the fact that the large locks can be put in the high dam plan, so, as an ultimate comparison, I think it is perfectly fair to assume the same size of locks in each plan.

Q. You knew, as a matter of fact, when you prepared exhibit 105, that the low dam plan adopted by the Rivers &

Harbors Act of July 3, 1930, provided for locks 110 by 600 feet throughout, didn't you?

A. That is right, and I knew that we could supply such size locks in the high dam plan whenever it became feasible.

Q. And you also knew, when you prepared defendants' Exhibit 105, that the TVA Unified Plan, as far as it has been constructed, and as far as it has been planned for construction, above Wilson Dam, does not provide locks 110 by 600 feet, did you not?

A. That is true, as far as it has been constructed, and as far as plans for construction, but there is a possibility there for putting in the large locks, and I think that should be kept in mind right along.

Judge Allen: Do you make your comparison here with the so-called low dam plan in House Document 328 or a hypothetical low dam plan?

The Witness: It is the same number of locks and dams as in the House Document plan, but if you want to assume that the large locks are in the low dam system, why, then, I assume that the large locks would be in the high dam system as an alternate matter, so that the comparison is made on the basis of the same size of locks.

By R. T. Jackson:

Q. Mr. Barker, in view of your counsel's suggestion, I direct your attention to the title 'Time Saved in Lockages with TVA High Dam Plan.' Now, does that mean the plan that is being constructed, or some other plan?

A. Well, it means the plan as constructed or contemplated.

Q. Yes. And then, 'As Compared to a Low Dam Plan,' did you mean the low dam plan adopted by the Rivers and Harbors Act of July 3, 1930, or not?

A. Yes, it is the same plan.

Q. You meant that?

A. Yes.

[fol. 1447] Q. Now, if you did mean that, you knew that any representation that it would have locks less than 110 by 600 feet was untrue, did you not?

A. Do I say that there? I don't see that I do.

Q. Do you say—will you point out where you show on exhibit 105 that you have altered the low dam plan set forth

in the House Document 328 so as to provide small locks instead of the locks 110 by 600?

A. I don't even say that now.

Q. Well, point out anything that shows that to anyone on the face of the exhibit.

A. It does not show it on the exhibit and I don't say it now.

Q. Now you show down here on the lower part of the exhibit, 'Time consumed in lockages, double lockages above Florence, Alabama,' don't you?

A. That is right.

Q. Now, why would you have double lockages above Florence, Alabama, if the low dam plan was constructed as adopted by the Congress in the Act of July 3, 1930?

A. You would not. This is for the purposes of comparison with just the title as shown.

Q. But it is not for any purpose of comparison, then, between the low dam plan as adopted by the Congress in the Act of July 3, 1930, and the TVA Unified Plan as it is being constructed?

A. The low dam plan shown in House Document 328 has two sets of costs, one with the small locks, and one with the large. I thought it would be of interest to make the comparison with the small locks in the House Document.

Q. And did you think it would be of interest to make a comparison with the small locks because the Chief of Engineers had recommended the project with the large locks and the Congress had adopted a project with the large locks?

A. Why, that had nothing to do with it.

Q. Is there anything on this exhibit to show that you are not purporting to compare on the face of the exhibit the TVA Unified Plan, as it is being constructed, and the low dam navigation plan as it was authorized by the Congress in the Act of July 3, 1930?

A. I don't think there is anything on the exhibit that would show that.

[fol. 1448] Q. The fact is, if you took the low dam navigation program as it was authorized by the Congress and adopted by the Congress in the Act of July 3, 1930, and compared it with the TVA Unified Plan, so far as it has been constructed and is presently planned to be constructed, the conclusions that show on exhibit 105 will be completely in error, will they not?

A. If the large locks were not in the TVA scheme then we would want a further computation on the exhibit.

Q. Are you in any doubt as to whether there are large locks at Wheeler?

A. Oh, not existing.

Q. Are you in any doubt as to whether there are large locks at Guntersville?

A. Not existing.

Q. No. Are you in any doubt as to whether there are incorporated in the construction plans, locks 600 feet long at Coulter Shoals and Watts Bar?

A. Well, the space will be provided.

Q. Well, the whole river is going to be there, yes, but you know what I mean Mr. Barker, and you know that there are no construction plans providing for the construction of locks of that size, when and as those dams and pools are constructed, are there?

A. Not in the initial plans, no large locks."

Examination by the Court:

As to whether I as an engineer can make a comparison of time saved in lockages between the TVA high dam plan and any low dam plan unless I assumed the same size of locks in each plan, it could be done. I did not think that was the fair way to do it in view of the fact that we can and will provide the large locks when that traffic warrants.

"Judge Gore: I wonder, if you could make an exhibit, Mr. Jackson, based upon the size of the locks as contemplated by the Act of Congress in the low dam plan, and then let us see what the difference would be? Is such an exhibit in the record?

Mr. Jackson: We will put one in, your Honor.

Judge Gore: I see; all right."

[fol. 1449] A tow boat and eight standard Ohio River barges can go through a lock 600 feet long without breaking tow. I think it is true that a tow boat with eight such barges cannot go through a lock 60 feet by 300 or 360 feet without breaking tow three times. An eight barge tow with standard equipment would be a very large tow. I do not think we would get so many of those to start with on the Tennessee River. As to whether that is the practicable and economical sized tow used on 9 foot channels such as the

Ohio River, there are tows like that used. I did not hear Colonel Watkins' testimony about the usual tows of 250 or 300 railroad cars equivalent. It is a fact that with such a tow of eight barges you would have to take four barges through separately and the tow boat through another time. You could not take more than four barges through at once if you had a tow that size and if you had eight barges you would still have to get your tow boat through. That would be true even if you had towing machinery for pulling the barges up through the lock. There is no question about it.

In Defendants' Exhibit 105 I did not make any allowance for time saved in the low dam plan by reason of the use of the navigable passes.

In my estimates of costs of operation and maintenance for the low dam plan and for the TVA plan, I included Dam No. 1, Florence Canal and Wilson Dam. In the Ashwander case I testified that the saving in maintenance and operation of the locks and dams under the TVA plan would amount to $1,065,000 annually as against the low dam plan and I stated that I had not calculated in terms of money the saving in dredging costs. I testified in this case that there was a saving in favor of the TVA plan of $1,200,000 annually. In explaining that difference between my testimony here and in the Ashwander case, in the intervening two and one-half years I had done considerably more studying and figur- [fol. 1450] ing on the low dams. To some extent I had been working on the low dams in the intervening two and one-half years and I used slightly different unit costs.

I estimated the cost of maintenance and operation of the main river dams of the Tennessee Valley project to be $590,000 a year. In the First Deficiency Appropriations Bill for the TVA for 1936, in which the estimate is given of the cost of maintenance and operation of the main river dams of the TVA, it amounted to $911,000. As to why there was a difference, I don't know for sure whether those two estimates include the same items.

As to whether I testified yesterday to the effect that the annual operation and maintenance cost would be $40,000 for each low lift lock and dam, on looking at my detailed figures, I find that it is not as easy as that, to take just one average figure for the whole thing. I have used anywhere from $20,000 to $50,000 for operation and main-

tenance depending upon the type of dam, its location and just what its characteristics were. I testified yesterday that:

"I think that the operation of the low dams should be increased over what Major Putnam had. I estimate for a low lift lock and dam about $40,000 per dam."

It is not as simple as that. That $40,000 is not an average. I used that in some cases, but, as I say, in looking at my detailed figures, which I did not have before me yesterday, I varied from about $20,000 to about $50,000 per low lift lock and dam. As to whether my estimate of $40,000 is untrue or not, I think it should be amplified by what I have stated. It is true as far as it went, it being just a rough figure. It is not necessarily my best judgment of the average figure.

"Q. What did you mean when you undertake to tell the Court it was 40,000?

[fol. 1451] Mr. Fitts: May it please the Court, it seems to me this is purely argumentative. The witness has explained.

Judge Allen: Objection sustained. The witness has answered and explained.

Mr. R. T. Jackson: May I have an exception. I do not think he has explained.

Judge Allen: You may have your exception."

Defendants' Exhibit 109 purports to show the navigable channels of nine feet provided in certain tributaries of the Tennessee by the completion of the TVA Unified Plan, and that the channel will go approximately 12 miles up the Duck River. There are no towns within the 12 miles so far as I know. As to whether it is a fact that that 12 miles is through what is called the "Big Bottom", where there is not even a tenant house, it is through what is called the "Big Bottom", but I understand those are very good farming lands. As to whether there was even a tenant house, I am not sure about the density of population or number of houses. I would not suppose that the end of the 12 mile stretch on the Duck River is 200 miles from the phosphate fields, but I would suppose that it was 100 to 150 miles from them. I do not think it is true that it would be a great deal closer to go from the phosphate

fields to the main Tennessee River, than it would be to find the 12 mile stretch at the mouth of the Duck River. In any case, if you wanted water transportation, which would be the cheapest transportation, it would be best to take it down by river. As to whether if you had to go 150 miles by land to get to this 12 miles on the Duck River and you could get to this fine waterway, I am talking about on the Tennessee River in 20 miles, the latter route would be cheaper, I am not saying this 12 miles on the Duck River would take us to the phosphate fields. I say it is a worth-[fol. 1452] while initial step in getting the channel up Duck River to the phosphate fields. Standing by itself as it is now, that 12 mile channel does not reach any town, industry or source of commerce.

It is a fact that there are no large towns on the Elk River within the area indicated on the exhibit. The largest town there would have 100 people. I cannot name any town there, but I think there are some very small towns along that lower section of the Elk. There is a phosphate deposit alongside of the upper end of the slack water in the Elk River. I think there is some operation from it. I do not think it is a fact that from the only phosphate fields in operation in the vicinity of Elk River, it is closer to haul to the Tennessee than to the Elk. I have looked it up on the maps several times and it is my impression that those deposits are a good deal closer to the lower part of the Elk River than to the Tennessee River. There are no towns at all on Bear Creek so far as I know. The largest town on my channel on the Hiwassee River is Charleston, which I suppose has two or three thousand people. Calhoun is right across the river. As to whether it is a fact that Charleston has only two or three hundred, I may be in error. I think it has a larger population than 280. I have been there many times. Calhoun is right opposite Charleston and it is of some additional population. They are not large places but both towns are on the main line of the Southern Railroad and the main highway, so it is a very logical re-shipping point. The largest town on the slack water channel I show on the Little River is Rockford which is a very small town, with a spinning mill and a little industry. The Elk River phosphate deposits are fairly substantial, but I do not think there are any large industries on the Duck River, Bear Creek, Hiwassee or Little River. I am [fol. 1453] not sure that I have seen any of the Elk River

deposits, but I have seen them outlined on an official map of the Department. From my recollection of the mineral deposit map, I think the phosphate fields are on the west side of Elk River about the vicinity of the state line.

"Q. Mr. Barker, isn't it a fact that what is being done here is merely extending the backwater up certain of these tributaries in such a fashion as to increase the total length of the shore line on these lakes, rather than reach industrial centers with the navigable channel; and further to increase the amount of shore line that has to be maintained and possibly protected by rip rap?

A. This backwater from the main stream dams would increase the shore line, but that certainly is not the purpose of it. The slack water as developed on the tributaries as shown on the map, would form useful initial steps in developing tributaries for navigation."

The backwater is not the purpose but the result of what is being done on the main stream, a beneficial and useful result. As to whether this depends upon towns and industries being constructed there that would need it, throughout the length of the tributary somewhere there are potentialities.

The source of my material on Defendants' Exhibit 107 was all obtained from House Document 857, 63rd Congress, Second Session, and House Document 108, 67th Congress, First Session. Those documents covered data that was accumulated by the Board of Army Engineers which was making experiments on towboats. It was called the experimental towboat report. The Board of Army Engineers had a number of towboats and barges and operated them in various depths of water and accumulated data in that way. That information contained in those reports was issued February 20, 1914 and March 2, 1921. I have heard of what the Taylor formula is with relation to the general depth of water, draft and size of the tow. I could not give it offhand and I do not believe any engineer could either. [fol. 1454] In my studies I have examined a formula of that kind but I cannot identify that particular one. I did not study it in preparation of this exhibit or in preparing to testify in this case and I made no calculation of my own through the use of that formula. I think it is one of the

formulas by which scientific determinations may be made in this field. There are a good many of them. I cannot recite any other formulas for towboats, but it is a very broad subject. On being asked to name just one, offhand I cannot name one. I have heard of the second supplementary report on the investigation of the experimental board on towboats, but I do not know when it was issued. It followed these two. If you tell me it was issued in 1929, I would think that was about right. I did not use any findings of that later report in preparing my exhibit or preparing my testimony. I did not make much out of that report. I could not see that it added anything to the subject. Such changes, if any, that were derived by that later study are not reflected in my exhibits or my reports.

(Counsel for Complainants then asked the Court to take judicial notice that by the 1930 census the population of Charleston was 480, the population of Calhoun was 275 and the population of Rockford was 350.)

In Defendants' Exhibit 108 entitled "Percentages of Channel Distance that are Less than 20 Feet in Depth in the High Dam Pool", none of the 179.8 miles of channel in Gilbertsville reservoir with a depth in excess of 20 feet would have a width of between 50 and 150 feet or between 150 and 300 feet. It would all be in excess of 300 feet wide. We have studied the necessity for dredging below Pickwick, which of course would be dredging in the upper end of the [fol 1455] Gilbertsville pool, and that dredging would extend downstream some three or four miles, and in that dredged cut the channel width would be somewhere around 300 feet. That is not 20 feet deep but that would be the only part of the Gilbertsville pool that would be less than 300 feet wide. It is my testimony that in every one of the pools shown in Defendants' Exhibit 108, the mileage which I indicate as having a depth of 20 feet or more has a width in excess of 300 feet at all points where there is a depth of 20 feet.

Examination by the Court:

It is not my testimony that in Gilbertsville all of the stretch of 184.2 miles has more than 20 feet in depth. My testimony is that 4.4 miles of that stretch is less than 20 feet in depth. As I understand it, the point of the question was whether

any of the channel shown in the exhibit as more than 20 feet in depth, is less than 300 feet in width. If the channel is 20 feet deep I think it is true that throughout the pool it is more than 300 feet in width.

Direct examination continued:

The depths which are shown on Defendants' Exhibit 108 are taken at the so-called normal pool levels. My testimony with respect to the percentage for each pool which in my opinion would be less than 20 feet in depth under the low dam plan was also based on the normal pool of the low dam system. It had nothing to do with the flow conditions at all. There would be slight water development. It was based upon flat pool conditions.

I think that either two or three feet is the standard over-depth in the Ohio River 9 foot project. I understand that [fol. 1456] they don't have that over-depth throughout, but they are trying to get it with dredging. I would not say that the over-depths in the Ohio River 9 foot project are not from two to three feet. I believe they are trying to obtain as well as they can the 2 or 3 foot over-depth. I don't know when the last dam completing the Ohio River project was finished. There are two new dams in there, and the one at Gallipolis is not finished now. I think the original Ohio River project was completed in 1929. Possibly it was completed in 1928. House Document 328 on the low dam plan was submitted to Congress in 1930.

I think it is a fact that the 9 foot project on the Illinois River has an over-depth of approximately 3 feet and that that plan was prepared and reported by the Corps of Engineers under standard practice to Congress in 1926. That, of course, was four years before the report of the Corps of Engineers on the low dam plan for the Tennessee River. I believe that the dam which was finished in 1928 on the Ohio River was a wicket dam. It is a fact that the 9 foot project on the Kanawha River has over-depths of 3 feet and that that project was not only designed and recommended and reported to Congress but was actually in a large part completed several years ago.

Defendants' Exhibit 110 entitled, "Comparison of pool fluctuations with high dam and low dam terminals," is not a comparison with high dams and "a low dam project." This time I really meant the low dam project adopted by the

Congress. For the high dam I meant the TVA Unified Plan. There is a relation between the existence of adequate terminal facilities and the development of water commerce. There is also a relation between the existence of substantial, actual or potential water commerce and the construction of adequate water terminals. You can not get traffic without terminals, and you would not build terminals without some [fol. 1457] potentiality of traffic. It is not right at all to say that when you find there are no water terminals, that may be because there is no potential traffic, or at least no one had confidence in it. That could be true, but, on the other hand, it might easily be because the channel was not improved so that there would be any worthwhile commerce.

I believe I have seen the water terminals at Cincinnati, Cairo and Memphis and I would say that they are seriously embarrassed in handling large quantities of commerce by reason of comparatively wide fluctuations of water levels at the water terminals. The one at Cincinnati has a very great vertical lift because of the variations in stage. I believe it does handle substantial commerce. It is a big terminal. As a matter of fact there are wide fluctuations in stage on the Monongahela and upper Ohio Rivers. It is a fact that the largest river commerce in the United States is and has been carried for many years on the Monongahela and upper Ohio Rivers. Their costs of handling are increased by those great fluctuations in stage, but that factor did not prevent terminal facilities from being constructed on those rivers and will not prevent it if other factors are strong enough to overcome that unfavorable factor.

I testified that terminal developments are being considered at the three locations shown on Defendants' Exhibit 110. The TVA is considering terminal locations at Wilson Dam, Decatur and Guntersville. When I said that they were being considered by an undisclosed party I was referring directly to the TVA. There are other plans under way by private parties. As to any private interest that is about to initiate construction of a terminal at either or any of these three places, there have been inquiries from the oil companies in regard to Decatur and Guntersville, but there is no actual construction. I understand their plans are [fol. 1458] under way. The total urban population in the vicinity of Wilson Dam is 25,000 to 30,000 in Florence, Sheffield and Tuscumbia. Such terminals as now exist

are below Wilson Dam. As to whether where those terminals are, there is almost no urban population, there are a few private developments over there on the Florence Canal which is right opposite Florence. There is urban population right near by in Florence and Sheffield. The population at Decatur where the terminal is under consideration is about 15,000 and that is on the river. The population at Guntersville is around 2,500 or 3,000. There are no large industries at Guntersville but there are some pretty substantial ones. There is a spinning mill, a sawmill, a basket factory and several other small developments. The comparable population figure in the industrial index at Chattanooga is supposed to be 125,000 to 150,000, and the industrial development is quite large. There is a great deal of industry at Chattanooga. It is a very large industrial center. The comparable population figure and industrial index at Knoxville is quite large.

At Florence there would be no great difference in pool fluctuations between the high and low dams. As to whether there would be none, if you consider the flood control element provided by the high dam plan, there would be somewhat less fluctuation with the high dam scheme. The comparable fluctuations between the high dam and the low dam plan at Chattanooga would be the same, but there is no chance of an argument there because of the existing Hales Bar pool. There would be no substantial difference, as the existing Hales Bar pool affects Chattanooga. As to whether there would be no difference at Sheffield, my answer for Florence would be the same for Sheffield. There would be no difference in pool fluctuations between the high and [fol. 1459] low dam plans at Knoxville. Florence, Sheffield, Chattanooga and Knoxville are the most important industrial centers and sources of water traffic now existing on the Tennessee River. In Florence and Sheffield the terminal above Wilson Dam would serve them best, Wilson Dam is in either plan.

A pilot holds his tow against the wind as much as he can when it is exposed to wind action tending to blow it from its course. He holds his rudder over so that the tow is forced against the wind as much as the limitations of the channel will allow. If the wind is blowing against him from his right, he would hold his rudder against the wind so as to keep him from going to the left.

I testified in the Ashwander case that the same type of vessel could be used between Pickwick and the mouth of the river as that used on the Mississippi and Ohio Rivers, but it would be necessary to load that equipment a little lighter. I think that was on the unimproved channel below Pickwick. It is still unimproved.

"Q. Well, if it is not so improved, the result of what is going on now will be to have inadequate navigation at the mouth and inadequate, wholly inadequate, navigation north of Chattanooga? That is a fair statement, isn't it?

A. Navigation conditions would be poor above Chattanooga and fair between Pickwick and the mouth.

Q. But there would be an interval between the mouth where it would not tie in with the navigation equipment in the Ohio and its tributaries and in the Mississippi Valley System and it would not tie in with the pool level beginning at Pickwick up to a point above Decatur?

A. It would tie in with the equipment. They would have to load a little lighter."

[fol. 1460] The point there is with the river unimproved below Pickwick, the standard equipment now used on the lower Mississippi and Ohio could be used but would have to be loaded a little lighter, because with the river condition below Pickwick in its present unimproved condition, the minimum depth with Norris regulation would be around 7 feet and with Norris and Hiwassee it would be around 7½ feet. I do not believe, with the construction of Gilbertsville reservoir, it would be necessary to increase the structure and strength of river equipment so as to stand the stresses and strains due to wave action. Of course, new equipment is being designed and built all the time and they are building bigger and heavier equipment, but what they now have could certainly be used without trouble.

As to whether I have had any experience in obtaining insurance on vessels engaged in commercial operation, I have discussed the matter with insurance men. I have not actually insured any vessels so operated. I have never operated standard river equipment as a commercial proposition over any stretches of open water of two miles or more in width.

On Defendants' Exhibit 115 entitled "Theoretical Efficiencies of the Tennessee River waterway", as to whether

I calculate that the average current velocity of the Tennessee River under the low dam plan would be two miles per hour throughout the year, that is not the average throughout the year. As to whether I calculated it to be that average throughout the year, 2 miles per hour is the best average figure that I could use for the calculations. For calculations of this kind, you must use an average figure. It is deceptive to a certain extent. I used it.

In computing the comparative times consumed in lockage, I made no allowance for time saved under the low dam plan [fol. 1461] by the use of open river navigation. I have made no allowance for the loss of time at TVA locks by reason of breaking tows to change for a single lockage. The lockage times are calculated on the basis of single lockages. As to whether I believe the commerce on the Tennessee River will be so insignificant that it will be handled in tows so small they can pass through the small TVA locks without breaking tow, there will be nothing so very insignificant about tows of that size. I think tows of that size would be the standard size tow for the river. I assume that commerce on the Tennessee River would be small enough that it could and would be carried on small tows for the first few years at least. This exhibit was not necessarily only intended to show a more favorable condition for a short period of time although it shows a reasonable average condition in the predictable future. What I have shown is I think fair and accurate for the first few years of operation, not indefinitely but for a considerable period of time. I include the time involved in passing through Dam No. 1, Florence Canal, Wilson pool and locks and Hales Bar pool for the low dams and the TVA dams as well, those projects are common to both plans. I include those in my computations. 65 minutes is involved in either plan for passing through Dam No. 1 and 113 minutes for passing through Wilson Dam. I used the same figures for both plans. The figure for Wilson Dam does not include going through the lake, but only the time consumed in passing through the lock. The time consumed in passing through the lake comes in under running time at the rate of 5½ miles per hour, minus the current velocity correction. I do not have that figure separately for both plans, but it is calculated on the basis of 5½ miles per hour, minus one-half mile an hour going upstream through Wilson [fol. 1462] Lake and plus about .2 of a mile coming down. 113 minutes was lockage time alone at Wilson. I do not

have the time separately that it would take to go through Florence Canal, I have calculated that by taking 5½ miles an hour times the distance. For Hales Bar lock I calculated 89 minutes for passing through, and that is the same for both plans. The calculation for Hales Bar pool comes in under running time, not a separate compilation, and that is arrived at the same way I described Wilson Lake.

The basis for my taking credit in downstream trips for only ¼th of the current velocity is just my judgment that you could not take full advantage of the current velocity and it seemed that about 25 per cent would be right. I have never operated a commercial barge line. I have operated and been on boats and have observed the process a great many times.

I testified that a certain type of navigation plan could be constructed on the Tennessee River for about $144,000,000 and I had 20 locks in all, including the existing Lock and Dam No. 1, and the existing Wilson and Hales Bar dams. So I really had 17 locks and dams in addition to those 3 existing in 1933. I have a table here (offered and received in evidence as Complainants' Exhibit 917) showing the location and lift of the locks for this plan. This exhibit correctly shows the location, lift in feet, pool elevation in feet, and the composition of the dam as I designed it.

In the case of the TVA dams the elevation of the lower lock sill at Pickwick is 342.2 feet and of the upper sill is 398 feet. At Wheeler the lower sill is 491 feet and the upper sill is 534 feet. At Guntersville the lower sill is 538 feet [fol. 1463] and the upper sill is 578 feet. At Chickamauga the lower sill is 618.2 and the upper sill is 663.0 feet.

Examination by the Court:

When I speak of elevation, I am referring to height above sea level rather than the height from the ground at that point. The locks sills are concrete structures that go across the lock chambers at the upper and lower ends and on which the lock gates rest. In other words, the lock gates are steel gates which open and shut like a pair of doors and these doors do not extend to the bottom of the reservoir which would be rough and would not effect a good closure, so there is a concrete sill put in there under each set of gates at the upper and lower ends of the chamber to make the closure.

Cross-examination continued:

I do not have the elevation of the upper and lower lock sills of Gilbertsville. As to whether I can supply that later, the plan is in a state of flux. I do not know just what the status of the design is. I do know where the lock will be but I am not sure as to the sill elevation. The elevation of the upper and lower lock sills for Coulter Shoals is in the same status and so far as I know no elevations are definitely fixed.

I do have something to do with navigation for the TVA. We have some preliminary figures on those. I would not think that anybody else would know better than I do. As to how I compute the navigable depths by drawing down pools in advance of floods without knowing the elevation of the lock sills, we would have some tentative figure on that. [fol. 1464] I can give you as good a figure as we have.

"Q. How do you compute navigable depths, by drawing down pools in advance of floods, without knowing the elevation of the lock sills?

A. Well, we would have some tentative figure on that, that I could give you, as good a figure as we have on it.

Q. That is only used when any of the witnesses have been testifying about pulling down the pools, like Gilbertsville and Watts Bar in advance of a flood, and preserving the navigable channel, they have been dealing with a rubber lock sill in the sense that none of these were fixed and they could slip in any one they needed?

A. I do not know as they could slip one in that was needed, no. They would have to keep one in line with the preliminary plans we have."

I am the navigation expert and I do not know for sure what the elevations for the lock sills will be. I can give a preliminary figure on it if you will treat it as preliminary. None of the other witnesses would know any better than I about it. I could give the elevation of the lock sill at Watts Bar very roughly. I ordinarily place the lock sill at from 12 to 14 feet below the lowest contemplated draw-down. At Watts Bar, as I recall it, the lowest draw-down in anticipation of a flood was down to about elevation 736, in which case the upper lock sill would be about 724 or 722 in elevation. The lower lock sill would be governed by the Chickamauga pool, and as I recall it, the lowest elevation at which

we would allow the Chickamauga pool immediately below Watts Bar lock was 675 and the lock sill would be some 12 feet below that. I don't recall the greatest draw-down elevation at the Coulter Shoals Dam. It would be, I am just estimating, somewhere around 803 and the upper lock sill would be around elevation 790. The elevation of the lower lock sill would be governed by the Watts Bar pool and that was to be drawn-down to 736, and that minus 12 feet would be about elevation 724 for the lower lock sill at Coulter Shoals. The upper lock sill for Gilbertsville would be placed [fol. 1464a] from 12 to 14 feet, or maybe more, below the lowest pool drawdown, whatever that was, but I am not [fol. 1465] sure what the maximum drawdown is at Gilbertsville in anticipation of floods. I can make an estimate of the elevation of the lock sill at Gilbertsville, about elevation 330 for the upper sill and about 290 for the lower sill. At Gilbertsville we have had lots of preliminary studies over the past year or two, I suppose.

Examination by the Court:

There are preliminary plans that have been made for the work at Gilbertsville and explorations for foundations have been carried on very intensively in the field. As I understand it, the actual plans for construction of the dam are not completed and the actual construction has not begun at all.

Cross-examination continued:

I do not know more definitely than I have stated what the lock sill elevations at any one of these three dams not yet under construction will be. As to whether I ever gave any of the witnesses who testified here any definite sill elevations, they understand the preliminary situation. I actually gave them the preliminary lock sill elevations. I think they are right around the ones which I have stated today. There are any number of plans and it is hard to tie the thing down right now.

In the pools like the Wheeler pool we have removed the stumps in lots of places. That is something which the Corps of Engineers in recent years has required every power company to do when it builds a power reservoir on a navigable stream under license from the Federal Power Commission. It may be that the Corps of Engineers has required that

since the Federal Power Commission was founded in 1920. I had in mind Hales Bar pool which was not cleaned of stumps, but that dam was completed before the Water [fol. 1466] Power Act. I don't think that was built under the present Water Power Act. I do not know of any reservoir built on a navigable stream since the Federal Water Power Act was enacted in 1920 where that was not done by a power company. We provided certain harbors of refuge on Wheeler Lake.

Redirect examination:

Defendants' Exhibit 115 represents the relative efficiency of the two plans for an indefinite period, if you assume that the large size locks for which space has been provided are to be installed as soon as the volume of traffic warrants such installation. In the lower ends of all of the high dam pools, there will be substantial distances along the shore line at which there will be minor fluctuations in pool levels. That type of shore line would be well adapted to the use of the terminals.

"Q. Now, do you know anything about whether any oil company has recently made any purchases of land for terminal sites along the Tennessee River?

Mr. R. T. Jackson: I object to that. That is not the best evidence.

Mr. Fitts: I am asking him whether he knows.

Mr. R. T. Jackson: It is hearsay.

Judge Allen: He can answer whether he knows.

Mr. R. T. Jackson: May an exception be noted, please.

Judge Allen: Just answer the question, whether you know.

A. Yes, I do know.

By Mr. Fitts:

Q. What do you know about it?

Mr. R. T. Jackson: The same objection, please.

Judge Allen: Objection overruled. You may have your exception.

Mr. R. T. Jackson: Exception noted, please.

[fol. 1467] A. The oil companies have purchased land in Decatur for terminal purposes and have under way purchase plans in Guntersville, Alabama."

The cost of operation of the terminals at Cincinnati, Cairo and along the Monongahela River is affected by the fluctuation in pool level and the cost of construction is also affected. Both of these items of cost would be reflected in the cost of transportation.

"Q. Mr. Barker, you testified on cross-examination, I believe, that there could be a navigation improvement by a low dam system if it had been started in 1933 at the cost of Wheeler and Norris Dams. Now, did you mean by that a navigation improvement of the same type and standard as that which would be provided by the TVA projects constructed and under construction?

Mr. R. T. Jackson: I object to the question as not proper redirect examination. I asked him whether the low dam plan could not have been completed by this time with that money, and he said it could. He has already attempted to show what he thinks are the advantages and it is not proper to repeat them.

Judge Allen: The objection is sustained to the form of the question.

By Mr. Fitts:

Q. Mr. Barker, I will ask you whether in speaking of a navigation improvement that could be completed at the cost of Norris and Wheeler Dams, you were speaking of an improvement comparable to the type of improvement by the low dams as reported in House Document 328, or the type of improvement comparable to that which will be provided by the construction of the dams included in the TVA plan?

Mr. R. T. Jackson: I object to that as just an evasion of the previous ruling. My question was plain, I asked him if he could have built the low dam plan by this time with that money and he answered 'Yes'. I did not mean, could he have built something.

Mr. Fitts: I don't see the objection. This question certainly is not leading.

Judge Allen: He may answer.

Mr. R. T. Jackson: Exception, please.

[fol. 1468] A. I was referring to a low dam project that would provide navigation facilities such as that contemplated in the low dam scheme of House Document 328. Such facilities would be in no way comparable to the facilities provided by the high dam plan for navigation."

When a certain pool level has been determined, I fix the lock sill elevations for the designers to give the necessary clearance. That is the way that lock sill elevations are determined. The lock sill is put down at a sufficient elevation to give a reasonable clearance in view of all other governing conditions.

The apparent discrepancy between my figure of approximately $25,000,000 for the amount expended upon the Tennessee River for navigation improvements, excluding Wilson Dam, prior to the creation of the TVA, and the figure appearing in the report of the Chief of Engineers of approximately $18,000,000 is because I obtained my figure from the District Engineer at Nashville, accepting his interpretation of preliminary reports in 1934. All of those figures taken do not appear in the 1934 reports as they were finally published.

"Q. Your attention was also directed to an apparent discrepancy between your estimate of the cost of operation and maintenance of the high dam system as proposed in the TVA plan and the estimate in the 1936 appropriations hearings. I would like to ask you how your made up your estimate and what items you included in it.

A. In the high dam plan my figures covered just the operation and maintenance on the locks plus the maintenance dredging below the locks.

I made my own individual estimates on that.

Mr. Fitts: May it please the Court, I would like to state that with respect to the exhibits showing the amount expended on previous projects—I don't have the number right now—on the Tennessee River, in order to be completely fair, I would like the opportunity of changing the figure on that exhibit to the $18,000,000 figure as reported [fol. 1469] in the report of the Chief of Engineers, because I think there is confusion as to that $25,000,000 figure.

Judge Allen: Is there any objection?

Mr. R. T. Jackson: I am sorry; all I heard was that they wanted to correct the figure. There is no objection to that.

Mr. Fitts: We want to change it from the $25,000,000 to the $18,000,000.

Mr. R. T. Jackson: There is no objection, as long as the record shows that the witness made the mistake in the first instance.

Mr. Fitts: He has not said he made the mistake.

Judge Allen: The change may be made."

Recross-examination:

In my estimates of the maintenance and operation, I did not include any share of the maintenance or operation of the dams and reservoirs. I omitted that entirely from the figures I have given here.

The fluctuations at Cincinnati increased the cost of terminal operations. I never heard of any report of the Corps of Engineers recommending to Congress that it spend $500,000,000 to eliminate these minor fluctuations in terminal costs at Cincinnati.

(The witness was excused.)

[fol. 1470] "Mr. R. T. Jackson: At this time I want to ask Mr. Fitts, at page 4146 (of the stenographic record), the Court requested the Authority to produce a copy of the Debler report from their files. That has not been done yet.

Mr. Fitts: I would like to inquire of the Court, we have the copy available, but I would like to state our position briefly. We would like to submit a copy of that report to the Court together with a memorandum brief which we have written on the admissibility in evidence of that report or any part of it, and ask the Court to consider its entire contents, together with the authorities on the rules of evidence that we have in our memorandum brief.

Judge Allen: This is the report made by a single engineer, is it?

Mr. Fitts: An engineer of the Bureau of Reclamation, that is correct. And if the Court is then of opinion that the report should be produced to the complainants and so orders, we will do so. We do not desire to turn the report over to the complainants except after the Court has considered the question of its relevancy and admissibility, and expressed its view thereon.

Mr. R. T. Jackson: I would also like to say further that we ask to use this in connection with cross-examination,

which is a different question entirely to that as to pure admissibility.

Judge Allen: The Court will bear that in mind.

Mr. Fitts: The first question is whether the complainants have the right to demand the production of a document which in our opinion is clearly irrelevant and immaterial in this case.

Judge Allen: The Court will examine your document and brief.

Mr. Fitts: I will get that in a few minutes. I would like to proceed with the examination of the witness.

Judge Allen: The Court will want to examine it very thoroughly sometime after recess this afternoon.

Mr. R. T. Jackson: Of course, in that time we will not be able to write a very good brief."

[fol. 1471] JAMES S. BRODIE was called as a witness on behalf of the Defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside in New Orleans, La., and my present position is Superintendent of Maintenance of the Federal Barge Lines, and in addition to that I act as chief engineer of the lines. I have been connected with boats all through my other experiences. I went to school in St. Paul, Minn., and then went to the University of Minnesota. Then I went with a traction engine company and was in the tractor business for a number of years. I then started a barge line on the Mississippi River and operated between Minneapolis and St. Louis. About 1920 I went with the Federal Barge Lines and have been with them ever since. I operated that barge line of my own about five years.

The Federal Barge Lines is the name of the operating part of the Inland Waterways Corporation, which is owned by the Federal Government, to operate inland waterway service to cover water transportation on inland rivers. The Federal Barge Lines operate a railroad from Ensley, near Birmingham, to the port of Birmingham, and they operate on the River from the port of Birmingham to Mobile, and from Mobile to New Orleans. From New Orleans they operate up the Mississippi River to St. Louis, up the Missouri

River to Kansas City, up the Illinois River to Chicago, and up the Mississippi River to Minneapolis.

The Federal Barge Line uses nearly all types of equipment, except the very small types, and we even have some which are called small gas boats, but we operate about 300 barges and 26 or 27 towboats of various sizes and descriptions. Nearly every type of navigation condition that might [fol. 1472] be put into the category of inland waterways is encountered by our operations. All these rivers which we pass over have wide spaces and narrow spaces, swift current and slack water, so we cover almost every kind of inland waterway condition. We operate both in open channel and in improved slack water, through locks and on long stretches with no locks.

As Chief Engineer, which was my title before the reorganization took place about two years ago, I had to deal with everybody from the time I started with the line. I was so intimately connected with the operations that when an emergency existed, they moved me to different jobs. One time they made me manager of the Warrior Division and another time they made me operating manager of the Upper Mississippi Division. In that way, with my experience with the barge line, I have come in contact with the requirements of shipping in connection with shippers and the operation of boats.

Probably the first requirement in furnishing transportation service on the inland waterways of the kind which the Federal Barge Line offers, which is common carrier service, is dependability. When a shipper knows that he can move his freight at a certain time, he is willing to ship. If he is doubtful about that, he is not willing to ship and we cannot solicit the freight.

The channel is the only question which affects the dependability of service that has ever been brought up with the Federal Barge Line, which is soundly financed. Finance is one of the troubles which is generally encountered, but with finances favorable, channel condition is the controlling factor. I would say the requirement for a good channel is [fol. 1473] a minimum amount of interference with a good trip. When a boat starts out to make a trip, if they encounter trouble, we refer to it as "bad channel". Usually sandbars and swift waters are the main things to hold up a trip.

In a manner I am familiar with the projects of the TVA,

so far as they relate to the improvement of navigation on the Tennessee River, through the description that the TVA men have given me of their projects and the trip that they took me on down through Wheeler Lake. I am generally familiar with the type of channel that is created by the kind of movable wicket dam that is referred to in House Document 328. In general, in my opinion moving freight by inland waters, the amount of water channel available is the measure of the value of the channel; that is, a deep, long slackwater pool is much more easy to traverse, much more dependable, than any other kind of inland waters. I am not very much familiar with the Ohio service, I have been on the Ohio, but we do not operate there. We have a good many barges interchanged between our line and the Ohio River companies and I have been up the Ohio. Those dams with wicket gates are let down in high water and there is a swift current usually over those dams as a rule, over the whole river at the time they have to let those dams down. Swift current is a bad thing and runs up the cost of operation materially.

By Mr. Fitts:

Q. In your opinion, Mr. Brodie, will the same type of equipment, which is now operating on the Mississippi and Ohio Rivers generally, be able to operate upon the Tennessee River after the completion of the high dam plan as it is being carried out by the Tennessee Valley Authority, without change in design or change in loading?

A. In general, all the equipment that the Federal Barge Line uses is adaptable to the new TVA river, the Tennessee River.

Mr. R. T. Jackson: I object and move to strike out that answer.

[fol. 1474] Mr. Fitts: I think it is certainly a partial answer. I will ask him to go ahead.

Mr. R. T. Jackson: That calls for a general answer and not for particularizing.

Judge Allen: The objection is overruled. He may answer.

Mr. R. T. Jackson: Exception noted, please.

A. The Federal Barge Line tows other equipment frequently, equipment owned by other companies, and nearly all of that equipment that comes to New Orleans is adaptable to the Tennessee River when improved. There are

some barges that operate up around the Pittsburgh district on the Ohio River that would have to be handled with a little more care on the big pools of the Tennessee River than they would on the Ohio. Those barges, however, are all busy and I don't see how they can get on the Tennessee River, because they are all building new barges, and the new barges that they are building are being fixed so that they would not be interfered with at all; that is, you could operate the new barges as well on the Tennessee River as you could on the Mississippi."

I am not sure whether the Monongahela type coal barge is being duplicated now or not. They build those barges without any coamings.

Examination by the Court:

A coaming is a sort of a raised fence around the top of an open barge. An open barge frequently has a deck of two or three feet from the side in, and a coaming is a kind of fence upon that. A great many of the barges operated on the Ohio River already have those coamings, and they use them for sand and gravel, and it has a tendency to increase the freeboard and put the vessel higher up above the water and so the waves cannot wash in.

[fol. 1475] Direct examination continued:

I have not seen those barges used for much other than coal, although once in a while in an emergency they do load them with steel and sometimes we have had experiences in handling those barges with such loads in them when they have come onto the Mississippi River.

Assuming that under the high dam system as being developed by TVA there will be only 7 lockages over the entire length of the river, as compared with 32 lockages as set forth in the low dam plan in House Document 328, in my opinion, the number of locks and dams that have to be passed through is a very material difference to any navigator. I have in my own experience a good deal along that line. Wherever we have to go through a series of locks and dams, it means a serious delay and the number of those that can be eliminated is a material advantage to a navigator. The time it takes to make a lockage is not measured correctly by the time it takes to go through the lifts at all, because a tow

stopping anywhere takes time. A heavy tow with perhaps 10,000 tons of freight in it, which may mean 15,000 or 20,000 tons dead weight load, is difficult to stop, it takes time, it has to be maneuvered, and the slowing down of a tow like that takes time. Starting it up again also takes time. Getting it into a lock means you have to go so slow that when the barge hits the side of a lock guiding itself in, it is not going fast enough to dent it. Very much speed of any kind will dent a barge if it is heavily loaded, hitting the concrete wall or a cushion, as some of the locks have piling.

[fol. 1476] "Q. Assuming that under the high dam plan as being developed by the Tennessee Valley Authority, there will be a minimum actual depth throughout the length of the river of eleven feet, and a depth in excess of 20 feet throughout the major portions of all of the pools, whereas under the low dam plan as reported in House Document 328 there would be the large portions of the pools of a depth not exceeding nine feet, in your opinion is this difference in depth significant to the practical navigator?

Mr. R. T. Jackson: I object to that question because the statement that under the low dam plan there would be long stretches not exceeding nine feet is not supported by any credible evidence.

Mr. Fitts: It is supported by the testimony of the witness Barker, and at page 1972 (of the stenographic record) the testimony of the witness Putnam.

Mr. R. T. Jackson: I press my objection that it is not supported by other testimony.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception noted, please.

A. The matter of depth is important to a navigator, because when he gets in shallow water—for instance, a tow drawing eight feet and sounding nine feet, the captain of the vessel must go slow, he may hit something, and when he hits something, he is in trouble. So, the tow will go slow when it gets in shallow water. Then it is harder to drive a boat over a shallow stretch of river than it is over a deep stretch. It takes more power to make the same speed."

Assuming under the high dam plan as being developed by TVA, the fluctuations in pool levels will be substantially

reduced along the river as compared with the fluctuations which would exist in the pools under the low dam plan as reported in House Document 328, generally the variation in the pool level would make no difference to a navigator. It makes a great deal of difference to the development of navigation. It makes some difference as to the matter of the boat moving. In the low dam plan, as I understand it in this House Document 328, a shallow stretch of river at the head of each pool is left, which is a relatively longer shallow stretch of the river and that part of the river has [fol. 1477] currents, whereas the high dam scheme of the TVA has no such thing, it is all pool up to the next dam. So far as the development of river transportation is concerned, the variation in level of the pool has a great deal to do with the terminal development where there is a high variation in water stage encountered, as terminals have to be much more expensive and elaborate to handle the traffic, and it becomes so expensive at a good many places that they have not put up terminals at all that were otherwise desirable because of the excessive variation in stage.

Assuming that under the high dam plan as being developed by TVA current velocities in the pools will be substantially reduced in comparison with the velocities that would exist under the low dam plan as reported in House Document 328, in my opinion that would be a significant fact. Current is a discouraging factor to the river operator. It takes more power to take care of the peak load requirements when an upstream movement is to be accomplished, thus requiring more capital investment in equipment. We have noticed in considerable experience that any current in the river has a tendency to create sandbars, and regardless of any engineering experience and previous calculations, those sandbars get ahead of them. Coming downstream in the condition where you have a swift current moving a heavy tow, it encourages difficulties about grounding because of the difficulty in handling a tow when the current is coming on.

If the movable wickets in low dams were down and the navigable passages in the dams were in use 67 per cent of the time, it would indicate to me that there would be a current during that 67 per cent of the time that a towboat [fol. 1478] would have to stem when moving a tow upstream, otherwise there would be a small saving in lockage

time due to the possibility of passing the tows over the dams, but the difficulty of bucking a current I should think would more than overcome the saving you get in lockage time. As to whether in my opinion additional equipment would be needed for service on the type of channel created by the low dam plan or equipment using more power than would be needed on the type of channel that will be created by the high dam plan, that matter of current comes up again. When you have a current you have to have enough power to push these tows against this current. Every tow that comes down the river has to go up and we need enough power to push the tow against the current, which is more power than is needed to push it in slack water.

Fairly good terminal facilities are one of the vital factors in any transportation system. On the river it is just the same. The overall cost of handling freight, that is common carrier type of freight, is 50 per cent absorption in terminal handling cost, so the efficiency of a terminal is the vital factor. Fluctuations in water level cause difficulty and increase the cost of construction and operation of river terminals. Assuming that the construction of the high dams would result in a substantial reduction of fluctuations of water levels over those that would obtain under the low dam plan, it would rather encourage more efficient terminals on the river than would be with a wide variation of river level. In my opinion this would probably have an effect upon the actual development of river traffic. The cost of river traffic and the dependability of service is what is going to attract the freight on the river and anything [fol. 1479] that can be done to minimize the cost will encourage river traffic.

As to whether practical navigation men prefer wide pools created by the high dam plan as carried out by TVA or the narrow pools of the low dam system, I prefer the long, wide pools. In navigating the Mississippi River below Cairo, I encounter difficulties due to low water.

"Q. Assuming that that stage at Cairo could be increased by as much as one foot in the low water season by releases of water from the Tennessee, would that in your opinion be of substantial assistance to navigation on the Mississippi?

Mr. R. T. Jackson: I object to the question, first there is no basis in the record for the hypothesis; second, under the

statute the Tennessee Valley Authority has nothing to do with the low water in the Mississippi.

Mr. Fitts: May it please the Court, if it will save time I will withdraw the question and frame this one.

Q. Mr. Brodie, assume the stage at Cairo could be substantially increased in the low water season by releases of water from the Tennessee, would that in your opinion be of substantial assistance to navigation on the Mississippi?

Mr. R. T. Jackson: I object to that for the further reason 'substantial' means nothing.

Judge Allen: Objection overruled. 'Substantial' means something.

Mr. R. T. Jackson: If your Honor please does 'substantial' mean foot, or mean two feet?

Judge Allen: You have objected to a foot. 'Substantial' has been accepted. There is testimony in the record, the three members of the Court remember the testimony is in the record supporting this question. Objection overruled. You may have your exception.

Judge Gore: The question has been more or less observed from the first of the trial, because there has been controversy between counsel as to what it meant on that day.

Mr. R. T. Jackson: That is right, but if any disinterested engineer would be called to the stand and asked what 'substantial' means, no one could answer as to the change in depth on the Mississippi River. And if anyone undertook [fol. 1480] to give an answer, no two being in the same room would agree.

Judge Allen: The objection is overruled. The word 'substantial' means something, it is different from insignificant.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: You may have your exception. You may answer.

Mr. Fitts: Do you understand the question or do you want it read back to you?

The Witness: I think so. The additional water coming from the Tennessee into the Mississippi raises the stage of the Mississippi during low water, and will substantially aid navigation. Is that the proper answer?

. . . . . .

The Witness: When I asked was that the right answer, I referred to the right usage of the words, particularly to the word 'substantial.' I was not sure as to just how the question was stated, and I wanted to get the kind of answer that would fit the question, so I asked whether that was the right answer.''

My experience does not coincide with the view that port-to-port traffic is the first to develop on an improved waterway and that no great volume of joint rail and waterway haul is to be anticipated in the early years, and will not develop until later. Our experience in the common carrier service is entirely opposite. We anticipate and get more joint transportation at the start of any service than we do port-to-port tonnage. We make rates as common carriers with railroads as soon as a channel is open for navigation and our barge line is put to work on it, and usually about 50 per cent or more of the traffic is joint traffic. As a matter of fact about 70 per cent of it is generally joint rail and water traffic. It is very difficult to get tonnage moving on any waterway and the ease with which the navigator can handle the freight and the dependability which he can offer to shippers are the big factors in getting cheap [fol. 1480a] transportation service to offer. If transportation is not offered cheaply and dependably, it will not come. The high locks and high dams in my opinion certainly will [fol. 1481] make cheaper and more dependable operations than the series of low locks and dams, and therefore will better encourage transportation on the river than otherwise.

By Mr. Fitts:

''Q. Mr. Brodie, assuming that under the high dam system as being developed by the Tennessee Valley Authority there will be only seven lockages over the entire length of the river as compared with 32 lockages in the low dam plan as set forth in House Document 328; further assuming that under the high dam plan there will be a minimum actual depth throughout the length of the river of eleven feet, and a depth in excess of 20 feet throughout the major portions of the pools, whereas under the low dam plan as reported in House Document 328 there would be large portions of the pools of a depth not exceeding nine feet;

further assuming that under the high dam plan as being developed by the Tennessee Valley Authority the fluctuations in pool levels will be substantially reduced as compared with the fluctuations that would exist in the pools under the low dam plan as reported in House Document 328; further assuming that under the high dam plan being developed by the Tennessee Valley Authority current velocities in the pools will be substantially reduced in comparison with the velocities that would exist under the low dam plan as reported in House Document 328; I will ask you whether or not in your opinion the high dam system will provide navigation facilities for the man who has to navigate substantially superior to those that would be provided by the system of low dams reported in House Document 328.

Mr. R. T. Jackson: I object to that question because, among other things, it assumes that in House Document 328 there is to be a minimum of nine feet over a large part of the waterway, which is not in accord with the fact or the practice of the Corps of Engineers.

Mr. Fitts: It is not in accord with the practice?

Judge Allen: On that, Mr. Jackson, point to the place where it shows a depth of more than nine feet.

Mr. R. T. Jackson: It appears as a question of practice, if your Honor please. When they have a nine foot channel they have over-depths of two to three feet, and Mr. Barker undertook to say on the basis of a very limited experience that that was not the practice of the Corps of Engineers, at least at the time of House Document 328, and on cross examination I brought out by his own admission that that had been the practice on the nine foot projects on the Ohio, the Illinois, and the Kanawha River-, among others, which are identically the same kind of nine foot recommendations as in House Document 328. Mr. Barker is simply mistaken in his assumption.

Mr. Fitts: I don't think you can ignore the testimony of any witness herein—I think if the fact is testified to by——

Mr. R. T. Jackson: If you please——

[fol. 1482] Mr. Fitts: Wait just a minute. I think if a fact is testified to by any witness you can frame a hypothetical assumption based upon it. Furthermore, this witness with such limited experience has had eight years in-

tensive work on this river, and eleven years experience with the Army Engineers, is probably better qualified than any man who has appeared in this case to testify about the Tennessee River.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May I add the statement also that Colonel Watkins, who drafted 328, testified, as I recall, that it called for overdraft.

Mr. Fitts: I beg your pardon, he did not.

Judge Allen: All that goes to the weight.

Mr. Fitts: There is no such testimony in the record.

Mr. R. T. Jackson: I don't want to argue, I want to make my grounds for objection complete so as to be fair to the Court.

Judge Allen: Objection overruled. You may have your exception.

Mr. R. T. Jackson: Exception noted.

A. It is my opinion that the TVA Plan with seven locks and dams is superior—will create a superior navigable channel to the channel which would be created by the plan of the Engineers with 32 locks and dams."

Cross-examination:

The Mississippi Warrior Barge Service has always been conducted by the Inland Waterways Corporation, or a predecessor. The Inland Waterways Corporation has been a federal corporation, owned and operated by the Federal Government. My entire experience since 1920 has not been with that line. I went with the barge line in 1927. It may have been 1926, that I went with the Inland Waterways Corporation, but previous to that I stated that I was operating a corporation of which I was president and manager, a barge line on the upper Mississippi between Minneapolis and St. Louis, as a private institution. I have been with the Federal Barge Line for the last ten years. That is a federally owned and operated enterprise. I would not say it was subsidized by the Federal Government.

[fol. 1483] "Q. Mr. Brodie, do you not know it to be a fact that when the Chief of Engineers made an appraisal of the property of the Inland Waterways Corporation somewhere around 1928 or 1929 or 1930, perhaps a year or two later he reported that whereas some $30,000,000 worth of

property had been turned over to the Inland Waterways Corporation by the Federal Government the appraised value of its assets was in the vicinity of $7,000,000?

Mr. Fitts: We object to the question. The value of the property of the Inland Waterways Corporation is clearly——

Mr. R. T. Jackson: The Interstate Commerce Commission, I mean.

Judge Allen: The objection is sustained.

Mr. R. T. Jackson: If your Honor please, may I state the purposes of the question?

Judge Allen: Is not the purpose evident from the question? After all, the Court can see the point as well as the question. Mr. Jackson, we are concerned about having such long statements of reasons in this record which goes on and on and on, with you and us facing a date line. We are concerned about that.

Mr. R. T. Jackson: I am concerned about it too, but I still want to cross examine the witness.

Mr. R. T. Jackson: May we have an exception noted, please?

Judge Allen: You may have your exception."

I don't think I said that the effect of lowering wickets on wicket dams is to increase the current. I don't think that is right. As to whether I said that the effect of lowering the wickets was to increase the current, I did not mean it exactly that way if I did say it. I meant when the wickets were lowered, it meant that the current was increased because the volume of water which was there was sufficient to allow them to lower the wickets. As to whether it is better to have open river navigation than locks and dams where the nature of the stream permits it, the nature of most [fol. 1484] streams would not permit such a statement. The slack water pools are the best ones to navigate in. If we could leave out the locks and dams entirely and have slack water all the way, that would be the ideal set-up. As to whether I would recommend the improvement of a river by locks and dams when the slope and character of the river is such that locks and dams are not otherwise necessary, when you qualify it that way and they are not otherwise necessary, I would recommend leaving it alone. If it is all right, let it alone. I think locks and dams are built in

rivers because the slope is so great that it is not possible to provide the desired channel by open river navigation.

Where you can provide the desired channel without locks and dams, it is preferable to have open river navigation, provided there is not too much current. I don't think I can give a definite answer, yes, or no, on that, because I can look at various rivers that have been improved for one reason or another, and the question is hardly one that I could make a recommendation on. As to whether, even though it were practicable to provide the desired channel of a given depth without locks and dams, in many instances I might recommend the construction of locks and dams in a river, the word-, "desired channel" is baffling to me. When explained as a channel of a given depth, it is baffling to me anyway. I don't know what would be a desired channel. For instance, on the Illinois River, where we have a very slow river, relatively, they put in some small locks and dams, and later decided that the locks and dams did not reach far enough and they put in some bigger ones. Naturally, that is a slow river, relatively, compared with our other rivers. However, I think that the new locks and dams on the Illinois are an improvement over the old. Assuming that it is practicable to provide a channel of nine feet without locks and dams, as to whether I would recommend nevertheless the construction of locks and dams to [fol. 1485] attain the channel of nine feet depth, I would not make a recommendation without a study of any river.

I have operated on the upper Mississippi River and was operating manager of the Mississippi-Warrior Barge Line of the Upper Mississippi Division for a number of years. The Inland Waterways Corporation operates on that section of the river.

"Q. How much have been the average earnings of the Federal Barge Line on the upper Mississippi Division for the past five years?

Mr. Fitts: We object to the question, may it please the Court.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: If your Honor please, this witness is undertaking to claim that it is better navigation with locks and dams than it is with an open river, and he is bas-

ing his experience upon the Federal Barge Line, and I think we are entitled to test the soundness of his conclusions.

Mr. Fitts: I don't think the statement is correct. The witness did not testify to that. He testified that the open rivers assumed certain velocities.

Judge Allen: The Court does not care to go into the ramifications of receipts and expenditures, and so forth. If you want to ask this witness whether the operation was profitable, the Court will allow the answer.

By Mr. R. T. Jackson:

Q. Were there any net earnings, average net earnings, from the Federal Barge Line operations on the upper Mississippi division during the last five years?

A. Up to date the upper Mississippi River project has not been completed and the Federal Barge Line is charged with the duty of operating up there to encourage and develop transportation. My own line up there made money before they put in locks and dams—made a little money. The operation of the Federal Barge Line has, I believe, shown a profit during some years, but the average of all of these years of operation has not shown any profit on the upper Mississippi due to the fact that the channel is not there.

Mr. R. T. Jackson: I move to strike out the volunteered statement about his own operations, in regard to which I did not ask.

[fol. 1486] Mr. Fitts: It seems to me it is a proper part of the answer. He told exactly what he was trying to prove by the question.

Judge Allen: It may stand.

Mr. R. T. Jackson: Exception noted."

The operations of the Inland Waterways Corporation on the Warrior River, as far as I know, segregated from the rest of the accounts, have not been profitable. I think the operations of the Inland Waterways Corporation on the Illinois River Division have been very profitable, but I do not believe our accounts show discrimination between the profits on the Illinois and those which are shown by operation on the Mississippi. I do not think it is a fact that the accounts for the Illinois River Division show that the Inland Waterways Corporation has lost on its operations

there. I think it is the opposite. I think the operations of the Inland Waterways Corporation on the lower Mississippi have been profitable. There were no locks and dams on the lower Mississippi. As to whether it is a fact that the only divisions of the operations of the Inland Waterways Corporation which have shown any profit are in open river navigation on the lower Mississippi, I think the Upper Mississippi Division has shown a profit during the time when the channel was in good condition. I think the Illinois has been showing a profit right along and undoubtedly the lower Mississippi River has a good record to show for a profit during the whole operation. As to whether the Upper Mississippi at the time of which I spoke had no locks and dams, it always had locks and dams during that period at Keokuk, Moline, LeClaire and Minneapolis. I don't know how many miles of the upper Mississippi were canalized at that time. The Keokuk Lake probably made a pool which you would call canalized by the river for 40 miles. The Moline pool was I think 18 miles, the LeClaire [fol. 1487] pool 6 miles and the Minneapolis pool 4 miles. As to whether the rest was open river, that was back in 1920. Since that time more locks and dams have been put in. A great many of them are completed.

Examination by the Court:

The project there is for 26 locks and I think about two thirds of them are completed.

Cross-examination continued:

The new locks that are being put in are mostly low lifts, that is, something under 20 feet. I think they average a little more than 10 or 15 feet, I don't know.

The service of the Federal Barge Line is as a common carrier. The vast majority of commerce on inland waterways is not carried by common carrier but by private carriers. In our experience we generally establish joint rail-water rates. It is not a fact that the Federal Barge Lines by statute have been given special rights with reference to the setting up of joint rail-water rates. Special rights have not been given to the Federal Barge Lines any more than they have to any other corporation that was a common carrier.

"Q. Is it not a fact that the Federal Barge Line has by virtue of Federal statute and the rulings of the Interstate Commerce Commission been given the right to set up joint rail-water rates or compel the railroads to join in such rates with 10 and 20 per cent differentials in favor of the Federal Barge Line?

Mr. Fitts: We object to the question as calling for the witness' legal interpretation of a statute.

Judge Allen: The objection is sustained upon the ground that it has nothing to do with the case.

Mr. R. T. Jackson: The only point——

[fol. 1488] Judge Allen: The objection is sustained. You may have your exception.

Mr. R. T. Jackson: Note our exception, please."

The relation between the rates of the water carrier and any joint water-rail rates and the alternative railroad rates has something to do with the development of water transportation, all rates have to do with water transportation, the same as they have any other transportation. Low rates attract freight while high rates repel it. We do operate under joint rail-water rates, some of our rates are joint rail-water rates.

"Q. And you also, in fixing your rates, enjoy an exemption from taxes and have franking privileges and the like, do you not?

Mr. Fitts: We object to the question, may it please the Court, immaterial and irrelevant.

Judge Allen: The objection is sustained. We are not considering the constitutionality of this statute, of the statute under which the Federal Barge Line operates, nor the constitutionality of the operation. Really, Mr. Jackson, you cannot seriously claim that this sort of thing will decide this controversy or have any material bearing on it?

Mr. R. T. Jackson: May we have our exception? In view of the Court's question as to what I might seriously contend, I want to say that I think the question of whether or not a witness basing his testimony upon the experience of a subsidized Federal corporation with special rates and things of that character is anything by which one may determine what would happen to ordinary commercial opera-

tions on another river, is entirely pertinent and proper cross examination.

Judge Allen: The objection is sustained for the grounds stated and for other grounds not stated and you may have your exception.

Mr. R. T. Jackson: All right.

Judge Allen: I want to call your attention again to the fact that the Court is endeavoring to conclude this case. Findings of fact will be asked for at the conclusion of testimony. We will proceed with the argument immediately, and it will depend upon the time when the testimony is concluded, how much time counsel have in order to take care of those very important matters."

[fol. 1489] The Federal Barge Line operations are not largely conducted in a special type of barge adapted to handling package freight and other cargo requiring the use of covered barges. The Federal Barge Line has open barges and covered barges for package freight and bulk freight, all of them in use. I do not know what percentage of the Federal Barge Line traffic is handled in open top barges, I would say offhand probably 40 or 50 per cent.

As to what detailed knowledge I have of industrial conditions which might affect water traffic on the Tennessee River, I don't know what you mean by detailed knowledge of industrial conditions. In general, I would say that the Tennessee Valley has a potential freight capacity because it is a rich valley. We already handle freight from the Tennessee Valley in the Federal Barge Line and we have some knowledge directly of what might be available up here in a relatively small way, because it is all joint traffic that we handle. I cannot tell what percentage of the traffic on the Mississippi River system is handled by the Federal Barge Line and what percent by the carriers. It would be a relatively small percentage that was handled by the Federal Barge Line.

The disadvantage of going through locks is measured by the total time lost, whatever that may be. As to whether I would recommend an expenditure for the elimination of all or part of lockage on a stream, of an order such that the annual fixed charges would greatly exceed the value of the time lost to transportation through the river, I do not see how anyone can make an estimate of the value of the time lost, when one considers that it may be an effort on the part of the

people putting the money into this thing, that they want to create something that does not now exist, that is, more [fol. 1490] river transportation. I cannot see where there is any measure of that in dollars, and from that standpoint, I do not see how any estimate or recommendation, especially by me, could even be considered. As to whether I would still recommend the expenditure of that money for that purpose, assuming that the elimination of time lost by lockage of a certain number of locks would involve an expenditure such that the annual fixed charges would many times exceed the value of time saved to existing or potential commerce on the river, if the potential tonnage is estimated that might be handled at any time in the future and that is so small that it would not justify in money the expenditure of the capital and maintenance of locks and dams, I would think it would be wrong to put in such locks and dams. However, the question in my mind is who can estimate what the potential tonnage is, so I do not think there is any measure of that which is available to me anyway.

As to whether expensive terminals were built on the recommendation of the Mississippi Barge Line at Davenport and Moline, the Federal Barge Line has no terminals at Davenport and Moline. The cities built them, not with the recommendation of the Federal Barge Line. As to whether they have been practically unused, only one terminal that the Federal Barge Line has had anything to do with at Davenport is a private terminal of an elevator company which we did make some recommendations about and which is in use. It is not true that the municipalities of Davenport and Moline built large expensive terminals when we instituted service on the upper Mississippi River and they are practically unused. They did not build any terminals at all for us. There are no terminals there built by the cities. There is a small terminal at Davenport which was [fol. 1491] used by the old packet boats and I think it has been used recently by some excursion boat. It never was used very much, but it was there long before the Federal Barge Line started business up there. It was built by the city.

We operate on the Warrior, Mississippi and the Illinois Rivers and up the Missouri River to Kansas City and infrequently to Leavenworth to get grain. We operate two miles on the Ohio River from Cairo to Birds Point. Our terminal is two miles up the Ohio River from the junction

with the Mississippi. That is open river navigation. We do not operate on the Ohio up through the wicket dams towards Pittsburgh. It is a fact that there is much more commerce on the Ohio River than on the upper Mississippi. I am familiar with the Monongahela River to some extent. I spoke relatively when I said that one of the things that was necessary in connection with low water flow was a large pool of water in order to make possible good navigation. The Monongahela River has the largest inland waterway traffic of any river in the United States and has been used as the criterion for river advocates for so long, and the only reason for its being used as extensively as it is, is that the City of Pittsburgh and surrounding districts consume the coal, and the coal is up the Monongahela River, and they have what might be called a shuttle service to move that commodity from one fixed place to the other fixed place. They move this shuttle back and forth and this tonnage is built up materially above all other transportation, but it has no connection with what might be expected on other rivers, the tonnage is not the same extent. I believe that statistics show it to be and to have been the largest ton-[fol. 1492] nage on any river for many years. That is because there happens to be commerce existing and moved on the river between Pittsburgh and the coal mines. I do not know it is a fact that the low water flow of the Monongahela is only 160 second feet.

(The witness was excused.)

[fol. 1493] J. H. ALLDREDGE was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 50 years of age, reside in Knoxville, Tennessee, and am a transportation economist, which in the business world is frequently referred to as traffic management. After finishing school at the Central Alabama Agricultural School in 1910, and teaching for about a year in the public schools of Alabama, and continuing my studies under private instructors, I formed a connection in 1910 with a canning company in Montgomery, Alabama, and developed its traf-

fic department serving as its traffic manager for about 9 years. Since 1910 I have been engaged exclusively in some kind of transportation work and in the study of transportation problems, mostly of an economic nature. During my service with the canning company in Montgomery, Alabama, I also acted as secretary to the manager of the Montgomery Freight Bureau, which was a part of the Chamber of Commerce. During that time I also acted as traffic adviser to some of the small boat lines operating on the Alabama River. After leaving the service of the canning company, I became secretary and traffic manager of the Dothan, Alabama, Chamber of Commerce. I served in that capacity about three years and then became general freight and passenger agent of the Atlantic & St. Andrews Bay Railway Company, in which capacity I served about a year. Then I accepted a position with the Alabama Public Service Commission at Montgomery, first as examiner and chief rate [fol. 1494] expert and then as director of its transportation bureau, which was in immediate charge of regulation of railroads and boat lines and finally the motor vehicles operating in the state. I held that position for about 12 years.

While I was with the Alabama Public Service Commission, I acted as technical economic adviser to the committee of state regulating commissions which assisted the Interstate Commerce Commission in the general investigation of the freight rate structure of the South, and between the South and the North. I also prepared and presented testimony of a technical and economic nature for the cotton textile interests and the marble interests of the South in the general investigation of their rate structures before the Interstate Commerce Commission. I did that simply as a loan from the Alabama Public Service Commission.

I am the author of "Rate Making for Common Carriers," published in 1929, and was editor and associate publisher of the fourth edition of "Watkins on Shippers and Carriers," published in 1930. I wrote a monograph entitled "Competition as a Factor in Making Freight Rates," printed in 1930, and I contributed an article on transportation economies in the January, 1934, volume of banking and transportation problems. I was principal author of the "Inter-territorial Freight Rate Problem of the United States," published as House Document 264, 75th Congress, First Session, and one of the principal authors of the "His-

tory of Navigation on the Tennessee River System," published as House Document 254, 75th Congress, First Session.

[fol. 1495] I am principal transportation economist and head of the transportation economics division of the TVA. My principal duties are to analyze and study the transportation conditions of the Tennessee Valley, particularly as they relate to navigation on the Tennessee River and the feasibility of coordinating water transportation service on the Tennessee River. I also furnish transportation information and advice to other divisions and departments of the TVA. I have made an intensive study of the movement of commerce in relation to navigation improvements on the Tennessee River since going with the TVA on September 1, 1934. I could not give specific references to surveys and reports which I have studied in connection with the economic value of navigation improvement on the Tennessee River. I have studied a great many of them and particularly House Document 328.

Since the coming of steamboats, the traffic on the Tennessee River in the past has been predominantly local in character and that is particularly true of recent years. In the days of the flat boats and keel boats, the produce of the Tennessee Valley went on through mostly to New Orleans as the small drafts of the flat boats and keel boats could get over the shoals fairly well and New Orleans was the principal market at that time.

Cross-examination:

The flat boats did not come back. They usually broke them up in New Orleans and sold the lumber and walked back or got back the best way they could.

[fol. 1496] Direct examination continued:

By Mr. Fitts:

"Q. Mr. Alldredge, in your opinion, what class or character of commerce should be given principal consideration in any analysis of the potential value of the Tennessee River for commerce if adequately improved for navigation?

Mr. R. T. Jackson: Just a moment, I object to the qualification of this witness. All he has shown is some connec-

tion with railroad transportation, and I don't think he has shown any qualification for inland waterways improvements or designing them.

Mr. Fitts: I am not asking him a thing on earth about design or about feasibility. I am asking what character of commerce should be considered, and if a man who has spent the time he has, and who has prepared the kind of reports he has prepared right there, is not qualified to testify, I don't know who is.

Judge Allen: The objection is overruled, and you may have your exception. The Court considers that experience in connection with the operation of the Authority as experience.

Mr. R. T. Jackson: May we have an exception?

A. It is undoubtedly the through commerce that should be given consideration because the primary need of the Tennessee Valley from the standpoint of transportation is to get its products out of the region to the markets of the country."

In reaching a conclusion as to the potential value of the improved Tennessee River, it is necessary to consider the Tennessee River as part of the integrated Mississippi and Ohio River systems. I am in agreement with the testimony of Major Putnam who testified on direct examination that the Tennessee River must be considered as integrated with the Mississippi and Ohio River systems.

By Mr. Fitts:

"Q. Will you state what factor should be considered in determining the potential volume of traffic which may be expected to move on the Tennessee River if adequately improved for navigation and interconnected with the Mississippi and Ohio River Systems?

[fol. 1497] Mr. R. T. Jackson: My objection is to the competency of the witness, whether he knows whether it is adequately improved for navigation, and whether he knows under what conditions it attracts commerce.

Mr. Fitts: Of course, the Court understands that the factors to be considered are economic and not physical. The assumption is that the river is going to be improved,

and I am asking this witness to testify, assuming an improved waterway, what economic factors will determine whether traffic will move or not.

Judge Allen: Did your question say 'Economic Factors'?

Mr. Fitts: It did not. I will reframe the question

Judge Allen: The objection is overruled. He may answer.

Mr. R. T. Jackson: May we have our exception, please?

Judge Allen: You may have it.

Mr. R. T. Jackson: That is not an amended question; it is the same question not amended, I understand.

Mr. Fitts: Let me withdraw the question, correct the record and state it this way:

By Mr. Fitts:

Q. Will you state, Mr. Alldredge, what economic factors should be considered in determining the potential volume of traffic which may be expected to move on the Tennessee River, assuming that it is adequately improved for navigation, and assuming that it is interconnected with the Mississippi and Ohio River System?

Mr. R. T. Jackson: We object to the competency of the witness upon the ground that he shows no qualifications for basing any judgment upon what is an adequate improved waterway or any knowledge of what the costs of transportation are, or, consequently, any knowledge of what commerce, if any, would move.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: Exception, please.

A. Well, in general, all of the economic factors which go to make up the economic environment within which the river will have a function as an integrated stream would be considered. Now, specifically, the abundance, variety and availability of the basic resources contiguous to the stream itself, and the other interconnected streams are one of the factors; the proximity of important commercial centers and [fol. 1498] manufacturing areas to the inland waterways system, the population adjacent to the interconnected streams, and whether or not the directions of these interconnected streams are in harmony with the direction in which traffic ordinarily moves into, out of, and through the valley, and finally the systems of freight charges maintained

by land transportation agencies with which the Tennessee River will have to compete, and with which it may be coordinated. These are, of course, fundamental conditions and they determine whether or not the Tennessee River has sufficient potentialities to justify a traffic survey at all or not. If they are favorable and point to the probability of a substantial tonnage, then the next step is to trace out those possibilities and potentialities in detail and determine what kind and volume of commerce can be attracted to the river and what the savings would amount to."

I have considered and studied the various reports of the Army Engineers dealing with the economic factors considered in the improvement of navigable waterways.

By Mr. Fitts:

"Q. Will you state whether your studies of the documents have indicated to you that the same general method of analysis has been employed in determining the economic feasibility of improving the internal waterways?

Mr. R. T. Jackson: I object to the question as leading, and for the further reason that the witness is wholly incompetent to tell what is the practice of the Army engineers in determining economic feasibility.

Judge Allen: These various reports are in evidence, and the question relates to the reports. The objection is overruled, and you may have your exception.

Mr. R. T. Jackson: Exception. I do not understand the reports state what processes the Army Engineers went through.

Judge Allen: House Document 328 states a good many things.

Mr. R. T. Jackson: Many things, but not that. May we have our exception noted?

A. Well, the most modern and most thorough of these surveys by army engineers do take those factors into consideration in substance. That is true of House Document 328 in large measure.

In my opinion the number and importance of the industrial and commercial centers that may be reached by the Tennessee River and interconnected inland waterways

[fol. 1499] will have an effect on the traffic possibilities of the Tennessee River.

The map (offered and received in evidence as Defendants' Exhibit 118) is entitled "Some Industrial and Commercial Centers Reached by Interior Waterway Systems with Waterway Distances Between Them". The data on which this exhibit is based was obtained from several sources. The general locations of the waterways was obtained from the U. S. Army Engineers' report. The commercial and industrial centers are placed there by a study of the geography of the country and the centers of population are taken from the census of 1930. The stream locations are taken from the United States Army Engineers' reports. It is a diagrammatic chart; it does not follow geographical lines exactly. It shows quite a number of important commercial and industrial centers on the banks of inland waterway systems of which the Tennessee River is a part. These centers are potential traffic originators and the traffic receivers for commerce which may flow to and from the Tennessee River. There are seven important centers on the Tennessee River itself, Knoxville, Chattanooga, Guntersville, Decatur, Florence, Sheffield and Tuscumbia. There are other towns along this river of less importance. Guntersville is not a very large city, but it is just 35 miles from Gadsden, Ala., which is the center of the second largest industrial district of Alabama. Guntersville is connected directly with Gadsden by railroad and highway. On the connecting streams there are many important centers which are daily creating traffic which could move by water and some of which could move to and from the Tennessee River. This system connects at Chicago with the Great Lakes and at New Orleans with the coastal canal which skirts the Gulf of Mexico and ties in some of the important ports along the Gulf. The center of population shown there is in Greene County.

[fol. 1500] "Q. Mr. Alldredge, will you state whether or not there is a substantial population on the Tennessee River and the interconnected waterways and the contiguous territory which could be served in the transportation of freight by means of the improved Tennessee River, assuming that it is improved?

A. Yes, sir.

Q. Without any long movement by land?

Mr. R. T. Jackson: I object to the question as entirely too indefinite and general. This shows connections to Olean, New York, and Duluth, Minnesota.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May we have our exception, please?

A. I said, yes, there is a substantial population along these interconnected waterways."

The chart (offered and received in evidence as Defendants' Exhibit 119) is entitled "Population Concentration Along Interior Waterway Systems." The data was obtained from the 1930 census. The strips colored in blue are approximately 50 miles wide, 25 miles from both banks of the stream on either side. The red areas are the large urban counties along the streams, in some instances more than one county being included. The population of these respective counties is shown on the map. It will be noted that about 18.2% of the population of the United States, based on the 1930 census, is located within 25 miles of the interconnected streams. The legend in the lower left-hand corner shows the population along each major subdivision of these waterways, the percentage of that population to the total United States population, and the population per square mile within the blue areas, subject to modification as shown in the notes at the bottom of the legend. The population along the Kentucky and Cumberland Rivers is shown but is not added to the total.

Referring back to Defendants' Exhibit 118, the figures [fol. 1501] along the river are the approximate waterway distances between the river ports.

I have made a study of the products produced in the Tennessee Valley which might be expected to use the waterway for shipment locally in this region and to points outside the valley through the Tennessee River if it were improved for navigation. The chart (offered and received in evidence as Defendants' Exhibit 120) is entitled "Principal crops produced in the Tennessee Valley" and was prepared by me or under my supervision and direction. The data was obtained from the Census of Agriculture of 1933 which is published by the United States Census Bureau from figures prepared by the U. S. Department of Agriculture. It is a government publication.

"Mr. Fitts: The Census of Agriculture. We offer in evidence as Defendants' Exhibit 120 the exhibit just identified by the witness.

Mr. R. T. Jackson: We object to the introduction of exhibit 120 on the grounds first, that it is irrelevant and immaterial; second, that the witness has no competency to testify with reference to the economic feasibility of the waterway, the movement of crops; third, that the exhibit reflects millions of dollars worth of corn which will be destroyed annually by the Tennessee Valley Authority through flooding some 580,000 acres of the best land in the Tennessee Valley, and that, therefore, the statistics are misleading; fourth, because we have been precluded—I don't mean precluded, but the Court has ruled that we may not properly prove the extent to which the crops of the Tennessee Valley are to be destroyed by this enterprise.

Judge Allen: The Court ruled that it would not go into the question of individual damages raised by the various individual witnesses who appeared here. That was the basis of the ruling of the Court. Defendants' Exhibit No. 120 is received and you may have your exception.

Mr. R. T. Jackson: We ask for our exception."

Agriculture undoubtedly offers a part of the potential source of traffic for the Tennessee River locally and for long [fol. 1502] distance hauling. In the earlier history of the region a large part of the traffic which moved on the river came from these sources. There is another inference to be drawn from that map. Those agricultural pursuits also require agricultural implements and machinery, which furnishes another source of traffic moving in the opposite direction to the ordinary movement of agricultural products. In House Document 328, table 2, p. 514, an estimate is made of the agricultural production in 1926 within 5 to 15 miles of the Tennessee River and its tributaries. The estimate was 2,075,430 short tons of agricultural products. In the same area along the main Tennessee River alone, the estimate was 793,940 short tons, which will give some idea as to the probable source of tonnage of those crops.

The chart (offered and received in evidence as Defendants' Exhibit 121) is entitled "Types of forest resources in and around Tennessee Valley". The data was obtained from the official forestry maps published by the Southern

Forestry Experimental Station of the United States Department of Agriculture at New Orleans, except for the state of Tennessee for which there is no existing official map and the information had to be obtained from the Forestry Department of the TVA. The white line defining the limits of the growth of white pine in the area comes from another official source prepared by the Bureau. Forestry has always furnished one of the principal sources of traffic on the Tennessee River. This exhibit illustrates the continued existence of that source of traffic. In House Document 328, table 2, p. 514, an estimate is made of the forest products produced in 1926 within 5 to 15 miles of the Tennessee River and its tributaries and shows that 735,970 short tons of forest products were produced within those [fol. 1503] limits, and along the Tennessee River alone within those limits there was 344,860 short tons. That is a substantial source of traffic.

The chart (offered and received in evidence as Defendants' Exhibit 122) is entitled "Producing centers for some basic minerals in the Tennessee Valley". The data was obtained from several sources, particularly from the minerals map accompanying House Document 328.

Cross-examination:

It is one of the plates in volume 2, but I do not recall the exact number of it. That information has been supplemented and checked by information which is contained in the Minerals Year Book for 1937, published, I think, by the United States Bureau of Mines, Department of the Interior.

Direct examination continued:

In House Document 328, table 1, page 512, the estimate was made of mineral production along the Tennessee River and its tributaries.

Examination by the Court:

The exhibit does not show phosphate mines at Carthage, Tennessee. The phosphate is shown by the crossed symbols as in Middle Tennessee. The cross picks right opposite Carthage indicates phosphate rock operations. I do not think it is very near Carthage.

Direct examination continued:

Carthage is on the Cumberland River east of Nashville and this rock mining of phosphate appears to be on the Cumberland between Nashville and Carthage.

[fol. 1504] Examination by the Court:

Carthage was placed at the end of the white line which is supposed to portray the Cumberland River, I presume to indicate that it was about half way between Carthage and Nashville. Carthage was intended to indicate the end of the Cumberland River. I cannot name the places where the phosphate mines are around Nashville. I know there are mines in that general vicinity but I cannot give the exact location.

Direct examination continued:

"By Mr. Fitts:

Q. Will you explain to the Court what is shown by the exhibit, that is of significance, if anything?

A. It attempts to illustrate that there is a substantial source of potential traffic for the Tennessee River, consisting in these mineral deposits and operations. Now, in House Document 328, table 1, as previously mentioned, an estimate is made——

Judge Allen: What page?

The Witness: I do not know the page, it is table 1. Estimates are made of the availability of minerals along the Tennessee River and its tributaries. According to that table, about 447,500,000 short tons of coal are prabably available within a strip of 5 to 15 miles in width along the Tennessee River proper. On the tributaries——

Mr. R. T. Jackson: Just a moment. I move to strike out the statement, it is a mere reading of what is in the report, and acquires no significance from this witness' reading. He is not competent to give an opinion as to whether it would or would not move.

Mr. Fitts: I might call attention of the Court there has been repeated testimony of witnesses on both sides, testifying, summarizing what is contained in House Document 328. I think it is for the convenience of the Court.

Judge Allen: We think it helps the Court to have our attention called to various matters in this rather bulky volume. You do not claim the statement made does not exist?

[fol. 1505] Mr. R. T. Jackson: I do not know. I have not read the volume sufficiently to have in mind that information. I only know this, if your Honor please, the volume is in evidence and certain witnesses have assumed facts there for giving an opinion, which is quite all right. But I do not want this witness going on to add to the testimony by reading from document 328.

Judge Allen: The Court rules the witness may call attention to materials from House Document 328. You may have your exception.

Mr. R. T. Jackson: We except.

A. On the tributaries in the same little strip of territory 5 to 15 miles of the river banks, an estimate of 1,387,500,000 short tons of coal probably available in the future is given. That makes a grand total along both the main river and its tributaries within 15 miles of its banks of 1,835,000,000 short tons of coal that are probably available. The limestone reserves are shown to be inexhaustible and the reserves of phosphate rock within 5 to 15 miles of the tributaries total 92,400,000 short tons.

Mr. R. T. Jackson: May it be understood my objection goes to each of these products as read from the document.

Judge Allen: It may be understood. I call attention again to the fact that in order to keep the record clear we desire specific objections always to be made.

Mr. R. T. Jackson: I was trying to accomplish that in this way.

By Mr. Fitts:

Q. Mr. Alldredge, in your opinion in making an estimate of the traffic potentialities of the Tennessee River, assuming that it is improved, is it important or not to consider the basic commodity products in the various sections which may be reached by the inland waterways system, which could be shipped to the Tennessee Valley region, assuming the river to be navigable?

Mr. R. T. Jackson: I object to any answer on the ground the witness is not competent to determine the economic possibilities of the waterway.

Judge Allen: Objection overruled. The Court bearing in mind that this witness has testified he has studied these questions for four years.

Mr. R. T. Jackson: May we have our exception, please.

Judge Allen: You may have your exception.

[fol. 1506] The Witness: My answer is, it is important."

The map (offered and received in evidence as Defendants' Exhibit 123) is entitled "Map showing traffic producing regions touched by interior waterway system." It is just an ordinary relief map with the publishers shown in the lower right-hand corner.

Cross-examination:

The Bauxite material is taken from the mineral year book, 1937, published by the U. S. Bureau of Mines, p. 665. The coal comes from a map showing coal fields of the United States, published by the U. S. Geological Survey of the Department of the Interior in 1907 and prepared by Mr. Marius Campbell.

Examination by the Court:

There are about 17 sources for this map and about half of them are non-governmental, but they are standard authorities.

Direct examination continued:

The map is not inclusive and is not so intended. It is simply for the purpose of illustrating to the Court that there are within the influence of all these interconnected streams some of the most important primary resources of the United States, and it is a firm foundation for the inference that traffic potentialities exist.

I think it is a clear inference that the geographical setting of the river system including the Tennessee River is distinctly favorable for the development of river traffic.

"Q. In estimating the potentialities of the Tennessee River, as included in the unified plan of the Tennessee Valley Authority in its report to Congress, is it important or not important to consider the basic products of the section reached by the inland waterways?

Mr. R. T. Jackson: I object to that as incompetent. [fol. 1507] Judge Allen: Objection overruled on the grounds heretofore stated. You may have your exception.

A. It is important, yes."

I have made a study of the movement of the rail traffic moving in and out of the Tennessee Valley and contiguous counties, which might be considered as potential traffic on the Tennessee River if the river is improved. The chart (offered and received in evidence as Defendants' Exhibit 124) is entitled "Railroad freight origins and terminations in Tennessee Valley and contiguous areas, 1932." The data shown thereon was obtained from Appendix 3 of the freight traffic report of the Federal Coordinator of Transportation, issued in 1935. It is intended to show by a consideration of railroad tonnages approximately what the volume of the traffic is to and from this region which the river could draw from when it is completed as a navigation channel. The information is shown in two sections, the one on the left showing the number of cars of freight terminated in counties in the Tennessee Valley area and the contiguous sections during the year 1932, and the section on the right giving the same information for the cars originated in that area. The legend in the lower right hand corner furnishes a basis for interpreting these figures approximately by counties. The report from which the information was gathered shows that the originations of railroad cars containing loaded freight during 1932 in the Tennessee Valley counties was 387,801, and the total terminations were 359-339, giving a grand total of 747,140 cars. In House Document 328 the District Engineer used for 1926 a total of 27,000,000 tons of freight moving into, out of and through the Tennessee Valley, exclusive of perishables and other articles that he thought would not be attracted to the river. [fol. 1508] If the total for the Tennessee Valley, as represented by this chart, is multiplied by the average car loading for the year 1932 in the southeast of 33.54 tons, it will produce a total tonnage of 25,059,075 tons that moved in and out of the Tennessee Valley during the year 1932. Since that time there has been a considerable increase in railroad traffic of nearly 44 per cent and the railroads have lost 16 or 17 per cent of that traffic to the trucks since 1926, and taking that into account, according to my estimates, something over 40,000,000 tons of freight are moving into and out

of the Tennessee Valley counties. In addition to that, there is a very large movement through the valley and there is a larger amount of traffic than the District Engineer actually considered in House Document 328.

I have made an investigation to determine whether or not the general flow of traffic in and out of the valley corresponds to the general direction of the river and the interconnected waterways and have found that the general direction of the flow of traffic would place a large volume of it in the same direction that the rivers go, that is, north and south and from the southeast to the northwest, and vice versa.

The chart (offered and received in evidence as Defendants' Exhibit 125) is entitled "Ton-Miles of Traffic on the Tennessee River, 1933 to 1936". The information came from special graphs covering the Tennessee River tonnage issued by the U. S. District Engineers' office at Nashville. The total of ton-miles was checked against the regular reports of the United States Army Engineers. There are two ways to measure the volume and amount of traffic moving on the waterways or any other transportation agency. One [fol. 1509] is simply by showing the number of tons transported and the other is to use the unit of ton-miles, which shows not only how many tons were transported but also the element of distance in the transportation. That is the best way to illustrate it. The U. S. Army Engineers did not keep their records by ton-miles prior to 1925, but I wanted to show how the traffic which is currently moving on the Tennessee River comes out when it is illustrated by ton-miles, the various groups of commodities. One conclusion that may be drawn from this exhibit is that traffic is increasing, and another is that ton-miles of forest products have on the average more significance than the sand and gravel products which have been spoken of several times. The traffic on the Tennessee has increased from about 32½ million ton-miles in 1933 to about 66 million ton-miles in 1936, and when the river is improved, the ton-miles will increase much faster than the tons because of the increase in haulage.

I have made a separate and independent study to determine which specific commodities could be expected to move on the Tennessee River and in what amounts, and at what savings, if the river is improved as set forth in the TVA plan. These specific studies were conducted during the last three

and one half or four months. The main purpose of it was to check as far as I could the estimate contained in House Document 328 of future tonnage on the river and determine whether or not the changes that have occurred in the character of the traffic which moves, when the circumstances surrounding its movement would depreciate in any way the estimates which House Document 328 contained. The U. S. District Engineer in his survey relied very largely upon information obtained from railroad business. That was not [fol. 1510] available to me, so I proceeded first, with the consideration of the general conditions affecting the flow of traffic into, out of, and through the valley, and then analyzed all of the pertinent sources of information that we could get hold of concerning the actual movement of traffic, andthen I went to shippers and receivers of freight, commercial organizations and others who have knowledge of the freight actually moving into and out of the valley, and from that information we compiled our estimate.

The table (offered and received in evidence as Defendants' Exhibit 126) is entitled "Estimate of Tonnage Movement on Tennessee River for 1937, Assuming Complete Navigation Facilities", and reflects the summary of these studies. In the case of two groups of commodities, coal and coke and forest products, I was not able within the limitations of time and the facilities which I had to work from, to make a detailed estimat of those tonnages, so I examined the information furnished as supplements to House Document 328 concerning those commodities and formed an over-all judgment, and in this summary I have simply included the tonnage and savings relating to coal and coke and forest products that were published in House Document 328, all of which is shown in the notes on the table. In the case of the present annual tonnage, I took the average for four years from 1936 back and made an estimate on the savings that were effected through the transportation of those materials on the river at the present time. In so far as this exhibit shows facts, they are true and accurate, and in so far as it is a matter of estimate, it represents my best judgment. This exhibit is based upon 1937 traffic.

[fol. 1511] "Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 126 the table just identified by the witness.

Mr. R. T. Jackson: We object on the grounds that the witness is not competent either to estimate what tonnage might move by water, or to determine the nature of the waterway involved from a navigation standpoint, or to estimate savings by water transportation."

Examination by the Court:

As to what my definition was in making this estimate of complete navigation facilities, so far as I was concerned in making the estimate, I meant the complete canalization of the river from the mouth to Knoxville for navigation purposes. I did not take into consideration any particular form of canalization. I didn't go to that extent.

Direct examination continued:

By Mr. Fitts:

"Q. In other words, in so far as these estimates are concerned, as I understand it, you estimate that these would move whether the river were canalized by high or low dams?

Mr. R. T. Jackson: I object.

By Mr. Fitts:

Q. So long as it is canalized?
A. So long as it is canalized and the service is established.

Judge Allen: The exhibit is received and you may have your exception.
Mr. R. T. Jackson: Note our exception.

By Mr. Fitts:

Q. Mr. Alldredge, will you state whether or not in your opinion the estimated totals set forth in Defendants' Exhibit No. 126 represent a reasonable and conservative estimate of the annual movements, annual savings and average savings which could be expected if the Tennessee River were improved for navigation by a canalized channel from the mouth to Knoxville?

[fol. 1512] Mr. R. T. Jackson: I object to the competency of the witness to answer the question upon the grounds

previously stated, and upon the further ground that he has already answered the same question.

Judge Allen: He may answer.

Mr. R. T. Jackson: Exception noted, please.

A. There were tonnages that we came in contact with that we could not trace out because of limitations in time. Then, again, as to the savings, we used a conservative formula in determining the savings in the first instance, and in the second place, railroad transportation charges, that is, railroad freight charges are right now in the process of being substantially increased. There was a considerable increase on a number of commodities that went into effect on November 15th. We could not incorporate these increases in these railroad charges. Another group of commodities were increased effective December 20th, and we did not get these increases in here. Then, the railroads have a general petition pending before the Interstate Commerce Commission which is now being heard, asking for a further increase generally on all commodities of about 15 per cent."

Cross-examination:

I did not put in what they are asking for now. I did not get any of those recent increases in there. I think they would have shown an increase in the savings here if I had.

Direct examination continued:

The savings by water transportation and the average savings per ton as shown in the last two columns of Defendants' Exhibit 126 were computed by taking the existing railroad freight rates applicable to the particular commodities as far as we could between the exact points between which they moved, and when we could not do that we took contiguous points that were affected by approximately the same level of railroad charges. Then on most of it we applied the formula prescribed by the Interstate Commerce [fol. 1513] Commission in the making of joint haul rates between railroads and boat lines, which is frequently referred to as the 10 and 20 per cent formula, except when you get so far beyond the limits of circuity that the 20 per cent would not apply. That is a conservative formula which was specifically prescribed to apply to joint haul movements between water lines and rail lines. It was applied to those

movements and, except in one or two instances, we used it also on the all-water hauls. We know that all-water charges are not regulated, they can make any rates they want to, but that is a common carrier formula and frequently the contract carriers cut much below those levels. In the case of gasoline, which is transported more by contract and private carriers than it is by common carriers, we used a different formula, but generally speaking, we used four mills per ton-mile for the distance transported by water to the major bulk terminals on the river, and then on that gasoline that goes out to the subsidiary filling stations or storage stations, we added to the water rate a rate equivalent to about two cents per ton-mile for transportation by truck.

It is not possible to make a worth-while estimate of the value and savings to shippers resulting from the improvement of the Tennessee River for through navigation without considering rail rates charged the shippers, because the rates are the things that the shippers and receivers pay and not the costs, and if there are any savings to be effected, they come about in the difference in the rates and not in the costs. As far as the Tennessee River is concerned, there is [fol. 1514] another element in the situation. Railroad rates are not made in direct relation to costs of service, and I have never heard of any rates on any other transportation agency being made in that way. In using the railroad rates as a base from which to calculate the savings, there is a peculiar situation in the United States. We have no national freight rate structure on the railroads; it is a regionalized structure, and the southeastern region is separate from that standpoint, and the railroad freight charges are considerably higher in that region than they are in the territory just north within which such rivers as the Illinois and the Ohio operate, so that there is an opportunity in the region on the Tennessee River to effect a greater margin of saving by the use of the river as compared with the railroad charges than there is on some of the other rivers.

I am the author of House Document 264, 75th Congress, First Session, entitled, "Inter-territorial Freight Rate Problems of the United States" and I have made a study of the relative unit costs of transportation services by water, rail and truck to determine whether the use of rail and water rates is or is not a conservative method of estimating transportation savings.

The chart (offered and received in evidence as Defendants' Exhibit 127) is entitled "Comparative Unit Function Costs, 1932", and was prepared by me or under my supervision and direction. The sources from which this information was obtained are indicated on the body of the chart and they are official reports prepared and published by the Federal Coordinator of Transportation.

[fol. 1515] "Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 127 the chart just identified by the witness.

Mr. R. T. Jackson: We object to it because, in so far as, if at all, it purports to be any expression of opinion by the witness, we object to his competency to compute costs with reference to water transportation, and if it is merely a reproduction of certain data or graphs that have been published in some reports we object for the reason that there is no showing what they cover or what they include, and they are not intelligible and would be misleading, introduced by a witness who knows nothing about them.

Judge Allen: The objection is overruled. The Court bears in mind that the witness, Mr. Alldredge, has studied these matters for four years in connection with the work of the Authority and has reported on certain phases of them in public documents.

Mr. R. T. Jackson: May we have an exception, and if the ruling is based upon any public document may we see the public document which is referred to?

Mr. Fitts: You certainly may. (Handing book to counsel.) I would like at this time to ask the Court to take judicial notice of the report which I referred to which is an official House Document, and which I think is clearly within the rule of judicial notice. It is here and I will be glad to furnish copies. I don't care to offer it in evidence because I don't think all of the report is relevant but I think the fact that he made it is.

Mr. R. T. Jackson: If it is being offered as an exhibit——

Mr. Fitts: I am not offering it as an exhibit because I don't think all of the material contained in it is relevant, but I think the fact that the witness made the report and made the study is relevant, so long as a challenge as to his qualifications has been made.

Judge Allen: That is in evidence, Mr. Fitts, the fact that he made the report is in evidence; you asked him that question and he said yes, he wrote the report.

Mr. Fitts: Of course that does not show what it is.

Mr. R. T. Jackson: No, it doesn't show anything except he wrote something.

Judge Allen: He wrote a public report, as I understand it, which was presented to the Congress.

[fol. 1515a] Mr. R. T. Jackson: That is right, but whether it is in relation to what he is testifying about or has any bearing on his qualifications does not appear.

Judge Allen: The Court considers that the testimony of this witness as admitted is competent upon the ground that a statistician of the experience of this witness is not compelled to engage actively, physically, in every business which he studies; because he makes an exhaustive study of the various sources and material which relate to the matters that he studies, he is entitled to testify and his testimony is competent. He is entitled to give his opinion and the objection goes to the weight rather than to the competency of the evidence.

Mr. R. T. Jackson: If it please the Court, I understand that was the ruling the Court had made, but I am merely preserving the record.

Judge Allen: The Court is merely preserving the record as to the reason why it considers this question competent. We consider him to be a statistical expert. We consider that he worked for four years and is experienced in that line."

This exhibit has a bearing upon the issue of rates as a basis for estimating the transportation savings, because in making comparisons of rates as between water carriers, for instance, and rail carriers, in order to know what the margin [fol. 1516] of difference in cost of the operation of carriers is, it gives an outside limit when the difference in rates is considered and that is what we have used in this exhibit. The official report from which this was made indicates that all costs of operation in the case of railroads and water carriers were considered, except expense for capital service such as bond interest which was not included. It is more what might be termed operating expense than anything else. Function cost is mostly operating cost. The inland waterways car lot carriers were mostly common carriers. The division of the black part of the bar indicating a cost of 3.4 mills per ton miles represents the average cost by water distance. Mr. Eastman made an adjustment of these

costs so as to compensate for the extra circuit of water lines as compared to rail hauls, and indicated for that purpose the figure of 5.5 mills. That is adjusted to the rail distance. As I interpret his report, it did not say so in so many words, those distances are really short line distances. The costs shown in the bar at the extreme right are divided in the same way. According to my check of his study, he included all Class I railroads, which are the larger railroads having an annual operating income of a million dollars or more; and in the case of water carriers, not all of them were included, they were simply representative. The freight traffic report, Vol. 1, is a study that Mr. Eastman made of transportation of freight traffic.

The table (offered and received in evidence as Defendants' Exhibit 128) shows the ratio of transportation savings by use of the Tennessee River, and transportation charges by all railroad routes on data obtained from the recent traffic [fol. 1517] survey. It was prepared by me or under my direction and the sources used were the same as those for Defendants' Exhibit 126, except that the savings are computed into terms of percentage ratios. The facts stated thereon are correct and the estimates are my best estimates.

"Mr. Fitts: We offer in evidence as Defendants' Exhibit No. 128 the tabular statement showing 'Ratio of transportation savings by use of Tennessee River.'

Mr. R. T. Jackson: Let the record show the same objection to the competency of the witness, the ruling and exception.

Judge Allen: Objection overruled. You may have your exception."

I formerly worked out my calculations of the percentage of savings in total cost of transportation that may be obtained by using this waterway on a per tonnage basis. This was simply converted, instead of showing what percentage of difference there is between the all rail tons to that between the charges by rail and charges by all water or by rail and water. The ratio of savings as shown on this exhibit is in my opinion conservative. The formula I used in working out the savings was conservative to begin with. I checked it against the savings as actually effected in the use of water transportation on other streams and it proves conservative from that standpoint.

The table (offered and received in evidence as Defendants' Exhibit 129) is entitled "Rail Freight Traffic, Southern District." The source from which I obtained the material was from the statistical reports of the Interstate Commerce Commission, except for the estimate for 1937 which came from the bulletins issued by the Association of American Railroads, and that is an estimate. In predicting the future growth of traffic set forth in House Document 328, the District Engineer said something about the rail [fol. 1518] traffic curve as one of the bases for his prediction. That rail traffic curve went down when the depression hit the country, and it subsequently started back up. I wanted to show the Court just how that curve is acting in relation to the estimate which the District Engineer made. There has been a slight recession in November and December of 1937.

"By Mr. Fitts:

Q. I will ask you whether in your opinion it is reasonable or unreasonable to expect a substantial increase in the amount of commerce beyond the amount which you have estimated for 1937, which might move on the Tennessee River if improved for navigation?

Mr. R. T. Jackson: I object to that question, object to the competency of the witness, and on the further ground I do not think he has even estimated the commerce to move on the Tennessee River.

Mr. Fitts: The witness has made all his estimates based on 1937 alone. Your witnesses made estimates projected into the future. I am merely asking whether an increase may be expected.

Judge Allen: Objection overruled. The witness may answer.

Mr. R. T. Jackson: Note an exception.

The Witness: My opinion is it is reasonable to expect an increase."

The chart (offered and received in evidence as Defendants' Exhibit 130) entitled "Tonnage Actual and Estimated, Moving on Mississippi River System Since 1914" was prepared by me or under my supervision and direction. After a most diligent search ever since I have been with the TVA, I was unable to find an accurate official report of tonnages moving on the Mississippi River system from the beginning

of the use of these rivers. We have undertaken, after the expenditure of quite some time, to work out such an estimate. This exhibit is based, as far as we can go, upon the total figures reported by the Army Engineers and the [fol. 1519] U. S. Census Bureau. When we could not get the complete figures, we used the partial figures from those official sources and made an estimate so that the trend might be visualized.

Examination by the Court:

All of the bars shown in the dark colors are the official figures and those shown in light or white colors are the estimated figures. The information was obtained from official reports of the Army Engineers wherever possible, but these are not complete for all the years which are indicated by the white bars. The source for the material for the years prior to the War of 1812 was from reports kept by official trade bodies in such cities as St. Louis, New Orleans and sometimes Cincinnati, and then we would check those figures against the total years that we could get and work out this estimate in that manner.

Direct examination continued:

We did not go to all of those places but we sought all the reliable information obtainable. The biggest difficulty we had was during the Civil War years and this exhibit is not absolutely reliable for those years for commercial traffic. Most of the boat lines were commandeered by either the Union Government or by the Confederacy and used for the transportation of war materials. We did the best we could about it and in my judgment that is the best estimate that could be made from said sources.

"Mr. Fitts: With that explanation we offer in evidence as Defendants' Exhibit 130 the exhibit on the standard, entitled 'Tonnage actual and estimated moving on Mississippi River system since 1814.'

[fol. 1520] Mr. R. T. Jackson: We object, so far as showing estimated tonnage, as being entirely speculative, incompetent, irrelevent and immaterial. As a matter of fact, it is difficult to understand why there is so much white on there, because it covers many years when to my knowledge there are reports.

Judge Allen: The Court deems this exhibit as illustrative of the witness' opinion with reference to the matters there estimated. Since the differentiation is clearly shown in the colors between estimates complete and incomplete, the Court does not consider it misleading.

Mr. R. T. Jackson: Exception.

Judge Allen: You may have your exception."

Examination by the Court:

The freight traffic on the railroads in the area of the Mississippi River system as far back as the year 1888, when the Interstate Commerce Commission was created, has grown steadily until about 1923, and since that time the tendency has been somewhat downward. The growth went up slightly during the boom period of 1926 to 1929 and then started down again and hit bottom along about 1932 when it started back up again. In recent years it is acting differently from the trend shown for all waterways, which have been steadily up and the railroad curves in the last dozen years or more have shown indications of going the other way.

Direct examination continued:

In my opinion, an estimate of the transportation charges on the freight actually transported on the Tennessee River does not accurately reflect the full value of this improvement for navigation in relation to movement in interstate commerce. To the extent that it stimulates the growth of industry and business, there is an intangible element of value, [fol. 1521] and frequently a waterway will cause a reduction in railroad rates, sometimes at right angles to the waterway, and these things result from the influence of water transportation, but are not taken into consideration in the calculations of these savings. The Mississippi River has traditionally had an effect upon the level of railroad freight rates in the Mississippi Valley.

In my studies of the movement of traffic around the Tennessee Valley region, I found a substantial movement in and out of the city of Chattanooga.

"Q. In your opinion, what effect, if any, would the provision of a nine foot channel on the Tennessee River from Knoxville to the mouth of the river have on the movement

of traffic between the states within the influence of the Tennessee River and the interconnected inland waterways?

Mr. R. T. Jackson: Just a moment. I renew my same objection on the same grounds as to the competency of the witness.

Judge Allen: Overruled upon the same grounds.

Mr. R. T. Jackson: Exception noted.

A. Well, it would serve to increase the volume of traffic, in my judgment."

Examination by the Court:

With regard to the existence of phosphate rock between Nashville and Carthage, in the Minerals Year Book of 1937 published by the Bureau of Mines of the U. S. Department of the Interior, at p. 1319, there is a reference to the production of phosphate rock in the State of Tennessee which shows that the production in 1936 took place in Maury, Sumner, Giles, Davidson, Hickman and Perry Counties and the production in Sumner County in 1935 was given as 14,763 tons which is not very heavy.

[fol. 1522] Cross-examination:

I graduated from a small school in Alabama known as the Central Alabama Agricultural School. It would not be a college today. It is not a college. I did not study there agricultural studies chiefly. They had agriculture in the course, but that was not the chief one. I did not take any course in engineering at that school or anywhere else. That was more of a general educational school. After I left the agricultural school I was not a shipping clerk for Penick and Ford in Montgomery. I never worked for Penick and Ford. That company you are trying to get a hold of was the Southern Syrup Company whose main product was molasses and syrup, and then I worked with a canning company. During that period I was secretary and manager of the freight bureau at the Montgomery Chamber of Commerce. That was extra work. I was in Montgomery about a year. Then I went to become Secretary of the Dothan, Alabama, Chamber of Commerce.

"Q. How large was Dothan at that time?

A. Oh, about 17,000 or 18,000 people.

Q. Well, it was only 16,000 in 1930, wasn't it?

A. I don't know exactly; I haven't checked that up.

Q. Was it the result of the Chamber of Commerce efforts that it went backwards, or was that about the size of the town?

A. I was just giving you an approximation. It is a very thriving little city."

Then for a year I was with the Atlanta & St. Andrews Bay Railroad. That is a short road about 100 miles long. From there I went with the Alabama Public Service Commission to become director of the Bureau of Transportation. In the meantime I had studied law and become a member of the bar. I was with the Alabama Commission for 12 years [fol. 1522a] until 1934. The Alabama Public Service Commission dealt with rates of all transportation agencies, in- [fol. 1523] cluding the boat lines. It also dealt with power rates. Power rates were not in my field, but the Commission dealt with them. The Alabama Commission regulated the rates of water carriers, but not only in connection with rail carriers. They regulated all of these rates where they were in common carrier service. When I first went with the Commission, there were several boats in common carrier service. By the time I left not all of them were gone. I joined the TVA on September 1, 1934. I wrote a book entitled "Ratemaking for Common Carriers." There is no chapter in that book specifically on water carriers. I said in there though that the general principles which I discussed would apply to boat line rates.

Defendants' Exhibit 127 shows mills per ton-mile for railroad transportation of Class I railroads. That is the average. I am familiar with the Class I freight rates but there are more than 12 classes. This exhibit is not limited to railroads in southern territory but refers to Class I railroads all over the United States. These costs are average costs for the hauling of all freight. They include the same kind of freight that is included in all classes of tariff schedules. They include all kinds of high priced merchandise that is shipped in less than carload lots, carries a relatively high freight rate and involves relatively high handling costs, but the tonnage of that type of freight is the minor part of the railroad business. It includes additional costs by way of insurance or liability on transportation of those high grade manufactured articles which are shipped in these high freight classifications. It also includes

the costs of handling and the insurance costs involved in perishable articles shipped under high freight schedules [fol. 1524] and the costs of refrigeration for food products and things of that kind. That is part of the operating cost. There are commodities which are carried at commodity rates which are relatively speaking very low. Those articles include coal and crushed stone and things of that character. All heavy bulk freight is moved in large quantities. Those are usually carried at the lowest rates, but I am not sure that they are carried at the lowest costs always. I am familiar with the fact that the great coal-carrying railroads such as the Chesapeake & Ohio and the Norfolk & Western made the largest profits throughout the depression. Where coal constitutes a very large part of railroad tonnage, the railroads can organize their schedules in such a way as to effect the lowest possible cost of operation, but where you throw in a car of coal now and then, I am not so sure that the cost would be much lower than of the other freight. As to whether I can tell any commodity other than that which is carried at commodity rates, such as coal, crushed stone, and those big, bulky commodities carried in open freight cars, can be carried more cheaply by the railroads, you have opened up a great big question. You are speaking on the average and in general, I suppose. I can name the commodities but I want to name the circumstances and conditions. Sand and gravel in some circumstances and under some conditions phosphate rock. Sand and gravel is one of the big bulky commodities carried at commodity rates when they are carried by railroads at all. As to whether I can name a commodity that is not included in one of the big, bulky commodities moved by the railroads at commodity rates which a railroad can ordinarily move more cheaply than such bulky commodi- [fol. 1525] ties, I don't know that I could name one that they could haul more cheaply as a general rule where they are properly organized, but I understand that special circumstances surrounding the movement of the commodities sometimes affect very materially the cost. One can find high cost operations of all kinds by looking for them.

I used a blanket 10-20 per cent differential on the basis of rulings of the Interstate Commerce Commission. I am familiar with the fact that the power to set a differential for a joint rail-water common carrier rate is vested in the

Interstate Commerce Commission by Sec. 15 of the Interstate Commerce Act.

Section 15A of the Interstate Commerce Act provides that the Commission may prescribe minimum differentials between all-rail rates and joint rail-water rates for common carriers so long as they are reasonable. I do not know that the purpose of that provision is to keep the all-rail rate high enough above the joint rail-water rate so that joint rail-water transportation will not be driven out. I never knew of the Interstate Commerce Commission raising the all-rail rate so that it would be 20 per cent higher than the joint rail-water rate. Assuming that the costs of water transportation and transfer of the joint rail-water movement were more than 80 per cent of the all-rail rate, it would not be possible to pay the operating expenses and the wages of the crew out of that formula if the service was devoted exclusively to joint haul service. It might be possible to serve that for less than cost if there were other means for making up expenses. It is sometimes done in case of railroad and trucking operations. The Interstate [fol. 1526] Commerce Commission may fix a reasonable differential between all-rail rates and the rail-water rate when in a particular case it finds on an examination of the facts that it is justified.

On Defendants' Exhibit 122 the distance from Knoxville to Memphis by the river route is 919 miles and by the all-rail route the distance is 424 miles, making it 217 per cent as far by water. Considering the Tennessee River by itself, as disassociated from its connections, I do not know of any large river in the eastern United States or east of the Rockies which has as large a circuity factor, as indirect a route, as the Tennessee River, starting from its head at Knoxville to its mouth.

At the present time the large movement of inland water commerce consists chiefly of heavy bulk commodities such as coal, sand and gravel, crushed rock, iron ore and things of that character, but that does not mean it is going to continue that way. It is a fact that inland water transportation is peculiarly suited to the movement of heavy bulk commodities of that character, but that is partly due to the fact that transportation charges constitute such a high proportion of the destination values on those wholly crude commodities and makes them more sensitive to transporta-

tion charges. Those are the first ones to seek the methods of economy. It is also true that package freight or merchandise requires relatively larger expense in handling and rehandling and also requires speedier transportation. Even with the splendid direct water transportation by deep water between such ports as Charleston and Savannah, practically no package freight movement has ever developed and it is almost entirely carried by rail. I think water haul is more [fol. 1527] suitable to long haul of goods than it is to short haul. The answer would have been different if New York had been involved. There is a great deal of package freight between New York and Savannah moving by water. As to whether I want to testify that package freight between New York and Savannah moves chiefly by water, I have not made any exact comparison as to the amount which moves but I do know there has been a continuous movement of package freight from New York down the coast to such cities as Charleston and Savannah for many years. The movement of that package freight is not all confined to cities along the Atlantic coast which have no railroad but that freight goes as far west as the Mississippi River.

There are four or five transportation economists in my division of the TVA. They are not just young helpers. They are all well qualified. Referring to Defendants' Exhibit 118, I could not say how much traffic now moves by water between Chicago and Evansville, Ind. I have not segregated it that way. As to whether I know it is a fact that there is none, I have not made an examination of the question to find out how much traffic goes from Chicago to Evansville. I think there is a 9 foot channel from Chicago to Evansville. The improvement of the Tennessee River will not in any way affect the movement of traffic between Chicago and Evansville. It might affect and probably would affect the movement of traffic from Chicago and Evansville to Tennessee River points and in the reverse direction. I also show Duluth on the map. I do not anticipate that any particular water traffic would develop between Duluth and Knoxville. That is not just a little frill. It showed traffic could move by water that way. Traffic could go from Olean to New [fol. 1528] York around by Australia and back up the Mississippi if somebody wanted to pay the charges.

Defendants' Exhibit 122 shows some extensive coal deposits in the vicinity of Pittsburgh, but it was not intended to indicate coal deposits as much as it was to show the pro-

ducing centers. Referring to Defendants' Exhibit 118, I do not anticipate a large movement of coal from Knoxville to Pittsburgh, there will not be much carrying of coal to New Castle, but there might be a movement of coal to Minneapolis, St. Paul or Kansas City, places like that where they need it. There is no coal now moving to Minneapolis and St. Paul. We have had inquiries about it. They have been inquiring about getting coke down on the Tennessee. There are extensive coal fields in Illinois comparatively close to the Illinois River, but I do not know whether coal is shipped from those coal fields to Chicago. They could ship coal from those coal fields to Minneapolis if they got the coal. I do not think it is better coal than around Knoxville. There is a complete analysis of the groups of coal around Knoxville in House Document 328. A casual examination of that shows that the coal in East Tennessee is a little superior to the Illinois coal. I know there is a large movement and that all of the coal used at Duluth and most at Minneapolis and St. Paul is shipped by boat up the Great Lakes as a return cargo for ore boats coming down. I know that there are literally hundreds of boats going up the Great Lakes empty from the ore ports on Lake Erie to Duluth for ore. It is true they carry coal if they can get any at very low rates if anybody sells it and wants to ship it. I do not know of any refusal to sell to them but I think the [fol. 1529] East Tennessee mines could do some selling too and might take advantage of that when the river is canalized up to there. I did not make a detailed study of how much coal I expected to move from the Knoxville area to Cincinnati, but I did study the potentialities. The coal for Cincinnati comes from either the West Kentucky mines or the mines up on the Kanawha, the Monongahela or the Ohio River. I am not sure about the superiority of the coal on the Kanawha River, but they can load directly from the mines into the river boats. I think that very thing will happen when the Tennessee River reaches the Cumberland Mountains coming up towards Knoxville. I do not know of any large coal mines below Knoxville where the tipples empty into the river, but I know coal is in there, and when boat lines started operating on the Tennessee River in the early days, most were coaled on the upper reaches of the river from mines on the banks of the river. I never knew of any which carried coal to Cincinnati.

I do not recall whether there is any map which would indicate that there is any coal in Iowa. Defendants' Exhibit 123 shows lead and coal.

"Q. Why don't you show coal in Iowa?

A. Well, we did not undertake to show all of those places.

Q. If you showed coal in Iowa it would not look much like Omaha and Sioux City would get coal from Knoxville?

A. I am not so sure of that. It depends on the grade of coal, and sale prices."

I showed some coal in the extreme southern tip of Illinois running over into Kentucky. I know that some of the coal fields in central Illinois are shipping directly on the Illinois River. As to why I did not show the coal fields in Indiana, [fol. 1530] we simply were not trying to show everything. As to showing only a little coal in the corner of Pennsylvania, the word "coal" is written on the Appalachian Mountains on the map to show that there is coal there. I admit there is coal in the Appalachian Mountains. As to why I did not show coal in Michigan and North and South Dakota, I did not have any purpose in showing that. As to whether I was showing only what I had a purpose to show, the purpose was simply to show the Court that there is a varied amount of primary resources touched by this stream which could be developed into traffic increase. If I had undertaken to catalogue all these, it would have taken me a long time and I could not have gotten them all upon the map.

Defendants' Exhibit 122 shows the basic minerals in the Tennessee Valley, including coal, limestone, phosphate rock deposits and mines, and Defendants' Exhibit 123 shows that one of the great resources is marble. Both of these are right. There is some other mineral up there that we did not show too. It is simply illustrative.

Defendants' Exhibit 121 shows a general outline of the forest area in the Tennessee Valley region. This does not mean that it is all forest land, but that there is some forest. To have differentiated between the cleared land and uncleared land would have brought me into such minute descriptions that it would have been confusing rather than clarifying. There are a good many woods left in this basin and they are being cut and marketed. When we build this immense Gilbertsville reservoir, all of the forest which are within that reservoir area will have to be cut down and

the same is true with reference to all the other TVA reservoirs up the river and on the tributaries, and all the woods [fol. 1531] will be destroyed where they are within the reservoirs. The reservoir areas are not more than half wooded. I do not know how many acres. As to whether I regard that as an act of conservation, considering all the elements of it, I think it is very much an act of conservation.

Defendants' Exhibit 119 shows the population per square mile. The Chicago population was not included on the Illinois system because I felt it should be more properly included within the influence of transportation on the Great Lakes rather than on the Mississippi. Chicago is the principal contributor to water traffic on the Illinois system. The population of the three counties in and around Chicago is shown on the map itself, but has not been computed in terms of population per square mile. In making my calculation of population per square mile for the area below Baton Rouge, I did not include New Orleans because I felt that the population as far as the 30 foot channel extends should be counted within the influence of the Gulf Coast transportation, but I have no objection to it being computed on that basis. There is a very large proportion of traffic in that section of the river.

Of the total tonnage moved on the Tennessee River in 1936, the supplies, materials and equipment in connection with the construction and maintenance of the works of the TVA and other government freight was 54.1 per cent of the total, which is taken either from the figures of the District Engineer at Nashville or from the report of the Chief of Engineers, and it includes the traffic at Guntersville of the Louisville & Nashville ferry. Excluding that crossing the river, it was 55.7 per cent. I guess practically all that government freight is TVA freight. I have not gone into [fol. 1532] that question in detail, but it is very probably mostly TVA freight. As to what part of the 1937 freight on the river was TVA freight, the figures for the 1937 freight have not been compiled as yet. I do not know whether they are larger than for 1936. Possibly more operations were carried on by the TVA. I don't keep up closely with those engineering operations. I cannot give the percentage in ton-miles of the TVA or government freight for 1936. It has not been compiled by anybody that I know of. We do not keep any records of the percentage of government freight in ton-miles. It is a better way to keep

[fol. 1538] mean on the exhibit when you get outside of the counties which are wholly white that there was no traffic and no railroads, but merely that I did not extend this study to those counties.

With reference to Defendants' Exhibit 125, I cannot give the tonnage, source and destination of TVA traffic by classes of commodities for 1936. I did not have to have that in order to compile the exhibit. I did not have to have TVA traffic to determine the ton-miles, the kind of traffic and what its source and destination were. I had a graph which indicated the movement of all traffic but not with the TVA traffic segregated. I am unable to explain that with relation to TVA traffic. The information for 1936 I obtained from special graphs furnished by the U. S. District Engineer. The report of the Chief of Engineers for the year 1936 has not been furnished yet. I have no objection to furnishing the special official graph from which I obtained this information.

With reference to Defendants' Exhibit 125, I cannot tell how much of the increase in forest products in 1936 is lumber or timber for TVA forms, construction camps or other uses, but from my general knowledge of the movement of forest products on the Tennessee River, I think it is a minor part.

On Defendants' Exhibit 126, I show an out-bound movement of 878,000 tons of iron and steel. It is expected that this very large movement will be shipped out of Chattanooga, Guntersville, Birmingham, and Muscle Schoals. Birmingham is not on the Tennessee River, but it can reach the Tennessee River. Birmingham steel will be shipped either through Sheffield, Decatur or Guntersville. There are no suitable terminal facilities at these various locations for handling this movement at the present time. They [fol. 1539] will have to be constructed. It would require some time for that to be done and it would have to be done before the traffic could develop.

As to whether I know of any waterway in the United States where there exists a movement in iron and steel having any such relation to the total traffic as that shown in my estimates for the Tennessee on my Exhibit 126, there is an important movement on the Ohio. I do not know whether the percentage of the iron and steel traffic on the Ohio to the total traffic is as large as this or not. There is an im-

portant movement on the Mississippi too. The proportion of iron and steel moving on the Ohio is nowhere near as large in proportion to the total traffic as I have estimated for the Tennessee. I do not think the percentage would be as great.

As to naming locations along the Tennessee River at which I estimate movement of coal and coke, that movement was taken from House Document 328. All I did was take the figure out of House Document 328. I made no detailed study of the points of origin, terminals or anything of that kind in connection with that movement. There is a very large movement of coal in, out of and through the Tennessee Valley. Major Watkins analyzed that carefully and determined what he thought would be a reasonable percentage of that to move by the Tennessee River. There are possibilities also of the opening up of mines right along the banks of the river after it is canalized, which would furnish an additional source of traffic for the Tennessee River.

The movement of forest products on Defendants' Exhibit 126 was likewise one of the items taken from House Document 328, but I did make a more extensive study of that than I did of the coal. I know that lumber moves generally on [fol. 1540] the Tennessee and has moved for years from the river banks below Florence. That area is not very well served by railroads and a great deal of that lumber is hauled in to the banks of the river and shipped out. I know that the forest resources extend all along the river from near its mouth to the head waters at Knoxville, and potential lumber traffic might originate at any place along the river almost throughout its entire length. I estimate that local lumber might be logged and taken to the river anywhere along the stream. There is a constant flow of lumber from the Southeast, reaching as far as the Gulf of Mexico, on through to the Tennessee Valley to points in the North, and some of that traffic could very well be handled in connection with railroad transportation to some place like Chattanooga, Decatur or Muscle Shoals, and then forwarded on by the Tennessee River and its connections. I could not say as to whether it is generally true that the history of the movement of forest products on all rivers has been that lumber along the banks has been cut off first and then the movement by water of forest products has steadily declined. I have made some investigation of the Tennessee and can say that the creation of these deep reservoirs will

back navigable water into places where it makes more economically accessible timber resources that heretofore have had to come out by expensive truck movements and brings the possibility of cheap transportation for logging to additional areas closer to the water. On p. 114 of the history which I wrote of the Tennessee River, I show that the forest product movement on the Tennessee River has had a decline after the boom of earlier years after the best timber has been cut off along the stream. I do not say that it is characteristic. It is partly due to the fact that what [fol. 1541] they used to call merchantable timber has declined and other uses for the timber are being created and other kinds of forest products are now moving more largely than they used to.

On Defendants' Exhibit 127, I said that Comparative Unit Function Costs were substantially the same as operating costs. Fixed charges such as interest, depreciation and taxes are a substantial item in the costs of any kind of transportation, particularly with railroads. I did not base my estimate of savings by water transportation directly on anything shown on Defendants' Exhibit 127. My estimates were based upon rates and not upon costs.

Defendants' Exhibit 128 shows a movement of 100,000 tons of cement and a total of all water cost of $272,000. That estimate does not include cement that is currently moved on the lower Tennessee, but represents probable new traffic originating largely in the Chattanooga District. The probable destinations were Decatur, Florence, Paducah, Memphis, Vicksburg and New Orleans. We took the existing all-rail rates from Chattanooga to those points and then figured the all-water rate at 80 per cent of that and used the difference as the measure of the savings by water. The average is approximately $.68 a ton and 100,000 tons at a savings of $.68 a ton makes a total saving by water of $68,000. We simply took 80 per cent of the rail rates and called that the charge for water transportation and said the difference was the saving which is a very conservative figure in my judgment. Sand and gravel which is a special movement of a kind of sand and gravel known as Tripoli, appearing in very large quantities along the banks of Bear Creek, was not estimated in that way. It moves both as an industrial raw material and the movement upon which that [fol. 1542] saving is figured is from Iuka, Mississippi, to Florence, Alabama, and then the savings is determined upon

the 80 per cent basis. It is true that the all-water or rail-water cost on sand and gravel was derived simply by taking 80 per cent of the all-rail rate, but that is not true of the present sand and gravel which is in another category entirely. The charge for all-water or rail-water transportation of the item of iron and steel is based upon the same formula. That is also true for sugar, which nearly all comes from the New Orleans Refining District and goes all up and down the river.

The short line rail distance between New Orleans and Knoxville is 441 miles and the water distance is 1,377 miles. That is figuring the water distance against the short line railroad distance, but freight moving on railroads does not always move by the short line. Generally speaking on all railroads there is a circuity of movement. The circuity factor between Knoxville and New Orleans is about three to one, figuring the all-water distance against the short line rail distance. I do not know exactly the circuity factor for the sugar movement between New Orleans and St. Louis but it is less than three to one. I would not assume that a differential between all-rail and rail-water rates on the Mississippi could be applied more or less blindly to the rate situation on the Tennessee even though circuity factors and density of population factors are very different. I have in substance applied the 80 per cent formula to practically every commodity except clay and gasoline. That cost exhibit which I filed here allows ample latitude for that.

The present sand and gravel movement shows a very much greater saving, one of the factors of which is due to [fol. 1543] the fact that the sand and gravel is dredged out of the river and transported on barges to the site where it is used. The other factor is that if it moved at all, it would have to move largely by trucks. There are no land facilities that are handy for moving sand and gravel from those particular points. There would be truck haulage but not rail haulage. One reason for the greater saving on the present movement of cement is due to the fact that much of it is for TVA uses and its destination is right in the river at the dams where there are no good land transportation facilities. We took that into consideration.

It is frequently true that rail rates for lines which parallel inland waterways are materially lower than those for feeder or traverse lines. That is just one of the intangible benefits of water transportation which I mentioned. It is a com-

mon practice for railroads to reduce their rates on specific commodities even below actual cost of transportation, to meet water competition. I don't know what the Interstate Commerce Commission is going to do hereafter about that, but they have been doing it for years. I know that it is necessary to provide rates for the railroads sufficient to keep them running. Some of them may go into bankruptcy in the meantime and come out again, but in the long run that is the way it is supposed to work out. No formula has been developed for operating the railroads at a permanent deficit and still keeping them going. Some of them have been in the hands of receivers for several years.

"Q. Now, if you compute savings on the basis that shippers merely pay the operating costs of the vessels on inland waterways, and the nation or the public pays the fixed charges and the operating expenses of the waterways themselves, is there any justification from the national or public viewpoint of claiming alleged savings based on a comparison of just operating costs of the barge owners and ignoring the fixed charges paid by the public?

[fol. 1544] Mr. Fitts: We object to that question, may it please the Court. It calls for the witness' conclusion on a matter of policy.

Mr. R. T. Jackson: It is an economic justification, whether there is any economic justification.

Judge Allen: The objection is sustained. You may have your exception.

Mr. R. T. Jackson: May we have our exception noted, please.

By Mr. Jackson:

Q. Is it not a fact that the mere granting of a subsidy to shippers on waterways does not constitute an economic saving from the standpoint of the nation?

Mr. Fly: We object, may it please the Court, upon the ground that he is now questioning the witness for opinions and statements and conclusions as to policy.

Mr. R. T. Jackson: I don't think so.

Mr. Fly: It is a question purely for Congress to determine.

Judge Allen: The objection is sustained, and you may have your exception.

Mr. R. T. Jackson: Exception noted, please."

On Defendants' Exhibit 128, the movement of 505,000 tons of gasoline and kerosene at an all-water or rail-water charge of $2,506,000 is in the St. Louis and Baton Rouge Districts. The principal receiving points we estimated on the Tennessee would be Muscle Shoals, Decatur, Guntersville, Chattanooga and Knoxville, but there would be intermediate places such as Perryville. I made up a table (offered and received in evidence as Defendants' Exhibit 131) that shows tonnage which I estimate would be delivered at these points. The basis upon which I computed the all-water or rail-water charges for a movement of this amount of gasoline and kerosene was four mills per ton-mile. That figure was based upon a consideration of the rates charged by contract carriers for the movement of gasoline on the Mississippi and Ohio Rivers, and from a consideration also of the costs of transportation by con- [fol. 1545] tract carriers as represented by the exhibit which I have filed here, and also on the general towing tariff published by the Federal Barge Lines. The exhibit to which I referred is Defendants' Exhibit 127, Comparative Unit Function Costs. The gasoline-kerosene movement is 15 per cent to 20 per cent of my total estimated movement. I looked into the matter of approximately how much of the total traffic moving by water on the Ohio River consisted of gasoline and kerosene expressed in percentage. I did not base my estimates strictly on such considerations as that. I went into the conditions in the Tennessee Valley itself and discussed the matter with the purchasers and distributors of gasoline and I discussed it with representatives of oil refining companies. The experience on another waterway which has been developed for a considerable time is a good index, if you take into consideration all the differentiating circumstances and conditions, which would include increased population, circuity, and other things. As to whether it is not a fact that the gasoline-kerosene tonnage on the Ohio River does not exceed 5 per cent of the total water traffic, including duplications, it is about 8.4 per cent in 1936. As to whether I am quoting unpublished figures for 1936, the 1937 official figures have not yet come out from the office of the Chief of Engineers, but I do have the 1936 figures on the Tennessee and Ohio. As to whether the figure 8.4 per cent, which I purport to

quote is based on some unpublished figure or the figures reported in the 1936 report which covers the data for 1935, I notice I have a letter from Colonel Powell, Chief Division Engineer at Cincinnati, dated November 24, 1937. I presume he has given me some figures. I do not recall whether I got my estimate of 8.4 per cent from the last official report [fol. 1546] of the Chief of Engineers, but they are official figures of the Chief of Engineers. I got them one way or another.

Examination by the Court:

Sometimes the unpublished figures which I receive from the Army Engineers are preliminary. Occasionally we can get those figures from one of the Division Officers, before they are actually publicly announced in Washington. None of the figures are received from anyone except the Army Engineers. All we get from the Army Engineers are in an unpublished state.

Cross-examination continued:

I cannot say whether I took the 8 per cent from the published report of 1936. I have not my notes here. The published reports show that the percentage ranges from 2.5 per cent in 1931 to a maximum of 5.5 per cent in 1935, which would be contained in the 1936 report of the Chief of Army Engineers, and I can very well understand that it would increase the next year.

I would not say that the circuity factor, population factor and industrial factor are more favorable for the movement of gasoline on the Ohio River than on the Tennessee River from the points which I have indicated as points of origin. The circuity factor from Baton Rouge to Guntersville is worse than from Baton Rouge to Cincinnati, but that is an extreme one. That would not be true on gasoline coming from Wood River, Illinois, to Tennessee River points.

Defendants' Exhibit 130 shows the actual and estimated tonnage moving on the Mississippi River system since 1814. I cannot tell exactly what tributaries of the Mississippi River system I used for 1817, but so far as we could observe [fol. 1547] it, we used the same streams as are included in Table 70, p. 28, of the report of the Chief of Engineers for 1936. It is largely the Mississippi River and its navigable

tributaries. The Chief of Engineers has been publishing annually the commercial statistics for a great many years. I do not know just when it started, but it has only been since about 1924 that he has been publishing a total net figure with duplications eliminated. One of the difficulties with the old statistics is that there were duplications when they were added together. For the years 1920 through 1923 and 1928 through 1936, the figures are reported as complete with duplications eliminated in the annual report of the Chief of Engineers. The figure for 1916, 1906, 1886, and 1880 are special canvasses from the Bureau of Census. For 1889, the figures are included in the census for 1890. The figures shown in black are taken directly from one of the reports I have indicated and the others are estimates I made from one source or another and from the partial figures published by the Army Engineers whenever I was able to find them. I did not make any use of Defendants' Exhibit 130 in any testimony I have given, but I want it to support my judgment that I expressed that there would be, when the river is canalized to Knoxville, a future increase in tonnage.

Redirect examination:

The circuity factor is determined by comparing the actual distance by water between two points with the shortest rail distance. Freight does not move by the shortest routes by railroads. This circuity factor is not a fair representation [fol. 1548] of the difference in distance when it is checked against the short railroad lines. There was no through channel on the Tennessee River in the past.

The graph (offered and received in evidence as Defendants' Exhibit 132) is entitled "Tennessee River Tonnage Graph 1936" and was prepared by the United States District Engineers' Office at Nashville, Tennessee, dated April 19, 1937, and shows graphically the movement of different tonnages on the Tennessee River classified into several groups of traffic. It is from this that I procured the data as to the ton-miles on the different groups of commodities.

Recross examination:

In comparing the all-water route with the all-rail route, I mean the shortest all-rail route. The circuity factor oper-

ates the same when applied to one point as another. In almost any case, there is more than one rail route that is possible. Freight frequently moves by the indirect route. That is true of practically any two points as far as railroads are concerned, but the water carriers have to stay in the channel and they do not usually have alternate routes.

(The witness was excused.)

[fol. 1549] PERCY H. THOMAS was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 65 years of age, reside in Atlanta, Georgia. I am an engineer on the staff of the Federal Power Commission, but I am not testifying in that capacity today. In explanation of my status in this case, the Acting Chairman of the Commission has given me permission to make a study in certain lines in connection with this case and granted me permission to testify in my personal capacity as an engineer.

I graduated from the Massachusetts Institute of Technology in 1893 with the degree of Bachelor of Science in electrical engineering. After a year or so in the apprentice course with the Westinghouse Electric & Manufacturing Company, I became a member of the Engineering Department of that company. For the next nine years, until 1903, I was busy on a mixture of research work and commercial design, as this was the pioneer period in the early development of alternating current. However, I had much opportunity to investigate practical problems of high tension transmission. At that time I presented several technical papers on the subjects before the national society of electrical engineers, the American Institute of Electrical Engineers. One of these treated of "static strains" in electric circuits, and I was afterward invited to present the subject matter before the Franklin Institute of Philadelphia, and was awarded the Franklin medal therefor.

Following 1903, I was for four years chief electrician for the Cooper-Hewitt Company, this being a personal enterprise of George Westinghouse, engaged in developing mercury vapor rectifiers and lamps. In 1907 I formed a partner-

[fol. 1550] ship with N. J. Neall, of Boston, to practice consulting engineering. During the next few years I was very active in the American Institute of Electrical Engineers, in which society I have served as manager and vice-president and have held at one time or another the position of chairman of nearly all the standing committees. That society has a Committee on Power Transmission, now known as the Committee on Transmission and Distribution, the chairmanship of which I have held many times.

In 1913 I was engaged by the firm of Guggenheim Brothers to design a transmission line for their large copper mine project in Chile. This led to my appointment as consulting electrical engineer for the firm, in responsible charge of the engineering for their power interests in South America, which included both hydro and steam systems and extensive transmissions and power supply for the Chile Exploration Company, the Braden Copper Company, and the Caracoles Tin Company of Bolivia. During this period I undertook for the firm the design of other hydro transmission projects, one for the city of Santiago, Chile. On the disbanding of the Guggenheim Brothers Engineering staff in 1923, I returned to consulting engineering, in which work I continued until 1934, with a wide variety of clients, largely on electrical power problems.

In 1934 I joined the staff of the National Power Survey under the Federal Power Commission, as chief of the Power Requirements Division. In January 1937, I was appointed regional director of the Atlanta office of that Commission. This office covers eleven southeastern states, Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Arkansas and Louisiana. The Power Requirements Division, in cooperation with the Power Resources Division of the National Power Survey, planned for the collection of data of the proper character and in sufficient quantity to permit the analyses and study [fol. 1551] of the operations and plants of the utilities of the country, their inter-company and interstate operations, the prospects of regional shortages or surpluses of power, efficiencies of operation, adequacy of facilities, and so forth. These data were collected in the form of questionnaires sent by the Commission to the utilities in the country and are now pretty well known. As regional director of the Atlanta office of the Commission, my duties, in addition to

it, but we do not have it. I don't say that the percentage on a ton-mile basis on government freight for 1936 would be greater than the percentage on the total basis. I do know that a very large part of the non-government movement on the Tennessee is sand and gravel, but I think the TVA has moved some sand and gravel too. I know the non-government sand and gravel movement is a very short haul, but it is a little longer than on some rivers in some cases.

With reference to Defendants' Exhibit 123, I have heard of the great limestone producing areas at Calcita, Michigan, but I did not show them on this exhibit. These three exhibits I have been talking about covering forests, agriculture and minerals are simply designed to show what the resources are in the Tennessee Valley and they have no reference to anything very far outside of the valley. As to whether I am familiar with the iron ore deposits at Marquette, Michigan, and also Northern Wisconsin, those are the ones in the Mesabi range. The Mesabi range is in Minnesota. I thought these deposits in Michigan and Wisconsin were the same deposits as in the Mesabi Range in [fol. 1533] Minnesota. I don't show those on that either. I think most of that goes to Pittsburgh.

I am generally familiar with the great gasoline industry at Whiting, Indiana, but I do not show that either. I do not show anything about petroleum in either Michigan or Pennsylvania. I do not think there are any petroleum resources at Whiting, Indiana. I think that that oil is brought in there from somewhere else. The gasoline shown on Defendants' Exhibit 123 over on the Chesapeake Bay is an unfortunate word. It should have been the word "Petroleum". A small amount of petroleum is produced in Pennsylvania. It is produced at Oil City in Pennsylvania and I know about where that is.

If Defendants' Exhibit 123 shows an apparent concentration of minerals and other resources around the Tennessee River to which I do not agree, it was not so intended. I could not agree that it really does show an untrue concentration of minerals in the Tennessee Valley. What I meant by the exhibit is that future traffic, when the Tennessee River is canalized and harnessed up, might well draw on some of the resources in the other regions. I think petroleum originating down in the southwest is just as much a source of potential traffic to the Tennessee River as the marble which you see there and more. I am quite sure that they

are going to trade coal and one thing and another, and I am quite sure that gasoline coming from the petroleum reserves in the southwest will be moving on the Tennessee River in six months. I do not know that corn is raised in Ohio and other points contiguous to the Ohio Valley and some of that may come up the Tennessee River, too. I don't think they are going to use more corn down here.

[fol. 1534] I do not have my tonnages broken down and I cannot tell exactly if it is correct to say that the movement of agricultural products such as corn and grain of all kinds on the Ohio River has ranged since 1932 in the vicinity of 3/100 of 1 per cent up to perhaps 15/100 of 1 per cent of the total traffic. I observed that the tonnage on the Ohio of grain and grain products, cereals and rice, is undoubtedly small. Since 1934 the official Army reports do not give the total amount of packet freight separated from the other groups, and the unclassified groups have ranged from about 5 per cent in 1934 to about 3.69 per cent of the total tonnage carried on that stream in 1936. I presume those articles are included in the unclassified group. I think that the reports of the Chief of Engineers show separately cereals, grain, feed, oats and grain products, but I have not got those figures before me. I would not dispute the fact that the largest percentage shown in those reports is 15/100 of 1 per cent of the total movement on the Ohio River, because I don't know. I did not know that before I made the estimate shown on Defendants' Exhibit 128 of potential tonnage on the Tennessee River, when I showed grain and grain products, cereals and rice, amounting to substantially more than 10 per cent of the total annual tonnage; but the situation is different between the Tennessee Valley and the region served by the Ohio with respect to those articles of freight. As to why it is different, the Tennessee Valley is largely a deficit area with respect to the production of those commodities, and it must bring in great quantities of them to meet its own consumption requirements. There has been a steady flow of grain and grain products from the Middle [fol. 1535] West into the Southeast ever since I can remember. I showed on the exhibit that there are a good many agricultural products in the Tennessee Valley and I presume that the great Pittsburgh and Cincinnati areas are deficit areas in the matter of producing grain and foods which they consume and use, but not on the lower Ohio.

There is approximately the same population in the Pittsburgh area alone that there is in the entire Tennessee Valley. Defendants' Exhibit 119 shows the population of the Pittsburgh area alone is 2,221,000 and the population of the Tennessee Valley is about 2,800,000. The concentrated populations in the Tennessee Valley are two, 155,000 and 159,000. The figure I have on the lower left hand legend of Defendants' Exhibit 119, Tennessee River, 1,329,048 population for 1930. That is the population within 25 miles of both banks of the Tennessee River. But that is not all of the Tennessee Valley. The Pittsburgh population is located within even a more restricted area, but the first question you asked me was in relation to the population of the Pittsburgh district and the Tennessee Valley.

I do not have the livestock tonnages, which are shipped on inland waterways, segregated by themselves. Livestock is sometimes shipped by barge on the Tennessee River now, but it is not shipped extensively. I think there is a small movement every year. It used to be shipped extensively for the days when they took the flat-boats down and walked back and also since the coming of steamboats. It would not take as long as 100 hours to ship livestock from Pa-
[fol. 1536] ducah to Knoxville by barge. In the report of the Chief of Engineers for 1932, the character of the livestock movement on the Tennessee River is shown as from Knoxville to Paducah, a total of cattle of three tons and of hogs, four tons, which is about the minimum. It is not close to the maximum. For 1933 the report of the Chief of Engineers shows one ton of cattle and two tons of hogs, but I recall a full barge load coming up locally last year. I don't know whether they got into the figures or not, but they came in the river a short distance.

I do not have the figures separated for the percentage of traffic for the lower Mississippi River consisting of forest products. I think forest products make a rather small percentage of the total traffic on the Illinois or Ohio Rivers and it is very much smaller than I have shown on the exhibit for the Tennessee River, but we have very substantial and positive sources of forest products as river traffic in the Tennessee Valley regardless of what they have on the other rivers. I show about 30 per cent of forest products. I think Major Putnam showed something like that too.

On Defendants' Exhibit 122, I show some phosphate mines which appear to be on the map right on the Cumberland River near Nashville. I don't recall any phosphate moving on the Cumberland River during the last few years. Some moved on the Tennessee. None moved on the Cumberland that I recall.

On Defendants' Exhibit 124 I show the county in which Memphis is located as one that would ship and receive over 150,000 car loads per year. That is not an accurate index of traffic in the Tennessee Valley. It is not in the Tennessee Valley, but it is connected and will be connected by water with the Tennessee Valley when the Tennessee River [fol. 1537] is canalized. A great deal of the Memphis traffic moves North and South on the Mississippi River and also back and forth to the West, but it also ships to and from the Tennessee Valley. I also show Birmingham as in one of the counties that will ship and receive over 100,000 car loads. It is not located in the Tennessee Valley, but is just below the edge of it. A great deal of its traffic is shipped to the South and other directions and a great deal goes North and comes in from the North. A great deal does not go North or come in from the North.

As to whether these counties I have marked are the ones I selected as having some bearing on my estimates, they don't have as much to do with it as the larger counties. Defendants' Exhibit 124 shows in the lower right hand corner certain lines by which it can be determined how many cars are shipped in and out of certain counties. Those lines do not appear upon a very large number of the counties shown on the maps. What I mean is that in my judgment the counties that do have lines in them are more directly related to the influence of the Tennessee River for navigation purposes than the other counties. As you increase the distance you get more and more remote. Hardin and Perry Counties which are entirely white are right on the Tennessee River. That means that those counties do not have a railroad at all or do not have a class I railroad that reported these figures. That explains all the white counties which are intermingled with the counties that are some way marked. I did not mean that the ones that are outside are too remote to receive any detailed study from me, but in the case of some particular county, there is some traffic which it is possible to reach as far as Florida. I did not

administrative matters, include the study of the conditions as to power supply in the region, and the study of problems on the same subject matter as they arise. I am a fellow of the American Institute of Electrical Engineers and a full member of the American Society of Mechanical Engineers. I have presented many technical papers before these and other societies.

In addition to my general experience, some 10 or 12 years ago William Spencer Murray was appointed by the Secretary of the Interior to make a study of the economies and savings to be made by a hypothetical interconnection of the major utilities on the Atlantic Seaboard between Washington and Boston, a Congressional appropriation being made for that purpose. I acted as Mr. Murray's consultant on transmission and interconnections for this study, known as the Super-power Report. During the War I acted as consultant for Mr. Frederic Darlington, Chief of the Power Section of the War Industries Board. This work turned principally on the shortage of power and the possibilities of interconnection. For this work I hold one of the $1 checks issued to the so-called dollar-a-year men.

In 1924 the American Institute of Electric- Engineers held its summer convention in Birmingham, Alabama. The Chairman of the Papers Committee asked me to prepare a paper on Interconnection for that meeting, and I did so, putting some three months' personal work on it. The paper covered a forecast of the growth of load in the southeastern [fol. 1552] states, principally Alabama, Tennessee, Georgia, and North and South Carolina, and the devising of a system of high tension transmission lines to interconnect and integrate the whole region, using many hydro sites not then in use but projected. This paper recommended a new type of interconnection, known as network. This is well known now but was little heard of then. The subsequent development of this region has followed this network plan.

In my work with the Federal Power Commission, it has been necessary to make one or two studies of a similar nature covering other groups of utilities in this country, one including most of the companies involved in the TVA region. This has never been released for publication.

As Regional Director of the Federal Power Commission, the whole southeastern states came under my jurisdiction. I am reasonably familiar with the principal utility systems in the territory around the Tennessee Valley. I have made

I would say at least three studies with respect to the adequacy of the facilities of the interconnected utility companies in the Tennessee Valley, including the complainant companies, to meet and supply the prospective demands for electric service. The first study I have in mind was made early in 1935, to determine the probable adequacy of electric power facilities in the region centering around the Tennessee Valley. It included Virginia, North Carolina, South Carolina, Georgia, Tennessee and Alabama, and it ran over a little into Mississippi. The study was based on reports from the utilities in answer to the questionnaires of the Federal Power Commission to which I have referred, and consisted in determining the available dependable capacity in the hands of these utilities, and a study of how much of that would be available, how much would be required for reserves, and to find out the amount actually available for delivering load, and comparing that with the probable demand in 1937 for power in that region. I might say that I took the year 1937 because when that study was made, that [fol. 1553] would be the earliest date at which new construction undertaken in 1935 would come into actual service. That study showed a very considerable shortage of capacity to be anticipated in 1937. That assumed that 1937 would be a dry year.

In speaking of dependable capacity, I used the technical word and by that I mean, speaking of hydro machines, the capacity you can count on in the driest year which comes along. I have taken the trouble to make the comparison of the loads reported in 1936 for the companies used in that study and that exceeds by a little over 4 per cent the estimates which I gathered from the company reports for 1937. The figures from the same sources for 1937 are not yet available, but there are preliminary figures which make it appear that my figures for the demand in 1937 are something like 6 per cent below the actual results. My figures for 1936 were 4% below the actual demand and for 1937, 6% below the actual demand which occurred. There has been no genuine scarcity of power, because 1937 has not been a dry year, but those estimates are all on the assumption that we will have a dry year.

I have recently made a study of the present and prospective load requirements and generating and transmitting facilities of the principal private utilities in this area, including the complainant companies and interconnected com-

panies, and the probable adequacy of such generating capacity to supply these complainants for all of their needs; that is, as to whether there is a potential surplus, or potential shortage of power. Although I have not studied the systems of all of the complainant companies, I have taken the view of what I call the system planner, the person who is held to be responsible for looking ahead and advising the company for whom he is working as to what should be done to secure an adequacy of supply. Obviously, it is necessary to look ahead by the length of time it takes to design and install facilities, and this period is from one to two years. In this case I made a study of two different years, [fol. 1554] 1939, since that year is about as early a time as the plants now under construction in this region could be assumed to be in operation, and 1943, which is far enough in the future to count on the full program of the seven power dams of the TVA being completed for use.

I have considered all of the complainant companies in this study and have made studies only of those of the list which are both within reasonable transmission distance of the TVA dams and at the same time have sufficient importance in load requirements to make it worth while to study them, although there is one exception. I studied one group of plants where the output is not of material importance, which consists of a portion of a semi-interconnected system of a greater total load. There are eight companies which are closely interconnected. They are the Commonwealth & Southern group, Alabama Power Company, Birmingham Electric Company, Gulf Power Company, Mississippi Power Company, South Carolina Power Company, Tennessee Electric Power Company, Southern Tennessee Power Company and Georgia Power Company. There is another group of interconnected companies, all of them being subsidiaries of Electric Bond & Share Company, the Arkansas Power & Light, Louisiana Power & Light Company, Memphis Power & Light Company, Mississippi Power & Light, West Tennessee Power & Light Company. There is another group of subsidiary companies, subsidiaries of the National Power & Light Company,—the Carolina Power & Light, Western Division, and the Tennessee Public Service Company. The National Power & Light group is not physically related to the Electric Bond & Share group, but I believe it is related in the ultimate control. There is another group in the Pineville District of the Kentucky Utilities,—the Old Dominion

Power Company and the Dixie Power & Light Company. I believe that the systems I have selected are those of the complainant companies and affiliated, interconnected companies with the minor exception of the Kentucky Utilities [fol. 1555] group. My studies show a probable shortage of firm power in the systems of these utilities.

Before referring to the actual figures on the document (offered and received in evidence as Defendants' Exhibit 133) I would like to make some explanations. Where a group of systems are adjacent and thoroughly interconnected with transmission lines and make a practice of the interchange of power for the purpose of giving the most efficient over-all operation, I have considered those systems as a group, and have produced figures only for the group as a whole. The shortages which I have found in this Exhibit are more properly shortages of energy rather than shortages of capacity.

In view of the great importance of the distinction between energy and capacity in these studies of the adequacy of facilities, I would like to explain the distinction a little more clearly. To furnish an adequate supply of electric power for general use it is necessary to consider both the phase of capacity and the phase of energy. Capacity represents the ability of the generating facilities to meet the maximum demand that may occur on them. Energy refers to the coal burned to produce steam or the water flowing through the water wheels which is necessary to drive the generators from one end of the year to the other. The maximum capacity is required about once a year on the day of the peak and the energy consumed is not known until the end of the last day in the year. These two phases have entirely different characteristics and must be considered separately, and I have found that the chief limitation of most of these groups was the limitation of energy.

The capacity of hydro machines may not be available in a dry year, even though it is entirely capable of carrying its full load with water in sufficient quantity in the rivers. The importance of this distinction is that a system has to have adequate machine capacity for its load during any minute in the year of plentiful water, whereas in a year of [fol. 1556] dry water it would not be able to carry its load, even though the load was no greater and it still had the

same machine capacity as before. It will not be sufficient unless there is a sufficient steam capacity in the system.

The first two left hand columns on Defendants' Exhibit 133 marked "Purchased Energy Requirements", give the summary figures of energy that will be required in 1939 and 1943, which is the energy which these companies must secure somewhere in addition to their own facilities for the loads which I have forecast*ed* they will have to meet. The next columns toward the right under the heading "Purchased capacity requirements" are under the head "Delivery of firm energy", which means that if some company, possibly the TVA, is furnishing a large amount of energy, such as 564,300,000 kilowatt hours to some neighboring company, it requires a certain amount of capacity to supply that energy. The energy has to flow through the machines, and the capacity of the machines which are adequate to deliver the energy is the capacity shown in this column. That is, when we discover that this amount of energy must be supplied, then it will be found that it cannot be done without the presence of 261,700 kilowatts, shown under the 1939 heading in these columns.

Examination by the Court:

These are figures which I have arrived at by calculation, but they include estimates. They are my own figures. They necessarily are estimates because they are for 1939 and 1943.

"Judge Allen: The Court suggests that there be added to the legend "Estimated" or something to show that this is an estimate."

[fol. 1557] Direct examination continued:

This study, like most of my other studies, is based on the questionnaire returns to the Federal Power Commission from the utilities as to their operations, capacities and other facilities. That data has been put together by recognized methods of computation and compilation to produce certain results with a minimum amount of the use of discretion. It is necessary to use a certain amount of discretion and to forecast, but use has been made of all known methods and devices for getting proper conclusions from these figures. These are the figures which are made up by the companies

themselves and reported officially to the Federal Power Commission. The Commonwealth & Southern group of companies are thoroughly interconnected and are operated in a common interest in such a way that if one has power and the other has not, power is transferred and perhaps returned at another time, but in any case they are operated under a single control in the general interest. In the same way the second group, marked Electric Bond & Share, is composed of companies that are very closely related in operation, and each depends on capacity from the others in such a way that a study of the operation of the group separately would have no significance. The same may be said of the National Power & Light group and of the Kentucky Utilities group. For these particular years for which I have made the study, it is usually a shortage of energy—not in the case of the Kentucky Utilities group, but in the others. There is also a shortage of capacity, but the significant thing is the shortage of energy.

The column under the heading "Machine Shortage Including Reserves" is a consideration of the available machine capacity, not taking into account any limitation of water in the hydro machines. While it is possible that the [fol. 1558] shortage of water may be the limiting factor, it is also possible that the limitation of machine capacity might be a limiting factor, and this table shows my conclusions on that matter. The shortage here is after the allowance of the reserves necessary to every system to give reliable service.

The last two columns marked "overall" are compiled from the columns to the left and simply show as an overall matter what capacity must be provided by the companies by this time if all of their requirements are to be met from the several points of view. The figures in the last column are the figures found in the four columns to the left, the largest figures are selected, and I am referring there to a new supply that must be furnished, not to the total supply including capacity and energy already provided. It is in addition to existing facilities. All these figures relate to firm power which must be backed up by the necessary reserves so that it is actually firm, even when the shortage of energy is made up by purchase. There would be no distinction between firm power and firm capacity with regard to the necessity of providing adequate reserve. The sum totals of the energy requirements for the four groups in 1939 are

770,900,000 kilowatt hours and for 1943, 2,169,500,000 kilowatt hours. In order that the supplier of such quantities of energy shall be able to supply them under the conditions in which they must be received, there will be required 380,300 kilowatts for 1939 delivery and 746,000 kilowatts for 1943 delivery.

The machine shortage is 310,200 kilowatts in 1939, but that shortage is covered by the 380,000 kilowatt supply to be purchased. The figure for 1943 is 787,500 kilowatts. To meet both machine shortages and the capacity necessary for delivering energy shortages will require 395,300 kilowatts in 1939 and 816,900 kilowatts in 1943. These figures are based upon the dry year, two dry years being chosen as [fol. 1559] typical, 1936 for the so-called Electric Bond & Share group and 1931 for the other groups. I am under this limitation, that to make these studies by the method I have used, it is necessary to have detailed data, and these are the driest years for which we have such detailed data. They are not by any means the driest years to be expected. When drier years occur, the shortages will be larger and the system planner will have to consider whether the cost of providing further reserve or further purchases than I have shown here will be justified by the cost. The shortage of capacity shown here for Commonwealth & Southern does not include the 2,000 kilowatt contract that that company has for delivery from the South Carolina Electric & Gas Company.

The reason why there is such a discrepancy between the machine capacity of a hydro plant and the dependable capacity which can be gotten from it in a dry year, is that when once a dam has been constructed and a reservoir and power house provided, the increment cost of putting more capacity in that power house is a relatively small matter, and it is found that it is well worth while to put in such additional capacity because that can be used in all years but the very dry years, and such power will be cheaper than power produced by steam. So it has been customary to provide such extra hydro capacity over and above what can be supplied in a dry year. It doesn't represent poor planning or anything of that sort, but is a natural development in laying out these systems.

The Commonwealth & Southern group has by far the larger portion of the totals I have shown, and the National Power & Light group are wholly dominated by hydro ca-

pacity. The Electric Bond & Share group has a small proportionate amount of hydro power and the Kentucky Utilities has practically none. I may summarize by saying that the two figures in the lower right hand corner of the table [fol. 1560] indicate, if my conclusions are correct, what must be provided by this group of companies if they are to give adequate service with appropriate reserves when these years come. Those are my estimates of the new and additional power supply which these companies in my opinion will require.

(The legend on Defendants' Exhibit 133 was thereupon changed to read "estimated additional power requirements".)

Cross-examination:

The heading "Machine Shortage including Reserve" represents the difference between my estimates of what the load will be and the present installation, taking account of the firm non-cancellable contracts.

Direct examination continued:

In my opinion I believe there will be further growth in load in the years beyond 1943 which may reasonably be expected.

The Commonwealth & Southern group and the National Power & Light group are predominantly hydro. The Electric Bond & Share group has a small proportion of hydro, and the Kentucky Utilities group practically none.

I considered the systems of all the complainant companies, but on Defendants' Exhibit 133 I excluded those which did not seem to be in reasonable distance of the dams of the TVA, taking account of the size of the loads of these companies, and I excluded only those which approached only those TVA dams which do not supply firm power.

In connection with Defendants' Exhibit 133, the figures which are shown there relate to the so-called firm power, [fol. 1561] that is, power that can be relied upon at any time regardless of low water in the rivers or other contingencies. It so happens that in most systems with hydro, it is possible to supply large quantities of cheap power most of the time. Where it is possible to use that power to shut down the steam generating units in the neighborhood, it is

possible obviously to save the cost of the coal being burned and other incidental costs. This is worth while, because the hydro energy costs practically nothing, as the machines are already in place. A great deal of such power is used in this region and it is called "steam replacement power". I speak of that in connection with this table because whatever steam replacement power we may use is over and above the figures shown in Defendants' Exhibit 133. The desirability of steam replacement power would be in direct ratio to the cost of production prevailing at the different steam plants.

As the matter of reserves, which I have shown on Defendants' Exhibit 133, plays a very important part in the determination of the adequacy of facilities and in shortages, I would like to explain rather carefully the point of view that I have taken. "Reserves", as I have used it and as I think it is generally used, serves to cover a large number of contingencies of various kinds which may upset a plant's balance between facilities available and the demand. Of these contingencies, one of the most important is difficulty with the generating apparatus, which is by far the most sensitive, complicated and difficult to handle of all the facilities in the power systems. This is especially true of steam apparatus. A large sized steam turbine has to be overhauled, cleaned and inspected often, even though it has not broken down. It is like a high-class automobile. You cannot wait for anything to happen, but you must have it looked over once in a while, and the oil changed and things of that kind. To properly overhaul a large sized steam turbine takes many weeks, and if anything serious has to [fol. 1562] be done, it takes some months. In the same way, to thoroughly overhaul steam boilers may take many weeks. Other contingencies may happen, transmission lines and other parts of the apparatus fail, so it is not possible to count on the use of all of the machines at the same time. When the largest unit in the system is down for inspection, an accident may throw the next largest machine out of operation. By accident, I mean possibly a mistake of the operator, lightning coming into the station, the failure of a protective device, or many other things which do happen in the best regulated power houses. That would mean the two largest machines out of service, but in figuring the

reserve, it is not necessary to take such an exaggerated condition, although it might happen.

I have been in the habit of taking one to one and one-half times the capacity of the largest units as the measure of the reserve that must be provided against the failure of the generators and apparatus connected with the generators. Shortage may be produced by failure of the transmission line over which power may come to the system, or other parts of the system might give trouble. It is not necessary to enumerate the other casualties. I have been in the habit of using more or less 5% as a measure to cover this type, in addition to that representing the breakdown of the generators which is a type of machinery by itself. Within this 5%, I am inclined to include one or more general factors. In a large system like this Commonwealth & Southern group, it is not possible to have such a perfect operating organization that every machine can be run at 100% of its capacity and no more at the particular time it may be needed. It may be somewhat near approximating it, but it is not reasonable to expect perfection. So there is a little allowance which I include in this 5% for contingencies of that sort. There are other sources of difficulty, such as predict- [fol. 1563] ing ahead the vagaries of the flow of water in a stream. There may be a dry September or a dry November, and until it comes, you cannot tell what it is. That is a contingency which has to be included in this general 5%.

There is another group of uncertainties that must be allowed for. These questions are, of course, matters of very great importance to the system planner. He is looking ahead two or more years, according to his particular problem in hand, and he has to forecast what the trend of the growth of his load will be. That is usually what they call a straight line or constant rate of increase that he expects for the next few years. Experience shows industrial conditions vary and that they progress, first a little higher and then a little lower. I am not referring to business cycles, but the changes of a few months at a time, with variations up and down. Unfortunately the capacity has to be available for any temporary increase, even though for a short time, and that requires a certain small increase in reserve.

There is also this problem, that the system planner picks 1940, perhaps, and he lays his plans, "Well, I have machines

which will carry us to 1940". Perhaps the next time he is going to balance his books will be 1942. He must put in enough capacity in his 1940 program to carry him to 1942, which means the capacity over and above the 1940 requirement. Another matter, when he comes to get his bids, making the designs, even at the time of the actual selection of the type of machines he is going to put in, he must buy an economical machine which fits his situation in an economical manner and which will not be less than the growth of his load. He will often buy considerably larger machines than are required to meet his requirements, though it will meet his power for the time. All those things must be taken into account, and I have been in the habit of using about 7½% [fol. 1564] of the capacity to represent that contingency.

That appears to cover the provisions for reserves, but there are certain considerations which must be taken into account of a general nature and predominate even over those figures. One of these is this, that the system planner has the responsibility to be sure that he has an adequate supply when the time comes. The loss to the community of inadequate power is very serious in comparison to the cost of providing facilities. If he provides a little too much power, he is merely providing for the next year's growth and there is little in favor of inadequacy of facilities. There is, however, a favoring circumstance that these various contingencies of which I have spoken do not all occur at the same time. If it were not for that, the amount of reserves that would have to be provided would be very much greater.

There is another point I might make, and that is the distinction between the system planner who is looking ahead with everything before him and plenty of time to do the adequate thing and the practical operator who may be caught short through some misfortune and not have adequate capacity to carry his load. Should that time arrive, of course, he will use every means he can to provide the power. He will borrow from his neighbors, and if his condition is acute, he will try to borrow power from industry, and he will start up obsolete machines that have perhaps been given up. He will very often do such things as will enable him to give his service as best he can. But as I see it, the system planner is not forced by circumstances and he should not count on such expediencies. If he is caught, all right, but he should

not count on them, and the use of these things in making his plans.

There is one other point which I would like to mention. This matter of reserve is after all a matter of insurance. There is no such thing as perfect service, as we all know. [fol. 1565] There have been some nationally noticed breakdowns in a number of important centers in the last two or three years. The systems do the best they can, but as long as absolute perfection cannot be secured, it is a matter of dollars and cents how much the expense will be that is incurred to reduce the failures. So after the allowance for the other matters required for reserves which I have used, I am free to say I think that is a reasonable total. If it is not a reasonable total, then I shift over and make allowances in the various categories until it seems to me the total allowance for reserve is a reasonable factor.

In this particular case I have taken for the machine reserve from one to one and one-half times the largest machine, a little different for different groups. I have taken 7½% of the forecast peak to cover variations of the nature of the cycle variations which I have described heretofore, and I have taken more or less 5%, representing transmission line outages and things of that sort, and the whole giving a total which seems to me to be reasonable considering the nature of the system.

From Defendants' Exhibit 133, the energy shortage in 1939, 770,900,000 kilowatt hours compares with 7,709,000,000 kilowatt hours which is the total forecast requirements for that year and is 10% of the total figure. The energy shortage of 2,169,500,000 kilowatt hours in 1943 compares with 9,966,000,000 kilowatt hours, the total forecast requirements in 1943, and is 22% of the total figure. The total capacity shortage in 1939 of 395,300 kilowatts compares with the total available capacity of 1,889,000 kilowatts and is 21% of that total figure. The capacity shortage in 1943 of 816,500 compares with the total available capacity of 2,373,000 kilowatts and is 34% of the total figure.

The document (offered and received in evidence as Defendants' Exhibit 134) is entitled "Details of Computations, [fol. 1566] Study of Load Forecast and Power Requirements of Four Groups of Utility Companies". In preparing the figures on Defendants' Exhibit 133, I had to go

through a considerable number of steps and computations and calculations which had to be based on some fundamental data. It so happened that the returns from the utilities made to the Federal Power Commission, of which I had spoken before, supplied sufficient detail for that purpose. For the ease of anybody who wished to check these figures, I have put down in this exhibit the intermediate steps between the original data and the conclusions. It is really a matter of convenience because it might not be so easy to follow them if there were not some guiding points. This exhibit is intended to give the details by which I arrived at the conclusions stated in Defendants' Exhibit 133. The information was taken from the same sources which I described in describing Defendants' Exhibit 133.

I have counted on the opportunity to state some assumptions that are made and the method of treating certain parts of this exhibit, because those are things which do not follow from an inspection of the table and without which it might be necessary to make a special investigation to find out what steps were taken on the part of anybody who wanted to understand it. I believe it would simplify the matter if I should put on record the particular matters I had in mind as complimenting and completing that statement which are not self-explanatory. In the beginning, I would like to state that it is known to those familiar with these studies of the question of shortage that there are a number of ways in which investigations may be made, some approximate and readily carried out and others more reliable but more extensive. I would like to say that I have used the most thorough and reliable method that I know for treating this question, and that it has been possible to do so on account of the completeness of the records which have been provided to the [fol. 1567] Federal Power Commission. The computation is based upon certain assumptions, that there should be no new construction of generating facilities in the region beyond those reported at the end of 1936 to the Federal Power Commission and that no contracts are considered as a firm source of energy except where there are non-cancellable contracts for firm energy. I point this out because there is a great deal of interchange of power in this region between companies, and very valuable and useful interchange, but it is interchanged because it is convenient for both parties to make the interchange. An examination of existing contracts shows that in very few instances have the utilities

committed themselves in a non-cancellable contrct as far as the year 1943.

The studies are made for a certain year. It is customary to take such a period of time because that is the shortest period which repeats itself time after time. Of course, it is necessary to consider a very dry year in studying this question of adequacy of facilities. I have already stated that for the Electric Bond & Share group, I have used the year 1936 as the driest year for which I have the detailed information. 1931 is the year used for the other groups. In order to get the best and most accurate results, I have made the computations month by month, each month computed separately, and I have considered week days, Saturdays and Sundays separately, because the use of power on these different days follows different patterns. Furthermore, to take account of the variations of the use of power throughout the day and night, I have developed load curves for week days, Saturday and Sundays, the same curves for each month. In determining these monthly shortages, I have considered the amount of energy that the existing steam and other fuel plants of these companies can generate under these load curves, working in the base, as the expression goes. In making this determination, I have used 85% of the capacity of machines that are capable of normal opera-
[fol. 1568] tion omitting obsolete machines and those which are not used except in reserve. The 15% unused capacity is to take account of those machines which are under repair or which have been dropped out of service because of accident or otherwise. I have then considered the amount of capacity that can be handled by the machine capacity existing in the utilities' systems with the water available in the dry years, this water being used in the peak of the curves. The difference in the band between the steam and hydro generation then represents the energy that must be secured, and the width of this band indicates the generating capacity that must be furnished by the supplying company at the delivery of its transmission lines in order to deliver that energy as it must be used on the load of the purchasing company.

I would like to illustrtae very briefly my last description since it is the basis of the computations. For that purpose I have prepared a chart shown as the last page of Defendants' Exhibit 134. It is a typical day load curve, by which I mean that this load curve indicates the delivery or use of

current on a typical day. The horizontal line at the bottom represents twenty-four hours a day and the figures beyond the figure 12 represent the time of day, the lefthand group representing the hours in the night and the righthand group the hours in the day time. Looking at the number 6 in the morning, half of the space on either side represents the section of the diagram set apart to represent six o'clock in the morning, or the hour between half past five and half past six. Follow the line vertically arising from the figure 6 until it strikes the heavy line, it will be shown what the demand was at that hour. The heavy line crosses the vertical line of which I speak on a horizontal line, and following that horizontal line to the left there is shown a figure, 30,000, and at six o'clock in the morning on this typical day the demand [fol. 1569] was 30,000 kilowatts. Similarly, on this heavy line all the way across the sheet, following up the vertical line from any hour, it is possible to find what the load was at that time. This gives a very wonderful method of expressing the variations in the use of power throughout the day.

Examination by the Court:

Saturday is different, because there are so many factories shut down on a Saturday afternoon and some do not open on Saturday at all. Under the present regime, there are a good many that work on a five-day week and that can be traced very clearly in the curve. I have taken holidays the same as Sundays. The detail of Defendants' Exhibit 134 shows that Sundays and holidays are referred to together. They are near enough alike in the use of power to be treated as though they were the same.

Direct examination continued:

There is one other very interesting and critical point. Referring to six o'clock in the morning again, if the power demand was 30,000 kilowatts for that hour, there were 30,000 kilowatt hours developed. That is what kilowatt hour means. It means a kilowatt for the duration of an hour. In the same way, for any one of these hours you can tell the number of kilowatt hours that were used. The total of those for the twenty-four hours gives the total of the kilowatt hours in the day, and also gives the area under that curve. We have divided the whole area up and the area

under the curve represents the kilowatt hours for the day, and that is where we get our mathematical relation and is what enables us to make these studies.

In this particular case, which was the typical daily load curve for the National Power & Light group for the month [fol. 1570] of October, which is the month of greatest shortage, the greatest capacity which was useful here, 85% of the available capacity of the steam machines, was 10,200 kilowatts, and that capacity can generate the amount of energy represented by the shaded line at the bottom of this curve. Those machines run twenty-four hours a day, and every hour they are developing 10,000 kilowatts. So it is very easy to determine how many kilowatt hours those steam machines can produce. In the same way, having found from the dry year of the past how much hydro energy can be developed in a day by the existing machines, I determined at the top of this curve how much of this area can be handled by that amount of hydro energy, and I draw the line and show the part of the load that would be carried by the hydro machines. The rest of the upper space is what must be provided from the outside, and the energy is equal to the area in that band. The capacity determined by reading on the lefthand scale, the difference in the height of the two lines at the top and the bottom will give the kilowatts that must be provided to supply the amount of energy that must be purchased.

The maximum consumption of electric power shown on the curve is at six P. M. and it is 70,000 kilowatts.

I should say a word about these forecasts. Of course, the amount of shortage depends upon forecasts, and it is important that they be made as accurate and as reliable as possible. The forecast must be made as a matter of judgment, and it is legitimate, necessary and proper to consider all the factors which are predictable in making a judgment as to what the total power requirements will be. I don't think it is profitable to go into detail as to how a man makes up his judgment in a matter of this kind, because it is a matter of instinct largely, but I will state how I arrived at my figures here. Turning to table C, the third table of De- [fol. 1571] fendants' Exhibit 134, it is shown how the forecast was made up. The forecast covers both the maximum demand, the peak and the energy in the third column from the end. The third column from the end and the last column give the figures respectively for maximum demand and

required energy, that is the prediction. The first three figures in each case are the figures furnished by the companies in their questionnaires. Beyond that are forecasts. This estimate was made by considering the probable rate of growth for the future as a percentage matter, but while the ordinary forecast is given as a uniform percentage, I wish to recognize the principle that these growths are rather by wavy lines than by straight lines, and I have arbitrarily given varying rates of growth stimulating this faster and slower development. Starting with the load of 1936, having assumed a percentage of growth, it is very easy to determine 1937, and so on. This is true both of the maximum demand and of the requirements. By that method I have arrived at the final figures which are shown on this sheet. It is a numerical operation. I calculate the per cent of growth and add it on. The same method was used for all except Kentucky Utilities, which made a forecast of their own and I used their forecast. The other companies did not make a forecast for those years.

The capacity shortage which I speak of is machine capacity shortage and not the energy shortage. I am referring to the underlying data for the first two columns in Defendants' Exhibit 133. I have gotten away from the forecasts now into a general statement. In listing the capacities for use in determining how much capacity can be carried by a given amount of hydro energy, I have summed up those hydro machines which have some pondage or reservoir capacity in such a way that they can be peaked, as the expression goes. By peaking I mean that the water can be stored for a considerable number of hours in the day at all times when it is not actually needed, and used quickly in a short period at the time of the peak load on the system so [fol. 1572] that a maximum value can be gotten out of the machine capacity at that station. I am referring now to the weekly period.

I have examined the forecasts of future load growth made upon the stand and represented by exhibits of Mr. Middlemiss, Mr. Rankin, and Mr. Moreland, and I have examined their exhibits, 372, 375, 501, 502, and 510, respectively.

The data given by complainants' witnesses as to forecasts of future load growths is by no means parallel to the subject matter of my studies. They have grouped the systems in this region in a different way, apparently, from the way I have grouped them. There are some cases in which the

figures are parallel and I have picked those out and will give very briefly the relations of those estimates and mine. These relate now to forecasts of demand. Mr. Moreland segregated all the systems within 100 miles of TVA dams, which is more or less the same group of companies as the companies I have considered,—by no means the same but somewhat similar territory,—so much so that a comparison of percentage growth might be of interest. Mr. Moreland's figures cover 1936 to 1943, giving a 40 per cent increase, and my figures for the same period give 46 per cent. The figures given by Mr. Middlemiss for the Commonwealth & Southern properties were 12 per cent increase for the period 1936 to 1939, 4 per cent a year. I have figures for the identical system which are 25 per cent increase for the three years,—practically double his. The 4 per cent growth for that particular region of the country for the three years seems to me to be a very pessimistic view of the region. Mr. Moreland segregated all of his groups for the same period from 1936 to 1939 and he showed a 21 per cent increase corresponding to my 25 per cent increase.

[fol. 1573] Cross-examination:

I am referring to the groups to which Mr. Moreland testified, his total maximum, all groups. I mean now all groups within the 250 mile area, as shown on Complainants' Exhibit 501. That is not the same zone which I am working on but I am giving it to you for what it is worth. Mr. Moreland gives for Commonwealth & Southern an increase of 12 per cent and my figure for the Commonwealth & Southern group was 25 per cent.

Direct examination continued:

Mr. Rankin, in considering the Electric Bond & Share group, those companies on both sides of the Mississippi River, gives an increase of energy between 1936 and 1939 of 28 per cent and my estimate was 24 per cent, which is less than his. Mr. Rankin's estimate of the demand for the same period for the same systems was 27 per cent and my estimate was 25 per cent, which is still less than his. Those are the only direct comparisons which I found could be made between my forecasts and theirs.

I am familiar, as far as required for making these studies, with the TVA transmission facilities and the location of the

generating plants, as well as with the transmission facilities and generating plants of the companies I have studied. In a region of this character where there are a large number of power plants scattered around and a considerable number of leading load centers, and where there is a network of interconnection and multiple lines between generating systems and load centers, the points of interconnection are very flexible. The electric current has a power of adapting itself to existing facilities, and power will flow, not where someone tells it to flow, but where it can accomplish the trip with the least resistance. In that, it is like water flowing in a series of channels, and it will divide itself [fol. 1574] up in such a way as to proceed with the least resistance. This means that if a series of interconnections are set up to supply various load centers for the future, and if the growth of the load does not turn out to be as anticipated, the current has the power of adapting itself to a considerable extent to the circumstances as they develop. On that account, I am willing to make suggestions as to where appropriate points of connection could be made with TVA with the understanding that if the time ever came to actually set up the installations, a review would have to be made of the circumstances to see if anything came up to change the decision. It is obvious, considering the Commonwealth & Southern, that Wilson Dam is one favorable point of interconnection. There is already, and has been for many years, a connection there to the Alabama Power Company system and vast quantities of energy have already been delivered from Wilson Dam to those companies. Another favorable point of interconnection of the Commonwealth & Southern, assuming the availability of power of these various dams, would be at Chattanooga. Other important points of connection with the Commonwealth & Southern Company would be at Norris Dam or Knoxville, and between Guntersville or that neighborhood, with some of the important circuits of the Alabama Power Company to the south.

A connection would naturally be made at Memphis with the Electric Bond & Share group of companies on both sides of the Mississippi River. A connection might be made at Norris Dam or Knoxville with the National Power & Light group, that is, the Carolina Power & Light Company and the Tennessee Public Service Company. A connection would naturally be made at the Pineville power plant or at some

transmission line center in that general neighborhood with the Kentucky Utilities. If it ever came to actually making [fol. 1575] the connections, the contracts involved under which connections would be made would have to be reviewed to see if any other conditions arose making it desirable to change the points of connection, because, as I say, they are flexible and considerable changes might be made.

There are very few potential customers of TVA power other than private utilities which could be feasibly served at the switchboard through transmission lines provided by the customers. There are a few of the larger cities and municipal plants in these cities that could build lines to the power houses. There are a few smaller municipalities and cooperatives, local industries and rural associations in the immediate neighborhood of the dams, that might be able to make connections, but I do not see that there would be any others. There might be a few large industries, especially at those dams, if they could find suitable places for the industries, sites which do not exist at most of them, and find labor conditions and transportation facilities.

As to what total classes of customers could feasibly reach the dams if TVA did not provide transmission lines, except for those in the immediate vicinity of the TVA dams where the transmission function is not a serious matter, it would only be the larger consumers who might be either private or municipally owned, and who are within such a range that private lines could be reasonably built, warranted by the benefits. The problem of the most feasible method for TVA to serve small municipalities, industrials and rural cooperatives in the general region of the Tennessee River is not particularly different from the problem arising in municipalities of serving scattered minor customers, and it is accomplished and would be accomplished here by networks [fol. 1576] of transmission lines which are laid out to different sections of the network to serve several customers. Where larger demands appear locally, a small increment in the capacity of the lines can be added at small cost. This method of distribution is far more feasible than the building of individual lines for the service of individual small customers.

"By Mr. Fly:

Q. Mr. Thomas, assuming that the construction and operation of Norris Dam or other dams on the tributaries of

the Tennessee would make available a substantial amount of additional continuous power at Wilson Dam, in your opinion would this increase of the firm power at Wilson Dam be a useful and valuable asset for national defense purposes, in connection with the Muscle Shoals properties?

Mr. R. T. Jackson: I object to that question, object to the competency of the witness to answer; also object to it as irrelevant and immaterial."

Thereupon the witness testified by way of further qualification as follows:

During the war, I was consultant to Mr. Frederick Darlington, Chief of the Section of Power of the War Industries Board in matters concerning transmission and interconnection of power. As a member of the Federal Power Commission one of our duties has been to assist in the national defense and study the problems of interconnection. I was with the War Industries Board about 1917 but have not been connected with the Army staff since then. I do know that the Army Engineers are studying the possibilities of concentration of power for war purposes in case the need comes, but it is not my understanding that they have jurisdiction in that field. The Federal Power Commission is also considering the availability of power from utilities in time of war.

"Mr. R. T. Jackson: I renew my objection and I also want to point out that, notwithstanding the statement of this witness, to the best of my knowledge and belief there is nothing in the Federal Power Act that gives the Federal Power Commission any function with reference to national defense.

Judge Allen: The objection is sustained to the form of the question as originally asked.

[fol. 1576-a] By Mr. Fly:

Q. Mr. Thomas, assuming that the tributary dams of the Tennessee Valley Authority will increase the stream flow, and hence substantially increase the—say, the tributary dams and the other dams upstream will substantially increase the stream flow, and will substantially increase the firm power at Wilson Dam, in your opinion would that increase of firm power, increase the value of Wilson Dam?

Mr. R. T. Jackson: Just a moment. Increase the value of Wilson Dam for what purpose? Power purposes? If it is for power purposes, I object.

Judge Allen: Do you object to the question as put?

Mr. R. T. Jackson: No, I don't object to it as put.

A. It will, since it will permit the delivery of larger amounts of power from that station."

In my opinion the interconnection of the various power plants of the Authority with Wilson Dam will increase the value of Wilson Dam.

Summarizing my conclusions as to the available market for the Authority's power, if the Authority's sales were limited to the dam sites I conclude that if the private utilities be not included, the sales at the dam sites would be very limited—only those exceptional customers to whom I have already referred.

[fol. 1577] Cross-examination:

Referring to Defendants' Exhibit 134, Table A on Sheet 1 for the Commonwealth & Southern group, I did not use any figures for installed hydro and installed steam capacity on those tables. I do not know that I have the installed figures. They don't mean anything in a study of this kind. I have had these figures before me, but they are not in this exhibit. I might be able to hunt those figures if you give me time enough, but I haven't them in this exhibit. The installed steam capacity doesn't mean anything in this study. I think I have in my work papers the figures for the installed steam capacity for the Commonwealth & Southern group if you want me to look for them. I have a figure here of 455,500 which I believe is installed capacity for the Commonwealth & Southern group. There is always a question there as to just what to include in that total. That is the steam capacity. I think it includes oil engine capacity, the fuel capacity. There is a very slight difference in the Commonwealth & Southern group in that. I have a figure here of 867,700, which I believe is the figure of the installed hydro capacity for the Commonwealth & Southern group. The installed capacity of the fuel plants of the Electric Bond & Share group is 201,900, as I have it here. Those are figures which I have not used in my studies, but I presume they are the figures off the questionnaire. The installed hydro capacity

of that group is 65,700. The corresponding figures for the National Power & Light group are 16,000 kilowatts for the fuel plants and 113,700 for the hydro.

For the Kentucky Utilities group the installed capacity of the fuel plants is 42,500 and there is no hydro capacity, as I have taken the Kentucky Utilities. The Kentucky Utilities is a fairly extensive system. It has a section centering [fol. 1578] around Pineville and a section centering around Dix Dam, Lexington, connecting into Louisville. The interconnection is a 66 kv. line, rather limited capacity, and I have not considered that line of sufficient capacity to permit the pooling of power, so I have assumed in my study that only that portion of the Kentucky Utilities which lies south of that 66 kv. line should be included, and that portion has no hydro. I excluded all of the Kentucky Utilities system except the Pineville system in my estimate, except that I have assumed, I believe it has 4,000 kilowatts of reserve capacity which would be counted on by the Pineville section from Dix Dam over that line. They do have a hydro plant at Dix Dam and a dam on the Ohio River is interconnected with the Kentucky Utilities and the two hydro plants are operated together, if together means one helps the other. As to why they built the 66 kv. line if it was no use, I did not say that the connection was of no use. I merely said that I did not think it was of sufficient importance so that it could properly be said that the region to the north was operated with the region to the south as a unitary group. There is a mere interchange over that line, but it is a mutual agreement from day to day as they may find it convenient to swap hydro power going south and steam power going north. As to whether they use that line and the interconnection of the steam and hydro to give them additional firm power, they interchange to save cost. There is no evidence in our reports of any firm obligation one way or the other. In fact it is a single ownership, so that could hardly be expected. It is not my point of view that because I saw nothing which I thought was a firm contract in that report to the Federal Power Commission, I disregarded any interconnection and the fact that the systems are actually operated on a coordinated basis. My point of view was on this that I am acting as a system planner and am in charge at Pine- [fol. 1579] ville in that region and I am looking forward to increased loads and what provision I must make in order to satisfy my maximum demand. I am familiar with these

facilities to the north, I know they are going to have demands for more power, and I am sure, looking ahead, that by the time I am short of power they will be short of power too, and I will not get any power from them unless I have a firm contract which is non-cancellable, and no such contract exists. Therefore, I have assumed that the power they might hope to get from there is in the list of power to be obtained. If they obtain it all right, that is one way for them to supply the shortage. As to whether it is a fact that that line was built for 110 kv., I believe it is built in such a way that it can be changed over to 110 kilovolts. It is not operated at 110 kilovolts.

Assuming the system planner had made arrangements for integrated operations, as to whether I nevertheless disallowed that because if I had been system planner I would have done something else, my point of view is really quite different from yours. If I were the man responsible for full operation of that system, I would look it over and see where was the best place to get power for the growth of each half, and if the northern half were overloaded, I might well find that power could be gotten for the southern half by buying power from the TVA or building a station down there or something of that sort. In any case I would not feel justified in 1937 and 1938 in not providing for any portion of the load I saw ahead, on the theory I might be able to take some power away from the northern section when they did not have any to spare. As to whether I knew they did not have any to spare, I am looking forward to the time when they are going to have a load growth, and nobody knows whether they will then have anything to spare. I daresay they have some to spare now. I have not investi- [fol. 1580] gated that. I eliminated it as I am not considering the present time.

To get the load from the Pineville District, I examined the operating records and found that the interchange of power over this 66 kv. line had some peculiar relations. That line has a more or less limited capacity, and, knowing the voltage and size of wire, I can tell somewhere near the interchange which can take place. I found that in times of low water at Dix Dam there was a considerable export of power to the North, and in times of plentiful water there was an export of power the other way. At any rate, the generation at Pineville was high at the time of low water and low at the time of high water. I made the assumption

that the true load in the Pineville District was between the two, and that when water was scarce in the north, the generator at Pineville, in addition to carrying its own load, would send power to help out Dix Dam, and at times when there was a plentiful supply of water, that the Pineville machines were not carrying all their own load, they had a little help from the water plant. That was the basis on which I determined the load in the Pineville District. I did not take my assumptions from any report to the Federal Power Commission. They did not give it. I did not discuss the integrated operation with the operating men who handled these companies. These statements that I have made are based upon the physical characteristics of the systems and the operations in the past. I did know as a matter of fact that the Kentucky Utilities sells some 2500 kilowatts of firm power to The Tennessee Electric Power Company. That is the contract demand which they sell. I am looking to the future and not the present.

Referring to the first table A, Defendants' Exhibit 134, by capability of steam plants I mean that when a utility contracts for a certain output and when the generator, steam or hydro, is put into operation and is perhaps set up in con- [fol. 1581] ditions slightly different from what the manufacturers expected, and they do not find it performs exactly the way that it was anticipated, or if the manufacturer has been a little liberal, they can get more power out of that machine than was promised. Having established the fact that the machine can, as installed, give more or less power than is shown on the nameplate rating, which is the manufacturer's promise you may say, and which has been reported by the utilities to the Federal Power Commission, I take the revised figures which I call the capability. I said the installed capacity was 455,500 and my figure in my exhibit, "Capability of steam plants, 398,700 KW." is for that group of plants which are capable of normal, regular operation. Looking on that chart, further down, there is shown the customer plants and reserve only. If those are added to the 398,000, the total is substantially the same as the total figure of 455,500 which I have given. The 398,700 capacity figure is the sum of the capacities of a number of machines which I selected from the total lists of the reports of the Commonwealth & Southern to the Federal Power Commission, the balance of the machines being grouped in this item below, at 51,500 kw. The two together give the total,

but I arbitrarily separated it into two groups. The reason that I eliminated 51,500 kilowatts in the latter group was this: my explanation of the typical load growth was by giving them a 24 hour load in the base. This figure which I have here is related to the total capacity of the machines, which I assume can be used in that manner, and those machines listed in the 51,500 kw. group are not machines which would be so used. They are machines in customer plants and other places which are not kept in regular service, though they might be put into service. I have separated them into two groups solely to have a figure to take 85 per cent of in order to secure my shortage figures, as I have described the method before. It is not a matter of setting [fol. 1582] aside certain steam plants as reserve capacity and I did not eliminate some of the steam plants entirely. I think perhaps some of them should be eliminated, but I have assumed that there might be contingencies in which it might be worth while to rehabilitate them. I did not eliminate any one of the steam plants.

As to whether in determining the capability of the steam plants I assumed limitations due to high temperature of circulating water, I merely took the ultimate figure that the companies have reported, without reporting in my exhibit here what the reason was. Of course, I would note the reason in my own mind, but it was not necessary to put it in here. I took the net figure which the company gives as capability. It is my testimony that this is a figure which I took off a company report and not an estimate of my own.

In dealing with Group 1 on Defendants' Exhibit 134, as stated in the heading, I have taken only the hydro plants having some pondage. This is a determination of the capacity at the minimum water flow of a very dry year. There is so little water that unless it can be stored in a pond or reservoir to be used on the peak days, it is of very little value. I am establishing here a figure of machine capacity, so as to see if you have got a certain amount of water which is applied in the load curve that I have shown, and takes care of a certain amount of capacity. I am establishing this figure to be sure that there is enough machine capacity in these plants to be able to carry it, so if a machine is on a river that does not have a pond it is of very little value. There are two sorts of elimination here. I have eliminated the Nacoochee plant of the Georgia Power Company and Langdale, North Highlands, Flint River, High Falls, Bar-

nett Shoals and certain small miscellaneous plants, eight plants aggregating about 8,000 kilowatts. I do not have the names of the smaller plants aggregating about 8,000 kilowatts. That is not all the eliminations I have made. In [fol. 1583] addition, considering the Alabama Power Company plants and the Georgia Power Company plants as a whole, I have discounted the total capacity obtained by adding up those plants I have not eliminated, because those plants being on the same river and the same pondage water having to pass through them all, it would not be possible to get a 100 per cent value of all the capacity for all the plants. The elimination figure was 10 per cent in the Alabama Power Company plants and 15 per cent in the Georgia Power Company plants. In other words, after eliminating about 30,000 kilowatts of normal capacity of the smaller plants without storage, I have discounted the Alabama Power Company by 10 per cent and the Georgia Power Company by 15 per cent. In The Tennessee Electric Power Company I eliminated one or two plants. Ocoee No. 2 was eliminated, Hales Bar, and eight miscellaneous plants aggregating 3,700 kilowatts were eliminated. I eliminated the entire plants.

I am not in agreement that it is a fact that the pondage on all of the plants of the Alabama Power Company in Alabama and the Georgia Power Company in Georgia is large enough to be operated at 100 per cent efficiency. I would like to point out that for one thing the Jordan Dam has a limitation in that certain water must be passed for navigation purposes on the Alabama River and that the Thurlow plant has very limited pondage. Further than that, I would like to point out the principle involved, which is that when a generator operating in a plant with pondage passes water to generate power for peaking purposes, this water is discharged always at 6:00 o'clock in the evening, if we refer to the typical load chart for the time of maximum demand. That water then has to pass down to the next plant, and if it is to be used to produce power in that second plant, it must arrive there at 6:00 o'clock to do any good, and that is either 6:00 o'clock the same day or the next day. These [fol. 1584] plants are placed at odd intervals along the river and in most cases the water which passes at a certain time in one plant has some lag before it is found in another. I understand that it is possible by skilful manipulation to pass the water from the pond perhaps early in the peak, or two

or three hours before the peak in the upper plant, and if the second plant happens to be close enough so that the water gets there before the end of the peak, perhaps three hours later, it might be useful. In general it is not possible to use the same water in all the plants on the peak and it is in an effort to appraise that limitation that I have made this percentage change. I am free to state that it is a matter of judgment and that is my judgment. I have given the matter a good deal of thought and have looked over and studied the physical set-up of the plants as far as it is available, and I believe those are fair figures, and I have very grave doubts if any organization can operate those plants to do as well as that in the actual case.

As to whether I have given my testimony that the pondage of the Alabama hydro plants is not sufficient to hold the water released from the upper plant to the next plant until the peak of the following day, the point that I made was that when the water was once released from one plant, it is started on a journey, and it is beyond the control of the company and they cannot have that water appear at another plant at the time they want it, when the demand is great. As to why they can not hold it at the next plant downstream if the pondage is large enough, if it don't get there when needed it will not be there. It would be possible to hold the water at the next plant down stream, if the plant had sufficient pondage to close the pool for a week, but this is not the case. As to whether I know it to be a fact that the men who have operated these plants have succeeded in operating them so as to utilize that water at each [fol. 1585] plant downstream at the peak, they have never yet operated in that way. I am considering the period of time from 1939 to 1943 and until that time I cannot tell what will be done. As to whether I know that the men who operate those plants have succeeded in operating them in that way, I have just told you that the test has not yet come. As to whether the men who operate these plants have succeeded in operating them in the past so as to utilize all the water at each of the successive plants of the company, I am not familiar with the detail of the daily operation. I cannot answer the question without consulting the day to day record. I have not studied the log sheets of operations of the different plants. It might or it might not be true

that the log sheets of the operations and the actual experiences of the men who operate these plants would be better than an estimate by someone else for 1939. I am somewhat familiar with the way these things operate and the customs among operators and I have just got to give the best impressions I have.

I have included all the energy in the dry years and I have added to it in the case of most companies a percentage to cover all the additional power which might be used if they had a larger load, 10 per cent in 1939 and 25 per cent in 1943, over and above what they actually used, on the theory that in a dry year a little water is wasted and with larger loads than I have forecasted, they could use a little more, and I have added that to the available supply.

I know it to be a fact that the machine capacity of Ocoee No. 2 is 18,000 kilowatts. I have no knowledge that it is a fact that the firm capacity of Ocoee No. 2 is 18,000 kilowatts in an extreme low water year. I know that there is a large pondage or reservoir in the next plant above Ocoee No. 2. I do not know whether that plant is operated so as to make the firm power capacity of Ocoee No. 2 18,000 kilowatts. I have not considered the present operation. I have consid- [fol. 1586] ered the most favorable operation that could be handled in 1939 and 1943. As to whether I think the pond up above will be destroyed in 1939 and 1943, I have explained that the water cannot be used in both plants at the same time. The point is, it is good for either plant, but not for both. I am not familiar with the fact that when water is released from Ocoee No. 1 on the peak on one day, it gets to Ocoee No. 2 the next day on the peak. I did not include that in this computation that I gave.

I have no figures to show that the firm capacity of the Hales Bar Dam is 25,000 kilowatts and I did not include it in the pondage plants. I did not throw out the energy there, but I did not include it among the plants which I said had pondage. For the purpose of load carrying capacity, I threw it out for the peak capacity. My energy figure is the figure for the year. The other figure is the capacity at the peak of the load and there is no relation between the two. I did not understand that a computation of all the energy for the year without regard to and discarding its production at the time of peak during low water is a wholly

unrelated thing. There is a minimum generation on the peak in this company's hydro plants which I have not included in the pondage. There is a minimum flow of energy there which cannot be accumulated to be used suddenly on the peak, but it is in the average run of the river. I assume that whatever capacity is taken care of in 95 per cent of the figure I have, is too small a volume to attempt to break up into numerical values. I have recognized its existence, but it is immaterial in amount.

I did not eliminate any hydro plants in the second group, except that there is one plant, Russellville, I think it is, with 700 kilowatts capacity which was not included as a pondage plant. That is in Group No. 2, the Electric Bond & Share Company property on both sides of the Mississippi River, and that is the only plant in that group. In the group known as the National Power & Light, I have eliminated [fol. 1587] Marshall with 3,000 kilowatts owned by the Carolina Power & Light Company. I have included the Carolina Power & Light, Western Division, but gave no attention to the Eastern Division of the Carolina Power & Light so far as generating capacity is concerned. My set-up is that the Western Division is an isolated division, isolated from the Eastern and Southern divisions. There is an interconnection between the two, they have contracts, and that relation is carried out through their contracts as though the two were connected for general operation. As to the size of the interconnecting line, it is not an interconnecting transmission line between the two, but it is a swap of power. The Carolina Power & Light Company has a contract by which it delivers power from the Western Division to the Duke Power Company at Greenville, South Carolina. At the same time the Duke Power Company agrees to deliver power to the Carolina Power & Light, Southern Division, at Wateree. Further than that, they have a practice which I believe is covered by contract to some extent at any rate, by which the Appalachian Electric Power Company will supply or deliver some power from the Carolina Power & Light through the Kingsport connection and will deliver power through, across the Virginia line to the Eastern Division of the Carolina Power & Light. It is rather limited in quantity, but it is an operation by which there is a swap of power, and the result is that power generated in the Western Division is used in the Eastern Division.

After I graduated from M. I. T., I spent some ten years with the Westinghouse Company. That was a manufacturing company. In those days the manufacturing companies had almost a monopoly in the knowledge and had to furnish most of the technical information for the operating companies. At that time they were not engaged in making mercury lamps. The mercury lamps followed by about ten [fol. 1588] years my connection with the Westinghouse Company. During the first ten years, I was studying static conditions with reference to high tension transmission lines. As to what voltages and what lengths of line I was studying, I have in mind not the complete design of these transmission lines but the methods of operation. Of course, there were a great many lines involved. I was familiar with everything going on in the country so far as that goes. The voltages involved at that time I think ran up to 110 kv., but I don't want to be held very closely to that. It was a gradual evolution. It is a fact that power today is being transmitted in this country at voltages up to 287,000 volts and over distances of over 300 miles. There is one pair of lines of high voltage of that amount and slightly less than 300 miles.

I was also chief electrician of the Cooper-Hewitt Company, which was a manufacturing and research company. After that period as a consulting engineer, I was with the interests of Guggenheim Brothers, but not at their plants in South America. I was connected with them a little less than ten years. They were engaged in very extensive mining operations in South America. The principal part of that work was mining. I did some work for utilities at that time. We prepared plans for certain plants for the City of Santiago, Chile. I was not an engineer with the City in connection with the construction of the hydro plants but my department with the Guggenheim Brothers was given the commission of doing this design work. I might add that the operations of the Guggenheim Brothers in mining was practically utility operations. They had to maintain villages for their employees, transmission lines, water, sewerage and other utilities. That is, they had villages at their mines up to about 5,000 inhabitants. I would regard the Guggenheims as engaged chiefly in engineering and mining operations.

[fol. 1589] I was in this country as a consultant from about 1923 to 1934, and after that I went on the staff of the Federal Power Commission. I was consulting engineer with the Guggenheim Brothers in charge of power operations. I was in charge of that division in the way of designing and supervision of operations, but not in charge of personnel or direct operations, but in charge of the supervision of purchasing, so far as engineers handling the supplies is concerned.

Examination by the Court:

As to what I did with the Guggenheims, I was consulting engineer in charge of power operations. I was in charge of that division in the way of designing and as supervising of operations, but not in charge of personnel or direct operations, but in charge of the supervision of purchasing so far as engineers handling the supplies is concerned.

Cross-examination continued:

I have never had responsible charge of the operation of any public utility system in this country. I have never been general manager of a utility, if that is what you mean. I have never had the responsibility for the actual operation of any large utility system in this country. In my work with the Federal Power Commission, I am engaged chiefly in work of a statistical nature and have no direct contact with the operation of any large utility system. As to whether in my work with the Federal Power Commission I was chiefly engaged in work of a statistical nature and had no direct contact with or responsibility for the operation of any large utility system, I have no more authority than the Federal Power Commission has and it does not have charge of operation and supervision. I do not have actual charge of the operations of any large utility system. I am appearing in this case in my private capacity and not as an employee of the Federal Power Commission. As [fol. 1590] to whether I am employed by TVA, my time has been assigned to them. I have made no change in my relations with the Federal Power Commission, but there is some arrangement between the TVA and the Federal Power Commission as to the time.

I used reports made by public utilities to the Federal Power Commission as the basis for my estimates. As to

whether it is a fact that these reports or answers to questionnaires submitted to the Federal Power Commission by public utilities are confidential, I think the Federal Power Commission has authority to use them. They have used them in the past. I do not know that they are confidential. I don't know that they are not. I don't know what you mean by confidential. As to whether it is a fact that the answers to the questionnaries are not open to the public, they have been used many times and are open to proper persons. I don't want to pass on the law of the matter, that a good many of these records are by law open to the public. As to whether it is my testimony that anyone may go to the Federal Power Commission and inspect those records or take copies of them, the Federal Power Commission has given certified copies of these records and reports a number of times. We did not give photostats of these records and reports to the TVA, they got them from us. They didn't take them away from us. I have no information that the Federal Power Commission refuses access to private engineers or engineers representing public utilities as far as these questionnaires are concerned. If I wish to show them to somebody, I ask permission from the Commission and I don't take the responsibility personally.

The first line on the first Table A of Defendants' Exhibit 134 shows the maximum annual demand and the underlying data for that table is found on Table C. In Table C, I show in the second column from the left the annual rate of increase assumed. The figures for the years 1934 to 1936 are actual and from there on they are estimates. For the year [fol. 1591] 1937, I show a figure of 9.8 per cent. As to whether it is a fact that actually the demand in 1937, instead of increasing 9.8%, has decreased 9%, I have no figures on the demand for these companies. I am not surprised to hear that the increase is less than this 9.8% on account of the slump that has occurred in these last few months. I would be very much surprised to hear that if the figure for the year 1937 was made to accord with the fact, it would show a minus 9% instead of a plus 9.8%, but it may be so. As to whether I investigated that, I do not have the figures available.

Going down the second column from the left on Exhibit C on Sheet 3 of Defendants' Exhibit 134, there is shown a figure of 5% in 1939, 3% in 1942 and 8% in 1943. Those

figures represent my estimates of variation in the total conditions. Those variations were put there to recognize the fact that these growths do not occur in smooth, straight lines. The growth of plants and the growth of loads do not come in uniform percentages, and to recognize that fact I have arbitrarily shown varying percentages for different years. I made the statement that I did not expect that the variations would hit the right years, but the average throughout the period I have taken would be a reasonable average, and it could not be criticized because I had assumed a uniform rate of growth when everybody knows that is not the way the load grows. I had no more reason for putting 3% in 1942 and 8% in 1943 than I had for putting 8% in 1942 and 3% in 1943, and I had no reason for selecting those two years. The figures for 1939 and 1943 on sheet 1 of Table A of Defendants' Exhibit 134 are copied from Table C. When I assumed the maximum annual demand for those years, I used the best judgment I had in the light of all the facts that I had. The 9% decrease for the year 1937 will be made up by 1939. I have taken my [fol. 1592] 1939 and 1943 estimates as shown on Table C and in the second line of Table A, sheet 1, I have added to that 7½% more. After making the best estimate I could for 1939 and 1943, it is not right to say that I have increased those estimates by 7½% of the estimate that I had previously made. What I have predicted here on the first line is what I think will be the annual trend of the demand. I pointed out that there are variations up and down which do not affect the trend but which do have to be provided for, and I have also explained that it is necessary to build a little ahead to have capacity on hand until the next period of planning. Further than that, you cannot buy machines to exactly fit the load, but a machine a little larger is bought because it is generally more economical. Those items are calculated in that 7½%, which I have explained at considerable length. In the second line of sheet 1, Table A, I have added 7½% of the figures shown on the first line as part of my reserve, and I then took that figure as the maximum condition for which capacity must be provided. In that sense it is correct to say that I have added 7½% of my estimate.

In my figures in these tables, I have made no allowance for installation which was not included in the reports for

1936. In this first group, the Commonwealth & Southern group, it has been testified that there is now on order turbines with a capacity of 105,000 kilowatts which are now being manufactured. I have made no allowance for that in this table.

It takes from one to two years to install additional capacity. It is common sense that proper utility management contemplates and requires that a utility shall provide enough capacity to take care of its actual and potential demands in the period of time during which new facilities can be added, and it is a matter of judgment whether a utility should build facilities far in advance of its probable or likely needs.

[fol. 1593] "Q. Well, Mr. Thomas, if a utility builds facilities far in advance of what may be needed or will be needed within the period during which new facilities may be constructed if desired, is the expense of those unnecessary facilities borne by the utilities, or the consumers?

A. No unnecessary—no disadvantageous building ahead should be undertaken, of course, it should be done only when there is an advantage in it."

It is not, broadly speaking, true that proper and prudent management of the utility would require that the utility should provide facilities adequate to meet requirements during the period that would be needed to install adequate facilities. If it can be shown that there is an advantage, a saving in any form in building ahead, they should be built. If they could get a bargain and could buy a plant very cheaply, which they would have to pay twice as much for, built later, they should buy.

"Q. But aside from that, Mr. Thomas, prudent management should indicate that you should not build greatly in advance of the public needs, unless it was necessary as a matter of prudent construction?

A. I think I have explained my view there."

I started with making my estimates shown on Defendants' Exhibit 133 for shortages for the year 1943 very early in the fall of 1937. I would not think that it would be necessary or good utility planning and operation to require that a utility should have in 1937 facilities sufficient to serve the predicted demand six years later, in 1943. A utility would

be very greatly overbuilt for a temporary period if it were to construct facilities in 1937 to meet a demand estimated in 1943 and provide for approximately 35% reserve and provide for 7½% extra demand for contingencies.

"Q. The Federal Power Commission would not approve the inclusion of the cost of such excessive capacity as a prudent investment in a rate base, would it?

[fol. 1594] Mr. Fly: I object to any such legal conclusion as that, as to what the Federal Power Commission might do by way of formal action.

Mr. R. T. Jackson: He is trying to indicate what the facilities should be.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: May we have our exception, please.

Judge Allen: You may have it."

All that Defendants' Exhibit 133 shows with reference to 1943 is that if my estimates of load curve were correct, and if it were proper to have such a large reserve capacity as I have suggested, and if all of these hydro plants could be discarded and ignored, as I stated yesterday, and if these utilities built no additional facilities in the next six years, there would be, in my opinion, a shortage of capacity of the order or magnitude shown on my exhibit. I would not expect to find today any utility, if it were prudently managed, with facilities that would meet those requirements for 1943, unless there were some very special conditions.

Referring to the figures for the Electric Bond & Share group on sheet 8, Table A, on Defendants' Exhibit 134, in the first line there is shown for the starting figure in 1936 a maximum annual demand of 225,800 kw. That is supposed to be an actual figure.

"Q. According to my information, and the records of the company, that is not in accord with the actual figure for 1935?

Mr. Fitts: We object to the form of the question.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: May I have an exception. I have not yet completed my question.

Judge Allen: You may have your exception. Ask the witness a question. Mr. Jackson, if testimony is presented to [fol. 1595] that effect, then you can incorporate it in your

question, but the Court cannot consider statements of counsel as included in your statement.

Mr. R. T. Jackson: Of course, I just wanted to direct the attention of the witness to what the situation was, and ask if he knew the explanation.

Judge Allen: Stated in that way the question is objectionable, and the objection is sustained.

Mr. R. T. Jackson: Of course, we take our exception.

Judge Allen: If you want to ask the witness whether that is a fact, ask him."

I think I shall have to make a slight correction in the last answer. That figure of 225,800 kw. is the reported loads reduced slightly by the figure of diversification. The sum of the different company loads would be 240,300 kw. which is explained on Table C. It would not be quite fair to add all the totals of those companies up and not make any allowance for diversity of the peaks, and the difference of 240,000 and 225,800 is the allowance that I made as described on that table. I do not recall having made any allowance for isolated sales where it happens that the company has certain properties that are not interconnected, as this is intended to be interconnected companies. I am not very clear, it is just possible that there might have been some small properties that are not included in this. I cannot remember whether I took out of the figures sales from non-interconnected or isolated properties. It was a very small amount, if any. These figures are for interconnected sales which the company reported. There were no sales actually taken out and I have no recollection that there were any in.

On this Electric Bond & Share group, the capacity of the fuel plants of 205,000 kilowatts is the sum total of the figures given by the companies, the capabilities of the plants. I did not eliminate any steam plants. I did not include 12,000 kilowatts steam capacity added in this group during 1937.

[fol. 1596] "Q. Did you make any allowance for any interconnection with other companies, such as the New Orleans Public Service Company?

A. I examined the inter-connection contracts covering them to see if there were any non-cancellable contracts. While a number of contracts between the companies are cancellable on short notice, and as I explained, I did not consider that as satisfactory for 1939 or 1943, as an elimination of their provision for capacity.

Q. You did not make any allowance, is all I asked?
A. No, I did not make any allowance."

I am not sure whether I made any allowance for capacity available at the customers' plants. I used what the company gave here.

I have not made the comparison and do not know whether the diversified demand or peak shown on page 10 of Defendants' Exhibit 134 exceeds the actual demand shown in Complainants' Exhibits for this group. If the diversified demand or peak for 1936 does exceed the actual diversified demand or peak, that error would persist in the same percentage up through 1939 and 1943. It would not be multiplied. If it was an error by being too large, the percentage of error would remain the same, but the total kilowatt hours would be increased.

With reference to the Carolina group, the second of the Electric Bond & Share groups, I have excluded the Southern and Eastern sections, but I do not know that that excludes all of the Carolina Power & Light system lying east of Asheville. It would be east of Asheville. The Duke Power Company comes in between the two sections. I stated that the Southern and Eastern sections are actually closely integrated with interconnections with the Duke Power Company and the Appalachian Power Company. I am familiar with the situation that the Appalachian Power Company gives [fol. 1597] the Carolina Power & Light Company the privilege of transferring energy through the Appalachian system in any direction and at any time, and that large amounts of energy are so transferred, but I am not sure that that is an accurate description of that situation. I know they do make transfers and I have here figures which show that 9,500,000 kilowatt hours net were transferred to the east in 1936, which is found on Table B. It would be a very exaggerated statement to say that there is full coordination of the predominantly steam Appalachian Company and the predominantly hydro Carolina Power & Light Company. There is a long high voltage line interconnecting Waterville, the principal station on the western division of Carolina Power & Light, with some of the large stations of the Appalachian Electric Power Company. It is a long, circuitous route, and energy is passed and can be passed over it. It is a very important line, and it is very well known among engineers, but it does not constitute, to my mind, close coordination of

these two systems. The gross amount which was passed was about 12,000,000 kilowatts eastward, and about 3,000,000 return in 1936 over the Duke connection. It is true that there is coordination carried out by the Carolina Company supplying hydro energy to the Appalachian Company whenever available, both during peak and off peak periods, and the Appalachian Company returning this energy at off-peak periods during the Carolina's dry season. I did not eliminate the Kingsport-Waterville line, but after studying that situation, I came to the conclusion that there was no non-cancellable relations by which, if Appalachian was short of power in 1943 and Carolina Power in its western division was too, that the Carolina Company could coerce the Appalachian Company to give them power they could not spare. There was no such relation there, and so I did [fol. 1598] not count it in the dependable capacity of the western division of the Carolina Power & Light. That line is freely used now in the practical operations of the company and there is plenty of power there now and they save some money by it. When I spoke about the exchange of power of 12,000,000 and 3,000,000 kilowatt hours, I was talking about the interconnection through the Duke Power Company. The exchange with the Duke Power Company is this: The Waterville station, or the network there, supplies power to Greenville, South Carolina, and it can be used by the Duke Company to advantage in its local work. To compensate, they supply from Wateree far to the east, which is a station on the Catawba River, where they have capacity, to the Southern Division a good many miles away, of the Carolina Power & Light where they need a little support.

I have not given the figures for transfer from the Appalachian. but I might be able to dig them up. I do not have those figures in my head, but I have been over them and looked at them. It is a sensible amount, but it is a small figure in money value though a large figure in kilowatt hours. It is dump energy.

I testified about various points at which interconnections could be made between TVA plants and utilities. I have no definite knowledge that all of these TVA power plants are to be interconnected with high tension transmission lines except what I read in the newspapers. I don't believe I am competent to answer that.

"Mr. Fly: We will concede that point."

I assumed that there would be a reasonable amount of interconnection between the various TVA plants and some exists already. I said that these were very elastic and that the power might flow one way or the other, depending upon conditions, and I understood that there were to be transmission lines connecting up all these systems, but of course [fol. 1599] there are a number of other lines existing in that neighborhood which I had partly in mind. My testimony as to the various points of interconnection which I regarded as feasible was not based upon any studies of pooling that I had made. They are matters of common sense. I am pretty familiar with that region and have studied it for a good many years. It is obvious to any engineer that with the location of power where it is, and the load centers and existing lines where they are, that those would be obvious points of interconnection. I have not made any final study of the best way to do it or the capacity or anything like that. As to whether I made studies of pooling of TVA power and the power of utilities, that is a broad term. Studies of pooling might mean anything. I made a good many studies of the possibilities there, but I would not want to be too specific in defining just what they were. As to whether I did or did not study the possibilities of pooling, as I say, it is a broad term. Pooling might be two particular plants combining their output, or it might mean six or eight states combining their forces. As to whether I did study the pooling of the TVA proposed system and the existing utility system, well, I have certainly, in a general sense. And this study is bearing upon possible pooling. I do not remember that I was the author of any paper advocating pooling of TVA power with the other utilities. I do not know what you mean by paper. I do not know what you have in mind, but perhaps I have said something somewhere, if you can tell me what.

I have made a number of studies but none were directed at the principal object of whether the most economical production of power would result from pooling of any proposed TVA power system and the systems of the utilities, so I cannot give a definite answer as to the advantage.

[fol. 1600] "Q. You cannot? Well, assuming that TVA had the right to generate power, and assuming that it could be sold at advantageous prices, would not sale to the utilities for distribution over existing lines with no additional cost paid for the current to TVA bring about the most wide-

spread public benefits, if any, of such generation and sale of such power?

Mr. Fly: I object to that question on the same grounds as heretofore. That is not only entirely irrelevant, but it is an effort to open up here in a conclusory way and by one or two questions a series of transactions that would have to be gone into at great length. What difference does it make as to whether or not the Authority could do this thing more economically by using the Utilities' system? That presupposes that an agreement could be made, and under what terms the agreement could be made.

Mr. Fitts: Furthermore, the question is directly contrary to the mandate of the statute in one particular. It is based upon an assumption which is against the mandate of the statute which requires the Tennessee Valley Authority to give certain preferences to municipalities and cooperative organizations of farmers not operating for profit. Furthermore, the question has in it the element of selling at an advantageous price, as if this case involved a review by this Court of whether or not Congress could elect to dispose of its property according to a certain policy which it has declared in a statute, and as if this court were called upon to review the wisdom and economic soundness of that policy, rather than the constitutionality of it.

Judge Allen: The objection is sustained. You may have your exception.

Mr. R. T. Jackson: May we have our exception noted, please?"

I delivered a paper in Birmingham in 1924, having to do with the integration of the companies in the southeast. It may well be true that the persons who were actually responsible for the operation of the principal utility companies in the southeast had made a study of the possibilities of integration of those systems in 1921. I don't happen to know. I was familiar with the fact that there were already in existence a number of major interconnections in the [fol. 1601] southeastern companies in 1924. It is a fact that a very highly integrated system has been developed in the southeastern states at the present time. I cannot tell what led to the developments or what was in the minds of the men who did it. I was not employed to develop any interconnection with the southeastern companies after my speech in

Birmingham in 1924. I am not claiming I led this change. I am saying that I made the speech as a matter of interest and in a general way the development followed along those lines.

I have made some predictions for load curves, but I do not understand what you refer to by my field studies. I have never been in Arkansas, except that I have been through it on the train. I have never been in Memphis.

"Q. Mr. Thomas, in your judgment, would a man engaged in the management and operation of utilities in Memphis, Arkansas, and Louisiana, and making frequent studies of those companies, their operations, the industrial and other conditions affecting them, be in better position to make an intelligent prediction of the load curve than a man who has never been in Arkansas and Memphis?

A. I think quite the contrary is the usual thing. Let me explain, if you will. The people who understand these plants and their operations, their efficiencies, are the people who design them and the people who study the reports. The designs and the reports may be made a thousand miles away. Unless you have access to them, and know something about them, your presence in the city or state where they are does no good.

Q. That is, I understand, according to your view, absentee ownership and management is of great advantage?

A. I admit, Mr. Jackson, that if you have the designs and reports and live in Memphis, you might also be able to do the work too."

In making these forecasts, I was considering the growth of the demand for power in the region and I did not make any allowance for the loss of load to the TVA. That has [fol. 1602] nothing to do with where the power was supplied from. I have shown the Commonwealth & Southern group on the exhibit as having something to do with the load curve. That is the use of power in the region which is served by that group. It doesn't take into account where the power is supplied from, but is the curve of the use of power. My figures on Defendants' Exhibit 133 and the supporting data (Defendants' Exhibit 134) are not to be taken as estimates of maximum demands of the various companies listed on these exhibits. It is the demand in the area, not necessarily the output of those companies, unless they are the ones to supply the area.

I do not know what the load curve trend is for the United States as a whole. That is a little too broad to answer and I do not believe anybody knows. The past historical load trend is up; I thought you were referring to the forecast trend. Until 1929, there never had been a decrease in any year below the year before. The trend has always been upward unless there was some very powerful influence to cause it to go downward. I cannot tell whether in the last 14 years the average has been five per cent.

For the Commonwealth & Southern group I have allowed an outage of 1½ times the largest unit, and then I allow 7½ per cent for swing in the business cycle, and other items. Then I allowed approximately 5 per cent for transmission failure and some other causes I mention. I did not say that these percentages would not be steady, but the misfortunes would not happen at the same time. I did add these three things together in getting my percentage of reserves. I chose them to get it this way. In addition to that I did not allow 15 per cent for machine failure on certain reserves. When I came to consider in what way steam generators would generate power on a possible load curve, I assumed [fol. 1603] that would be only 85 per cent of the capacity of the machines in use, which has nothing to do with the reserve capacity. I do not suppose that there is any figure known as the average output of steam generators in utility operation. I have some idea, it is very variable. Some companies have better luck than others, and it varies according to the type and age of the machine, but I don't know that there is such an average. If there is such a figure, I do not know it. As to whether I know from my studies that experiences have shown over a 25 year period that the steam generators are entirely dependable, not merely for when they are needed, but in case they might be wanted and not actually needed, for 96% of the time, I have seen different statements made from time to time, studies by individual companies, and a limited experience on particular types of machines, but I do not believe that there are any general statistics that are of general application. I do not think I was on a committee that issued such figures. I was not on the Prime Movers Committee. It must have been some other Thomas. I have never been on a committee of the Edison Electric Institute and I do not know what report you have in mind. They made many reports. I have not seen this report for 1936.

I do not know that I stated exactly that the largest unit of a system, such as the Commonwealth & Southern, might be out for overhauling during the period of low water, but it might be. I know that it is the intention that on a system such as the Commonwealth & Southern with predominantly hydro power, steam units are always overhauled during periods of high water, but they cannot always choose. If they have an accident or something suspicious, they have to look it over without waiting for the time to do it. Referring to my statement about the normal overhauling that I likened to the examination of a high priced automobile, it is the intentior in any prudently managed company with hydro [fol. 1604] power to have the normal annual overhauling at a time when there is a surplus of hydro power and the steam is shut down anyway, but if one of those machines developed a vibration during the low water time, they have to look at it, or if the oil in the bearings becomes hot, they have to take it out. It is a fact that the matter of overhauling or regular maintenance and care will always be made during the season when there is an abundance of hydro power, and the steam plants are not in use, in the sense that that arrangement will be made whenever they have control of the inspection, but it sometimes happens that it is evident something is going wrong with the machine, in which case they have to shut it down and handle it at the time. The distinction I have made in my testimony was between accidental throwing out of a machine, and the taking out of a machine intentionally for some precautionary work. In general to be of any significance from the standpoint of peak carrying capacity, the failure of the unit will have to occur in a particularly dry six months of a particularly dry year, but it may happen in some parts of the system that the failure of a unit might be so important that the interconnecting lines would not make up for it, but I cannot make any broad, general answer. That would be true with the usual transmission facilities in a general way. The dry year would have to be when the load was considerable, not necessarily at the exact maximum, but when there is a heavy load. The dry year in the territory of the Commonwealth & Southern from past records occurs about once in 13 years, depending upon what the definition of a dry year would be. An extreme dry year might come every fifty or one hundred years, like the

one hundred year flood. There is a difference between a wet and a dry year. It might be so that the records would show that an extreme dry year has occurred in the Commonwealth & Southern territory about once in 13 years, but I have not really checked it up. As to the probability of a [fol. 1605] failure that I described happening at a time when it will restrict the peak carrying capacity of the system, I have considered the possibility of very many accidents which might happen. Any one of them is improbable, but that there will be one or more of the large number of possible accidents is not so improbable. The probability of a failure that I have described as happening, such as the appearance of a vibration in a particular generator at the time of a dry time, is a very remote possibility as far as that particular machine is concerned. I made no special assumption as to how long the particular machine would be out of service. If the steam generator were out only a short time on a hydro system, it would affect the capacity by the amount of load it was carrying, or it would affect the potential capacity by the amount of the capacity of the machine, whatever that is. There are extra generators on the hydro plants that can take up part of that slack if it is only out for a very short time, but it affects the capacity by how much drops out. If there is unloaded capacity of hydro machines and reservoirs, that would naturally take up whatever was dropped, provided the capacity was sufficient, and the reservoir was sufficient.

As to what would be the effect on the system carrying capacity of a machine being out only for a short time where one has a large amount of hydro with extra generators, if the original peak carrying capacity included all the units, hydro and others, and you drop a steam unit out, you must subtract that much. If you had not included all the hydro capacity when you established the system figure then, of course, it would not be necessary to subtract the capacity of the system unit which failed provided the hydro was available. In my studies, Table A in each case accounts for all of the capacity of the system, that is, all the usable capacity, all that is available. It does eliminate those various plants which I previously named.

[fol. 1606] I have described a great many things that might happen to the facilities of a utility and my testimony is based upon an assumption that during an extreme dry

year when the largest unit in the system is out of service for the six driest months, and when another unit half as large as the largest unit is also out of service during the six driest months, and if I miss my load forecast by this 7½% factor, which I have previously described, and if also there are transmission line outages reducing the firm capacity by 5%, the results will be what I have testified about and shown on Defendants' Exhibit 133. It is not conservative to say that the probability of the coincidence of all these factors is less than one in 500,000 years. The percentages and this machine and a half which I have allowed here are the discounted results of a great many accidents which might occur. The question of probability has been taken care of in the choice of these percentages. They would be very much larger percentages if I did not assume that many of the misfortunes would not happen at the same time. It is necessary to consider that this Commonwealth & Southern system extends over several hundred miles in two or three directions with a very large number of plants, and a very large number of lines, and the trouble is not going to be confined to one ...achine here and one machine there. At college I made a study of the theory of probabilities in this connection. I do not think that the formula would fit and I did not apply it to my conclusions in arriving at the probable coincidence of these various factors.

Redirect examination:

My purpose in eliminating certain dams without substantial pondage from my calculations was because it is [fol. 1607] necessary to determine and to know what machine capacity will be available if called upon. In a dry year it is usually not possible to call upon all the hydro capacity due to shortage of water. Much capacity that would otherwise be wasted by a shortage of water can be preserved where pondage is available, that is, the capacity to save up the water running when the load is light and using it all at the times when the load is at the peak, which is the only time that the full capacity is required. To arrive at such a figure is a difficult operation if you are looking for numerical exactness. The difficulty lies primarily in uncertainty as to the minimum water that is available and as to the exact form of the load curve which has to be supported, and uncertainty as to whether water used in one plant on the peak only can be gotten to another plant on

the same river at such a time as to be used. In arriving at my conclusions, I have assumed as potential available machine capacity the full capacity at all plants with reservoirs or pondage. This leaves a number of plants, the so-called run-of-the-river plants, without pondage capacity. They will be able to generate power from whatever runs through them twenty-four hours a day without pondage. This is a quantity which is difficult to determine. Fortunately for the success of these studies, this is a minor quantity and may be approximated. There is another factor which must also be approximated of considerably greater importance, which has relation to the ability to use the potential available load capacity at pondage and reservoir plants at its full value on the load curve. In view of the minor importance numerically of these two factors, I have cancelled one against the other. To explain a little more fully what I have referred to as another factor of difficulty in using the pondage units at full machine capacity on the system load, I would like to refer to the chart attached to Defendants' Exhibit 134, the typical daily load curve charge. [fol. 1608] This is a point exceedingly important, justifying the elimination of certain of these plants on the system which, unexplained, might be misunderstood. Referring to this chart in Defendants' Exhibit 134, it is shown that the use of the hydro machine capacity is in the upper shaded part marked "hydro". If that capacity is to be used, it must be used in that portion. That energy is derived from some 40 or 50 separate plants, I don't remember the exact number, and each must make its contribution. If a small plant, like one of those eliminated, is to make a contribution to that shaded area, and is also to use the full rated capacity, it can only do so for a time during the day which is limited by the limited amount of water; that is, if there is only 10% enough water to carry that machine at full capacity, it can only carry its full capacity for 10% of the day. The same will be true of all those plants. Referring to the curve, the load dispatcher has a problem of fitting the special requirements which must be met if these individual plants are to be maintained at their full capacity in this shaded area. I can briefly explain the difficulty by calling attention to the fact that this shaded area might be likened to a wall built of bricks. Each brick will represent the contribution of one of these power plants. When you make the condition that that power plant shall operate at its full

machine capacity, you have determined the shape of that brick. It can only operate for so long and the height of the brick is determined by the capacity of the machine. The length of time it can operate is determined by the amount of water and you have to take those bricks which somebody else has shaped and fit them into that particular curve. The shape of the bricks cannot be controlled and obviously no such operation can be done 100% perfectly. A further difficulty is that the shape of these bricks changes from day to day because the amount of water changes in the river. Still [fol. 1609] a further difficulty is that the shape of the curve changes from day to day because the shape of the load varies, and this must be done on the highest day of the year. It is in the recognition of the impossibility of using the 100% value, that I have discounted the total by leaving out some of these smaller plants which overbalance, I may say, a certain gain that will come from the run-of-the-river plants passing the river water. I am referring to available machine capacity though it involves, of course, the use of energy. In discussing these eliminations, I was talking about the capacity eliminations.

Referring to specific cases, the Hales Bar plant is eliminated for a somewhat different reason. That is a more important plan and is not reported as having any drawdown in the pond, or as having any pondage, and I presume that is because there is an Army regulation which prevents their storing any water at low water, so that if those regulations are observed it would not be possible to use that plant for peaking.

With reference to Ocoee No. 1 and Ocoee No. 2, the plant with the pondage on the Ocoee River is below the plant without the pondage.

Referring to my estimates of growth of demand up to 1943 shown on Defendants' Exhibit 134, my estimates are based upon past experience in the development of the industry and uses of electricity and are made taking into account the almost universal trend for the natural increase of power with the growth of the country and growth in the use of electricity and increase of power in industrial operations.

The long transmission line to which I refer is from Boulder Dam to Los Angeles, which is between 270 and 284 [fol. 1610] miles long and has a voltage of 287,000. These are two separate transmission lines on separate power structures and there is a generating plant at the end of the

line in the City of Los Angeles. There are also synchronous condensers at the receiving end of the line.

My estimated demand is not a proper basis of estimating adequacy of the facilities of these four groups to serve the estimated demands in the territory which they serve, because it takes the sort of study I have made here to determine such a question.

Recross-examination:

As to whether, when I stated that Ocoee No. 2 was a plant without storage capacity, I understood that the plant's storage capacity was on the same river but of a different name, there are two plants on the Ocoee River named Ocoee No. 1 and Ocoee No. 2 of The Tennessee Electric Power Company. Those two plants are together. There is another plant on the river further up. The Tennessee Electric Power Company has a plant on the Toccoa River, in Georgia, which is the same river but with a different name, above those plants. That is the Blue Ridge plant and I am familiar with that plant. It is some twenty-five to thirty miles above the other two plants. I do not remember that the dependable firm capacity of Ocoee No. 2, as reported to the Federal Power Commission, from which I got my data, is 18,000 kilowatts. I did not use those dependable capacities in my studies. I made an energy study. A competent system planner should know how long it takes for water to flow from one plant to another, and the size of the ponds, and what would be the best way to use them. It is possible to know that, but the time taken is not the same under all conditions. The water flows much faster when it [fol. 1611] is high than when it is low, but I suppose it is possible to know that. I should think that the system operator has to know that and regulate the operations of the company on that basis. I have those factors in mind and I have made allowance in my figures here for the small uncertainties that come from those matters that we are not able to calibrate and measure. It is not fair to say that I have made allowance by decreasing the capacity, the allowance being made upon my lack of information about the facilities so that I would be able to express an intelligent opinion. There are factors there which cannot be calibrated by anybody.

(The witness was excused.)

[fol. 1612] Counsel for defendants then offered in evidence and the court received as Defendants' Exhibit 135 the stipulation entered into between the parties concerning the stock ownership and the relationship of various Complainant companies.

Counsel for defendants offered in evidence and the court received as Defendants' Exhibit 136 the stipulation entered into between the parties concerning the TVA transmission line and substations and lines served by TVA.

KENNETH E. HAPGOOD was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 38 years old and reside in Chattanooga. My present position is assistant engineer of design and construction in the Department of Operations of the TVA. I graduated from the Worcester Polytechnic Institute in 1923, with the degree of Bachelor of Science in Electrical Engineering. I am an associate member of the American Institute of Electrical Engineers. I spent six years with the General Electric Company, two years of this time being spent in the alternating current engineering department on design of water wheel generators, in which large water wheel generators were designed. This section also designed synchronous generators and condensers. I spent three years in the high tension section of the central station engineering department of the General Electric Company, in Schenectady, and during this time I was the representative of this section on the alternating current machinery standards committee. This section acted as a liaison section between the various district offices and various design sections of the factory on matters of engineering. The section also acted as consulting engineering section for such customers as required [fol. 1613] engineering to be done. Among the work that I did in this section was consulting work on excitation designs, of condensers and the improvement of the stability of machines, and I made studies on stations with respect to breakers, etc. The Greenville loop of the Duke Power Company, in South Carolina, was one of these studies. The section

handled various parts of the country and foreign properties, and during the time I was there I handled work on the Southeastern States, except Florida, on properties in California such as the Southern California Edison, the California-Oregon Power Company, and properties in Japan and Mexico, such as the Nippon Electric Company, in Japan. During this time I also spent some six months with the Alabama Power Company on an exchange basis.

I have been with the TVA in the division of design and construction approximately 3½ years. This division handles all of the design and construction for transmission lines and substations of TVA, except substations or switching stations at the hydro plants, which are a part of the dams and are handled by another design section.

I was for three years with the Southeastern Engineering Company and Allied Engineers, Incorporated, in Birmingham, Alabama. Most of this time I spent doing engineering work on the Georgia properties and was what some companies call sponsor engineer. I was liaison engineer between the operating department and headquarters engineering offices in Birmingham, and during this time we made extensive studies as to providing reliable service for the City of Atlanta. These studies were completed and gradually put in execution. We also made studies on improving the generating plants of the Georgia Power Company, doing what work was necessary to bring the excitation systems up to what was a reasonable standard.

During the course of my duties I have become familiar with the physical transmission properties of TVA and the [fol. 1614] properties of the customers whom it serves at wholesale.

The map (offered and received in evidence as Defendants' Exhibit 136-A) is an exact copy of the map which is attached to the stipulation on lines and substations. There is one slight error and that is that a short section of line between Booneville, Mississippi, and the Lee County line should be shown on the map as constructed. It was inadvertently omitted. The line from Booneville to Tupelo was purchased. The line which was omitted is approximately fifteen miles long and has a capacity of 44,000 volts. We constructed a short section of 44 KV line to complete the line from Booneville to the Lee County line. The solid lines on this exhibit are the lines which were purchased and re-

tained by TVA under the contract of January 4, 1934. The lines in Alabama and Mississippi which are shown in solid green were purchased under the contract of January 4, 1934, and retained. There are two short pieces of line which are not covered by the legend. The line from Iuka, Mississippi, to Golden was purchased by TVA under the contract of January 4, 1934, and sold to the Tishomingo Electric Power Association. A short section of 12 KV line very slightly west of New Albany, Mississippi, to the Benton County line was sold to the City of New Albany. The small green cross-hatched line by Norris Dam is an 11 KV line about eight miles long which was purchased from The Tennessee Electric Power Company.

Examination by the Court:

The lines that were purchased under the contract of January 4, 1934, in Alabama were purchased from the Alabama Power Company and in Mississippi from the Mississippi Power Company.

Direct examination continued:

The map (offered and received in evidence as Defendants' Exhibit 136-B) is entitled "Rural Lines Owned by Municipalities and Cooperatives Purchasing Power from the TVA [fol. 1615] and Rural Lines Owned by the TVA", and was also included in the stipulation. This map was prepared as of October 15, 1937. The areas blocked out with blue lines are the areas in which various cooperatives are operating having wholesale contracts with TVA. The areas blocked out in yellow show as of that date the properties which TVA was operating directly. There is an area around Norris Dam, for instance, and an area in the northwest corner of Alabama. In addition, there are three short sections of low voltage line, 12,000 volts, which the TVA owns and operates. One of these is from Bolivar, Tennessee, to Somerville, Tennessee, and the other one is a short stretch of line from Benton County, Mississippi, to Holly Springs, Mississippi, and a very short stretch of line from New Albany in Union County, Mississippi, to approximately the Pontotoc County line. Since this map has been prepared, the Lincoln County Association took over the property which it had a contract to acquire and is now in direct operation on its own, and we are selling power at wholesale to that

county. The different cooperatives are distinguished by Roman numerals, which the legend completely shows.

Examination by the Court:

There are 21 cooperatives on this map, and with the addition of Lincoln County there are twenty two.

Cross-examination:

This is intended to be a copy of the stipulation map.

"Mr. Jackson: Second, it does not show the North Georgia Membership Corporation, which runs up into Tennessee, as I understand it.

Mr. Fitts: We left that out because—we had it on one time and we left it out, but, on account of the suggestion of the Court—this is an exact duplicate of the map that was stipulated, Mr. Jackson as being correct.

Judge Allen: You concede that the North Georgia Membership Corporation operates two lines in Tennessee?

[fol. 1616] Mr. Fitts: I think that is established in the record, and I think the record shows how many."

Direct examination continued:

In the course of my duties I have become familiar with the physical properties conveyed to TVA by the Alabama Power Company and the Mississippi Power Company under the contract of January 4 and I have become familiar with the identity of the physical properties which were optioned by The Tennessee Electric Power Company under the same contract.

The map (offered and received in evidence as Defendants' Exhibit 137) is entitled "Lines and Substations of TVA and Lines and Substations Purchased or Optioned under the contract of January 4, 1934 by Authority from Commonwealth & Southern Companies." As shown under the legend, the solid green lines are the lines which were purchased, in Alabama from the Alabama Power Company and retained by TVA, and in Mississippi from the Mississippi Power Company and retained by TVA. The lines shown in green with two blocks breaking the line are the lines which were purchased and resold. Those appear in the state of Mississippi. The line from Iuka to Golden in Mississippi was purchased by TVA from the Mississippi Power Com-

pany and resold to the Tishomingo County Electric Power Association. The other section of the line in the stipulation in Benton County, Mississippi, was also purchased from the Mississippi Power Company under the contract of January 4, 1934, and sold to the City of New Albany. The blue lines shown around Norris Dam were the lines which were under option under the terms of the contract of January 4, 1934 from The Tennessee Electric Power Company, and the small green line running out of Norris Dam has an 11 kv. line which was purchased from The Tennessee Electric Power Company. There are other lines in Alabama out of Hartselle, Alabama, which were purchased under this [fol. 1617] contract of January 4, 1934 and resold to the Joe Wheeler Electric Membership Corporation.

I am familiar with the loads which the TVA is now serving or has a contract to serve and with the transmission systems and load centers of the complainant companies.

The map (offered and received in evidence as Defendants' Exhibit 138) is entitled "Transmission Facilities of TVA and of Private Utilities". The area was selected to show the lines of the complainant companies which were near TVA dams and to show the nearest dams to non-complainant companies of any magnitude. There are lines of complainant companies that are not shown there. The map is not large enough to include them all on the scale on which the map is made and the map does not identify the lines as belonging to complainants or non-complainants. The Duke Power Company is interconnected with these utilities, but the Kentucky Utilities Company has no connection in the area in this part of Tennessee. There is another small company in this area in Tennessee, the Hydro Electric Corporation. The Aluminum Company transmission lines are shown in the area in aluminum color.

Examination by the Court:

The lines of the Commonwealth & Southern companies, particularly the Alabama Power Company and Tennessee Electric Power Company are connected to Wilson Dam, and they go right by Norris Dam. There is a connection through Chickamauga Dam in Chattanooga, Tennessee. Generally speaking these lines come within two hundred miles of any dam.

Direct examination continued:

The lines of complainant companies are shown in red. I do not attempt to limit the lines of the complainant companies in any manner. I took the lines of the complainant [fol. 1618] companies from exhibits which they submitted. The map shows Wilson Dam's connections with the Alabama Power Company, and this connection north of Wilson Dam with the Southern Tennessee Power Company which is a wholly-owned subsidiary of The Commonwealth & Southern Corporation. It also shows a connection at Norris Dam construction substation with The Tennessee Electric Power Company. This connection is still in existence and the substation supplies power to Norris Village and for station service at Norris Dam when necessary under the interchange agreement in the contract of January 4, 1934. That line was used in the construction of Norris Dam and the substation will shortly be removed. There is a 44,000 volt connection at Chickamauga Dam near Chattanooga which was used to take power from The Tennessee Electric Power Company in the early stages of construction. This connection is now used as a standby and the power is supplied to the Chickamauga construction project by way of the Watts Bar project line, which is a TVA line serving TVA power. The black line at Guntersville Dam was a 110,000 volt connection with the Alabama Power Company which supplied power for the dam on the construction project. This connection is now operated open. The power is supplied to Guntersville from Wheeler Dam by the Guntersville line which is owned by TVA. When a connection is open, power cannot be taken across that connection. It must be either closed by closing the switch or making a wire connection similar to the switch in your house.

The nearest line of any company, other than companies of the Commonwealth & Southern group, the American Gas & Electric group or the Electric Bond & Share group, to any TVA dam constructed or under construction, would be the Kentucky Utilities Company at Pineville, Kentucky, which is approximately 45 miles north of Norris Dam. The nearest utility other than those three groups to any dam on the main stream, constructed or under construction, would be the Duke Power Company, in South Carolina, near the [fol. 1619] western boundary of Oconee County. That is approximately 115 miles from Chickamauga Dam. The

small utility of the Kentucky-Tennessee Light & Power Company which has a line at McKenzie, Tennessee, is approximately 75 miles from Pickwick Landing Dam, which is the nearest dam to that property. The nearest utility of reasonable magnitude to Wilson and Guntersville Dams, excluding the Commonwealth & Southern, the American Gas & Electric and the Electric Bond & Share groups, would be the Duke Power Company at some 250 miles from Wilson Dam. The smaller company which I have mentioned at McKenzie, the Kentucky-Tennessee Light & Power Company, is something like 100 miles from Wilson Dam. The Duke Power Company is about 240 miles from Wheeler Dam and the TVA has the two possible connections to the Kentucky-Tennessee Light & Power Company and the Kentucky Utilities Company at Springfield, Tennessee, and Franklin, Kentucky, which are around 100 miles. The Duke Power Company is approximately 180 miles from Guntersville Dam and these other companies, the Kentucky-Tennessee Light & Power Company and Kentucky Utilities at Springfield are something like 125 miles away and Franklin is probably on the order of 140 miles away.

I have a copy of a stipulation between the parties on the lines and substations of TVA. Exhibit B to that stipulation lists transmission lines in a table. The lines under "B", Roman numeral I, in that table were purchased from the Alabama Power Company under the contract of January 4, 1934. These lines consist largely of 44,000 volt lines, specifically a line from Wilson Dam to Hobgood, Alabama, a 44,000 volt line from Hobgood to the Alabama-Mississippi state line, a 44,000 volt line from Hobgood to Russellville and Rockwood, another line to Moulton, a 44,000 volt line around Decatur, Alabama, from Decatur to Hartselle, and from Decatur east and then north to Athens, Alabama, and one short stretch of 22,000 volt line from the Alabama-[fol. 1620] Mississippi state line to Red Bay, Alabama, in Franklin County.

Lines under "C", Roman numeral I were purchased from the Mississippi Power Company and consist largely of 44,000 volt lines extending from the Alabama-Mississippi state line to Iuka, Burnsville and Corinth and from Burnsville to Booneville. There is also a stretch of line from Tupelo to Oklona, Mississippi. The total shows a 22,000 volt line from Golden to Fulton, which was included.

Under Roman numeral II, "A", there are shown plant tie lines which serve the necessary function of permitting the free transfer of power from one plant to the other, thereby making the plants flexible. They are a substantial and necessary part of the plant construction program. If TVA had not constructed these plant tie lines, it would have had to rely upon the facilities of the Commonwealth & Southern companies in the area to serve the properties of plant inter-ties. In my opinion, these facilities would not be adequate to serve this purpose for the plants that were constructed or are under construction. There were no utility lines of any consequence between Wilson and Pickwick Landing Dams.

The lines listed under II-B and III and IV, which do not come under either of the above classifications, that is, they are not lines purchased, or tie lines, but are properties located wholly or partially outside the ceded area, are the Columbia-Dickson line, the Pulaski-Columbia line, the Pickwick-Jackson line, the Jackson-Bolivar line, the Columbia-Monsanto No. 1 line, the Wheeler-Columbia line, the Santeetlah-Hiwassee line, the Chickamauga-Friendship line, the Columbia-Monsanto No. 2 line, the Norris-Alcoa line, the Pickwick-Memphis line, the Jackson-Milan-Trenton line, Norris-Knoxville, the tie line with the Arkansas Power & Light Company and the Columbia-Victor line. Under IV, there is the Columbia-Murfreesboro line, the Pulaski-[fol. 1621] Fayetteville line, and the North Memphis-South Memphis line.

Examination by the Court:

All of these lines I have mentioned are either wholly or partially outside the ceded area and the other lines are inside the ceded area, except for one possible exception, I see I omitted the Bolivar-Somerville line in Tennessee.

Direct examination continued:

These lines serve the function of delivering power to the municipalities and cooperatives with whom TVA has wholesale contracts and they also serve industrial customers of TVA outside of the ceded areas in Alabama and Mississippi. The Santeetlah-Hiwassee line may be considered an exception, since its function is to provide construction power to the Hiwassee project.

These lines under II-B and III and IV serve load and contract commitments of TVA with the City of Memphis and also the Arkansas Power & Light Company connection at Memphis, and also serve the loads around Jackson, Tennessee, consisting of Trenton, Milan, Jackson, Bolivar and Somerville, and the two cooperatives in that area, the Gibson County Electric Membership Corporation and the Southwest Tennessee Electric Membership Corporation. All of these customers have wholesale contracts with TVA.

The lines which serve the loads in the area around Columbia, Tenn., the Monsanto Chemical Company and the Victor Chemical Company, which have power contracts, will also serve the loads at Dickson, Pulaski and the electric membership corporations consisting of the Middle Tennessee, the Duck River and the Lincoln County Electric Membership corporations. All these cities and cooperatives have wholesale contracts with TVA. The lines around Norris will serve and deliver power to meet the TVA contracts with the City of Knoxville and with the Aluminum Company of America at Alcoa. The line from Athens, Tennessee, to [fol. 1622] Decatur is not in operation right now. The line from Decatur, Tennessee, to Dayton is in operation and serves the city of Dayton and the Meigs County Electric Membership Corporation, both of which have wholesale contracts with TVA. I have omitted the North Georgia Electric Membership Corporation in view of the Court's ruling.

The TVA could not have delivered loads outside of the ceded area without using the lines of the Commonwealth & Southern companies or constructing lines of its own. There is one area, particularly in West Tennessee, in which there were no lines which could have been used to deliver TVA power to our customers. In those areas lines would have to be constructed, even if it were assumed that an agreement could be reached for the use of lines.

"Q. Mr. Hapgood, in your opinion do these lines which you have mentioned and explained, constitute an unnecessary duplication of existing transmission facilities in the area, or are they useful and valuable additions to the existing facilities?

Mr. R. T. Jackson: I object to that question. If it is material, it is a question to be determined by the Court.

Mr. Fitts: I don't think so.

Mr. R. T. Jackson: And I object further to his qualifications.

Judge Gore: Will you read the question again?

Mr. Fitts: Yes. I would like to make one statement before I read it. It seems obvious to me that the question of usefulness and desirability of a transmission line is a question of fact and also of expert opinion. I don't see how it could possibly be a question of law for anybody.

Judge Gore: The thing I wanted to know about the first part of the question was whether you were asking for a conclusion.

[fol. 1623] Mr. R. T. Jackson: I object to the question as double, and also that it is calling for a conclusion.

Judge Allen: The Court has permitted the complainants to ask questions of this nature. The decision on the ultimate question of fact is, of course, for the Court, but the Court will permit the witness to answer this question.

Mr. R. T. Jackson: May we have our exception, if the Court please?

A. Before answering that question, I would like to define "Duplicate." There are two meanings of this word "Duplicate"; one of them is a supplementary facility. All large load centers are supplied by two or more transmission lines to render reliable and dependable service, and this is as necessary, of course, as having spare generating capacity. The other meaning of the word "duplicate" is a facility which serves no function not already adequately and dependably served. I take it your question means that you have the last meaning in mind?

By Mr. Fitts:

Q. I have.

A. On that basis, generally speaking, it is my opinion that those lines are not a duplication of existing facilities. The Pickwick Landing Dam-Memphis line may be used as an example of this. That line was constructed to meet the contract with the city of Memphis, Tennessee, and in addition to that function, it will fulfill the function of supplying some 35,000 kilowatts to the Arkansas Power & Light Company at Memphis, Tennessee. As shown in Mr. Rankin's testimony, there is or will be a shortage of power in the valley companies of the Electric Bond & Share group in that area, so I don't consider this line as a duplication.

That shortage, by the way, is even with this 35,000 kilowatts of capacity from the Tennessee Valley Authority. The Pickwick Landing-Jackson Line——

Q. I wish you would discuss next the line from Norris to Alcoa, if you will.

A. The line from Norris to Alcoa was constructed to meet our contract with the Aluminum Company of America. This line may be called upon, or the Aluminum Company of America, rather, may call upon, the authority for some 112,000 kilowatts of capacity. The line will not only serve them but will serve a valuable supplementary source to the connections already existing between the Aluminum Company of America at Alcoa and the Utilities in that area. It is my opinion that this line is a valuable supplement to existing facilities. Taking a line of a different character, [fol. 1624] there is a 44,000 line of low capacity between Columbia and Murfreesboro, Tennessee. This line is necessary to provide reliable service to our wholesale customers, the Middle Tennessee Electric Membership Corporation and the Duck River Electric Membership Corporation.

Q. Now, would you discuss the line from Pickwick Landing Dam to Jackson?

A. The line from Pickwick Landing Dam to Jackson is already supplying some 3000 kilowatts of power at Jackson, and, in addition, the West Tennessee Power & Light Company in that area is supplied by a 110 KV. line, I believe it is, from Memphis to Ripley, Tennessee, and then by a line from there to Jackson, Tennessee, and in addition, has installed capacity of some 5,200 kilowatts of generator capacity. In Mr. Rankin's testimony and bits its shows that these various plants of the West Tennessee Power & Light Company are good for approximately 4,100 kilowatts on the peak in terms of firm capacity. Their records would indicate that the load of the West Tennessee Power & Light Company now is on the order of 6,000 kilowatts, and, using the figures produced in evidence by Mr. Rankin, the load may reach 7,500 kilowatts by approximately 1939-1940. Obviously, if the line from Memphis to Ripley should fail these same 5,200 kilowatts of generating capacity would not be able to carry this 8,000 or 10,000 kilowatts of load. There is another potential shortage not included in the figures I have just mentioned, and that is the Kentucky-Tennessee

Light & Power Company has a potential shortage of 3,000 to 5,000 kilowatts north of Milan and Trenton, Tennessee.

Q. Now, will you discuss the line from Norris to Knoxville?

A. The line from Norris to Knoxville in my opinion, is not a duplication of facilities. This line was constructed to meet the contract which the Authority had, but, in addition, if suitable operating agreements are made, it can be connected to the facilities of the Tennessee Electric Power Company, the Carolina Power & Light Company and the Tennessee Public Service Company, at the Arlington substation in Knoxville. This would provide a very flexible means of transferring power around. If any quantity of power is to be transmitted from Norris to Knoxville, dependably transmitted, two circuits would be required, and this line would serve as one of those two circuits. Looking over the area, Mr. Rankin and Mr. Middlemiss in their testimony as to loads and capacities showed a demand of some 231,000 kilowatts on the Tennessee Public Service-Carolina Power & Light, Holston River System in 1939, and some 985,000 kilowatts of demand on the Common-[fol. 1625] wealth & Southern groups, also showing an excess of dependable capacity over and above the loads of 20,500 for Carolina Power & Light-Tennessee Public Service Holston River group, and on the order of 65,000 for the Commonwealth & Southern groups. Adding these various capacities, it shows only a reserve or excess dependable capacity approximately 7 per cent on the two systems. So, this connection, if suitable agreements were made, between Norris and Knoxville will very materially assist the various systems at that point."

The total number of miles of transmission lines of 22 KV. and over which have been constructed, are under construction or are authorized by the Board of the TVA is on the order of 1322 miles. In addition to this the TVA owns and operates approximately 216 miles of line of this character purchased from the Alabama Power Company and the Mississippi Power Company under the contract of Jan. 4, 1934, in Alabama and Mississippi, and approximately 8 miles of line which was transferred to TVA under the TVA Act by the War Department at Wilson Dam, making a total of approximately 1545 miles of transmission line of all characters.

I have studied the statistics supplied by the Edison Electric Institute on the extent of the electrification of farms in the years from 1931 to 1937 in the Tennessee Valley states of Virginia, North Carolina, Kentucky, Tennessee, Alabama and Mississippi. The percentage of rural electrification of farms receiving central station electricity as compared with the total number of farms in the states as of December, 1931, was in Virginia 7 per cent, in North Carolina 3.6, in Kentucky 3.1, in Tennessee 3.3, in Alabama 4.8 and in Mississippi 1.1 per cent.

Examination by the Court:

The definition of a farm as used in those tables by the Edison Electric Institute is the same definition as is expressed in the U. S. Bureau of the Census, which is, I believe, three acres or more on which a person makes a living. [fol. 1626] The percentages apply whether it is a farm of 1500 acres or a farm of three acres, regardless of the number of acres, and it includes a homestead which has someone living on it.

Direct examination continued:

The same figures for the year 1932 were in Virginia 7.4 per cent, in North Carolina 3.5 per cent, in Kentucky 3.4 per cent, in Tennessee 3.6 per cent, in Alabama 4.5 per cent, and in Mississipi .8 per cent. The statistics are not particularly clear as to whether the decrease resulting in Mississippi in 1932 was due to an increase in the number of farms, or a decrease in the number of electric services, but I would assume it resulted probably from a combination of them both. The same figures show as of December 31, 1936; in Virginia 10.3 per cent, in North Carolina 8.2 per cent, in Kentucky 3.8 per cent, in Tennessee 8.1 per cent, in Alabama 5.5 per cent, and in Mississippi 2 per cent. The same figures for 1933 show for Virginia 7.9 per cent, for North Carolina 3.4 per cent, for Kentucky 3.4 per cent, for Tennessee 3.6 per cent, for Alabama 4.2 per cent, and for Mississippi .8 per cent. The comparison in Tennessee between 1933 and 1936 is the difference between 3.6 per cent and about 8 per cent in 1936, and in Mississippi in 1933 it was less than one per cent, and two per cent in 1936. The percentage of rural electrification in the Valley States is rela-

tively low as compared to the national average and the other states.

The TVA has been constructing transmission lines of 23,000 volts and above in the last four years at the rate of approximately 330 miles a year of all classes, and if my mathematics are correct, at that rate it would be somewhere on the order of 35 to 40 years before TVA could have constructed 12,000 to 15,000 miles of transmission lines.

[fol. 1627] Cross-examination:

I am in the Design and Construction Department and work under Mr. Woodruff. Mr. Woodruff works under Mr. Sullivan. It is not correct that Mr. Sullivan works under Mr. Evans in that department. Mr. Evans is in another division than the Electrical Department. It is my understanding that Mr. Sullivan works directly under Mr. Blandford and reports to him, as distinguished from Mr. Evans. I am sure of that.

I graduated from Worcester Polytechnic Institute in 1923. I was with the General Electric Company for a period of approximately six years. While I was with the General Electric Company, I was engaged in consulting work having to do with companies in various parts of the world. As to whether I ever visited any of these customers' systems, most of my visits were made in southeastern territory. I never visited Tokio and various other places which I mentioned. As a matter of fact, when I was with the General Electric Company, the procedure was if an order came in for equipment, our department, as one of its functions, checked the customer's order to see whether it would serve the purposes for which the customer desired it. Then, if it happened to fall to me in that department, I went to the design section of the company and asked them to design proper equipment, if necessary, and in any event to make an estimate of the cost. After I got that information from the design department of the company, I might write up a specification of the customer's order and then I would turn that specification over with the design, if a design of any kind was received from the design department, and the estimate of cost, to the commercial department, which would attempt to close the deal for the business. We did not handle direct commercial negotiations. However, we did [fol. 1628] handle engineering questions and conferred on

engineering data with customers when the customers requested the engineering division for the information.

Examination by the Court:

I was one of the engineers who gave that information.

Cross-examination continued:

I was in the department which I have been discussing, in which there were a great many engineers. It would take a great many engineers to check the orders which came in to a large company like the General Electric.

After I left the General Electric Company, I was employed by the Southeastern Engineering Company in Birmingham, Alabama. As to whether I was employed at any time by the Dixie Construction Company, I believe the pay checks were signed by the Dixie Construction Company. However, all the stationery was "Southeastern Engineering Company" until the Allied Engineers took it over. The work of that organization involved planning, studies, preparation of purchase specifications, for substations and things of that character. As to whether that was one of the service organizations connected with the utility companies in the southeast, I do not know what you call it. We did the engineering work on the primary system for the companies in that group. That was the southeastern group as it was then known. It fulfilled the function of an engineering service for these utilities. I left that organization in 1931. I was substantially out of employment from then until I entered the employ of the TVA in 1934.

The statistics issued by the Edison Electric Institute which I gave with reference to rural electrification covered [fol. 1629] six states, that is, all of the states touching the Tennessee Valley with the exception of Georgia. It is a fact that a good many of the farms in those southeastern states are operated by tenants. As to whether I have made studies to determine whether or not there is available rural service which is not being utilized by the farms along existing lines in the rural areas, we have done sufficient work to know where service is available and where it is not. I have not made such studies personally but it has been done under my supervision. I do not know whether practically 65 per cent of the farms in Alabama are operated by tenants. As to whether my studies carried me that far,

I did not think that was entirely pertinent to the studies and I did not try to make that particular distinction. As to whether it is a fact that farm income is of importance in determining the number of consumers able to acquire such service, in my opinion, you can compare studies of states and can find in such a state as North Carolina that the percentage is twice that of Tennessee as to income, but the farms electrified are practically the same, or were in 1936. I know that it requires an investment on the order of $100 for each rural customer to wire his home and purchase sufficient equipment to use 400 kilowatt hours per year. I do not know that it would require approximately a $2,000 investment on the average by the farmers to use TVA minimum requirements of 662 kilowatt hours per mile of line per month. As to whether I did not study that either, I am not sure of the figure. I would have to go back. As to whether I did not regard that as material, I do not remember the figure. I think I have a few figures on the trends of farm cash incomes in these southeastern states for the past ten years. There are some states in which the farm incomes varied in a larger measure than in others. [fol. 1630] There has been no exceptionally large growth or exceptionally large decrease in farm income in the six states. I do not say there has been none, I said there had been no exceptionally large change. As to whether I know from my studies in Alabama, for instance, that the average annual cash income for the farm for the period of 1924 to 1928 was $176,000,000 and for the same state in 1932 it was only $58,000,000, I do not remember those figures. I do not have them with me. As to whether I ever had them, I was not much interested in going back to 1924, I was interested in existing conditions. Assuming that the farm income did decrease in Alabama from $176,000,000 to $58,000,000 during that period, I would regard that as a substantial reduction, but I think those reductions are reflected in varying percentages of farms electrified. The only method you can use in considering the state is the average income for the particular farms for the states. In comparing the statistics by states, I would more or less be forced to consider the average income per farm rather than the income of one state as compared with the income for another state.

As to whether the total farm income in one state as compared with the total farm income in another state would not mean anything in determining the possibilities of farm electrification, except when it was reduced to income per farm you will have to consider the income per farm. If you are referring to a particular area, then you must consider the particular condition in that area. From my studies and experience, I have not found that it is necessarily true that farm tenants are less inclined to new and progressive ideas, and less inclined to install electrification on farms than the owners occupying their own places. As to whether I have found it one way or the other in my studies, you will find some that hesitate and some that don't. I [fol. 1631] don't know. Given proper conditions, tenants are just as likely and just as ready to go to the expense of rural electrification as the owners who live on their own farms.

As to whether I have made any actual surveys in Alabama in the field to study the number of potential rural customers, I believe that some kind of surveys have been made in the areas in which we operated to study the number of potential rural customers. I do not know how many miles of line could be built in any section of Alabama and obtain five customers or more per mile. The density of customers per mile does have a bearing on the cost and feasibility of providing service for customers or farms, the more customers you have per mile, the less cost per customer, and conversely, the fewer, the more cost. I could not give the exact figure on the average cost per customer to string a single phase rural line to serve five customers per mile. I should say it would be something in the neighborhood of $200. As to whether it is about $206 per customer, it is on the order of $200. I could not give the exact figure. As to whether, if there were only four customers per mile, the cost would go up to about $245 or $250, it varies in proportion to the number of customers. I have nothing to do with the particular feature of the business which determines the minimum number of average customers per mile of rural line required for the construction of new lines. As to whether I know anything about that, that is a matter of policy in which we have no part.

In my study of the rural electrification situation in these states I did not quite agree with the figure from the Agri-

cultural Census that in 1935 the average cash income per farm in Tennessee was $405. The figure I reached was $564, which is the figure for gross income and not cash income. The figure for the gross income which I ascertained for Alabama per farm in 1935 was $579. I [fol. 1632] could not tell one way or the other whether the 1935 cash income per farm was in Tennessee $405, in Alabama $430, and in Mississippi $450. I haven't the exact figures to know how the average cash income per farm, which excludes the estimates made for consumption on the farm in these states, compared to the average for the United States, but I would judge it would be somewhat below. As to whether it would be very much below, I don't remember how much. I don't remember and would not want to say that the average for the entire United States was a cash income of $1060. As to whether I recall from my studies whether the average cash income per farm on the Pacific Coast is on the order of $2500 and over, I did not go into that. It has no bearing on the Tennessee Valley itself and I was not concerned at all. I made no study of these cash income statistics for farmers in the southeast and their relation to cash income for farms in states on the Pacific Coast and such other states as that. I was concerned with the Valley states and I was not interested in what happened in remote sections of the country, with respect to Valley states. As to whether I made any study of the cash farm income for the southeastern states and cash income for other sections of the country, I do not quite understand what you mean when you say "cash income". As to what is the gross cash income, money taken in as distinguished from vegetables, chickens, etc. used on the farm, the figures I read from my notes here, evidently were in dollars. I am willing to testify the figures I read for 1935 are average income in dollars for those farms. That is what my notes show. They show average income per farm, considering gross income of all farmers divided by the number of farms. If my memory serves me, I understand from my study of the statistics of the Census Bureau that it means the net gross cash income in terms of [fol. 1633] dollars. Without checking back to the sources again of my notes which terms it "millions of dollars farm income divided by the number of farms in the State", my testimony is that it is gross income in millions of dollars.

Cash income may include a number of things, I cannot remember that right now.

I cannot identify the document (offered and received in evidence as Complainants' Exhibit 918) in connection with my rural electrification studies as a copy of the Neighborhood Plan for rural electrification of the TVA as my division has nothing to do with it. It may be, it is headed "Electric Development, Department of Electricity, TVA, dated August 1, 1936".

"Mr. Fitts: Mr. Jackson, if that is a copy of the thing we gave you, it is authentic."

This document comes from the Service Department which serves separate functions and our Division is concerned only with design and construction. This Electric Division is concerned with other matters.

"Q. The reason I want to show you this Complainants' Exhibit 918, I understood you earlier in the cross examination to be unable to recollect the requirements of the TVA rural electrification so as to express any opinion as to the cost of equipment that it would be necessary to acquire, to carry out such a plan, and I direct your attention to this statement on page 1-A of Complainants' Exhibit 918, it is marked both page 2 and page 1-A:

'There is no fixed rule as to what is "enough business". This will vary, depending on the cost of the line and other factors. However, experience in other communities in the Tennessee Valley has shown lines are generally feasible when customers agree to install enough equipment to use an average of 662 kilowatt hours per month per mile of line; and where surveys reach this total, it has in most cases been possible to arrange for construction of the lines either through TVA or the Rural Electrification Administration. In over 20 counties of Tennessee, Alabama, and Mississippi, rural lines have been built or are under construction to serve farmers and in most cases they have been surveyed [fol. 1634] by this neighborhood plan, using the objective of 662 kilowatt hours per month per mile of line. It is generally agreed that this plan is more practical and workable than any other previously attempted.'

I would like to ask if you have had that in mind in your studies of the rural electrification development and possibilities?

A. That is a matter of policy which is outside of the scope of our division. I was concerned with what had happened, not what was going to happen in these studies."

We design the lines to obtain the best possible. I presume that in Tennessee in the 1930 census figure the average density of farm homes costing $500 or more per mile of road is 2.53; in Mississippi it is 1.31; and in Alabama 1.31. The figures I have from the Edison Electric Institute Bulletin do not quite agree with those figures.

Examination by the Court:

As to whether the only figures I studied were from the Edison Electric Institute Bulletin, those are the figures that I studied. Those are part of the figures that I studied. The only figures I testified about were from the Edison Electric Institute Bulletin.

Cross-examination continued:

As to whether I studied the Federal Census figures, I used the figures in the Edison Electric Institute Bulletin on that when I looked that up. I did not pay much attention to the farms per mile of road. I am sure that I did not study those specific Federal Census figures for those three states.

The document (offered and received in evidence as Complainants' Exhibit 919) is entitled "Production of Electricity for Public Use in the Tennessee Valley States and the Nation, month of July, 1937, preliminary report". It [fol. 1635] shows the details of the consumption of electricity and of the operations of cooperatives and the like in the territories where TVA was operating at the time. As to whether Cullman County, Alabama, is poor land or a good agricultural county with diversified farming, as I remember Cullman County there is some slight diversity. I could not state whether it was one of the most diversified agricultural counties in Alabama or in the southeast. Its population is largely white and very progressive and thrifty. As to whether it is my opinion that the people in that county would be better than ordinary prospects for the

use of electricity from rural lines, I should say that they would be as good as the ordinary prospects. It is quite largely a German population. I do not remember the exact date when TVA started serving electricity to the Cullman County Electric Membership Corporation, but I think it is on the stipulation.

"By Mr. R. T. Jackson:

Q. Can you tell me whether this Electric Membership Corporation has a clear field for the development of the business in its territory in Cullman County?

Mr. Fitts: We object to that question, may it please the Court, on the grounds that it is irrelevant and immaterial. Furthermore, it is cumulative.

Mr. R. T. Jackson: It is a foundation question; that is what it is.

Mr. Fitts: There is evidence in the record completely and thoroughly as to the situation in Cullman County.

Mr. R. T. Jackson: No, it is not.

Judge Allen: The objection is sustained. We consider the question somewhat vague as 'Predictable future'.

Mr. R. T. Jackson: I note an exception, and may I say that the question of whether or not any electric company has a monopoly in the area it serves, or whether it is being subjected to competition is not speculative.

Judge Allen: That was not the question, Mr. Jackson. You will remember that is not the question.

[fol. 1636] Mr. R. T. Jackson: That is what I am trying to ask.

By Mr. R. T. Jackson:

Q. May I inquire whether the Cullman County Electric Membership Corporation has a monopoly of the territory in which it serves?

A. I never read the charter of the Cullman County Corporation.

By Mr. R. T. Jackson:

Q. A monopoly in fact; you know what I mean by that?

A. I didn't know that anyone had a monopoly on a territory.

Q. You don't understand what I mean by a monopoly in fact of an electric company serving an area?

A. My understanding is the sole right to serve is what you mean. I may be mistaken.

Q. Let me ask this question, and I will try to get a word that will not confuse you. May I inquire whether the Cullman County Electric Membership Corporation is the only organization offering electricity for sale in the area in which it serves?

A. There are other lines in the county.

By Mr. R. T. Jackson:

Q. Offering electricity for sale on the highways where the Cullman County Electric Membership Corporation offers service?

A. There are other lines in Cullman County.

Q. That is not the question. You understand the question, Mr. Witness? Now, are you willing to testify that there are any other organizations of any kind offering electricity for sale to the residents along the highways where the Cullman County Electric Membership Corporation has its lines constructed and is now offering electric service?

A. I would have to refer to the map to clear up my mind on that, but there may be such a situation there.

Q. Can you name one?

A. I should want to refer to a map to refresh my memory on that particular situation. I don't remember all these details.

Q. Can you name one now? You can say yes or no.

A. Offhand I could not name one without refreshing my memory."

[fol. 1637] I accept the information contained on Complainants' Exhibit 919 of the Tennessee Valley Authority's Division of Electricity as being trustworthy and reliable.

According to Complainants' Exhibit 919, the number of domestic customers served by the Cullman County Electric Membership Corporation as of August, 1937, was 891 and the number of commercial customers was 104, a total of 995 customers for the month of August, 1937. The last sheet on Complainants' Exhibit 919 shows that there were 162 miles of line. That is a little over approximately six customers per mile. As to whether it is true that at that time

there were 44 per cent of the houses or somewhere around 750 along these lines that were not taking service, I don't remember that figure and haven't it with me. It is true that Complainants' Exhibit 919 shows that the total purchases of electricity by Cullman County for the month of August was 56,100 kilowatt hours, which figure would be greater than the total sales to customers. As to whether the kilowatt hour sales by the cooperative per mile of line per month were approximately 272 kilowatt hours, the only figure I could give for the kilowatt hour would be around 500 and I would have to write that down perhaps 15 or 20 per cent to get the sales. I did not actually compute that 500, but I merely estimated it from the miles of line in this other sheet divided into 56,100 kilowatt hours. It is merely a matter of arithmetical calculation, and it would be slightly less than the 662 kilowatt hours per mile of line per month provided by the TVA plan shown on Complainants' Exhibit 918. It is comparable to that figure. I know nothing about whether this project was approved with very much less than the minimum demand specified in the TVA Neighborhood Plan. The approval of such projects is not a function of our division but is a matter of the executive. The TVA acquired about 212 miles of rural lines from the Alabama Power [fol. 1638] Company. The total miles of line in the Alabama Power district, according to the stipulation described this morning, is 314 miles.

On Defendants' Exhibit 136-B is shown in green the lines which were purchased under the contract of January 4, 1934 and sold to the City of Athens. There was a total of 137 miles in the area, 70 miles was purchased and resold and some 67 miles of the lines were constructed by the TVA. All the rural lines which are shown in green, aside from those which were purchased under the January 4th contract, were constructed by the TVA. It is not a fact that all of these rural lines shown on the map, except those that were purchased from the Alabama Power Company under the contract of January 4th, were financed by the TVA. 292 miles of lines were constructed by municipalities on their own. The number of miles of lines financed and constructed by TVA and sold was 1,000 miles.

Defendants' Exhibit 137, entitled "Lines and sub-stations purchased or optioned by the TVA under the contract of January 4, 1934, from C. & S. Companies", does not show projected lines for which requests have been made for ap-

propriations, but shows only the lines that were under construction and which were authorized for construction by the Board of Directors of TVA, and they are the only lines shown on this exhibit other than those already constructed.

Any plans for the construction of a transmission line to serve electricity to Tarrant City and Bessemer are under another division. I do not know what plans have been made on that. Complainants' Exhibit 484 shows a loan and grant agreement between the PWA and Middlesboro, Kentucky, which is somewhere north of Norris Dam, for the construction of a municipal distribution system to distribute TVA power. Our division has not been authorized to lay out the transmission line to carry power to that point, but I would like to state that this map is not intended to cover anything but transmission lines constructed or under construction. [fol. 1639] To my knowledge our division of TVA has not been authorized to make any surveys or designs for construction of transmission lines to the towns of Newbern in Obion County, Tennessee, Paris in Henry County, Tennessee, Clarksville in Montgomery County, Tennessee, Lewisburg in Marshall County, Tennessee, Lenoir City in Monroe County, Tennessee, Aberdeen in Monroe County, Mississippi, or Starkville in Oktibbeha County, Mississippi, shown on Complainants' Exhibit 484 as towns where the PWA has made loans and grants for the construction of municipal distribution systems to serve TVA power. The engineers in our division would make the field surveys for such transmission lines and we have not been authorized to make any surveys. The plans of extension do not come under our division but come under the planning division. I am in the design and construction, department of operation.

In the Hearings on the Second Deficiency Appropriation Bill for 1937 on page 359, it appears that there were 1049 employees in the Department of Electricity. That was the former name of the Department of which my division was a part. Down at the bottom of the page there is shown the engineering, planning and design division, with 1030 employees. That is not my department. I am in the department of design and construction, Department of Operations. It is a part of the old Department of Electricity and there was a reorganization last summer which eliminated the Department of Electricity as such and the name now is the Department of Operation.

The TVA is not now constructing or about to commence construction of electric transmission or rural distribution lines in the State of Mississippi to be subsequently operated by the Four County Cooperative Association. I do not recognize any such name as the Tippah County Electric Membership Corporation. To my knowledge, there is no such corporation. It may be a recent organization and I don't know whether the TVA is constructing any lines for it. [fol. 1640] I was present at some conferences in July of 1937 with the city officials of Columbus, Starkville, Aberdeen and West Point concerning the construction of electric lines in or about those municipalities, but I had no particular discussion, as I remember it, with those gentlemen with regard to the construction of lines. I do not know whether that took place before there was any application by any of these towns for a contract for TVA power. I do not know the status of the application. I was present at that meeting in July of this year. In the affidavit filed in this case on the hearing for a preliminary injunction by Mr. Woodruff, who is my immediate superior, he states:

"It is stated that announcement was made of a high transmission line from Okolona and Starkville. There have been numerous discussions with regard to transmission lines in this area."

There were such discussions and I think it is further explained by the statement that follows the one you read:

"However, no project has been definitely worked out or prepared for approval, and no engineering work has actually been done on this project other than making very rough estimates of approximate costs and discussion of the projects involved."

As to whether these rough estimates and discussions were had with officials before any applications were made, I had no such discussions.

I testified that we had not been authorized to make any surveys or designs for a transmission line up to Middlesboro, Kentucky. I do not know that it is a fact that it was announced in the LaFollette Press for December 27th that requests for routing the lines through that city had been rejected and the TVA was projecting a line by way of Maynardsville to Middlesboro. I have never read the LaFollette

[fol. 1641] Press and I could not testify about that. Our department would not be authorized to give out any such release and our department did not give it out.

Referring to Defendants' Exhibit 138, entitled "Transmission Facilities of TVA and of Private Utilities", the lines of the Duke Power Company are about 100 miles from Watts Bar Dam. The lines of the Duke Power Company would be naturally closer to Hiwassee and Fontana Dams. They would be on the order of 60 or 70 miles from Hiwassee Dam and about the same distance from Fontana Dam site. The distribution systems of Louisville and St. Louis would be something on the order of 150 miles from Gilbertsville Dam, but I do not have the exact figure. Louisville would be about 200 or 250 miles from Pickwick Landing Dam.

TVA had constructed, as of October 15, 1937, about 3,600 miles of all types of distribution and transmission lines, including the rural lines which it has constructed for municipalities or in the ceded areas, and including about 1300 miles of line which TVA has constructed for cooperatives or municipalities under contract. As to whether TVA built 65 miles of 154 kv. line from Wheeler to Columbia in 70 days, I don't remember how long it took TVA to build that line. I should say that was going pretty good speed if they built it in 70 days. As to whether that is in accord with the fact, I don't remember exactly how long it took to build that line and I haven't that figure with me. I was in the Department of Construction at that time, but I can not remember all those details. As to whether it is true that that project could have been duplicated elsewhere by TVA, if we had two construction crews, one could work on one project and one on another. It is regular practice among the companies to have several construction crews which would be constructing different lines or different sections of line of that or [fol. 1642] other character at the same time. If sufficient crews were available, it naturally would be possible to build lines much more rapidly than at the rate of 300 or 400 miles a year. Generally speaking, one can multiply the crews and increase the construction in a year, but they may come up against a limitation on the purchase and delivery of material. I do not mean a shortage of steel and wire, concrete and cement, but rather an inability to obtain from the manufacturers, due to the condition of the factories. There are occasional difficulties even now. I can not testify as to

whether the steel, wire and cement factories are overloaded now or not.

"Q. Mr. Hapgood, was I right in understanding you to testify this morning that one of the purposes of what you call inter-tie lines, and which I understood to be lines connecting the different dams and generating plants, was to increase the firm capacity of the system, or dams?

Mr. Fitts: Just a moment. I object to the question because it misstates the testimony of this witness and I think quite material testimony of the witness, which was with respect to the functions performed and not the purposes for which the lines were constructed. I think it is materially different. If the question is reframed in accordance with his testimony as to what function the lines performed, as distinguished——

Mr. R. T. Jackson: I think that is an improper objection. I am only asking the witness am I right in my understanding of his testimony, to be a certain way.

Judge Allen: Objection sustained.

Mr. R. T. Jackson: May we have our exception, please?

Judge Allen: You may have your exception."

I testified that the inter-tie lines between the dams and generating plants served the function of permitting an interchange of power between the various dams. That connection has a tendency to increase the firm capacity of the system, since you can transport power from one dam to the other. I know from my experience that it would increase the firm capacity.

[fol. 1643] The existing utilities serve the City of Chattanooga and have been for some time past, with several transmission lines. As to whether there are four or five such lines, I do not remember the exact number. I have not investigated and can not say offhand that any two of these transmission lines are adequate to serve the requirements of Chattanooga. If lines should be constructed by TVA adequate to serve the City of Chattanooga and service were offered in Chattanooga over those transmission lines, those transmission lines might possibly be a duplication of the facilities of the utilities including their transmission lines into Chattanooga to serve that city, depending upon the

arrangements that are made and the connections that are made.

Examination by the Court:

"Judge Gore: I have been thinking this morning, since you defined, or gave the definition of duplication, I have been wondering what you mean by it. You say there are some lines three or four, Mr. Jackson says in his question, now coming into Chattanooga and serving Chattanooga. Then he asked the question if the TVA should erect transmission lines into Chattanooga, would that be a duplication. You say it would not. Now, how is it possible for it not to be, is what has been worrying me all morning.

The Witness: Let me first explain my definition this morning of duplication.

There are two meanings of duplication: First, in which the facilities are supplementary, such as these lines, two, three or four lines whatever it may be, serving the city, one assisting the other so one line may be out of service and still the service maintained adequately and properly.

The other meaning of duplication is a facility to fulfill a function which is already adequately served. My statement that it might or might not be a duplication is based on the thought that these facilities which Mr. Jackson mentioned could be tied into the existing facilities, thereby providing additional support, providing suitable agreements were made.

Now, if the suitable agreements were not made, of course, that would be a duplication in the last sense.

[fol. 1644] Judge Gore: I get your answer, to Mr. Jackson's question that sufficient lines were coming into Chattanooga to supply the demand now. Of course, I also get the idea, the impression, that TVA was not going to tie onto the present system, but they were going to build their lines into Chattanooga independent of what is already here. Then would that be a duplication? Would that be a substitution, or what would that be?

The Witness: So far as I know, the Authority is not going to construct any lines into this city.

Judge Gore: I do not know, but suppose they did.

The Witness: If the lines were constructed from Chickamauga Dam to Chattanooga to serve the same load as

being served now, as two separate systems, there would be a duplication to that extent.

Judge Gore: Well, that is what I thought."

Cross-examination continued:

Assuming that there are five major transmission lines supplying Chattanooga and that any two of the five are sufficient to supply the requirements of Chattanooga, the construction of additional transmission lines into Chattanooga to serve that system would to that extent constitute a duplication. If the load is adequately served, it is certainly a duplication to the extent that additional facilities are built. However, there must be some duplication now if two lines are serving the city and there are five around the city.

It is true that private utilities have been serving the Memphis area for some time. As to whether there would be a duplication of service if TVA constructs facilities into Memphis to serve the entire load of the city, the TVA line to Memphis is not a duplication of any existing facilities. The City's distribution system may duplicate the existing system. As I pointed out, there is a shortage of power in that area, even with the amount of power from the new contract to supply the Arkansas Power & Light Co., and [fol. 1645] therefore that line will not be a duplication. Assuming that a private utility has an existing supply of power adequate to serve the requirements of the City of Memphis and the TVA substitutes a completely new supply of TVA power in lieu of the supply from the existing facilities, that line is not a duplication. If there is any duplication there, it consists in the internal distribution system being duplicated. Certainly in an area that is deficient in power, an additional transmission facility coming into that area is not a duplication of any facility.

"Judge Allen: Is a PWA loan involved in the Memphis situation?

Mr. R. T. Jackson: A gift, your Honor, $4,000,000.

Judge Allen: With reference to this matter of gift, should we have the Alabama Power Company versus Ickes case argued before us?

Mr. R. T. Jackson: It has not been my thought that it would be.

Judge Allen: I thought that the Supreme Court pointed out in certain cases, grants of 30 per cent to any municipality, and in certain cases grants of 45 per cent were made, and held you could make them.

Mr. R. T. Jackson: So far as the PWA Act is concerned, that is true.

Judge Allen: Yes.

Mr. R. T. Jackson: I have asked nothing about the gift to Memphis.

Judge Allen: I have been wondering whether in view of that position we can—really the Court is bound by that decision and the attorneys are officers of the Court and of the Supreme Court, they are bound by it, and the Court has been wondering as to the materiality of the questions involving these municipalities in situations governed by that decision.

Mr. R. T. Jackson: As I stated the other day, the decision in the Alabama case turned upon the right to sue. I did not understand it affects our right to proceed here.

Judge Allen: It turned upon this point, that the curtailment or the destruction of the business of the utility by that kind of competition did not invade its legal right.

[fol. 1646] Mr. R. T. Jackson: I did not understand that it did. I do not know that the Court is asking to have the point argued at this time. I presume we will ultimately argue the question to the Court.

Judge Allen: The Court has considered the matter, and they feel as though that decision should somewhat narrow the scope of this controversy.

Mr. R. T. Jackson: We would like to be heard before the Court renders a decision on the basis of the Alabama Power Company versus Ickes.

Judge Allen: We had hoped that it might help out in the situation this afternoon.

Mr. R. T. Jackson: The only way that I can see that it would help out, your Honor, would be by an assumption that some material part of our case was, before argument and final submission, decided against us. I make no such assumption, therefore, I desire to make my record upon what I believe to be the law.

Judge Martin: Yes, but the Court bases its action upon what it conceives to be the rules of evidence, and that after all, is a question for the court.

Mr. R. T. Jackson: Quite so. And if the Court feels that our case is narrowed and rules out our evidence, we should like to make our record, because, unfortunately, we do not share that view, and wish to make our record as we see it.

Judge Allen: And of course, the Court, no more than the river, operates in vacuo. We are aware of the decision of the Supreme Court in the case of the Alabama Power Company versus Ickes.

Mr. R. T. Jackson: I appreciate that, and only earnestly hope the Court will keep an open mind until we have had an opportunity to present our views.

Judge Allen: My mind is closed on that case, because the Supreme Court is superior to me, and the superior court of the land has spoken.

Mr. R. T. Jackson: Of course, we are not in any way arguing the Alabama Power versus Ickes case, but putting in evidence, and I have never known that the question of the application of a decision of the Supreme Court is, under an entirely different state of facts as here, res adjudicata to that decision, and we should like to be heard on it before decision. I know of no way of doing that except by going forward and making the record.

[fol. 1647] Judge Allen: Very well, proceed. But I never knew a Court with a sense of its duties ignoring the decision of the Supreme Court of the United States upon a question involving some of the very same questions raised by the pleadings before the Court.

Mr. R. T. Jackson: The unfortunate thing, your Honor, I do not so construe the decision and pleadings. That is another thing I want to be heard on. Of course, the Court is not going to ignore any decision of the Supreme Court, neither are we, but I want to argue what application it has here, if any, and we do not think the application here is adverse to us."

Referring to Defendants' Exhibits 137 and 138, as far as I know the transmission lines of TVA in so far as they have been constructed, have not been built in many instances close to towns served by existing utilities, so that they would constitute duplicate sources of service for those towns. As an illustration of that, the Wheeler-Norris line misses every large town on the way between Wheeler and Norris Dams. As to whether they are pretty well designed

or located to serve the cities served by existing utilities, coming close to the cities, all through that area, other lines that I have mentioned do come close to towns. These transmission lines have been built to serve contracts, and with that in mind, we would serve the contracts we had. The Wilson-Norris line was not built to serve the Aluminum Company's contract. It was built as a tie-line and was so classified. It was built before the contract with the Aluminum Company was made.

"Q. Did the Tennessee Valley Authority employ Jackson and Moreland in 1934 as consultant engineers to study the requirements and characteristics of the proposed TVA transmission system, in cooperation with private utilities?

Mr. Fitts: We object to that question, may it please the Court, as it refers to a matter completely in the past, has no relation at all with this case. The question——

Judge Allen: Objection sustained. You may have your exception.

Mr. R. T. Jackson: An exception, please."

[fol. 1648] Colbert, Franklin, Lauderdale, Lawrence, Limestone and Morgan Counties are located in the so-called ceded area in Alabama.

The table (offered and received in evidence as Complainants' Exhibit 920) being a table of data taken from the official publication by the United States Census Bureau for 1935, shows the United States census for 1935 in Alabama and gives statistics by counties. Assuming those figures are correctly taken from the official report, the average value per farm as shown by this exhibit in the ceded area in Alabama is nearly 1½ times as great as the average value per farm for the entire state, and the average value of farms per acre in the ceded area is approximately 1½ times the average value of farms throughout the state, $28.18 as against $18.75.

The list on Complainants' Exhibit 919, being statistics of TVA, under municipalities in the third column shows Athens, Alabama, having 119 miles of rural lines; Lauderdale, Alabama, with 150 miles of rural lines; Colbert County with 135 miles of rural lines; and the Alabama Power District with 96 miles of rural lines; and it adds up to substantially 500 miles. In the fourth column headed Initial Serv-

ice, it is shown that such service began for Athens on June 1, 1934; for Lauderdale County, October 20, 1934; for Colbert County, December 4, 1934; and for the Alabama Power District, May 1, 1936. The stipulation shows the lines which were purchased in these various sections under the contract of January 4th, including the Athens rural lines, and shows 60 miles of lines purchased and 254 miles constructed by TVA. According to the stipulation, there were some 70 miles of line purchased and approximately 67 miles constructed. I would not know it is a fact that more [fol. 1649] than 100 miles were constructed by CWA funds in this county. I am taking my figures from the stipulation sheet which shows the lines constructed.

The second sheet of Complainants' Exhibit 919 shows the number of customers and shows Athens with 1261, of which 22 per cent is farm customers. The figures for the Alabama Power District show that there were 734 customers, of which 47 per cent were farms; Colbert County with 54 per cent of farms; and Lauderdale County with 905 customers, of which 42 per cent were farms. Out of a total number of customers served of 2515, approximately 1153 are rural customers, if that is what it adds up to, but I cannot add that mentally as fast as that. Assuming that the figures are correctly transcribed on Complainants' Exhibit 920 from the U. S. Farm Bureau Census for 1935, it would show that the census for 1935 stated that there were 25,795 farms in all of the counties of the ceded area, after excluding one half of the farms in Franklin County. If those figures are correctly transcribed, less than 4½ per cent of the farms in the ceded area are now obtaining TVA power. I previously testified that in 1936 the average for the state of Alabama as a whole was that 5.5 per cent of the total number of farms were electrified, and in 1935, 4.4 per cent of the total farms in Alabama were electrified.

In the Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 75th Congress, 2nd Session, on the Independent Offices Appropriation Bill for 1939, (which appears in the record as Defendants' Exhibit 153) and particularly the TVA application for appropriations on page 1,000, there is given a tentative estimate of possible TVA system requirements and capacity available by fiscal years, 1938 to 1942, inclusive. The figures show that out of the estimated requirements for 1942 only

17,000 kilowatts will be used for rural consumers, which [fol. 1650] is 3 per cent of the total estimated system requirement, and that the municipal contracts now served are estimated to constitute only 3.3 per cent of the total estimated system requirement in 1942. It shows an estimated increase in the municipal contractors' requirements which is on the order of 7½ per cent a year. It further shows that 22.3 per cent of the total estimated system requirements in 1942 will be in connection with municipal contractors which are not now served by TVA, and that their requirements will be 129,000 kilowatts, and that all of this increase is to come from Chattanooga, Decatur, Knoxville, Memphis and Russellville. The distribution systems of all of these cities are now being served by the complainants. Otherwise than in Decatur, both the distribution systems and the wholesale supply of electricity are being furnished by the complainants.

It further shows that the estimate of 20,000 kilowatts for TVA construction in 1938 is continued at the same figure through 1942 and there is no drop-off in the amount of power which is shown will be used by TVA for construction. It also shows that 16.2 per cent of firm power and 12.3 of secondary power of the total estimated system requirements in 1942 will be for industrial contractors. The total in 1942 of 28.5 per cent of the estimated system requirements for industrial contractors compares with the 3 per cent estimate for cooperatives in 1942. I do not know whether the estimate shown on the table for utility contractors given in 1939 and continuing through 1942 is confined to the Arkansas Power & Light Company. This is the first time I have ever seen these tables. I had nothing to do with their preparation and I know nothing about their make-up. On page 1000 of the reports of this hearing, the figure as shown for the 1942 minimum capacity required by TVA customers is 638,000 kilowatts and the figures show that in 1940 the [fol. 1651] surplus or margin over and above the estimated minimum requirements would only be 7,000 kilowatts. I don't know what they mean by that and I had nothing to do with it. The figures are there and I don't know a thing about the make-up of the figures, and I don't know what that margin of 7,000 kilowatts means.

The table (offered and received in evidence as Complainants' Exhibit 921) is the latest figures prepared by Edison

Electrical Institute of June 30, 1937 and is much the same as the table which I used.

Redirect examination:

The customer density of the rural lines of the private utilities which existed prior to the creation of TVA and the cooperatives is greater than the customer density on the new lines in rural territory that have been constructed since the creation of TVA for the cooperatives. As I remember the figures, it is something on the order of 12 customers per mile average on existing lines prior to the cooperatives and on the cooperatives lines the average is something on the order of 4.4 customers per mile. The high customer density on the lines constructed prior to the creation of the cooperatives would be accounted for by the fact that something on the order of 40 per cent of the customers were on the so-called rural lines existing prior to the cooperatives within 6 miles or thereabouts of a transmission substation, and another 40 per cent were living in communities of 100 or greater, and the remaining 11 per cent on the lines lived in communities of 100 or less. It is the creeping out of lines from those load centers or communities which accounts for that.

The Wilson Dam-Norris Dam line is as nearly straight as it is practically possible to make it, considering physical obstructions. It is a straight line between Wheeler Dam and the Watts Bar Dam site, and I believe its nearest point [fol. 1652] to Chattanooga is some 25 miles away. Between the Watts Bar Dam site and Norris Dam the line is as nearly straight as it was physically possible to make it. The line does not go through Chattanooga, Huntsville, Decatur, or through any big city and I would say that it did not go through any good-sized town. Offhand I do not know the size of the biggest town which it goes through, but it would be comparatively small. The line shown as the Chickamauga-Watts Bar line is completed and will serve to connect Chickamauga Dam power plant when it is completed with the Watts Bar Dam site project. The line shown is authorized from Guntersville to the Chickamauga Dam and will likewise connect the two dams.

I do not remember how long the Cullman County Electric-Membership Corporation has been in existence. Complainants' Exhibit 919 shows that Cullman County received its

initial service August 8, 1936, so it has been in existence substantially a year and a half. It is a more or less established fact that there are always possibilities of growth along lines. Initially, it is practically impossible to serve all of the potential customers along a particular line. From an engineering standpoint, the possibilities of growth are as vitally important as the immediate load which may be obtained on construction.

If the generating and transmission facilities of the complainant companies now serving Chattanooga were put in use to serve an increase of load of the interconnected companies at Nashville or elsewhere on the interconnected Commonwealth & Southern system, a new line to the city of Chattanooga by TVA would not be a duplication in the sense that the new line does not displace usefulness of the generating facilities.

[fol. 1653] Recross-examination:

Referring to page 1000 of the Hearings of the Sub-committee of the Committee on Appropriations on the Independent Offices Appropriation Bill for the fiscal year ending 1939, as to whether that does show that TVA expects to obtain the entire load of such load centers as Chattanooga, Knoxville and Memphis by 1942, I could not say that they expected to. I know nothing about the make-up of this table or what was in the mind of the individual that made it up. In the table they do say they are going to take 50,000 kilowatts in Chattanooga, 48,500 kilowatts in Memphis and 25,000 kilowatts in Knoxville by 1942. As to whether that is not the total load, by 1942 I doubt if that will be the total load.

(The witness was excused.)

[fol. 1654] G. O. Wessenauer was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 31 years old and reside in Knoxville, Tennessee. I am a civil engineer. I was graduated from the Carnegie Institute of Technology, receiving the degree of Bachelor of

Science in Civil Engineering in 1927. I was a part time instructor in the engineering college of Carnegie Institute of Technology from 1926 to 1935. After graduation in 1927 I was employed by the West Virginia Power and Transmission Company. My duties there were concerned with preliminary investigations of various hydro-electric possibilities to determine the available power and the cost of the developments. We prepared drawings in connection with applications to federal and state commissions for a number of these developments, and also planned and outlined the work for the various field corps obtaining physical data in connection with such applications. The plans contemplated the integrated operations of some twelve hydro developments, having a proposed installed capacity of about a half million kilowatts, and they planned to develop most of the potential power of the stream.

About the middle of 1931 I was transferred to the office of the chief engineer of the West-Penn Electric Company. My duties here consisted in making economic studies of the various hydroelectric possibilities as compared with possible central steam stations, as a source of supply for a large utility system. I also assisted in investigations of the possibility of inter-connection with a neighboring utility to reduce costs of generation, and to improve reliability of service. I made an analytical study of statistical data to determine the energy consumption of six major electrical [fol. 1655] appliances. I also gathered and prepared data, including extensive studies of the hydro-electric power resources in connection with a report to the National Power Survey. There were five large river systems, including some 46 developments, having a proposed installed capacity of about a million kilowatts. I also made a study and investigation of the economical loading of distribution transformers.

I am an associate member of the American Society of Civil Engineers. I was a co-author of a paper entitled "Application of Duration Curves to Hydro-Electric studies," which was published in the transactions of the American Society of Civil Engineers and which received the 1934 Collingwood prize.

I came with the TVA in September, 1935, and was employed in the power section of the Projects Planning Division to make studies of the power that might be available

from the projects of the TVA then under construction or being planned. I am now power supply engineer, having been transferred to that position about last September. My duties in that position are to determine the amount of power that might be available from the projects or from the system under actual operation, with generating capacities either installed or proposed. In my previous position I was called upon to make studies of potential power and of provisions for possible ultimate installations in connection with investigations, preliminary to the authorization of both dam and reservoir projects of the TVA. Since it would be costly, and almost prohibitive, to add capacity to a project which had been built without making provisions for such installations, it was necessary to make these studies to determine what provision should be made for those future possible installations of equipment at a later time in this initial construction time.

[fol. 1656] I have with me a copy of the report on the unified development of the Tennessee River system of March 31, 1936. I was called upon for the estimates set forth in Table 6 appearing on page 62 of that report. Most of these estimates were made as a part of our routine studies, which were made for the purpose of determining what adequate provision should be made for the projects at the time of their initial construction. For those systems in the table which list Fontana, studies were also made to determine the effect of integrated operation with the Aluminum Company's plants on the Little Tennessee River. The Aluminum Company's plants are three: Cheoah, Calderwood and Santeetlah. The Fontana site is just upstream from two of these projects and the release or storage of water from the Fontana project would affect the operation of the Aluminum Company's plants. Therefore, in these studies, integrated operation of the Aluminum Company plants was assumed. To obtain the figures shown in this table we first calculated the power that would be available from all of the plants. Of course, part of this power would belong to the Aluminum Company, so that from the calculated amount there was deducted an arbitrary amount assumed from previous negotiations regarding the Fontana site.

In arriving at the figure of 660,000 kilowatts, which appears in the second column of the table to which I have been referring, there were included the following projects: Gil-

bertsville, Pickwick, Wilson, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris, Hiwassee, Fontana, Santeetlah, Cheoah and Calderwood. Eliminating the Fontana Dam and the effect of the integrated operation with the Aluminum Company plants, and using the same assumptions, the potential continuous power would be about 535,000 kilowatts. At the time those studies were made, [fol. 1657] Wilson Dam was the only dam actually constructed and in operation. At the present time, Norris, Wheeler and Wilson Dams are constructed and in operation.

There have been frequent changes in the assumptions upon which the calculations of power estimates have been based. Probably there have not been any assumptions that have not been changed at some time or other. The last major change in assumptions was made about last March, when the flood control section had completed tentative studies on the filling schedules for Norris reservoir. The assumptions as to operating reservoir levels were not prepared either by the power section or by me personally. A number of the other assumptions, such as the efficiency, evaporation, leakage, etc., were prepared in the power section. The assumptions as to reservoir operating levels originated from studies which were constantly being made by the engineers in charge of a particular project or working on a particular project, and by engineers in the flood control and navigation sections. We have reviewed the stream flow records of the Tennessee River and have found that on a conservative basis the flow conditions in a year like 1925 would determine the continuous power from the systems.

In making the estimates contained in the table in the Unified Report to which I have referred, it was assumed that on April 1 the reservoir at Fontana would be at elevation 1659, or about 54 feet below the top of the gates. So far as I know, there have been no further studies with regard to Fontana Dam since that time. It was assumed that Norris reservoir would be on April 1 at elevation 1020, or 14 feet below the top of the gates. Since that time there has been a change in the assumed reservoir level of Norris Dam that has been given to me for the purpose of my studies. Those assumptions came from the studies of the engineers in the [fol. 1658] flood control section, from the water control engineer, Mr. Woodward.

"Q. Now, I will ask you what that change is as given to you?

Mr. R. T. Jackson: We will object to that, because there is no showing that any change was approved by the Board of Directors. The Board did file this document with Congress and approved it, and there is no proof that they approved any change. We object further that if it is——

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May I add for the further objection that,—and I ask this question as preliminary for it—were these alleged changes or instructions in writing?

The Witness: No, they were not.

Mr. R. T. Jackson: We object.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: We take an exception if the Court please.

A. The level of Norris reservoir might be as low as elevation 1005 on April 15, or 29 feet below the top of the gates."

In making the estimate which is set forth in the table in the Unified Report which I have referred to, the reservoir at Hiwassee Dam was assumed to be at elevation 1501 on April 1, which was about 27 feet below the top of the gates as then contemplated. Since the time we were instructed to make those studies, there have been changes in the assumptions as to the reservoir levels at Hiwassee Dam that have been given to me.

"Q. Can you tell us what the changes are?

Mr. R. T. Jackson: Just a moment. We object to that for the same reason, that is, that there is no showing that the change was ever approved by the Board.

Judge Allen: The objection is overruled. The Court has repeatedly ruled that the Authority may put in evidence facts relating to the actual operation of these dams by the persons who operate them, and the Court also bears in mind the introduction in evidence of the water control bul-
[fol. 1659] letins and the resolution outlining the authority.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: You may have your exception.

Mr. R. T. Jackson: And may the record show that Hiwassee has not been completed, and consequently never has been operated by this witness or any witness.

A. The level of Hiwassee reservoir might be as low as elevation 1465 on April 15, which is 61½ feet below the top of the gates as now contemplated. There has also been a change in the level of the gates."

In making the estimate set forth in the table in the Unified Report to which I have referred, the upper main river reservoirs were assumed to be at minimum flat pool navigation level and the others were slightly higher than the minimum flat pool as of April 1. Since that time, there have been minor changes in assumptions given to me with respect to the operating level of the main river reservoirs.

An estimate was made of the continuous power available from the ten dam system consisting of Gilbertsville, Pickwick, Wilson, Guntersville, Wheeler, Chickamauga, Watts Bar, Coulter Shoals, Norris and Hiwassee, upon the basis of the revised assumptions as to reservoir elevations which I have stated. The potential continuous power from that system is about 485,000 kilowatts, but would vary from four to five per cent either above or below that figure, depending for one thing on the actual filling of the reservoirs within assumed tolerances from the filling schedule, and for another thing on the degree of utilization of the available flow.

The chart (offered and received in evidence as Defendants' Exhibit 139) is entitled "Approximate System Operation, dry year like 1925". Its purpose is to show, first, as is [fol. 1660] indicated by the title, approximate system operation in a dry year like 1925. It is illustrative of the estimates and of the way in which they are arrived at.

"Mr. Fitts: We offer in evidence as Defendants' exhibit No. 139 the chart entitled 'Approximate system operation, dry year like 1925'.

Mr. R. T. Jackson: We object to it on the ground that it is misleading because it omits from the system the Fontana Dam, which is not only shown in all of the reports to Congress, but in the schedule of the latest report to Congress.

Judge Allen: Are any of these figures on this exhibit based on Fontana?

The Witness: No, your Honor. This is based and intended to show the operation of the ten dam system. It more illustrates the method of the calculation rather than for any particular calculation.

Mr. Fitts: It states on its face the projects included.

Mr. R. T. Jackson: That is right, and it says, 'system'. It also states it is the system and indicates that there are ten dams only in the system, and for that reason is misleading, because it has been included in all of the reports to Congress and is included in the current one.

Mr. Fitts: I would like to point out that the Court has ruled before, and I think quite correctly, that each side has the right to present its own theory in this case in exhibits.

Complainants were permitted to show a Fontana Dam site, despite the fact that it is our theory that it cannot be included in this litigation, that it is so speculative and remote and contingent that it is clearly non-justiciable under all of the rules of the cases.

But they were allowed to show it, and I think the Court has previously ruled that we should be permitted to show our own theory of the case, which is that under the widest possible rule of justiciability it is only the system that has been actually authorized that can be before the Court.

[fol. 1661] Mr. R. T. Jackson: This states here projects, not only a system, but contains projects included in the system.

Mr. Fitts: That is correct.

Mr. R. T. Jackson: And thereby is misleading.

Mr. Fitts: This is our theory of the case.

Mr. R. T. Jackson: May I finish my statement? It thereby states then that that is all there are. Here we have a report to the Congress right during the course of this very trial including the Fontana project, listed as one of those in the system.

Judge Gore: Isn't Gilbertsville Dam in the same situation as Fontana?

Mr. Fitts: No, your Honor. Congress has again appropriated money for the investigation at Gilbertsville. It has refused to appropriate any money, even for the investigation, at Fontana. Furthermore, land has been purchased at Gilbertsville.

Judge Gore: Nothing whatever has been done at Fontana?

Mr. Fitts: That is correct.

Mr. R. T. Jackson: Oh, well, some preliminary surveys have been made.

Judge Allen: The Court considers that the Authority is entitled to show the work done in operation of the dams

by the men who operate them, and also are entitled to show the work done by employees of the Authority in preparing for dams which are authorized. The Court is fully aware of the Fontana situation. The exhibit is admitted.

Mr. R. T. Jackson: And may we have our exception, please?"

The diagram in the upper left hand corner of the chart shows the gross system power available from these ten projects for each of the 52 weeks of the year. The diagram immediately below shows the average weekly inflow and releases at the Norris project. The one below that is similar for Hiwassee. The charts on the right show the reser- [fol. 1662] voir contents in the reservoirs as it varies throughout the year.

Examination by the Court:

The one at the top is for all of the reservoirs and the ones below are for Norris and Hiwassee, respectively. Norris and Hiwassee are included in the top one and also the main river reservoirs. There is an elevation scale on the right of those two lower diagrams.

Direct examination continued:

First, I would like to point out the power would be available from these projects with the natural flow assuming no use of storage. In the upper left hand corner diagram there is a dashed line which is marked "Power at main river projects from natural flow". That is the power that would be, or might be produced if the flow passes through all of the heads at these various projects. I would like to go next to the Norris diagram, which shows in solid line marked "Inflow". That represents the natural flow at the Norris Dam site, or which would be the inflow into the Norris reservoir. That, in a way, represents the power that would be available at that project, with no use of storage, except that it is affected by the head through which it would go. That head would be variable, depending upon the level of the reservoir. The heavy line in the lower diagram from Hiwassee similarly indicates to a degree the power that might be available at the Hiwassee project from

natural flow. The effect of the storage in this group of projects is to regulate the flow of the main stream, and make it more uniform throughout the year, which also results in a greater uniformity of the power that would be [fol. 1663] available. I might illustrate it by returning to the diagram on the left, which is entitled "Norris". In the first part of the year, the dotted line which is marked "release", is below the solid line, which is marked "Inflow", indicating that water is being stored in the reservoir. Later on in the summer when the release or dotted line is above the inflow or solid line, it indicates that water is being taken from storage. The contents chart immediately to the right on Norris shows that the reservoir content gradually increases in the Spring months as water is being stored, and then as it is drawn out in the summer months, when the release exceeds the inflow.

Examination by the Court:

It is upwards from January to June 1 or the first of July to about the middle of October, and then decreases.

Direct examination continued:

A similar explanation would apply to the Hiwassee diagram. There is also storage in the main river reservoirs towards the end of the flood season, water can be stored in those reservoirs until about the middle of May. Then, releases would be made for malaria control operations. The releases are the greatest when the natural flow is the least, and consequently, the natural power is the least.

In the upper left hand diagram, everything below the solid horizontal line which is marked "550,000 kilowatts, approximately 470,000 kilowatts net" represents the estimate of continuous power for that particular system. You can notice on this diagram where the solid line jags up above that line, that is the secondary grade of power available. All of the area below the solid line represents the regulated [fol. 1664] power that will be available from all of the projects.

Taking the Norris chart, for instance, the Norris Reservoir is about elevation 970 on January 1st, and gradually fills to about elevation 1009 toward the end of May. This is not a uniform line, because it depends on the flow that is available, and also that it is held down, so as to come within

the allowable variation. After May, the water is drawn from the reservoir, lowering it to a minimum level about the middle of October. The dry season ended about that time in 1925. The dry season may extend in some years into the month of November and the early part of December. The operation, coming down in 1925, the reservoirs came to minimum levels about the middle of October, and then on the resumption of high stream flow the possibility would be to store water against the natural course of dry flow conditions later in the year. That explains why the Norris chart gradually rises until about the end of November, and then the water is drawn from the reservoir in preparation for the flood season. In other words, according to this, we would be storing there in that period of time between about the middle of October and the end of November in anticipation, and then we would go ahead and waste it in order to get rid of it and lower it.

Turning to the upper left hand diagram, it is marked as being 550,000 kilowatts, which is approximately 470,000 kilowatts net. The difference between the gross and the net figure is due to what is known as utilization losses, that is, to cover leakage and evaporation and losses due to flow not reaching the lower projects at exactly the right time, and inability to operate exactly as anticipated, and other possible operating problems. That is continuous power. [fol. 1665] In this case the difference between gross and net is about 15%. Losses such as efficiency loss in the structures and machinery have already been allowed in obtaining the 550,000 kilowatt figure.

The reservoir elevations would not necessarily be exactly alike any two years. It would be a great coincidence if there were any two years exactly alike. There is bound to be variation in the way those operations go. This is a calculation based on past records and is only our estimate as to how it might be operated under such conditions. The system is still developing and it has not been operating under such conditions yet.

The decrease in continuous power from our early estimate would be accompanied by a greater increase in the amount of high grade secondary power available, offsetting to a considerable degree the apparent economic loss from reduction of the continuous power. There is a difference between continuous power and firm power capacity. Con-

tinuous power is the power which would be available 24 hours a day, 365 days a year, or for any period under consideration. Firm power capacity of a plant or system of plants is for any period the maximum demand which that plant or system of plants can be reasonably sure of meeting, considering load characteristics.

The table (offered and received in evidence as Defendants' Exhibit 140) is entitled "Status of Generating Capacity as of December 31, 1937." The information was obtained as to the units in operation from published statements and reports. As to units being installed, it is knowledge from the construction people, and those under contract. The last ones are from the resolution of the Board.

The table (offered and received in evidence as Defendants' Exhibit 141) is entitled "Successive steps of insulation and estimated power capacity."

[fol. 1666] I have not personally, nor to my knowledge has the power section, ever made any computation as to what filling schedule should be followed in order to fill the various reservoirs to so-called normal pool level. I have not personally, nor to my knowledge has the power section, ever issued any orders or instructions as to how the projects of the TVA should be actually operated.

[fol. 1667] Cross-examination:

I am not the head of the power planning department. Dr. Glaeser is. I report directly to him. At the present time, that department reports directly to the general manager. It is my understanding that it is a coordinate department on the same footing as other departments in that respect.

By high grade secondary power I mean power that would be available from 75 to 80 per cent of the time over a number of years. I drew a distinction between continuous power and firm power capacity. The load factor is a part of the difference between those two terms as I use them; it has all of the load characteristics. Assuming that you had 100,000 kilowatts continuous capacity and that the system was operating at a 60% load factor, you would still have to know what generating equipment is installed before you can determine the corresponding figure. Assuming sufficient generating equipment to permit the utilization of all our continuous capacity on a 60% load factor, the firm power capacity with sufficient generating equipment within that

period for which the load factor applies would be about 100,000 divided by 60—I think it is 167,000. I think that probably with the installation for which the space is provided at the TVA stations, possibly they could use it up to 60% load factor. I understand that the 60% annual factor is about the general load factor of large utility systems operated in the southeast.

As to what use is made of the main river storage for power purposes, the use of the main river storage, is principally for regulating the flow and for malaria control operations which could go through the generating equipment that has been provided to produce power. It would certainly go through the generating equipment in so far as we have any use for electricity.

[fol. 1668] "Q. And are the main river plants operated to supply peak loads during the day period, and reduced operation at night during off-peak hours?

A. Are you speaking of actual operations, or the calculations?

Q. Is there any difference between actual operations and the calculations in that respect?

A. I want to make it clear that we only have a few dams in operation now, and this discussion here today has been with regard to a system of completed projects."

In my studies some of the main river plants are to be operated to supply peak loads during the day and reduced loads in operation at night during the off-peak periods. As to whether or not any of the main river dams are being operated at the present time so as to supply peak loads during the day and reduced loads during the off-peak period, I am not operating the project. I don't have charge of the operation of the power project. I have nothing to do with them. I am simply an engineer making calculations with regard to such matters as I have testified to, upon data given to me, and I am not an operating man.

Referring to the figure in the upper left hand corner on Defendants' Exhibit 139, it is not quite correct to state that the dotted line shows the continuous power of the dams named in the project operated as run-of-river. The dotted line shows the power from week to week of the main river projects, except Norris and Hiwassee. That is the main river projects only. That is what the power would be on

run-of-river operations without the use of storage. It would not necessarily follow that we would have some pondage to get that particular dotted line. The solid line shows how much that is increased by low water regulation. The increase is from about 170,000 kilowatts to 550,000. Both lines are expressed in terms of gross power and not net power. The figure 470,000 kilowatts is net for regulated power. [fol. 1669] The amount of increase achieved by regulation is from 170,000 to 550,000 kilowatts, from which the figure to obtain the net would have to be applied to both. The 550,000 is reduced to 470,000, so the 170,000 would also be reduced by about 15%. I have reduced each figure about 15% and the difference represents the amount of increase at main river dams and also power at tributary dams. It is plainly marked at the bottom that it is for the main river projects only and the top one is for all projects. I do not have the figure as to how much the power at the main river projects is increased by regulation. I have not made any calculations corresponding to the one shown graphically in the upper left hand corner including Fontana. I do not know what the effect would be of including Fontana.

Referring to the next figure on the left hand side which relates to Norris, the inflow is the actual record of 1925 as published by the United States Geological Survey as to what the flow would be at the Norris site. The release line is a hypothetical amount based on the study. It is a calculation of what it would be if you had flow conditions like 1925 and were operating this system.

There is some discharge of water during January, February, March, April and May. The amount of water stored is the difference between the release line and the dotted line. There is some release by the dotted line. We do not store all the water available.

As to whether, in the course of my studies I did not have to familiarize myself with the methods of operation now in use, the methods of operation now in use were considered, but when you consider that you have so many projects, the operation might be different from what occurs now. I think the projects now in use would be operated on a daily or weekly peak basis but I did not determine that. I don't know how they are operated. I never knew that there was [fol. 1670] any such committee as the hydro-electric committee of the TVA.

I prepared the figures for table No. 6 on page 62 of the Unified Report. I made the figures and supplied the figures to whoever wrote the report. Santeetlah, Cheoah and Calderwood were included in the calculations to arrive at the 660,000 figure, from which an amount was deducted that would belong to the Aluminum Company as part of the integrated operation. About 90,000 kilowatts were deducted. That was not power that would be produced at Fontana. That represents the amount of the total power that would go to the Aluminum Company as their part of the integrated operation. You cannot identify where the power is produced.

The Fontana site is immediately above Cheoah and would control to a considerable degree the water at Cheoah and also Calderwood, so that the releases from Fontana would naturally affect the operation of Cheoah, Calderwood and Santeetlah. Santeetlah is on one of the tributaries, the water from which is discharged into the Cheoah pool. It means that if you change the operation of the two lower plants, the operation of the Santeetlah plant would be changed to conform. I made the calculations and estimated the total potential power, and I was given an assumed amount and took 90,000 kilowatts from that total to give the net figures shown in this table. I did not make any separate calculation as to how much power would be produced at Fontana. I did not make any separate calculation of how much low water regulation applied by Fontana would increase the continuous power capacity or high grade secondary power capacity of the main river projects.

As to whether I mean to testify that in the 660,000 kilowatts of continuous firm power shown on page 62 of Complainants' Exhibit 328 there is included any power produced at Santeetlah, Cheoah or Calderwood, I am trying to make [fol. 1671] clear that you cannot make that fine distinction in regard to where the power is produced. The power was calculated as the total power of all fourteen plants, from which was deducted an amount of 90,000 kilowatts, which was from the negotiations regarding the Fontana Dam site as being that portion belonging to the Aluminum Company. Part of the total power was produced at the Aluminum Company plants. Each week of the year is different as to the amount of power produced at various points and you can't tear that thing apart and identify each part to determine

how much was produced at each plant of the Aluminum Company. Assuming that a private company was developing Fontana other than the Aluminum Company of America, they would determine how much power they could develop in a similar fashion. I do not mean they would have to go into partnership with the Aluminum Company of America to develop the Fontana Dam site, but the amount of power that belongs to each individual is necessarily only attained by negotiation. I think there are some rivers on which there are various water power developments all owned by different interests. I do not think I can answer whether prior to the Federal Water Power Act each interest took whatever power it produced at its own plant as its own.

I did not include the Hales Bar plant in my calculation. As to why I did not treat that the same as the Aluminum Company plants, I mentioned that the figures given were taken from previous studies which had been made. Those studies did not take Hales Bar into account. Those studies were made to determine the amount of power to be produced by TVA plants on the Tennessee River without any computation as far as Hales Bar is concerned, but we could not do that on the Fontna project.

This figure of 660,000 kilowatts represents as I understand it, the power that would be available to the TVA if they constructed the particular plants listed in the table 6 [fol. 1672] on page 62. If I could assume operation for 1925 flows, I could determine the operations and output of Santeetlah, Cheoah and Calderwood operating separately, or I could determine the three of them as a unit. Upon the same assumptions I could also determine how much power would be produced by Fontana operating as a unit with the other TVA dams. I did not do it.

"Q. Can you point out to me anything in table 6 or on page 62 of Exhibit 328 or any other place in 328 where there is anything to suggest to the Congress that the continuous power capacity figures shown in that report do not accurately reflect the estimates of the Authority in that regard?

A. No, there is not. There is nowhere that it does not reflect that that is not the correct estimate.

Q. Have you finished?

A. I want to point out that on Page 105 there is a paragraph relating to existing plants, which points out essen-

tially there must be close coordination between these plants and the Fontana Plant?"

There is no statement in that report of March 31, 1936, to Congress which suggests to Congress or anyone reading the report that there is included in the table or estimate of continuous power, power produced at the Santeetlah, Cheoah and Calderwood plants of the Aluminum Company of America. The table does not show that. It shows the power that would result to the TVA from the construction of those ten plants.

"Q. And neither the table nor anything else in the report shows or indicates that part of the power is to be produced by the plants of the Aluminum Company of America, is that right?

A. You have been playing around this subject all morning and I tried to point out to you before that that is the net resulting power to the Authority, and the table shows it as such.

Mr. R. T. Jackson: May I have an answer to my question?

[fol. 1672a] Mr. Fly: The document speaks for itself.

Judge Allen: The objection is sustained. The witness has answered and given his explanation.

Mr. R. T. Jackson: May I have an exception, if the Court please?

[fol. 1673] Judge Allen: The table is before us.

Mr. R. T. Jackson: Yes, but he is undertaking to give a different statement, as I understand it, than the table, and I want to know on what he bases that.

Mr. Fly: He didn't submit that report anyway. He took assumptions that were given to him, as he testified.

Mr. R. T. Jackson: I see. If his assumptions have nothing to do with the official action of the Authority, then, I think his testimony ought to be stricken.

Mr. Fly: It is shown that they do have."

I did not make the calculations on page 279 of Complainants' Exhibit 115 which shows an estimate of 660,000 kilowatts continuous capacity of the TVA system and 5,780,000,000 kilowatt hours of firm energy. I cannot make the assumption that the 660,000 is the same as the one in the Unified

Report. I did not prepare that particular liquidation estimate. I did not prepare Complainants' Exhibit 909 which is a photostat of the sheet taken from Complainants' Exhibit 116 showing the TVA system demand, generator allocations, firm power capacity, actual and projected to the end of 1940.

Examination by the Court:

As to whether turbines are always at the bottom of the dam, in the modern practice the turbines are below the generators in the power house. That is, the water flows through the intake, through the turbines, which spin around on verticle axis, and then flows out below. The turbines are towards the bottom of the dam.

Redirect examination:

"Mr. Fitts: May it please the Court, I would like permission to interrupt the cross examination for just one moment, because of the fact that just prior to the recess the cross examination of the witness was directed to the implication that the Board of Directors of the Authority had not completely reported to Congress all of the complicated facts [fol. 1674] with respect to the original proposed arrangement with respect to the Fontana Dam site. I would like to call the attention of the Court right now, before it is overlooked, to the evidence already in this record, which clearly shows that the whole matter was laid before the Committee on Appropriations at the time that the question of the appropriations for the Fontana Dam were under consideration by the Committee in the House. I refer to Complainants' Exhibit No. 115, which is the report of the hearings on the First Deficiency Appropriation Bills for 1936, and I refer specifically, while there are other passages throughout the hearings that relate to the subject, I refer specifically to the passage on page 192, which begins under the title 'Acquisition of Fontana Dam, of the Aluminum Company'.

I would like permission of the Court simply to read at this time a paragraph there in order to get this matter in its proper setting.

Mr. R. T. Jackson: If the Court please, I object to it, as not being a proper interruption of cross examination. There are a great many things about Fontana Dam in the record that we want to call to the attention of the Court also.

Judge Allen: The Court thinks that it is proper for Mr. Fitts to read the paragraph:

Mr. R. T. Jackson: We except.

Mr. Fitts: 'Mr. Taber. Now, Doctor, why should the Government buy the Fontana lay-out from the Aluminum Company of America? It is a purely power development; it is not a navigation proposition, is it?

Dr. A. E. Morgan: We would not put any power plant in there at present. We would use it entirely for storage providing benefits to flood control, navigation, and power, but especially flood control.

Mr. Taber: Why not let the Aluminum Company of America go on and build it and put in a plant there and provide industrial activity?

Dr. A. E. Morgan: They are going to provide just such industrial activity. Under the proposed contract we would sell them power. But if they build that plant, then they will operate it for the Aluminum Company of America. Here is the best site on any of the tributaries of the Tennessee after Norris, and if we lose control of that, then they will operate it to suit themselves for power only. Also, the difference in value of power that could be generated on the plants down the Tennessee River with unified operation would be about 100,000 horsepower.

[fol. 1675] Mr. Taylor: Why are they willing to sell it on those terms?

Dr. A. E. Morgan: They are willing to sell for two or three reasons. One is that it saves them the investment of that money. They will be buying power through the years instead of building other dams and generating power. They will also get this advantage if that dam is built, in the regulation down the river. They have dams downstream from this; so the water that comes out of this dam would go through their plants down river. They will get a certain advantage. We will get considerably greater advantage than they will. Moreover, if the TVA acquires their property it can supply the Aluminum Company with power from down river dams at once, whereas it would take three or four years for the Aluminum Company to supply itself with power by building the dam.

Mr. Taylor: Are they surrendering their plants down river, too?

Dr. A. E. Morgan: They will operate them so as to obtain the advantages of unified control.'

Mr. R. T. Jackson: There are a great many other provisions dealing with this that I shall not ask the Court to grant me time to read into the record at this moment."

Cross-examination continued:

I did not testify that the capacity of the integrated eleven dam system, without the Aluminum dams, was 535,000 kilowatts. I testified that the potential continuous power of the ten dam system was 535,000 kilowatts under the old assumptions. That is, eliminating Fontana and any question of integration with the Aluminum Company of America plants. As to when the assumptions were given to me upon which my calculations as to capacity were based, I will state that the studies were started about a year and a quarter to a year and a half ago, which were approximately in line with this chart, or these later assumptions. It was not until last March that the flood section had completed their tentative studies on Norris reservior, and this particular chart has been prepared in the light of the most recent changes of any of those which make some minor changes from those [fol. 1676] earlier studies. The estimates shown on Defendants' Exhibit 141 have to do with firm power capacity, in which case you consider the machinery available, as well as the characteristics of the load and the flow, etc. As to when approximately these assumptions were given to me, I thought I made it clear that these assumptions were being changed from time to time. As to whether my calculations have been made on constantly changing assumptions that were given me during the course of this lawsuit, this lawsuit is pretty long. They were not the result of this lawsuit. For the firm power capacity estimates, the assumptions came about last March. In so far as those assumptions affect my calculations on Defendants' Exhibit 141, they were given to me last March.

In order to produce our firm power, it would be necessary for someone to dispatch the water between the various plants, not necessarily exactly the way I have shown it, to get the same result. In other words, with the number of plants involved, it would be possible to arrive at this result by some alterations from this exact showing here. There would be a margin of variation, but substantially they would have to be in accordance with the assumptions given to me in order to produce the estimates that I have made. It is conceivable that if Mr. Woodward orders some other

type of water control, then my theoretical study might have an entirely different answer. I understand that Mr. Woodward does control the water releases. The result of these calculations, or any calculations, and the nature of any assumptions upon which calculations can be made, depend upon what orders may be given by Mr. Woodward.

I understand Mr. Karr is system operator. As to whether he gets his instructions from someone other than from me as to the method of operation in which he releases water, I am not in that department and cannot testify as to how he [fol. 1677] gets his instructions. He does not get them from me.

Water wheels and turbines are constructed so as to operate at a maximum efficiency for particular heads or ranges. I understand that in designing a plant and installing a water wheel, it is planned so that it will be in operation the greater part of the time within the range of maximum efficiency. As to whether I have been making estimates on that sort of thing, I want to make the distinction. I am not the designer of the water wheels. As to whether I know at what elevation on the reservoir the generators at Norris operate at maximum efficiency, I don't have that with me and I don't know. As to how I could figure the firm power capacity if I did not know that, I had the efficiency curves. Then I did have information as to the range of maximum efficiency of the Norris generators. I am not prepared to answer whether that would be in the vicinity of elevation 1,000 or better without looking at some diagrams. I haven't that particular chart. With regard to efficiency and to the position of the turbines, as to whether it is necessary to hold some dead storage in a reservoir in order to obtain power, if there is no head of water, there will be no power, and if you do not have any dead storage, there would be practically no head.

Examination by the Court:

Dead storage is the space in the reservoir in which the water remains more or less throughout the time of the project. In other words, it is storage below the minimum level to which the reservoir is allowed to go and it is useful for storage of silt and other material like that, as well as for obtaining the head. Possibly some of that water could be used to generate power, which would in turn lower the head further. In other words, the difference between the level of

the lake and the water below the dam is the head. The dead [fol. 1678] storage is the difference in elevation, it would be the head, represented by that dead storage.

Cross-examination continued:

Then there would have to be additional water to flow through the turbines in order to produce any power. Flow and head make power. You can't have it without both. If you simply had dead storage flat without inflow, there would be no power. I think the top of the dead storage at Norris is about 135 feet above the bottom of the river.

The elevations of the main river reservoirs which were assumed in making my calculations on the basis of the so-called changed estimates were at April 1, for Coulter Shoals 805, Watts Bar 736, Chickamauga 675, Guntersville 591, Wheeler 553, Pickwick 412, and Gilbertsville 355. I haven't the elevations as of June 1. I made no assumptions with respect to June 1 particularly. The assumptions were given me that the reservoirs could fill to the following elevations after April 1. That is, Coulter Shoals 810; Watts Bar 740; Chickamauga 682; Guntersville 595; Wheeler 555; Pickwick 413; and Gilbertsville 357.

Referring to the last column of Defendants' Exhibit 141, which says "Estimated firm power capacity, KW", firm power capacity is the maximum demand which that system of plants could be reasonably sure of meeting, considering the load characteristics under the period considered. The machinery available, the continuous power, the load characteristics, all have a part in it. In that calculation there was assumed that the weekly load factor would be somewhere between 60 and 75 per cent. The annual load factor, I think, was something less than 60 per cent. I do not have the figure with me for the continuous power available as comparable to my last column on Defendants' Exhibit 141. I gave [fol. 1679] a figure of continuous power of 485,000 kilowatts for a certain group of these plants. It covered all except Fontana and the Aluminum Company. That was the continuous power on a 100 per cent load factor. That would not be the continuous power figure that would compare with 570,000 of firm capacity, according to my definition on Defendants' Exhibit 141. You cannot divide this firm 100 per cent capacity of 485,000 by plants. I have no such figures divided by plants, nor can you divide it between how much

was run-of-river and how much storage. The way you figure it without knowing any of those things is that you determine the total power available from all the plants under all the conditions that are likely to happen within that period. It is the total of all of them, not individual plants, because there are times when the main river projects could supply the continuous power. In other times of the year, power would be supplied both by the main river projects and by the tributary projects. I studied the characteristics of each plant, such as the head, efficiency of the plant, and flow available. That is all put together in detailed, long drawn out calculations, to get the estimate shown of continuous power. I cannot break it down by plants, because that is not a thing that can be broken down plant by plant. I could supply a break down by weeks.

"Mr. Fly: Do you have that available already?

The Witness: I haven't it available here, it will take some time to get it.

Mr. Fly: I object to the witness being called upon to make the calculations.

Mr. R. T. Jackson: Haven't you got it in your working papers?

Mr. Fly: The Court has already ruled that cannot be done.

Mr. Fitts: During the testimony of Major Putnam, we made some such inquiry as that, and the Court ruled we [fol. 1679a] could not require the witness to produce detailed working papers for this record.

Mr. Fly: He has not made the calculations.

Mr. R. T. Jackson: May I ask one question to see whether he does have it?

Judge Allen: Now, just a moment, please. The objection is sustained. You may have your exception."

[fol. 1680] I have made a calculation on the critical month of November, 1925. It is all a part of this total calculation. As to whether I will supply the calculation for November by weeks if I have it in my papers, I haven't that in my papers.

"Judge Allen: The objection is sustained. The Court is not inclined to go into these minutiae. We are required under the statute under which the Court is constituted to expedite this case. Even the Supreme Court is required

to expedite this case. For that reason the Court from time to time has ruled and adheres to its ruling that minutiae will be excluded. In a case where the witness hasn't the papers with him, there is an additional reason. You may have your exception."

Page 62 of Complainants' Exhibit 105 is divided on a system of plants. I mean different systems. The table on Page 1000 of the Hearings on the TVA Appropriation for 1939 (which hearings appear in the record as Defendants' Exhibit 155) has a line which is marked "minimum reserve." I did not prepare the table but I assume "minimum reserve" means the least amount of reserve. I don't know what it includes as to outage. At the bottom there is a statement "40,000 kilowatts under contract is available." It is not clear from the table what it means and I personally cannot tell what it means.

(The witness was excused.)

[fol. 1681] CHARLES LEE KARR was called as a witness on behalf of the defendants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 45 years of age and reside in Chattanooga. I am superintendent of power operations of the TVA. I have the degree of mechanical engineering from the University of Michigan. I have had approximately 24 years of service or experience in the line of work that I am now following. That consisted of approximately eleven years with the Detroit Edison Company, Detroit, Michigan. Beginning there, I served a student course with the Company, advanced by various stages to technical engineer of all generating stations and of the production department. The last four years with that organization I was assistant chief engineer in full charge of the production department, acting as liaison man between the construction and production departments. It so happens that on this particular property they handled all production design and construction work, all designs having to do with production being approved in the production department prior to being put into effect, and that was one of my duties in that particular position.

From the Detroit Edison Company, I went to the Kansas Gas & Electric Company, Wichita, Kansas, an operating Company connected with the American Power & Light, a subsidiary of the Electric Bond & Share Company, and I was superintendent of power on that operation, in full charge of operation and maintenance, transmission, distri-
[fol. 1682] bution and generation. I was with that Company for six or seven years, and was transferred to the Carolina Power & Light Company as operating manager. The Carolina Power & Light Company is one of the operating group of the National Power & Light Company, the National Power & Light Company being the subsidiary of the Electric Bond & Share Company. As operating manager of this Company, I was in full charge of operations, in fact, all departments, with the exception of the accounting and legal division. After I left the Carolina Power & Light Company, I was with the Copper Weld Steel Company at Glassport, Pennsylvania, for a short period, as special engineer for those people in conductor installations and designs.

From the Copper Weld Company, I came with the TVA as of March 7, 1936, as superintendent of power operations. I have occupied that position since. My functions as superintendent of power operations are supervision of all generating transmission and distribution facilities. I have charge of the physical operation of the gates at Norris, Wheeler and Wilson dams, and of the amount of water to be released from day to day. I receive my instructions with respect to the amounts of the releases and the rates of release from Sherman Woodward, Chief Water Control Planning Engineer. Those instructions come to me normally in written form and set forth the rates of discharge or release for a given period. In certain instances, instructions are given to me orally. In every instance, I receive my instructions as to the amount of water to be released from Mr. Woodward. No other official or department gives me any instructions on that subject at any time. The organization is so set up that it is necessary for me to follow those in-
[fol. 1683] structions. Those instructions are given to me as definite orders and I have not at any time departed from them. I have never been consulted by the Water Control Department or Mr. Woodward or any of these officials in

the formulation of those instructions, with the exception of a very few instances which involved special generator tests or acceptance tests on new equipment. At those times I was consulted to make sure that we had sufficient water to make those tests possible. I normally consult with Mr. N. W. Bowden, assistant to Mr. Woodward in the water control department. I have never recommended to that department or to any official of that department any different water release bulletin than that prepared and issued by Mr. Woodward. No bulletin issued by that department has ever been changed at my request.

In my division, which includes transmission and distribution and generation, there are approximately 300 employees. At the generating stations, we have the customary operating crews headed by the superintendent at each plant. At Wilson Dam, we have a system operation office headed by the chief system operator, who has directly under him load dispatchers, under Mr. C. P. Almon, Jr. My office is in Chattanooga and his office is at Wilson Dam. The load dispatchers come under Mr. Almon direct. They control all operations on the transmission system, granting the right to the various operators at sub-stations and operating stations to carry on switching operations necessitated by constant change of the transmission and distribution system. The load dispatchers are on duty 24 hours a day, and in connection with our operations at the dams, the load dispatchers get hourly reports from the various generating [fol. 1684] points as to the loads, or the energy that has been generated during that hour, the water released during that hour, the pool levels at the end of those hours, and all pertinent switching data which may have been conducted during that hour. They also receive the same information from attended sub-stations. An attended sub-station is one of the primary sub-stations which has attendants there either part or all of the time. The hourly reports are telephoned in to the dispatchers at Wilson Dam and a report for the 24 hour period is mailed to them. The reports are filed at the office of the chief system operator and forwarded by telephone, and forwarded to me each day. To sum up, the generating plants and the attended sub-stations work every hour and report to the Wilson Dam office of the chief system operator conveying the data that I have described. Each 24 hours they submit a written report to that same office and each day I receive from the chief system operator at Wilson

Dam by telephone a summary of all this data, followed by a written report which comes by mail.

In the conduct of the operations of releasing water from the dams, I keep daily records of the daily discharges and of the water used for power. The amounts of those releases are not in any way treated as confidential. You might say the information is broadcast. They are sent to many in the TVA, to certain of the navigation people, and the Army people. We go so far as to send a copy by special messenger each day to Mr. O. J. Miller of The Tennessee Electric Power Company. That data gives the discharges at various points; the river flow at various points; the river stages; the discharge below the dams; and also such pertinent forecast data, which is usually forecast ahead for two or three [fol. 1685] days. That information is compiled by another office. That is water data. It also includes the stages in the various reservoirs.

The tabulation (offered and received in evidence as Defendants' Exhibit 142) shows the water releases at Norris, Wheeler and Wilson dams for the period between June, 1936, through November, 1937. The information was obtained from our plant records and from the water control planning division. For the period shown here from June, 1936, down through November, 1937, this is the complete story of water released at the dams shown. Sheet one is a comparison of the total discharges available for generation by months and totals for the periods ending as of December, 1936, and as of November, 1937. The second column sets forth the total discharges below the dam at Norris in day second feet. We have used a period of day second feet rather than cubic feet per second. Day second feet would be a considerably smaller figure. Day second feet is discharge. One day second foot is equal to the discharge of one cubic foot of water per second for 24 hours. The figures shown here are the aggregate figures for the month on that basis. The second item in the first column, July, 1936, shows a total discharge of 34,790 day second fet. That is the total amount of water discharged for all purposes at Norris. The third column sets forth the estimated discharge available for generation in day second feet, that is the portion of the second column of the total discharge which is available for the generation of power. It is part of the total discharge below the dam which could have been used or passed through the turbines or water wheels if operated to full capacity. At

Norris, under normal head conditions, the capacity of the water wheels in stream flow is approximately 7,800 second feet, I think. The fourth column shows the percentage of [fol. 1686] the discharge available for generation to that of the total discharge. The columns under Wheeler and Wilson dams give similar information for those generating points.

The second sheet attempts to show a comparison of turbine discharges with total discharges and discharges available for generation; that is to say, a comparison of the amount actually used for power generation as compared with the total amount of the releases and as compared with the total releases which were available for the generation of power. The figures are likewise set forth by months. The second column shows the actual turbine discharge at Norris, and the third column shows the percentage of turbine discharge to total discharge. For illustration, in August it shows an actual turbine discharge of 70,250 day second feet. That was the amount actually used for the generation of power. The 78.74 per cent shown in the next column is the percentage of the turbine discharge to that of the total discharge below the dam, as shown on the first page. The fourth column is the percentage of the turbine discharge to discharge available for generation. Looking at the tables for seven months of 1936, they show that the percentage of discharge through the turbines to the total discharge below the dam was 64.07 per cent. The percentage of the total amount which was actually available for generation, and which was actually used for power generated at Norris in those seven months was 79.59 per cent. The comparable figures for the 11 months ending November 30, 1937 are 15.14 per cent of turbine discharge to total discharge, and 22.28 per cent of turbine discharge as compared to the discharge available. The reason why under the heading of Wheeler Dam there is no entry for the first few months down through October on this particular tabulation is that we did not have generation at Wheeler at that time. Wheeler did not begin to generate power until November.

[fol. 1687] The third sheet shows the extent of the use of Norris storage for generation at Wilson and Wheeler Dams. The second column under Wheeler Dam shows the Norris reservoir storage releases in day second feet, by months, and totals. The third column shows the Norris storage release used for generation at Wheeler Dam. The next col-

umn shows the percentage of Norris storage releases shown for generation.

"Judge Allen: The Court will suspend in a few moments and it has a ruling to make.

The report on the economic height of Norris Dam by E. Debler, hydraulic engineer, an employee of the Bureau of Reclamation, transmitted to the chief engineer of the Bureau of Reclamation, has been produced by the Authority for inspection by the Court. Complainants desire to inspect it and to offer it as an exhibit in connection with the cross examination of the witness Woodward.

This report was not made to the TVA nor was it made by an employee of the TVA. It does not appear under what direction the investigation was made, nor that the report was required under any Federal statute. The report does not appear to have been adopted or approved by the Bureau of Reclamation. Considered as testimony, it is purely hearsay. Neither does it rise to the dignity of a public document. It has no value as bearing on the credibility of Mr. Woodward, for he stated that the report existed and that it made some such estimate as that described by counsel for complainants.

Since the report as evidence is incompetent, irrelevant and immaterial, it is returned to the Authority, whose property it is.

Mr. R. T. Jackson: If the Court please——

Judge Allen: You may have an exception.

Mr. R. T. Jackson: Yes, but may we not have it made a part of the record, in the excluded portion, so that we may have a review of the questions?

Judge Allen: No, the Court has ruled and you may have your exception.

Mr. R. T. Jackson: May we have a further exception to the denial of the right to have it entered as a part of the excluded record."

[fol. 1688] Examination by the Court:

As to whether the releases of water from the various dams shown on Defendants' Exhibit 142 were in aid of navigation and in the generation of electric power, the releases, according to my instructions, were for navigation and flood control.

"Mr. O'Brian: They were at least in part for power—well, I will pursue that in a moment."

Direct examination continued:

Sheet No. 3 of Defendants' Exhibit 142 attempts to show the extent of the uses of water released from Norris storage at the Wheeler and Wilson Dams. Column 2 of sheet 3 is intended to show Norris storage used for generation in day second feet at Wheeler Dam. The explanation of the blanks appearing in column 3 is that in the early stages we did not have generation at Wheeler up until November 1936. Thereafter there was sufficient flow in the Tennessee River unregulated to carry on our needs at Wheeler for power generation. All the other releases that were made in that latter period from Norris were not used for generation at Wheeler, because there was sufficient water in the river. The next column shows that part of the Norris storage releases were used for generation at Wheeler Dam. The item 2.72 per cent means there was only 2.72 per cent of the Norris releases used at Wheeler for generation. These same characteristics are also true of the other columns of this exhibit relating to Wilson Dam.

Looking at sheet 2, it shows that 15.14 per cent of the total water released from Norris Dam in 1937 down through November was used at Norris Dam for generation at Norris Dam. During times of high reservoir stages or elevations, the 84 per cent that was released at Norris Dam during that period and not used for generating power at Norris Dam was released by way of sluice gates and spillways, and this [fol. 1689] was done, according to my instructions, primarily for lowering the pool in order to accommodate possible subsequent floods. During latter stages, all discharges were through sluice gates both for navigation and flood control.

Referring to the total of the first column on sheet 3 which shows the total releases from Norris Dam in 1937 for the period specified, none of those releases were used at Wilson Dam for generation. There was sufficient water in the Tennessee River uncontrolled to avoid the use of Norris releases for generation at Wilson. Apart from the 0.76 per cent used at Wheeler for generation, none of the rest of the Norris releases were used at Wheeler for generation of power.

The explanation why the releases from Norris for February of something over 309,000 day second feet, for March of something over 154,000 day second feet, for October of something over 144,000 day second feet and for November of something over 275,000 day second feet are very much larger than f - the intervening months shown is because, according to my instructions, during the months of February and March those releases were made for lowering the pool at Norris in preparation for possible subsequent floods. During October and November, the releases were for the purpose of getting the pool lowered for possible floods in the next wet season. According to my figures those releases in the low water periods of 1936 and 1937 substantially increased the minimum stream flow through Wilson Dam during the low water seasons. Definite minimum flows were fixed by instructions from the Water Control Planning Division.

The principal purchaser of power from the TVA during 1936 was the Commonwealth & Southern System. Of the total amount of power sold by the TVA in 1936, 83 per cent [fol. 1690] was purchased by the Commonwealth & Southern System. The reduction in the amount of the releases made from Norris Dam in the low water season on various Sundays and holidays, as testified to by Mr. Woodward, did not result in any reduction in the amount discharged on those days from Wilson Dam below the minimum set for navigation.

I am generally familiar with the power contracts of the TVA. That is a part of my duty. I am also familiar, as a part of my duties, with the generating, transmission and the substation facilities used in serving customers. I know who supplied power to the existing customers of the TVA before the TVA began serving them; and I also know who is now serving customers who were under contract with the TVA but who have not yet begun to take service.

The table (offered and received in evidence as Defendants' Exhibit 143) is a summary of contracts for the disposition of power of the TVA as of December 15, 1937. It is intended to set forth the complete set of contracts now existing between the TVA and its customers. (Counsel for defendants conceded that the exhibit included all contracts regardless of whether service was being rendered under them or not on December 15, 1937.) The information that

goes into the makeup of this exhibit was procured from the information that we keep in my office as part of our duties. The first column of this exhibit on both pages states who the contractors are with the TVA for power, the first category consisting of eighteen municipalities, the second of sixteen cooperatives, the third of eight municipalities who are not yet purchasing power, three cooperatives who are not yet purchasing power, nine industrial customers, three additional industrial customers not yet purchasing power, and one utility. Wherever the statement "Not yet pur-
[fol. 1691] chasing" does not exist those customers are purchasing. Wherever the typewritten symbol ordinarily used to designate the word "number" appears on this exhibit, it indicates territories served within the ceded areas in Mississippi and Alabama and described in the January 4th contract.

The contract (offered and received in evidence as Defendants' Exhibit 143-A) is the contract of January 4, 1934, and the contract (offered and received in evidence as Defendants' Exhibit 143-B) is the amendatory contract dated February 13, 1934.

Referring again to Defendants' Exhibit 143, the symbols are explained in the foot-note. I have attempted to show under the heading "Previous service" in the second column of this exhibit where the customers obtained service, or from what point they obtained service, or company in some cases, prior to taking service from TVA. Where the word "none" appears, that is intended to mean that those particular customers were not receiving service prior to TVA service. Jackson, Tennessee, is shown on Defendants' Exhibit 143 for identification in the first column as Item 8, municipal plant, "W. T. P. & Light Co." That means that the power was purchased from the TVA under an early contract for certain municipal purposes. In the later contract it was to sell wholesale to the City of Jackson for their requirements. It is explained by a foot-note. The reference to the cooperatives marked with the letter "X" indicates that there was resale service rendered by the Mississippi Power and Alabama Power Companies prior to the transfer of the property to the TVA under the contract of January 4th. In some of those instances that are marked with the "X", the members of those cooperatives were served directly by those companies prior to the transfer.

[fol. 1692] Those that are marked "X" are all within the ceded area.

Under the heading "Previous service", the legends referring to municipal plants and also municipal distribution systems indicate the source from which they were served. In some instances there were two or three sources and we have tried to show them; also, we have set forth here in some cases, for instance, Athens, Alabama, Dayton, Tennessee, and Tupelo, were receiving service from the Mississippi Power Company or Tennessee Electric Power Company. That is to say, where the legend "Municipal distribution system" is used, it is intended to indicate that the municipality owned its distribution system but purchased its power from one of the utility companies prior to TVA service.

We have attempted to show in the third column under "Point of delivery" as near as possible the point of delivery to these various customers. In the case of the municipalities, we have shown it as the city gate, or substation at the city gate. The last two columns state just what they purport to state, the date of the contract of that particular customer with the TVA and the initial date in the last column when those customers began taking power by purchase from the TVA. The second sheet lists the municipalities, cooperatives and industrials not yet purchasing, and under the heading of "Existing service", the utilities, if any, now serving them. Wherever they had no previous service, the word "none" appears. The next column gives the contemplated points of delivery; the next is the date of the contract; and the next is the date of the initial purchase.

On sheet 1 of Defendants' Exhibit 143 for identification, the words "municipal plant" mean municipal generating [fol. 1693] plant, and it includes primarily both generation and distribution unless it is explained in the foot-note.

"Q. Are these contracts shown on this exhibit, Mr. Karr, all of the contracts which the Authority has for the sale of power?

Mr. R. T. Jackson: You mean today?
Mr. O'Brian: Today.
The Witness: No.

Q. What additional contracts are there not shown here?
A. Well, in the case of Falkville, I think it was the——

Q. Now, wait a minute. I am asking as of today whether it is a complete list?

A. It is."

We have had other contracts with customers who are not shown on this list. For example, we previously had a contract with the Falkville Milling Company that has since been transferred to the Joe Wheeler Corporation at Falkville, Alabama. We also had a contract with the Volunteer Portland Cement Company which has been transferred to the City of Knoxville. However, we never began operations under that contract. We also had a contract with the Western State Hospital, a public institution near Bolivar, and it was transferred to the City of Bolivar. We also had a contract under date of January 4th with the Commonwealth & Southern which has expired. To the best of my knowledge, there was never any contract with the Yates Bleachery, but there were some small temporary contracts with cotton gins, and with certain cooperatives. All those contracts have expired. So that today we have here, to the best of my knowledge, a complete list in this exhibit of all power contracts of every description now in existence with the TVA. That is a complete story.

[fol. 1694] Apart from the question of contracts, the TVA is now serving customers other than those listed on Defendants' Exhibit 143. We are serving some customers direct in the Wilson and Norris Dam areas. Those customers are made up of residential customers on the government reservations and certain rural customers adjacent to the reservations. They are approximately 2,000 in number. None of them are being served under formal contracts. Some of them were taken over by the TVA under the contract of January 4th. The Lincoln County Electric Membership Corporation, which appears as No. 6 on Defendants' Exhibit 143 under the heading of cooperatives, took possession of the distribution facilities and began the purchase of power at wholesale from the TVA on December 11, 1937. Prior to that day, the TVA operated the lines of the Lincoln County Electric Membership Corporation under a special agreement with that corporation.

The contract (offered and received in evidence as Defendants' Exhibit 144) is a contract now in force between the TVA and the Lincoln County Electric Membership Corporation.

There are no operating agreements now in force by which the TVA is operating any properties. However, there have been a few, and they have been terminated. All of the rural properties at any time operated by the TVA have now been disposed of, with the exception of the rural customers in the areas adjacent to Norris and Wilson Dams.

The document (offered and received in evidence as Defendants' Exhibit 145) is a copy of an "Agreement between the Tennessee Valley Authority and the Arkansas Power & Light Company".

The document (offered and received in evidence as Defendants' Exhibit 146) is a copy of "Amendatory agreement between Tennessee Valley Authority and Aluminum [fol. 1695] Company of America," dated January 20, 1937. The TVA rendered electric service to the L. N. Gross Company of Fayetteville, Tennessee, under an operating agreement with the Lincoln County Electric Membership Corporation. The TVA served directly that Company at one time over the rural lines in Lincoln County. That contract was taken over by the Lincoln County Electric Membership Corporation as of December 11, 1937, and that Company is now being served by the lines of the Lincoln County Electric Membership Corporation. The fact is that the L. N. Gross Company had a contract even at that time with the Lincoln County Electric Membership Corporation.

I am in charge of the power houses and transmission lines of the TVA and I know from my records the amount of generation of power at each dam of the TVA and the amount of power delivered to each customer of the TVA. I am familiar with Section 7 of the contract of January 4th.

"Q. I wish to ask you a few questions relating to the service that has been made under that particular section of the contract. Which municipalities did the TVA serve during the contract of January 4, 1934 in the so-called claimed territory of the Alabama Power Company, the Mississippi Power Company and the Tennessee Electric Power Company, outside of the ceded area?

Mr. R. T. Jackson: I object to the question because the witness has testified that he did not come with the Authority until March 11, 1936, and now he is asked to describe what was done by the Authority under a contract made on January 4, 1934.

Q. These records are kept in your office, are they, Mr. Karr?

A. They are.

Q. Do you know what the records show relative to that service?

A. Yes, sir.

Mr. R. T. Jackson: I object to that question.

[fol. 1696] Judge Allen: He may answer.

Mr. R. T. Jackson: Exception.

A. Okolona and Amory, Mississippi, and Dayton, Pulaski and Dickson, Tennessee.

Q. During the term of that contract, referring to Section 7 of the contract, did the Authority sell any power in the Counties of Rhea, Roane, Meigs, and the Western part of McMinn, Tennessee, or in Monroe County, Mississippi?

Mr. R. T. Jackson: I object on the same ground, I make the same objection.

Judge Allen: The objection is overruled and you may have an exception.

A. Yes.

Q. What other customers, not previously served by those companies did the Authority serve within the so-called ceded territories during the existence of the contract of January 4, 1934?

Mr. R. T. Jackson: I make the same objection.

Judge Allen: All of these contracts are in evidence, are they not, Mr. Jackson?

Mr. R. T. Jackson: All contracts that the Tennessee Valley Authority has made are in evidence. Whether or not those matters are concerned with those contracts I don't know.

Mr. O'Brian: I think they are all in evidence.

Judge Allen: The contracts are in evidence—that was the understanding of the Court in its first ruling, and therefore we feel that the best evidence rule does not apply here. The best evidence is before us, but this witness in whose office these records are kept may summarize to the Court the result of his knowledge, in aid of the Court, and for the convenience of everyone concerned. The best evidence is before us. If there is any question about the facts, the best evidence is here.

Mr. R. T. Jackson: I understand that all the contracts are in, but whether or not they relate to the particular matters about which the witness is now being interrogated, and whether there was service under those contracts, I don't know—I simply don't know.

Judge Allen: You understand that the matters about which you are asking now relate to contracts already filed? [fol. 1697] Mr. O'Brian: That is my understanding.

Judge Allen: And covered by this summary of contracts introduced in evidence?

Mr. O'Brian: Yes, if there is any mistake about that I will straighten it out during the recess. If there is any fault in that I will withdraw the evidence. It is not very important anyway, but it is a matter that should be covered.

Q. What other customers were served under that contract outside the ceded area? Will you refer to your notes and give me that?

A. Yes, sir.

Mr. R. T. Jackson: I should like to have my objection noted on that.

Judge Allen: The ceded area is a matter of geography, isn't it?

Q. And we were permitted to serve customers outside of that area with aggregate load not to exceed 2500 kw.?

A. That is correct.

Judge Allen: The witness may answer."

The list is, the Cullman County, Alabama, Electric Membership Corporation; the Duck River Electric Membership Corporation, Tennessee; Lincoln County Electric Membership Corporation, Tennessee; the Middle-Tennessee Electric Membership Corporation, Tennessee; Pickwick Electric Membership Corporation, Tennessee; and the North Georgia Electric Membership Corporation of Georgia, and a part of the time the Monsanto Chemical Company located near Columbia, Tennessee. The maximum number of kilowatts outside of this contract was 1673 kw. At the date of the expiration of the contract, February 3, 1937, it was 956 kilowatts, exclusive of Monsanto. As of February 1937, Monsanto amounted to 850 kilowatts.

The document (offered and received in evidence as Defendants' Exhibit 147) shows an analysis of power disposi-

[fol. 1698] tion and use by the TVA. The information was compiled from the official records of the TVA. Referring to part 1 of this exhibit, each of the sheets shows a different calendar year beginning with the calendar year 1933 and going down to the calendar year 1937, through the month of October. The first column purports to show a list of the customers served. The expression in the second column "ultimate consumers" means consumers at the end of the year. It is not necessarily the maximum during the year, but those at the end of the twelve months' period. (Counsel for Defendants explained that an ultimate consumer means a consumer served with power, not necessarily by the TVA directly, but served with power generated by the TVA through a contractor; for example, the TVA may have one customer, an operator, but the ultimate customers may run into the hundreds.) Referring to the first column on the second sheet headed "Direct service", and the second category there "Temporary rural", Lauderdale County, Alabama, is shown with the number of ultimate consumers at the end of that year, namely 160. Column two shows the number of customers served at the end of the year that were being served, especially in the case of cooperatives, etc.; and in the case of the municipalities, it sets out the municipalities being served at the end of a given period. The third column is the total of the succeeding columns across the page. The third column, total kilowatt-hours, is broken down by months in the items across the page.

Referring to sheet 9, which is the second sheet of part two, the first column gives the customer and the type. The second column attempts to show the normal source of energy to [fol. 1699] serve these customers, and in some instances where the source can be definitely fixed, we have shown it here, that is at a generating station or from C. & S. Interchange. By C. & S. Interchange we mean that it is taken from a point on our system from the Commonwealth & Southern group, and returned to them possibly at Wilson Dam, or maybe some other source on our system.

By "Method of delivery" in the third column is set out the facilities in this particular case, rather than the city gate or some other location that we indicated on a previous exhibit. Most of these sources or method of delivery are from sources of primary stations to the customer, and the facilities involved. The point of delivery is also shown or we attempt to show there the substations or generating

points involved where they can be tied to it, or in the case of certain of the direct services at the customer's meter. The facilities listed here are not in all cases owned by the TVA. Where they are not owned by the TVA, in certain instances we have shown by the legend that they are owned by the Alabama Power Company. In other instances they are owned by The Tennessee Electric Power Company. Under method of delivery, it shows "A. P. Co.", which means Alabama Power Company. Down below in the third category is "T. E. P. Co.", which means Tennessee Electric Power Company. In cases where those designations do not appear and where the exhibit does not show otherwise, the TVA owns the facilities.

On some of these sheets in part 2, there are double asterisks; for example, in the column "Method of delivery" on sheet 9, we show Mississippi Power Company, and so forth, under temporary rural with a double asterisk. The double asterisk shows the property acquired from the Mis- [fol. 1700] sissippi Power Company under the contract of January 4, 1934. Referring to Defendants' Exhibit 137, you will note there have been changes in the sources or methods of delivery from year to year. However, the TVA took over certain of the power companies' lines and they showed at one time as being the methods or sources of delivery to the customers. Those lines were these 44 KV lines, or a line through Alabama to Burnsville and Corinth, and from Burnsville to Booneville, Mississippi; and also there were lines from Okolona into Tupelo. They are not shown on the exhibit for later years as the sources. The lines now shown here are being used only for secondary lines or back-up to some extent; that is, since the Commonwealth & Southern interchange was discontinued. I said primary source; there is no generation at Pickwick.

Examination by the Court:

On sheet 9, part 2, there is a similar set of double asterisks after Margerum, Alabama. That was acquired from the Alabama Power Company under contract of January 4th. It is true that the double asterisks apply only to acquirements from the Mississippi Power Company. Margerum is in Alabama, but that is an interconnection with the Mississippi Power Company.

Direct examination continued:

The single number symbol which I have used in the third column on sheet 12 shows property acquired from the Alabama Power Company under the contract of January 4, 1934. In the other exhibit showing the point of delivery, if it was a municipal operation, the point of delivery would be set at the city gate or substation, which we thought was definitely locating it sufficiently for that purpose. Now we are [fol. 1701] using the substation and facilities, or the facilities that are actually in use for delivery at or near the customer's service. Sheets 6, 7, and 8 under part 1 show the present status of the disposition of power in the year 1937 up to the 31st day of October. Sheets 15, 16 and 17 show, as of the same date, the source of the energy, method of delivery, and the point of delivery.

(Thereupon counsel for defendants offered the analysis in evidence as Defendants' Exhibit 147. Counsel for complainants objected to the introduction of the exhibit in so far as it relied upon evidence that had been the subject of complainants' previous objection which the Court had overruled. The objection was overruled, an exception was noted and the exhibit was received in evidence.)

"Q. My question is intended to relate, Mr. Karr, solely to the subject of secondary power, sales of secondary power. I am asking you with that in mind whether the contracts, the industrial contracts do contain a provision permitting discontinuance in low water season? If there is any doubt about it, I would like to have the complainants produce the contracts. They are in their custody and we can straighten it out.

* * * * * * *

Judge Allen: The Court thinks that the objection is well taken with reference to any interpretation of the contracts. So far as what the contracts do provide, we think that there ought not to be any question about what is in them, and that counsel ought to be able to tell us what they provide.

Mr. R. T. Jackson: There are none, and I have suggested for the convenience of everyone, and it seems this would permit us to make any correction necessary, if Mr. O'Brian will ask his witness what contracts he claims provide for interruption of secondary power. If that is accurate, when

we look at the contracts, we will raise no question, or if we find it is inaccurate, we will bring it to the attention of the Court.

• • • • • • •

Q. Mr. Karr, will you name the industrial contracts which permit the Authority to discontinue the sale of power, secondary power, in times of low water flow? Can you name those?

[fol. 1701a] Mr. R. T. Jackson: I wish it to be amended to say which the TVA claims.

Mr. O'Brian: Which the TVA claims it is permitted to discontinue."

The contracts with industrial customers which the TVA claims permit the TVA to discontinue sale of secondary power in times of low water flow are the contracts with Monsanto Chemical Company, Victor Chemical Company, Electro Metallurgical Company, and the Aluminum Company of America. In the event of a low water season in which there is not power enough available for all customers, the TVA claims that it is permitted to curtail delivery of secondary power to them. I am familiar with the method of handling commitments of secondary power and this is the customary method. Notice is required by these contracts before interrupting service. Each contract sets forth the method by which the notice should be given. It varies in length in different contracts from 5 to 21 days for the cut-off period. Notice is required to be given to the customer before resuming service. With respect to the purpose of those requirements for giving notice, both as to discontinuing and as to resuming deliveries, the major portion of these cus-[fol. 1702] tomers that I have mentioned have electric furnace operations involved which necessitate when possible a certain cooling down procedure. Further, they require a certain length of notice, or they think it advisable to give their employees a certain amount of notice before a lay-off takes place by such curtailment of power supply.

I don't think that it would be feasible for the TVA to sell this secondary power to municipalities for them to resell to large industrial customers. The reasons why are,

first of all, that you are injecting a third party into this case, which means that notice from us to the municipality and from the municipality to the ultimate consumer must be given. And in the case of disagreement between the ultimate consumer and the municipality, things might become very embarrassing if we found ourselves in a position of cutting off the municipality, and affecting their service in general, in order to meet our curtailments that would be required. Speaking of it in generic terms, secondary power is sold usually to fit the requirements of a customer according to the customer's particular needs. That is almost a custom-made product. The sale of secondary power under these contracts with the large industrial concerns which I have named materially increases TVA's output of energy during the periods that we have such type of power. The full name of Monsanto Chemical Company and the State of incorporation of the party which has been referred to in these exhibits as the Monsanto Chemical Company with whom the TVA made a contract on May 15, 1936, is The Monsanto Chemical Company of Delaware. The TVA has never had a contract with The Monsanto Chemical Company of Alabama.

[fol. 1703] The table (offered and received in evidence as Defendants' Exhibit 148) shows the use of Norris and Wheeler Dams for power supply to Commonwealth & Southern companies, from June through December, 1936. The last seven months of 1936 which are embraced in this exhibit were considered below normal as far as stream flow is concerned. The rainfall condition in that period was somewhat below normal over the entire Tennessee Valley watershed. We consider those seven months normally as the dry months of the year. The table purports to show the sales to the Commonwealth & Southern system over this dry period. The first line on this exhibit shows the net amount of power generated month by month at Wilson Dam. I have attempted to show in the next category the ability of Wilson Dam to generate with and without the use of storage releases from Norris Dam.

The net generation figure on this exhibit in September 1936 for Wilson Dam shows 81,574,275 kilowatt hours. That figure includes water released from Norris. Without Norris releases being used at Wilson, we estimate that we could only have generated 64,432,875 kilowatt hours. The amount of power sold in the month of September 1936 and as shown

by this exhibit to the Commonwealth & Southern companies was 88,520,774 kilowatt hours. To sum up, the sales to the Commonwealth & Southern companies exceeded the total amount generated at Wilson Dam and also exceeded by a large figure the total amount which could have been generated there without the Norris release. The months of August and November show a similar condition. That is to say, in each of these three months the Commonwealth & Southern companies purchased from the TVA a total amount of kilowatt hours substantially in excess of the amount actually generated at Wilson Dam, and an amount [fol. 1704] in a greater excess over what could have been generated if Wilson Dam had been operating without Norris regulation. The tabulations on this table do not show any reference to the use of Wilson Dam power by any other customer of the TVA, nor by the TVA for its own use.

With respect to the source of the power that other customers were buying at the same time from the TVA that these particular sales were being made to the Commonwealth & Southern companies, the deliveries of course came from the transmission system as a whole, but we did set up these figures here on the basis of showing Wilson Dam's ability to furnish all the Commonwealth & Southern requirements and give them first call on the Wilson Dam power. If it had been possible to make an apportionment of what we might call the Wilson Dam allocation to customers other than Commonwealth & Southern companies, it would show up a greater amount as shown on this statement. In my opinion this is a conservative estimate under those circumstances. On the basis of the figures shown, taking those three months for illustration, the Commonwealth & Southern system could not have secured all that power from the TVA in those three months from the Wheeler and Norris Dams, even if they had been sold all the power that Wilson Dam generated. That remaining power came from Norris Dam. That power was not going at that time (1936) to the Aluminum Company. We did not start to serve the Aluminum Company until July 1937. The power went to the Commonwealth & Southern companies.

The table (offered and received in evidence as Defendants' Exhibit 149) shows the hydro-system power data for the calendar years 1926 through 1937. It was prepared from records in my office for the years beginning 1933 at the [fol. 1705] time the TVA took over the operation of Wilson

Dam; and prior to that time from the records of the Army Engineers which they turned over to us upon taking over the operations. Referring to the second column under the heading "Kilowatt hours available", the figures are based upon the stream flows and generating capacities available. That is a computation for each year based on the actual stream flow and the actual generation. The third column sets out the kilowatt hours generated as shown by the record to which I referred. The fourth column is the difference between the kilowatt hours generated and those available, and as far as that column is concerned, the figures there shown represent stream flow which was not used for generation, and so far as power purposes are concerned might be regarded as wasted. The last column is the actual number of kilowatt hours sold.

I previously made the statement that sales of secondary power increased our output for sales to a considerable degree, if we were to make delivery to our customers of secondary power, and further it would tend to actually increase the load factor during these periods.

Cross-examination:

The title to Defendants' Exhibit 149 may be expressed either "Hydro power system data" as it is expressed, or "Hydro system power data". The difference between the second and fourth column on that exhibit may not be wholly explained by station use. The difference between the column headed "generated" and the other headed "sold" is not in substance represented by station use. In this particular case I think it is the station uses plus incidental losses due to transmission.

[fol. 1706] I was formerly with the Carolina Power & Light Company, but I did not have charge primarily of the engineering and construction departments. As to whether my duties were executive, I had supervision over those departments. I was also with the Detroit-Edison and the Kansas Gas & Electric Companies. Those Companies are primarily, if not wholly, steam companies. The major generation is steam. The Detroit-Edison is not all steam. It gets hydro power from the Huron River, Eastern Michigan Division, but they are very small plants.

I am head of the division of operations of TVA, a part of the Department of Operations. We have no electrical

department in the TVA to the best of my knowledge. They abolished the electrical department either in August or September of 1937. My superior is Mr. A. H. Sullivan who reports to Mr. John Blandford, our general manager. I am only part of what was the electrical department and I cannot say whether more than 1,000 men shown by earlier reports to be in the electrical department were laid off when the electrical department was abolished in 1937. To the best of my knowledge, there were none laid off in my division. Some of the men with whom I was affiliated in the electrical department were transferred to other departments with different names than the electrical department. In our supervision of operations, we have districts with district managers and division managers. They are located at various points in Tennessee, Alabama and Mississippi, but not, to the best of my knowledge, in any other states. I want to qualify that by stating that I am being questioned about some members of the Department of Operation that I do not have supervision over. The division managers report directly to Mr. Sullivan. They report to me functionally on transmission and distribution problems.

[fol. 1707] We have district headquarters in our operations. Before the change in name and the reorganization of the electrical department, we did not have division and district headquarters located at places such as Memphis. We have a division office at Memphis at the present time. As to whether those division and district offices in Tennessee, Alabama and Mississippi are engaged in sales promotion, organization and things of that character, I can not testify as to their activities in any promotional work of any kind. They do not report to me in that connection. They only report to me where they are in a district where lines and substations are involved, and where electrical operations are actually being carried on at the present time under my supervision. Those are the only matters they report to me on. As to any other matters, they report to Mr. Sullivan, who is their immediate superior. I know that the division managers have relations with the station officials and officials of the cooperatives where we render service. As to whether they constantly advise with the offices of cooperatives and station officials, I don't know about constantly. I assume that they make many contacts with the customers.

The annual hourly peak demand of the TVA in 1937 was in the order of 137,000 or 138,000 kw. That was the total

demand of both firm and secondary power. I could not give the figure for the maximum one-hour peak demand for firm power for 1937. It would be considerably less. I gave the total demand for the year 1937, which would include secondary power. The peak demand for both firm and secondary power was in December of 1937. I could not say definitely that that is the usual month of peak demand in this area, because I have not made studies of the time of the adjoining [fol. 1708] utilities' peaks, but it is not out of the ordinary to have a peak on a system occur in December. I am not specifically stating whether that is so as to the territory.

As to whether I do not know that our peak firm demand in 1937 did not exceed 75,000 kw., I have not made a study as to what our actual firm demand was in 1937, nor have I made calculations of the firm capacity of the TVA hydro power system at the end of 1937. I have made no comparison of the relation between the firm demand of the TVA hydro power system based on 1937 and the firm power capacity of that system. The first figure in the last column of Defendants' Exhibit 141 shows the estimated firm power capacity to be 258,000 kilowatts. I do not even know the source of that information. I did not have anything to do with it, and do not know anything about it. I have not sufficient familiarity with the system to question its correctness. I have no familiarity with the system whatever in that respect.

If we had maximum firm demand of 75,000 kilowatts and a firm power capacity of 258,000 kilowatts, that would mean that our system was very much underloaded. If we had a system underloaded to that extent, we would not have any trouble as to operation and release of waters involved, because our surplus capacity would be so very much greater than our firm demand. We would not have any trouble in getting sufficient water for generation. It would not require the close, prudent management of water releases and of dispatching which would be required if we had a system that was fully loaded.

I have testified in connection with Defendants' Exhibit 142, which shows total discharges below the dams of Norris, Wheeler and Wilson, and some additional information, that Mr. Woodward gave me instructions with reference to the [fol. 1709] release of water. I said that generally those instructions were in writing. Bulletin 1 and bulletin 2 attached to Defendants' Exhibit 65 are the original instruc-

tions which were used by Mr. Woodward. They are not the only written instructions which I have ever received from Mr. Woodward. I received written instructions from time to time. I could not state how often those written instructions were given to me on the average, but I would answer "frequently". I would not say it averaged once a week, but I think it would average at least once a month. I believe that the bulletins annexed to Defendants' Exhibit 65 were the first bulletins issued, to the best of my knowledge. I had been operating the plants at that time, and since March 7, 1936. However, there were no dams involved, other than Wilson, at that time.

Referring back to the fourth column headed "Kilowatt hours not used" on Defendants' Exhibit 149, there were that many kilowatt hours wasted by way of water because TVA had no market for the power.

Examination by the Court:

Those kilowatt hours were not generated. That is expressed in terms of water that was lost. It is a loss of water, not of actual energy.

Cross-examination continued:

Referring to the column headed "Estimated discharge available for generation" on Defendants' Exhibit 142, that does not mean that none of that ran through the generators. The generation is a part of the available.

[fol. 1710] The third column under the heading "Wheeler Dam" on sheet 1 of Defendants' Exhibit 142 shows the percentage of the total discharge at Wheeler Dam that could have been used by the generators in Wheeler Dam. At the opening of 1937, there was one generator at Wheeler Dam and sometime during 1937 a second generator was put in. If there had been no generators in Wheeler Dam during 1937, we could not have used any of the flow for generating purposes. To the best of my knowledge, the ultimate installation which is now planned at Wheeler Dam is 4 units. Defendants' Exhibit 142 shows a condition at the beginning of 1937 with only one unit and the condition later on in 1937, towards the end, of only two units. I would not say definitely that if there were four units installed there, as is ultimately planned in accordance with the present report to Congress, there could have been twice as much in percent-

age, and absolutely I presume, of water used through the generators at Wheeler Dam. Even if they were the same size generators, it would depend on whether there was enough water at all times to operate. There would not have been enough water, say in August, with 81.81 per cent; and if we had utilized less generating capacity, it would take less water to operate it. There would be a period in the year when there would be insufficient water at Wheeler Dam under the conditions shown on Defendants' Exhibit 142 to operate four generators. Then, of course, there would be flood time in the spring when there would be more than enough to operate even four generators. That is the time when hydro-electric plants produce what is commonly called dump power. That would be purely dump power under those conditions. Ordinarily it is the case that in the construction of hydro-electric plants for public utility service, the practice involves the installation of generating machines [fol. 1711] that will utilize more than the low flow but less than the flood flows of the stream. That would be the situation that would exist at Wheeler Dam when the four generators are installed, if they are installed, under conditions of water flow which I have shown on sheet 1 of Defendants' Exhibit 142.

I have just said that the Wheeler Dam installation at the beginning of 1937 was one-fourth of the designated ultimate installation of the power plant. Later it was one-half. As to whether it is a fact that if Hales Bar, which long ago was completed, had had only half of its generating facilities installed so as to make it in a comparable situation with Wheeler Dam, it would have been capable of using only a smaller percentage of the stream flow shown by me on Defendants' Exhibit 142 than was Wheeler with one-half of its installation, I am not familiar enough with Hales Bar to make that statement, not knowing the exact water conditions at Hales Bar from day to day. I am familiar enough with Hales Bar to think that that is a reasonable statement, provided that there were times when there was more than ample water for generating at Hales Bar at full capacity. As to whether Hales Bar is a typical power operation I have never been at Hales Bar. I couldn't even tell you the capacity installed at Hales Bar. I am aware of the fact that there is a hydro-electric plant there operated by a public utility for the purpose of producing power for sale as a

public utility but I don't know the installed capacity at Hales Bar.

Referring to sheet 3 of Defendants' Exhibit 142, and looking again at Wheeler Dam, I show the percentages of Norris storage releases used for generation and also give a similar figure for Wilson Dam. In 1936 I show no percentage of Norris storage release, used at Wheeler and Wilson Dams. [fol. 1712] That is because the flow otherwise available in the river was more than sufficient to operate the generating capacity to the extent that it was installed and operated in Wheeler Dam during that period. It started in operation in November and we could not use any part of that release prior to that time. The TVA fulfilled all demands that it had for firm power during the period covered by this exhibit. If we had had a larger market for the sale of power, we could have used a greater amount of the releases from Norris for the generation of power to the extent of our generating facilities in order to supply that market as shown in the previous exhibit—that is, if we had had a market for the power. If we had generating capacity installed in our down-stream dams sufficient to use the water, we could have used as much, and if possible, all of the releases from Norris for the generation of power to supply that market. Sheet 3 of Defendants' Exhibit 142, showing that very little of Norris Dam releases was made for generation of power at Wheeler, means nothing more than that at that time we did not have sufficient market,—or in one case, any generating facilities, —so that we could utilize that water for the generation of power. When and if the TVA takes from these complainants or others a sufficient market to utilize the releases of water from Norris Dam for the generation of power at down-stream power plants, I would not wish to be understood as testifying that that water would be run through the downstream plants without being utilized to generate power. It would not be if I could help it.

Referring again to sheet 3 of Defendants' Exhibit 142, I have shown in the right-hand side data on Wilson Dam and the percentage of Norris storage release used for generation, and in 1936 I show that approximately 80 per cent on [fol. 1713] the average was utilized at Wilson Dam. When we utilized less than 100 per cent, that was because we did not have enough market or enough generating capacity to utilize the additional water. It is one or the other. The generating capacity installed at Wilson Dam at the present

time is 184,000 kilowatts. I have not seen the reports to Congress and do not know whether there are contemplated increases in that installation up to 640,000 kilowatts. I do not know anything about whether large increases are contemplated.

When I come to 1937 for Wilson Dam, I show zero per cent of Norris releases utilized for the generation of power. That again does not mean anything except that we did not have a market to sell the power that we could have generated at Wilson Dam through the use of Norris releases.

There are reasonable sized blocks of firm power that the TVA is committed to serve under existing contracts and is not yet serving. We hold contracts with Memphis, Chattanooga and Knoxville which will be firm power contracts. I stated the other day that we claimed the right to cut off certain of the power which we were obligated to supply under contracts with certain large industrial corporations. Those contracts also provide or obligate the TVA to supply blocks of firm power. I have no right to cut those off. Those contracts extend for 20 years.

Our contract with the Aluminum Company states that TVA must give 21 days notice of any intention to interrupt secondary power. There is another secondary block of power that only requires 14 days notice. Our contracts with Victor Chemical Works and Electro-Metallurgical Works contain provisions requiring 14 days notice. That means that there is at least one block of secondary power which we could not cut off except on 21 days notice in the case of the Aluminum Company. If we got a bulletin from Mr. [fol. 1714] Woodward telling us to shut off the flow at the power plants of the TVA for flood control or some other reason, we could not carry it out for 21 days. I would consult with Mr. Woodward about what orders should be made in regard to releasing the water in the light of our contract for power and our right to interrupt it. I would attempt to prevail upon Mr. Woodward to arrange the release so that it would keep our contract commitments covered. I would certainly attempt to consult with him.

The contract of the TVA with the Arkansas Power & Light Company contains among other things the following provision:

"Advance Schedule of Loads. Arkansas Company's system operator shall furnish to Authority's system operator

by mail, at intervals of not less than two weeks, a schedule, by days and hours, showing Arkansas Company's expectant use of Authority's service for four weeks ahead, such schedule to be solely for the convenience of Authority's system operator and not to constitute a commitment by Arkansas Company."

When it refers to the convenience of the Authority's system operator, that is Mr. Almon. He is under my direction and jurisdiction. His convenience is in arranging for the production of power in accordance with the requirements of the various demands which the TVA is undertaking to fulfill. In order to do that, Mr. Almon has entire charge of the load dispatchers. He must not necessarily determine where the power must be produced, but he must make sure that the system is so arranged that it will have the power wherever we may have it. He must attempt to be sure that there will be enough power to supply the demands. If the system is fully loaded, that will require a schedule of releases of water at the various hydroelectric plants making up the system; but that has not been the case as yet. That is because we have a very greatly under- [fol. 1715] loaded system, but when we have a fully loaded system, then practical and prudent operations require prudent and careful scheduling of the releases of water from all of the plants available so as to supply the system load curve. This provision looks among other things, to assisting the TVA system operator in scheduling his operations so as to meet the TVA load curve when and as it develops. That will be necessary for us to attempt. We will attempt to get the releases arranged through Mr. Woodward to provide for the scheduling of the releases of water from various hydro plants that are available to the system to supply its demands. There must be water released in some manner or other to provide for the power commitments. In some manner or other it must provide releases which will result in a supply of power that will meet the system load curve.

In the case of a combined steam and hydro system, it is the common practice for the steam plants to be started up during low-water seasons in order to supplement the hydro system. That does not impose quite as severe a problem with reference to water releases as though the system were entirely hydro and on the same water-shed. Provided we begin to run short of water, it is necessary to back it up

with steam. You can use that system generally within certain limits so as to make what might be called a much looser situation for the operation of the hydro system. It could be more loose if you want to use the steam plant. If the system is entirely hydro, located on a single water-shed, that is not a means of relief that is open to you, and it would be less flexible than with steam.

If some unpredictable trouble occurs at one of our hydro plants and results in the outage of that plant, the action of the water-wheel governors in the remaining plants would [fol. 1716] automatically and within a few seconds take up the load power formerly carried by the plant suddenly placed out of operation. This would result in reducing the water release by the amount formerly passing through the water-wheels at the plant which failed, and at the same time increase the releases at all the other plants which pick up the load that was carried by the plant that failed. There has never been a definite order that in such a case our dispatchers should curtail the power supply to our customers by reducing the loads and the water releases at the remaining plants to their former values and immediately restore the water released at the plant which failed to the flow previously existing by operating the sluice gates for spillways. However, we would attempt to make adjustments in releases as rapidly as possible to get back to the schedule, or within the limits which we are given to operate. If, for instance, we were supplying the City of Memphis and the limited instructions given to us for operation were such that we either had to violate those instructions or to leave Memphis in darkness, and if Mr. Woodward or his office would not permit us to change our releases, I am afraid that if we were pressed, some one would have to go without power temporarily, and our contracts provide for breakdowns and similar conditions. Our firm power contracts with cities like Chattanooga, Memphis and Knoxville, do not contemplate the possibility of leaving the cities in darkness or without electric service for a period of time, but if the disaster was great enough our contracts cover those situations. In case of a major failure of high voltage intertie transmission lines connecting one of our plants in our system and carrying a substantial amount of load, the rest of our plants would have to take up the load automatically, [fol. 1717] providing there was no other source or tie be-

tween that generating system that is in trouble and other generating stations.

We supplied a large block of power to the Aluminum Company in December 1937, because they had trouble at Alcoa. That was around 50,000 kilowatts and was at the time when we had our peak. I stated in my affidavit which was made and filed December 11, 1936, in this case, in paragraph 4, that: "The amount of power that is now being sold to customers of the Authority other than the power companies is approximately 22,500 kilowatts." Then I say: "The entire sales of power by the Authority, exclusive of power sold to complaining power companies will not be in excess of 37,000 kilowatts at any time before May 1, 1937." That was an estimate. I think it proved to be fairly accurate. I testified yesterday that I had never requested Mr. Woodward to change any of the instructions which he had issued. By testifying that I had not consulted with Mr. Woodward in regard to any matters except on one or more occasions when some one desired to arrange a test of certain generators, I did not mean to convey that I had never discussed various problems with him. I have never conferred with him about the power requirements. That affidavit of mine also showed an estimate that the kilowatt sales to customers, exclusive of any that might be made to power companies, would be approximately 35,500 kilowatts up to January 1, 1938. In making that estimate, I think we were over the demand.

In a large, reasonably well-loaded utility system obtaining its power from hydro plants, the normal load curve varies from hour to hour. I anticipate that that would be the characteristics of a load curve of a utility in an area such as that where the TVA gives service. The operation [fol. 1718] of a public utility system to meet such a load curve requires hourly adjustments of generating plants; every change in load, so to speak. If your supply is wholly hydro, it requires hourly changes in the water releases at some of the plants. That is, it changes the procedure at the plant. If you are supposed to maintain a constant release below your dams, within certain limits, then you must make adjustments or corrections in gates to make up for the changes in turbine discharges. Whether or not if I did that during the low-water season, I would maintain a con-

stant flow, would depend on my instructions. If I did undertake to maintain a constant flow below all of a system of hydro dams during the low water season, I would anticipate that I would very substantially decrease the firm power capacity of that system. There would be a large part of the time when our typical load curve would require a much smaller amount of water supply than during the peak. If we are fixed with a given flow through the gates, that flow would have to be large enough to meet the daily peak. If you were going to meet that constant flow so as to meet the daily peak, it would mean that you would waste the difference in the water from the standpoint of firm power except for the peak hour of the day. I presume that that would be very substantial on the ordinary load curve if there were no limits. On the basis stated, that would be true.

In the case of the construction requirements of power at Guntersville, we had something on the order of 6500 kilowatts total demand on that project. To the best of my knowledge, the construction requirements at Guntersville, Chickamauga and Norris varied, and I could not state that they would probably run around 4,000 kilowatts each. Some have been slightly over that; some have been under that. I would not say that 4,000 kilowatts was a fair average figure. I am not familiar enough with their equipment. The latest report to Congress—the Hearings for 1939—[fol. 1719] (which appears in the record as Defendants' Exhibit 153)—shows an annual requirement for construction purposes of about 20,000 kilowatts. In my judgment that is a high estimate.

I could not tell what is the firm capacity of Wilson Dam at a 60 per cent load factor. I stated yesterday I had not figured out the firm capacity at Wilson on any basis as yet other than some preliminary figures for 1936. I have not made any calculations for 1937 or 1938. As to how I know that we can supply our firm power requirements if I do not know the firm power capacity of our plants available to us, I will say that if I were merely required to give an estimate, that would be a different problem; but with the flows fixed as they are now for navigation, I am not worrying about our commitments for some time to come. Our commitments are not large enough so that I am not having to worry about the power end of it right at the present time. It is true that at least some part of the power for construc-

tion of Norris Dam was supplied by an interchange arrangement with The Tennessee Electric Power Company. A similar interchange arrangement was made for construction purposes with the Alabama Power Company for Guntersville. Wheeler has been served from Wilson, but I could not say for sure that that was true about the very beginning. I understood that the transmission line from Wilson to Wheeler was constructed prior to the commencement of construction of Wheeler Dam. Power was also supplied at Chickamauga Dam by interchange agreement with The Tennessee Electric Power Company up until a short time ago. That was not also true of Pickwick Landing, which has been served from Wilson.

I do not know what is included in "minimum reserve" in the table on page 1000 of this year's Hearings on the TVA [fol. 1720] appropriations (Defendants' Exhibit 153). I have not seen any plan set up as to outages of units for purposes of minimum reserve so far as the TVA is concerned. I do not know what is meant by the note at the bottom of the table showing "40,000 kilowatts under contract as available". I have not been furnished with any rule curves for the operation of these reservoirs.

We do not list the Volunteer Portland Cement Company among the industrials, because we have assigned that to the City of Knoxville. That is a contract for firm power.

The power at Wilson Dam was at all times sufficient to supply all of the demands for power for construction being carried on by the TVA, if we had had interties of lines to the construction projects. We have already stated that we had interchange agreements with the existing utilities to supply power for construction. I do not presume they could install the power generating facilities at the dam under construction until it was completed. That power at Wilson would have been more than enough to supply all lockage requirements. We have three stand-by steam plants under my jurisdiction. Two of them are very small stations and the third one is the Sheffield steam plant, located at Wilson Dam. One of the small stations is at Corinth and one at Tupelo, Mississippi. The large one at Sheffield is on the reservation at Wilson Dam. That plant is in condition to operate.

The TVA does not operate the lines of the cooperatives. I most assuredly think that they now have independent

operating forces. We have no understanding with the cooperatives to help them restore service on lines when they are in trouble due to outages or from other trouble. To the best of my knowledge we do not. I am head of the de-
[fol. 1721] partment that has charge of that. The TVA, under the direct charge of Mr. Sullivan, did go to Tupelo and restore its system and the TVA was paid for that. In the instances that we have assisted a cooperative, we have been paid for that service.

The Lauderdale Cooperative is in the vicinity of Florence and Wilson Dam. That is quite a good sized operation for a rural line with something like 800 customers.

Examination by the Court:

This is not a dollar a year service. We are paid for these services and have been paid for these services from time to time our exact expenses, plus the customary overheads.

Cross-examination continued:

That is not necessarily a recent change in our method of operation, but we have not been called upon here recently to the best of my knowledge. We show the Lauderdale County item on Sheet 4 of Defendants' Exhibit 147 as "temporary rural", with 885 customers. There were a great many of those lines in Lauderdale County that were taken over from the Alabama Power Company. However, the TVA has constructed a considerable number of miles of line in Lauderdale County. The 160 customers shown on the first sheet were previously served directly by the Alabama Power Company. We have enlarged the mileage, and taken on more customers. We have attempted to develop that system. I presume, according to this, that we have been operating that system as a direct retail operation for about four years and we are still operating that as a di-
[fol. 1722] rect retail operation. The direct retail operation near Muscle Shoals was also included. We have some 2000 or more direct retail customers in the two areas that were mentioned; that is, the Norris Dam area and the Wilson Dam area. That included customers living on the reservation and in the adjacent territory. Referring to the direct retail operation shown on Defendants' Exhibit 136 B, which is the largest operation shown on that map, we are operating in two counties direct. That is the area

shown with the brown or yellow line. In the northwest corner of Alabama are Lauderdale and Colbert counties, shown as temporary rural. We also have Colbert County there which has been in operation directly for four years and is still in direct operation. I have no contract indicating the disposal of those properties and I am not in position to know whether they are negotiating for their disposal or not.

Referring to sheet 15 of Defendants' Exhibit 147, we show there the Rockwood, Alabama Stone Company. I would have to refer to the contract to make sure whether it is to supply a stone cutting company operation at a particular location. I haven't the record here to answer whether we have a second contract with the Rockwood, Alabama Stone Company for serving its quarry at Adair as an entirely different operation. I cannot state as to whether we have one at a different location. I do not have anything to do with the negotiation of those contracts. The reference to the Rockwood, Alabama Stone Company is clear on sheet 2 of Defendants' Exhibit 143.

I could not say for sure that the operation of the Rockwood Alabama Stone Company shown on sheet 2 of Defendants' Exhibit 143 is a stone cutting plant. I don't know. I don't know whether it is a quarry operation or what it is. I know approximately where it is located. It is close to Russellville, Alabama.

[fol. 1723] I was asked a series of questions on direct examination relative to whether or not the power contract of the Monsanto Chemical Company with the TVA was with the Monsanto Chemical Company of Delaware and I said that it was. I investigated that merely by the contract which I have in my possession. I couldn't say whether it is a fact that on May 15, 1936, the date of this power contract, the Monsanto Chemical Company of Delaware was qualified to and was doing business in Alabama. I don't know that, nor do I know whether on the same date the Monsanto Chemical Company of Alabama was qualified for and doing business in Tennessee. As to whether it is a fact that the Monsanto Chemical Company of Alabama is a wholly owned subsidiary of the Monsanto Chemical Company of Delaware, I have not investigated that. I have not looked into it sufficiently to say whether these corporate

entities are run by the same officers and the same management. I don't know that whether prior to and on May 15, 1936, the date of this contract, all elemental phosphorous produced by the Monsanto Chemical Company of Delaware or Alabama was produced by the electric furnaces at Anniston, with power purchased from the Alabama Power Company. I don't know that coincident with the building of the phosphorous production by electric furnace operation with TVA at Columbia, Tennessee, by Monsanto Chemical Company, the phosphorous production at Anniston was curtailed. I am not aware that when the Columbia furnaces were brought up to capacity the production at Anniston was entirely displaced. I don't know anything about that. I think there have been estimates of the kilowatt sales to [fol. 1724] Monsanto at Columbia, but I could not say for sure what they are. I would anticipate them to be very large. When I gave some figures of about 800 kilowatts to Monsanto, that was during the construction period. We had committed ourselves to serve Monsanto in large blocks when construction was completed. That was true under the contract then in existence.

(The documents consisting of nine water control bulletins, the last being dated June 28, 1933, which had been produced by the defendants, were offered and received in evidence as Complainants' Exhibit 923, and the documents consisting of water control memoranda Nos. 1 to 24 inclusive, the first being dated July 27, 1937 and the last being dated December 31, 1937, which had been produced by the defendants, were offered and received in evidence as Complainants' Exhibit 924.)

I don't know whether the customers served directly by TVA are served on established rate schedules. I have nothing to do with the rate schedules, we are dealing with the customers as a whole. I have nothing to do with the schedules under which they are served, or how they are served, except for operations.

No departments are set up definitely in my division of power operations other than system operation plants, that is, generating plants and transmission and distribution. My department is included in the larger department of operations. Mr. A. H. Sullivan is head of the department of operations and under him comes the administrative office. Then there is a division of engineering and construction

headed by Mr. W. W. Woodruff; the division operations headed by various division managers; and the division for promotion, headed by Mr. H. A. Warner. A certain amount of the promotional work comes under Mr. Warner. I do not know definitely under whom the other promotional work comes.

[fol. 1725] Redirect examination:

"Q. Mr. Karr, I have just a few questions which were brought out by the cross examination. In reply to one of Mr. Jackson's questions, Mr. Karr, I understood you to say that to meet a system load curve, to meet the requirements of the system load curve, water must be released as necessary to meet the requirements of the load curve from time to time. Now, I wish to ask you whether in saying that it must be released you meant that in your case it must be released regardless of the instructions given you by the water control division?

Mr. R. T. Jackson: I object to that question, I don't think it is proper. All I asked him was whether to meet the load curves they had to have releases of water.

Judge Allen: Objection overruled, he may answer.

Mr. R. T. Jackson: Exception.

A. I think I qualified that statement when I made it. The water to meet load requirements must be released, but we have certain limits to operate under. Under our instructions, we do have a slight leeway, primarily in connection with maintaining certain river stages for navigation and flood control."

On cross examination, I was asked whether, if there was a breakdown of one particular unit that went out of operation and the load would have to be taken up by the other generating units either there or elsewhere in the system, it would not be necessary to adjust the releases for the other remaining units so they could pick up the load, and I said it would be. By releases I meant releases for our turbines. We would only be permitted to adjust the releases as a whole as far as our instructions were concerned from the water control division. The water control planning division fixes the limits of our discharges from a particular dam. When I speak of adjustments of releases made

by my particular division for power requirements, those adjustments have always been made within the limits of the [fol. 1726] discharges fixed by the water control division. I was also asked whether in the event Mr. Woodward should issue an order to shut off all flow I would be able to carry out the contracts which require notice before cutting off the power. Upon getting orders from Mr. Woodward, if it was to the extent that it did conflict with our commitments under power contracts, I would first call the matter to Mr. Woodward's attention and see if he could not make such adjustments as would accommodate them, and then if he could not, there would be nothing else for me to do but curtail power.

I also testified on this same subject of what would happen in a breakdown situation. Certain of the contracts contain clauses which have special provisions relating to contingencies arising from floods, which would excuse an interruption of service.

Examination by the Court:

As to whether in the event of failure to produce the required amount to supply our contractors from the hydro plants we have any auxiliary plants of any kind to fall back on, I don't know whether there are any other plants, such as steam plants, contemplated or not. There are none in operation to the best of my knowledge. I might explain in that connection that we do have emergency agreements with some of our customers that they will supply us up to their full facilities in case we have a serious breakdown in our system. That is direct customers who have plants of their own and buy our power in addition to what they produce themselves.

[fol. 1727] In addition to the water control bulletins which have been put in evidence, we also receive oral advice and instructions from the water control division frequently during flood seasons, that is, when the rivers are in flood stage. For example, during the great flood beginning in December, 1936, and running over through January, 1937, all instructions at that time were oral. There were certain days when we were getting them almost hourly, and we never missed daily communication. There is a gap in the specific written instructions during that particular period, during which all the operations were carried on through oral instructions.

With reference to the difference between the estimates which I made in my written affidavit offered earlier in the trial, of power sales to customers who were then under contract and my recent peak sales, the estimate in my affidavit was estimated on the basis of existing contracts.

Defendants' Exhibit 142 shows that there were substantial releases of water over and above that required for generation.

I stated on cross-examination that certain industrial contracts were for a term of 20 years. The special contracts with the Aluminum Company and the Arkansas Power & Light Company are for less than 20 years.

Referring to the 160 customers in Lauderdale County, shown on sheet 2 of Defendants' Exhibit 147, I testified that they were Alabama Power Company customers transferred to the TVA and made a misstatement there. The Alabama Power Company properties were transferred to the TVA in 1936 and this was 1934 that we were referring to. Those particular customers were not customers transferred at that time by the Alabama Power Company. They were not [fol. 1728] treated as customers of the Alabama Power Company. Those customers in Lauderdale County are part of the 2000 customers who were located in the immediate vicinity of Wilson Dam, on government reservations and on rural lines running out of those reservations. They are part of the customers that were mentioned.

Recross-examination:

I said that the TVA had some interchange agreement, or something with customers or companies. Those are embodied in the contracts which are in evidence in this case. Any interchange agreements we have will be found in those contracts. Even as to firm power, in cases of certain emergencies and floods, we would be permitted to interrupt power under some of the contracts and not be held liable if there was an interruption of service in a case such as an act of God.

Redirect examination:

I was asked about certain work done at Tupelo by the TVA. As to the circumstances which brought TVA into that situation, to my knowledge there was a severe cyclone which

struck Tupelo in the early part of April, 1936. I say it was a severe cyclone, because I have been in the country where they have cyclones, and I never saw as much damage done in any one place as was done at Tupelo, and we assisted them at that time on their call. They called us in to help them out in repairing the lines.

(The witness was excused.)

"Mr. Fitts: At this time I would like to offer in evidence as defendants' exhibit No. 150 the stipulation of the parties with respect to purchases of power by the complainant com- [fol. 1729] panies under the contract of January 4, 1934. I would like to say in that connection that Mr. Jackson asked me the question yesterday as to whether the examination of Mr. Karr was intended in any way to vary from or contradict the stipulation, and it simply seemed to me that in order to make it perfectly clear and to complete the record on the subject, since there is testimony in the record on it, we ought to put in the agreement of the parties on the subject, and I offer it for that purpose.

Mr. R. T. Jackson: We object to that as incompetent, irrelevant and immaterial. It is on the question of estoppel that was up yesterday and we agreed or stipulated as to the facts, as to what power was taken, and all that sort of thing. It is the same sort of thing that was sought to be proved yesterday.

Judge Allen: If this bears only on the question of estoppel the objection will be sustained.

Mr. Fitts: I am not willing to concede that. There is quite another question and that is this, it has been strenuously contended throughout this case that there is no place for power that is going to be generated at these Government dams to go; there is no need for it, in other words. That it is going to be thrown onto an already glutted market. Now, it seems to me that the fact that these private utilities have found it desirable and in fact necessary, we might assume, to purchase this power in low water seasons particularly, when they haven't got enough at their own plants, is very material on that proposition.

Mr. R. T. Jackson: We continue our objection and do not agree with counsel's statement with reference to the purchase. It is not a question of necessity, it is a question of——

Mr. Fitts: The fact that purchases were made, it seems to me to be at least relevant on the question of whether there is an over supply on these systems.

Mr. R. T. Jackson: I don't think that is so. You have heard of nuisance values, Mr. Fitts.

Mr. Fitts: It seems to me it is always a pretty good inference when a man says, 'I have got too much of something' and then goes out and buys it from somebody else, it is a pretty good inference that he hasn't got too much of it.

Judge Allen: Just a moment, please. May we confer?

[fol. 1730] Judge Gore: If we understand you, Mr. Fitts, you claim that this has a bearing upon the question of adequacy of these facilities of the complainant companies?

Mr. Fitts: I would not put it that way, your Honor. I think there are two separate questions. I think there has been some confusion about our purpose in producing any evidence on that subject. We are not interested in this case, legally, as I see it, in whether or not the complainant companies have done a good job or whether they have had prudent management. But there may be an interest in whether or not there is any need for this additional power that is being generated here; whether there is any place for it to go. And I think that the showing that there have been large purchases of power by these companies, over this period of time, is relevant on that question as to whether or not there is any place for this power to go, and whether there is any need for it; in other words, whether their systems are overloaded with surplus generating capacity to such an extent that if you throw this power on the market there is no place for it to go.

Judge Martin: After all, Brother Fitts, isn't that the question of adequacy, which was the question asked by Judge Gore?

Mr. Fitts: I think it is a different angle of the question, because I don't want to be understood here as making any point on whether or not the complainant companies as they now stand, are rendering adequate service. I don't think that is material. The question is whether or not in the reasonable future there is to be a need for additional generating capacity in this area, if that itself is relevant. The complainants have raised it. I doubt it myself.

Mr. R. T. Jackson: If the Court please, I want to say this, the facts about this, if it is material, to be received in evi-

dence, along the line offered by Mr. Fitts, or suggested by Mr. Fitts, requires us to offer proof to show, I think the following things: First, this power which was purchased was used only as steam replacement at the request of the Government. And we had at all times generating capacity more than enough to supply our needs. We bought it in part, frankly, as the Court would realize, for its nuisance value, because——

Mr. Fitts: I object to this statement unless it is an offer to prove. I don't know what it is. Are you testifying or what?

[fol. 1731] Mr. R. T. Jackson: I am stating what I think we would have to go into.

Judge Gore: He is answering your statement, I think.

Mr. Fitts: He is stating what the facts are, he is not stating what a legal theory is. He is stating facts. I was stating what I considered the relevancy of this testimony. He is stating facts that ought to be presented in this record by witnesses.

Judge Gore: Unless he is sworn and takes the witness stand, I don't think we are going to consider him as a witness.

Judge Allen: Finish your statement, Mr. Jackson.

Mr. R. T. Jackson: We were confronted with a situation and not a theory, and we purchased for nuisance value. We can prove, if it is material, not only that we had adequate facilities to produce all of the power that we were purchasing from the Government, and that was long before TVA, as the Court knows, but we can produce evidence to show that we could produce it cheaper than this incremental power. I think that it is irrelevant, incompetent and immaterial, and if it goes into evidence, I think we are confronted with the necessity of explaining those facts.

Mr. Fitts: To borrow Mr. Jackson's expression, I am not intimadated by the threat of additional evidence. The Court will rule on that when it is presented.

They have agreed that the facts stated are correct.

Judge Martin: We would not be drawn into immaterial issues.

Judge Allen: This is your stipulation, Mr. Jackson.

Mr. R. T. Jackson: What is it, if the Court please?

Judge Allen: This is your stipulation?

Mr. R. T. Jackson: Yes. We do not in any way contest the facts, of course, that are set out in that stipulation.

Judge Allen: Yes. You stipulate that these tables correctly set forth the facts. The Court receives this exhibit in evidence. It will not consider it in connection with any question of estoppel, which the Court has ruled out of this case. It will consider it in connection with the matters stated by Mr. Fitts.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: Yes, you may have."

[fol. 1732] James S. Bowman was recalled as a witness on behalf of the defendants and, having been previously sworn, was examined and testified further as follows:

Direct examination:

There are a few questions and answers in my previous testimony which I think ought to be clarified or amplified in order to avoid misleading the Court as to what I meant to say there. From the individual questions asked me I was thinking that counsel for complainants wanted actual rules for the operation of the reservoirs. Then when I got the transcript and read over the questions in toto it appeared that counsel for complainants might also have had in mind any studies which we have made on that. My answer was correct in that the power section had set up no actual rules of operation for the reservoirs, but they had made a great number of studies of the sort mentioned, of which I was aware, and some of which I had supervised at one time. That is as to malaria control. I am making a distinction between studies and actually setting up rules to govern the operation. There is an error in the tabular statement, Defendants' Exhibit 45, which was produced by me during my prior examination, relating to Guntersville project. There is a slight error given in the capacity of the units in lines 14 and 15. I gave it as 25,000 kilowatts. As a matter of fact, the way the specifications finally went out, which I had not checked up on, it was 24,000 kilowatts.

The table (offered and received in evidence as Defendants' Exhibit 45-A) has been prepared to correct that error.

There is also an error in lines 14 and 15 of Defendants' Exhibit 46, which is a tabular statement relating to the Chickamauga project which was produced by me during my

prior examination. The capacity of the generators should [fol. 1733] be 27,000 kilowatts instead of 25,000 kilowatts. I might say that this discrepancy came about because there was a considerable difference of opinion as to whether the turbines on those projects should be made the same physical size, or the generators should be made the same physical size. In my set-up I had the generators the same physical size, and it was later determined, for various reasons, to make the turbines the same physical size, which made a slight spread in the size of the generators, reduced the size of one and increased the size of the other. The table (offered and received in evidence as Defendants' Exhibit 46-A) has been prepared to correct that error.

We have studied all of the sites of the main stream of the Tennessee River for dams and reservoirs that will provide a 9-foot channel and control floods on the Tennessee River and reduce the contribution of the Tennessee to the Mississippi River. We are still studying three sites, Gilbertsville, Watts Bar and Coulter Shoals. These are for the purpose primarily of obtaining a 9-foot navigable channel with minimum over-depth of two feet and for obtaining as much flood control as we feasibly could. The Norris site had already been fixed at the time I came with the TVA and started my investigations. I made studies of the Hiwassee site. We have made some reconnaissance investigations of other possible sites on the tributaries, but so far we have made no detailed investigation of those sites.

"Q. From the studies you have made are you able to say whether or not there are also valuable waterpower resources available at these navigation and flood control sites which you have named?

Mr. R. T. Jackson: I object to his giving any testimony about navigation sites, because he is not qualified.

Mr. Fitts: If that objection is seriously made, I will ask Mr. Bowman to state to the Court the nature of his work in detail, since he has been with the TVA during the past three and a half or four years, as to how it relates to navigation problems and navigation conditions on the Tennessee River."

[fol. 1734] Very shortly after I came with the TVA, I started to make studies, and I believe the first man who came with me was Mr. C. T. Barker, in charge of the navigation

section of my division. He has worked continuously in that work ever since, and we are studying very intensively the prospect for navigation on the Tennessee River and the proper sequence for obtaining that navigation. We worked very closely with the Army Engineers through those years on locks, marking of navigation, dredging, and various navigation operations. I was actually the man in charge of the part of the work to determine the design and lay-out of the main stream projects, as well as the tributary projects, after I arrived. Mr. Barker was working under my supervision and direction specifically on navigation problems. Since last June, I have had charge of the project planning solely. Before that I had charge of all system investigations, but I no longer have that, so Mr. Barker is not under my supervision in navigation planning. However, I now have the navigation operation section which is charged with seeing that all of the navigation facilities are actually carried out during construction, charged with terminal design, design of floating equipment, and various other actual operations concerning navigation. During the period which I described, when the investigations and studies were under way, Mr. Barker reported directly to me.

"Mr. Fitts: I think that is sufficient, if the Court please.

Mr. R. T. Jackson: I renew my objection. The secretary of War has charge of all members of the Corps of Engineers, so far as I know, but that would not qualify him as an expert.

Mr. Fitts: You don't deny that he is qualified as a hydraulic engineer, do you?

Mr. R. T. Jackson: No, but I do as to design and operation.

Judge Allen: The objection is overruled.

[fol. 1735] Mr. R. T. Jackson: May we have an exception?

A. Yes, I think that at all of the sites we have constructed, which are under construction or in process of investigation, there are valuable power resources at those sites."

There are not a great number of available flood control reservoir sites in the Tennessee Valley. That is principally because a good flood control reservoir site is rather a coincidence. A good dam site with a large reservoir above it, properly related to the rivers and the drainage basin to be controlled, and with reference to the point at which floods are to be controlled, is rather rare; you don't find many of

those. It is my opinion that if dams were built at the available sites on the tributaries of the Tennessee River purely for local flood control, they would practically forestall the building of dams later for the improvement of navigation, control of floods on the Tennessee, Ohio and Mississippi Rivers, and provisions for low water releases. It seems probable to me that most of these projects designed for a single purpose would not be well adapted for multiple use, or would be relatively too expensive if it were proposed to convert them to multiple purposes, so, therefore they would stand for a single purpose, and would probably forestall multiple-purpose dams to be built on the same sites later. Whether or not the construction of dams on the tributaries designed solely for local flood protection without any provision for generation of power would have a similar effect upon the subsequent development of the potential power resources which I mentioned as being available at those sites would depend on how they were designed. But if they were designed with tunnels or conduits at the bottom, and had various sorts of control works, pen-stocks might be connected in the future—and again they might not be. It is very difficult to tell without a specific design.

[fol. 1736] Assuming that the Federal Government constructed a series of 32 low, movable, wicket navigation dams upon the main stream of the Tennessee River, and assuming that it was later determined to construct high dams on the main stream of the Tennessee River capable of producing electric energy and with flood control provisions, except on the assumption that low dams may have reached the end of their useful life at that time, probably the later improvement would be forestalled, or else a considerable residual part of the investment in the low dams would be sacrificed when they were drowned out or flooded out by the high type of dams which you require for the purpose suggested. In other words, if you built such high dams with a low dam system in, you would flood out the low dams and have to remove them and duplicate your investment, unless they had reached the end of their usefulness.

Examination by the Court:

It is my opinion that it probably would not be feasible to make a system of low dams into high dams of the type that is being constructed by the TVA, or any kind of a high

dam capable of producing hydro-electric energy and with flood control features. I would not attempt to do so.

Direct examination continued:

There is a great difference in foundations. For one thing, the low dams could be founded on a soft base—that is, on sand and gravel, with piling—while the high dams obviously require a rock foundation of the type we are constructing now. Furthermore, it would only be, say, one out of three or four of the low dams which might occupy the same site as the high dam; and the others would be drowned out and could not be incorporated, because they would be upstream in the pools.

[fol. 1737] All of the dams which have been constructed or are under construction or investigation by the TVA provide at minimum draw-down elevation a navigable depth of 9 feet back to the next dam upstream. The navigable depth of 9 feet refers to a 9-foot draft with a minimum of 2 feet over-draft or over-depth. This depth occurs at what we call the minimum flat pool elevation, and the water at the dam downstream may be drawn lower than this, depending on the flow of the river, and still maintain this depth at the upper end of the pool. Above these levels up to the maximum surcharge level, which is the top of the gates, is storage which is useful for flood control storage. The design of the main river dams makes provision for storage capacity above minimum draw-down elevation, above the flat pool level or above the minimum draw-down elevation, which depends on the flow of the river. All of the storage above that and up to the maximum surcharge level would be operated, or can be operated for the benefit of flood control.

"Q. Mr. Bowman, will you state whether or not the sites, order of development, and features of design required in a dam designed for navigation and flood control differ in any material respects from that which would be dictated if the projects were to be constructed and operated primarily for the production of power.

Mr. R. T. Jackson: We object to the qualifications of the witness as to the navigation feature.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May we have our exception, please?

A. As to most of these dams, there are such features which differ in material respects from what would be used

if the dam was designed primarily for the production of power.

Q. Now, will you state whether or not every provision has been made in the design of the projects under construction by the Tennessee Valley Authority which is necessary or useful in the operation of those projects for navigation and flood control?

Mr. R. T. Jackson: The same objection as to the competency of the witness on navigation.

Judge Allen: The objection is overruled.

[fol. 1738] Mr. R. T. Jackson: May we have our exception, please?

The Witness: Yes, to the best of my knowledge, these provisions have been made so that they meet all of the requirements of that operation, with certain provisions which give a great deal of flexibility in the operation, considering the system should be operated as a whole, that is, I think that we have gone further, perhaps, than we would with an isolated dam simply to meet system requirements in respect to the navigation and flood control.

Q. Now, Mr. Bowman, are there any features in the design of these tributary reservoir projects constructed or under construction by the Tennessee Valley Authority that are valuable in flood control and navigation, which differ in any way from those that would have been provided if those dams were constructed and operated primarily for the production of power?

Mr. R. T. Jackson: The same objection as to the competency of the witness, so far as the navigation feature is concerned.

Judge Allen: The objection is overruled and the Court will restate its opinion on this matter. We consider that substantial experience with the Authority in these matters is experience.

Mr. R. T. Jackson: May we have our exception noted?

Judge Allen: And that experience of the amount and nature that this man has had qualifies him to testify as a witness on these matters. Your objection, in other words, goes to the weight.

Mr. R. T. Jackson: I understand the view of the Court. I am renewing it to preserve my record as the Court will understand.

Judge Allen: You may have your exception.
Mr. R. T. Jackson: Exception.

A. There are such provisions. Principally, they are sluiceways of unusually large capacity at a fairly low elevation in the dam."

At elevation 1020 the capacity of the sluiceways at Norris is approximately 36,000 second feet. At Hiwassee with the pool at elevation 1526 the capacity is approximately 22,000 second feet.

[fol. 1739] Examination by the Court:

In a dam such as Norris Dam, the intakes to the turbines and to the sluiceways are entirely separate. That is, they are separated by some distance. The entrance to the sluiceways at Norris is down toward the bottom of the dam. The elevation of the center of the sluiceways, referring to Defendants' Exhibit 49, is 865, and those sluice-ways are ten feet high, so that it extends from 870 to 860. There are eight sluice-ways at Norris. The sluice-ways simply conduct water from the Norris pool to the down-stream side of the dam. They discharge directly without going through the turbines. There is no connection between the turbines and the sluiceways, physically, whatever.

Cross-examination:

The center line of the pen-stocks is 867 at the intakes, and those pen-stocks are 20 feet in diameter. That would be approximately from 857 to 877. There is a little bell mouth at the entrance, so that is not strictly correct, but it is just about that.

Direct examination continued:

The total combined discharge capacity of the two turbines at Norris is approximately 8,000 second feet. I believe it is slightly above that at the higher elevations and slightly less at the minimum. At Hiwassee the water capacity of the two turbines, whenever they are ultimately installed, will be approximately the same as at Norris. Those are not exact figures. I do not know the results of the recent tests at Norris, but they are approximately correct. At Norris the capacities of the sluiceways is over four times

the capacity of the turbines, and at Hiwassee it is over two and one-half times the capacity of the turbines. Sluiceways with those discharge capacities enable you to hold the reser- [fol. 1740] voir at low elevation during the flood season, or to pull them with a considerable degree of rapidity down to the proper elevation for the storage of a flood. If you have small sluice-ways, approximately the capacity of the turbines, say, you could not accomplish these operations for flood control with that facility. As a matter of fact, you might have a discharge into your reservoir equal to the capacity of the sluiceways if they were upon the order of 8,000 or 10,000 second feet, and you would not be able to lower the reservoir for a long period of time. With 36,000 second feet, it is so much in excess of the capacity of the stream flow, except during the peak of the flood itself, that the discharge would rapidly become greater than the inflow and consequently draw the reservoir down.

There are certain features of design in the projects on the main stream of the Tennessee River which differ from those which we have been providing, and which would be provided if the projects were to be operated primarily for power. Particularly at Pickwick and in the present plans for Gilbertsville, we have spillway capacity in excess of what would be required to pass the maximum probable flood. This is for the purpose of holding down the elevation of those two pools in advance of a flood until the discharge becomes very high and you are almost ready to store water in the surcharge space. The Wilson Dam is considerably higher than any of the main stream projects being constructed by the TVA. The head at Wilson normally is about 92 feet, while at any of the projects we have, I think perhaps Coulter Shoals might be as high as 70 feet, that would be the highest, most of them average about 50 feet. I am speaking now of the difference in elevation between normal water below the dam and normal water above the dam.

[fol. 1741] From the standpoint of facilities provided for navigation and flood control, there are material differences in the structure and design of Wilson Dam and the dams constructed or under construction by the TVA on the main stream of the Tennessee River. For one thing, the pool at Wilson is only 15½ miles long, which means that you reach another lockage in that distance above Wilson, while the

shortest of the other pools which the TVA is constructing, I think, is 50 miles, and the average is about 85 miles, which means that you have a longer pool without lockage on the other projects. As to flood control, at Wilson you would probably get around 40,000 acre-feet in a pinch, but even to get this the maximum pool level of Wilson Dam should be raised between one and two feet, which would enable you to get probably somewhere between 40,000 and 45,000 acre feet of flood control storage. Of course on the other projects the flood control storage is very much greater than that.

"Q. Now, Mr. Bowman, generally in your opinion, when the dams on the main stream, constructed and under construction by the TVA are completed, how will that compare with Wilson Dam with respect to their value and usefulness for navigation and flood control?

Mr. R. T. Jackson: I object to that on the ground that the witness is not qualified on navigation.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Please note my exception.

A. In my opinion, the other dams will be more valuable than Wilson for both purposes, considerably more valuable."

The principal difference in design between the projects constructed or under construction by the TVA on the main stream and Hales Bar Dam is that the TVA projects have high crest gates which can be readily regulated at any time as to the amount of water discharged, and the storage in the reservoir above and below what we term normal pool level, or between the minimum navigation level and the surcharge [fol. 1742] are readily controlled. At Hales Bar there are flash boards, approximately 3 feet high, which do give a measure of control above the fixed spillway crest, but that volume is rather small and it is difficult to control those flash boards deliberately during the progress of a flood. Under certain conditions you can drop the flash boards, but until the flood is entirely over, it is impossible to set up the flash boards again.

There is a relationship between the spillway capacity which I have testified as being provided at the projects constructed and under construction by the TVA on the

main stream and flood control. At Pickwick and Gilbertsville the spillway capacity is greater than that required to pass the maximum estimated flood in order that the level of the pool can be held at a low level during high discharges. Of course, there is also a provision for surcharge which is incorporated in the spillway gates; that is, the top of the spillway gates is fixed higher than it ordinarily would be except for flood control.

"Q. What are the determining factors in determining the proper location of navigation facilities such as locks on projects such as Pickwick or Wheeler on the main stream of the Tennessee River?

Mr. R. T. Jackson: I make the same objection to the competency of the witness.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception.

A. The controlling engineering factor is to locate the locks at such points that the approach both up and downstream will be most advantageous for navigation."

Those conditions usually favor one side of the river. In all of the main stream projects constructed or under construction by the TVA, the power house has been placed at the opposite end of the dam from the navigation locks in order that the releases from the power house during the stages of the river and flows in the river that ordinarily [fol. 1743] obtain, will not interfere with the entrance into a lock downstream. If the power house was right alongside the lock there would be eddies around the downstream walls which would interfere with them to a considerable extent.

"Q. Will you state whether in your opinion this relative location of the locks and the power houses has been favorable or unfavorable to navigation?

Mr. R. T. Jackson: I make the same objection to the competency of the witness.

Judge Allen: Objection overruled.

Mr. R. T. Jackson: Exception.

A. It has been favorable to navigation. As we carried out the purpose which I first stated, we were very careful to locate the locks in such position that the approach up and

down stream would be the most favorable that could be obtained. This was checked over with the district engineer in Nashville, we exchanged opinions in that respect, we inspected the site on the ground, and finally came to an agreement as to what the best location was and that was where the lock was built."

At all of the projects on the main stream constructed or under construction by the TVA, space has been provided for the installation of an additional lock in the future whenever the capacity of the present lock may be reached. At Pickwick the size of the present lock is 600 feet by 100 feet wide. The provision there is for an auxiliary lock of small size, 60 by 360 feet. Above Wilson Dam, space has been left alongside of the smaller locks, which are 60 by 360, for later construction of a large lock 600 by 110 feet in dimension. Considerable expense has been involved in making these provisions, both in the way of excavation and carrying the sheet piling and masonry into the embankment, so that the larger locks may be readily built at a later date.

The table (offered and received in evidence as Defendants' Exhibit 151) is entitled "Storages in TVA main [fol. 1744] stream projects in acre feet". It was prepared from previous exhibits which have been submitted by the defendants. It summarizes the figures that appear at the bottom of Defendants' Exhibits 39, 42, 43, 46, 47 and 48.

The document (offered and received in evidence as Defendants' Exhibit 152) is a photostat of part of pages 71, 72 and 73 from House Document 328. Referring to the table in Defendants' Exhibit 152 appearing on page 73, as to day second feet, one day second foot would be one cubic foot of water flowing every second for 24 hours. Since there are 86,400 seconds in a day, there would be that many cubic feet of water in one day second foot. One acre, one foot deep, which we call an acre-foot, contains 43,560 cubic feet. So, dividing the former by the latter, it gives a conversion factor of 1.984. We multiply day second feet by that figure to get acre-feet. Customarily that is called simply a conversion factor of two, because it is so close to two, and that is what we actually use; but more precisely it is 1.984.

In the TVA table (Defendants' Exhibit 151) I think the volume figures refer to elevations which are slightly below flat pool level, that is, what we gave as minimum navigation level, while the table from House Document 328 (Defend-

ants' Exhibit 152) shows what that document calls normal pool level, which is minimum flat pool level. There is a very slight difference between the two. The ratio between flood storage and total volume of the pool is very much greater in the TVA projects as shown on Defendants' Exhibit 151, which represents the projects constructed, under construction or under investigation by the TVA, than in the projects from this table in House Document 328 shown in Defendants' Exhibit 152.

[fol. 1745] "Q. Mr. Bowman, in your opinion, what order of development of projects on the Tennessee River and its tributaries was most desirable at the time of the passage of the Tennessee Valley Authority Act in order to improve navigation on the main stream of the Tennessee and to reduce floods on the Tennessee and Mississippi Rivers?

Mr. R. T. Jackson: The same objection as to the competency of the witness on the navigation features.

Judge Allen: Overruled.

Mr. R. T. Jackson: May an exception be noted, please?

A. It is my opinion that the program which has been followed by the TVA was the proper one for the accomplishment of those purposes. Starting with Wilson Dam, the next one for the improvement of navigation in the lower section of the Tennessee River was Wheeler Dam, which had been started by the Corps of Engineers for that purpose. The particular obstruction in that stretch of the river was the cross-over between the head of the old Muscle Shoals Canal and the foot of the Elk River Shoals Canal, the minimum depth of about 1½ feet on the crossing, which was virtually the head of navigation except for very small craft or in medium high stages of the river. The Wheeler Dam drowned out this obstruction and extended a nine-foot draft practically to the town of Guntersville and somewhat beyond the site at which the Guntersville Dam is being built at the present time. After Wheeler, the worst stretch in the lower section of the river in which there was a substantial bottle neck was in the vicinity of Sheffield and Tuscumbia, where a minimum depth in the Sheffield cut, Buck Island cut was between 4 and 4½ feet at low water. In the Colbert Shoals Canal further downstream, the canal is sinuous, rather narrow, not adapted to barge traffic.

The construction of Pickwick Dam eliminates both of

these obstructions and will give a nine-foot draft up to the entrance of Lock No. 1 at Florence. Below Pickwick, there was a minimum depth in Big Bend Shoals of about 4½ feet, and after Norris which had already been authorized by Congress was completed, this would be increased to about 6½ feet minimum, which gave a better depth than at many sections further up the river. Although that was still somewhat short of the nine-foot depth, at the same time a 6½ foot depth will allow a considerable degree of traffic. And there were other sections of the river which had much shallower depths, and which it seemed should be improved first. Furthermore, for several years we had not located the proper site for Gilbertsville Dam, which has only been accomplished within the last year. We were not in position to improve the lower stretch between Pickwick and the mouth until we had definitely located that. As a matter of fact, those explorations took something like three years before we finally settled on the Gilbertsville site.

[fol. 1746] Q. Where was the most logical project in your opinion for the improvement of the navigable channel of the main stream of the Tennessee River after the construction of Pickwick?

Mr. R. T. Jackson: May I have the same objection with reference to the competency of the witness?

Judge Allen: You may have the same objection. Is this not something that has already been gone over once?

Mr. Fitts: Your Honor, as I recall, the only way it is in is that on redirect examination I read to Mr. Bowman a part of his testimony in the Ashwander case relating to a part which Mr. Jackson had read on cross-examination, which did cover this. No witness has actually testified from the stand in this case to these facts.

Judge Allen: The objection is overruled.

Mr. R. T. Jackson: May we have our exception?

Judge Allen: He may answer.

A. Considering the fact that the Chattanooga area would probably be most productive of navigation traffic, there were still sections of the channel above the head of the Wheeler pool in which the depth was not over 3 feet in low water, perhaps slightly less, as against a 6½ foot depth below Pickwick, with Norris Dam releases in effect. Therefore, to bring Chattanooga within reach of commercial traffic, it

seemed advisable to build the next site for navigation at the Guntersville site, which would give a navigable depth back to the entrance of the Hales Bar lake; Hales Bar Dam then continues a nine foot depth into the Chattanooga harbor. Now, any additional releases from these main river pools, as they would be constructed, added to the releases from Norris, would give us approximately a 7 foot depth downstream from Pickwick. In other words, navigation with perhaps a six foot draft could then reach clear into Chattanooga, where if that system had not been followed there would have been still sections of the river in which not over a 3 foot draft would have obtained, and have made it impossible to reach Chattanooga with that type of navigation.

Q. Well, in your opinion, would it have been desirable instead of adopting that method to have started up at the head of the river and built the dams down stream, that is, built the dam between Knoxville and Chattanooga first?

Mr. R. T. Jackson: I just wanted to preserve the record. The same objection to the competency of the witness as to navigation.

[fol. 1747] Judge Allen: Overruled.

Mr. R. T. Jackson: Exception noted.

A. To my mind the logical method of procedure would be improvement of the real bottle necks in the lower section of the river up to Chattanooga, and take the worst stretches first."

After the construction of Norris Dam, there were particular projects that were particularly desirable for flood control on the tributaries. Hiwassee was one. Hiwassee gives us a considerable degree of flood control on the Hiwassee River, and furthermore it is on the opposite side of the basin from Norris Dam, which allows us to take some advantage of diversity in storm precipitation. After Hiwassee, Chickamauga Dam immediately above Chattanooga, would be of great benefit in the minor floods anyway, and in the floods which are somewhat larger. Until we get more complete control on the tributaries and Hiwassee is completed, Chickamauga Dam will become increasingly valuable for flood control. Gilbertsville there again enters into the picture. For flood control on the Mississippi, of course, Gilbertsville would have been pref-

erable to some of these other dams which I have mentioned. However, until this last year we have not been in position to fix the Gilbertsville site, and appropriations have not been available, of course, for its construction.

"Q. Mr. Bowman, will you state whether there is any storage space in the reservoirs on the main stream projects either below or above minimum draw down levels that is not useful for either navigation or flood control purposes, or both?

Mr. R. T. Jackson: The same objection as to the qualifications on navigation.

Judge Allen: Overruled.

Mr. R. T. Jackson: Exception noted, please.

A. Below the minimum draw down level of course it requires storage behind the dam to fill up the pool to [fol. 1748] that navigation level. Therefore, all of that storage behind the dam up to the minimum navigation level or to the flat pool level is valuable for navigation. Between the minimum navigation level and the maximum surcharge level, that space is valuable for both navigation and flood control.

Q. In your opinion, in order to provide a minimum nine foot channel on the main stream of the Tennessee River, control destructive floods in the Tennessee Valley and reduce the contribution of the Tennessee River to Mississippi floods, what type of projects on the Tennessee and its tributaries are necessary?

Mr. R. T. Jackson: The same objection as to qualifications with reference to navigation.

Judge Allen: The same ruling. He may answer.

Mr. R. T. Jackson: Exception, and a further objection that I thought he had already answered the same question.

Mr. Fitts: He has not. It was read out of the Ashwander case, but it was never asked to him direct on the stand in this case.

A. It is my opinion that the same type of projects being built by the Authority on the main stream would be necessary for these purposes."

Cross-examination:

As to whether, before my connection with the TVA, I was engineer in responsible charge of designing any large

reservoir, at the Miami Conservancy District, I was not in responsible charge; I was the assistant engineer there. I had been out of college about a year and a half when I entered the employ of the Miami Conservancy District. That was a detention reservoir system. I had responsible charge of the design and construction of a large impounding reservoir before I came to the employ of the TVA. I did some work in the later phases of Dix Dam, increasing the capacity, that is, I was engaged with one or two other men in responsible charge of that work. The engineers in responsible charge of that construction were Harza Engineering Company. I worked for them. I have not been in [fol. 1749] responsible charge of any other large dams or reservoirs. We had some fairly large storage at one reservoir in Canada. As to whether I personally designed and constructed it, I was in charge of hydro-electric problems and features. That was the High Falls Dam on the Michipicoten River. Harza Engineering Company was the consulting engineer on that project.

It is true that many impounding reservoirs have sluiceways at least up to the capacity of the turbines, so that if the turbines are shut down for any reason, an equivalent amount of water which would normally go through the turbines can be released in order not to interfere with regulation down stream. As to whether it is a fact that the combined discharge capacity of the sluiceways and turbines at the Radford power project on the New River in proportion to the area of the reservoir is very much greater than the combined capacity of the sluiceways and the turbines at Norris in proportion to the area or volume of the reservoir, I don't know what the capacity of the sluiceways is at Radford. I know that the turbine installation there is very much higher in proportion than the turbine installation at Norris. I believe they are both 100,000 kilowatts, if I remember, and Radford is a good deal smaller reservoir than Norris. It has storage capacity of around 100,000 acre-feet. In other words, it is a great deal more highly developed for power purposes than Norris.

Examination by the Court:

That is shown by the power capacity of the turbines with reference to the size of the reservoir.

[fol. 1750] Cross-examination continued:

"Q. You also stated, I think, that downstream, the TVA projects had special features in that the spillway capacity is designed to carry maximum floods, is that substantially right?

A. What I stated was that there was more spillway capacity than would be required to pass the maximum estimated flood, in order to hold the reservoir down to a low level; in other words, the limiting factor there is the amount of water that could be passed over the low sill with a low reservoir level rather than the capacity of the spillway to discharge a flood of higher level.

Q. Will you tell me the maximum capacity of the spillway at Wheeler Dam?

A. At Wheeler, I think——

Q. Give it at minimum pool level?

A. Well, at Wheeler that relation does not obtain. The capacity at low pool level at Wheeler is rather moderate.

Q. Well, what is it?

A. I was seeing if I could recall what that is; I don't have the figure with me.

Q. Isn't it less than 200,000 second feet?

A. At what elevation are you referring to, elevation 48?

Q. What is that?

A. Elevation 548 or 550, or what elevation are you referring to for pool level?

Q. What do you think is the minimum pool level at Wheeler Dam?

A. 548 is what has been stated.

Q. Well, take that figure, isn't it true that the maximum capacity of the spillway at that level is less than 200,000 second feet?

A. I think it is around there. I would have to figure it, and I don't have a slide rule with me.

Q. Isn't it your recollection that that is about right?

A. Well, if it figured out that way, that would be about right. As I say, I cannot keep all of the figures in my head, I rely too much on the slide rule. That sounds somewhere around the proper figure, either 48 or 50 elevation.

Q. What is the maximum estimated project flood at Wheeler?

A. I believe it is 680,000, if I remember correctly. It is right around that."

[fol. 1751] I am familiar with the Blue Ridge reservoir on the Toccoa River. I think it is correct to state that the ratio of the Blue Ridge turbine and discharge gate capacity is greater in proportion to volume than at Norris. Blue Ridge was built for a high capacity peaking plant, and the power there was developed to the maximum. There has been no such development at Norris compared with the size as there has been at Blue Ridge. I do not know what the water capacity of the sluiceways and turbines is, but I know the turbine capacity and power is very high. I do not know that the sluiceway capacity at Blue Ridge is greater than the turbine capacity. Good, sound engineering practice on any hydraulic project requires that in the case of a power reservoir, a spillway shall be built large enough to take care of the largest estimated flood, far in excess of anything that had occurred in the past. That is good, sound engineering on any project. As I pointed out, at Pickwick and Gilbertsville we have gone in excess of that. At Pickwick we added two gates, and at Gilbertsville three additional gates beyond what we had estimated as the maximum possible flood. The provision of spillway capacity to meet these projected 500, 1,000 and even 5,000 year floods is a safety matter under proper hydraulic design and construction of a large dam with a large reservoir. You should go to the greatest possible limit on that; and if you provide beyond that, as we have done, it is for another purpose. Such spillway capacity is one of the things that is required by the Federal Power Commission and the Corps of Engineers in approving a project by a private company for the construction of a reservoir on a navigable stream. They are always vitally interested in that feature.

I stated that in each instance we have either placed the lock, or our plans for contemplated projects call for placing the lock at the opposite end of the dam from the power [fol. 1752] house. That is nothing more than common standard practice in the construction of any power reservoir or dam on a navigable stream. I have never known of the Federal Power Commission or the Board of Engineers approving a license for constructing a power project by a private company on a navigable stream with the power house placed alongside the site selected for the lock by the Corps of Engineers. I do not think it is good practice

and I do not believe they would allow it. I would not expect any power company building a power project on a navigable stream to do that or to be permitted to do that by the Corps of Engineers and the Power Commission. As a matter of fact, when you go up the Tennessee River to Hales Bar Dam, built many years ago, before the adoption of the Federal Power Act, the lock is at one end of the dam and the power house at the other. There is nothing particularly unique about that feature, except that the requirements for navigation were observed. That is observed in the same way that a private company asking a license from the Federal Power Commission would observe it.

I stated about the desirability of constructing Wheeler and Norris, which are above Wilson. The construction of both of those projects would very greatly increase the firm power capacity at Wilson Dam, and the value of Wilson Dam as a power project. I also stated that I thought it wise to construct Pickwick Landing Dam. The construction of the Pickwick Landing Dam also increased the firm power capacity for utility uses at Wilson Dam and made Wilson Dam more valuable as a power project by making possible peaking to meet a characteristic utility load.

When I studied this matter, I found with very little study that the two largest centers on the Tennessee River for manufacturing or commercial business were Chattanooga and Knoxville. Up to this date it is true that the TVA has never provided any practical, usable, navigable chan- [fol. 1753] nel between Knoxville and Chattanooga, but of course the Chickamauga Dam is the initial step toward that. Outside of that we are working on the Watts Bar and Coulter Shoals projects; but I believe for the development of the Tennessee River that the most important thing is the outlet to the inland waterways system of the country, rather than the improvement of an isolated stretch which simply goes between two towns and nowhere else. As to whether it is my judgment that the wise and orderly development of a navigable waterway does not as quickly as possible connect the two largest cities and the two largest sources of potential traffic on the waterway, I do not agree that they are the two largest sources of potential traffic. You might have rail connections along the river, such as at Guntersville or Decatur, and leading into industrial areas in the hinterland which would have a larger potentiality

than two towns immediately on the river, perhaps. It is not my judgment that the future of Guntersville as a great commercial and industrial center is greater than that of Chattanooga and Knoxville. I said larger communities removed from the river, but in the hinterland. You have Birmingham and Gadsden and Attalla, and other towns readily connected with the river that may furnish commodities in excess of what you would find in an existing large town.

"Q. You testified as to your knowledge about the difficulties of building high dams after low dams had been constructed. I invite your attention to this statement of General Pilsbury, who is a very eminent navigation engineer, is he not?

A. Yes, sir.

Mr. Fly: I object to any cross examination on General Pilsbury's statement.

Judge Allen: The objection is sustained. The Court adheres to its ruling in that particular. You may have your exception.

Mr. R. T. Jackson: May we have our exception, and may I have my question appear in the record, so that I can show what is sought to be elicited?

[fol. 1754] Judge Allen: The record may show that Mr. Jackson desired to read from the witness testimony of General Pilsbury——

Mr. R. T. Jackson: Who the witness testified is an eminent navigation engineer.

Judge Allen (continuing): —who is not here and is not a party to this case, and the Court holds this is not competent examination. You may have your exception.

Mr. R. T. Jackson: And we are not permitted to show the statement which we wish to confront the witness with?

Judge Allen: You are not permitted to read into the record the testimony of General Pilsbury in another case, and you have your exception to that statement.

Mr. R. T. Jackson: Thank you. He is one of the chief——

Judge Allen: The Court is desirous of going forward with this case. We are required by statute to expedite the case. We have made our ruling and it stands."

As to whether I have made studies to show at what elevation Norris reservoir would have to be on January 1, February 1, March 1, April 1, April 15 and May 27 in a dry year like 1925 in order to carry out the provisions of Water Control Bulletin No. 2, you will have to show me what Water Control Bulletin No. 1 is. Water Bulletin No. 2 of June 30, 1936, included in Complainants' Exhibit 933, says that until further notice water shall be released from Norris Reservoir, so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 cubic feet per second. I don't know what elevation Norris was at that time. Apparently, the purpose was to maintain the 15,000 as long as possible. I don't know whether they had enough storage at that time to maintain it in an extremely dry year or not, and I cannot answer the question as to what elevation Norris should be on those dates you have given in order to provide that flow in a dry year. As I say, I think that figure was sought to be maintained as long [fol. 1755] as might be according to the bulletin. I did not furnish any figures for that, and I have not made calculations as to what the reservoir should be on those dates.

As to whether in my examination I found that the Dandridge site on the French Broad River would give much more storage than Hiwassee for flood control, I have never been satisfied as to the Dandridge site. I do not know how much storage might be obtained there. The reason for that is the foundation conditions are very bad, and the area is full of sink holes, and we have never determined whether a dam could feasibly be built there, or if it could be built, how high. I have examined the site physically and topographically several times, and have usually come to the conclusion that it was a pretty bad site, and we couldn't do anything about it without extensive drilling and investigations which we have never had the appropriations to carry out.

As to whether I found from my investigations that the Dandridge site on the French Broad would give much greater storage capacity than Hiwassee for flood control, I said we had never determined how high we could build a dam at the Dandridge site on the French Broad River, and the storage depends on how high you can build a dam. My answer is that we have never determined that it would have more. There are some sink holes at the Norris site,

removed some distance from the abutments, and there are sink holes upstream in the reservoir; but at the Dandridge site, you just step off of the abutment right into a sink hole about 50 feet deep.

Space is being provided at Hiwassee for the ultimate installation of two 60,000 kw. units, and one 60,000 has been authorized. Whether the second unit will be as large as 60,000 kw. or not will probably be determined whenever the need for it may become apparent. If it is, then the turbine installation will be much larger in proportion to the storage capacity of the reservoir than at Norris.

[fol. 1756] Referring to Defendants' Exhibit 151 where I have combined figures from various previous exhibits offered by me, in computing what I called flood storage, I did not make any allowance for slope in the pools, as that in a way automatically corrects itself. Those are flat pool levels, but we have found from an investigation of one or two reservoirs that although the slope in the upper level is less naturally than the slope in the lower level for the same discharge, the fact that a much larger area is occupied at the upper level in both cases has brought our calculations out, if I remember, to a fraction of one or two per cent of what it would be, taking the actual slope lines. So, we have for simplicity simply used the flat levels. The flat level without any slope is the basis of these calculations, but they are practically the same results that you would get if you figured these slopes. We tried it out on two jobs, I believe Gilbertsville and Chickamauga, and it came out as closely as it could be calculated, you might say within the accuracy of a contour map. I might explain another thing which makes that variable. That is, if you start with a certain flow on the lower level and end up with a certain flow on the high level, that would probably never be the same in any two floods. So you would have a constantly varying quantity, and this quantity is about what it would be under any actual conditions, and is much simpler to use.

I previously testified that it was sometime in July or August of 1937 that the conclusion was reached that the height of Gilbertsville Dam should be at elevation 375. No official action had been taken at that time, but the conclusion of the Engineering Department and the consulting engineers was that it should be not less than 375. That conclusion was made as early as the latter half of July by the Engin-

eering Department and early in August by the consulting engineers.

[fol. 1757] The document (offered and received in evidence as Complainants' Exhibit 925) was prepared by me, or under my direction. In the case of Gilbertsville that is, I take it, 359. That was the so-called normal pool level. It was not the surcharge level that is shown on there. You notice that is just a dotted line, while the others are solid lines. These are all in Watts Bar and Coulter Shoals which is also a dotted line. Those are with the old normal pool levels at that time. Gilbertsville is the old normal pool level. None of those show the surcharge level. That is dated July 9, 1937 and was approved by me some time after that. It bears my signature in the lower left-hand corner. But that simply shows the so-called normal pool levels and not the surcharges in those three cases.

The photostat marked for identification as Complainants' Exhibit 926, which is marked "page 10" and which you say follows Complainants' Exhibit 925, I have never seen before. I would not call Complainants' Exhibit 925 a design. There is a dotted line on there. I don't think it does correspond with the figures shown on Complainants' Exhibit 926. This maximum lock lift here is 68 feet, while according to this the lock lift would be 57 feet, so this is apparently 11 feet higher than that. I don't see any pool levels on here. The only thing to go by is 68, and I know the level below the 68-foot lift. That would make elevation 70. It would probably be somewhere between 70 and 75 at that lift. So the two don't correspond. As to whether page 403 of Complainants' Exhibit 116 does not show that early in 1937 the lock lift at Gilbertsville was 68 feet, I was trying to see whether it gives the pool level on here anywhere. As to whether I can tell from the acre-feet that the elevation was 370, the acre-feet might have been very close at that time. That looks like about 370 elevation; that is correct, 68 plus 302 pool level would be 370. There is a table here somewhere [fol. 1758] on those projects. I do not want to search further. I just thought it would make a better all-around check if I could find any other statements on Gilbertsville. This appears to be that old 370 elevation which does not correspond with that profile which you have showed me. As I explained, the profile shows the so-called normal pool level and not the surcharge. The old 70 refers to surcharge.

Referring to page 919 of the report of the Hearings on the Appropriations Bill for 1939 (which appears in the record as Defendants' Exhibit 153) that shows the lock lift for Gilbertsville at 68 feet, which is elevation 370. Looking at Complainants' Exhibit 926 for identification and page 403 of Complainants' Exhibit 116, it is true that for Gilbertsville there is shown the same volume of storage. It is obviously the same pool levels with a 68-foot lift.

As to my saying that I could not identify this sheet, Complainants' Exhibit 926 for identification, I said I did not make it up and had not seen it before. After I was on the stand before, I examined the data submitted to Congress in support of the TVA's recent application for an appropriation. But I did not change one of my volumes that was favorable to me at Wheeler the next day on the basis of the figures in that document. I explained that once before, that that was a misreading of the curve that I had had for several years, and it was a mistake in reading that curve, and I did not see the information which you allude to.

I have not checked up yet whether it is a fact that in the information submitted to Congress by TVA two days before I testified, I found that the volume of flood storages reported to Congress were different and less, not only at Gilbertsville, but at practically every other reservoir of TVA. I might say in explanation of that at Gilbertsville, which I [fol. 1759] found and checked up later, was that there was what was considered to be an insignificant change, in view of the status of the project, and it was not officially settled at that time that the final elevation was to be 375, and in view of that, rather than change the figures to the Appropriations Committee, and then later change them again, the old table was used, so as to avoid continual changes on a project still under investigation. That is the explanation which has been given to me for Gilbertsville.

As to whether I found in every case the report submitted to Congress two days before I testified showed a different and smaller volume of storage at the TVA reservoirs, I do not know whether it was every case or not. I suspect that they used flat pool levels in compiling that rather than the minimum navigation level which we have. As I say, I did not make up those tables and they were made up by some other person. The figures were in existence at that time. It was simply a case of different persons taking two different

figures. I usually make these up, but I did not this year because I was down here as a witness in this case. I approved the chart that you showed me in it, and as I stated, that simply gives normal pool level and not surcharge. I can not state definitely, but according to the best of my recollection that chart was made up for other purposes and inserted in the data which went to Congress. I may be wrong, but my recollection is that that was made up for another purpose and used later for that purpose.

I am head of the Project Planning Division. I have seen schedules similar to the document (marked for identification as Complainants' Exhibit 927) which is entitled "Tennessee Valley Authority Proposed Program of Dam Construction", which you say was also submitted to Congress two days before I testified. This is dated November 26, 1937, and is [fol. 1760] apparently put out by the TVA. I would have to study it over and check it up. As to whether I can not identify it, although I am head of the Project Planning Division, the thing of it is that this is set by the budget officials and the construction division—not by the planning division. I am asked at times with reference to these different projects. This is a schedule of construction progress rather than planning projects. The figures in the table on page 948 of the recent Hearings before the Appropriations Committee on the Bill for 1939 under the heading "Proposed Construction Schedule as of December 13, 1937", listing completed dams, dams now under construction, and proposed dams, seem to check with the construction schedule shown in Complainants' Exhibit 927. As to whether or not, as planning engineer, I have to know the construction program in order to prepare my plans and designs, I do not prepare the designs. I prepare preliminary designs, and then it goes to the designs division and they prepare the detailed designs. In other words, the detail of my work, except for seeing that certain hydraulic features are carried out, is usually finished, perhaps a year or a year and a half or two years before the project starts, and after that it is simply a follow-up process.

(The witness was excused.)

[fol. 1760a] The depositions of the witnesses R. D. Cowley and K. T. Hutchinson, taken by complainants and offered

by defendants were ordered by the Court to be included with defendants' case.

(The deposition of R. D. Cowley is as follows:)

R. D. Cowley was called as a witness on behalf of complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

I am 51 years old, was born in Lincoln County, and my address is Kelso, Tennessee. My home is on a farm about eight miles east of Fayetteville, in Lincoln County, Tennessee. I am a farmer, grain dealer and banker. I am President of the bank at Kelso and I have a grain warehouse, but I would not consider it an elevator. I have lived in Lincoln County all my life and I am Secretary and Treasurer of the Lincoln County Electric Membership Corporation, a Tennessee corporation, and I have held that position since the Corporation was organized. The original incorporators were B. E. Holman, M. F. Childress, D. L. Conger, George Goodrich, W. W. Gill, J. A. Stewart, and myself. Mr. Conger is President, Mr. Childress and Mr. Gill are Vice Presidents, and I am Secretary and Treasurer. Mr. Conger is now away on a vacation trip. I do not know what date Mr. Conger left. He was at our last meeting on July 7th and said he was going to take a trip and would start within the next day or so.

As Secretary and Treasurer of the Corporation, I have the custody and possession of the minute books, the charter and by-laws of the Corporation. I have here with me the [fol. 1760b] by-laws and certificate of incorporation, and the minute book of the Corporation.

I have a copy of the certificate of incorporation dated September 12, 1935, granted the Lincoln County Electric Membership Corporation. I did not bring the original.

"Q. Do you have the custody and the possession of the original certificate?

A. Yes, I think we have that in my files at home.

Q. Will you produce and file as complainants' exhibit for identification No. 26, Cowley, the original certificate of incorporation?

A. Not without direct authority and instructions from my lawyer, Mr. Holman."

Certain paragraphs from the minutes of the first meeting of the incorporators of the Lincoln County Electric Membership Corporation, held on September 16, 1935, read as follows:

"There was also present at the meeting Harold F. Clark, of Athens, Alabama, and J. M. Peavey, of Fayetteville, Tennessee, both representatives of the Tennessee Valley Authority, who met with the Board and explained many details necessary to the proper organization of the company."

* * * * * * *

"Thereupon, upon motion of M. F. Childress, duly seconded by W. W. Gill, it was ordered that one of the Tennessee Valley Authority attorneys be requested to assist B. E. Holman, and J. M. Peavey, in the draft of proper bylaws to be submitted to the Board at a subsequent meeting, for approval, all present voting for the adoption of this motion.

Two letters were then read from Mr. F. F. Beauchamp, division engineer, informing the Board that on Tuesday, October 1, 1935, twenty-three miles of rural lines now constructed in the southwest corner of Lincoln County, between Giles County, and Huntsville Highway in Lincoln County, would be energized."

In answer to whether those three paragraphs read by me correctly set forth what happened, if they had been incorrect they would not have been put in the minutes. I have no recollection now of what happened—there were too many [fol. 1760c] details for me to remember—little things two or three years ago. I tried to keep the minutes correct.

Certain paragraphs from the minutes of the meeting of the Board of Directors of the Lincoln County Electric Membership Corporation held on September 26, 1935, read as follows:

"Mr. J. M. Peavey and C. G. Davidson, attorney for the Tennessee Valley Authority, met with us and gave valuable advice in outlining the methods by which we should proceed."

"The Witness (interpolating): I might also add that these gentlemen appeared at the request of the Lincoln County Electric Membership Corporation."

"A suggested form prepared by Mr. C. G. Davidson, attorney, to be used in application for membership in this corporation was presented and the same is herewith filed for further reference, and

The power contract between the Tennessee Valley Authority and Lincoln County Electric Membership Corporation was presented, the same as prepared by Mr. C. G. Davidson, attorney, and said contract is in words and figures as follows."

(The power contract and the sale and security contract between the Lincoln County Electric Membership Corporation and TVA referred to in the minutes and produced by the witness were never actually delivered or placed in operation. Up to December 11, 1937, the properties were operated under agreements described below and identified as Complainants' Exhibit 588 and Complainants' Exhibit 626. On December 11, 1937 these agreements were superseded by a new contract subsequently received in evidence as Defendants' Exhibit 144.)

The Lincoln County Electric Membership Corporation had a contract with TVA dated October 1, 1935 (which appears in the record as part of Complainants' Exhibit 588) for the collection of bills for electric services, which contract has been renewed. The Corporation also has a supplemental contract with TVA dated June 29, 1936 (which [fol. 1760ca] appears in the record as part of Complainants' Exhibit 626) for the collection of bills for services.

I don't know the exact date when the TVA began the construction of lines in Lincoln County. Our first meeting ap- [fol. 1760d] pears to have been held on September 16, 1935, and our charter bears the date of September 10, 1935. The construction of those lines began considerably prior to those dates. I don't remember how long before the certificate of incorporation was applied for that the lines were begun.

There were 23 miles of lines in process of construction, as I recall, at the time the Corporation was formed, but as to whether or not those lines were still under construction at the time of our first meeting, I would have to look at the records before I could say.

There are no other contracts in existence that I know of between the Lincoln County Electric Membership Corporation and TVA other than the contracts I have produced. There are approximately 159 miles of line in Lincoln County now in operation by TVA. TVA is operating those lines at our request. The Lincoln County Electric Membership Corporation has not taken over these electrification lines and is not now contemplating so doing. Since the formation of the Corporation, TVA has operated those electric lines at our request.

I do not know exactly how many miles of lines are yet to be built. About 680 customers are now being served by the lines which are in operation. The lines are scattered through a good part of the County, not in every section, but pretty well scattered. As to who determined where those lines would be built and the details incident to their construction, I don't know as I can say with reference to other parts of the County, but I can intelligently answer with reference to the section of the County wherein I live. Our contract with TVA shows that the Membership Corporation has three methods of paying TVA for the lines it had constructed, either by paying for them in cash, part in cash and part in notes, or all by notes. In either event when notes were executed, they would be secured by trust deeds on the properties and we would pay interest on any unpaid [fol. 1760e] balance of the principal sum at the rate of 3½ per cent per year, with interest being paid semi-annually. I do not know what the lines now constructed and in operation have cost, but I have requested a bill for them. I do not know the cost of the lines which it is contemplated will be built. At the present time I don't know what would be the actual cost of the lines when they are all completed or how much the Corporation would have to pay TVA for the lines when the Corporation takes them over. I called for that information on July 7th, but my understanding is that our operating contract with TVA expired June 30, 1937, but TVA continued to operate the lines. The contract has a proviso covering the lapse of time between the time the contract

expires and the date that it may be renewed. The employees of the Corporation consist of a young lady in our office, a superintendent and two linemen that are employed more or less regularly, as I understand. That is a part of the duties that TVA had to assume, because we are under an operating contract and I would not be supposed to know exactly the number at all times. As to whether I know the names of those employees, I know the name of the girl, Miss Morris, Mr. Campbell, and I believe there was one by the name of Mr. Moore, if I am not mistaken. Let me explain that that is being done under our contract with TVA whereby they are operating at our request and for that reason I cannot definitely answer. TVA pays the salaries of those employees under our contract with them. The bills for electric service rendered to customers are payable to TVA in line with our contract.

As to who determined where the lines were to be built in the section where I live, we first made a potential survey of the various roads leading into the little town of Kelso and marked off on the roads the number of the various dwelling houses which we thought would purchase current and gave this information over to our committee in Fayetteville, with [fol. 1760f] the request that it be worked out where the greatest number of people would be served. I could not say as to who determined whether or not the line to that community would be built. This information was given to our committee which was earnestly insisting on TVA to construct these lines for our proposed organization, and just how this committee worked it out with TVA I am unable to say, but there was no road in our community that they were not insisting on a power line to come along and were not satisfied if they didn't get it. We had some difficulty with TVA in getting the lines built, by reason of the fact that I own a rather large farm and a Mr. Douglas just across the river also owns a very large farm. These particular roads were rather thinly populated and the Membership Corporation did not see fit to recommend the construction of those lines just because we would take current, without a specific knowledge of the amount of current that we would take and pay for. I don't know that it was necessary for me to go to Chattanooga and take the matter of extending service to my community up with TVA. I made my trip to Chattanooga after these lines were under construction. I

did make a trip to Chattanooga with reference to some other lines. I said a few days ago that the purpose of my trip to Chattanooga was to get service to my community, but I was talking then and I am swearing now. I told you then that these lines were not going to be built because there was an insufficient consumption of current to justify the building of the lines, and that therefore I went to Chattanooga to discuss the matter with TVA, but I was mistaken and I meant to tell you that I made my trip to Chattanooga for a work order, after the lines were ordered constructed. Some three or four other customers on that line and I are underwriting a definite amount of power to be consumed, but we are not obliged to do it for the reason that my neighbors and myself consume more of our requirements than we did, and [fol. 1760g] we think we can apportion it entirely within our radius. Naturally we had a certain amount to guarantee and certainly it would not have been good business for them to have constructed four or five miles of lines to just give service to four or five customers.

[fol. 1760h] Cross-examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

I have lived 51 years in Lincoln County and for the past fifteen years I have been generally familiar with the extent and nature of electric lines and electric service in the County and in this area.

"Q. Mr. Cowley, during this period for the past fifteen years what has been the situation in the rural areas in this County with respect to the existence of electric lines and electric service?

Mr. Snepp: I would like at this point to object to this question and to any other questions of that nature for the reason that they are beyond the scope of the examination in chief.

The Special Master: I rule that I do not have any power to exclude the testimony and I overrule your objection and you may take an exception.

Mr. Snepp: Yes, we note an exception.

By Mr. Fitts:

Q. Just proceed.

A. The rural sections of Lincoln County, and especially the section of the county wherein I reside were denied the benefits of electricity and were unable by any reasonable means to procure same.

Mr. Bemis: I think the answer is improper and should be stricken out, this statement, that his community was denied the benefits of electricity, that that is a mere conclusion of the witness.

The Witness: I will change that and say that they could not secure the benefits.

The Special Master: I will overrule the objection.

Mr. Bemis: We note an exception."

I had made an effort in my community a number of times to secure electric lines and electric service in the rural areas by taking the matter up with the local manager of The Tennessee Electric Power Company and once by [fol. 1760i] making a trip to Shelbyville with a delegation of citizens of Kelso and Fayetteville to confer with Mr. Tom Greer. The electric lines run east to a farm which we know as the Jesse R. Smith farm, which adjoins real estate now belonging to me and which is only two or two and a half miles from my home. At one time I wired and asked permission from the Power Company to construct my own line at my own cost, by digging the holes and furnishing the poles and the wire, and asking if they would furnish the service, and they refused. I know of my own knowledge that in 1933, and 1934, and the early part of 1935 there was a desire among the membership of the rural area in this section for electric service. I know of my own knowledge of other demands by people in this County to procure electric service during the period of 1933, 1934 and 1935, by reason of having talked with community leaders who are interested in these extensions for the benefit of themselves and other communities, and by having our organization meetings from time to time and by conferences with a great many men,—I guess you would call it that, large numbers of citizens would come together at least here in Fayetteville from different sections of the County who were interested and so much interested in

securing electric rural lines to their homes and their communities. Before the first line was built anywhere in the rural areas in this County by the TVA, the Corporation or anyone else, I made an attempt to get these lines built by TVA, although I was not doing work at that time in the community but some of my associates were. I went to the County Court and to the Farm Bureau of Lincoln County in behalf of securing these electrification lines, and especially to Major Childress who was a court member in the County. In answer to under what circumstances and about when I first heard about and became connected with a movement for the purpose of building these lines, as [fol. 1760j] I recall I was asked by numbers of people—you understand now that it is rather hard for me to remember back and tell the exact details of things. I recall Mr. Lawrence Sloan, now deceased, who at the time was President of the Lincoln County Farm Bureau, told me that there was a proposition being prepared which would be presented to the County Court to get TVA to construct the lines and sell them to us in this county. We approached TVA and solicited them very urgently.

I am fairly familiar with the location of the rural lines in this County and I do not think there are any lines duplicating or paralleling the lines belonging to any private power company. I know there was no line for service to Kelso, Flintville, Elora and other sections of the County, and neither were there any lines servicing Boone's Hill, Coldwater, Malina and a number of other points in the County. Not to my knowledge were any of the 680 customers of the Corporation previously served by any private power company. I know that a great many were not served,—I would think 100 per cent of them were not served. The surveys along the road which I spoke of in my direct examination were not made by surveying instruments but by people getting in cars and going along the road and marking out this house or that house. In our community that was done by John Taylor,—he is now deceased—and by one or two others. In the beginning of the matter and no part of this was connected with TVA in any way or the Electric Membership Corporation. The cost of them was paid for by private funds. As to whether in gathering our information we solicited customers for the Corporation who could be induced to sign contracts, we did not. At that

particular time we were making surveys so that we could submit information to our committee as to approximately how many customers would be served. When we had this information we turned it over to our committee, or to [fol. 1760k] Mr. Sloan who was President of the Farm Bureau.

We have a contract with TVA by the terms of which these lines that have been completed by the TVA at its own cost are to be sold to the Corporation. When these lines will be turned over to the Corporation will be determined by the Board of Directors and the Committee,—the Board of Directors and the Committee being at present one and the same. TVA will be obliged to turn these lines over to us under the contract when we make the election. At the present time, these lines belong to TVA and are being operated by TVA under the existing operating contract, the revenues are being collected by TVA, and the employes engaged in the operation are employes of TVA. As a member of the Board, I think I am familiar with the general plans for the operations when the lines are turned over to the Corporation. Our Board has discussed informally the plan of operation which will be put into effect when we get these lines. The general method of operation is described in the contract between the Corporation and the TVA.

"Q. On the basis of your familiarity with the matter and your knowledge of the terms of the agreement of the Corporation and the Tennessee Valley Authority do you think you could answer the question,——

A. (Interposing.) I think I can.

Mr. Bemis: The question calls for the conclusion of the witness on that subject.

The Special Master: It is overruled.

Mr. Bemis: We note an exception.

Q. Based upon your knowledge that you spoke of, when the Corporation assumes these lines and the title to the lines is passed to them, how will the bills be collected and how will the checks be made, and how will the employees be paid, and whose employees will they be and how will the lines be operated in general?

Mr. Bemis: I make the same objection to that question.

The Special Master: It is overruled.

[fol. 17601] Mr. Bemis: We note an exception.

The Witness: The checks will be made payable to the Lincoln County Electric Membership Corporation who will make collection of all bills and the employees will be employed by the Board of Directors of the Lincoln County Electric Membership Corporation and will be paid by them upon the order of the Board."

I remember having a talk with Mr. Watson in reference to obtaining service from The Tennessee Electric Power Company prior to the date of the construction of these lines. I don't remember where the talk was—I believe perhaps in my office here in Fayetteville—I don't think I went to his office. The general subject of that conversation was in reference to securing current to serve our community. It has been so long ago that I can't recall the details of what I told him I would do in order to get that service, but I do remember that the requirements were such that our community could not comply with them.

"Q. To refresh your recollection I will ask you to state whether or not the substance was that you stated that you should build the line at your own expense to serve your requirements and the other customers to be served over it thereafter and that the ownership of the lines should be deeded to the company.

Mr. Bemis: I object to that because the witness has answered that he was unable to give the details.

The Special Master: He may answer.

Mr. Bemis: We note an exception.

The Witness: That conversation did not occur with me, but I did on or about the same time when I was trying to get current over there, tried to get Mr. Watson to consent to allow me to build my own line over which I would bring the current up to my home which is approximately two and a half miles."

I have spoken in my direct testimony of the meeting of the Board of Directors on September 26, 1935, at which certain representatives of TVA were present. My understanding and recollection is that they were present at our invitation and request, to aid, assist and advise us upon the problems under consideration, and give us the benefit of their own previous experience in any instances that might

[fol. 1760m] come up. Neither myself nor my associates, other than one of our incorporators, Mr. Holman, had any experience in forming and organizing an electric membership corporation of that character, but I understand Mr. Holman a number of years ago had some experience in electric lines by reason of being joint owner of a small plant in southwest Kentucky. At these meetings no statements were made which would have caused me and my associates to go out and take customers away from the Power Company. Any expressions always came from our own Board membership as to constructing more lines for us. The purpose of having these representatives of TVA attend the Board meeting mentioned was to outline the method of organization and the way in which we would go about setting it up, and to answer such other questions with reference to the organization as the members of the Board might request.

(Thereupon counsel for complainants received permission from the Special Master to examine the witness on matters he had testified to upon his cross-examination without waiving objections as to the scope of the cross-examination.)

Redirect examination:

(Offered by defendants, and admitted by the court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

In answer to whether or not the demand and interest and desire of the people in the county for electricity was in any way affected by the TVA and the low rates offered by TVA, so far as I know, and I am now speaking for myself. I was always interested in it and had been for a number of years.

[fol. 1760n] "Q. Was not your interest as a resident of Lincoln County in rural electrification accentuated after the advent of the Tennessee Valley Authority, and after the mass meeting and the organization meeting, etc.?

A. That was where the contract started, was at those meetings.

Q. (Interposing.) I am simply asking you was it before or after?

A. It was when the Tennessee Valley Authority had been created by act of Congress."

In the local meetings and in the mass meetings that met with the county agents, Mr. Sloan and Major Childress, the rates of TVA were not discussed so much as the fact that we could get electricity which we had had trouble in getting and the fact that TVA would build the lines and that we could get it at all. The rates were not discussed so very much but it was discussed that they were needing it. I was interested in securing it for myself, but I cannot tell what other people thought. I wanted electricity before I died and I wanted it so I could enjoy it.

As to whether anyone has talked to me since Saturday regarding my testimony, I talked with Mr. McFarland a few minutes last night and with Mr. McFarland and Mr. Fitts about three minutes this morning. I talked with Mr. Fitts in Mr. Holman's office not over five minutes.

(The witness was excused.)

[fol. 1760o] (The deposition of K. T. Hutchinson is as follows):

K. T. HUTCHINSON was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

I am 42 and reside in Murfreesboro, Tenn. I am President of the Middle Tennessee Electric Membership Corporation and also Professor of Agriculture at the Middle Tennessee Teachers College at Murfreesboro, and Director of the farm at the College.

I received a notice on Saturday morning to come here and produce copies of a letter dated May 4, 1936 from L. A. Sears, a letter dated May 8, 1936 from W. I. Nichols, and a letter dated June 17, 1936 from K. Wilde Blackburn, Asst.

Counsel for the REA. I do not have those letters. Since that time I have made a search through all our files and I have not as yet been able to locate them, and I am sure I do not recall at this time the nature of the letters. At the time these letters were written we had no office. We established an office about September and it has come to my attention that our files have been searched and also that there have been photostatic copies made of quite a lot of records in the office, and I am not sure as to where these letters are. However, I have a hunch that copies of these letters can be secured from Mr. Blackburn and that they may be filed with him but I am not sure.

With reference to the photostatic copy of the letter dated May 4, 1936 signed by L. A. Sears, Chief Project Section of REA, I could not testify that I received that [fol. 1760p] letter. I do not mean to say that I did not receive it, but I mean to say that I don't know. At the present time, I do not recall having received it.

With reference to a photostatic copy of the letter, addressed to Dr. K. T. Hutchinson from K. Wilde Blackburn, Asst. Counsel, % TVA Legal Division, Knoxville, Tenn., dated June 17, 1936, together with an attached form, I do not remember receiving such a letter. I do not recall whether or not I received that letter. I have not since Saturday personally searched the records of the Corporation for these letters, but I have had our proper employees make such a search as would be justified. I have no files at home because any such matters would be at our office.

Some of the letters which have been referred to and which I have been asked to produce I recall receiving, but such letters were immediately delivered to our Corporation office. I have established no office whatever at the College or at home.

As to whether at any time I procured and furnished to Mr. Blackburn a certified copy of the charter of incorporation of the Middle Tennessee Electric Membership Corporation, that has been the work of our counsel, Mr. McFarland. I have not personally mailed certificates of the recording of the charter in various counties wherein the Corporation is operating to Mr. Blackburn, and I could not swear that they have been furnished to him.

(Mr. McFarland then conceded that he had personally made certified copies of the certificate of incorporation in

the different counties covered by the Corporation and had personally mailed them to Mr. Blackburn.)

As to whether the permit from the State Highway Department of Tennessee giving the Middle Tennessee Electric Membership Corporation the right to construct electric lines along the state highways has been mailed to Mr. [fol. 1760q] Blackburn, that has been referred to our attorney to handle in the proper way. The consents for the use of roads from the courts of the counties mentioned in the certificate of incorporation have also been referred to the attorney of the Corporation and I understand they have been furnished to Mr. Blackburn. I remember receiving a letter from Mr. Blackburn stating that he was enclosing a copy of a letter and asking me to hand the copy to Mr. McFarland as he did not know Mr. McFarland's address. I suppose I handed Mr. McFarland a copy of that letter, but I can't be absolutely positive about it. It has been my custom under this program to carry out my duties.

(The witness was handed a photostat copy of a letter.)

"Q. Now, with the slight refreshing of your recollection, I will ask you to read that letter or that photostatic copy of the letter at the concluding paragraph and see if it brings back to your mind any remembrance of receiving it? Does that bring back any recollection of the letter?

A. I don't say that it does."

With reference to a photostatic copy of a letter dated May 8, 1936 from W. I. Nichol, I must say that I do not remember whether we received such a letter.

Cross-examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

I am President of the Mi[illegible]e Tennessee Electric Membership Corporation and hav[illegible] held that position since its organization approximately in January, 1936. I have lived in Murfreesboro about ten years and previously I lived in Nashville. I am generally familiar with the rural areas in this County and the adjoining County. I own a farm

in this County. The Middle Tennessee Electric Membership Corporation operates in Rutherford, Wilson, David-
[fol. 1760r] son, Cannon and Smith Counties. It has approximately 280 miles of transmission lines in operation and it serves approximately 706 customers. The lines are owned by the Corporation. They were constructed by TVA as contractors under contracts for construction work.

Mr. Bemis: We make the general objection that the question goes beyond the scope of the direct examination.

The Special Master: It is overruled because of the lack of authority on the part of the Master."

Under the contract, TVA was to be paid for the construction work by the Corporation on the basis of the cost, plus overhead, as set out in the contract. I think I am correct in saying that the overhead is 12½ per cent. The payment for construction work has been made in part. $226,000 has been paid. The total obligation is $275,000. The lines have been turned over to the Corporation and are owned and operated by the Corporation. They were never operated by TVA so far as I know. The Corporation's office force sends out the bills and the checks from the customers are made payable to the company. The Corporation at present has three full time employees and one part time employee.

As to whether I can tell you of my own knowledge the extent of the rural electrification service at the time the Corporation was first organized, in the counties in which the Corporation is now operating, before the Corporation lines were built, I cannot answer that in the matter of percentages but I can answer it from my general observation and as I knew it from my experience as a farmer. I have been Director of the local Farm Bureau and other activities of the farmers, and since I was familiar with their situation, I can say that many communities desiring electric service were not being served at that time. These communities had made efforts to get service. I first learned of the movement to get rural electrification in this community when it was talked among the farmers in 1935. My first real knowledge of a real effort to get service in this section was
[fol. 1760s] called to my attention on the morning of the mass meeting of the farmers, when I was called at my office and urged to attend because of my interest in the farmers, which I did, and at that time the mass meeting authorized such procedure. Before the lines were constructed, the

people from these various communities represented at this mass meeting went back to their respective communities and took the matter up further with their people in the interest of rural electrification. We did not have the assistance of TVA or any of its employees, as the people who lived in the communities and attended the mass meeting were desirous for electric service and did the work themselves. The Corporation undertook to construct these transmission lines. I have referred to after the customers had signed up, which has been our policy throughout. The people went out who wanted service and signed up customers and then the lines were built to where the customers were. May I add that it was unanimous and that there are some communities that are desirous of service who have not as yet been accepted. The preliminary work was done absolutely at the instance of my associates and myself. We bore the expenses of the preliminary survey and of our travel long and short trips in the territory, and of our charter and its registration and we have not been reimbursed. In doing this work and in making this preliminary survey and in contacting customers, we were advised by TVA, after we had made the request for such information, that we could not serve customers already being served by another power company, so thereafter we did not contact such customers. This has been the policy of our Corporation from the beginning. In the first meeting of the Board of Directors, we talked it over and passed a resolution to that effect, stating that we would not in any way attempt to interfere with or disturb any power company that was rendering service in a community where we were active, and we also expressed in that resolution that we wished complete cooperation. I am rather [fol. 1760t] familiar with the list of customers receiving service from us and I think I am correct that there is absolutely not one who was previously a customer of the Power Company. The locations where our lines were built were not served at all prior to our service. Where other lines were already existing and rendering service, we did not undertake to secure customer contracts.

There are existing cases of duplication of lines where our lines are parallel or along the same road with the lines of the Power Company as they now stand. These lines of ours are parallel to theirs, because the private Power Com-

pany lines were built along these roads after our customer list was secured, and we had proposed to build these lines. Our lines were built for us after we had contracts with the customers along the road. I do not know whether or not the Power Company built these lines before or after we signed the customers. I stated a moment ago that our Corporation has adopted a definite policy of not soliciting any customers previously served by the Power Company, but I am under the impression that we have not received the same sort of cooperation from the Power Company, because in some instances when a list had been completed and signed up, customers have been served by the Power Company after they had signed up with us.

The Board of Directors of our Corporation determined whether or not we would build a line at a particular place or run a particular extension to a customer or group of customers, and we made that determination ourselves. I know what contacts our Corporation has had in the past six months with TVA or any of its representatives. These contacts have been only at our request when we have asked their advice in some detail matter, for example as to whether this particular undertaking may be economical and feasible, but it has been at our request all of the time. We have a regular meeting of our Board of Directors once a month and we may call special meetings in addition. Our Board [fol. 1760u] members are not paid any salary nor any expense money.

(Thereupon counsel for complainants received permission from the Special Master to examine the witness on matters he had testified to upon his cross-examination without waiving objections as to the scope of the cross-examination.)

Redirect examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

At times we would ask TVA for advice as to whether or not the proposed undertakings were economical and feasible. In a way TVA was at those times offering to help us and our counsel and render such advice and service, that is, after we prevailed upon them a while they might offer this sug-

gestion. We took up with the TVA such questions as related to our power contracts which we have with the TVA. We cannot secure customers except according to these contracts which we have with TVA. In reference to the power contract, we have asked other advice because we could not serve customers without the power.

"Q. Does that question depend upon whether the project under consideration is economical or not economical and feasible?

A. Well, as to whether our contract with them for power supply would hold good to render service to such customers.

Q. If I understand it then it covers other matters except those about which you asked advice, as to whether or not they are economical and feasible?

A. No.

Q. As to questions which might arise about your contracts.

A. Yes, with the Tennessee Valley Authority.

Q. And that is all?

A. That is all we have consulted them in regard to."

[fol. 1760u-a] I think TVA supervises our books and accounting under our power contract. That is they audit our books. My explanation is that to the extent our power contract with TVA calls for such attention to our books they supervise our books and accounting. I was a director in the local Farm Bureau of Rutherford County. I attended a mass meeting of farmers which was held in January, 1935, at the Rutherford County Health Unit and was the first of such meetings. I recalled some of the subjects discussed at that meeting. It was a farmers' meeting and they discussed their need of electric service and they pointed out how insistently they had striven to acquire electric service, but until that time had not been able to get it, and I know that it was the general feeling of the group that they were not [fol. 1760v] getting proper attention from the Power Company as to the then existing power service, that they were not getting proper consideration as to their getting power service. I don't recall any representative of TVA being present at the meeting. If there was,—I didn't know them,—and I didn't know by name all the farmers who were present. Professor C. F. Holt presided at the meeting and he is a farmer in this County. The meeting was in session when I arrived. I was notified of the meeting. Ramsey Snell, a farmer in this community, called at my home and requested

my wife to tell me to go. At that meeting I was selected as one of the persons who was detailed directly to proceed with the organization and with this effort to secure power from TVA, and after that meeting I attended other meetings. TVA employees attended later meetings at our request. I recall the names of some of these employees. Mr. J. M. Peavey of TVA present here in the room, is one; also Mr. Edward Falck and Mr. W. I. Nichol. I don't recall any of the others. There have been regular monthly meetings and some called meetings.

I judge that the farmers of this County and the adjoining counties found out about the possibility of forming an electric membership corporation and having TVA build the lines and the cooperatives borrow money from REA through their newspapers and from other sources of daily news. They did not know the details of this when they attended the meeting, but they knew something about it and that is what prompted them to attend their first mass meeting. I suppose the farmers saw that TVA power was available from the newspapers and I saw it myself. I approached TVA about the financing and building of the lines the first time after I had made my second trip to Fayetteville, when I looked up Mr. Peavey and talked to him about the possibility of securing such service. Mr. Peavey said: "I will, of course, let you have any suggestions that might be helpful", and he also emphasized to us that he was very busy [fol. 1760w] and did not know when he could give us any attention. Mr. Peavey discussed the matter with me further at other times. I have seen Mr. Peavey at the TVA office in Fayetteville. I have also seen Mr. Peavey at Shelbyville, after the TVA offices were there. I saw him with regard to our power contract and later in regard to our construction cont-act.

I believe that the thing that prompted the interest of the farmers in securing rural electrification was not entirely the TVA low rates but the desire and feeling of the need of electric service.

"Q. Now, I understand you to say that you do not believe that the low rates for power and the ability to secure money at 3½ per cent interest had any effect on the people as to the interest in procuring these lines?

A. Well, of course, I cannot answer for other people as to what their feelings were that prompted their thoughts.

Q. But all of these meetings and the building of the line and the expense and the formation of the Corporation was after the Tennessee Valley Authority had come into Middle Tennessee, was it not?

A. No. As I understand it, there had been brought to my attention communities and individuals who had made efforts to secure electric power but were not able to do so.

Mr. Snepp: I object to that as being hearsay.

Mr. Fitts: He asked the witness for a conclusion,—he asked him if it was based on the ability to get cheap Tennessee Valley Authority rates and the witness said 'no' and then he proceeded to say that he knew of such efforts before that time.

Mr. Bemis: Now, what has occurred appears on the record and we now ask that the record show that we move that the witness' explanation be stricken out.

The Special Master: I think that the witness more or less had occasion to make an answer of that kind at that time.

Mr. Bemis: We note an exception."

I have not known the County long enough to know whether the interest that was manifested at these meetings held by the farmers was after the TVA had come into Middle Tennessee and started its operations.

[fol. 1760x] "Q. What do you mean by saying that you 'had not known the County'?

A. Well, I mean by that I have been in this County only ten years as a citizen and owner of property and during those ten years I have been rather impressed in these various discussions with farmers, and that was before the Tennessee Valley Authority was every organized, to the effect that they had made diligent effort to secure electric service and they were not able to get it.

Mr. Snepp: We except to that statement of the witness."

The first meeting I attended towards getting rural electrification was in January, 1936. I cannot answer whether that was before or after TVA began its operations in Middle Tennessee. I do not know when TVA began operating there. At that time TVA did have an office in Fayetteville and I visited them there to get information.

I have lived in this County about ten years. I own property a short distance from the then existing Tennessee

Electric Power Company line and I asked that they view my case. I bought this property in June, 1932, and soon after that I went to the Power Company, to one of their officials, and asked that they view my case and give me some kind of an answer as to whether they could serve me or not and I never heard anything from them and later I learned,—this was before I ever heard of the Tennessee Valley Authority,—and I heard that the farmer directly opposite my property was undertaking to get service and I went back to the Power Company again and offered them a right of way across my property free of charge towards servicing this farmer and my farm which was directly across the road from this existing line to this community that they went through there to serve and I have never heard from it since. In answer to the question as to whether I made an application for extension of service to the Tennessee Railroad and Public Utilities Commission, I do not know about any other people but they did not supply me with any written form to fill out but simply ignored my request and have not made any answer to it yet.

[fol. 1760y] In making our surveys of customers in the community which we signed up, TVA did not furnish the forms that we used. Our attorney prepared the form we used and I cannot answer whether it was prepared from the one furnished by TVA. The surveys of the customers were not made prior to the formation of the Corporation. The general survey of our territory was made sometime before the mass meeting which set the organization going. In the early days before the Middle Tennessee Corporation was set up, Mr. Carmack was our attorney. He was elected at the mass meeting as one of the members of the organization when the Corporation was authorized. Mr. McFarland, our present attorney, began to represent the Corporation at the time it was organized. As I understand it, the form of survey that was used was prepared by Mr. McFarland. As far as I know, before the formation of the Corporation he prepared the form of survey. As far as I know he was our acting attorney at that time. Since this subpoena was served upon me I have talked to Mr. McFarland.

Recross-examination:

(Offered by defendants and admitted by the Court over complainants' objections set forth at side folios 638 to 641, inclusive, supra.)

I talked to Mr. McFarland once in his office and I guess we were in the office five or ten minutes. The first time that I saw him was about ten minutes before we appeared here today. No one connected with the TVA has told me what to say or what not to say in answering questions, and no one told me what to answer or specifically what to state in reply to any questions.

(The witness was excused.)

[fol. 1761] OFFERS IN EVIDENCE

Counsel for defendants offered in evidence and the Court received as Defendants' Exhibit 153, the Hearings on the Independent Offices Appropriation Bill for 1939. Counsel for complainants objected to the offer on the grounds that the statements made by TVA representatives to the Appropriations Committee as set forth in said Exhibit were incompetent and self-serving.

"Mr. R. T. Jackson: If the Court please, the situation is that we had a little different view about the admissibility of documents, in the first place, than has been expressed by the rulings of the Court. In the first place, House Document 328 is the report of engineers in their official capacity, which, as we understand it, has been traditionally accepted by the Federal Courts as proper evidence.

When matters come before a committee involving facts that are in litigation with a citizen or with other arms of the Government, it is our understanding that their statements were admissible as admissions against them, but not in their favor. The Court adopted a different view of the latter class of documents, and held, as I understand it, that they were admissible in toto regardless of whether they might be admissions, or what we might claim to be self-serving statements.

Our only purpose here was, with the Court's permission, to preserve our position as a matter of evidence upon that type of documentary proof."

* * * * * * *

"Judge Allen: The Court has decided to admit the statements in connection with the budget hearings and all matters

in connection therewith. Your objection on that point is overruled and you may have an exception.

Mr. S. D. L. Jackson: If the Court please, I am not quite clear as to the extent of the Court's ruling.

Judge Allen: The extent of the Court's ruling is that the entire statement, not only made by members of the Authority, and the colloquy between them and members of the Committee, but the speeches of Representative May, and everything in that book is received in evidence, everything in that connection.

[fol. 1762] Mr. S. D. L. Jackson: And may we have an exception to the admission of the exhibit in that form?

Judge Allen: Yes."

Counsel for defendants offered in evidence and the Court received as Defendants' Exhibit 154, the Annual Report of TVA for the fiscal year ending June 30, 1937, submitted to Congress December 31, 1937.

Counsel for defendants offered in evidence and the Court received as Defendants' Exhibit 155, a copy of a resolution adopted by the Board of Directors of TVA under date of December 20, 1937 approving a letter attached thereto from John B. Blandford, Jr., General Manager of TVA, to Congressman Woodrum, and as Exhibit 156 a copy of another resolution adopted by the Board of Directors of TVA under date of December 20, 1937.

"Mr. S. D. L. Jackson: May I submit an objection on the ground of their materiality and relevancy, subject to the Court's ruling?

Judge Allen: There is a good deal of evidence in this case that is not material or relevant, on both sides.

Mr. Fly: The letter to Honorable Clifton A. Woodrum is Defendants' Exhibit 155, and the resolution authorizing the acquisition of land and fixing the maximum pool level at Gilbertsville is exhibit 156. Are those received, your Honor?

Judge Allen: They have been received.

Mr. S. D. L. Jackson: Please note our objection and exception."

Counsel for defendants offered in evidence and the Court received as Defendants' Exhibit 157, a certified copy of resolution adopted by the Board of Directors of TVA under date of February 20, 1936.

[fol. 1763] "Mr. S. D. L. Jackson: We object to it as immaterial and irrelevant. And on this matter, I think if the Court please I shall object to the mode of proof.

Mr. Fly: It is a duly certified copy with the seal of the Authority affixed. It is the first time we have had an objection of that character.

Judge Allen: The exhibit is received.

Mr. S. D. L. Jackson: An exception."

Counsel for defendants offered in evidence and the Court received as Defendants' Exhibit 158, a certified copy of a resolution of the Board of Directors of TVA under date of January 25, 1935.

"Mr. S. D. L. Jackson: We object to it on the ground it is immaterial and irrelevant and the mode of proof.

Judge Allen: It may be received.

Mr. S. D. L. Jackson: An exception."

Counsel for defendants then offered in evidence and the Court received over complainants' objections as Defendants' Exhibit 2, a stipulation entered into between the parties.

Thereupon defendants rested.

"Judge Allen: We will proceed with the rebuttal tomorrow. The Court will hear argument, and has asked that proposed findings of fact and conclusions of law be presented immediately upon the close of the hearings.

Mr. Fly: Will there be any lapse of time between the close of the hearing and the argument, your Honor?

Judge Allen: Well, that will depend somewhat upon the natural course of the day and the night.

Mr. R. T. Jackson: We should like to have an opportunity to discuss that with the Court and other counsel if we may, when we are through with the testimony.

Judge Martin: May I personally throw out a suggestion in view of your inquiry? This is just from this one Judge. [fol. 1764] We should like very much to complete the case entirely this week, that is, have all of the proof in, findings of fact submitted, conclusions of law offered and the argument of the case, this week. There are four days left in this present week. Now, that is just the expression of an individual view.

Judge Allen: It is the expression of a second view. But how long do you expect your rebuttal to take?

Mr. R. T. Jackson: I expect we will take three days for our rebuttal, and I had very much hoped that we would not have to work day and night and try to argue the case the next morning to the Court, because I don't believe it would be very helpful to the Court that way.

Judge Allen: Were you asking for a definite period of time?

Mr. Fly: I had hoped and expected that counsel in view of the very small amount of new material that we have brought in in our case, that counsel would finish their rebuttal in two days. Then that would give us Friday and Saturday to finish the argument, and wipe the case out.

Judge Martin: That is what I had hoped, that there would be two days at the outset of more proof, and two days for argument.

Mr. R. T. Jackson: I don't believe we could do that.

Judge Martin: A day and a half for argument.

Mr. R. T. Jackson: Speaking for myself, I am afraid I couldn't do anything Friday, if we finished Thursday.

Judge Allen: The Court is compelled to view the matter, most of all, from the standpoint of its public duty, its obligation under the statute, its obligation to the work of these two District Courts and the Circuit Court. We are compelled to place those matters first, and you will bear in mind that on each side of this controversy there are many experienced lawyers. In other words, this is not a case of one man trying the case on each side. Each side draws upon great resources. It has been the conclusion of the Court, it is the conclusion of the Court, that we shall proceed immediately with the argument, and with the presentation of the findings of fact on the conclusion of the hearing. We are compelled to that.

[fol. 1765] Mr. R. T. Jackson: We should like to have an opportunity to file a motion, and file some objections.

Judge Martin: During the noon recess I have already reset my Court Docket. I keep current by very hard work. I am speaking of my own district now. During the noon recess the District Attorney called me over long distance 'phone with respect to the criminal calendar. The constitution of the United States guarantees a speedy trial. I carry out that constitutional requirement very rigidly.

These men in jail are waiting for trial, awaiting indictment by the Grand Jury. They have a right to be arraigned, tried and sentenced. I have already reset three weeks of my calendar. Of course, we have been out of our districts, respectively, will have been, even at the conclusion of next week, one sixth of a year, a full year, that is two months, and of course, we have those considerations in our minds.

We have, of course, allowed very full cross examination in the case. The rules are very strict, if I construe them correctly, with respect to the limit of rebuttal testimony, so there should not be very much time consumed frankly, in rebuttal, where the case has been fully developed by both sides in chief, and it does seem to me that four days left this week, with four days left this week that the case ought to be in fieri Saturday evening.

Mr. R. T. Jackson: I would like to say this, if I may, of course we are confronted with the situation here where we have one suit, where we might have had 18. It required a great deal of preliminary evidence to go in. We tried to shorten our case as much as we could, at the suggestion of the Court avoiding cumulative evidence, and there has been very extensive and cumulative criticism advanced on the other side of the case. There was much more time devoted to that than we devoted in our case. I think it is a proper case for some rebuttal testimony.

We do not understand the statute, while expediting the great constitutional cases, means that they should be expedited beyond the point where counsel can give every aid that they can to the Court in determining those cases.

Judge Allen: The Court feels that it has allowed counsel to assist the Court at great length.

Mr. R. T. Jackson: My only point is as far as oral argument is concerned, whatever that is worth to the Court or to the litigants, that the opening of that after closing the night before at the end of a very long trial is a substantial denial of right, so far as the litigant is concerned.

[fol. 1766] Judge Allen: If you have any decision of the United States Supreme Court to that effect, I personally should be glad to see it.

Mr. Fly: He has none, your Honor, I am sure.

Mr. R. T. Jackson: I don't claim that I have, when I said I feel that is so as a practical matter.

Judge Martin: I must comment, in view of the statement of counsel, for myself I have never sat in a case as Judge, nor tried one as attorney in which greater latitude was allowed counsel in the full development, both of the charges made by the complainant and of the defenses brought forward to those charges in the way of admission of evidence. we have not even strictly observed all of the rules of evidence. We have allowed latitude on the side of admitting where there was doubt about the competency of it in every case.

So, certainly this Court could not be properly criticised for any expedition unduly, or any haste, or any forcing of counsel to proceed more rapidly than justice would require.

But now when we come to rebuttal, it does not seem to me that counsel should be permitted to cumulate or to produce rebuttal testimony on either side of anything except some very material matter to the administration of justice in this case, and a correct decision of it.

I refer counsel to the authorities with respect to the limit of proof in rebuttal as well established in the United States Court in support of that position.

Judge Allen: Now, in respect to the argument, the Court has decided to allow a substantial time for argument to each litigant, longer than is allowed for the largest case that I have ever seen argued in the United States Circuit Court of Appeals.

But, speaking for myself, after 16 years—this is not for the record.

(Statements made off the record.)

Mr. R. T. Jackson: I did not mean to imply that there had been any undue expedition of the case. I was concerned and am concerned about the question of oral argument, and I thought it my duty to frankly state that to the Court, because it seems to me that is a matter of importance."

[fol. 1766a] **Rebuttal Evidence for the Complainants.**

Counsel for complainants offered in evidence and the Court received, as a part of complainants' case in chief, Complainants' Exhibit 928, being a contract dated March 12, 1934 between TVA and the City of Florence, Alabama;

Complainants' Exhibit 929, being a contract dated March 14, 1934 between TVA and the City of Tuscumbia, Alabama; and Complainants' Exhibit 930, being a contract dated March 14, 1934 between TVA and the City of Sheffield, Alabama.

[fol. 1767] REQUESTS FOR SUBPOENAS DUCES TECUM

"Mr. S. D. L. Jackson: At this time, if the Court please, complainants desire to present to the Court, with the request that the Court permit a writ to issue, certain subpoenaes duces tecum against the Tennessee Valley Authority.

The first one is certain described pages out of the detailed statement of budget estimates for the fiscal year ending June 30, 1939, submitted to Congress in December, 1937. This is a description of the pages.

First, 'Navigation, flood control and hydro electric program summary on pages 7 and 8, including justification of estimates, the plan and profile exhibit on page 9, the principal features exhibit on page 10, the channel depth exhibit on page 11, power demand and capacity exhibit on page 14, proposed program of dam construction on page 15, the structures and improvement detail for Gilbertsville Dam and reservoir on page 30, structures and improvement detail for electrical plant and equipment on page 31, and transmission and distribution exhibit on page 32 of TVA detailed statements of budget estimates for the fiscal year ending June 30, 1939, submitted to Congress in December, 1937.'

That is a general description of the statement that was presented. (This subpoena, following a later ruling of the Court at a subsequent session, was identified as Complainants' Exhibit 954.)

I have another one relating to that same document.

Judge Allen: It will not be necessary to read it.

Mr. S. D. L. Jackson: I submit this one in the event the Court does not permit a subpoena to issue for the described pages, because this is a subpoena duces tecum for the entire document, the budget estimates submitted to Congress, and this is only in the alternative. (This subpoena, following a later ruling of the Court at a subsequent session, was identified as Complainants' Exhibit 955.)

The third one is for certain minutes of the Board of Directors of Tennessee Valley Authority approving recommendations or reports relating to methods of operating Norris or Wheeler Dams, or any other dams embraced in the unified plan now under construction, and so forth. (This subpoena, following a later ruling of the Court at a subsequent session, was identified as Complainants' Exhibit 956.)

Judge Allen: The subpoena duces tecum, the application for a subpoena duces tecum with reference to the copy of the report of the United States Department of the Interior, Bureau of Reclamation, is refused. The Court will consider the other requests."

[fol. 1768] Thereupon counsel for complainants, to preserve their objection and exception marked for identification as Complainants' Exhibit 931 the subpoena duces tecum refused in the foregoing ruling.

[fol. 1769] MAJOR R. W. PUTNAM was recalled on behalf of complainants and, having been previously sworn, was examined and testified further as follows:

Direct examination:

I have been on the stand before in the complainants' case in chief and was sworn at that time.

"Q. Major Putnam, the defendants here have presented testimony in this case that it takes no longer for a tow to pass through a high dam lock than through a low dam lock. In the design of a lock what factors govern the size of the valves, and the number and size of the openings into the lock chamber?

Mr. Fly: I object to this as being improper rebuttal. This is a subject which Major testified on expressly in his examination in chief, and it was met in the Government's case. This is just the sort of thing that will spread this case endlessly, if he is to go back and merely pick up the weak spots in his own testimony.

Judge Allen: The memory of the Court is that Major Putnam himself testified upon this point. Objection sustained and you may have your exception.

Mr. S. D. L. Jackson: May we have an exception? And if the Major were permitted to answer he would state that the length and width of the lock chamber, its height, and the rapidity with which water is to be introduced into the chamber are the factors governing the size of the valves and numbers and size of the openings into the lock chambers.

Q. Major Putnam, what is the general practice in the design of locks of different widths and lengths, but of the same height—when it comes to the question of the time of filling or emptying the locks?

Mr. Fly: The same objection.

Mr. S. D. L. Jackson: My recollection is, if the Court please——

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I state that my recollection is that although Major Putnam testified as to the time of going through the locks, there was no testimony introduced by us in our case in chief as to the design, and the factors and matters of that kind that enter into the construction of locks, [fol. 1770] so as to determine and regulate the times of filling and emptying. That was gone into by the defendants. There are exhibits here showing the times necessary to go through locks of different types, but these matters are preliminary, and leading up to testimony that will directly rebut testimony that the defendants offered here of this nature.

Judge Allen: Major Putnam was on the stand a considerable time. How long was it, Major Putnam?

The Witness: Almost a day.

Judge Allen: We thought so. The Authority, in order to rebut certain testimony of Major Putnam, introduced certain testimony of their own. Now, it is not our understanding of the rule of rebuttal that the case will be reopened on any subject.

Mr. S. D. L. Jackson: We are not asking to reopen the case on the subject.

Judge Allen: Nor that it is proper rebuttal to rebut the direct evidentiary fact leading to the ultimate fact. An ultimate conclusion was reached by Major Putnam and that ultimate conclusion was contested by the Authority.

Mr. S. D. L. Jackson: The point I make is that at the time the Authority contested it, it went into certain computa-

tions and calculations. Now, we have a right to rebut the accuracy of those, even within the limited rule of rebuttal that the Court has stated. And this is what this testimony is directed to, and if permitted to continue it will lead directly to that point in a very short period of time.

Judge Allen: You testified with reference to the time element, didn't you?

The Witness: I testified as to the relative total time required, total time lost in lockages of the two plans. As I recall it, a certain percentage for one, and a certain percentage for another for the entire trip.

Mr. S. D. L. Jackson: We certainly, if the Court please, have the right to rebut these calculations that the defendants introduced here, on times, on lockages and design, and one thing and another of that character. This testimony, if your Honor please, is not merely appended to the testimony that Major Putnam gave in our case in chief. The line of questions which I have, and which if permitted to pursue, I would like to, or I will bring out, shows the inaccuracies and the errors in the computations, and of the opinions given by the defendants' expert or skilled witnesses. Now, certainly the computation that they produce through witnesses in answer to our case in chief is not a matter that we could [fol. 1771] by any possible stretch of the imagination be expected to meet in our case. But if an expert takes the stand, if your Honor please, in defense, and gives an opinion or testimony based on calculations, and he states the basis of his opinion, sets forth his calculations by an exhibit or otherwise, then it seems to me that the Federal rule of rebuttal, or any rule of rebuttal, and even the rule that the Court enunciated from the bench a moment ago, it is perfectly proper rebuttal for the complainants then to show the inaccuracy and the errors and the weaknesses of those opinions and calculations. Now, that is just what we are doing this for.

Judge Allen: The objection is sustained on the ground that the question calls for an answer which is not proper rebuttal. The testimony referred to by counsel for the complainants, pages 3457, 3458 and 3459 of the (stenographic) record, was that of Colonel Watkins on cross examination. The question asked by Mr. Raymond Jackson leading into the subject was, 'How long did you estimate it would take

for lockage through a low dam in comparison with the lockage through a high dam?'

I might say—this is not included in this typewritten ruling, but there is another question on the same page by Mr. Raymond Jackson, 'At what speed do you estimate that a tow with eight barges will make on an average on a round trip.'

The Court has admitted opinion testimony with extreme liberality. Major Putnam, witness for the complainants, gave his own testimony on this subject at considerable length. To recall Major Putnam, an expert for complainants, whose opinion testimony was opposed by defendants' witness Colonel Watkins, an expert for defendants, is to reopen the case on expert testimony, and would lead to an unnecessary and improper examination in rebuttal. This ruling applies to opinion testimony given by experts both on direct, on cross and on redirect examination. This ruling does not exclude evidence in denial of some affirmative case or fact which defendants have attempted to prove. (Carver v. U. S. in 160 U. S. 553, at 555). You may have an exception. You may proceed.

Mr. S. D. L. Jackson: We note an exception to the Court's ruling, and ask leave of the Court that if the witness were permitted to testify he would say that the general practice is to design the valves and culverts to provide for sufficient openings of proper size into the lock chambers, so that the time of filling will be the same. Now, if the Court please, I have several questions bearing upon this same point, which, I take it, are affected by your Honor's ruling, and I think it will save the time of the Court if I may be permitted to ask the questions and make the record. I will try to be as expeditious as possible.

[fol. 1772] Judge Allen: The Court feels that your objection is saved by your exception. You have stated what you want to show and we have ruled against you, and you have your exception, and I will ask you not to ask further questions along this line.

Mr. S. D. L. Jackson: If the Court please, I must respectfully differ with the Court that the question which I did ask and which this testimony will bear upon has been fully or completely stated by the two questions that I have been permitted to ask of this witness.

Judge Allen: Suppose you show the Court the questions.

Mr. S. D. L. Jackson: I will be glad to state it to the Court.

Judge Allen: Suppose you show the Court the question.

Mr. S. D. L. Jackson: I have a form here of the questions and my notes of answers on them. These are questions 3, and I have questions 4, 5, 6 and 7.

Judge Allen: These relate to the same general subject.

Mr. S. D. L. Jackson: Those I am now handing to the Court, that is true, but that is not all the testimony I expect to elicit from Major Putnam. May I have this marked as Complainants' Exhibit 932?

Judge Allen: Major Putnam, didn't you testify rather at length about the time it would take to make these trips, on the lockage?

The Witness: I don't recall that, I spoke in general terms of the percentage of time lost on a trip for lockage, from one end of the river to the other, of 7.3 per cent for the low dam and four per cent for the high dam. I did not, as I recall it, go into the details.

Mr. Fly: You did discuss the breaking of tow at the different sized locks, did you not?

The Witness: I did.

Mr. S. D. L. Jackson: If there is any confusion about the first exhibits——

Judge Allen: What is the fact affirmatively introduced by the defendants that you are rebutting?

Mr. S. D. L. Jackson: That there was no particular difference in lockage time between the small and large locks.

Judge Allen: That is the conclusion, that is the ultimate fact.

[fol. 1773] Mr. S. D. L. Jackson: That is the ultimate fact stated by Major Watkins, and then he said there is time consumed in slowing up, and the Court will recall he said the filling time of the small locks and the large locks is practically the same. Then, I think Mr. Barker——

Judge Allen: All of this was in connection with an estimate asked for by Mr. Jackson?

Mr. S. D. L. Jackson: Well, testing the scope and the background of opinions that the witness expressed. That is the purpose of cross examination, if the Court pleases.

Judge Allen: The Court is not criticizing the cross examination.

Mr. S. D. L. Jackson: I merely point that out, that it is to bring out the hypotheses upon which opinions are expressed, and to lay a groundwork for evidence of the character which we are now seeking to offer.

Judge Allen: Major Putnam, this exhibit is your estimate of comparative lockage time at the locks?

The Witness: It is not my original estimate, it is one based upon testimony given as to thirty-one minutes through a low-lift lock and thirty-nine minutes through a high lift lock, by Mr. Barker, as I recall, and on the assumption that that thirty-one minutes and thirty-nine minutes is correct.

Judge Allen: In other words, this is based on assumption.

The Witness: It is based on assumptions as to testimony given by defendants.

Mr. S. D. L. Jackson: If I may state the testimony of Mr. Barker and the defendants' exhibit to which Major Putnam alluded in answer to the Court's inquiry a moment ago is Defendant's Exhibit 105, and Mr. Barker's testimony, which is testimony in direct appears at pages 4668 and 4669 of the (stenographic) record.

That is not matter which was developed on cross-examination. It was matter which was affirmatively developed by the defendants in the direct examination of Mr. Barker.

Mr. Fly: Of course the main point is that Major Putnam himself testified as to lockage times and he criticized the different sizes of locks, and testified as to the loss of time and inconvenience in breaking tow. He covered this entire [fol. 1774] field. Now, by shading into a matter of detail they want this expert to get on there and furnish additional computations. It is merely a shading on matters of utmost detail. The Major has been over all of this in his main case.

Judge Allen: The Court has made it plain that this ruling does not depend upon the fact that Colonel Watkins' testimony was brought out on cross examination. We wanted to put that testimony in its setting, and that was why we referred to the cross examination. The Court adheres to its ruling. We consider that these proposed questions and the exhibit embody opinion testimony of an expert, who has already testified on the subjects in chief. The opinion

will not be permitted to be asked, and you may have your exception.

Mr. S. D. L. Jackson: Now, may we have an exception? And if the Court please, this is an entirely different matter than has been presented before in this case, namely, the denial by the Court of our right to make a record in the case.

Judge Allen: You have made your record.

Mr. S. D. L. Jackson: But if the Court please, — I don't want to be contentious, — but I cannot make a record unless I am permitted to ask these questions of this witness, and I now earnestly request the permission of the Court to be permitted to make my record so that this question may be presented to the Court on review, by asking the questions of this witness. I will of course abide by the ruling of the Court and will attempt to expedite the matter just as much as possible. But I most respectfully urge we do have a right to make a record in this case. And that ruling of the Court is an entirely different and most serious thing.

Judge Martin: Do you mean by 'making a record' that we have not allowed you to make a record for about eight weeks? Just what do you mean by that, that you have a right on each of these questions, the general line of which we have excluded, on very clear grounds, supported by the Supreme Court authorities cited, do you maintain that you have a right to dictate into the record in response to each question that you offer, the answer which the witness would have given? Is that what you mean by making a record?

Mr. S. D. L. Jackson: And I first have a right to ask each question, and to dictate into the record as an offer to prove, within the meaning of equity rule 46 the substance of these answers.

Judge Martin: In other words, your contention is that you have a right to ask the question and then the objec- [fol. 1775] tion to the question is sustained, and then you offer to prove what the witness would have answered to that question?

Mr. S. D. L. Jackson: That has been the course followed throughout this trial, if your Honor please. I might say, of course, it is prescribed by Equity Rule 46, and I might add that in the new rules of practice which have been

adopted by the Supreme Court, that is prescribed as the rules which will be followed or the method which will be followed when those new rules go into effect sometime next summer. It is merely an adoption of the rule of Blease v. Garlington in 92 U. S. page 1. It does not change the rule. It is existing practice, and I submit we have a right to do that. It is a substantial right of counsel in the case.

Judge Martin: Does the Equity Rule divest the trial court of discretion in the matter of burdening the record with unnecessary details, where the point is clearly preserved for review by the Appellate Court?

Mr. S. D. L. Jackson: But my point, if your Honor please, is that it cannot be clearly preserved for review by the Appellate Court unless I am permitted to ask the question and state in the record in substance, showing so much of what the witness would answer as would clearly show the nature of the testimony that is excluded, as is all set forth in Equity Rule 46.

Judge Martin: Suppose in the instant matter that we are considering, following our ruling that we are excluding the recalling of an expert who has already testified at length in the case to give opinion testimony opposed to the opinion testimony of some witness for the defendants, and we have indicated clearly the basis of that ruling, isn't complainants' right on review to show error in that ruling, if erroneous, clearly preserved by the record as it now stands.

Mr. S. D. L. Jackson: I don't believe so, your Honor. Under the ruling of Blease v. Garlington.

Judge Martin: Why is it not preserved?

Mr. S. D. L. Jackson: Now, I might say we have, ready to present, testimony from Major Putnam dealing not only with this narrow point as to the lockage times, but on other matters. And of course the situation cannot be accurately or truly reflected in the record unless this Court permits me to ask these questions, referring back to other specific items of testimony of the defendants' witnesses, which are affirmative facts, a number of which are affirmative facts, and to make my record in each instance.

Judge Allen: Then in this case you could keep us here until April on rebuttal.

[fol. 1776] Mr. S. D. L. Jackson: I can assure you, if your Honor please, that it will probably be the most expeditious way in which the matter can be handled.

Judge Allen: The Court has no assurance of the progress of this case, from the progress of the case.

Mr. S. D. L. Jackson: And I might state that the only way in which the reviewing Court could determine whether or not the evidence offered in rebuttal is proper rebutta' is by having it spread upon the record so that they might consider it.

Mr. Fly: If I might offer an observation, I don't know of any rule of law that requires the statement of each specific question. When a witness is called upon to give a certain line of testimony on a certain subject, then it surely is sufficient that there be a brief outline of his proposed testimony upon that point; and not go through that laborious procedure by taking up each specific question in that field, and then in detail each specific answer.

Mr. S. D. L. Jackson: Well, I think the rule is well defined, and particularly in connection with rebuttal evidence the necessity for it is even more apparent than it might be in the case in chief of either of the parties, because in order for rebuttal evidence to be proper it must be related to certain items of the evidence of the opposing party, and that cannot be shown in any other way in the record unless and until we are permitted to proceed to make up our record.

Judge Martin: The presiding Judge stated this rule does not exclude evidence in denial of some affirmative case or fact which defendants have attempted to prove, but was based on the rebuttal of opinion testimony by the recalling of a witness who has already testified as an opinion witness at great length.

Couldn't you make a statement, Brother Jackson, that would preserve your record, without the use of question and answer form, which would delay us, that would show what you could prove by this witness by way of opinion, if permitted to do so? Couldn't you state that into the record? You have the power of very succinct statement, the Court observes.

Mr. S. D. L. Jackson: I cannot suggest any more succinct method of doing it than to be permitted to state it in response to proper questions.

Judge Allen: The Court at this time is considering the entire scope of rebuttal.

Mr. S. D. L. Jackson: That was as I understood the rul-

ing. Consequently, I cannot do that, in answer to Judge Martin's question.

[fol. 1777] Judge Allen: We bear in mind that an enormous amount of this record is made up of expert testimony.

Judge Gore: Mr. Jackson, do you propose to prove by the questions that you want to ask this witness that the witness Watkins, I believe that was his name, or any of the different witnesses in dealing with the subject now under consideration, took into consideration elements or factors which were not proper to be considered in those things.

Mr. S. D. L. Jackson: Took some into consideration and disregarded others that must be taken into consideration in order for their opinion to be entitled to any weight.

Judge Allen: All of that bearing on opinion testimony.

Mr. S. D. L. Jackson: All of that bearing upon the facts that they stated as to what their opinion was based on. Some of those facts are directly controverted; and it also bears upon the credibility of the witness.

Mr. Fly: If I might observe, I think the clear meaning of the Equity Rule is that in some brief way for the convenience of the Court we get the substance of the proof stated. Certainly under Equity Rule 46 this Court has full discretion as to the matter of detail. I don't think there can be any doubt as to that.

Judge Allen: The Court has special discretion in the matter of rebuttal. The record will show that the complainants offered Major Putnam, an expert for complainants who had already testified in chief, and whose expert conclusions have been opposed by expert witnesses of the defendants, who would, if he had been permitted to testify, have contradicted the factors used by the defendants' experts in their opinion contradictions of Major Putnam's opinion testimony. You may have your exception.

Mr. S. D. L. Jackson: Now, may we have an exception? Major Putnam's testimony, opinion on this particular point, I think would go beyond that, if the Court please. He brings out the inaccuracy of certain facts on which the defendants rely.

Judge Allen: On which opinion testimony is based.

Mr. S. D. L. Jackson: That is right, but that was not stated in the statement that your Honor read, as I understood it. It related to the opinions.

Judge Allen: The ultimate thing is the opinion. Major Putnam gave an opinion based on certain factors. Colonel Watkins and other people gave other opinions based on other factors, brought out both on direct and in cross [fol. 1778] examination. Now, the proposition is we shall go again into these factors for the purpose of getting another opinion, not a denial of an ultimate fact, not a denial for instance of the fact or statement that Norris Dam is 500 feet high instead of 225, or whatever it is; not a denial of the fact that the Tennessee River is some 650 miles from Knoxville to Paducah, or whatever it is; not a denial of a fact. The purpose is a denial of an opinion.

The Court has made that plain, and the Court's ruling stands.

Mr. S. D. L. Jackson: Might I have an exception? And again, even at the risk of appearing to be contentious, I would like to state that I think also that Major Putnam's testimony, and this testimony which is offered, does deny certain facts which were introduced in evidence by the defendants here. And may the record show——

Judge Allen: Major Putnam stated to me that the exhibit was an opinion based on certain assumptions. That was the effect of his statement. I thought him better qualified to testify than anyone else on that subject.

What are the facts now which you claim are going to be shown by this evidence?

Judge Martin: The rebutting fact, not the rebutting opinion, but the rebutting fact.

Mr. S. D. L. Jackson: That in the construction of locks that the construction is different in locks where the lift is to be of a different degree, so that in the actual construction the valves, culverts and openings into the chamber are given such dimensions and spacing as to let the water in as fast as possible without creating disadvantageous surges. Where the surge is too great—well, I take it perhaps that part is an opinion. But I take the first part to be a definite fact.

Judge Allen: Bearing upon an opinion.

Mr. Fly: Lockage time, which in turn goes to another ultimate fact of the advantages of high dams over low dams. It is one of those shadings of this detailed evidence. It is not an ultimate fact in any sense of the word.

Judge Allen: The Court will permit counsel to ask ques-

tions calling for denials of affirmative cases or facts which the defendants have attempted to prove.

Mr. S. D. L. Jackson: May I in connection with the statements which have been made as to this particular phase of the testimony, let the record show the offer of complainants' exhibit 932 in connection with this. That is the one [fol. 1779] that relates to this matter we have been discussing. I wanted to show that was offered as part of or in connection with the offer to prove the testimony in this particular phase of the case. I take it the ruling is that it is excluded.

Judge Allen: Let the record show it is excluded, and you may have your exception. Let the record show that this is the exhibit concerning which the Court interrogated Major Putnam, and he said that it was an estimate based on certain assumptions, and on certain figures in the record. Is that correct, Major Putnam?"

(Complainants' Exhibit 932 referred to in the foregoing ruling of the Court was later received in evidence by the Court. See side folio 1807 of this record.)

"The Witness: That is correct.

Mr. S. D. L. Jackson: May we have an exception to the exhibit being excluded. If the record does not so show, may the record show that that exhibit was prepared by him or under his direction?

Judge Allen: Yes.

Mr. S. D. L. Jackson: If I have not already done so, may I reserve an exception to the Court's ruling as to the refusing to permit me to ask these questions and state the answers as the offers to prove.

Judge Allen: The ruling was made upon the ground that it appears from the examination of the questions and the examination of Major Putnam that the ultimate facts to be contradicted by the exhibit and by the facts mentioned in the questions is an opinion. In other words, what is sought here is the contradiction of an opinion and not the contradiction of a fact affirmatively attempted to be proved by the defendants.

Mr. S. D. L. Jackson: May we have an exception? We will attempt to prepare a short statement and submit it to the Court at some future time on the point."

As to the testimony of the defendants that terminal operations under the low dam plan would be subjected to material additional expense on account of rapid and frequent fluctuations of the river, in the low dam plan for navigation, in the case of terminals, where there are cranes and derricks and the operations are by direct lifting, no adjustments would have to be made where the changes in stages are as great as four feet a day, as those terminals are built in such a way that it is merely a question of how [fol. 1780] far a bucket or tongs would be dropped in order to pick something up. Some terminals are equipped with chutes, belt conveyors and escalators, the type of equipment which runs on an incline, and freight is either slid down or pulled up by means of belts or otherwise, hinged at the inner end and raised and lowered at the outer end. In the normal daily operations at such terminals, they have to encounter the difference in elevation of whatever is the difference between the height of a barge when loaded and the height of a barge when unloaded, and that normally exceeds four feet, so that a daily fluctuation of as great as four feet would not be something that they do not encounter every day anyway.

"Q. About how many days during the year on the average do you estimate that fluctuations in stage in excess of two feet a day would occur at the following places: Florence, Alabama, Johnsonville, Tennessee and Chattanooga, Tennessee?

Mr. Fly: May it please the Court, reviewing the summary of Major Putnam's testimony, I find that he testified on this subject, the fluctuations of pool levels, the effects on terminals, both on his direct and on his cross examination during complainants' case.

Mr. S. D. L. Jackson: I don't believe so.

Mr. Fly: He gives the difference in terminal costs, port by port, and shows $281,249 cheaper largely because of greater fluctuation.

Judge Allen: What page?

Mr. Fly: I will have to look up the page. I have a summary of the testimony.

At another point, he referred to the fluctuations in the pool at Norris, and indicated great difficulty with terminals at Norris Reservoir because of the fluctuations.

Mr. S. D. L. Jackson: I recall testimony, something about the fluctuations at Norris.

Mr. Fly: This question is just shading into the utmost detail on subjects that this witness covered at the outset. And if he did not cover it in detail at the outset, it means no more than it means as a matter of utmost detail.

[fol. 1780a] Judge Allen: The question plainly calls for an estimate.

Mr. S. D. L. Jackson: Oh, this question plainly calls for an estimate, there is no question about that.

Judge Allen: Yes. This is not the stage of the case to be introducing opinion testimony, Mr. Jackson, you know that. The proper and usual form of a question in rebuttal is 'Is it or is it not a fact that so and so'.

Mr. S. D. L. Jackson: I must differ with the Court. I don't think there is any particular form of question that is applicable to rebuttal testimony.

Judge Allen: The objection is sustained to the question.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may have an exception.

Mr. S. D. L. Jackson: And if the witness were permitted to answer he would state that based upon an examination [fol. 1781] of the daily hydrographs——

Judge Allen (interrupting): He would give an opinion.

Mr. S. D. L. Jackson: Yes, that the daily fluctuations in excess of two feet at Florence will occur on the average of about sixteen days per year, at Johnsonville, about 27.7 days per year, at Chattanooga, 31.2 days per year. That is the opinion that he would give in response to that question if he were permitted to answer.

Judge Allen: Does the Authority make a motion to strike the answer from the record.

Mr. Fly: Yes, I will make such a motion.

Judge Allen: The offer is stricken. It comes within the plain ruling of the Court. It comes within the law. The Court has shown the utmost latitude to the complainants in every branch of this case. It has shown latitude also to the defendants. We have come to a time when this case should be run according to the rules of evidence, and those rules have been read from the decision of the Supreme Court.

Mr. S. D. L. Jackson: Well, I don't understand, if the Court please, that——

Judge Allen: The question calls for an opinion. Major Putnam has given his opinions. His opinions have been controverted. It is not proper rebuttal to let him again give opinions on these matters.

Mr. S. D. L. Jackson: If the Court please, he gave no opinions on this matter, on our case in chief. This matter was injected into this case by the defendants, these wide fluctuations on these pools. We had no opportunity, absolutely, on our case in chief to go into this matter because that was injected when the defendants got to their answer.

Mr. Fly: Why didn't you have the opportunity in your case in chief, if fluctuations meant anything?

Mr. S. D. L. Jackson: They didn't, until you began saying they did.

Judge Allen: Opinion evidence in any case is not a fact. It is a matter of judgment.

Mr. S. D. L. Jackson: Well, I am sorry, but if I understand, this was the Court's ruling. It is that when the defendants in their case go into certain phases and give opinion evidence on it, then there is no right ever to the plaintiffs to controvert those opinions.

Mr. Fly: The Government pointed out that this witness testified on the subject of fluctuations of pool levels, in regard to terminals, both as to tributary dams and as to main stream dams. It went into the item of cost of, I think, [fol. 1782] $281,000, I don't know for what period, due to fluctuations, in his own words. If he is coming back now on some further details of fluctuation, you have no right to make any such broad statement.

Mr. S. D. L. Jackson: I was not stating your position.

Judge Allen: The ruling stands, and you may have your exception.

Mr. S. D. L. Jackson: I was stating my interpretation of the Court's ruling.

Judge Allen: You may have your exception, and let us proceed with the case.

Mr. S. D. L. Jackson: Now, on this point, if the Court please, may we have now the right to present for the record a statement of the balance of the questions, which we have on this point? There will be three of them.

Judge Allen: May the Court see them?

Judge Allen: The record may show that Major Putnam if permitted to answer would have made certain statements concerning fluctuations in stages on the Tennessee River,

and concerning the results of some studies as to the extreme fluctuations produced by flood stages on that river, and you may have your exception.

Mr. S. D. L. Jackson: If the Court please, may I respectfully except to the statement of the Court, if it is to be understood as being a statement of the substance of the testimony, within the meaning of the Equity Rule 46.

Judge Allen: The ruling is all inclusive; it states the subject.

Mr. S. D. L. Jackson: Will the Court permit me to have this sheet marked as an exhibit and shown in the record.

Judge Allen: That application is overruled, and you may have your exception to that.

Mr. S. D. L. Jackson: May I have an exception.

Judge Allen: The Court considers that this entire line of offering of testimony is a reopening of the case.

Mr. S. D. L. Jackson: I might state, the questions were submitted to the Court at its request, and were examined by the Court. There is no way in which a reviewing Court can consider the questions unless we are permitted to make them a part of the record.

Judge Martin: Brother Jackson, hasn't the Court by now made it pretty plain to you, sir, that the position taken [fol. 1783] is that you do not have the right, since we have clearly indicated the basis of exclusion, to dictate in question and answer form or the like, what you expect to prove by this recalled expert witness on rebuttal on an opinion expressed by a witness for the defendants? Now, that is very clear to you, and we don't want to encumber this record with what we deem to be useless material of no help to the reviewing court. That is the basis for refusing to permit that exhibit to go into the record.

Mr. S. D. L. Jackson: I understand the Court's position, if your Honor please, and I am trying within the Court's ruling merely to make a record as we feel that we should be permitted to make, as counsel, in order to present clearly to the reviewing Court the nature of this material which was submitted to this Court, and what we will expect to prove by it. I will be very glad to shorten it all I possibly can, and present it in the most succinct form possible. But the right to make a record is a substantial right of counsel in the case.

Judge Martin: Which we think has been carefully preserved by the Court.

Q. Major Putnam, the defendants have testified to the effect that wind action on tows——

Mr. S. D. L. Jackson: This, I might say, is a different subject. I don't believe there is any testimony in complainants' case in chief bearing on the wind action on tows.

Judge Allen: There is testimony bearing on the action of wind and waves.

Mr. S. D. L. Jackson: Waves.

Judge Allen: Didn't you testify about wind?

The Witness: I don't recall except as it produced waves, your Honor. I may be mistaken.

Mr. Fly: Do you recall defining fetch?

The Witness: I recall defining fetch, yes, I do.

Mr. Fly: And the amount of open water?

The Witness: The unobstructed distance over which the wind blows.

Mr. Fly: The unobstructed distance. I think you referred to the effect of river banks and that sort of thing on wind action also.

The Witness: Referring only to waves, Mr. Fly.

Mr. Fly: In the (stenographic) record at pages 1961 and 1962 on cross examination, it is gone into at great length. This witness brought in wind and wave action, and there [fol. 1784] is no wave action without a wind, I assume on those lakes. He is just trying to go back and patch up some matter in the most intimate sort of detail here.

Mr. Fitts: They put on another witness who testified to nothing else.

Mr. Fly: Oh yes, that is true. On the main case, Colonel Willson testified to nothing else except wind and wave action. It matters not if this witness did not cover it fully, now is no time to go into detail on that sort of thing.

Mr. S. D. L. Jackson: I don't agree with counsel's statement of the testimony offered on our case in chief. My recollection is that Colonel Willson testified as to the effect upon his fleet of barges of going on Wilson Lake and Wheeler Lake. Now, I think the shortest way is to permit me to read this first question on this particular group of testimony.

Q. Defendants have testified, Major, to the effect that wind action on tows navigating the upper reaches of the pools on the low dam system will create substantial delays and hazards, and that these delays and hazards will offset adverse conditions resulting from wave action on the TVA

lakes. What is the common practice in handling a tow when it is subjected to winds, which tend to throw it off its course? That is a question of fact, as I understand it.

Mr. Fly: Even so, it is the same subject that was gone into as a matter of fact in the case in chief by two witnesses.

Judge Allen: The objection is sustained. The question calls for an answer which is not proper rebuttal. You may have your exception.

Mr. S. D. L. Jackson: May we have our exception and may we be permitted to present to the Court a statement as to what we would expect to prove by this answer?

Judge Allen: Present it here, Mr. Jackson.

(Document handed to Court.)

Mr. S. D. L. Jackson: Those two at the bottom of the first question there (indicating). If the witness were permitted to answer he would state that the rudder would be set over so as to tend to turn the tow to the wind; the rudder power thus offsetting the wind effect. Now, may I ask this——

Judge Allen: What other question on there calls for anything except judgment?

[fol. 1785] Mr. S. D. L. Jackson: I don't suppose any of them on that sheet. But, may I ask one question just to preserve the record?

Q. Major Putnam, are there any difficulties or disadvantages involved in this operation?

Mr. Fly: Objection.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception and may I be permitted to state briefly——

Judge Allen: You will be permitted to state the general conclusion.

Mr. S. D. L. Jackson (Continuing): That there are no difficulties, the only disadvantage is extra power required to propel the tow.

Q. Major Putnam, what winds are most effective in throwing a tow from its course?

Mr. Fly: Objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May I have an exception? If the witness were permitted to answer he would state 'Cross winds'.

Q. Under what conditions are cross winds to be guarded against?

Mr. Fly: We object to that.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have our exception?

Judge Allen: Can't you now cover the rest of these by some general statement?

Mr. S. D. L. Jackson: I will try, your Honor. If the witness were permitted to answer this question and other questions relating to this same general subject, he would testify that cross winds are to be guarded against when there is a wide open sweep, and also where the channel is narrow; that under the comparative conditions as to wide open sweeps and narrow channels, as between the TVA plan and the low dam plan, under the TVA plan there will be about 138 miles where there is a wide open sweep and cross winds; that there will be less than 47 miles of channel within the banks of the river; that under the low dam plan—— There would be little channel exposed to a wide open sweep, and there will be nearly 184 miles of channel within the banks of the [fol. 1786] river, of which about 130 miles will have a width of 400 feet or more."

As to the testimony of the defendants to the effect that the high dam channel is very narrow as compared with the total overflow area, waves begin to be affected by depth of water when the depth of water is three times or more than the height of the waves. Waves three feet high would be undisturbed when the water was about nine feet deep. The Gilbertsville pool at mile 30 from Paducah for nine foot depth at elevation 370 is about two miles in width. The longest fetch at mile 30 for the same elevation of 370 is between twelve and fourteen miles. At mile 40 the width of the Gilbertsville pool for a depth of nine feet of water at pool elevation 370 is about 2 to 2½ miles. The longest fetch at mile 40 for this same 9 foot depth is nearly 15 miles. The width of Gilbertsville pool for a depth of 9 feet at pool elevation 370 is about 1½ miles at mile 50 and the longest fetch at mile 50 for this 9 foot depth would be nearly 15 miles.

"Q. Now defendants have testified that it will not be necessary to load river equipment somewhat lighter or to

increase its structural strength to meet conditions imposed by waves and wave action. That, if the Court please, is in connection with Colonel Watkins' testimony at pages 3507 and 3508 of the (stenographic) record. In the commercial operation of vessels on inland waterways what usual important steps does an owner have to take before he is allowed to operate, and before he may obtain insurance on his vessel and cargo?

Mr. Fly: I object to that. On the main case this witness testified specifically on the types of equipment which were in use on the Ohio and Mississippi, and he even stated his conclusion that certain equipment would not come onto this river. I can look up additional references too, but it is simply a rehash of the old subject.

Judge Allen: The objection is sustained upon the ground that the inquiry leads us into something very remote and immaterial, under the issues of the case.

Mr. S. D. L. Jackson: May I have an exception? The question however asked was, in the commercial operation of vessels on inland waterways what were the steps an owner has to take. That might have been obscure. An exception and offer to prove: That the plans of the vessel are submitted to the American Bureau of Shipping for approval as to strength, and stability. Marine surveyors check the [fol. 1786a] routes proposed to be operated on, and when the vessel is built, trial tests are made by surveyors, and when the tests are completed, a certificate is issued by the [fol. 1787] Department of Commerce prescribing limitations as to draft, freeboard, and otherwise. Only then may insurance be obtained upon the limitations thus fixed.

Q. What differences, if any, exist in the general design of inland waterway craft, those that are to be operated on waters subject to substantial wave action?

Mr. Fly: Objection, both on the ground that this entails matters of wind and wave action, which this witness dealt with most of all, more than all of the other witnesses put together, and this witness, as a part of complainants' case, also dealt with the matter of freeboard, of the type of equipment that would come on the river, and all that sort of thing. I don't think we ought to have to go back over this

case and go over the whole matter in detail from the beginning.

Mr. S. D. L. Jackson: This testimony, I believe, also relates to the testimony of the witness Brodie.

Mr. Fly: Of course, it does. Mr. Brodie was answering Major Putnam's testimony.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception? If the witness were permitted to answer he would state that river craft are generally designed to keep water out of cargo with only sufficient framing to provide strength to stand strains incident to loading, unloading, docking and undocking, and where wave action is involved which imposes irregular stresses, it requires strengthening of the frame, thus increasing the weight of the vessel by a large percentage."

As to the testimony of the defendants that the equipment of the Federal Barge Line will be adaptable to use on the waterway resulting from the execution of the TVA project, I am familiar with the equipment of the Federal Barge Line, as my company handled their towing operations on the Chicago River for one whole season. The equipment of the Federal Barge Line in use on the Mississippi and its tributaries is distinguished for being much more substantial, heavier and more expensive than equipment of equal size generally used by other operators on these waterways. For a cargo barge of about 2,000 tons, the [fol. 1788] difference in costs amounts to as much as $15,000.

The effect of the use of the shelter spots which are being made along the shores of Wheeler Lake for river equipment to put into in case of storms will affect the navigating time, increasing it by as much time as it takes to go into, to stay in, and to come out of, these shelters.

As to the testimony of the defendants that most of the traffic on Norris Lake would be a downstream movement of coal, most of the coal mining operations near Norris Lake are near the head of the Powell River branch of the reservoir. The length of the Powell River branch, having a nine foot depth at maximum pool elevation, is about 61 miles. When Norris pool is at elevation 1020, that length of a nine foot depth on the Powell River branch is 53 miles and when Norris pool is at elevation 955, that length is about 38 miles. If coal is to be loaded at the head of Powell

River branch of Norris Lake, it would be possible to locate a terminal about 25 miles from the mines at a point where a nine foot channel would be available all of the time. Such a terminal would be a very high structure, requiring an expensive conveyor installation, so arranged that the outer end would have to be raised or lowered almost 100 feet. As an alternative, a terminal could be built there on a float or rails, paralleling the channel to avoid this excessive lift, but it would have to be moved back and forth along with shore equipment, as the reservoir rose or dropped during the season.

A barge lift, if one were to be constructed at Norris Dam, as testified to by the defendants, would have to be built over the spillway of the dam or over the power house or over the bank on the left hand side of the stream looking down stream. If built over the power house or spillway, it would have to be substantially longer than if provision had been made for it before. If built over the hill on the left bank, [fol. 1789] it would be considerably longer, resulting in any case in a substantially greater expense.

The sketch (offered and received in evidence as Complainants' Exhibit 933) is entitled "Coal transfer and transit facilities, Norris project". This sketch is the same as Defendants' Exhibit 103, except that it contains some figures and notations which were added by me and which show the actual elevation of the upper section of Norris Dam based upon the scale shown on the original exhibit of defendants. The figures at the bottom of 960 and, going to the top, of 1040 and the two lines extending to the right marked "Elevation 1034, top of gates, and elevation 1028, bottom of tunnel" and the words at the bottom "Elevations shown above added by complainants" are the additions that I have made to Defendants' Exhibit 103.

"Q. Major, defendants have testified that low water releases of water from Norris and Hiwassee reservoirs would so increase depths of the Tennessee River before completion of the main river dam as to have an important effect towards increasing commerce in the lower part of the river. To what extent, if at all, would enrichment of the low water flow of the Tennessee River during the construction and before the completion of the TVA Unified Plan benefit navigation?

Mr. S. D. L. Jackson: That is, I believe, a new point that——

Mr. Fly: This witness testified on the main case as to the effect of the releases from Norris on navigation. There is a further objection to this question in that it has got two or three questions wrapped up in one, as to navigability of the river, and the amount of commerce and all of that. It ought to be broken down, but I don't think any of it is pertinent, after this witness has once testified upon the effect of those releases on the downstream depth.

Judge Allen: If you answered this question, what would you be giving, Major Putnam?

The Witness: I would be giving the effect on the navigation on the Tennessee River as pertains to its cost of operation.

[fol. 1790] Judge Allen: You would be giving your opinion?

The Witness: Giving my opinion in the interim period.

Mr. S. D. L. Jackson: I should have stated that. I think this properly does call for an opinion.

Mr. Fly: We didn't go into that subject.

Judge Allen: Objection sustained upon the ground it calls for an opinion.

Mr. S. D. L. Jackson: May we have an exception and state if the witness would be permitted to answer, he would state the navigation would be benefited by temporary increased depths in certain portions of the Tennessee River during the construction period of the TVA Unified Plan. I would like to ask one more question along this same line. I apprehend the objection will be sustained.

Q. What would be the value of this temporary benefit to navigation on the Tennessee River pending execution of the TVA Unified Plan?

Mr. Fly: Objection.

Judge Allen: This is your estimate and opinion?

The Witness: Yes.

Judge Allen: An objection would be sustained if made.

Mr. Fly: I did make it, your Honor.

Judge Allen: All right, the objection is sustained.

Mr. S. D. L. Jackson: Exception. If the witness were permitted to answer, he would testify that this interim benefit would be about $30,000 a year.

Q. Major, it has been testified by defendants that the release of stored water from Norris and Hiwassee reservoirs will be of benefit to navigation on the Tennessee after completion of the TVA project by way of increasing the depths at the upper end of the pools. It has also been testified that this regulated flow would increase the current velocities at the heads of the pools to about 2½ miles per hour. What is your opinion with reference to these two effects?

Judge Allen: Is there objection?

Mr. Fly: There is an objection. If I understand the question, it is just a springboard for a speech, and I don't know what the speech is going to be.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception? If the witness were permitted to answer he would state [fol. 1791] the benefits of increased depths would be off-set by the disadvantages of increased current velocities.

Judge Gore: Read that question, Mr. Jackson. I think I asked that question myself of the defendants' witness. I was interested in it.

Mr. S. D. L. Jackson: If permitted to answer, the witness would state that the benefits of increased depth would be off-set by the disadvantages of increased current velocities.

Judge Gore: All right.

Mr. Fly: I think, your Honor, I will concede that the witness has so testified. I didn't understand the question as I stated. I thought it went to the question of whether or not the releases from Norris would have a general permanent value in aid of navigation. This witness has already testified on that subject. This is a slightly different point, that is as to building up navigable depths at the upper reaches of the reservoirs.

Judge Allen: The Court has sustained the objection not upon the ground that you mentioned, Mr. Fly, but upon the ground that it calls for an opinion, and it does call for an opinion, even though it is on a slightly different point.

Q. Testimony has been introduced by the defendants, Major, to the effect that the release of stored water from Norris and Hiwassee reservoirs will materially increase the navigable depths in the Ohio and Mississippi Rivers, so as to be of substantial benefit to navigation. Will you

state what the facts in this matter are? Now, in that connection, that relates to a computation of records, and in that connection I would like to state it is our position that whether or not navigation on the Mississippi River might be benefited is of no moment in this case, because there is no obligation imposed upon these defendants under the statute or any place else to aid navigation on the Mississippi River. Testimony was introduced by the defendants bearing upon that point, and that is the reason for our desiring to go into this line of rebuttal testimony.

Mr. Fly: This witness has testified specifically on that point.

Mr. S. D. L. Jackson: That still is his opinion. I will be glad to ask the question.

Judge Allen: The objection is sustained for the same reason.

Mr. S. D. L. Jackson: May I have an exception. If the witness were permitted to answer he would state in his [fol. 1792] opinion it still would have none."

As to the testimony of the defendants that the Army Engineers are not building any more low movable dams, I know of one project now under construction by the Corps of Engineers using low, movable dams. This project is on the upper Mississippi River between St. Louis and St. Paul.

Cross-examination:

The Mississippi River goes through St. Paul. I did not say anything about a dam—I said a project. The project is near St. Paul and right there there is a high lift dam, if that is what you are looking for. It is one out of 26 dams in the project.

Direct examination continued:

The Corps of Engineers began building locks and dams of intermediate lift on the upper Ohio River about the year 1926. The total traffic which was being moved on the Ohio River at that time was about 20,000,000 tons a year. I know of a current official proposal for the use of wicket dams on an important inland waterway.

"Q. Please state briefly what that proposal is.

Mr. Fly: I object to the hearsay as to what the proposal is.

Judge Allen: The objection is sustained to what the proposal is. The Major may state the site. What is the site of the project?

The Witness: The site of the project is at the site of five dams on the Ohio River.

Mr. S. D. L. Jackson: May the witness be permitted to state the reference to the official document?

Judge Allen: May the Court see the document?

Mr. S. D. L. Jackson: I direct the Court's attention to page 157 of this document, the one little paragraph, with the line drawn around it, and state that if the witness were permitted to answer,—well, wait a minute."

[fol. 1792a] (The document referred to was House Document 306, 74th Congress, First Session. It was subsequently offered in evidence as Complainants' Exhibit 936 and was excluded by the Court upon objection of counsel for defendants.)

[fol. 1793] Examination by the Court:

As to whether it is an official Governmental project, the project proposed is not authorized by Congress; if that would answer your question. It is proposed only by an officer of the Corps of Engineers and his superiors.

"Mr. Fly: I think in any case that would be objectionable. I would assume that the Chief of Engineers had made a formal recommendation to the Congress. If it is simply a recommendation of certain officers of the Corps, I think it is clearly objectionable."

Direct examination continued:

"Q. In connection with the former question, the former matter, Major Putnam, will you state please with reference to this wicket dam project that you have mentioned whether or not the proposal was to increase the height of the wickets?

Mr. Fly: I object to that.

Mr. S. D. L. Jackson: Merely that one fact is all I want to bring out.

Mr. Fly: I don't care how many facts. Here is a proposal of the Chief of Engineers which has been rejected. It has not been carried up by the Chief of Engineers, it has not been adopted by Congress, and what difference does it make that a district engineer at some time past thought one of those dams a good idea.

Mr. S. D. L. Jackson: It has not been rejected, if the Court please. It was approved by the division engineers and by the Board of Engineers.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception? And if the witness were permitted to answer he would state that the proposal was to increase the height of the wickets by two feet.

Q. Major Putnam, it was testified by defendants that the low dam plan would slightly increase floods on the lower part of the Tennessee or Ohio and Mississippi; also that the low dams on the main stream would prevent the use of dams for flood control. What effect, if any, would a properly designed low dam project have on floods on the Tennessee, Ohio and Mississippi Rivers?

I realize I am asking for the witness' opinion.

Mr. Fly: I thought he covered this subject on the main case.

[fol. 1794] Mr. S. D. L. Jackson: I don't think so.

Mr. Fly: I object to it.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception? And if the witness were permitted to answer, he would testify that such a project would have no effect, if properly designed. One follow up question. Would the construction of low dams in any way affect the possibility of the subsequent erection of the high dam?

Judge Allen: Just a minute, please.

Mr. Fly: I object.

Judge Allen: The objection is sustained. You may have your exception.

Mr. S. D. L. Jackson: May we have an exception? If the witness were permitted to answer, he would state that they would not, unless they were located exactly on the sites proposed for the high dams."

Assuming that all of the structures in the TVA Plan were built except Gilbertsville, and operated as testified by

the defendants as to low water regulation, the subsequent erection of Gilbertsville would not result in any substantial benefit, for the defendants have testified that during 70% of the time there would be a nine foot channel in the Tennessee River between Paducah and Pickwick, and that due to the regulation of low-water flow from tributary reservoirs, there would be a 7 to 7½ foot channel 100% of the time. The deficiency in depth could be made up comparatively easily by a moderate amount of dredging, and the value of Gilbertsville, as now proposed, at an elevation of 375 feet, with what I believe to be its disadvantages to navigation, would have to be measured against the cost of obtaining a nine foot channel by dredging.

The table appearing on page 925 of Defendants' Exhibit 153 shows that the navigable channel depth on the Tennessee River below Pickwick Landing pool down to Paducah will be 8½ ft after all other structures (including Hiwassee but not including Gilbertsville) are completed. There again, but to a different degree, the deficiency can be fairly [fol. 1795] easily made up by dredging, so that balancing the benefits against the detriments, it is my opinion that Gilbertsville would have no net benefit to navigation.

"Q. If you were called on to operate the TVA system of dams on the Tennessee River for the primary purpose of navigation, what would be your general rules, if any, as to the maintenance of reservoir levels? This, I realize, calls for an opinion, but again a change in type of construction has now been shown to have taken place here during the course of this trial.

Mr. Fly: You mean to say the witness didn't know the type of construction? He inspected every one of the dams. He said he was familiar with the plans, had made full study of them, and qualified himself extensively. And it is quite inappropriate to go into all of this, and I object to it.

Mr. S. D. L. Jackson: As to the dams which had not been constructed, of course there are material changes that now appear to have been made, and particularly there is testimony as to the proposed method of operation.

Judge Allen: The Court permitted the other question upon the sole basis of the existence of this report. This question falls within the previous ruling, and we sustain the objection.

Mr. S. D. L. Jackson: May I have an exception?

Judge Allen: Yes.

Mr. S. D. L. Jackson: If the witness were permitted to answer, he would state that he would keep the main river reservoirs at not less than flat pool level and that as low an elevation above that as long as possible; that during floods the storage space above flat pool would be utilized as far as possible in controlling floods.

Q. If you were called upon to operate the TVA system of tributary reservoirs for the primary purpose of navigation on the main river, what would be your general rules as to the control of discharge and as to the maintenance of reservoir levels?

Mr. Fly: I object to that as again without any hypothetical basis.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception? And if the witness were permitted to answer, he would state that the only rule he would have so far as navigation was concerned, would be not to dump the storage in such a way as to increase the height of the major flood in the main stream. [fol. 1796] Judge Allen: The Court desires to finish with this case on Saturday, that is, finish with the presentation of the case, and to have the case in its hands at the conclusion of the session on Saturday. That is our objective.

Mr. S. D. L. Jackson: All I can assure the Court is that we will proceed as speedily as we possibly can."

I am able to identify the source of the data shown on Defendants' Exhibit 30, which purports to show, among other things, gross water-borne commerce on inland waterways of the United States, 1919 to 1934. The source of this data is from the annual reports of the Chief of Engineers, United States Army, appearing year by year in Part IV of the book. By actually taking the readings off of the top graph and comparing them with the statistics shown in that report as to grand total traffic, rivers, canals and connecting channels, I find that they correspond as closely to the graph as it may be read. I also find the same thing to be true with an examination of the graph showing the traffic on the Mississippi River and its tributaries. I find the statistics are correctly plotted, if we assume that the title "Total Traffic, inland waterways", appearing on Defend-

ants' Exhibit 30 corresponds to the title "Grand total, rivers, canals and connecting channels," appearing in the annual reports of the Chief of Engineers. The figures which are represented graphically on Defendants' Exhibit 30 do not make any allowance for duplications that might exist.

The annual reports of the Chief of Engineers do contain statistics for the traffic on canals, channels and rivers, eliminating duplications, and these statistics are different from those under corresponding headings, as plotted on Defendants' Exhibit No. 30.

"Q. Using the figures on Defendants' Exhibit 30, what rate of growth of traffic is shown for the period, 1932 to 1934, inclusive?

Mr. Fly: I object. The exhibit speaks for itself.

[fol. 1797] Mr. S. D. L. Jackson: This is merely preliminary. I expect to show that in contrast to what the other figures show.

Judge Allen: He may answer.

Mr. Fly: I want to object to it on that ground, your Honor. Now, he is not only giving his opinion as to there being a difference, but he is going to give oral testimony as to the details of the difference. I don't think we ought to be subjected to that sort of prejudicial and erroneous testimony.

Mr. S. D. L. Jackson: I might state the defendants had the first shot at this exhibit, in getting it in here. Its inaccuracies are no fault of ours.

Mr. Fly: Yes, but you can produce the document. You are testifying as to the content of the document, and the document will speak for itself. You have been to law school.

Mr. S. D. L. Jackson: Yes. Of course, if I might interject——

Judge Allen: The objection is sustained and the Court will ask you to bring in the report on which you base that question.

Mr. S. D. L. Jackson: May I ask the witness one question? They may all be in the Court room, I don't know, I didn't personally make a check.

Judge Allen: The Court will also ask you to point out the place where it is from.

Mr. S. D. L. Jackson: If given a few moments time we will be very glad to do that.

Q. Are those all in the annual reports of the Chief of Engineers?

A. They are all in the reports of the Chief of Engineers for the year subsequent to the traffic year reported on.

Judge Allen: Mr. Jackson, the Court requested you in the colloquy that we had here between ourselves not to make your offers of proof in question and answer form because it consumes so much time. We are quite aware of the situation confronting you. Although we did notify counsel several days ago in advance of the fact that rebuttal proof would be confined to rebuttal, notice was given of that fact, our precise ruling upon this question of opinion testimony was not in your hands until today. For that reason, we have been patient with the situation, we have understood it, and we have also thought that we got along faster today to go along as we have. Tomorrow we shall expect that the offers to prove will be given in succinct statements instead of in [fol. 1798] question and answer form. That will help both of us.

Mr. S. D. L. Jackson: Very well.

Judge Allen: I mean all of us; and furthermore the Court again repeats that it expects this case to be concluded, the argument over, and the requests for findings of facts in our hands on Saturday."

(Counsel for complainants then offered as a part of their case in chief a table, which was received in evidence as Complainants' Exhibit 934, giving the detailed figures for the gross hydro generation of the Alabama Power Company testified to by the witness Barry who had in his testimony given the total figures. The witness Barry had prepared this table, Complainants' Exhibit 934, and the defendants stipulated that if Mr. Barry were recalled to the stand and asked appropriate questions, he would identify this table as the breakdown of the total figures to which he had testified.)

The figures containing the grand totals of river, canal, and connecting channel traffic for certain years are shown in the annual reports of the Chief of Engineers and the figures appear on page 3 of Part 2 in each case. In the annual report of the Chief of Engineers for the year 1935 it is stated on page 3:

"The gross total commerce on the rivers, canals, and connecting channels was 215,146,078 tons valued at $3,973,683,002, which included 608,515 tons of foreign imports, valued at $18,983,258, and 644,331 tons of export, valued at $42,937,637. After eliminating all known duplications of traffic between different rivers, canals and connecting channels, the adjusted total amounted to 194,786,428 tons, valued at $3,462,517,009."

That figure of 194,786,428 tons is the figure I used in my statement for the calendar year 1934 which is the period covered by Defendants' Exhibit 30. On page 3 of the commercial statistics of water-borne commerce for the United States for the calendar year 1933 appearing in the annual report of the Chief of Engineers, 1934, it is stated:

[fol. 1799] "The gross total commerce on the rivers, canals, and connecting channels was 199,558,245 tons, valued at $3,436,292,381. After eliminating all known duplications, of traffic between different rivers, canals and connecting channels, the adjusted total amounted to 182,965,000 tons, valued at $3,088,615,000".

In the annual report of the Chief of Engineers, United States Army for 1933, Part 2, page 3, it is stated:

"The gross total commerce on the rivers, canals and connecting channels was 165,338,881 tons, valued at $2,983,203,487. After eliminating all known duplications of traffic between different rivers, canals and connecting channels, the adjusted total amounted to 151,276,145 tons, valued at $2,589,991,917."

And in the annual report of the Chief of Engineers for the year 1932, page 3, it is stated:

"Gross total commerce on the rivers, canals and connecting channels was 206,883,274 tons, valued at $3,156,734,169. After eliminating all known duplications of traffic between different rivers, canals and connecting channels, the adjusted total amounted to 179,735,000 tons, valued at $2,816,403,000."

The rate of growth of traffic as shown by the figures on Defendants' Exhibit 30 for the period from 1932 to 1934

is 30.3%. Using those figures and eliminating duplications, the rate of growth for the same period was 28.5%.

"Q. Now, the defendants have testified that the elimination of duplication would not change the 1950 traffic predicted. What are your views with respect to that?

Mr. Fly: I object to his views. That is just simply a question of fact. If he knows the fact, let's find out how he knows it.

Judge Allen: Objection sustained. It falls within the ruling of the Court.

Mr. S. D. L. Jackson: If I might state, I think that is merely just a mathematical computation based on the same basis as this exhibit 30, but using different figures than those used in Defendants' Exhibit 30, but if I may be permitted to save an exception and state very briefly, I can clear it up.

[fol. 1800] If the witness were permitted to answer he would state insofar as the figures shown on Defendants' Exhibit 30 control the estimate for 1950 traffic, the use of figures eliminating duplications would result in a lower estimated traffic for 1950 as the rate of growth would be less.

Q. What general classes of traffic are included in the annual reports of the Chief of Engineers under the caption, 'Grand total, rivers, canals and connecting waterways' which the graph entitled 'Total traffic inland waterways' on Defendants' Exhibit 30 purports to illustrate?

Mr. S. D. L. Jackson: I might say, if the Court please, that all of this testimony is directed to inaccuracies that appear, inaccuracies of fact that appear on Defendants' Exhibit 30, which was offered and received in evidence here after being offered by the defendants.

Judge Allen: To illustrate an opinion.

Mr. S. D. L. Jackson: Facts on which——

Judge Allen: Is that so?

Mr. S. D. L. Jackson: —an opinion was based. And also, it is an exhibit which graphically shows certain things.

Judge Allen: To illustrate an opinion.

Mr. S. D. L. Jackson: I don't know as Defendants' Exhibit 30 is merely to illustrate an opinion. It purports to portray facts, if your Honor please. It purports to show gross water-borne commerce on inland waterways of the United States, and here is a graphical representation of it. Does

the Court have this in mind, that we are alluding to, in this evidence (indicating)? That doesn't show opinion, that purports to show facts, and they are wrong.

Judge Allen: What witness introduced this exhibit, Mr. Jackson?

Mr. Fly: It was Colonel Watkins.

Judge Allen: Are these actual figures on this graph? Where did he claim he got them?

Mr. S. D. L. Jackson: He got them from reports of the Chief of Engineers and other official reports.

Judge Allen: It is not a conclusion of his——

Mr. S. D. L. Jackson: No, your Honor, it portrays facts graphically.

[fol. 1801] Judge Allen: Obviously, the present question is directed toward the navigation phases of the case.

Mr. S. D. L. Jackson: Yes, your Honor, and particularly with reference to an exhibit relating to that introduced by the defendants, which purported to show facts.

Judge Allen: The exhibit being introduced by a witness who was an expert, and who gave his opinion, we feel that this falls within the ruling previousy announced, and also, we bear in mind this statement in the Ashwander case:

'While, in its present condition, the Tennessee River is not adequately improved for commercial navigation, and traffic is small, we are not at liberty to conclude either that the river is not susceptible of development as an important waterway, or that Congress has not undertaken that development.'

That is 297 U. S. Reports. Now, in view of that statement, the Court considers that this particular line of questioning is immaterial. We consider that it was immaterial in the first place, it was immaterial in the defense, and it is immaterial now.

Judge Allen: The Court indicated last night very plainly that we felt that the spirit of our ruling has been violated during the day, but we realized that you were in a situation where you had your questions prepared in a certain way, and could not possibly do that. We asked you to change that today, bearing in mind the spirit of the ruling as well as its letter. The spirit of the ruling excludes the interminable minutiae upon which these opinions are based.

Mr. S. D. L. Jackson: Now, if the Court please——

Judge Allen: You are trying to break down Colonel Watkins' opinion, and show that it is not credible——

Mr. S. D. L. Jackson: No.

Judge Allen: That it is based on improper figures and values. Why can't you say on the record that the Court would not hear you further on that, and that you excepted vigorously? Now, doesn't that show the Supreme Court what that is about?

Mr. S. D. L. Jackson: I don't believe it does, if your Honor please. I will be glad to try to make a statement now which will bring this out, but I know of no other way of doing that but to bring another question before the Court for ruling, ask the question, and if objection is sustained, then, I will attempt to state it as briefly and in the shortest possible [fol. 1802] form as possible. I worked and tried to revamp this material so as to comply with the Court's ruling yesterday, both in the letter and spirit of the ruling. If permitted to go forward with that, I think I can probably get this evidence in, if the Court will permit, and also make a record which will be satisfactory to our clients, in a very short space of time, rather than as we did yesterday, spend considerable time attempting to discuss it. I have tried to boil this down so that both those results can be achieved and still conserve the time of the Court and counsel to the utmost.

Judge Allen: The objection is sustained. We feel that it is within the spirit of the ruling made yesterday, we consider that it relates to a line of immaterial inquiry.

Mr. S. D. L. Jackson: May we have an exception? Now, in attempting to state briefly and succinctly the matters I would expect to develop on this line of examination, and in answer to this particular question, if the witness were permitted to answer he would state that over 50 percent of the total traffic carried on rivers, canals and connecting waterways, consists of deep draft ship traffic as of the total given in Defendants' Exhibit No. 30, that there is no relation between the growth of deep draft ship traffic and that which might utilize a nine foot channel on the Tennessee River; that deep draft traffic is partly foreign, partly domestic, moving over ocean routes or deep draft areas where conditions as to cost are different, and in ocean traffic, competition is between water carriers only, and the same is true for domestic coastwise traffic, whereas, on strictly inland waterways, the principal element of competition is that offered by land transportation.

Q. Major Putnam, to what extent, if any, does the availability of raw materials and markets enter into a comparison of traffic growth on one group of waterways with the possible growth on another? If the Court please, I realize that calls for an opinion, and I have a statement prepared.

Mr. Fly: We object.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Please note my exception. If the witness were permitted to answer this question and other proper questions, he would state that the factor of the availability of raw materials and markets materially affects the comparison of traffic growths on inland waterways, as contrasted to deep draft ship traffic waterways. To compare the Tennessee River with the Great Lakes would be to assume that the cost of producing and assembling iron ore, [fol. 1803] coal, limestone and other raw materials of the steel industry at one or more points on the Tennessee River, would not be greater than that now resulting from the use of the Great Lakes. No such equal basis exists, and could not unless high grade iron ore could be produced in the Tennessee basin, and unless a project depth of 21 feet or more were provided on the Tennessee River, with locks throughout large enough to accommodate ships over 600 feet long, and 60 to 70 feet wide. That as to markets reached by water, other than local markets, for which the Great Lakes routes have the advantage, the Chicago district is about 363 miles by water from St. Louis, while Chattanooga is 701. Pittsburgh is about 472 miles by water from Cincinnati, and 608 from Louisville, while Chattanooga is 929 and 795 miles respectively from these two places.

Q. Major Putnam, witness Watkins, Defendants' witness, Colonel Watkins, estimated that the existing traffic on the Tennessee River of about 2,000,000 tons would increase to 17,700,000 tons about 1950. Assuming the TVA projects for the Tennessee River were now just completed and ready for use, what rate of increase would be involved to reach that total by 1950?

Mr. Fly: I object to that as improper rebuttal.

Judge Allen: It calls for an estimate, does it not?

Mr. Fly: Anyone with a pencil can figure that out, so why take the time of this Court?

Mr. Fitts: He went into traffic estimates at great length on the case in chief.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If permitted to answer, he would state 65½ per cent each year.

Q. Assuming that the TVA projects were not completed until the end of the year 1943, the date scheduled in TVA's report to Congress of March, 1936, what rate of increase would be required to meet the 1950 figures?

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: If permitted to answer, he would state 131 per cent each year.

Judge Allen: Mr. Jackson you did not understand that the ruling yesterday precluded other types of rebuttal than that covered by the ruling?

Mr. S. D. L. Jackson: I think this is under the ruling. This is merely to clarify matters that are already in the record. It is concentrating and making a calculation which might be of assistance to the Court.

[fol. 1804] Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: The offer has been made. Exception.

Q. What has been the average rate of increase of traffic on the Ohio River from 1932 to 1935?

Mr. Fly: The same objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If permitted to answer, he would state the rate of increase has been at the rate of about 15.5 per cent a year. Now, I don't desire to impose on the Court, but I have a very few questions to develop, and I can make the record very promptly.

Q. What was the total traffic on the Ohio River for 1935?

Mr. Fly: The same objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If the witness were permitted to answer, he would state about 22,138,000 tons, including ferry traffic.

Q. What would be the traffic on the Ohio, or what would the traffic on the Ohio have to be for 1937 to have increased since 1932 at the same rate required for existing traffic on

the Tennessee River to reach the 1950 predicted figure in the period from the end of 1943 to the end of 1949?

Judge Allen: The objection is sustained. This really amounts to a reopening of the case.

Mr. S. D. L. Jackson: Now, all this is, if your Honor please, it is just a few mathematical computations based upon figures that are here. And the computations we felt would be of assistance to the Court in considering this evidence, but if the Court does not desire us to present them, we won't, but it will only take a moment, I assure you. We don't feel that it is invading the Court's previous ruling on rebuttal. I think it might be somewhat inconsequential, but it is not going behind the Court's back in any way. The whole purpose of it is to assist the Court. I realize the Court can make these computations, if it desires to do so. This is merely to present a figure.

Judge Allen: The objection is sustained. Of course, we realize it is not going behind our back, because we realize the important audience is the Court Reporter.

[fol. 1805] Mr. S. D. L. Jackson: If permitted to answer, the witness would state the Ohio River traffic would have to total approximately 118,600,000 tons for 1937 under that assumption as to rate of growth.

Q. When you made your traffic survey for the Illinois River, as published in House Document No. 4, 69th Congress, First Session, what traffic did you estimate would move on that stream, in that document?

Mr. Fly: I object as irrelevant and immaterial, as well as improper rebuttal.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If permitted to answer, he would state 7,515,000 tons a year.

Q. Did the traffic spring into existence the year the waterway was completed?

Mr. Fly: Objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. If permitted to answer, he would state that it did not, but starting with the year 1933 the traffic increased from 194,000 tons for the previous year to about 389,000 tons. By the year 1935 it in-

creased to about 620,000 tons, and preliminary estimates for 1937 place the traffic at something above that.

Q. This is a different line, directed to the testimony of the witness Alldredge. Defendants have testified that existing transportation savings by water on the Tennessee River—and I refer you to defendants' exhibit 128, it was generally assumed that the water or rail-water transportation charges would be 80 per cent of the corresponding rail charges. In connection with existing operations on other portions of the Mississippi system, to what classes of water carriers, if any, does a formula of that kind apply?

Mr. Fitts: We object to the question as improper rebuttal. The testimony of Mr. Alldredge was in reply to the testimony of this witness.

Mr. S. D. L. Jackson: I think Mr. Alldredge is the first one who went into these rail-water combinations though.

Judge Allen: He testified he made his computations on the basis of 80 per cent, didn't he?

Mr. S. D. L. Jackson: That is correct, he did.

Judge Allen: And he made estimates on that basis.

Mr. S. D. L. Jackson: Well, I don't know if they are estimates, or whether he made calculations, bu' he drew conclusions from them.

Judge Allen: Objection sustained.

[fol. 1806] Mr. S. D. L. Jackson: May I have an exception. If permitted to answer, the witness would state such a formula applies only to common carrier transportation, and then only to the portion of their business which is rail-water interchange traffic. And one following question on the same point.

Q. What per cent of the total traffic shown on defendants' exhibit 126 is comprehended by the terms of traffic to which this formula was applied?

Mr. Fitts: The same objection.

Judge Allen: The same ruling.

Mr. S. D. L. Jackson: If the witness were permitted to answer, he would state about 41 per cent. And may we have an exception to the ruling?"

The Federal Barge Line or The Inland Waterways Corporation operates on the Mississippi River between the Twin Cities and New Orleans, on the lower section of the M

souri River, below Kansas City, and on the Illinois waterway between the mouth of the Illinois and Chicago, and also on the Warrior River system.

Cross-examination:

It does not operate on the Ohio, unless the terminal in the City of Cairo is across the state border, which I don't know. It does not go to Louisville.

Direct examination continued:

The Inland Waterways Corporation handles chiefly common carrier business. About 4 per cent of the total traffic on the inland waterways consists of common carrier business and about 5 per cent of the total business on the Mississippi system is common carrier business.

"Q. Now, based on experience elsewhere, is it fair to assume that about 41 per cent of the future traffic of the Tennessee River will be common carrier business?

A. It is not fair to so assume.

Judge Allen: Wait a minute.

Mr. S. D. L. Jackson: Mr. Fly is resting over here.

Mr. Fitts: We didn't object.

[fol. 1807] Mr. S. D. L. Jackson: It does call for an opinion.

Judge Allen: The Court sustains an objection on its own motion.

Mr. S. D. L. Jackson: I am merely making my record on this question. It is the only one I have on this particular point. There was a ruling?

Judge Allen: The Court of its own motion sustained the objection to that question.

Mr. S. D. L. Jackson: If I may have an exception. If the witness were permitted to answer, he would state, 'it is not'."

The table (offered and received in evidence as Complainants' Exhibit 932) shows the comparative times for a single lockage through locks of two different sizes, that is 60 by 360 feet of the TVA above Wilson and 100 by 600 below Wilson. There is a third alternative using low lift lock 110 by 600 feet which has a differential in time. It gives the separate operations for each type of lock for single lockage.

The table (offered and received in evidence as Complainants' Exhibit 935) gives the figures showing the total time in hours consumed with the low dam plan or with the TVA plan. It is based on the times which are totaled at the bottom of Exhibit 932, using these unit times for each of the locks through either plan and taking into consideration the number of locks and open river navigation. There are two assumptions involved. One assumption is that we use a smaller size tow that would go through a single lock the whole length of the river, which is called the Hales Bar Lock size tow, which would be the controlling locking size. The other estimate is for an eight-barge tow, which is described or referred to by the defendants in their testimony. I assumed on Complainants' Exhibit 932 that an eight-barge tow has to go through the small lock in three sections. The 116 minutes which you see on the right hand column on Complainants' Exhibit 935 is the total time shown on the previous Exhibit of 116 minutes where each operation is [fol. 1808] detailed and where the eight-barge tow must go through in three operations, four barges each time and then the tow-boat the last time. There is not room for the five units in the lock at once.

"Mr. S. D. L. Jackson: If the Court please, I have one question of an opinion nature which I would like to be permitted to ask, to make a record.

Judge Allen: It is based upon these exhibits?

Mr. S. D. L. Jackson: Yes, it is directly based upon the exhibits and the explanation that the Major gave with reference to them. I am merely asking for my right to make my record. It is clearly an opinion question that I am asking.

Q. Major, what difference, if any, exists in the cost of transportation of freight by water as between the use of tows of the size suitable to pass at Hales Bar Lock, with breaking the eight barge tow previously described?

Mr. Fitts: We object to that, may it please the Court.

Mr. S. D. L. Jackson: That eight barge tow is in evidence.

Mr. Fitts: Yes, he asked for the difference in cost of transportation. Isn't that your question?

Mr. S. D. L. Jackson: That is right.

Judge Allen: The objection is sustained. In other words, the Court has asked for the exhibit, but these questions we consider to be within the ruling.

Mr. S. D. L. Jackson: I apprehended that ruling. I merely wanted to save an exception. If the witness were permitted to answer he would state there would be a savings in transportation costs of at least 15 per cent in favor of the eight barge tow. I have one further phase to take up, if the Court please, and I will be just as expeditious as possible in covering it.

Q. Major Putnam, defendants have testified with respect to their Exhibit 115 to the effect that the average current velocity in the Tennessee River throughout the entire length for 100 per cent of the time amounts to two miles per hour under the low dam plan; also that under the TVA Unified Plan the average current velocity throughout the entire river for 100 per cent of the time would be 5/10ths of a mile per hour. What ratio is this between the average current velocities of the two plans as testified to by the defendents?

[fol. 1809] Mr. Fitts: What is that? That calls for just a computation.

Mr. S. D. L. Jackson: This does. This one question is merely preliminary.

Mr. Fitts: We object to it on the ground it is cumulative and unnecessary in any event, besides being improper rebuttal.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception, and if the witness were allowed to answer this question and other appropriate questions on the same subject, he would have testified. I will state that this is an offer to prove which we make, had we been permitted to conduct a line of examination of Major Putnam on matters of speed, depth, and current velocity, and a comparison of the respective speeds and current velocity, under the two plans. If this witness were allowed to answer this question and several other questions of a similar nature dealing with the same subject, he would have answered as follows:

Defendants' Exhibit 115 contains a statement to the effect that the current velocity throughout the entire Tennessee River for 100% of the time would be 2 miles per hour as compared to the current velocity under the TVA plan of .5 of a mile per hour. This statement as to average current velocity under the low dam plan is incorrect as shown by the results of a study of Defendants' Exhibit 106 which shows a ratio of current velocity between the two systems for dif-

ferent lengths of the river for different percentages of the time. A study of this Exhibit 106 shows that the ratio between the average current velocity under the low dam system to that under the high dam plan system should be in the neighborhood of 2½ to 1 and not in the ratio reflected in the statement, Defendants' Exhibit 115, which is 4 to 1.

If allowed to answer the next question, the witness would have stated that his investigations show that for the entire river the average duration of the period when the wickets are lowered would be 30.8% of the time. During that average period the current velocity would average 2.06 miles per hour. With the individual wicket dam pools, the velocity range would be from 1.48 miles per hour to 3.03 miles per hour, these partial velocities having a duration of 13%. For these pools, the duration range is from 8% to 67% and the current velocities corresponding to these durations are 2.36 miles per hour and 1.76 miles per hour. Current velocities which might be termed to be quite high, that is, those over 3 miles per hour, are of short duration.

[fol. 1810] If the witness had been permitted to answer the next question, he would have stated that the statement on Defendants' Exhibit 115 quoted as follows: 'The upstream running times are based on a still water towing speed of 5.5 m.p.h. minus current velocity of 2 m.p.h. with the low dams and minus 0.5 m.p.h. with the high dams. The down stream running times are based on a still water towing speed of 5.5 m.p.h. plus ¼ of the current velocities,' is an incorrect statement of method of allowing for increased speeds resulting from current velocities because it is not correct to state that the down stream speed should be increased by adding ¼ of the current velocity to the still water speed. If channel conditions are such that a tow can travel at any given rate of speed, then it can do so if the still water speed plus the current velocity is equal to or greater than the rate of speed allowed by channel conditions and is in no way dependent upon current velocity.

If permitted to answer the next and other questions of a similar nature relating to the same subject this witness would have testified that the only place where the low dam plan would have provided just barely a 9-ft. depth was on the intermediate sill of the lock at Wilson Dam and that this limiting depth would control the draft of vessels for either the low dam project or the TVA dam project. A re-

sult of this would be that the TVA project would not allow a 9-ft. draft for vessels navigating the Tennessee River.

If permitted to answer several other questions of a similar nature dealing with the same subject, this witness would have stated that Defendants' Exhibit 107 did not represent the latest authentic data with respect to matters affecting the relation existing between depths of water, speed of vessels, and indicated horse power. The supporting data for Defendants' Exhibit 107 was published in 1921, and numerous tests and observations have been made since that time which support the modern finding to the effect that increasing the length of a tow can be expected to offset friction resistance due to shallow water. He would further have testified that there is no value in depths of water in excess of 15 feet as far as their effect upon the resistance to movement of large tows on the Tennessee River is concerned.

If permitted to answer the next question and other questions of a similar nature on the same general subject this witness would have testified that based upon Defendants' testimony as to the length of the river under the low dam plan which would consist of dredged channels and as to the duration of increased depths due to high stages of the river there would be no value in the increased depths provided by the TVA plan for 50% of the time. He would also have testified that for the other 50% of the time when the increased depths over the bars in the low dam plan would be less than 4 feet for 20% of the distance as testified to by Defendants that the TVA plan would have an advantage [fol. 1811] of an increased speed resulting from the greater depths of not over 10% for 20% of the distance for 50% of the time or the equivalent of an increased speed of 1% as applied to the entire river for the entire year. He would also have testified that for the 80% of the river not involved in dredged channels, no greater speeds would result to either plan because depths would be generally in excess of 15 feet. If barges were partially loaded or were running light, the 1% advantage would be decreased.

If permitted to answer the next question, the witness would have stated in rebuttal to Defendants' testimony to the effect that a vessel that was foundering would have no more difficulty in getting out of deep water in order to be beached before sinking with the TVA plan than it would with the low dam plan, that the increased distance to travel

under the TVA plan would be almost half a mile or nearly 3 times as much as that involved under the low dam plan.

Judge Allen: Mr. Jackson, you have shown that you now understand what the Court has been trying to do with reference to this question of offer of proof, and I might say our desire for expedition is not a desire for expedition wholly for the Court. It is a desire for expedition for the sake of counsel. Since we now understand each other, if you wish to amend, or move to amend the offer of proof, which the Court made from the bench here yesterday, on certain questions that you were not permitted to ask, in an effort to show how it could be done, the Court will consider that.

Mr. S. D. L. Jackson: Thank you, your Honor, for that.

Judge Allen: You could do that during recess.

Mr. S. D. L. Jackson: I would be very glad to, to check the record. And I had caught last night, in going over my notes, certain matters of offers to prove, which I had stated, which I was going to request the indulgence of the Court to permit me to augment slightly by the addition of a sentence or two, and I will be very glad if I may also examine during the recess, or perhaps during the noon hour, the offers of proof stated by the Court in certain instances, and do it all in one statement this afternoon, if I may. In connection with the subject of stage fluctuation at terminals, on which there were one or two questions yesterday, I note that I offered to prove—an offer to prove which I had made appears in the record as being partly stated before the noon recess and partly after the noon recess, and part of it unfortunately was not stated at all. If I may be permitted to ask this witness one or two questions on this general subject, then I want at that time to introduce or to specifically call the Court's attention to a page or two of an exhibit that is already in evidence in connection with that examination." [fol. 1812] With reference to stage fluctuations at terminals, changes in the stages in excess of 4 feet a day for the period from 1925 to 1934, inclusive, averaged at Florence, Alabama, 1.9 days per year, at Johnsonville, Tennessee, 4.2 days per year and at Chattanooga, Tennessee, 7.9 days per year. Pages 188 and 189 of House Document 328, Complainants' Exhibit 105, gives the extreme ranges produced by flood stages in the four important points on the Tennessee River of Knoxville, Chattanooga, Florence and Johnsonville. (Counsel for complainants then offered in evidence

and the Court received photostats of pages 188 and 189 of House Document 328 which is Complainants' Exhibit 105.)

"Q. Would any enrichment of the low water flow which would be provided by the TVA Unified Plan eliminate or decrease the cost of dredging operations on the Mississippi River?

Mr. Fitts: We object to that question. The exact same question was asked on the examination of Mr. Putnam before in the case in chief.

Judge Allen: It calls for an opinion, does it not, Major?

Mr. S. D. L. Jackson: It does.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May I have an exception and offer to prove there would be no decrease in cost of dredging operations on the Mississippi River? Will you mark this as exhibit 936?

One final question. I have asked the reporter to mark as Complainants' Exhibit 936 House Document 306, 74th Congress, First Session, concerning which there was some testimony yesterday about this, testimony or offers to prove, about this wicket dam construction of dams in the Ohio River. And I offer that exhibit in evidence. That is the book.

Mr. Fly: We object to this, your Honor, on the ground first that it is not proper rebuttal, and further it is cumulative if it has any bearing at all. We further object to it on the ground of relevancy.

Mr. S. D. L. Jackson: I think that yesterday counsel asked us to produce and introduce the whole exhibit.

Mr. Fitts: We said if there was going to be any evidence on the subject at all.

Mr. S. D. L. Jackson: There has been some evidence.

[fol. 1813] Mr. Fitts: The evidence is wholly immaterial.

Mr. Fly: I objected to the witness testifying as to the contents of a document. I did not thereby stipulate the whole document became admissible at this stage of the proceedings.

Mr. S. D. L. Jackson: In any event, we offer it, your Honor.

Judge Allen: The exhibit is rejected.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may."

(Subsequently at the close of the trial, the Court permitted further offers of proof to be made by counsel for complainants in connection with this testimony as follows):

"Mr. S. D. L. Jackson: In response to appropriate questions put to the witness Rufus W. Putnam, the witness, if permitted to answer would state that in designing a lock the practice with reference to considering the time of filling and emptying is to design the valves, culverts and openings into the lock chamber of such dimensions and spacing as to let water in as fast as possible without creating disadvantageous surges; that where the surge is too great a disturbance is created which may damage vessels using the locks and the lock walls through collision; that also tow lines are likely to be parted resulting in additional delays at the locks. Further, in assuming that two locks are capable of being filled at an equal rate as far as length and width are concerned, it is necessary to design the lock with the higher lift so as to let in water at a much faster rate in order to permit of the filling of each of such locks in the same time.

The witness Putnam, in answer to appropriate questions, would further testify in rebuttal to the testimony of the witness Barker, appearing at page 4637 of the (stenographic) record, that the practical working capacity of the existing locks at Dam No. 1, Wilson and Hales Bar is 40 per cent of the theoretical capacity of such locks, that twin locks, each 56 feet by 360 feet have been available on the lower Monongahela River for many years, that since 1923 the Corps of Engineers has lengthened some of the lower locks to 720 feet to increase their capacity, that the theoretical maximum capacity of one of these sets of locks is about 125,000,000 tons a year and the maximum commerce passing through such locks was in 1929, and amounted to about 28,900,000 tons, or about 23 per cent of the theoretical working capacity as compared with the 40 per cent figure testified to by the witness Barker. The witness Putnam, in answer to appropriate questions would testify in rebuttal to testimony from the witness Watkins, appearing at page 3272 of the (stenographic) record and the witness Barker, [fol. 1814] appearing at page 4604 of the (stenographic) record, that the daily fluctuations in excess of two feet at Florence would occur on the average of about 16.2 days per

year, at Johnsonville, 27.7 days per year, at Chattanooga, 32.2 days per year, that such figures are based upon the examination of the daily hydrographs for the ten year period, 1925 to 1934, both inclusive.

The witness Putnam, in answer to appropriate questions, if he were permitted to answer, would testify in rebuttal to testimony of the witness Watkins, on pages 3274-3275 of the (stenographic) record and the witness Barker, on page 4715 of the (stenographic) record, that under the TVA Plan there will be about 138 miles where there is a wide open sweep and cross winds. Under the low dam plan there will be little or no channel exposed to a wide open sweep and there will be nearly 184 miles of channel within the banks of the river, of which about 130 miles will have a width of 400 feet or more; that the channel within the banks in each case will be of equal conditions as respect to cross winds except for the 54 miles of low dam channel which will be less than 400 feet in width; that it is necessary therefore to compare the effects of cross winds for 54 miles of channel, less than 400 feet in width, in the low dam plan with those for 138 miles of TVA channel exposed to wide open sweeps. Whatever difference exists is in favor of the low dam plan.

I wish to direct the Court's attention to the top of page 212 of Exhibit 105 with reference to the 9-foot depth on the intermediate lock sill at Wilson. The witness Putnam, in response to appropriate questions would, if permitted to answer, testify in rebuttal to the witness Watkins' testimony, at page 3301, the witness Barker, at pages 4653 and 4654 and the witness Brodie, pages 4909-4912 (of the stenographic record), that the benefit of the release of stored waters to navigation on the Ohio and Mississippi Rivers would be so small that it would be impossible to calculate it, and would have stated his reasons in support of this opinion as follows: The Tennessee River is the River that is proposed to be regulated by TVA, not either the Ohio or the Mississippi Rivers. As a result the coincidence of low water on the Tennessee River with that on the other streams is very limited. Any possible enrichment as a result of storage releases from the tributary reservoirs on the Tennessee is only a small percentage of the low water flow on the Mississippi, which has averaged 134,000 cubic feet per second during a recent thirty year period.

Any increases in stage resulting will vary daily, weekly, monthly and annually, cannot be predicted on the Mississippi or Ohio Rivers nor anticipated. The stage increase [fol. 1815] resulting would be possibly of a small value in places only where the depths of less than 15 feet would be available in the natural river as most of the river consists of deep pools. Any stage increase at Cairo becomes smaller in amount proceeding downstream towards the mouth of the river.

If the regulation of the Tennessee River were to produce minimum weekly flows as set forth by TVA on page 59 of the Unified Report to Congress in March 1936, the stage increase on the Mississippi would average not to exceed 1.2 feet for only 6 per cent of the time based on an examination of a thirty years record of daily flow of such stream. This increase would not have exceeded two feet for one day in the entire thirty years period. It would have between one and a half feet and two feet for 112 days during that period and in excess of one foot for 505 days. An increase in stage of 1.2 feet on the Mississippi results in increased depth of only eight inches due to the peculiar behavior of bar formations on the Mississippi River.

The witness Putnam in response to appropriate questions would, if permitted to answer, testify that the construction of low dams would not in any way affect the possibility of subsequent erection of high dams unless they were located on the exact sites proposed for the high dams; that if both types of structures were to exist simultaneously, the pools would be kept confined to low dam pool stages except in times of flood. During floods, the navigable passes would be lowered and navigation would operate as with the high dam system, through locks in the high dams.

An arrangement similar to this was proposed in Complainants' Exhibit 105, House Document 328, for the extension of reliable navigable depths in the upper portion of what is now Norris Reservoir, so as to overcome the differences between low pool and high pool stages for carrying navigation through to the upper end of this navigable stream, which otherwise could not be reached by navigation during maximum drawdown periods."

Cross-examination:

I would not say I have been present in Court a large part of the trial, certainly not half of it. I have been in Chattanooga during most of the trial. I have acted as a consultant for complainants and their counsel continuously since the beginning of the trial but not continuously prior thereto. I have advised with counsel in the course of the examination and have sat at counsel's table during the examination of the defense's hydraulic witnesses and have [fol. 1816] actively advised counsel and suggested questions to counsel for cross-examination of a great many of the defense's engineering witnesses.

I have not chosen the four cities on the Tennessee which have the least fluctuation—some of them have small fluctuations and some of them have larger fluctuations. Most of those cities do not have the least fluctuation of any cities on the river. Sheffield has lesser fluctuation and there are some small points up near the mouth of the Clinch, Kingston and Lenoir City that will be found to have less fluctuation, I think, than Chattanooga. Those cities are among the cities that have the least fluctuation on the Tennessee River. I do not have the details of how many days in the year the average fluctuations in stage at Guntersville and Decatur, Alabama, are in excess of four feet. I will have to work that out. I would not know without an examination of the hydrograph whether it is very much larger. My opinion without any basis of anything else but general knowledge of the situation on the river is that it would be greater, but I don't know how much. All those cities selected by me are at the upper ends of pools except Johnsonville. You would not necessarily have smaller fluctuations at the shallow ends of the pool. There will be smaller fluctuation at steeper places in the river. Florence and Chattanooga are located at steeper places in the river, Knoxville is in a comparatively flatter section and Johnsonville on the lower section of the river is in an even flatter section than the others.

I did not refer to any project located in the vicinity of St. Paul. I referred to a low dam project between St. Louis and St. Paul. The project extends from below the mouth of the Illinois River at Alton to the head of navigation at Minneapolis. I don't recall referring to any one [fol. 1817] movable dam, either installed or being installed

in that region. As I recall it, practically all of the dams of the 26 in that region are movable dams. I was asked whether I knew there was a low dam project under construction by the Corps of Engineers. I did not mean to suggest to the Court that the dams under construction were similar to the low dams in House Document 328. They are movable dams in the sense that the discharges and flow are controlled by Taintor gates or roller gates. In order to keep the pools at a very close degree of regulation, these gates are installed as a necessity to control the pool levels very closely, due to railroad, city and other occupation on the banks. As to whether that makes it a movable dam, I would call that a movable dam. I would not think it to be a fact that the usual definition of a movable dam refers to the wicket type of dam. The wicket type of dam was the type set forth in House Document 328 under the low dam scheme. The dams that I have reference to have a regulation type of lock in the sense that a vessel has to lock through. They have no navigable pass. I have never understood a gate of the size there to be a spillway. It is a difference in terminology. It is for the regulation of pool levels, whether water is discharged or not. I would not attempt to compare the two types.

I testified as to one other recommendation with which I was familiar—that proposal was for the replacement of five of the wicket dams now in existence on the Ohio River with wicket dams of two feet higher lift and probably for strengthening of the foundation and lengthening of the wickets, which would involve a complete replacement of that section of the dam. I merely meant to suggest to the Court that this was an illustration of the fact that at least certain members of the Corps of Engineers did not think wicket dams are obsolete. I did not mean to testify that those dams were eliminated or replaced. What was [fol. 1818] actually done there was that there was a slight increase in the height of lift by substantial reconstruction. One of the principal objects was to increase the depth of the water in back of the dam. I did not intend to change the testimony I gave in this case originally as to the practice of the Corps of Engineers in substituting higher dams in place of the low dams.

In the design and construction of new equipment for inland waterways in certain operations where the volume

of business would justify, there is a general tendency towards heavier and more expensive units.

"Q. Is it not true that the Federal Barge Lines operate several different types of equipment?

A. That is correct.

Q. And it is true, is it not, that on the upper Mississippi they have in use small equipment similar to the equipment in use by other operators?

A. They have small equipment; as to its comparative weight with that of other operators, I am not in position to state.

Q. Well, in general it is about the same type, isn't it?

A. I would not know in detail; I have not examined the structural details of those barges.

Q. I would not ask you in detail, I would ask you in general.

A. In general, I think those barges are slightly more expensive.

Q. Only slightly?

A. As I spoke of yesterday.

Q. But only slightly in that instance?

A. Yes sir; they have very fine equipment."

As I recall, there is coal near LaFollette, Tennessee, I will have to refer to my notes to be sure. It is one of the coal mining centers. I did not particularly note that House Document 328 indicated the existence of substantial amounts of coal located on the Clinch River above Norris [fol. 1818a] Dam. On plate 180 of Part II of that document, the coal operations appear to be largely north and northwest of the Powell River and very few on the Clinch.

Redirect examination:

The average lift of the 26 dams on the Mississippi River, including the high lift dam at the Twin Cities, is 11.4 feet. The pools behind those dams are generally maintained within the banks of the river. There are a few places in the marsh sections near LaCrosse and Winona where it spreads out somewhat, but in general it is between the banks of the river. In the steep places in the river there is less fluctuation.

(The witness was excused.)

[fol. 1819] THEODORE T. KNAPPEN was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 37 years old, live in New York City, and am a civil engineer, I am graduate of the U. S. Military Academy, B. S. degree; a graduate of the Engineering School at Ft. Belvoir; and a graduate of the Rensselaer Polytechnic Institute with the degree of Civil Engineer. I served as First and Second Lieutenant in the Corps of Engineers, engaging in miscellaneous duties including surveying and construction, and I engaged in engineer work in California in construction and hydraulic mining. From July 1924 to March, 1925, I worked on the design of service water supply for Vallejo, Cal. From April, 1925, to May, 1928, I was the design and resident engineer on water storage development for irrigation and hydro-electric power for the Nevada Irrigation District. From June, 1928, to August, 1928, I was hydraulic engineer for the Hetch-Hetchy water supply project. From September, 1928, to March, 1934, I was area engineer for the 1st Field Area, Memphis Engineer District, with headquarters at Cairo. From April, 1934, to August, 1936, I was Chief of the Engineering Division of the Muskingum Flood Control Project in Ohio. From August, 1936, to July, 1937, I was consultant and chief of the flood control section of the U. S. Engineering Department, North Atlantic Division in New York City. From August, 1937, until now, I was and am a Consulting Engineer associated with the firm of Parsons, Clapp, Brickerhoff and Douglas on miscellaneous hydraulic and soils engineering work.
[fol. 1820] I am a member of the American Society of Civil Engineers and Secretary of the Soil Mechanics and Foundations Division of that society, and Chairman of the Subcommittee on the Structural Design of Earth Dams and Embankments, and am a member of the American Geophysical Union.

While Engineer of the 1st Field Area of the Memphis District, I was in charge of the design and construction of the New Madrid floodway, of the west levee from Cape Girardeau to the Missouri state line. The levees around Cairo and Cairo Drainage District and the levees from Hickman to Tiptonville, that is the Reelfoot levee district,

and I was in charge of all river work from Cairo to the Missouri state line, including bank revetment and contraction works and dredging. I was in charge of the construction, raising and maintenance of over 200 miles of levees under the Jadwin Plan, including the strengthening of levees and walls at Cairo and the Cairo Drainage District, and as area engineer was responsible for the acquisition of some 120,000 acres of land for levee rights. In dredging work I supervised the operation of from one to three dredges, a dredging survey boat and construction fleets, including up to 200 units of floating craft. I am familiar with the hydraulics of the Mississippi River at Cairo and the mouth of the Arkansas and I have substantial familiarity with the river below that reach. In connection with studies of hydraulics at Cairo, I became familiar with the main tributaries influencing the stage at Cairo, including the Ohio, Tennessee and Upper Mississippi.

As chief of the Engineering Division on the Muskingum Project, I was responsible for investigation, surveys, hydraulic studies, design and engineering supervision and I gave consideration to the major subjects of hydrology, [fol. 1821] project design, operating plans, economic studies and structural design, as well as other subjects, including the magnitude, duration and distribution of rainfall and the relation of rainfall to run-off and seasonal occurrences of floods. Floods selected for the basis of design for flood control projects were in excess of the greatest flood experienced in that watershed. I made special studies in connection with the design of the earth dams on the Muskingum Project which were erected on sand and soft foundations. As a consultant on the design of the Merrimac, Connecticut and Susquehanna River flood control projects, I considered matters of combined reservoir control, channel improvement and levee and wall protection. I am familiar with the design of hydro-electric reservoirs.

I am familiar with the reach of the Mississippi River extending from Cairo to the mouth of the Arkansas River and the flood control facilities that have been erected on that stretch.

"Q. Have you formed any opinions as to the most feasible types of projects for the protection of the alluvial valley on this reach in the event of overflow?

Mr. Fly: I object to that. Colonel Kelly came here and testified, and described the control works, described the alluvial valley and the works there, the Jadwin plan, and all of that, and gave his opinion as to all major aspects of this Mississippi Valley flood problem. I think this is entirely improper rebuttal.

Judge Martin: Brother Jackson, is any part of this proffered testimony through this witness more than cumulative?

Mr. S. D. L. Jackson: Oh, yes, if your Honor please, it is directed particularly to the testimony of several of the defendants' witnesses who were put on the stand, as to the effect on the Mississippi Valley of the flood control works which, as they have said, will include this new expanded Gilbertsville Dam, which of course was a deep secret from everybody when the complainants' case in chief was going in. If your Honors will note the exhibit introduced by——

[fol. 1821a] Judge Allen: I don't quite understand that, Mr. Jackson, because you certainly introduced reports, and you questioned upon Gilbertsville, and you put it on your maps, and you had it in your figures.

Mr. S. D. L. Jackson: The size and magnitude of the project, and its increased benefit on the Mississippi River Flood control; why, they have now put in a table, Exhibit 153, the last exhibit they put in, almost the last, which shows Gilbertsville with some 25% or more increased acre footage of flood storage, all of which, according to the testimony of these witnesses will serve to affect the flood control on the Mississippi River, and which no one knew until long after the plaintiffs' case in chief had been closed, and which first appeared when the defendants' witnesses got on this witness stand in the trial of this case.

Judge Allen: And you have in your hands the new reports, is that it?

Mr. S. D. L. Jackson: Yes, but that even never saw the light of day until December 13, and after we had closed our case.

Mr. Fly: Now, let's boil this down and see just what we have got hold of. That speech means that the adopted plan for the Gilbertsville project is 5 feet higher than counsel previously understood it to be. That is all, that is all there is to it.

Now, to take this witness and take him up and down the alluvial valley of the Mississippi, the levee system and the floodways, the floods, and flood damage, and all that sort of thing with a general question of that sort, because of five feet additional height on a single project, is utterly ridiculous, and that question cannot be aimed at that specific point.

Colonel Kelly testified as to all these projects, as to the whole valley and the entire business.

Mr. S. D. L. Jackson: I might state this five feet which counsel speaks of so slightingly gives them a million and a quarter acre feet more flood storage, or so, they claim, and it appears in the figures that they themselves put in evidence.

Mr. Fly: I object to no questions specifically directed to the addition of the five feet at Gilbertsville.

Mr. S. D. L. Jackson: And its effect upon the Mississippi River.

Mr. Fly: The effect of Gilbertsville Dam, on account of the added five feet?

Mr. S. D. L. Jackson: The combined effect of that coupled, with the other things, on the Mississippi River presents [fol. 1821b] an entirely different situation.

Mr. Fly: That presents a wedge to get into the whole business, again, that is exactly what it presents.

Mr. S. D. L. Jackson: They present an entirely different situation than the old one.

Mr. Fly: That is a springboard to get into the old situation.

Mr. S. D. L. Jackson: I might say that if Mr. Fly will concede that the New Gilbertsville Dam will be of no more help to the Mississippi floods than the old Gilbertsville Dam, before they changed it, it will affect somewhat, our position on this trial.

Mr. Fly: I will concede that this witness, if called upon to testify, would testify that that added storage would give added benefit to flood reductions on the Mississippi River.

Mr. S. D. L. Jackson: That was not my question and although I appreciate counsel's desire to be helpful, I am sorry I cannot avail myself of it.

Judge Martin: Brother Jackson, could you for our aid, state generally what it is you expect to show by this witness?

Mr. S. D. L. Jackson: Yes, I will be very glad to.

Judge Martin: I don't think that is unreasonable.

Mr. S. D. L. Jackson: No, and I will be very glad to, if the Court please.

Now, I might state that in the witness' qualifications which are being copied into the record, and which the Court has not heard, it appears that among other things this witness was, for five years, in charge of an area in Mississippi, and has extensive and first hand personal information concerning it.

Mr. Fly: On the levees.

Mr. S. D. L. Jackson: Of the Mississippi and the flood control problems.

Mr. Fly: On the levees particularly. Isn't that correct, Mr. Jackson?

The Witness: On all phases of flood control.

Mr. Jackson: If you want to examine him about his qualifications, you can.

Judge Allen: Let's proceed. The Court, in addition to counsel, has been up and down the alluvial valley several [fol. 1822] times, and we want specifically to know, Mr. Jackson, from you, what is new in this subject.

Mr. S. D. L. Jackson: Now, specifically and in answering your question, your Honor's question, the purpose of calling Mr. Knappen is really a multiple purpose, first, that the testimony of the witness Kimball, which appears at page 4332 of the (stenographic) record as to his method of determining floods against which protection should be provided is fallacious and insufficient. At that point, Mr. Kimball, I believe, stated that he gave consideration only to floods of record in the Tennessee Valley and at page 4182 (of the stenographic record), that he did not give effect to the flood of 1867. Another purpose——

Judge Allen: That is an opinion of Mr. Kimball? The question seems to indicate so.

Mr. S. D. L. Jackson: I think, perhaps, it was an opinion based on researches and investigations of fact that he had made. An additional purpose is that contrary to the opinion expressed by the witness Clemens at page 3591 of the (stenographic) record and at page 4558 of the (stenographic) record by the witness Okey, that the most effective protection to the alluvial valley in the reach below Cairo against a flood of 2,600,000 cubic feet a second at Cairo would be the raising of the levees from 2 to 5 feet and

the improvement of the channel by cut-offs and the use of floodways. Now, these——

Judge Allen: This page 4558 of the (stenographic) record refers to an opinion, the statement is of an opinion.

Mr. S. D. L. Jackson: But, that opinion was based, I believe, in part, Mr. Okey's opinion, directly, was based on previous assumptions that had been given to him, and, I think, which will appear, after an examination of probably several pages, that he was considering Gilbertsville as having a very large—that is larger storage capacity available.

Judge Allen: Now, is there anything else?

Mr. S. D. L. Jackson: Oh, yes. That in addition that contrary to the testimony of the witness Clemens at page 3604 and 3605 and 3606, and the witness Okey at page 4506 to 4508, both inclusive (of the stenographic record), the Unified Plan of the TVA could not be depended upon to affect materially the crest stage reduction at Cairo in any great flood.

Judge Allen: You concede, of course, that the statement of that would be an opinion?

Mr. S. D. L. Jackson: Mr. Knappen's statement would be an opinion based upon the facts which he now has in-
[fol. 1823] vestigated, and which he knows, and which are different than some of these other facts that were testified to as the basis for these other opinions.

Mr. Fly: I think it is always appropriate to bear in mind that our flood control witnesses were in direct answer to the flood control witnesses of the complainants. That was not new material on our part. Anything new is a mere matter of details and calculations, altogether——

Mr. S. D. L. Jackson: And facts.

Mr. Fly: — and that sort of thing.

Mr. Fitts: You opened the subject.

Mr. S. D. L. Jackson: Now, another purpose, that, whereas the testimony of the witness Clemens at pages 4221-4222 (of the stenographic record), indicate that a reduction in the crest of the flood at Cairo through the use of the facilities provided in the TVA Unified Plan as modified by the increase in project heights of the Gilbertsville Dam, would, on the basis of certain past floods have been from two to two and a half feet, a fair average reduction which could be expected from those facilities would be from zero to 1½ feet, or an average of about three-quarters of one foot.

ing degrees of success upon the lower river; upon the assumption that during the low stages on the river the projects set out in the TVA Unified Plan should come through the regulation of flow of waters in the Tennessee, contribute an increased discharge of 15,000 cubic feet a second six per cent of the time, the increase in low water flow would afford little benefit to navigation on the Mississippi; that the addition of that amount of water would have no effect upon the amount of dredging required, and in the past the channel has been [fol. 1832] kept open at the minimum previously experienced stages; that in the opinion of the witness the Unified Plan is not a justified means for increasing the navigable capacity of the Mississippi since there is no need of increased flow, and there will be no measurable decrease in river work."

I am familiar with the structural characteristics of Norris Dam. As to how I became familiar with this dam, I examined the Unified Plan and the defendants' and complainants' exhibits relative to Norris Dam, and I visited the dam during the construction.

Assuming that the plan of operation is to fill Norris reservoir so that it would stand at elevation 955 on December 15th, and that filling would increase at a uniform rate with respect to the volume, reaching an elevation of 1005 on April 15th, and that after that date the filling might extend to the top of the spillway, I have an opinion on the primary function of Norris Dam under that plan of operation.

"Q. Will you state that opinion?

Mr. Fly: I object to that.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer, he would state that upon the assumption given in the question he has reached the opinion that the primary function of Norris Dam under such assumed plan of operation would be the development of hydro-electric power; and in pursuance of other appropriate questions relating to the same subject, the witness would further state if permitted that some of the basic features upon which that opinion is based are that the Norris reservoir provides approximately 2,650,000 acre feet of storage to the top of the gates, that this is storage equal to 16 inches of run-off, that a reservoir constructed for flood control pur-

poses would provide approximately one half of this storage; the fact that a minimum storage elevation of 955 feet is planned indicates that something over one half million acre feet is never to be released from the reservoir, and it is apparent that the only purpose of that storage would be to provide a head for the generation of electric power.

[fol. 1833] A further consideration in such opinion that Norris is primarily a power reservoir is that during the summer months the amount of storage below the top of the gates provided for flood control purposes is equal to only approximately 3 inches of run-off, whereas three times as much is needed for assured flood control; that the reservoir has more than adequate capacity for flood control, but the principle of operation is such that inadequate capacity will be provided during certain seasons of the year; that is, that the reservoir does not provide firm flood control protection under the plan of operation; that the operating plan for the reservoir assumed has every appearance of being the most logical plan for the operation of a combination reservoir for power development at the site and storage for downstream power development.

And in answer to a succeeding question based on slightly different assumptions, but relating to the same subject, the witness if permitted to testify would state that upon the assumptions that instead of the plan of operation which he had previously assumed, the plan was to maintain the Norris pool elevation from January 1st to April 1st at elevation of 1010, and that in April the pool would be allowed to arrive at elevation 1020 as a summer storage level, the witness would be even more firmly of the opinion that the dam under that plan of operation would be operated primarily for the production of hydro-electric power.

If I may continue,—and in answer to further appropriate questions relating to this subject, the witness if permitted, would state that the purpose of providing dead storage below elevation 955 at Norris, and below elevation 1415 at Hiwassee is to provide minimum head for the generation of hydro-electric power.

That if Norris reservoir were to be operated as a flood control reservoir, the plan of operation should be such that it should never be used except for the temporary storage of flood waters, to be released as fast as channel conditions permitted; and that if Hiwassee Dam were to be operated to effect the results set forth on page 99 of the Unified Plan

Now, that is an opinion that is based upon, again, if your Honors please, these new facts, to which we did not have access and could not have had access, and even the board of directors of the Tennessee Valley Authority, apparently did not know it until December 20th, until long after our case had closed. I still have numerous other purposes.

Judge Martin: Brother Jackson, for my benefit, would you answer further on what you mean by your last statement, 'And to rebut certain facts?' Just what do you mean by that?

Mr. S. D. L. Jackson: Well, just this, if your Honors please. Their opinions were based on certain facts. Their opinions are predicated, and conclusions are drawn from facts. Now, we think certain of those facts are inaccurate, and we would like to show what are the true facts on which such an opinion might be predicated, and also show where the divergence of opinion would then result from the different basis of facts on which it was predicated.

Judge Allen: You are saying that you didn't know what height, for instance, Gilbertsville was going to be, and that it added so many acre feet, as now calculated. I am asking you whether the changes that you say exist, and which take you unfairly by surprise, if there can be surprise in this case, relate only to the figures given for Gilbertsville.

[fol. 1823a] Mr. S. D. L. Jackson: No, no, that does not. Now, other capacities of other TVA projects have been changed, and the information has first come to us during the trial of this case. That also appears in Defendants' Exhibit 153. I mean they are now using or stating different figures as to the acre storage capacity or flood control possibilities on the Tennessee River throughout, as it affects and has relation to the Ohio Valley or to the Mississippi Valley. All of those things have shifted.

Judge Allen: And you claim that these changes are embodied only in this new report submitted to Congress?

Mr. S D. L. Jackson: I am advised that these changes which relate not only to the physical structures that they proposed to erect, but also to certain changes in their proposed method of operation, first came to our attention when the witness Bowman was on the stand. That is, there had been no announcement, no information available, that gave us the proposed method of operation that the defendants now undertake to say they are going to follow, until the

witness Bowman took the stand as a part of their case.

Judge Martin: Your contention is, among other things, that you made your proof on the hypothesis of a certain situation with respect to Gilbertsville, offered your expert testimony on that hypothesis, and that something new developed after you had rested your case in chief, which would take you unfairly by surprise unless you prepared to meet it now, is that what it boils down to?

Mr. S. D. L. Jackson: Yes, I think that very fairly reflects it, if your Honor please, except that it is not limited solely to Gilbertsville, because there are some changes, not as great in degree as they are in Gilbertsville to the other structures, and changes in method of operation.

Mr. Fly: May it please the Court, there should not be any misunderstanding here. The only project where these gentlemen did not have the full information as to the physical structure of the dam is at Gilbertsville. All there is regarding these dams that these gentlemen may not have known all of this time is an added five feet of height at Gilbertsville Dam. To insinuate here that all of these structures have been changed is really to make a baseless charge. There is not a slight bit of evidence here to support any such suggestion.

I think we ought to evaluate this for what it is worth. Here is a man that spent years on the levee system. He is not coming in here to talk about the change in Gilbertsville Dam and what will happen at Gilbertsville, and he is not to talk about what will happen with a method of operation at Norris. He is not going to stop his testimony at the mouth of the Tennessee River.

They have seen their hydraulics case fall down about their ears, and now they have brought up another man from the alluvial valley of Mississippi who has spent a number of [fol. 1823b] years on the levee system, and we are going to have the whole blooming business over again.

Mr. S. D. L. Jackson: I might state further, if the Court please, that we were completely in the dark, and submit through no fault of ours; we tried to get records, we were completely in the dark as to the method of operation that the defendants propose to follow until Mr. Kimball and Mr. Woodward, two other of the defendants' witnesses took the stand, and until Mr. Kimball introduced an exhibit, I believe, Defendants' Exhibit No. 90.

Judge Allen: Which you objected to.

Mr. S. D. L. Jackson: Oh, vigorously.

But my point is that through no lack of diligence or lack of desire to present this case to the Court in the first instance, just up to the minute, we have had, since the defendants' case started, and after our case in chief closed, we have had certain material factors which we could not have access to before brought out, and I think that it is proper for us to be permitted to meet that at this time, which is the first opportunity we have had to meet it.

Judge Allen: Mr. Jackson, do you intend to offer anything else through Mr. Knappen except these questions?

Mr. S. D. L. Jackson: These are not the questions, if the Court please, these are statements of the references to defendants' evidence that Mr. Knappen's testimony would relate to.

Judge Allen: Would relate to?

Mr. S. D. L. Jackson: Yes, and in a general way describe the purpose of putting him on the stand, but it is not the offer of proof that we would desire to spread on the record as to his testimony in the event it were excluded.

Judge Allen: Well, does your offer to prove state in effect anything more than this?

Mr. S. D. L. Jackson: Oh, yes, that relates back, mostly, to the defendants' testimony that this is designed to meet, the offer to prove.

Judge Allen: The defendants' testimony was offered to meet your testimony given in chief, wasn't it?

Mr. S. D. L. Jackson: The defendants' testimony, as we stated before the recess, invoked numerous additional facts, and in that connection, if the Court please, I stated that certain other main river reservoirs had been changed by recent plans, and if the Court will consider page 403 of Complainants' Exhibit 116, which is in evidence——

[fol. 1823c] Judge Allen: Will you show it to us?

Mr. S. D. L. Jackson: Yes, your Honor. On page 919 of Defendants' Exhibit 153, which was put in yesterday. the Court will notice under the column headed 'Controlled Storage', in one of the columns in the table, on each of these pages it appears that four of the main river reservoirs are now stated by the defendants to have a different, and I think in all cases a larger controlled storage capacity than is shown by the table on page 403 of Complainants' Exhibit 116, which was the last available information prior to the appearance of this table.

Mr. Fly. Mr. Jackson, you do not suggest that there has been any change in these structures, that is merely a matter of operation.

Mr. S. D. L. Jackson: I don't know—well, so far as that is concerned a lot of the structures have not been built, and one of them is now in process of being erected, I think that is Guntersville.

Mr. Fly: So far as operation is concerned, the complainants' own witnesses were asked a question by the Court numerous times; the effects that would come from these dams would depend on the manner in which you operated them, and you can operate them differently and get different results, and all the witnesses, including Mr. Kurtz and Mr. Kelly were questioned along those lines, and that anyone of numerous means of operation being assumed lays a groundwork for an endless amount of rebuttal, bringing in a levee expert here, is beyond all question.

Mr. S. D. L. Jackson: Of course, the witness now offered is much more than a levee expert. If the Court will examine the statement of his qualifications and experience, the Court will readily ascertain that he is much more than a levee expert, that he is a well qualified engineer on structures of this kind, dams, and levees, and power dams and flood control projects, and he has designed a tremendous flood control project within a very recent time.

[fol. 1824] Judge Allen: All of the proffered testimony of the witness Knappen lies in the field of opinion evidence. These facts involved are brought in to form a basis of an opinion, and the Court, in light of the three and a half pages of the statement to be introduced in the record as to the purpose of producing the witness Knappen, decides that the testimony to be proffered by this witness is immaterial, as well as not constituting proper rebuttal. You may have your exception.

Mr. S. D. L. Jackson: May we have an exception, and may we mark the sheets which the Court has returned to us as Complainants' Exhibit? Or would the Court prefer to have that copied in the record, or be given an exhibit number? It can be done either way.

Judge Allen: Copied in the record.

Mr. S. D. L. Jackson: Through this witness we intend to adduce testimony to the effect:

(1) That the testimony of the witness Kimball (stenographic record p. 4332) as to his method of determining floods against which protection should be provided, is fallacious and insufficient.

(2) That contrary to the opinion expressed by the witness Clemens (stenographic record p. 3591), and the witness Okey (stenographic record p. 4558), the most effective protection to the alluvial valley in the reach below Cairo against a flood of 2,600,000 c.f.s. at Cairo, would be the raising of the levees from 2 to 5 feet, and the improvement of the channel by cut-offs and the use of floodways.

(3) That contrary to the testimony of the witness Clemens, (stenographic record pp. 3604, 3605, 3606) and the witness Okey (stenographic record pp. 4506-4508) the Unified Plan of the TVA could not be depended upon to effect a material crest stage reduction at Cairo in any great flood.

(4) That whereas the testimony of the witness Clemens (stenographic record pp. 4221-4222) indicate that a reduction in the crest of the flood at Cairo through the use of the facilities provided in the TVA Unified Plan, as modified by the increase, in project height of the Gilbertsville Dam, would, on the basis of certain past floods have been from 2 to 2½ feet, fair average reduction which could be expected from these facilities would be from 0 to 1½ feet, or an average of about ¾ feet.

(5) That contrary to the opinion of the witness Okey (stenographic record pp. 4506-4508) a reduction in flood crest at Cairo through the use of the facilities provided by the Unified Plan, including the modified Gilbertsville Dam, [fol. 1825] would persist throughout the whole Mississippi River below Cairo, such reduction in crest would become insignificant by the time the flood had reached the mouth of the Arkansas, and that hence Mr. Okey's calculations of the acreage which would be protected by reason of the reduction of the crest at Cairo must be discounted considerably.

(6) That contrary to the opinion of the witness Okey (stenographic record p. 4511) that the TVA Unified Plan would appreciably mitigate seepage in the Valley in a great flood, such would not be the case.

(7) That contrary to the opinion of the witness Okey, (stenographic record p. 4508) that the operation of the TVA

Unified Plan in a great flood, such as the flood of 1927, would materially reduce stages in the backwater areas below Cairo, such would not be the case.

(8) That contrary to the opinion of the witness Okey, (stenographic record pp. 4510-4511) that highwater maintenance costs on the Mississippi would be materially reduced through the operation of the Unified Plan, such would not be the case, after the completion of the modified Jadwin Plan, and that the Unified Plan would not eliminate the necessity for additional flood control measures at Cairo and below.

(9) That contrary to the general testimony of the witness Okey, to the effect that great economic flood control benefits to the Mississippi alluvial valley would accrue from the operation of the TVA Unified Plan, such plan would not be economically justified for the purpose.

(10) That contrary to the opinion of the witness Clemens, (stenographic record pp. 3591-3592) and of the witness Okey (stenographic record p. 4558), that it is not practicable to raise the levees to protect against predictable floods at Cairo and below, the physical conditions are such that the levees can be raised safely under proper design, as much as is necessary.

(11) That contrary to the opinion of the witness Barker, (stenographic record pp. 4651-4653), that Norris and Hiwassee dams will provide a material benefit to navigation on the Mississippi River, they will not do so and furthermore there is no need for the increased flow in the lower Mississippi River.

(12) That the plan of operation of the Norris Reservoir, as proposed in the testimony of the witness Kimball, (stenographic record pp. 4278 and 4381 and Defendants' Exhibit 90), as a plan of operation not reducing the effective-
[fol. 1826] ness of that reservoir for flood control, would actually make the primary purpose of the reservoir the production of hydro-electric power, and would reduce its effectiveness as a flood control facility.

That the plan of operation to which the witness Bowman testified (stenographic record p. 3893) that is, maintaining normal pool level and maximum pool level for power stor-

age at elevation 1020, would reduce the effectiveness of Norris Dam as a flood control facility.

(13) The same line of testimony with respect to Hiwassee Dam.

(14) That the plan of operation of Norris Reservoir as set forth in Complainants' Exhibit 116, (testimony of Dr. Morgan before the House Appropriations Committee), would indicate that the primary purpose of the dam is the production of hydro-electric power.

(15) That contrary to the testimony of the witness Barker, (pp. 4652, 4654), and that of the witness Bowman, (p. 3893), and that of the witness Kimball, (p. 4322), (all page references to the stenographic record), the dead storage provided in Norris and Hiwassee reservoirs, and referred to in Complainants' Exhibits 912, 352 and 362, and in Defendants' Exhibit 90, is provided in those reservoirs for the purpose of creating head for the generation of hydro-electric power, and that a different plan of operation should be provided if Norris and Hiwassee are flood control reservoirs.

And, may we at this time move that all of the testimony offered by the defendants having to do with the Gilbertsville Reservoir and its changes from former designs, its effect upon the flood control possibilities in the Tennessee Valley as changed and its effect upon the alluvial valley of the Mississippi and floods upon the Mississippi be stricken from the record as immaterial.

Judge Allen: The motion is overruled.

Mr. S. D. L. Jackson: May we have an exception.

Q. Mr. Knappen, have you formed any opinion as to the most feasible sites for facilities for protection of the alluvial valley in this reach against flood overflow?

Mr. Fly: Objection, as immaterial, and as improper rebuttal.

Judge Allen: The objection is sustained.

[fol. 1827] Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer he would state in response to this, and other appropriate questions that he is familiar with the flood control facilities that have been erected on the Mississippi River from Cairo to the mouth of the Ar-

kansas River and is of the opinion that the most effective protection in this reach of the river against a flood of 2,600,000 cubic feet a second at Cairo could be obtained by raising the levees to the necessary height, and by improving the channel through cut-offs, and by the utilization of the New Madrid floodway; that a reservoir control system primarily for Mississippi River flood protection would involve excessive costs, with respect to benefits, and the value of tributary reservoirs is too problematical to be relied upon on an economic basis for flood protection in this reach of the Mississippi River; that he is familiar with the Tennessee Valley Authority Unified Plan, Complainants' Exhibit 328 in this case; that he also is aware that the projected Gilbertsville dam is now being constructed to an elevation five feet higher than is outlined in the Unified Plan, and is of the opinion that the Unified Plan, as so modified, could not be depended upon to effect a reduction of the flood crest stages at Cairo in every great flood, because it would not be effective when the discharge from the Tennessee was very small or very large, and that he believes the fair average reduction in the crest at Cairo which might be effected by the Unified Plan as so modified in a great flood which required the operation of the New Madrid floodway would be from zero to 1½ feet, or an average of ¾ of a foot, and that such a reduction of crest would not carry on down the river and would diminish until its effectiveness would be eliminated at the mouth of the Arkansas River.

Q. Are you familiar with seepage conditions in the Valley, and have you studied the phenomenon of seepage?

A. I have, and I am.

Q. In your opinion would the Unified Plan appreciably mitigate seepage in the Valley in a great flood?

A. It would not.

Judge Allen: Just a minute, Mr. Witness. Don't answer please until counsel has been given an opportunity to object.

Mr. Fly: I have no objection so long as it is particularly on the point of seepage, but when he starts broadening out into the conditions in the alluvial valley, and all that, I think we should stop it. As I recall it, the specific point of seepage was brought out for the first time in our case.

[fol. 1828] Mr. S. D. L. Jackson: Very well, if I can get in this evidence, I would be glad to do it. I am asking for an opinion, I do not desire to try to evade——

Mr. Fly: You are not objecting, are you?

Mr. S. D. L. Jackson: Not at all, but I want to explain to the Court that I asked that question in view of their ruling for the purpose of trying to make up a record.

Mr. Fly: Well, let's go.

Mr. S. D. L. Jackson: Let us wait until the Court instructs me if I may.

Judge Allen: It is indicated by the ruling of the Court that this entire subject, lying as it does in the field of opinion evidence, involving facts stated upon which some expert may base an opinion, we consider it all immaterial and improper rebuttal, and unless there is some material fact that you want to rebut, we consider it improper rebuttal, and the Court on its own motion objects to the question and strikes the answer out.

Mr. S. D. L. Jackson: I might state that I did not anticipate that the questions would be answered, I was trying to make up a record. I may have an exception to the Court's ruling?

Judge Allen: Yes.

Mr. S. D. L. Jackson: If the witness were permitted to answer, he would state that in his opinion the TVA Unified Plan would not mitigate seepage appreciably in great floods.

Q. Assuming the operation of the TVA Unified Plan in a great flood, such as the flood of 1937, with reservoir draw-down of the lower river reservoir as the flood approaches, and release of storage after the crest at Cairo, what would be the effect on stages in the backwater area below Cairo?

Mr. Fly: Objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Please note an exception, and offer to prove by the witness, if permitted to answer, that in a great flood the operation of the Unified Plan, including draw-down of the lower river reservoirs as the flood approaches and the release of storage after the crest at Cairo would have only a negligible effect on the backwaters."

[fol. 1829] I am familiar with high water maintenance on the Mississippi and I have conducted a high water fight.

"Q. Based upon your experience, how much do you believe that the Unified Plan of the TVA would reduce high water maintenance cost on the Mississippi?

Mr. Fly: That is objected to as improper rebuttal.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception, and offer to prove that if the witness were permitted to answer he would state that the Unified Plan would offer no appreciable amount of reduction of high water maintenance cost after the completion of the modified Jadwin plan; and, in answer to further appropriate questions relating to the same subject, he would state, if permitted to answer, that in his opinion the construction of the Unified Plan is unnecessary for flood control at Cairo and below and would not eliminate the necessity for additional flood control measures at Cairo and below, and that he is of the opinion that the flood control features at Cairo and below, and that in his opinion the flood control features of the Unified Plan are not justified economically for flood control on the Mississippi and an equivalent flood control protection can be provided more economically by other means. Levee protection equivalent to the features of safety provided by the Unified Plan can be obtained for $9,000,000.

Q. Are the physical conditions, including foundation conditions, at Cairo and below Cairo along the Mississippi, such as would render feasible the raising the height of the levees?

Mr. Fly: We object to that question on the ground that, as I anticipate the answer, it is in direct rebuttal, not of our own witnesses, but of the complainants' own witnesses on the case in chief. Mr Kelly testified on this subject, and read from a report of the Chief of Engineers to the effect that the levees had reached the limit of their practicable height, and was asked whether he agreed with it, and he stated that he did, and this testimony is clearly going back to the testimony in chief, and not rebutting any of the defendants' testimony, but testimony of their own witnesses.

Mr. S. D. L. Jackson: Mr. Okey testified——

Mr. Fly: Of course, we answered your testimony.

Judge Allen: Can't you have that checked by the record? [fol. 1830] Mr. S. D. L. Jackson: I will be very glad to

have that record checked. I recall that they read out of some book to him, but I do not recall what, and I do want to call the Court's attention——

Mr. Fly: Page 2585 of the (stenographic) record.

Mr. S. D. L. Jackson: I call attention to Mr. Okey's testimony at page 4558, and Clemens at page 3595 and 3592 (of the stenographic record).

Judge Allen: At page 2585 of the (stenographic) record, Colonel Kelly was asked, 'The present levees on the Mississippi are about as high as it is desirable to construct them. An increase in the height accentuates the danger of a crevice, and its consequences, besides presenting the serious hazard of subsidence in the soft ground which they must occasionally cross.' Then he is asked whether he agrees with that statement of the Chief of Engineers and he says he has no reason not to agree with it.

Mr. S. D. L. Jackson: Of course, if that is the only theory relied on, that does not touch this question. It says the present levels are about as high as it is desirable to construct them.

Mr. Fly: Then it states the reasons, which shows what they have in mind when they say it is not feasible.

Mr. S. D. L. Jackson: The statement is that it accentuates the danger of a crevasse. As I understand it, that would be merely a sort of expression of judgment, and would not be an engineering determination of the physical possibility of raising the levee a moderate height.

Judge Allen: Objection sustained. Mr. Jackson, the Court considers this matter rather serious. Wouldn't it be a conservative estimate to say that 75 per cent of the testimony in this record is expert testimony?

Mr. S. D. L. Jackson: I would hate to try to give a percentage, I would say it is a considerable amount.

Judge Allen: For the record, to permit the introduction of such a large volume of expert testimony on behalf of the complainants, which then the defendants would rebut with their experts, and then to go over the same ground with the same experts, or as in this case a totally new expert, re-opens the whole controversy when the case has been tried; and also the proposition that in the ordinary course of engineering activity, in the ordinary course of carrying out the instructions of Congress under a statute which has not been declared by the Supreme Court to be null and void, the proposition that some change in plans entitles complainants

to such a re-opening of the case would mean that after the defendants' case is all in, then the complainants can try the case all over again having heard the defendants' proof. The Court bears all of these matters in mind and considers it improper rebuttal and the objection is sustained.

[fol. 1831] Mr. S. D. L. Jackson: May we have an exception, and state that if the witness were permitted to answer the question he would state that the physical conditions at and below Cairo on the Mississippi are such as would render it feasible to raise the height of the levees. The witness at one time entertained the idea that it was not feasible to raise the levee system, but since that time as a result of extensive research and practical experience, has learned that it is entirely feasible to raise the levee system all that is necessary. The problem of seepage and the problem of soft foundations he has learned can be solved by proper design.

That the experience of the witness is in part based upon the fact that he has recently completed the construction of an earth dam 125 feet high upon some 200 feet of pervious sand and gravel foundations without cut-off, and that last year this dam had some 60 feet of water stored behind it without any signs of distress."

I am familiar with the major problems involved in the maintenance of a navigable channel on the Mississippi below Cairo.

"Q. Will you describe as briefly as you can those major problems?

Mr. Fly: Objection, as immaterial and improper rebuttal.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception? And if the witness were permitted to answer, he would testify that he is familiar with the major problems involved in the maintenance of a navigable channel on the Mississippi River below Cairo, including minimum flow conditions, are the formation of crossings or bars, and the methods of excavating channels through them by dredging; that dredging may be necessary when as much as 250,000 cubic feet a second is flowing in the river, and dredging is continued to extreme low stages, which may have a minimum flow of around 100,000 cubic feet a second; that in order to help maintain the channel and induce the natural current to scour out the bars, a system of contraction works has been provided with vary-

to the effect that Hiwassee has sufficient storage capacity to completely control flood waters from above, it should be operated so the water would never be stored except the temporary storage of flood waters, to be released as rapidly as channel conditions below permitted.

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Q. Mr. Knappen, in your engineering practice in the flood control field, how do you go about determining the size and times of occurrence of floods, for protection against which a project shall be designed?

[fol. 1834] Mr. Fly: Objection. That is improper rebuttal, gone over on the main case, this whole matter of flood control, Mr. Kurtz and Colonel Kelly went over the same field.

Mr. S. D. L. Jackson: This question, of course, is merely preliminary.

Judge Allen: It is preliminary but it involves a lot of time. It is the same blind alley. Is it designed to lead up to an opinion?

Mr. Fly: I think the question is an opinion itself, calls for an opinion itself, your Honor.

Mr. S. D. L. Jackson: No, it is—that is, I don't want to mislead the Court.

Judge Allen: Is this a description of the factors which underlie an opinion.

Mr. S. D. L. Jackson: No, I don't believe it is. It is more a recital of an instance in his experience, of fact, which does enter into and have a direct bearing. If I might state what I would expect to develop by this in a few succeeding questions here, it would be that it is impossible to count upon seasonal storms, and in designing a flood control project you must take into consideration that the storms might come at any season of the year, that in the construction of the Muskingum flood control project——

Judge Allen: That is your opinion, isn't it, Mr. Knappen?

The Witness: I was going to state an actual occurrence of a summer flood.

Mr. Fly: That would be objectionable upon other grounds.

Mr. S. D. L. Jackson: It is based upon his experience.

The Witness: That is the background for my opinion.

Judge Allen: Yes. The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception? If the witness were permitted to answer that question and other appropriate questions relating to the development of this same subject, he would state that in his engineering practice, in the flood control field, in determining the size and times of occurrence of floods against which projects are to be designed, the witness gives consideration to storms which have occurred in the climatological region; upon the basis of floods following these storms, it is common practice to develop project floods as a basis for design; that in all cases [fol. 1835] in the witness' experience the project storm is greater in magnitude than any previous occurrences of record; that in engineering practice it is assumed usually that the project flood may occur at any season of the year, and that in the opinion of the witness it is correct to make such an assumption, and that opinion is supported by the witness' experience in particular upon the Muskingum project, where during the period of construction a storm of great magnitude occurred about the middle of August, and that that storm was the third greatest storm that had ever occurred on the river in the period of record; that the witness had examined the records in the Muskingum Valley over a period of 80 years, and during that period there was no record of a similar occurrence during the summer months, and that in the opinion of the witness a period of record of 80 years is not convincing proof that a greater storm might not be experienced during any month of the year. I believe that is all.

Now, in connection with the testimony on seepage, in view of the fact that the defendants first injected that element into the case, and the ruling of the Court not permitting us to at this time go into the question, complainants now respectfully move that all of the testimony of the defendants relating to that subject and its effect upon the flood control problems in the Mississippi Valley be stricken from the record.

Judge Allen: The motion is overruled and the Court might indicate this, the Court will come to the time when it will rule very closely and very definitely with respect to what are the material issues in this case. The Court does not intend now, in the course of a lawsuit, immaterial evidence having been offered on the part of the complainants, and the defendants having been allowed to answer that with immaterial evidence, to sift out the defendants' immaterial

evidence, and leave the complainants' immaterial evidence in; and neither do we intend to stop now at this point and go through all of the record. We are going to go ahead and finish the case, and then there will be a sifting.

Mr. S. D. L. Jackson: May I have an exception? I take it this motion is overruled.

Judge Allen: The motion is overruled.

Mr. S. D. L. Jackson: Then, may I have an exception?

Judge Allen: You may have an exception. The Court will supplement its statement in this way: The sifting will take place in the finding of facts."

(The witness was excused.)

[fol. 1836] Edward J. Minser was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 34 years of age and reside at Kansas City, Missouri, I am chief meteorologist for Transcontinental and Western Air Lines, Inc., which is an air line engaged in the transportation of mail, passengers and express between New York and Los Angeles and San Francisco. A meteorologist is one who engages in the science and study of weather and the effects of weather, as to rains, snow, sleet and the causes and results of certain meteorological phenomena.

I received my grammar and high school education in Minnesota and enlisted in the United States Navy in 1925, and was assigned to the U. S. Destroyer "Wood" in the battle fleet. In April 1927 I was transferred to the aerological school of the navy at Washington, D. C., which is the naval school for training meteorologists for forecasting weather, as far as weather affects the fleet. Upon completion of the course of instruction, I was assigned to the observatory at that station and subsequently acted as assistant instructor in the Navy Aerological School. While so engaged, as a matter of regular routine, I made airplane soundings of the upper air and became familiar with the making of such soundings and with the working up at an altitude of 17,000 feet, and the characterization and interpretation of the records of such flights.

Upon my discharge from the Navy in 1929, I entered the U. S. Weather Bureau Service at Allendale, North Dakota, [fol. 1837] where a kite station was maintained for sounding the upper atmosphere. I resigned from that position in May 1929, and became meteorologist for Transcontinental Air Transport at Albuquerque, New Mexico. I was stationed at Albuquerque and Clovis, New Mexico, Amarillo, Texas and Kansas City, Missouri, as meteorologist, performing all of the routine duties required of an airway meteorologist, which included surface and upper air observations, the collection and dissemination of air information, the drawing of weather maps, the making of forecasts for pilots and for operations personnel. In December 1931, I resigned from the air line and established a forecasting service at St. Paul, Minnesota. In June 1932, I returned to the air line service at the request of the company, which is now Transcontinental and Western Air Lines, Inc., and in September 1934, I was appointed Chief Meteorologist, the position which I now hold.

The particular work to which I have given my attention has been in weather forecasting. In air line work a forecast is all important as a requirement for safe flight operations. The system established with the air lines is to utilize all of the material of the Weather Bureau, or from other sources, and from this material to issue forecasts for the information of flight personnel. The air lines have a small forecasting station and are, therefore, able to utilize and adopt all of the latest and most modern ideas and methods that are approved for weather forecasting.

In the last nine years I have studied, analyzed and observed the history and behavior of all storms that have occurred in the northern half of the western hemisphere. In the meteorological office of the air line at Kansas City under my supervision, there are drawn daily four weather maps [fol. 1838] which cover the United States, and in addition the morning and evening maps cover the hemisphere from Honolulu to Bermuda and from the Arctic Circle to the Gulf of Mexico. I have made original studies in the icing of aircraft and have had a paper on this subject published in the Air Commerce Journal and in the Aeronautique Internationale. I have collaborated in the studies of dust storms, thunder storms and floods, and have contributed a section on meteorology for a textbook to be published shortly on the subject of aeronautical navigation. I keep in

touch with the various schools engaged in research on meteorology, and I maintain personal contact with the majority of the leading meteorologists in the United States and in foreign countries.

I have presented two papers before the American Meteorological Society, one being an analysis of excess rainfall in the United States and another entitled "Synoptic Studies of Icing Conditions in Free Air". My present activities include the supervision of the Transcontinental and Western Air Lines' forecasting staff composed of 12 meteorologists and five junior meteorologists. In my activities I have become familiar with the method of forecasting known as "air mass analysis", or the polar front method, introduced in this country by the United States Navy. I have analyzed and tested this method and it is employed under my supervision by the forecasters on my staff. This system is not generally used by the city weather bureau offices yet, but it is gradually being extended throughout the air weather forecasting services and has been in use on our air line for four years and has gradually increased the accuracy of our forecasts and permits detailed estimations of the cause of storms causing weather. The air mass analysis method of forecasting takes into consideration that portions of the earth's surface have uniform properties and that if a body [fol. 1839] of air stagnates over a given region, it will slowly assume those properties. It involves the movements and collections of masses of air possessing properties which may be identified with one region or another. It involves consideration of the effect of moisture contained in those masses, as well as the velocities at which those masses may or may not travel. The employment of this method requires a knowledge of the vertical structure of the air which is obtained from surface reports and upper air soundings from airplanes and balloons. A paramount consideration in the prediction of rainfall in connection with this method is a knowledge of the conditions under which the areas in which water vapor may be condensed out by cooling of the air to below its dew point. I have collaborated with Mr. Gail Hathaway, principal engineer of the Missouri River Division, U. S. Engineers Corps, in making an extensive study of a large number of flood storms in the United States. The method used in this study was to select certain storms that had occurred in the general vicinity of the dam sites upon which Mr. Hathaway was engaged and to transpose those

storms over the region of immediate interest. My part in those studies was to analyze the meteorological data and to determine the structure and cause of the storm to see if it were meteorologically possible to transpose the storm over the desired region. I applied the air mass analysis method in these studies. Storms causing flood rains may be divided into two types, namely, tropical storms of the type of West Indian hurricanes, and extra-tropical cyclones.

"Judge Allen: Now, perhaps, it will save time if we ask what is the purpose of the testimony of this witness?

Mr. S. D. L. Jackson: The purpose, briefly stated——

Judge Allen: And whose testimony does this rebut?

Mr. S. D. L. Jackson: The testimony is designed to rebut the testimony of the witness Kimball.

[fol. 1840] Judge Allen: What page?

Mr. S. D. L. Jackson: Appearing at page 4184 of the (stenographic) record, that the flood season on the Tennessee is from December 15th to April 1st. It is also designed to rebut the testimony of the witness Sargent to the effect that floods start about the middle of December and run till about the first of April.

Judge Allen: What page of the (stenographic) transcript?

Mr. S. D. L. Jackson: That is page 3722; and the testimony of the witness Kimball relating to the method in which he proposed to operate these dams that he would raise the reservoir from elevation 1005 on April 15th. Now, if the Court please——

Judge Allen: What page?

Mr. S. D. L. Jackson: That, I believe, is page 4278 (of the stenographic record). That is the defendants, in general, the defendants introduced evidence that a seasonal flood might be expected on this river, and this testimony is designed to show that it cannot be limited seasonally.

Mr. Fly: May it please the Court, we went into this at considerable length with Mr. Kurtz, and he was on the case in chief, and Mr. Kurtz took a flood right at the tail end, a very large flood, right at the tail end of the flood season. We went over that in considerable detail with him, and also with Colonel Kelly, we went into this matter of the flood seasons on the Mississippi and Tennessee. And we also discussed with one or both of those witnesses the matter of the pop-ups, or the summer floods. That whole matter was

gone into at considerable length. That matter of seasonal filling in line with that was gone into with them. There is not a thing that is new here as distinguished from the main case.

Judge Allen: Can you ask that in one question, Mr. Jackson?

Mr. S. D. L. Jackson: I will try. Now, you mean one question to——

Judge Allen: To rebut the testimony of Mr. Kimball, which is rather general, in answer to the question, as to what the question is in general. The statement is the flood season on the Tennessee ranges from about the middle of December to the first of April.

Mr. Fly: May it please the Court I have found one reference to the testimony of Colonel Kelly in which he stated he agreed with the following: 'In order to determine the effect of reservoirs on the Mississippi flood flows'—that is at [fol. 1841] 2604 of the (stenographic) record, 'It is necessary to establish some rule for reservoir operations. Practically all large Mississippi floods have occurred during the ninety days from February 15th to May 15th.' There is other material there, but the Colonel stated he concurred with that, and I believe at other times, which I have not spotted just yet—Oh, here it is. Colonel Kelly says at 2606 'but the general season,'—referring to the Mississippi and Tennessee—'The general season is approximately the same, that is, they both are liable to flood during the first five months of the year.' Now, I could go on with that sort of thing at considerable length, and, somewhat, I think, with Colonel Kelly's testimony, and I am sure that is true with Mr. Kurtz, and take into account that it was his own point. It was gone into amply on the main case, and I think it is wholly unjustified in the matter of rebuttal.

Mr. Fitts: I would like to refer the Court to the testimony of the witness Kurtz, appearing on page 2064 of the (stenographic) transcript. This is just a part of it, but I happen to have it right here.

Mr. S. D. L. Jackson: If the Court please, this is designed to show, this testimony, that there is a great probability of a storm causing enough rainfall to create a flood, occurring at any time of the year, though the heavy rainfall season in general may be through certain particular months of the year. And of course, its relation is that on a flood control

project it cannot be definitely determined that a flood, out of season flood, will not occur, because the possibility and probability of such floods does actively exist, and this witness is——

Judge Allen: That was considered by some of the defendants' witnesses, as I remember. They spoke of summer floods.

Mr. Fly: Spoke of summer floods, I believe Mr. Kurtz. Mr. Kurtz said, 'During other times of the year, that is during the summer and during the late spring, when some of the great storms on this river occurred, the percentage of rainfall is very much less, so much less that you have to have a very much greater storm during these particular months to produce a flood of a given magnitude than you would have to have during the months from December to April.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception? I think, if your Honor please, all of that discussion was precipitated by your Honor's request of me to frame one ques-[fol. 1842] tion, if I could, to bring out the substance of this witness' testimony, which question I had not yet framed or asked. May I—it will be short, I assure your Honor,—may I go through and make my record here in a fashion in which I had anticipated might have to be done in the event the Court should exclude that testimony?

Judge Allen: The Court has sustained that objection on the ground, the same ground, that it is not proper rebuttal.

Q. During what months of the year are tropical cyclones most frequent?

Mr. Fly: Objection.

Judge Allen: Is that the basis for an opinion that you want him to express?

Mr. S. D. L. Jackson: A recital of history, and also opinion as to what might happen in the future.

Mr. Fly: This is simply a matter of flood seasons, it can't have any other effect.

Judge Martin: Do you want to get that in as a basis for an opinion?

Mr. S. D. L. Jackson: This is based upon a historical study.

Judge Martin: Yes, I am not asking that, I am asking whether the ultimate fact that you want to get in here based on historical studies is an opinion?

Mr. S. D. L. Jackson: Yes, I believe that it is. If I may briefly describe, the witness will, from his historical study, be able to testify as to the times of year at which storms of the character I have described in the question do strike this geographical area with which we are concerned, and then based upon that fact, I would expect to elicit an opinion from him that in the future similar storms of that character may be expected to strike this area.

Judge Allen: The objection to this line of questioning is sustained, on the same grounds as heretofore given.

Mr. S. D. L. Jackson: May we have an exception, and if the witness were permitted to answer this question, and subsequent appropriate questions relating to the same subject, he would state that tropical cyclones occur most frequently during July, August and September; that the path of the tropical cyclone will follow a warm moist surface or current of air and avoid regions of cold dry air; that generally tropical cyclones either go up the East Coast of North America or stagnate over the Southern States. When a [fol. 1843] cyclone stagnates it will continue to deposit water until its water content and the sources of its supply are exhausted; that in the past the witness has studied tropical cyclones that have caused floods, in and adjacent to the Tennessee Valley area.

Judge Allen: What witness of the defendants testified about tropical cyclones?

Mr. S. D. L. Jackson: Well, there was one witness, I recall, that put in an exhibit showing a lot of storms in North Carolina, wasn't that Mr. Kimball?

Judge Martin: I recall the one at Tupelo.

Mr. S. D. L. Jackson: If I may be permitted to answer your Honor's question, Mr. Minser, in his recitals of his experience and training which I have asked to be copied into the record, stated that tropical hurricanes causing flood rains might be divided into two types, namely, tropical storms of the type of West Indian hurricanes and extra-tropical cyclones. Now, that I think, will give an answer to your Honor's question, and my terminology in this question was based upon that preceding statement.

Judge Allen: I wondered whether Mr. Kimball or any of the witnesses for the defendants described a tropical cyclone?

Mr. S. D. L. Jackson: I don't think they called them any-

thing but storms, but Mr. Minser has applied that terminology.

Judge Allen: All right, you may continue.

Mr. S. D. L. Jackson: The witness would testify in that connection that the witness has analyzed the storms of July 7th to 9th, 1915 in Alabama; the storm of July 17th, 1916 in North Carolina; and the storm of September 25th to 27th, 1929, in Georgia, all of which gave record floods in those areas, and which caused some precipitation in the Tennessee Valley area.

And, in pursuance of questions—appropriate questions relating to the development of this same subject, the witness if permitted, would testify, would state that in his opinion if a tropical hurricane should move inland and, on reaching North Georgia or North Alabama found its path blocked by a cold air mass, it is quite possible that it would deposit its suspended moisture in the upper Tennessee Valley.

And, in answer to further questions developing the same subject matter, the witness if permitted, would state that if such a tropical cyclone should stagnate in northeast Alabama it is probable that the heaviest rain would fall over the headwaters of the Hiwassee, Little Tennessee and [fol. 1844] French Broad and Holston Rivers, since the mountain range that these rivers drain would contribute to the lifting of the warm moist air, and then induce heavy rainfall;

That the cyclonic circulation around the center of the storm, warm moist air, would be directed at the Tennessee Valley, and there also would be heavy precipitation on the western watershed, which includes the Emory and Clinch Rivers;

That records indicate that tropical storms usually dissipate within two or three days after stagnation, so, in the opinion of the witness such a storm probably would give heavy rain for three days, but such rain preceding a storm might begin 24 to 36 hours before the stagnation of the storm;

That in the witness' opinion such a storm can produce precipitation in an amount more than an average precipitation of 11 inches over an area of 20,000 square miles.

Judge Allen: In connection with that point, the storm has been with us from the very first. Considered as storms the testimony with reference to cyclones will be cumulative. Considered as cyclones, that is to say the cyclone being a

storm sui generis will appear here for the first time, and it is not proper to consider them in rebuttal.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: Yes.

Judge Allen: Mr. Jackson, will you inform the Court now how many more experts you will put on in rebuttal?

Mr. S. D. L. Jackson: Two following Mr. Minser.

Judge Allen: And will you have other witnesses besides these?

Mr. S. D. L. Jackson: I have two, both of whom will be—I don't think their testimony will take very long.

Judge Allen: And when do you expect to conclude your case or your part of it?

Mr. S. D. L. Jackson: Oh, I would think, as nearly as I can anticipate, that a great part of the testimony, particularly of the two expert witnesses, will fall within the scope of the ruling that the Court has already made, and with those witnesses I might state with respect to one of them that I have the offers to prove and statements prepared so that I can go along and make the record with considerable celerity. With respect to the other one, I do not have it [fol. 1845] prepared as yet in that order, and would be glad to get it in that order tonight, so that it will not take much of the Court's time. I would think that possibly by tomorrow noon, or maybe sometime in the afternoon, we would be through with the evidence, insofar as I know. It might be that there will be one other witness, not an expert, that I know about, but so far as I know, I think there will be two. I am not exactly positive of that.

Judge Allen: The Court expects to have the argument concluded and the case in its hands on Saturday. We are working along as rapidly as possible in the presentation of this proof, and of course the amount of time it takes can at best be only an estimate, and the Court appreciates that.

Judge Martin: It occurs to me that with these other witnesses that you mentioned in response to Judge Allen's question, if you would do so, we could save a world of time by avoiding the question and answer form, and just say that it falls within the scope of our ruling, and you can state what you expect to prove by your witnesses. That might save a vast amount of time as compared with the question and answer form, which is quite tedious in the way of detail, to have questions and answers of each witness here.

Mr. S. D. L. Jackson: I have attempted to hold this to a minimum to conform to the Court's wishes, and my only fear is that to depart entirely from the regular procedure of asking the witness a question and obtaining the ruling of the Court on that question, and on testimony relating to the same general subject, and then stating an offer to prove, my fear is in departing entirely from that course of procedure might not properly preserve the record which of course we are exceedingly anxious to preserve.

Judge Martin: We are as anxious as you are.

Mr. S. D. L. Jackson: As long as it appears in the record that a question was asked relating to a particular subject, I have tried earnestly to combine and consolidate to the very utmost, and I will endeavor to get through just as fast as I possibly can, but I do hesitate, if your Honor please, to try to depart from that form of procedure entirely, because I do have the fear that it might waive, or not properly preserve some rights that we are exceedingly anxious to preserve. I do want to make my position clear, it is with no desire to impose upon the time of the Court, in trying to get through with this as fast as may be done.

At this time I would like to inquire if the Court has considered the application filed yesterday for subpoenæs duces tecum?

Judge Allen: The Court has not yet ruled on that; we will rule on it later.

[fol. 1846] Mr. S. D. L. Jackson: My only purpose in making that inquiry was to find out if the Court was ready at this time to make its ruling with respect to that, and the thought occurred to me at this time to ask the question as a result of some questions that the Court put just before recess. If we are drawing to the close of our testimony here, we would be eager to get the ruling at the earliest possible date that suits the convenience of the Court.

Judge Allen: The Court thinks it will have them the first thing in the morning.

Mr. S. D. L. Jackson: Very well, I appreciate your Honors' consideration."

I have studied flood storms that have occurred in the Southeast.

"Q. Will you state please whether or not from your studies you ascertained whether there was a seasonal variation in the types of storms causing these floods?

Mr. Fly: I object to that as irrelevant and improper rebuttal.

Judge Allen: Objection sustained. That, I take it, is an introductory question, Mr. Jackson?

Mr. S. D. L. Jackson: Yes, your Honor.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May I have an exception, and I offer to prove that if the witness were permitted to answer he would state * * * that there is a seasonal variation in the type of storms causing these floods; that during the winter months from November through March, flood storms occurring in the southeastern states are extra-tropical cyclones; that during summer and early fall, July through October, flood rains in the South are generally caused by tropical cyclones that move across or stagnate in the southern states; that of course extra-tropical cyclones may occur during this summer season as well, but investigation shows that tropical cyclones predominate as the cause of floods during these seasons."

(The witness was excused.)

"Judge Allen: The Court understands, it is the understanding of the Court that when we suspend on Saturday there will be presented to us a comprehensive set of findings on both sides, and that if there is something that is wished to be substituted, opportunity will be given both [fol. 1847] litigants to do that on Monday morning.

* * * * * * *

Mr. Fly: I assume all findings submitted to the Court will be submitted at the same time, and there will be a mutual exchange at that time.

Judge Allen: That is the understanding of the Court. The Court thinks that you should further understand that the arguments which will be held on Saturday will be the final arguments.

Mr. S. D. L. Jackson: What is the Court's plan? In the event this evidence does not take all day tomorrow, will it go into argument tomorrow, or on Saturday, or what?

If the Court please, if I may say, to intelligently digest

or analyze this evidence and to present it in any form that will be of any material assistance to the Court,—and that, as I understand it is the fundamental purpose of an argument, some time between the close of this evidence and the actual making of the argument in this Court is just essential in our opinion. It is just a superhuman task to get this material organized and any indulgence that the Court can give will be greatly appreciated by us.

Judge Martin: You mean that if the proof is concluded tomorrow, say, at the morning session, Mr. Jackson, that you would like to start the argument Saturday morning? Is that concretely what you mean?

Mr. S. D. L. Jackson: That is the idea I am trying to convey, if your Honor please, but I am still begging for more time than that. I appreciate the Court's ruling, that they want to finish this argument and everything by Saturday, but if we could get it over for a while, there is no doubt but that it will be of more material assistance to the court, and we honestly feel that it just makes counsel's efforts ineffectual to have the argument start within such a limited time.

Judge Allen: The Court will allow Saturday for argument. How much time will be left after rebuttal, of course, we don't know, tomorrow. But the Court will allow Saturday for argument, three hours will be allowed to each side.

Mr. S. D. L. Jackson: Well, in the absence of an opportunity to consult with my associates, I don't know what their opinions will be, but may I respectfully reserve an exception to the limiting of the time of argument to three hours, and to the holding of it so soon after the conclusion of the hearing of the evidence.

[fol. 1848] Judge Allen: You may reserve any exception to any phrase, comma, dotting of an 'i' or crossing of a 't', in anything that is announced in this manner by the Court. This Court bears this in mind, we are not a reviewing court. We are a trial court. We have heard this testimony. We have met here since November 15th. In addition, we not only have received, but we have read numerous briefs on each side. The ordinary case in the United States Circuit Court of Appeals involving a matter of this magnitude would be allowed two hours for each litigant. Now, the statement of facts in many particulars does not need to be made because we have heard the facts, while the review-

ing court has not heard the facts. This being the case, the Court feels that far from interfering with a substantial right of Complainants in allowing them three hours, in a trial court, where a reviewing court would allow them two, we feel that we are being very liberal indeed.

Also, we have tried to notify you of all of these things long in advance. It was as I remember it, very early in December, at least very early in the case, perhaps I should say substantially early, that we asked that the findings of fact state the number of the exhibit and the pages of the testimony referred to. We gave notice of that, and gave repeated notice of that. We have repeatedly given notice in order that counsel on each side might be prepared. We have given notice of our intentions to proceed with argument, and chief counsel for complainants has not conducted the rebuttal.

Judge Allen: The extreme liberality which has been accorded complainants and defendants in the preparation of their case is, in our judgment, now afforded in the presentation of arguments, which certainly need not deal very greatly with facts before three judges who have heard, with the exception of opinion, have heard nothing but facts since November 15th. Of course, we have heard some discussion of law, and that helps too. We have heard about the cases. Counsel were also notified to submit their final briefs at the conclusion of the evidence, and we expect that to be done.

Mr. S. D. L. Jackson: At the conclusion of the evidence or the argument?

Judge Allen: At the conclusion of the arguments, on Saturday.

Mr. S. D. L. Jackson: May we possibly ask the same indulgence there as about the findings that we may get it to the Court on Monday morning.

[fol. 1849] Judge Allen: Well, get your brief in and make your request on Saturday. The Court again calls the attention of the litigants to the fact that there is very little surprise in the facts of the case, and in view of the various decisions in all the courts, including two decisions of the Supreme Court, dealing with important phases of this question, there cannot be very much surprise in the argument. You cannot be very much surprised, for instance, by what

the Authority says, and the Authority cannot be very much surprised by what you say.

* * * * * * *

Mr. S. D. L. Jackson: May I have an exception to the ruling of the Court in these limitations of time and the short space of time which is permitted to intervene between the close of the evidence and the other proceedings?

Judge Allen: Yes, you may have."

[fol. 1859] JOEL D. JUSTIN was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I am 56 years of age, reside in Marion, Pennsylvania, and am a consulting engineer. I received my technical education at Cornell University from which I graduated in 1906 with the degree of Civil Engineer.

After graduation I worked on the Pennsylvania Railroad tunnels and the Hudson Company's terminal in New York City as inspector. From 1907 to 1912, I worked on the Ashoken Reservoir of New York City, making preliminary investigations and hydraulic studies for construction, and I was assistant engineer and resident engineer on the construction of the Olive Bridge Dam, a 200 feet high concrete dam. From 1912 to 1914, I was principal engineer for the Board of Public Works, Harrisburg, Pennsylvania, in charge of miscellaneous public work including a low dam across the Susquehanna River. From 1914 to 1916, I was resident engineer for the Fargo Engineering Company, doing preliminary investigation and construction work on a hydroelectric project in Wisconsin. The major project was the Wisotta Dam of 50,000 H.P. on the Chippewa River. I also worked on the dam at Cornell, Wisconsin, and did preliminary work on dams at Chippewa Falls and Holcomb Jim Falls. For a period of about six months in 1916 and 1917, I was resident engineer at Cumberland, Maryland, on the construction of water supply and sewerage work, involving a small dam and filtration plant. From 1917 to 1919, I was a construction engineer with the Aluminum Company of America, working on hydroelectric projects on the Yadkin River, N. C.

[fol. 1851] From 1919 to 1923, I was chief engineer with Ludlo Engineers, Winston-Salem, North Carolina, doing miscellaneous work in water supply, sewerage and water power throughout the southeastern states on individual jobs of rather small magnitude. In 1923 for about three months, I was construction superintendent on the reconstruction work of the Holtwood hydroelectric development project on the Susquehanna River. From 1924 to 1925, I was hydraulic engineer with the Power Corporation of New York at Watertown, New York. There was at that time great activity in hydroelectric work and my principal function was the planning of proposed developments and the determination of their economic feasibility under the direction of W. P. Creager, Chief Engineer. There were several such projects constructed.

In 1925 I was consulting engineer on Kanan Taishu and Taiwan Electric Power Company, which were two projects totaling about 30 million dollars on the island of Formosa, Japan. One project involved an earth dam about 160 feet high, 4000 feet long, and the other involved several earth and concrete dams and a power plant of about 100,000 H.P. capacity. From 1925 to 1928, I was hydraulic engineer for the U. G. I. Contracting Company of Philadelphia, doing investigation, design and construction of hydro-electric projects for companies in which the United Gas Improvement Company was interested. From 1928 to 1932, I was hydroelectric engineer with the United Gas Improvement Company of Philadelphia in general supervision for the parent company over companies in which U. G. I. was interested, and I also did some outside consulting work on dams and power problems, one of which consisted of an extensive investigation of the power possibilities of the Little Tennessee River.

From 1932 to date, I have been a consulting engineer in Philadelphia. My principal work has been on power prob-
[fol. 1852] lems and on dams for power, irrigation and flood control. During this period I am, or have been, connected as consulting engineer with projects involving approximately 40 dams, of which approximately 18 are under construction and the remainder are in various stages of preliminary investigation and design. These dams are located in Maine, New Hampshire, Vermont, Massachusetts, West Virginia, Nebraska, Mississippi, Ohio, Texas, New Mexico and Colombia, South America.

Purely flood control projects on which I am a consultant are Muskingum flood control project, Ohio, Connecticut flood control project in New Hampshire, Vermont and Massachusetts, Merrimac flood control project, New Hampshire, and Yazoo River flood control project, Mississippi. Other flood control projects which also involve power or irrigation on which I am a consultant are the New River project, West Virginia, Possum Kingdom Dam, Texas, which has recently been taken from the Army Engineers and I am no longer connected with it, Conchas Dam, South Canadian River, New Mexico, Denison Dam, on the Red River in Texas and Oklahoma.

I am a member of the American Society of Civil Engineers, a co-author of Creager and Justin's "Hydroelectric Handbook", author of "Earth Dam Projects" and co-author of "Power Supply Economics" by Justin and Mervine, which were all published by John Wiley & Sons, New York City. I was awarded the James Cross gold medal of the American Society of Civil Engineers in 1925 and the Fuertes Graduate Gold Medal by Cornell University in 1932 or 1933.

I have read the report entitled "Unified Development of the Tennessee River", referred to in this case as the "TVA Unified Plan", which is Complainants' Exhibit 328.

"Q. I refer you to this exhibit 328 and read to you from the lower right hand part of page 16 this sentence. This is the TVA Unified Plan, if the Court please, filed with [fol. 1853] Congress March 31, 1936. I am quoting, reading from the lower right hand corner:

'Since Tennessee River records have been kept for only a limited period, estimates of probable future floods must take into account flood data relating to all river systems in this portion of the country as well as all the characteristics of the river system and of the Tennessee Valley.'

Now, in connection with the determination of flood control works, is it sound engineering practice to proceed as indicated above, and consider all floods which have occurred in this general territory?

Mr. Fly: Objection, not proper rebuttal.

A. It is.

Judge Allen: Just a moment.

Mr. S. D. L. Jackson: Just a moment, if you will withhold your answer until the Court has had an opportunity to rule.

Judge Allen: Mr. Jackson, you introduced this exhibit, this report?

Mr. S. D. L. Jackson: Complainants' Exhibit 328? Oh, I think it was put in this record as complainants' exhibit, but of course it was prepared by the defendants and we are not bound in our view by all of the statements that might be contained in that.

Mr. Fly: It was put in on your main case, though.

Mr. S. D. L. Jackson: Oh yes.

Judge Allen: Did you obtain opinions from Major Putnam or anyone else in your main case with reference to this point?

Mr. S. D. L. Jackson: Your Honor, I don't believe we did?

Mr. Fitts: Aren't you developing the matter of project flood, and how to calculate the greatest flood to be anticipated? That has all been testified to by Mr. Kurtz.

Mr. S. D. L. Jackson: This will go into the possibility of floods during the summer season in the Tennessee Valley, this particular line of questions that I am now seeking to ask. [fol. 1854] Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have our exception. If the witness were permitted to answer, he would state that it was sound engineering practice to consider all such floods. And in response to other questions relating to the same general subject, or other appropriate questions, the witness, if permitted to answer, would state that many summer floods have occurred in rivers in this general territory, that some of them have been the maximum floods of record on their respective watersheds."

The table (offered and received in evidence as Complainants' Exhibit 941) covers floods which have occurred between April 15th and November 30th on rivers in and near the Tennessee River Basin during the period of stream flow records. The records are obtained from the U. S. Geological Survey and the U. S. Weather Bureau. It shows in the first column the names of the rivers, in the second column the names of the places at which the records which I obtained were made, and the third column is a reference

key. The second sheet shows where the original information came from and explains the legend.

Examination by the Court:

This covers all of the rivers which are in the general vicinity of the Tennessee River, including the Tennessee, Mississippi, Ohio, Cumberland, French Broad, and Little Tennessee.

Cross-examination:

Some of these are Atlantic Ocean rivers. They are in southeastern states.

Direct examination continued:

The stations at which my readings were obtained are the points where the gauges were located and are shown in column 2. Column 4 is the drainage area in square miles above [fol. 1855] the station at which the reading was taken, and column 5 is the flood stage which merely means that when a river reached that height they considered it to be in flood.

Cross-examination:

It refers to the height. I expect in almost all cases it is the same as the peak.

Examination by the Court:

That means that as far as the records show, the stage peak on the high flood is the highest point reached on the date shown in the last column. For instance, on the Mississippi the exhibit shows that the highest flood was 42.5 feet in July, 1884, at Cape Girardeau, Missouri. That means that it is the highest recorded stage of the Mississippi in history, as far as these studies I have made show at Cape Girardeau. But all of these floods are not the maximum floods of record. Where they are, that fact is noted right in the table. The one that you picked was the maximum flood of record at Cape Girardeau. Unless otherwise noted that would follow down the column.

Direct examination continued:

That is designated in the next column on this exhibit and in the column which is opposite the one reading "July 4

Flood of 1844 on the Mississippi'' appears the word ''Maximum'', and that was the flow that the Court just questioned me about.

Where I give figures in the column marked ''Height Flood Discharge, Cubic Feet Per Second'' I refer to the measurement of flow on that date at that place as determined by the [fol. 1856] government agencies. It does not necessarily mean that they actually measured that flood. It might be from their gauge heights and gauging tables. The column marked ''Discharge per Square Mile, Cubic Feet per Second'' is obtained by dividing the total discharge given in the previous column by the drainage area in square miles which is given in column 4. The date appears in the last column.

The rivers' names on Complainants' Exhibit 941 which are tributaries of the Tennessee River are the Little Tennessee and the French Broad River. The New River is located in West Virginia and Virginia and runs north of the Tennessee watershed and then turns and runs in a southwesterly direction and flows into the Ohio River. The Kanawha River is in reality formed by the New River and several other rivers that come in and might be described as just the lower end of the New River. As shown on Complainants' Exhibit 941, the maximum flood of record occurred on the Kanawha River on September 14, 1878, and on the New River the maximum flood of record occurred July 16, 1916.

I have previously examined Defendants' Exhibit 54.

''Q. Will you assume the filling of the Gilbertsville Reservoir to normal pool level between the first and middle of May, and the filling of other main stream reservoirs to normal pool level between April 1st and the first of May, and I will ask you whether or not such a plan of operation would increase or reduce the effectiveness of these dams for flood control.

Mr. Fitts: That question is objected to.

Judge Allen: You are now about to give your opinion?

The Witness: It would necessarily be an opinion.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception, and if the witness were permitted to answer he would testify that this plan of operation of main stream dams such that the main stream reservoir would be filled to the normal pool

[fol. 1857] level between the first and middle of May, and the filling of the other main stream reservoirs to the normal pool level between April 1st and the first of May, would reduce the effectiveness of these dams for flood control.

In answer to further appropriate questions relating to the same subject, the witness, if permitted to answer, would state that the reasons for his opinion are, in general, that if space reserved for flood control on any river anywhere in this country, at least, is deliberately filled with water by the middle of May or any other month, there is no flood control provided.

It is absolutely contrary to all sound principles of flood control to adopt any other practice than to keep space (or reservoir capacity), intended for flood control purposes, empty at all times except in times of flood. This is because although summer floods are rare on many water sheds, you may get them at any time.

That all flood control systems with which the witness has been connected provide for taking care of great floods at all times, both summer and winter."

I have examined Defendants' Exhibit 90.

"Q. Mr. Justice, I direct your attention to Defendants' Exhibit 90 to the diagram on the right end of that exhibit labeled 'Cove Creek Volume Curve, Kurtz,' and ask you what it means in the field of flood control engineering?

Mr. Fitts: We object to asking the witness on the stand what it means. What is the purpose of the question?

Mr. S. D. L. Jackson: I am asking him as a skilled expert witness what significance that curve has to one who knows flood control engineering.

Judge Allen: Now, is this a question preliminary to the expression of an opinion?

Mr. S. D. L. Jackson: Yes, your Honor.

Judge Allen: As long as it is preliminary to an opinion, the objection is sustained on the ground that it is preliminary to an expert opinion.

Mr. S. D. L. Jackson: May I have an exception?

[fol. 1858] Judge Allen: Yes. The Kurtz referred to undoubtedly refers to the same Mr. Kurtz who testified in this case?

Mr. S. D. L. Jackson: That is correct, yes, but this is a Defendants' Exhibit.

Judge Allen: That is what rebuts Mr. Kurtz.

Mr. S. D. L. Jackson: My reference was describing the caption of that exhibit. If the witness were permitted to answer he would state that that diagram is a simple volume curve.

Q. Mr. Justin, could a reservoir of 1,312,000 acre feet capacity indicated,—and operated in the manner indicated be used for effective flood control?

Mr. Fitts: That question is objected to.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception, and offer to prove that if the witness were permitted to answer this and other appropriate questions relating to the same or closely allied subject, he would state that this reservoir may be used for effective flood control perhaps up to the capacity of 1,312,000 acre feet indicated, providing it is normally kept empty, allowed to fill up only during floods and emptied as soon and as rapidly as possible thereafter as can be done without downstream damage.

Q. Now, Mr. Justin, I ask you to assume that the rate of filling of Norris Reservoir is such that on December 15 it would stand at elevation 955, and that the filling would increase it at a uniform rate with respect to the volume, reaching an elevation 1005 on April 15th, and that after that date the flood season would be over and the filling might extend to the top of the spillway if sufficient water were available.

Will you please examine the diagram at the left end of Defendants' Exhibit No. 90, labeled 'Norris Volume Curve', and tell me, on the assumption of the plan of filling which I have given you, what, in your opinion, that diagram means with reference to the operation of a flood control dam?

Mr. Fitts: We object to that question.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may.

[fol. 1859] Mr. S. D. L. Jackson: And if the witness were permitted to answer he would state in answer to this question, and to other appropriate questions relating to the same subject matter, that in his judgment the method of operation indicated for Norris Reservoir on Defendants' Exhibit No. 90, which I might state the assumptions in the question were based upon, is not in accordance with good engineering

practice for flood control purposes, because if you want to get the maximum amount of flood control benefit out of any reservoir, the reservoir should normally be kept empty and allowed to fill in time of flood, but the upper portion of the diagram at the left of Exhibit 90 indicates that it is the intention to continue the filling of the reservoir till at least May 1st. That, if this method of operating the reservoir is followed, there would be no flood control value in any of the storage below elevation 1020. Above elevation 1020 it is uncertain as to whether or not it is intended to fill the reservoir to a higher elevation. If it is assumed that the reservoir will never be allowed to fill above elevation 1020, there would be about 500,000 acre feet of flood control capacity available.

And the witness would further state in response to appropriate questions relating to this same general subject matter, that the capacity above the top of the gates of Norris Dam to elevation 1052, as indicated on Defendants' Exhibit 90, would not be flood control capacity, as the water is not controlled as it goes over the top of the spillway, but such uncontrolled capacity cannot be credited to flood control. Under some conditions it may ameliorate flood damages down stream. However, if the discharge from other tributaries is causing the main stream to run banks full, the spillway discharge from Norris could itself cause flood damage.

Q. Mr. Justin, I now hand you Complainants' Exhibit 362 and call your attention to the figures at the right of the exhibit. What, in your opinion, does that figure represent?

Mr. Fitts: We object to that question, may it please the Court, because it is not proper rebuttal.

Judge Allen: Is this in connection with another opinion?

Mr. S. D. L. Jackson: Yes, it is.

Judge Allen: The objection is sustained, and for the further reason that it is a Complainants' Exhibit, and it has been explained by the complainants. It is not proper rebuttal in other words.

[fol. 1860] Mr. S. D. L. Jackson: I understand the Court, I merely want to state that this is designed to bring in focus this Complainants' Exhibit as compared to the Defendants' Exhibit. May I have an exception?

Judge Martin: Do you mean that there is some possible omitted question on that exhibit that you want to supply for the record?

Mr. S. D. L. Jackson: No, there is not any omission on that exhibit, if your Honor please, it is merely to focus the Court's attention to this particular Complainants' Exhibit, and the particular Defendants' Exhibit which has been mentioned in the previous preceding question. May we have our exception?

Judge Allen: Yes.

Mr. S. D. L. Jackson: I offer to prove that if Mr. Justin were permitted to answer this question and other appropriate questions, he would state that he had examined Complainants' Exhibit 362, that he noticed that the figure on the right of the exhibit represents a purely flood control reservoir having a dependable capacity of 1,312,000 acre feet. The figure on the left of the exhibit indicates a dam and reservoir having a dependable flood control capacity of 497,000 acre feet, provided the water is never allowed to rise above elevation 1020 except in time of flood. The dead storage indicated in the blue area on the figure on the left side of Exhibit 362 is to create a head for the development of power at the dam. The pink area on this figure would not be dependable flood control storage unless, except in flood time, it were left at or below elevation 955. And that, pursuant to other proper questions directed to the same general subject, if the witness were permitted to testify, he would state that in his opinion, Norris Dam is a power dam with incidental flood control to the extent of 497,000 acre feet, and for the purpose of comparing the Norris Dam with the proposed Cove Creek Flood Control Dam, shown on the right side of Exhibit 362, that it would be much less effective for flood control as flood control storage is only 497,000 acre feet compared with 1,312,000 acre feet at Cove Creek."

I have examined Complainants' Exhibit Nos. 352 and 353 and Defendants' Exhibit 89.

"Q. Now, with respect to the flood control system set out on Exhibit 352, which was introduced by the witness Kurtz in this case, and is further described in Complainants' Exhibit 353, and as set forth in Defendants' Exhibit 89, I shall ask you to assume that during the emptying program for [fol. 1861] those nineteen reservoirs, the opening of the lowest reservoir of each of the principal tributary groups set out on Exhibit 352 would be maintained at a constant and fixed discharge, and that it would be such as to keep the dis-

charge below the reservoir and all the way down as nearly as possible at banks full stage, and that the upper reservoirs of each tributary would have their discharge varied within a considerable range so as to suit conditions obtaining for any particular flood, and I shall ask you whether or not under that program for emptying those reservoirs they would be operated successfully for flood control purposes?

Mr. Fitts: We object to that as not proper rebuttal.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception, and if the witness were permitted to answer this and other appropriate questions relating to the same subject, he would state that if you were to assume that during the emptying program for these nineteen reservoirs, the opening of the lowest reservoir of each of the principal tributary groups set out on Exhibit 352, would be maintained at a constant and fixed discharge, that it would be such as to keep the discharge below the reservoir and all the way down as nearly as possible at banks full stage, and that the upper reservoirs of each tributary would have their discharge vary within a considerable range, so as to suit conditions obtained for any particular flood, he would be of the opinion that they could be used successfully for flood control, but, in the judgment of the witness, they could be operated more successfully if, during the emptying program, the discharge from the lowest reservoir of each of these principal tributary groups could be varied within a considerable range to suit the conditions of any particular flood. However, the operation should vary with each particular flood and this would have no bearing on the general design of the project.

Q. Mr. Justin, I now read from Exhibit, Complainants' Exhibit 328, the lower left quarter of page 18, where the following appears:

'Since it is impossible to predict from which source the major part of any particular flood may come, it is desirable that adequate storage be provided on as many as possible of the tributaries.'

I ask you if, in accordance with your experience that is a good general principle to apply in the selection of sites for flood control purposes?

Mr. Fitts: Objected to as calling for an opinion.

Judge Allen: Objection sustained.

[fol. 1862] Mr. S. D. L. Jackson: Exception, and if the witness were permitted to answer this question, he would state that he had noticed the lower left quarter of page 18 of Complainants' Exhibit 328, which contains the language quoted in the question, and that in the witness' opinion, that statement embodies one of the first and most important principles which has guided the selection of flood control projects with which he has been connected.

Q. Mr. Justin, I ask you to refer again to Defendants' Exhibit No. 89, and to Complainants' Exhibits 352 and 353, and I now hand you Complainants' Exhibits 354 and 355, and ask you whether or not you have examined the two latter exhibits?

Judge Martin: Brother Jackson, does this lead up to an opinion on some fact?

Mr. S. D. L. Jackson: Yes, which will be brought out by my next question, but I feel that I should——

Judge Martin: I just wanted to know how closely we should follow you. In other words, if we are ruling it out, you are just making your record, and it is not necessary for the Court to give very close attention. If you are about to present some fact, we will follow it very closely.

Mr. S. D. L. Jackson: The only fact I expect to present at this place, is that he has examined the exhibits."

I have formed an opinion as to the comparative degrees of flood control which will be afforded by the so-called Kurtz system illustrated on Exhibit 352 and 353 on the one hand, and the system of reservoirs illustrated by Exhibits 354 and 355 of the TVA plan.

"By Mr. S. D. L. Jackson:

Q. Which of the two systems, in your opinion, will provide the greater degree of flood control?

Mr. Fitts: Objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception, and if the witness were permitted to answer he would state that in his opinion the so-called Kurtz system will provide, by far, the greatest measure of flood control, that in forming this opinion, the witness assumed that for either system of reservoirs, the details of design and construction will be ex-

ecuted in accordance with good engineering practice. That under the Kurtz system there is ten times as much flood [fol. 1863] control storage as under the TVA plan. That the Kurtz system controls 78 per cent of the watershed above Chattanooga, whereas, the TVA plan controls only 25.7 per cent. That an analysis of the inches of flood control storage at the various reservoirs under the two plans indicates great superiority for the Kurtz system.

That a plan involving 19 reservoirs arranged on the tributary streams, will, in general, be more efficient than one involving only three on some of these tributaries even though the total storage might be equal instead of being ten times greater in the Kurtz system than in the TVA system. That the Kurtz system is superior in every respect to the TVA plan, except that the TVA reservoir scheme is vastly superior for the production of power.

That the witness has not studied the details of the two schemes, but has merely familiarized himself with the general features of both of them, and it is not necessary for him to know all the details, as he bases his opinion on his judgment and general experience in flood control work.

Q. I now refer you to Complainants' Exhibit No. 349, Mr. Justin. Now, assuming that the dams of the TVA Unified Plan were built in such a manner and to such height as to eliminate all flood damage below them, would that Exhibit 349 show the average annual flood benefits that would accrue due to the elimination of such flood damages?

Mr. Fitts: Objection.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception, and if the witness were permitted to answer this question and other appropriate questions relating to the same subject, he would state that he had examined and had referred to Complainants' Exhibit 349. That that exhibit does not show the average annual flood benefits that would accrue due to the elimination of all flood damages on the Tennessee River, because the Tennessee Valley Unified Plan provides no flood control benefits for a number of tributary streams on which damages have occurred. That, on the basis of Exhibit 349, if the Unified Plan completely eliminated all flood damage on the main river and on the tributaries where TVA dams are located, the average annual benefit would amount to $828,-

588. And, in response to other appropriate questions directed to the same subject matter, the witness would state that on the basis of Complainants' Exhibit 115, page 279, the annual primary energy output of the system is estimated at 5,780,000,000 kilowatt hours, and the revenue therefrom is estimated at $23,120,000 per annum. That the ratio of the annual power benefit so determined to the annual flood [fol. 1864] control benefits on the basis of Complainant's Exhibit 349 is 28 to 1. On this basis of computation, the Unified Plan would afford about 4% of the total benefits through flood control, and about 96% of benefits of power.

That the witness is familiar with many flood control and many power projects, and if, on any one of those projects, the average annual power benefits were 28 times the average annual flood control benefits, the witness would consider that the project was primarily a power project."

Cross-examination:

On Complainants' Exhibit 941 I only make three references to the Tennessee System, one on the French Broad, one on the Tennessee, then another on the Little Tennessee. I don't notice any other tributary streams of the Tennessee. I presume that McGhee, Tennessee, is on the Little Tennessee watershed. I have not been there. I would have to refer to a map of the TVA projects to tell whether any project authorized by TVA is above any place on this exhibit where I have recorded a flood stage. I don't have the map now. We had it a minute ago. I made up this exhibit without reference to the location of the TVA's projects. This is just a table of values. The map in Complainants' Exhibit 328 does not show the towns. It shows the proposed location of Fontana Dam, which is well up on the watershed, and I would say that McGhee is most certainly below that, because the watershed area on this exhibit is 2,470 square miles. I know where TVA's projects are in general.

As to the points I have listed here for the flood stages and whether there is any TVA project above either of those points, I would say that on the Little Tennessee River, most surely there were. I mean the proposed Fontana Dam. I don't think TVA has proposed any projects on the French Broad River at all. I have never seen a plan of the TVA that ever showed anything on the French Broad River. I [fol. 1865] have never seen any plan of TVA that showed any dam on the river system above Knoxville.

Some of these rivers are tributaries of the Ohio-Mississippi System and some flow into the Atlantic. I think we took the Tombigbee River out of the exhibit. The Coosa and the Black Warrior Rivers flow down into the Gulf section. There are more of these rivers in the eastern part of the territory, the other side of the mountain range, that flow into the Atlantic. They rise east and south on the other side of the mountain range. Between the Tennessee Valley and the valleys of these rivers there is a mountain range.

The flood stages which I have listed on this exhibit for the French Broad River and the Tennessee River look like they might be parts of the same flood. Whether or not the peak on the French Broad is reflected in the stage shown for the Tennessee, I cannot tell without looking at the hydrograph. As to whether the peak at Dandridge on the French Broad was two days prior to the peak at Knoxville on the Tennessee, I have them listed and I would have to answer I do not know whether that is a fact, whether it is the same flood. It may be and it may not be. I can tell by examining the hydrographs at the two places and tracing it down. I do know that the French Broad empties into the Tennessee above Knoxville and Dandridge is back up on the French Broad River. My figures on this exhibit list the flood at Knoxville two days subsequent to the flood stage at Dandridge. I do not show the duration of this flood crest, they are just peaks that were selected for the table. When the flood popped up we caught it at the peak and that is all we have put down on this exhibit. The other would be much more of a job. The records that I used show the peaks and that was the only thing at the moment I was interested in. I did not interest myself in the duration of the crest for the [fol. 1866] immediate purpose of preparing this table. The only purpose of preparing the table was to show that there were summer floods in this part of the country. The exhibit shows the maximum flood on the French Broad on May 21, 1901 and the flood on the Little Tennessee five years later, but I did not record any flood stages on any other tributary of the Tennessee around the time of the flood on the French Broad. There may have been some; I don't know. The probability is that each one of these storms had lesser storms on watersheds immediately surrounding where there may have been a very local storm. You can't always say that these are local storms that we are dealing with here.

The only way I can answer the question, whether there are any records which I examined, showing that these floods were general in character or were sustained in duration, correctly is to say that I examined the records to obtain this table, to get a table that showed a number of summer floods, and at that time I was not paying attention to anything else, and I did not study how sustained the floods were. I would have had to have gone over and picked out different watersheds, and plotted a lot of lines, and worked it out to show what it was, and how general it was.

My instructions were to make a table of summer floods that could be readily obtained in this general vicinity. As to whether they were the severest floods obtainable, I have in the table all of the maximums that we could get, whether or not you have them, I don't know. The records which I examined do not indicate what the flood stage was at Chattanooga for those same floods, but it is not a high flood. As to whether it was not a flood stage at Chattanooga, I think from reading the evidence, something like 30 feet is flood stage. I am sure that this flood was not recorded as producing a flood stage at Chattanooga, which is something [fol. 1867] like thirty feet at flood stage. I don't know that none of these floods recorded on this exhibit produced a flood stage at Chattanooga. If the records had shown a flood stage at Chattanooga at the time of these floods, we would have found it. I will grant that historically there have been no serious floods at Chattanooga in the summer time. The hydrograph records show that.

(The witness was excused.)

[fol. 1868] CLARENCE WATSON was recalled as a witness on behalf of the complainants and, having been previously sworn, was examined and testified further as follows:

Direct examination:

I am the same Mr. Watson who testified in this case before. I testified that I was the district manager of the Cumberland District of The Tennessee Electric Power Company and I have held that position since July, 1935. From 1929 to 1935, I was district manager of the Middle Tennessee District of The Tennessee Electric Power Company.

From 1920 to 1929 I was employed by a predecessor company, the Southern Cities Power Company, from 1920 to 1925 as superintendent of operations and from 1925 until the latter part of 1929 as general superintendent.

I am acquainted with Mr. R. D. Cowley who is a resident of Kelso, Tennessee, in the Middle Tennessee District. Mr. Cowley is the Secretary-Treasurer of the Lincoln County Electric Membership Corporation. Mr. Cowley is a banker at Kelso, Tennessee. Mr. Cowley testified in this case in a deposition taken by the Special Master and in which he referred to Mr. Tom Greer. Mr. Greer was connected for a few months with The Tennessee Electric Power Company after its purchase of the Southern Cities Power Company. He was in the Legal Department and engaged in making appraisals of the property. Otherwise he was not associated with The Tennessee Electric Power Company.

"Q. Do you know anything about an occasion of a request made by a group of residents of Kelso to Mr. Tom Greer for an extension of service?

A. Yes, Mr. Cowley and other interested parties from Kelso——

Judge Allen: Were you there?

The Witness: I was in the office and the matter was referred to me.

[fol. 1869] Q. Were you present at the conversation which you are now going to relate?

A. No, I was not present.

Mr. Fly: We object, of course, to any statements of what took place.

Judge Allen: Objection sustained.

Q. Was there any investigation made by you as superintendent for the Southern Cities Power Company of a request for service in the vicinity of Kelso?

Mr. Fitts: We object to that on the ground that it is irrelevant. Unless he is going to testify what he found out, it is irrelevant for him to answer the question.

Mr. Bemis: The witness has said that he reported——

Judge Allen: Unless you have asked this question as preliminary to a statement of what this man physically did and took part in, it is not relevant.

Mr. Bemis: Mr. Cowley undertook to show that frequent requests had been made for service which were ignored, and I was showing that that is not the fact.

Judge Allen: Well, ask this man whether requests were made and were ignored.

Judge Allen: Were there?

The Witness: No requests were made that were ignored.

Judge Allen: Is that all you want to prove?

Mr. Bemis: No, that is not all I want to prove by this witness, but perhaps that covers this particular extension.

Q. Now, Mr. Cowley also testified, 'I was trying to get current over there and tried to get Mr. Watson to consent to allow me to build my own line at my own cost by digging the holes and furnishing the poles, over which he would bring current up to my own home, which was approximately 2½ miles.' Will you state whether or not Mr. Cowley ever proposed to you, personally, that he would be willing to construct at his own expense a line extension so as to obtain service from the Tennessee Electric Power Company, or its predecessor, the Southern Cities Electric Power Company?

A. No, he did not.

Q. How much would such a line cost?

[fol. 1870] Judge Allen: The Court has indicated—and the Court will now say what it has not said before. As this case was going along, we were informed by Mr. Raymond T. Jackson, chief counsel for the complainants that a case was pending which he was supposed to argue in the Circuit Court of Appeals in the Fourth Circuit, on Thursday or Friday of this week, and Mr. Raymond Jackson asked this Court, in view of the fact that the Fourth Circuit had refused to postpone the argument, he told this Court that he wanted a breathing spell between this case and the hearing in the other case, and after consultation with the full bench, the presiding Judge of this Court conferred with Judge Parker on the telephone, explained the circumstances, and with the approval of the full Court, a letter was written to Judge Parker asking that the argument in the second case be deferred in order that Mr. Jackson might have a breathing spell between the conclusion of this case and the time when he had to argue the other case. From time to time the Court has mentioned to counsel that we bear in mind not only our statutory obligation to expedite this case,

the enormous interruptions of the work of the entire circuit, which occurs in this case, but that we were endeavoring to finish this case also for the benefit of counsel. That appears in the record, and that is the fact.

Mr. Bemis: Well, if the Court please, I am not inclined to disagree with the view of the Court——

Judge Allen: I am not stating a view, I am stating facts. We have tried to expedite this case bearing in mind the situation of Mr. Jackson also, and his very urgent request for a breathing spell between the conclusion of this case and the time that he had to argue the other case, and on the request of the Court he was given until next Thursday to argue that case. The Court has indicated what are the proper limits of rebuttal.

Mr. Bemis: May I recall to the Court that as a part of our case in chief we offered testimony taken by depositions of certain witnesses; that the defendants at the same time offered the testimony of certain other witnesses that we objected to on the ground that it was not the proper time for the defendants to offer testimony.

Judge Allen: And the Court ruled that those depositions by the defendants should be received as a part of the defendants' case and not as a part of the complainants' case and we understand that that instruction is followed in the record.

Mr. Bemis: That is correct, but under those circumstances there was no opportunity to make other than general objections to particular portions of the testimony taken, so we [fol. 1871] have never been advised as to the Court's views as to which parts of those depositions were competent and would be considered by the Court in reaching its decision.

Judge Allen: No opportunity was denied you to make objections at any time.

Mr. Bemis: Objections were made generally to the competency and materiality of them as a whole.

Judge Allen: No objection -as been at any time denied counsel on either side unless an exception were granted and taken, and many times the Court has sustained an objection without it having been actually made.

Mr. Bemis: What I am trying to point out is that the testimony which we are seeking to rebut remains in the record without having been stricken out.

Judge Martin: The question was 'What it would cost to build that line.'

Judge Allen: The Court considers that any evidence bearing on that subject is incompetent, immaterial and irrelevant, and particularly improper in rebuttal.

Mr. Bemis: And may we have an exception?

Judge Allen: You may."

Any requests received by The Tennessee Electric Power Company during the period from 1933 to 1934 and the early part of 1935 for extension of service to residents in Kelso or in the vicinity of Flintville would come to my attention as District Manager if they were made. During that period no requests were made for extension of service by The Tennessee Electric Power Company to residents in Kelso or in the vicinity of Flintville. There was an application filed in 1932.

The document (offered in evidence as Complainants' Exhibit 937) is a petition signed by the prospective customers in Kelso and Flintville for electric service.

[fol. 1872] Examination by the Court:

It was for proposed service from us and not from TVA.

Cross-examination:

By prospective customers I do not mean people that I thought might be customers. They were people in Flintville and Kelso. They were not actually getting service at that time.

Direct examination continued:

Complainants' Exhibit 937 is a part of the office records of the Middle District of The Tennessee Electric Power Company. It has been in my possession or in the possession of the company continuously since the time it was presented. It was received prior to June, 1932. As District Manager pursuant to this request for service I authorized the Engineering Department to make a thorough investigation of this proposed line extension on behalf of the proposed customers mentioned in Complainants' Exhibit 937.

"Judge Allen: Isn't there testimony in this record repeatedly to the effect that the Tennessee Electric Power Company has served everyone that it is capable of serving in that territory?

Mr. Bemis: I think so, the testimony was offered by the

defendants to the contrary, and that is what we are trying to rebut.

Judge Allen: In other words, they rebutted your testimony, and now, you want to rebut theirs?

Mr. Bemis: Well, this is an incident that was offered as part of the defendants' case, to which we are offering contradicting evidence."

The document (offered in evidence as Complainants' Exhibit 938) is our office file covering the engineer's report on the investigation of the line extension into Flintville and Kelso. It is a copy of the engineer's report on his investigation. It is a report made to me as District Manager of Mid-[fol. 1873] dle Tennessee. It is an original record of The Tennessee Electric Power Company and has been in the possession of the District Office since it was presented to us some time in 1932.

"Q. What, if anything, was done subsequent to that report? Was notice given to whoever it was presented the original petition, that is, Complainants' Exhibit 937?

Mr. Fitts: We object to the question on the ground that it is immaterial and irrelevant, and to its form.

Judge Allen: Objection sustained.

Mr. Bemis: As to form, if the Court please.

Judge Allen: The objection is sustained on the ground that the subject of the inquiry as shown by this document is immaterial.

Mr. Bemis: And may we have an exception?

Judge Allen: You may.

Judge Allen: It might save time of counsel for the complainants, as well as counsel for the defendants, if in these matters they would where they can admit these documents came from the offices of the different managers instead of having that proved.

Mr. Fitts: We will admit that.

Mr. Bemis: In the light of the Court's ruling perhaps it would shorten it if I would state in the form of an offer to prove further testimony on this same subject matter. I understand the Court regards this particular line of testimony as incompetent and irrelevant.

Judge Allen: The Court has endeavored to make that clear.

Mr. Bemis: We reserve our exception and offer to show that pursuant to appropriate questions the witness would state that subsequent to the report of the engineer in regard to the feasibility of the line extensions to give service to Kelso, among other places, an investigation was made by the Railroad and Public Utilities Commission for the state of Tennessee, that Complainants' Exhibit 939, consisting of two sheets, and constituting a report by the Tennessee Commission, and by the engineer of the Tennessee Commission, which is offered as a part of this offer to prove was re- [fol. 1874] ceived, defined among other things that the proposed extension was not feasible, or not required under the regulations of the Commission, that subsequent to that time a further investigation of the possibility or feasibility of these proposed line extensions was made; that complainants' exhibit 940, consisting of a report by the district engineer to the witness with attached map of the proposed line extension is a part of the records of the company and was received by the witness sometime in November, 1932, that the results of this further investigation were made known to the applicants for service extensions.

Mr. Bemis: If the Court please, I believe I made no offer of complainants' exhibit No. 937 and 938, but I now make the offer so that the record can show the Court's ruling.

Mr. Fitts: We object separately to 937, 938, 939 and 940 on the grounds they are incompetent and immaterial, not proper rebuttal, and furthermore incompetent and hearsay.

Judge Allen: Aren't you offering all of these exhibits that we have before us?

Mr. Bemis: I had assumed from the Court's ruling that these further exhibits would fall within the Court's ruling, that what was done pursuant to these requests for service was not competent. If I am in error, I am sorry.

Judge Allen: You are offering these five exhibits?

Mr. Bemis: Yes, and to save time I had made the offer as part of an offer to prove.

Judge Allen: I see.

Mr. Fitts: There are four exhibits, I think. They are 937, 938, 939 and 940. We object separately to each of them on the grounds stated.

Judge Allen: The Court rejects all of these exhibits upon the ground that they are immaterial to the issues of the case, and not proper rebuttal.

Mr. Bemis: And we save an exception. And I presume that that ruling of the Court would be applicable to the testimony of the witness Cowley, which we are seeking here to rebut.

Judge Allen: There is no motion pending before us.

Mr. Bemis: If the Court please, then, we move to strike out the testimony of the witness Cowley and the witness Hutchinson (in the stenographic record) as follows: The entire deposition of R. D. Cowley at pages 25 to 72 inclusive [fol. 1875] of supplement A to December 7th, 1937; the entire deposition of the witness, K. T. Hutchinson at pages 81 to 82 inclusive of supplement A to December 7th, 1937; the following testimony of the witness E. W. Carmack on pages 12 and 13 of said supplement for which testimony the narrative statement herein is substituted:

'During the time I have been here, I have had the opportunity to become acquainted with rural electrification service in the rural areas of this section. Prior to the formation of the Middle Tennessee Electric Membership Corporation, there were considerable areas in this County that were not receiving electric service. Those were the same areas which are now being served by the Corporation. I am familiar in a general way with the location of the lines now operated by the Corporation. To the best of my opinion in talking to those people who now have service from our Corporation, those lines are located in territory that was not previously served by any power company. None of the members of the Corporation were served by The Tennessee Electric Power Company prior to the organization of the Corporation, according to my investigation.'

Mr. Fitts: That motion I think is clearly improper, because that goes to all of the testimony of the witness Cowley who testified to a great many other things besides this one particular isolated point.

Mr. Fly: I am inclined to agree that all of the testimony on this sort of a point will ultimately be determined to be irrelevant by this Court. But I don't think the Court can now——

Judge Allen: Now, don't assume what this Court is going to do.

Mr. Fly: I will assume to state my own opinion on it, your Honor, that it is irrelevant. I should not be surprised if

the Court would come to that conclusion as regards to some of the material that is submitted in our case. But I don't think that the Court can now go back and sift all of the evidence which in its final ruling will be deemed to be irrelevant.

Judge Allen: If counsel for defendants will state there is other material in the testimony of the witness Cowley that is here attempted to be rebutted and that is material and relevant——

Mr. Fitts: I think the testimony is as to the operation of his cooperative, and as to how it was organized, and whether or not it was organized by pressure from outside, or because of the desire of the people alone——

[fol. 1876] Judge Allen: It bears on the issue of coercion?

Mr. Fitts: That is correct, and of the relationship between the cooperative.

Judge Martin: Does counsel for the complainants agree with the statement of Mr. Fitts' as to the other testimony of the witness Cowley? If so, that would save the Court trouble of reading that deposition possibly.

Mr. Bemis: It is our view, and it was stated in our general objections——

Judge Martin: Not your view, but do you agree with his statement? He stated specifically that certain matters were testified to by the witness Cowley. Do counsel agree with his statement or not, now?

Mr. Bemis: I don't recall that he gave testimony as to how the Lincoln County Electric Membership Corporation was organized.

Judge Allen: The Court will ask you to check that matter and to report to the Court.

Mr. Bemis: Thank you.

Mr. Fitts: If that statement is questioned, I would like to get it settled right now.

Judge Allen: We will expect a positive report from you on that point before we rule upon this question. Now, let's proceed.

Q. Mr. Cowley stated in his testimony, in response to the following question: 'In these local meetings about which you have testified, and these mass meetings that met with the county agent Sloane, and manager Childress, were the rates of the TVA discussed', to which Mr. Cowley answered, 'Not so much as the fact that they could get elec-

tricity. They had trouble in getting it. I was interested in securing it for myself, but I cannot tell what other people thought, but I wanted it for myself. I wanted electricity and I wanted it before I died, and I wanted it so that I could enjoy it.' Now, Mr. Watson——

Judge Allen: Were you there at that meeting, Mr. Watson?

The Witness: No, I was not at that meeting.

Mr. Bemis: I have not concluded the question, if the Court please.

Q. Mr. Watson, recalling the testimony of Mr. Cowley [fol. 1877] that he proposed to build at his own expense a line of 2½ miles to take service, and calling your attention further to Complainants' Exhibit 937 to refresh your recollection, are you able to say how much money Mr. Cowley offered to subscribe per month for extension of service to the——

Mr. Fitts: We object to that question as utterly irrelevant and immaterial, and I don't see what that has to do with the meeting.

Judge Allen: Objection sustained.

Mr. Fitts: And I would like to call the Court's attention to the fact that the part of the testimony of the witness Cowley which Mr. Bemis just quoted is part of the testimony to which I referred when he was testifying about the local mass meetings and the local movement for the organization of the cooperative.

Judge Allen: Objection is sustained to the question.

Mr. Bemis: Exception, and offer to show that if permitted to answer the witness would state that Mr. Cowley in the application for service made in 1932 subscribed for $2 per month for extension of service to him. And if the Court please, I believe that has a direct bearing upon the credibility of this witness."

I am familiar with the lines now operated by the Lincoln County Electric Membership Corporation. Those lines were constructed commencing in March, 1935. The Lincoln County Electric Membership Corporation was organized about September, 1935, subsequent to the construction of the Lincoln County Electric Membership lines.

"Q. By whom were those lines constructed?

Mr. Fitts: There is no dispute about that.

Mr. Fly: We owned those until two weeks ago. That is all in the record.

Mr. Bemis: I understand there is no objection as to the date when these lines were constructed.

Mr. Fitts: The lines were built by the Tennessee Valley Authority and turned over later to the Lincoln County Electric Membership Corporation. All of the contracts are in the record. The whole history of the transaction is de- [fol. 1878] scribed in the record, in the contract.

Mr. Bemis: To clear up any confusion, are you willing to agree that the lines which are now operated by the Lincoln County Electric Membership Corporation were constructed sometime about March, 1935, and that the electric membership corporation was not organized until sometime subsequent, namely, in September of 1935?

Mr. Fitts: I understand the March date is wrong. But I think it is true some lines may have been constructed in Lincoln County before the cooperative was actually organized and doing business. I understand the March date is wrong, however. I am informed that that date is not the correct date."

(The witness was excused.)

"Mr. Bemis: I have two witnesses whose testimony will relate to this subject.

Judge Allen: What do you expect to show by them?

Mr. Bemis: I had better state that Mr. Hutchinson in his deposition stated that he had made a number of requests for service to the Tennessee Electric Power Company which had been ignored. Now, in substance I wish to show that is not the fact, that they had been investigated and that Mr. Hutchinson was told on what terms and conditions line extensions would be made to him. If the Court deems that to be irrelevant, I can perhaps state in the record, without calling the witnesses, what we expect to show.

Mr. Fly: We concede all that you have stated there.

Judge Allen: That is conceded?

Mr. Fitts: That is conceded, that the witnesses would so testify.

Mr. Bemis: Well, I don't know that that is satisfactory,

that the witnesses would so testify. Will you concede it is the fact?

Judge Allen: That is all you could show by your witness. You cannot show the facts by your witness, you can only show that the witness would testify to the fact.

Mr. Bemis: The Court is entitled to judge of the credibility of the witness.

[fol. 1879] Mr. Fly: It is conceded he is a credible witness.

Judge Allen: It is conceded he is a credible witness.

Mr. Bemis: I think that is tantamount to a concession that the facts are contrary to what Hutchinson testified.

Judge Allen: The understanding of the Court is it is tantamount to a concession that two credible witnesses contradict each other; is that correct?

Mr. Bemis: That is correct.

Judge Allen: In other words, there is a conflict in the testimony?

Mr. Fly: Except we don't think there is necessarily a conflict.

Mr. Bemis: I had mentioned to the Court I had two witnesses on this subject, on which testimony would be cumulative. Mr. Hall, J. M. Hall, who is district engineer in the local office, in the locality where Mr. Hutchinson resides, and Mr. C. P. Little, who is local manager in Murfreesboro, Tennessee.

Judge Allen: What do you expect to prove by them?

Mr. Bemis: They would both testify requests for service by Mr. Hutchinson had been investigated and that two reports had been made to him in regard to the cost of line extensions, and the cost of service, and that he had stated that he had no desire to have those line extensions made on those terms.

Mr. Fly: We will concede that, and make the score 2 to 1 now.

Mr. Fly: I want to make a statement with respect to the testimony of the witness Cowley which was put in question. I would like to give the Court references, if the Court desires to note that—I do not care to read them—but, as reported in Supplement A to the official transcript, the witness Cowley testified with respect to solicitation and coercion on the part of the Tennessee Valley Authority on pages 55, 56 and 60; with reference to duplication of lines on page 58; with reference to the fact that no customers

previously served by the power company were being served by his cooperative, on page 59; and with reference to the relationship existing between the cooperatives and the Tennessee Valley Authority on pages 66 and 67.

Judge Allen: The motion to strike from the record the deposition of the witness Cowley is now denied.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: Yes."

[fol. 1880] WILLIAM P. CREAGER was called as a witness on behalf of the complainants and, having been first duly sworn, was examined and testified as follows:

Direct examination:

I reside at Buffalo, New York, and I am a consulting engineer. My preliminary education was at the grammar school of Baltimore City, Baltimore City College, and at night school in Baltimore.

I am a civil engineer and a graduate of Rensselaer Polytechnic Institute of 1901 with a degree of Civil Engineer. I am a member of the following technical societies and committees: American Institute of Consulting Engineers, American Society of Civil Engineers, Society of American Military Engineers, International Association for Hydraulic Structure Research, International Congress on Soil Mechanics, American Geophysical Union, Executive Committee of Soil Mechanics Division, Am. Soc. C. E., Executive Committee of Power Division, Am. Soc. C. E., Chairman of Committee on Soil Mechanics Bibliography, Am. Soc. C. E., Member of Committee on Seepage, Am. Soc. C. E., Member of Committee on Dams, Am. Soc. C. E., Member of Committee on Valuation, Am. Soc. C. E.; and I am a licensed professional engineer in New York and California.

From 1901 to 1903, I was Provincial Supervisor in the Philippine Islands. From 1903 to 1906, I was designer on locks and dams for the New York Barge Canal. From 1906 to 1922, I held various positions from designer to chief engineer of hydraulic structures for the J. G. White Engineering Corporation. From 1922 to 1930, I was Chief Engineer and Vice President in charge of engineering and construction for several public utility corporations in New York, generating hydraulic power exclusively. From 1930

to date, I have been acting as a consulting hydraulic engineer. My thirty-six years of practice have been in the field [fol. 1881] of hydraulics and I have designed 26 hydro electric developments and supervised the construction of 15 of them. I have designed about 40 or 50 dams exclusively of my consulting practice and have supervised the construction of 13 of these. I have made designs, estimates and financial reports on about 200 hydraulic properties and my studies have involved work in 35 states and 9 foreign countries, including work for the Russian and Mexican Governments, and I have acted as consultant on a large number of flood control projects for the United States Army Engineers.

During the last two years of my consulting practice, I have been employed on Los Angeles Flood Control District, the Brazos River Conservation Dam, Texas, the Savage River Project, Maryland, the Mexican Commission of Irrigation, the Central Nebraska Public Power and Irrigation District, the Pittsburgh Flood Control District, the Black River Regulating District, New York, the Red River Flood Control Project, Texas, the Binghamton Flood Control Project, New York, the Los Angeles County Drainage Area, California, the Orange County Flood Control District, California, the Aluminum Company of America, and on a number of public utilities. I have also been engaged but have not yet started work on several other hydraulic projects, including one for the Argentine Republic. All of the projects on which I have been engaged as consultant during the last two years embodied the design, construction and operation of 25 authorized dams and many others studied for comprehensive systems, and eight of the aforementioned clients were engaged in the design, construction and operation of projects to be used primarily for flood control.

I am the author of the following technical books: Author of "Engineering for Masonry Dams", 290 pages; Co-author of "Hydro-Electric Hand Book", 880 pages; Associate Editor "Pender's Hand Book for Electrical Engineers", 2200 [fol. 1882] pages; Associate Editor "Reinforced Concrete & Masonry Structures," 770 pages; and Associate Editor "Kent's Mechanical Engineers Hand Book", 2100 pages. I am also collaborating to write as co-author a forthcoming

book to be entitled "A Treatise on Dams". Of the aforementioned publications, "Masonry Dams" has been translated into French and a large part of "Hydro-Electric Hand Book" has been translated into Russian.

In addition to the eight aforementioned clients which had the question of flood control as th primary objective, I have had a number of other clients which have had the question of flood control as one of their major problems and I have had a large number of cases prior to my consulting practice in which the question of floods was of great importance.

I have had the following special or local experience with the Tennessee River and its tributaries. I worked on the design of the Ocoee #1 and the Ocoee #2 developments on the Ocoee River. I did some consulting work on the Hales Bar hydroelectric plant, I designed the hydraulic intake system for the Muscle Shoals steam plant, and I designed the water supply system for two government nitrate plants near Florence. I made an examination of the site of Wilson Dam and I acted as consulting engineer for The Aluminum Company of America on the flood capacity and flood control features of its Santeetlah Dam. I also made or assisted in making a number of reports on hydroelectric projects on a number of the tributaries of the Tennessee and I visited Norris Dam during its construction. I did a great deal of original research for the benefit of my publications and among these I have made a very comprehensive study of floods through the United States and foreign countries. The flood characteristics of the dam and its flood territories were, of course, included in such studies.

I am familiar with the Tennessee Valley Authority Unified Plan in a general way.

[fol. 1883] "Q. Will you describe the modern methods by which the height of the dam and the volume of the storage space is determined for a project to be used solely for flood control purposes and for no other purpose whatever?

Mr. Fitts: I object to that as improper rebuttal, it is purely an opinion.

By Judge Allen:

Q. Does that call for an opinion?

A. No, he asked me the modern methods, and I think they are very well established. It is not my opinion. If I an-

swered the question I would recite what the modern methods are as practiced by flood control engineers in general.

Judge Martin: What would it rebut?

Mr. S. D. L. Jackson: This line of questions is somewhat preliminary, the Court will appreciate that. I am leading up to a line of questions which will rebut testimony offered by the Defendants here.

Mr. Fly: Your Honor. I think this is pretty serious, to have this witness started off saying what his opinion is, and that his opinions represent the opinions of the profession, and how these dams ought to be built. It is going right back to the beginning. Assuming that he might touch upon some facts it must be his opinion, and it still would be improper rebuttal.

Judge Martin: We have been trying fairly and consistently throughout these hearings to exclude rebuttal of expert opinion testimony, but not proposed rebuttal of facts.

Mr. Fly: This matter of accepted standards in the profession naturally is an opinion.

Judge Allen: What is the fact that is testified to here as to modern methods contrary to what this witness will testify.

Mr. S. D. L. Jackson: Well, I don't know as anybody expressly testified as to modern methods, what modern methods were, but as I stated, this is preliminary, for the Court's information, to lay a ground-work for other testimony that will be produced. Of course, in any scientific or technical field, there are certain well-defined laws and principles that apply.

Judge Allen: And those you developed, you had opportunities to develop and you did develop in your case in chief, and the defendant answered. Now, here again, it is a reopening of the case as to modern methods, and there is no showing that anyone of the defendants' side said anything about modern methods, that this evidence will now dispute in this answer? The objection is sustained on the [fol. 1884] ground that there is no showing that the answer to this question would rebut anything in this record.

Mr. S. D. L. Jackson: May we have an exception, and an offer to prove that if the witness were permitted to answer he would state that under modern methods by which the height of a dam and volume of the storage space is determined, for a project to be used solely for flood control pur-

poses and for no other purposes whatever, the location of the reservoir and its capacity are determined from economic considerations and the suitability of the reservoir for a comprehensive flood control program, if any. The dam is built to the required height to provide the given storage and there is no need to build the dam higher than that required to give the required storage space, because if it were built higher than required, either there would be a waste of money or it would have been built higher for an additional purpose. It would not be possible to generate primary power at a dam which has been built solely for flood control purposes, because any storage space which is provided solely for flood control must be absolutely empty most of the time, and under such conditions there would be zero head, and without head there can be no power. It would not be modern practice to install generating equipment to obtain primary power at a dam built solely for flood control, and it would be necessary to build a dam higher than required solely for flood control in order that a head would be created for power generation.

Mr. Fitts: Of course, your Honor, there is another ground upon which this evidence would be excluded. It is irrelevant, anyhow.

Judge Martin: It has been excluded.

Mr. Fly: There is an important point there. Nobody has ever contended on the part of the defendant that there would be any power produced at any of these dams There will not be any power at tributary dams. This is entirely irrelevant to anything brought out by us in our case.

Mr. S. D. L. Jackson: It goes in with the hookup of primary power.

Mr. Fitts: He is asking about a dam constructed solely for flood control, and the statute does not authorize the construction of any dam solely for flood control.

Mr. S. D. L. Jackson: Of course, the navigation angle has been covered by other witnesses.

[fol. 1884a] Judge Allen: This subject has certainly been gone over at length by the complainants. If there are any details of it that were not touched upon, they should have been touched upon in your case. It is not proper rebuttal.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: Yes.

I have seen Complainants' Exhibit 362 before and have examined it.

"Q. I call your attention to the dam and reservoir indicated on the left of that exhibit. Suppose that at this dam site flood control and power were the sole consideration. Suppose that only the available storage space at elevation 1020 were needed for flood control, would you say that the dam had been built solely for flood control?

Mr. Fitts: We object to that on the grounds previously stated.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: You may.

Mr. S. D. L. Jackson: If the witness were permitted to answer this and subsequent questions relating to the same subject, he would testify, that under the assumptions in the question, that the dam would not have been built solely for flood control, because it was higher, and the storage [fol. 1885] space would have been greater than would have been necessary solely for flood control. Under the same assumptions, except that only the available storage space above elevation 955 were needed for flood control, he would be of the same opinion.

Q. Mr. Creager, suppose that in comparison with a dam built at this site solely for flood control purposes, this dam on the left was about 20 per cent higher, contained about 90 per cent more storage space; costing with its power plant, about 340 per cent more, and in addition, the value of its annual power output was many times the annual flood benefit, would you consider it primarily a flood control project?

Mr. Fitts: We object to that on the same grounds.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception, and if the witness were permitted to answer he would state that under the assumptions contained in the question, he would consider such dam primarily a power project. In designing a dam solely for flood control and for low water regulation below the dam, the lowest discharge facilities would be located just as low as it would be possible to built them, and usually at the bottom of the reservoir, as shown by the proposed dam sketched on the right side of Exhibit 362. If a dam such as the dam on the left of Complainants' Exhibit 362 were constructed

solely for flood control and low water regulation, the discharge outlets would be located considerably below where they are shown to be.

The witness, in answer to subsequent proper questions directed to the same subject, if permitted, would testify that he is of the opinion that if the Norris Dam had been built solely to create a reservoir for the combined purposes of flood control and low water regulation on the stream, there would be no opportunity for economic generation of primary power at such a dam, because if it were built for combined purposes of flood control and low water regulation, it would necessarily have to be quite empty during the time of extreme low water on the stream, and at such times there would be no head available for power generation at the site. That, in his opinion it would not be possible to obtain economical incidental power from the dam for the purpose of assisting the rest of the system in the generation of primary power, because the rest of the system needs supplementary power in order to firm up its output only during the low water season and at such times the Norris Dam reservoir would be empty. That the only conditions under which it would be possible to generate economic power for any use in a primary power market from a power installation provided at a dam which was alleged to have been built solely for flood protection and low water regulation, or that the dam must have been built higher than was necessary for the sole purpose of flood protection and the regulation of low water flow, thus creating a permanent minimum head which necessitates some dead or wasted storage space.

[fol. 1886] Q. Mr. Creager, what is dead storage?

Mr. Fitts: We object to that, it calls for an opinion, it is not a fact.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception?

Judge Allen: The question is leading up to a question of opinion?

Mr. S. D. L. Jackson: That is correct, your Honor, and if the witness were permitted to answer this question and other questions relating to the same general subject matter, he would state that dead storage is never used for any purpose, the water surface is never lower than the elevation of the top of dead storage. It is automatically created to obtain head for power or surface areas for a lake for

pleasure or other purposes. When dead storage is present at a dam built allegedly solely for flood control and/or low water regulation, the witness is of the opinion that the dam has been built higher than necessary for use as a flood control and/or low water regulation dam, and extra expense is incurred in providing dead storage because the dam is higher than necessary.

Judge Allen: The Court is wondering, Mr. Jackson, why you did not offer these various experts in your main case? The Court would have permitted them to testify on these points, and that would have avoided additional testimony on the same subject.

Mr. S. D. L. Jackson: Was that question asked me on the record.

Judge Allen: Yes, it was asked on the record. We have been wondering why—I have consulted with the other two judges—why this evidence is offered now, when, evidently from the conduct of the case it would have been admitted at the proper point in the complainants' presentation as original testimony.

Mr. S. D. L. Jackson: In our view, if the Court please all of this evidence is proper rebuttal as we understand the rule that applies to rebuttal evidence. We are in the unfortunate position of the Court refusing to accept our view on that issue, or on that question, but we are sincere in the belief that all of this testimony is proper rebuttal. It is designed to controvert evidence which was produced here by the defendant.

Judge Allen: Well, we merely note that this evidence could have been produced in chief.

Mr. S. D. L. Jackson: And it has been suggested that when the defendants' witnesses took the stand and gave testimony that appears in this record, it put into the case [fol. 1886a] matters which we thought even had we attempted to have offered them in our own case in chief, the Court would probably, in our view, at least, at that time, would have stated that we were going into matters that would have no proper relation to the case in chief."

I have examined Complainants' Exhibit 352 which is labeled, "Location of System of Flood Control Reservoirs." I understand that it was presented by Mr. Kurtz and that this system is his recommended system in this case. I understand that 19 reservoirs are involved there.

"Q. What is the total acre feet of dead storage space indicated for those 19 reservoirs?

Mr. Fitts: We object to going over exhibits which are already in, and saying what is in them.

Judge Allen: Objection sustained.

Mr. S. D. L. Jackson: Exception, and if the witness were permitted to answer, he would state, 6,024,000 acre feet of net storage space indicated on those 19 projects."

I have examined Complainants' Exhibit 354 labeled "Tennessee Valley Authority Unified Plan Recommended to Congress," which is an exhibit out of the report filed March 31, 1936.

"Q. How many reservoirs does that exhibit show are involved above Chattanooga?

[fol. 1887] Mr. Fitts: We object to the examination or repetition.

Mr. S. D. L. Jackson: This is merely preliminary.

Judge Allen: Preliminary to an expression of opinion?

Mr. S. D. L. Jackson: A series of opinions.

Judge Allen: The objection is sustained. The exhibit is in evidence, we are quite familiar with that part of the record.

Mr. S. D. L. Jackson: May we have an exception to the Court's ruling? If the witness were permitted to answer this question and further appropriate questions relating to the same general subject, the witness would testify that he has examined Complainants' Exhibit 352, and understands that it was presented by Mr. Kurtz in this case, and that it involves 19 reservoirs; he has also examined Complainants' Exhibit No. 353, which he understands has application to the reservoirs recommended by Mr. Kurtz in this case. If the drainage area above Chattanooga is 21,400 square miles then upon the basis of the data appearing in Exhibit 353, the reservoirs indicated on Complainants' Exhibit 352 control about 78 per cent of the drainage area above Chattanooga; that he has examined Complainants' Exhibit 354 and has noted that six reservoirs are involved above Chattanooga. He has examined the data contained on Complainants' Exhibit No. 355, and assuming 21,400 square miles as the drainage area above Chattanooga, only about 26 per cent of such drainage area is

controlled at Chattanooga under the TVA Unified Plan recommended to Congress, as set out on Complainants' Exhibit 354. That he is of the opinion that for flood control above Chattanooga, the system indicated on Complainants' Exhibit No. 353, the Kurtz' exhibit, is much superior to the TVA system as set forth on Complainants' Exhibit 354, assuming that each is built according to accepted practice of detailed design and construction. That a flood control system built solely for local protection must increase the peak in the main river occasionally. However, where there are two or more such local systems, above a given main stream, the combined effect would be an improvement on the main stream. Because of this all flood control projects of which he has knowledge are designed for local protection, although many of them afforded flood protection also to the main streams. As an example, the witness notes that the general system of flood protection provided in plan two of the Mississippi River Commission as contained in Defendants' Exhibit 32 is a system of reservoirs for local flood benefits with incidental benefits on the lower Mississippi.

[fol. 1888] Q. Mr. Creager, in modern engineering practice is it necessary that before a flood control dam is built, a decision must be reached with respect to the volume and size of the flood which it is proposed to control?

Mr. Fitts: We object to that, may it please the Court, on the same ground.

Judge Allen: The objection is sustained.

Mr. S. D. L. Jackson: May we have an exception. And if the witness were permitted to answer this question and other appropriate questions relating to this same general subject, he would state that in modern engineering practice, before a flood control dam is built, a decision must be reached with respect to the volume of the flood which it is proposed to control. Under the assumption that the period of record for floods on the Tennessee River is about 50 years, and that the site of the dam is to be at the site of the Norris Dam, in his opinion it would not be in accordance with good modern engineering practice to design a dam for the purpose of controlling a flood no larger than one which has been recorded in the previous 50 years.

The reason for this is that a certainty exists that a greater flood will occur in the future than has occurred in the last

50 years. Under modern practice floods of record are only a small part of the total evidence used to determine flood projects which are usually taken to be between 150 per cent and 200 per cent of the maximum of record, and sometimes more.

He cannot describe briefly the methods used in the determination of the flood for which adequate protection should be provided, because such a consideration would involve a number of facts, including meteorological data, storms of record, floods of record, percent run-off, period of concentration, valley storage, vegetable cover, geological structure, topography.

Q. Mr. Creager, I show you Defendants' Exhibit 90, and I shall ask you to assume that the rate of filling of such a reservoir is such that the reservoir would stand at elevation 955 on December 15th, and that filling would proceed at a uniform rate with respect to the volume to an elevation of 1005 on April 15th, and that after that date the filling might extend to the top of the spillway if sufficient water were available. What, in your opinion, is the method of operation which I have asked you to assume?

Mr. Fitts: We object to that as not proper rebuttal.

Judge Allen: The objection is sustained.

[fol. 1889] Mr. S. D. L. Jackson: Exception. And if the witness were permitted to answer, he would state in response to this question and other appropriate questions relating to the same subject, that he had examined Defendants' Exhibit 90. Under the assumption that the rate of filling of such a reservoir is such that the reservoir would stand at elevation 955 on December 15th, and that filling would proceed at a uniform rate with respect to the volume to an elevation of 1005 on April 15th, and that after that date the filling might extend to the top of the spillway if sufficient water were available, it is his opinion the method of operation assumed would indicate that it provided an elevation of water surface below which under ordinary conditions head and/or storage would be available for another purpose, such as the production of power, and under modern engineering practice, a rule of operation such as that assumed would be unnecessary, and quite useless, if such a dam were operated for flood control purposes only. However, if the dam is to be used for the production of power or any other purpose than flood control, involving

the production of power, some such rule for filling the reservoir would be useful."

I am familiar with the hydrological conditions of the eastern United States which, of course, includes the Tennessee River.

"Q. I refer you to Defendants' Exhibit 90 and ask you to assume that 1,312,000 acre feet of storage space is necessary for flood protection, and that no more than 1,312,000 acre feet is available above elevation 990. In your opinion, would the rule of operation indicated on Defendants' Exhibit 90 be satisfactory?

Mr. Fitts: We object to that, may it please the Court, on the same ground.

Judge Allen: That calls for an opinion. Objection sustained.

Mr. S. D. L. Jackson: May we have an exception. And if the witness were permitted to answer he would state in response to this question and to other appropriate questions relating to this same subject, that in his opinion the rule of filling set out on Defendants' Exhibit 90 is not consistent with modern flood control practice as applied to flood protection at Chattanooga, assuming that 1,312,000 acre feet is required for such protection, and that no more than that amount of storage space is available above elevation 990. This is because all records of flood are notoriously undependable, and floods of large magnitude might occur during periods in which historical records have indicated that large floods have not occurred. Therefore, there is a great [fol. 1890] probability that floods of large magnitude might occur considerably after the period of encroachment on flood storage indicated by the method of operations shown on Defendants' Exhibit 90. He is of the opinion that it would be extremely hazardous not to have that flood storage available.

Q. Mr. Creager, would you consider it good modern practice in engineering where automatic gates are used to control large volumes of water to equip such gates also with hand control?

Mr. Fitts: We object to that, may it please the Court.

Judge Allen: Objection sustained.

[fol. 1895] Mr. S. D. L. Jackson: That came at some later time, after you had telephoned to your budget officer in your Knoxville office or someone, and received advice from someone there.

Judge Allen: Now, with reference to the subpoena duces tecum for the minutes of the directors relating to methods of operation of Norris and Wheeler Dams, the Court has consistently held testimony with reference to methods of operation of these dams and projected dams is competent and material if properly presented. Material testimony covering the same subjects as this application for subpoena duces tecum was given on behalf of the defendants in this case prior to the Christmas recess. It is the memory of the Court that Mr. Woodward concluded his testimony, both direct and cross, on December 18th.

Why is this application for subpoena duces tecum asking for minutes relating to methods of operating Norris or Wheeler Dams, or establishing rule curves, or establishing rules for the filling and lowering of the reservoirs at said dams, and for minutes prescribing levels at any of the reservoirs of the TVA dams not asked or brought into Court, at least, during the progress of the defendants' case? Why is it asked for on rebuttal?

Mr. S. D. L. Jackson: I might state in answer to that, if your Honor please, that on the last day, I think, the last day of the defendants' case, they produced in response to a request from us, a water control memorandum, those which were made by Mr. Llewellyn Evans and Mr. Woodward, prior to July of this year when they were acting as a committee, which I think appears from the Defendants' Exhibit 61 or 65.

They also produced—I might state in response to that, or in addition to that, they produced then about eight or nine so-called water bulletins, or water control memoranda. That is Complainants' Exhibit, I think, 923 of this record. It was only brought in and given to us, I think, on the last day of the defendants' case. At the bottom of each sheet of that exhibit, of these eight or nine water control memoranda, appears the notation: 'Approved by the Board of Directors,' which indicates obviously, that there are other minutes of the board of directors relating to these matters which were not produced at any time. Now, subsequent to July of this year, there were also produced and marked, Complainants' Exhibit 924 of this record, a number of

water control memoranda signed by Mr. Woodward or someone for him. Those did not bear any such notation.

Now, our subpoena, when we were advised that there are certain minutes of the board of directors expressly relat-
[fol. 1896] ing to this very material, I think our subpoena was timely presented.

Mr. Fly: May it please the Court, I think it would be helpful if I would again state that they have had all of the resolutions on this subject. There are no more. The only result of ordering this subpoena is for me to come in here again and make that same report.

Mr. Fly: * * * May it please the Court, pursuant to the ruling of the Court, we have checked the 43 pages, as many as were submitted to us——

Mr. S. D. L. Jackson: 47.

Mr. Fly: Of a photostatic copy of a 48 page document entitled 'Tennessee Valley Authority detailed statement of budget estimates for the fiscal year ending June 30, 1939'. Except for the missing pages and except that several of the figures and computations appearing on the original in red ink have been in the process of copying changed to an indistinguishable dark color, this photostatic material appears to be an accurate copy of a document which the authority submitted to the Subcommittee of the House Committee on Appropriations in charge of appropriations for the Authority. Counsel for complainants have stated in open Court that this photostatic copy was secured by them two days after the recent hearings held by the Appropriations Committee of the House of Representatives on the Tennessee Valley Authority appropriations. These hearings were held on December 13, 1937.

I want to make this statement to the Court in absolute frankness and explain the embarrassment which this incident has created. The Government regards this document as wholly incompetent and irrelevant.

[fol. 1897] I want to emphasize, however, that there is nothing in it which we have any occasion to fear. However, in deference to the Appropriations Committee, itself, I am compelled to state candidly the circumstances under which the information was compiled for and supplied to and held by the Committee.

The photostats which complainants have are taken from a report which the Tennessee Valley Authority prepared

Mr. S. D. L. Jackson: Well, I think that counsel now have a book there, and can readily authenticate it, and I understand they had examined the other sheets which we submitted to them this morning, and have made a statement that so far as authenticity was concerned——

Judge Gore: These are the two missing sheets from what you handed them this morning?

[fol. 1901] Mr. S. D. L. Jackson: That is one of the two sheets missing from what I handed them this morning, and the other one is 925 in evidence.

Mr. Fly: They have got three or four others missing from this document.

Mr. S. D. L. Jackson: I think perhaps that is right, but anyhow those are two of the small number of missing sheets that there were, and the others—I don't know where they are, I think some of them were given exhibit numbers.

Judge Allen: Do you claim that these are anything more than preliminary figures?

Mr. S. D. L. Jackson: Why, based on counsel's statement, Mr. Fly's statement made to the Court about December 16th, they are the figures that were submitted to the Subcommittee on December 13th. I have no means of knowing whether they are preliminary, final, interim or what not. I think they were figures, based on that statement, that were actually handed to the Committee, and concerning which the defendants——

Mr. Fly: Tentative figures. The final figures are in the proceedings and are in evidence.

Mr. S. D. L. Jackson: They were submitted to them in support of an appropriation request for some forty million dollars.

Mr. Fly: And changes were made during the time the committee considered it, and the committee acted upon the final figures which are published by the committee as its official record of its full action.

Mr. S. D. L. Jackson: Do you know that that is a fact?

Mr. Fly: It clearly is.

Mr. S. D. L. Jackson: In view of Defendants' Exhibit 153 it appears that the tables were submitted to the committee in the form I presume in which they appear on that sheet, and that then they were revised sometime after that and before December 20th, 1937.

Mr. Fly: Before the committee action?

Mr. S. D. L. Jackson: The Board resolution with respect to certain of that data is dated December 20, 1937.

Judge Allen: Is there any statutory requirement for submitting this particular set of figures to the Congress?

Mr. Fly: No, your Honor, I don't think there is any statutory requirement for submitting that particular set of figures.

[fol. 1902] Judge Allen: There is a statutory requirement for submitting the usual hearing report.

Mr. Fly: For submitting general data, yes, your Honor, and the custom is to submit those in preliminary form, they are gone over with the committee and certain changes made at that time, to make them clearer, and then they are checked up, and then finally the committee makes up its final official table, and then takes action.

Mr. S. D. L. Jackson: One purpose of this is to bear upon the credibility of certain witnesses offered by the defendants, on this action.

Mr. Fly: You don't mean that.

Mr. S. D. L. Jackson: Yes, I do mean just that.

Mr. Fitts: It doesn't bear on their credibility because they stated the full facts about that.

Mr. Fly: There is no question of credibility involved here. The main question is how you got these confidential figures. In fact you got the official budget hearings two days before I could get them.

Judge Allen: Mr. Jackson, you doubtless have stated, but please restate the exact facts which you claim that this set of figures rebuts.

Mr. S. D. L. Jackson: The witness Bowman, when he took the witness stand, and that was I think on December 15th or 16th, testified as to certain figures which he then said were the figures with respect to various of the projects of the Authority.

Mr. Fly: Specifically the height of Gilbertsville Dam.

Mr. S. D. L. Jackson: And I think perhaps other things.

Judge Allen: Just a minute, Mr. Fly. We have asked Mr. Jackson a question and we would like to get an answer.

Mr. S. D. L. Jackson: Now, it appears that the figures to which he testified were divergent to figures which the Tennessee Valley Authority had presented to Congress in April of 1937, and which were set forth on page 403 of Complainants' Exhibit 116. On cross-examination Mr. Bowman

Mr. S. D. L. Jackson: May we have an exception. And if the witness were permitted to answer, he would state in response to this question and other appropriate questions relating to the same subject that it would be good modern practice in engineering where automatic gates are used to control large volumes of water to equip such gates also with hand control, and it is a simple operation to change from automatic to hand control.

If the automatic feature provided for sluice gates in a flood control dam were broken, or if the automatic rule of operation at any time was not in conformity with the desired or correct operation, it would take only a few moments to change over to hand operation. The only harm that could possibly result from equipping a flood control dam with automatic operating flood gates for use after filling would be in the expenditure of money for the automatic feature. The provision of such automatic feature would in no way affect the efficiency of the project because at any time it would be perfectly feasible to abandon the automatic feature. The elimination of the automatic feature could not lessen the value of such reservoirs.

The Court requested yesterday that in offering each witness which we offered in rebuttal, we were to state the reference to the defendants' testimony which the testimony of the witness was designed to rebut. I don't believe that was given with respect to Mr. Creager, when he was called this morning.

Judge Allen: But all of the questions which you have asked either lead up to or call for opinion evidence?

Mr. S. D. L. Jackson: Yes, your Honor, that is correct. But the testimony, if I might make just this very brief statement,—the testimony of Mr. Creager would relate to subjects including those testified to by the witness Woodward and the witness Kimball to the general effect that the purpose of Norris Dam is primarily flood control, and [fol. 1891] merely incidentally the production of power.

Judge Allen: It would also relate to the testimony given by your witnesses in chief to the same effect as that of Mr. Creager's.

Mr. S. D. L. Jackson: Mr. Creager's testimony is designed to rebut, and the purpose of producing Mr. Creager is to rebut the testimony of the defendants' witnesses.

Judge Allen: General testimony to the same effect was given by your witnesses in chief.

Mr. S. D. L. Jackson: Oh, Mr. Kurtz, I believe testified on that subject in the case in chief, but at that time of course there had not been brought into or there had not appeared in this case this curve set forth in Defendants' Exhibit 90, and Mr. Kimball and Mr. Woodward had not stated the method of operation that they proposed, or it was stated in the defendants' case that they proposed to follow, in the operation of that dam and the other dams of the system,—the Court will recall that both of those hydraulic witnesses on the case in chief dealt with the problem of flood season, and of seasonal filling.

Judge Allen: The Court is following the usual rule with reference to that in all courts.

Mr. S. D. L. Jackson: That the testimony of Mr. Creager would relate also, or rebut also testimony of the witness Kimball to the effect of deficiencies in the Kurtz' system of reservoirs.

It would also rebut testimony of the witness Kimball as to the method of selecting project floods. Mr. Kimball undertook to state methods of determining project floods, and Mr. Creager's testimony is designed to rebut that testimony by showing that such method is improper, that the rule of filling curve, Defendants' Exhibit 90 introduced for Norris Dam by the witness Kimball, is not a proper curve for flood control operation; that the method of operation of Norris Dam testified to by the witness Kimball is an improper one for flood control, and that contrary to testimony of the witness Kimball provision for automatic control of the reservoirs recommended by the witness Kurtz would not lessen the value of the dams he proposed for flood control."

(The witness was excused.)

"Mr. S. D. L. Jackson: Now, with respect to this ruling which the Court made, I think it was yesterday morning, the complainants wish to be satisfied that we are correct in understanding that the Court's ruling with respect to the introduction of testimony in rebuttal by expert testimony, or by expert witnesses is to the effect that no such testimony [fol. 1891a] should be admitted of the same witnesses—if the same involves an expression of opinion——

Judge Allen: Whatever the ruling of the Court was when you reopened the case, on the expression of opinion, that is not proper rebuttal. Wherever experts testify and cover

a subject, they have an opportunity to say all they want to, and give all of the expressions of opinion they wish, and then the defendants' experts answer on that, our holding is that you cannot reopen the case and bring in the same expert or new experts to say all over again the things which you might have said the first time while you had these subjects before you. That is not proper rebuttal."

[fol. 1892] Counsel for complainants offered in evidence, as a part of their case in chief, and the Court received as Complainants' Exhibit 942, a graph setting forth the loads of all the complainant companies by weeks for the calendar year 1937 and an attached sheet containing the reading by weeks of the figures contained on the graph.

Counsel for complainants offered in evidence, as a part of their case in chief, and the Court received as Complainants' Exhibits 943 to 953, inclusive, certified and exemplified copies of the charters of the following cooperatives organized in the state of Mississippi: Lee County Electric Power Association (Exhibit 943), Alcorn County Electric Power Association (Exhibit 944), Monroe County Electric Power Association (Exhibit 945), Pontotoc County Electric Power Association (Exhibit 946), Prentiss County Electric Power Association (Exhibit 947), Tishomingo County Electric Power Association (Exhibit 948), 4-County Electric Power Association (Exhibits 949 and 950), Tippah Electric Power Association (Exhibits 951 and 952) and Northeast Mississippi Electric Power Association (Exhibit 953).

COLLOQUY

"Judge Allen: At this time the Court would like to have certain information, Mr. Jackson. There are two applications for subpoena duces tecum before us. One calls for the Tennessee Valley Authority's detailed budget estimates submitted to Congress in December, 1937, containing pages 1 to 47, both inclusive. When was this budget estimate submitted to the Congress?

Mr. S. D. L. Jackson: It was submitted to the Subcommittee of the House Committee on Appropriations at a hearing, I think the date is December 13, 1937.

Judge Allen: The other application for subpoena duces

tecum which relates to this same detailed statement,—does it not Mr. Jackson?

Mr. S. D. L. Jackson: There is another subpoena calling for certain specific pages of the same report.

[fol. 1892-a] Judge Allen: Yes. For pages 7 and 8, 9, 10, 11, 14, 15, 30, 31 and 32, and describing in detail the material contained upon those pages. The Court in considering an application of this kind on rebuttal is compelled, of course, to satisfy itself of the competency and relevancy and materiality of the evidence sought to be furnished. Do you have a copy of this detailed statement, Mr. Jackson?

Mr. S. D. L. Jackson: We have, if your Honor please, a photostat of what we think was a copy of it. That is, we feel confident, in answer to your Honor's question, we feel confident that the information which is on the thing we have is the information that was actually presented to the Committee.

Judge Allen: When did you receive it?

[fol. 1893] Mr. S. D. L. Jackson: It came to us sometime after December 13th.

Judge Allen: Yes. How long after December 13th?

Mr. S. D. L. Jackson: Within a couple of days.

Judge Allen: The Court would like to see the photostat.

Mr. S. D. L. Jackson: We have,—I am informed, this is incomplete, certain sheets are out. I took some of them out in connection with Mr. Raymond Jackson's examination of one of the recent witnesses,—of Mr. Bowman, I believe.

Judge Allen: Of Mr. Bowman.

Mr. S. D. L. Jackson: I think that exhibit is the one with his signature on it.

Judge Allen: Why was not this application for subpoena duces tecum, since you received this material about two days after December 13th, not made during the progress of the defendants' case? Why is it made on rebuttal?

Mr. S. D. L. Jackson: For this reason, your Honor, first, our case in chief had closed, your Honor recalls, before that date.

Judge Allen: I remember that, but I am asking why it is introduced on rebuttal.

Mr. S. D. L. Jackson: I don't believe we have any right to subpoena documents while our adversaries are going forward with the lawsuit.

Judge Allen: I think you have a right to ask the Court to order them produced.

Mr. S. D. L. Jackson: Well, if your Honor will recall, when this question first came up here about December 16th Mr. Fly then said he would be very glad to produce them. Your Honor recalls that. Now, we mentioned on one or two occasions after that during the course of the defendants' case, and nothing was at that time ordered by the Court, and the document was not produced. Now, Mr. Fly said, if your Honor will recall, when we first mentioned this report in connection with Mr. Bowman's testimony, the first time he was on the stand, that he would be very glad to produce it.

Mr. Fly: I want to be clear on that. I said if the Committee released it.

Judge Allen: Just a minute. Have you finished your statement, Mr. Jackson?

[fol. 1893-a] Mr. S. D. L. Jackson: I beg your pardon?

Judge Allen: Have you finished your statement?

Mr. S. D. L. Jackson: No. Then later on that same afternoon, after recess, Mr. Fly came in and reported to the Court that he had checked with their budget officer by telephone, and he then stated that certain of the information and figures which had been used by Mr. R. T. Jackson in examining Mr. Bowman were correct.

Judge Allen: Now, Mr. Fly, the Court would be very glad to hear from you with reference to this.

Mr. Fly: I would like to examine that.

Mr. S. D. L. Jackson: Well, I am sorry.

Mr. Fly: May I not examine it?

Mr. S. D. L. Jackson: I see no reason. I take it he has it. He handed it up to the Court.

Mr. Fly: It is the first time I have seen that copy.

Judge Allen: If you will permit counsel to examine it, and if there was no question of authenticity, then a very serious question would be disposed of for the Court.

Mr. Fly: I am trying to get someone here who is familiar with these things now, your Honor. I want to state that I never stated that I would volunteer to produce in Court any tentative or confidential figures submitted to the Committee unless they were released by the Committee.

[fol. 1894] Judge Allen: The Court, with reference to this particular detailed statement of budget estimates will ask counsel for the Authority to check it and report promptly to the Court whether or not it is authentic. And the Court

will withhold ruling on that matter until that question is determined.

Judge Allen: And your only answer to the reason why this is offered on rebuttal is that you could not make an application for subpoena duces tecum during the progress of the defendants' case?

Mr. S. D. L. Jackson: No, that is not correct, your Honor. I stated what my impression of the law was on that. I have had the subpoena ready for some time, but we expected that this document would be produced by the defendants.

And, if your Honor will recall, we raised that question on one or two occasions since December the 16th or 17th when the question was first up. We stated that they had stated that they would produce it, and it was not forthcoming, and they rested without producing it.

Judge Allen: Now, with reference to the application for subpoena duces tecum for the minutes; this, like the other two applications for subpoena duces tecum, was offered on the first day of rebuttal testimony. That is correct, Mr. Jackson, isn't it? You offered it during the course of the rebuttal?

Mr. S. D. L. Jackson: I think we presented the subpoenas to the Court on the morning we started our rebuttal testimony, and after the defendants' case had rested, and we were ready for the rebuttal.

Judge Allen: But after you had started the rebuttal?

Mr. S. D. L. Jackson: Yes, I think that is correct.

Judge Allen: Yes. That is, it was offered in the course of rebuttal testimony?

Mr. S. D. L. Jackson: Might I interrupt the court for just one moment? On page 3856 of the (stenographic) record there was some colloquy between Mr. Fly and Mr. R. T. Jackson, which ended with Mr. Jackson stating 'Do you want to produce a copy of the data, Mr. Fly? Mr. Fly: I haven't got it, but I will be happy to produce it after this goings on.'

Mr. Fly: And if you will read on you will find that I referred to the executive session of the committee, that the matter could not be released without the permission of the committee, and that I would be bound by the committee's action in that regard?

and submitted to the House Appropriations Committee, shortly before the hearings on our budget. By the direction of the Committee, and for reasons with which the Authority has nothing to do, the report is held confidential subject to the disposition of the Appropriations Committee and the Appropriations Committee alone.

The report as submitted is in somewhat tentative form, is used in the hearings at the discretion of the Committee, parts of such reports are sometimes inserted in the record of the hearings by the Committee's directions, and very frequently as the hearings will progress and as it is necessary to recheck matters, substantial changes are made in the final form of the Appropriations Committee's printed record of the matters dealt with in the report. The official record of the committee which constitutes the only official basis of its action, and the only final and official record of the report of the Tennessee Valley Authority to the Committee is now printed and has been introduced by the defendants and received by the Court as Exhibit 153. To the extent that that final report records differences in matters of detail from this tentative and confidential report, the reasons for such differences will be apparent, I think, in every case in the official report of the hearings. This is, in my opinion, in effect, an effort to go behind the official action of the Appropriations Committee and would result in a violation of the confidential character imposed upon these tentative figures by that committee in executive session. The committee, so far as I know, has never authorized the release or publication or distribution of any of these tentative and confidential figures. I am informed by the budget officer of the Authority that the chairman of the Subcommittee of the Appropriations Committee in charge of the Authority's budget has expressed concern to him over the reports that parts of this confidential document have already somehow appeared in this trial.

As I have indicated, the document as has been delivered to us by counsel for the complainants omits certain pages which appeared in the report submitted to the Committee, and certain of the data does not appear distinctly. If the Court so desires, I am willing to assume responsibility for submitting for the Court's examination, a complete and ac- [fol. 1898] curate copy of the report as the Authority delivered it to the Appropriations Committee.

My only concern in this matter arises out of my belief that not only the Authority, but also, in my opinion, counsel and the Court are under a duty not to violate the rules of the Appropriations Committee with regard to the disposition of material of this character.

Judge Allen: The question is before us on the allowance of the subpoena duces tecum. We understand from this statement, Mr. Fly, that that part of the detailed estimates that you have checked is correct, but that certain parts of its are missing.

Mr. Fly: That is right, your Honor.

Judge Allen: That is right. You doubtless have the other parts.

Mr. S. D. L. Jackson: Oh, my recollection is that I took those pages out and gave them to Mr. Jackson at the time he was examining a witness, so I presume they are still in our possession. One of them is in evidence, Complainants' Exhibit 925.

Judge Allen: Since you have the document, and so far as the authenticity is concerned, it is conceded, what legal ground is there for issuing any subpoena duces tecum for this detailed estimate or for any page thereof?

Mr. S. D. L. Jackson: The Authority's concession of authenticity does eliminate one question which gave us some concern about whether or not we had the document that was authentic. Do I understand you gentlemen have an authentic copy of that which you are going to hand to the Court?

Mr. Fly: Understand I am not offering an authentic copy here for counsel, but for the confidential use of the Court. The Court may examine my copy, but since you have a copy and since there are no inaccuracies, so far as the form is concerned, there must be no question left on a subpoena duces tecum. He has got his copy, already.

Mr. S. D. L. Jackson: If I may state to the Court the purpose, if the Court will refer to page 1077 of the Defendants' Exhibit 153, which defendants put in evidence the last day of their case, in a letter to Chairman Woodrum, chairman of the Subcommittee on Independent Offices Appropriations of the House Committee on Appropriations, it appears, or it is stated in that letter that 'In order to advise [fol. 1899] the committee of the latest information available in our projects we suggest that the tables already sub-

mitted to you be revised in line with the latest action.' Now, from that it is apparent that certain tables which were submitted to the House Subcommittee on Appropriations on December 13th were revised by the Authority, as appears from this letter which is dated December 20, 1937.

Mr. Fly: That is precisely my point. The official record shows it.

Mr. S. D. L. Jackson: Now, these are tables prepared by the defendants.

Judge Allen: Submitted to the Congress on December 13th, 1937?

Mr. S. D. L. Jackson: Yes, that is correct.

Judge Allen: And, in your hands on December 15th, 1937?

Mr. S. D. L. Jackson: I think that is correct.

Judge Allen: Now, it is the general rule that a motion or application for subpoena duces tecum should be made in such time that it will not delay the trial. Here we are now during rebuttal presented with these two applications that the Court should issue an order to produce a document that you have. The entire Court feels that the two applications relating to this particular document should be and they are refused.

Mr. S. D. L. Jackson: Might we have an exception?

Judge Allen: You may have an exception.

Mr. S. D. L. Jackson: To the Court's refusal of each. And might I ask that these applications for subpoena duces tecum be given each an exhibit number. (Complainants' Exhibits 954 and 955)

Judge Allen: Yes.

Mr. S. D. L. Jackson: If the Court please, when this document was handed to our friends on the other side there were certain pages missing. I have ascertained that Complainants' Exhibit 925 which is in the record was one of the pages which was missing. That was page 9.

Exhibit 926 was marked for identification in connection with Mr. R. T. Jackson's cross examination of the witness Bowman, and it was not offered in evidence.

And the page which bears the reporter's stamp, '926', which is page 10, and is described at page 5744 and 5745 (of the stenographic record) in a question, after the document was stamped Exhibit 926—'I show you complainant's exhibit 926 for identification, marked page 10, which fol-

lows exhibit 925 which you have just identified, and ask you whether the tabulation does not show,—or whether that tabulation does not correspond with the design for Gilbertsville shown on Exhibit 925, which is approved by you'.

And there is some discussion about it on that page. Now, might I be permitted to have the reporter stamp this page, page 10. another photostat of the same page, as Complainants' Exhibit No. 926?

[fol. 1900] Judge Allen: Is there any objection?

Mr. Fly: I object to that, your Honor, on the ground that would be a gross breach of duty of counsel and of the Court towards Congress. This is a matter of immaterial detail. The full record of the final action of that committee is here in this record, and I will not be a party to any business of this sort, of pulling that out of the executive session——

Judge Allen: Let us look at it.

Mr. Fly: If it is suggested that it be put in, your Honor, I want a witness put on who can state how it was procured, and we can ascertain whether or not it was actually a breach of the rule of Congress, and the duty towards the Congress. It is a matter of irrelevant detail anyway.

Mr. S. D. L. Jackson: I am merely now asking that the reporter be permitted to mark that sheet which your Honor has complainants' exhibit No. 926 for identification in place of the similar sheet that was so marked a few days ago.

Mr. Fly: I cannot be a party to that unless the witness gets on the stand and clarifies this matter. I object to it.

Mr. S. D. L. Jackson: I now have a copy of that which bears the stamp, I don't know if those are the reporter's figures. It may be several have been stamped.

Judge Allen: Was this offered?

Mr. S. D. L. Jackson: My recollection is it was, and it appears on these pages of the (stenographic) record to which I have alluded, page 5745 and 5744, that that page was presented to the witness Bowman and the witness Bowman disclaimed any knowledge of it and it was not previously offered in evidence. I now offer it.

Mr. Fly: I object to it on the grounds heretofore stated and I would like to have a witness to go into this matter, your Honor.

Judge Allen: Mr. Bowman says 'I never saw this before'. Now, is that the only evidence before us as to what this is?

was interrogated as to when these figures had changed. He stated sometime during the summer, fixed it I believe in the month of July or possibly August. Now, those figures which your Honor has on that sheet 10 now before you are the same figures as the ones that appear in Complainants' Exhibit 116 at page 403. That is dated September 29, 1937; that that compilation that your Honor now has before you on exhibit 926 was prepared.

Furthermore, it now appears from Defendants' Exhibit 153 that the earliest time the Board of Directors had taken any action with respect to anything about this change of [fol. 1903] figures was December 20, 1937, after the witness Bowman had testified, and that a day or two before he had testified the Authority had presented those same figures that they had last spring to the Appropriations Committee of Congress when they were requesting an appropriation of about $40,000,000.

Now, those are the facts as I recall them that appear now in the record. Consequently it goes to the credibility of the witness Bowman and it goes to the sincerity and to the real intent and purpose of this resolution of December 20, 1937, which was adopted at a time when this case was being tried here in an adversary proceeding, and they attempted to set up, as our view is, they attempted to set up a purported or claimed change. And under the circumstances we think that all of those facts should be brought out in this record.

Mr. Fitts: May it please the Court, I would like just very briefly to supplement that statement, because it is a completely incomplete statement of the testimony of the witness Bowman as it appears in the record. And his entire testimony shows why this proposed exhibit is not rebuttal of anything, because what the witness said was that from April, 1937 through to early this fall there had been constant conferences and changes in the tentative and preliminary designs of the Gilbertsville Dam, not only as to its height but as to other features, and that for several years investigations and conferences had been going on as to site, and as to design features.

This is just one of the difficulties, if I may digress for a moment, it is one of the difficulties that comes into a case of this character where we are trying dams that are not even under construction, and that have not even passed

out of the preliminary design stage. It is impossible to come into Court and present a rigid design of a dam that is still being designed. And the testimony of the witness is that all through the summer of 1937 and up through this fall there was a board of special consultants working on the problem with respect to Gilbertsville, that no decision was reached until this fall, and even that decision of course is subject to change, we don't say it is a final decision, we say it is the latest opinion of the design engineers and of the board of consultants, and it is what the witness says. He says further, which the Court, using again its judicial eyesight knows, that all of the hydraulic engineers in responsible charge were down here in this Court room at the very time these preliminary budget figures were being prepared and presented to the committee. They were not there in Knoxville to check them. The office engineer, according to the statement of the witness Bowman, and the chief budget officer, simply took out the old [fol. 1904] figures on Gilbertsville and put them into the record as the best thing they had because they didn't know, and there was no reason why they should know, they didn't know that the design engineers and the consulting engineers had reached a different conclusion as to the height to which the dam would be built, and there being no board action on the subject, and he made it clear that there had not been any board action on the subject, there having been no board action, they took the last set of figures they had in the office for this and used them.

All of that is clear in the cross-examination and the redirect examination of the witness. Why there should be any difficulty, why there should be any necessity for presenting as rebuttal, and reflecting on the credibility of that witness, this sort of a paper that is taken from the confidential files of the committee, I am frank to say I cannot see.

Mr. Fly: This case will never turn on five feet more or less on any particular dam. But if it were conceivable that it would, if the question as to just when and how the board of directors came to vote for the first time a final figure of 375, the whole story is set forth here in this exhibit, on page 1076, 1077, 1078, there is the whole story of the added five feet of Gilbertsville Dam.

Mr. S. D. L. Jackson: Now, referring to the record, as to credibility, referring to page 3847, 3848 and 3849 of the (stenographic) record in Mr. Bowman's testimony, to which I alluded in my former statement, he said at the end of the examination on that point, 'I should say that in July or August sometime we arrived at these conclusions.' Now, there is an exhibit from one to two months later which shows entirely different conclusions.

Mr. Fly: That is Mr. Bowman's conclusion. The chief engineer had not acted, the board of directors had not acted. There is no dispute about that.

Judge Allen: It has been offered?

Mr. S. D. L. Jackson: We have offered Exhibit 926.

Judge Allen: You are offering this as an exhibit?

Mr. S. D. L. Jackson: Yes, your Honor.

Judge Allen: Exhibit 926 is excluded. On the ground that it is immaterial.

Mr. S. D. L. Jackson: Your Honor, may I have an exception?

[fol. 1905] Judge Allen: Yes, you may have an exception.

Judge Allen: The Court has another matter to take up with counsel. Certain bulletins, we understood perhaps they were water control bulletins, certain papers were presented in Court by the Authority, relating to the methods of operating Norris and Wheeler Dams, and as we understood the other dams embraced in the Unified Plan. It was our memory that it was testified that there were no rule curves. Perhaps we are wrong on that.

Mr. Fly: I think it was testified, your Honor, that Professor Woodward did not have, for the purposes of his operations, and did not follow a rule curve.

I would not want to state that these various engineers with their slide rules, and pencils, and all that sort of thing have not made calculations with curves of different sorts. That is habitual with the engineers.

Mr. S. D. L. Jackson: My understanding of the testimony does not coincide with the statement made by Mr. Fly. I felt that Mr. Woodward's testimony was somewhat broader than that.

Mr. Fly: Well, it probably was, because he said he paid no attention to any filling curve, and I don't think he had prepared one. And I am sure he said he didn't follow it.

Judge Allen: As we understand the testimony of Mr.

Karr, for instance, it was that Mr. Woodward did not give him rule curves to follow.

Mr. Fly: That is true, that is absolutely true.

Judge Allen: Is there any difference about that?

Mr. S. D. L. Jackson: I do not know as Mr. Karr specifically testified on that subject, if the Court please. Did he?

Mr. Fly: Yes, he did.

Mr. S. D. L. Jackson: I don't believe he did.

Mr. Fly: Mr. Wessenauer, in his calculations, presented [fol. 1906] the filling curve.

Judge Allen: Yes. Some witness made that statement, we were quite sure. Now, whether any resolutions of the Board, resolutions, we are talking about, not minutes, approving recommendations or reports relating to methods of operating Norris or Wheeler Dam-, or the other dams embraced in the Unified Plan, now under construction or recommended for construction by the Authority, or establishing rule curves for the filling or lowering of the reservoirs or relating to water control thereat, and directing the means and manner of water control or prescribing methods, or levels at any of the reservoirs at dams constructed under the Unified Plan,—I have tried to state the gist of this application for subpoena,—are there any resolutions to that effect that are not in evidence?

Mr. Fly: I will state, your Honor, that there are no resolutions on these subjects which are not in evidence. By way of explanation, I would say that some of the bulletins themselves indicated approval of the Board of Directors, I think, but they show on their face that they had been approved by the Board. But in addition to the material which is reflected clearly in this record, there are no resolutions dealing with that subject.

Judge Gore: Are there any resolutions of the directors pertaining to any subject except the sale and transmission of electric energy, are there any other kinds of resolutions in the record?

Mr. Fly: I think all of the resolutions as to the construction of the dams are probably here, your Honor. Offhand I don't recall.

Judge Allen: The resolution is in evidence establishing the committee of which Mr. Woodward and the chief electrical engineer are members?

Mr. Fly: Oh, yes, yes.

Judge Allen: Under which the water control bulletins are issued?

Mr. Fly: That is true.

Judge Allen: That is in evidence.

Mr. Fly: And that same resolution, as your Honor recalls, approved one or two bulletins at the same time.

Judge Allen: Yes.

Mr. Fly: Now, to answer your question further, Judge [fol. 1907] Gore, the subpoenaes call for, speaking broadly, for all of the resolutions pertaining to power, and I think all of those have been produced, and I don't think there have been a great many in addition to those which have been produced.

Mr. S. D. L. Jackson: May it please the Court, each of the memoranda or bulletins that appear on Complainants' Exhibit 923 show a notation at the bottom 'Approved by the Board of Directors'. I take it the Board of Directors can only take action by some formal method. Do I understand now that that notation is not correct, and that there is no approval?

Mr. Fly: No, my assertion was that that is correct, and those early bulletins were approved. I think you will find that the bulletins on which that approval is noted carry the Board resolutions right with them. That was at the time of the original organization of the water control committee, I believe.

Mr. S. D. L. Jackson: They are not in evidence.

Mr. Fly: Why, yes, they are.

Mr. S. D. L. Jackson: The resolutions?

Mr. Fly: You will find the resolution is in evidence at full length, setting up the—the resolution setting up the water control committee and approving the first one or two bulletins, and then the later resolutions setting up the water planning department and instructing how they shall operate.

Mr. S. D. L. Jackson: That is not what I am talking about. There are nine sheets on Complainants' Exhibit No. 923 which was handed to us by Mr. O'Brian here a day or two ago, after we had requested the Authority to produce. I think that came at the time that Mr. Karr was on the stand. Now, on those nine sheets there is a notation at the bottom, 'Approved by the Board of Directors'.

Mr. Fly: How many of them have that on them?

Mr. S. D. L. Jackson: Nine.

Mr. Fly: That is right.

Mr. S. D. L. Jackson: I would say those in Exhibit 923. Those in Exhibit 924, which show these bulletins subsequent to either June or July of 1937 bear no such notation.

Mr. Fly: That is correct.

Mr. S. D. L. Jackson: The later ones do not. The ones from June to July of last year, which are contained in [fol. 1908] Exhibit 924 do not bear any notation.

Mr. Fly: No, the Authority delegated to Professor Woodward authority to carry on the operations under general review by the Chief Engineer without Board action. Board action was not taken on those bulletins.

Mr. S. D. L. Jackson: Now, our subpoena calls for the resolutions of the Board of Directors.

Judge Allen: Your subpoena calls for minutes.

Mr. S. D. L. Jackson: That is right, and resolutions.

Judge Allen: The Court is talking about resolutions.

Mr. S. D. L. Jackson: Our subpoena did call for minutes, and we still urge that the subpoena, in calling for minutes, is one which we think we should be permitted to see—the minutes with respect to it, even though the minutes might consist of resolutions and some other material. But there has been nothing produced by the Authority in the way of Board action to show the accuracy or fallacy of this notation on the bottom of these exhibits, and as I understand counsel's statement there is none.

Mr. Fly: Your Honor, if I may have the dates with reference to the notations of Board approval here, and the exhibit number and the date, I will again check those. I don't know whether there are any formal resolutions on this or not. I will be glad to recheck them.

Judge Allen: Those were furnished by the Authority. If you will let Mr. Fly look at them, and get the dates, and check them.

Mr. Fly: Now, is this all?

Mr. S. D. L. Jackson: Also, with respect to the part of the subpoena referring to rule curves, do I understand now that there is no Board action approving any rule curve for any of these dams?

Mr. Fitts: That is correct, none at all. We checked that at the time we delivered you those Board resolutions. There is no Board resolution on the subject.

Mr. S. D. L. Jackson: Then this curve shown on Defendants' Exhibit No. 90 has never had Board approval?

Mr. Fitts: That is correct. The Board has taken no action with respect to the rule curves, or operating levels except that one resolution that you have, which is a different situation.

Judge Allen: That is the resolution authorizing operation in all of those matters?

Mr. Fitts: That is correct.

[fol. 1909] Judge Allen: By the electrical engineer and the water control head?

Mr. Fitts: Water control planning department.

Mr. S. D. L. Jackson: That is the resolution of June, 1936.

Mr. Fitts: Then, of course, there is a subsequent resolution, at the time of the general reorganization which created the water control planning department.

Judge Allen: I am talking of the resolution which incorporated by reference two water bulletins.

Mr. Fitts: That is right, that is the earlier of the two. That created the water control planning committee, and then came the reorganization.

* * * * * * *

Mr. S. D. L. Jackson: Now, in connection with this matter that we were discussing a moment ago, I notice that the defendants in producing their water control memoranda and bulletins did not produce water control bulletin No. 3, which is dated December 19, 1936, and which is set forth on one of the pages dated December 19, 1936 of the document that was marked Complainants' Exhibit for identification No. 910, that is this big book of reports of the defendants' stream flow operations, which was identified here some time ago.

Mr. Fly: I don't know, your Honor, I have not checked this particular document.

Mr. S. D. L. Jackson: Yes. If I might assist these gentlemen, they have in an exhibit, No. 923, they have a water control bulletin numbered 5, dated October 24, 1936, and their next one is water control bulletin, numbered 4, dated March 10, 1936. That is a gap of probably five months. And I now want to find out if this one dated December 19, 1936 is one of their water control bulletins?

Mr. Fly: Counsel has called my attention to a document in his possession entitled 'Bulletin' dated December 19, 1936. There is no signature or other heading on it, to indicate clearly from where it came, but I have the explanation

here from Professor Woodward. This was an advance notice of the general principles which would govern the operation of Wheeler reservoir during the winter. It was not issued as an official bulletin, and was not signed by the Committee. As a matter of fact, Wheeler was drawn down to 547, as shown by the record.

Judge Allen: Is Professor Woodward here?

[fol. 1910] Mr. Fly: He is not.

Mr. Fitts: We got that over the telephone. He is not here.

Judge Allen: I am just asking you whether you are willing to concede he would testify to that effect.

Mr. S. D. L. Jackson: I would want to cross examine Professor Woodward on that point, if your Honor please, from some material that we have, which I am perfectly willing at this time to state to the Court.

And if I might be permitted very briefly to do it. I will state that in a hearing before the Subcommittee of the Committee on Agriculture and Forestry, United States Senate,—I am not offering this in evidence, I appreciate the Court's ruling, but in a report, the Tennessee Valley Authority water control operations, January, 1937 flood, by J. H. Wilkerson, associate hydraulic engineer, a report was submitted, which stated 'The Committee on water control operations has issued three bulletins and one memorandum, setting forth general regulations for the control of water through reservoir operations'.

Now, the memorandum referred to in that report is dated December 19, 1936, and is the same memorandum that is in this volume. It says there that the Committee issued it for the control of water, and that was reported to Congress.

Mr. Fly: Mr. Wilkerson, who is Mr. Woodward's chief assistant,—I believe that is correct, isn't it? You are the assistant to Mr. Woodward, and you have to do with the issuance of these bulletins?

Mr. S. D. L. Jackson: Now, just a minute.

Mr. Fly: I am going to offer you a witness, if you will wait a minute.

Mr. S. D. L. Jackson: Let's have him sworn and put on the stand, if you are going to do that."

(Thereupon, Jackson H. Wilkerson was sworn and took the stand.)

[fol. 1911] "Mr. Fly: I assume this is voluntary testimony, but it will be limited to this one point.

Judge Allen: It will be limited to this one point, and the Court in determining the question which has arisen in the course of rebuttal——

Mr. Fly: There is no direct. I think he is your witness, as a matter of fact.

Judge Allen: Do you want to cross examine him?

Mr. S. D. L. Jackson: I want to ask him if he prepared this report. May I have it?

Judge Martin: What is your name?

The Witness: My name is Jackson H. Wilkerson.

Mr. S. D. L. Jackson: I take it that Mr. Wilkerson is offered for cross examination on this one particular point. Is that it?

Mr. Fly: It is for examination first. You wait, and see if he is hostile, and then ask to cross examine.

Judge Allen: If you wish to cross examine him you may. If not, the Court will examine him and determine whether——

Mr. S. D. L. Jackson: As a matter of fact, if the Court will just ask him, or desire to examine him—I have no desire to take this gentleman as my witness. I am perfectly willing to stand on their statement to Congress.

Judge Allen: Will someone give us the statement that was read here, the one on the card?

Mr. S. D. L. Jackson: The one that Mr. Fly just read?

Mr. Fly: The statement from Mr. Woodward, I just read it.

Judge Allen: Let's have that statement. May I have the card?"

(Statement read as follows:)

"Mr. Fly: Counsel has called my attention to a document in his possession entitled 'bulletin' dated December 19, 1936. There is no signature or other heading on it to indicate clearly from where it came, but I have the explanation here from Professor Woodward. This was an advance notice of the general principles which would govern the operation of Wheeler reservoir during the winter. It was not issued as an official bulletin and was not signed by the Committee. As a matter of fact, Wheeler was drawn down to 547 as shown by the record."

[fol. 1912] "Judge Allen: Now, is this the water control bulletin concerning which you have some question, the bulletin of December 19, 1936?

Mr. S. D. L. Jackson: That is the one that was not furnished under Exhibit No. 923 as part of Exhibit 923."

[fol. 1913] Examination by the Court:

I believe I recall this bulletin. My position with TVA is river forecaster, with a rating at present of hydraulic engineer. At the time that was issued, I was associate hydraulic engineer for the TVA. In the organization I operate under Mr. Fry, head of the hydraulic data division. Mr. Fry is under Mr. Woodward's division. In the course of my work I report practically daily river conditions and weather conditions and data to Mr. Woodward, or to Mr. Woodward's assistant, Mr. Bowden.

I am familiar with the bulletin of December 19, 1936. As to the conditions under which it was issued, the first time I saw this bulletin in substantially this form, Mr. Woodward handed it to me one day in his office and asked if I approved this method of operation, or concurred with it. I told him I disagreed in one thing, in that he had the rate of draw-down too slow, it was something like about the rate of slower than 2 feet per week. He reconsidered that and changed it to its present form and requested that I publish it with my daily river bulletin. I believe it was not issued as an official bulletin. As to what level Wheeler was drawn down in December at that time, I believe it was lowered to 553 and possibly lower. I am not sure about going lower at that time.

"Judge Allen: Is there anything you want to ask this particular witness, about this particular point?

Mr. S. D. L. Jackson: Would the Court interrogate as to this point, if he did not prepare this report to Congress, which stated that the committee on water control operations had issued three bulletins and one memorandum, and that the memorandum of December 19, is the memorandum referred to and described in this report.

Judge Allen: What document is that that you read that from?

[fol. 1914] Mr. S. D. L. Jackson: This is from the report of the hearings before the Subcommittee of the Committee on Agriculture and Forestry, United States Senate in the

report submitted to that Committee by the Tennessee Valley Authority.

Judge Allen: That covers all that the Court cares to ask.

Judge Martin: But counsel may examine him.

Judge Allen: If you want to ask him, you can ask him.

Mr. S. D. L. Jackson: As upon cross examination?

Mr. Fly: I don't know why you should make any point on that. Go ahead and get the information.

Mr. S. D. L. Jackson: I didn't call this gentleman.

Mr. Fly: All right, then, after clarifying the one point——

Mr. S. D. L. Jackson: I didn't call him, I don't call him as our witness.

Mr. Fly: Mr. Wilkerson, will you kindly explain to the Court the difference between the official bulletins which bore the number and the signature of Professor Woodward, and these daily river bulletins,—are they? Explain to the Court the difference in having it circulated in the manner in which it was in this case.

Mr. S. D. L. Jackson: Now, I object to interrogation by counsel.

Mr. Fly: Well, you raised this point. Don't you want it clarified?

Mr. S. D. L. Jackson: I want to find out——

Mr. Fly: All right, that is all.

Mr. S. D. L. Jackson: If that purported bulletin which we have is one of their official bulletins."

(The witness was excused.)

"Mr. Fly: If your Honor please, I have had the Board minutes checked regarding the notation of approval of the water control bulletins, and I find in all of the cases mentioned except one, and I have not been able to find that one notation, that there was a formal notation of Board approval. For example, here is the one on June 3, 1937, 'The Board unanimously approved water control bulletin No. 8, [fol. 1915] a true copy of which is labelled exhibit 637-S, as filed with the records of the Authority.' That simple notation occurs with all of them, and I will stipulate as to the one which I don't have, that is July 2nd, 1937, that a similar notation was made in the minutes. Bulletin No. 1 is not covered by these notations, but the Court will recall that when the bulletins themselves were introduced they

carried the resolutions, formal resolutions on the face of them.

Judge Allen: Now, do we understand that it is the professional statement of counsel for the Authority,—or it is our understanding, and are we right in understanding that all of the resolutions covering the matter asked for in the single remaining application for subpoena duces tecum have been produced?

Mr. Fly: That is correct, your Honor, and I might further state regarding that February report that there is no resolution on that. The Board never adopted that, and passed no resolution on it.

Judge Allen: The Court has ruled on that.

Mr. Fly: Mr. Jackson, are you going to offer these now, that you have got them?

Mr. S. D. L. Jackson: I want to take a look at them, if I may, before doing so. Do I understand these are accurate copies of the resolutions?

Mr. Fly: These are copies of the notations taken out of the minutes.

Mr. Fitts: The only thing on the subject.

Mr. S. D. L. Jackson: We have all of the notations on the minutes relating to these water control operations.

Mr. Fly: That is right.

Mr. Fitts: That is correct.

Mr. S. D. L. Jackson: Now, if I may for a minute——

Mr. Fitts: One missing date we were not able to find, but we are willing to agree the same notation——

Mr. S. D. L. Jackson: I am not going to agree as to what might be in the Board's minutes, not having been in gunshot of them during the progress of this trial. There may be a gap. I cannot stipulate it.

Judge Allen: The Court accepts the professional statement of counsel in reference to these matters as it has accepted the professional statement of counsel for the complainants on certain matters.

The application for subpoena duces tecum with reference to the minutes of the Board of Directors as to methods of operating Norris and Wheeler Dams, and all of the other [fol. 1916] matters included in paragraph one of that application, and as to the minutes of the Board of Directors prescribing levels of any of the reservoirs and all of the other matters contained in paragraph two of that application are denied, upon the ground that you have the official

action of the Board on these matters, and upon the further ground that this application was made during the rebuttal, and that it did not come sufficiently in advance to permit of compliance without delaying the trial.

Mr. S. D. L. Jackson: May we have our exception to the Court's ruling?

Judge Allen: You may have your exception.

Mr. S. D. L. Jackson: And may the application for subpoena duces tecum be marked or given the exhibit number, (Complainants' Exhibit 956) and appear in the record?

Mr. Fly: I would also ask, your Honor, that counsel's report to the Court that there were no such resolutions may be understood as a part of the record.

Judge Allen: That may be included in the record as a professional statement of counsel.

Judge Allen: The Court wishes to announce to counsel and to the litigants that, with whatever recess may be necessary and appropriate for supper, or at dawn or at breakfast, we will proceed until all of the evidence in this case is in today."

Counsel for complainants then offered in evidence and the Court received as Complainants' Exhibit 957, copies of resolutions of the Board of Directors of TVA, dated October 26, 1936, March 12, 1937, March 31, 1937, May 5, 1937, and June 3, 1937, furnished by the defendants dealing with the water control bulletins.

Counsel for complainants then offered and the Court received as Complainants' Exhibits 910-a, Water Control Bulletin No. 3 dated December 19, 1980, and 910-b, a sheet captioned "Tennessee Valley Authority Engineering Data Division, February 9, 1937, river stages and rainfall" taken from the document marked Complainants' Exhibit 910.

[fol. 1917] "Mr. Fly: At this time the Government desires to renew each and every one of its motions made heretofore for the dismissal of the case as to each and all of the complainants, as to each and all of the defendants. The Government at this time wishes, further, and does hereby further move for the dismissal of the case as to each and all of the complainants and as to each and all of the defendants, upon the ground that considering the record, the case as a whole, the complainants have failed to make out any cause of action.

Judge Allen: The Court will take the matter under advisement."

Here both sides rested the case and the Court adjourned at 3:45 P. M. to hear final argument at 9:00 A. M. the following day, January 15, 1938.

STATEMENTS RE RULINGS OF COURT

"Judge Allen: The Court has a statement for the record. Throughout the trial from November 15, 1937, through January 14, 1938, the Court has held daily conferences, sometimes several times a day, and even has held long conferences on Saturday and Sunday in chambers. The rulings made on the admission or rejection of evidence as well as on the admission of depositions and the issuance of subpoenas duces tecum are the rulings of the entire Court. The statements made from the bench, unless otherwise indicated in the record, were in general made after consultation with, and in all cases reflect the sentiment of the entire Court.

. . . . . .

Judge Allen: The Court desires to make a statement. In the statement made this morning by the Court, it was not meant to indicate that there was no difference in opinion among the members of the Court as to the scope or limitation of the evidence, but the full Court has concurred in the application of the conclusions reached on these matters."

CLERK'S COPY.

Vol. IV

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

SUPREME COURT OF THE UNITED STATES

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VOLUME IV.

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., MAY 9, 1938.

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*COMPLAINANTS' EXHIBIT No. 1

[fol. 1918] Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the 15th day of November, 1937, at ——— o'clock A. M., and bring with you the following documents and records, to wit:

(1) Minutes of each of the meetings of the Board of Directors of Tennessee Valley Authority, held on or about each of the dates hereinafter set forth, that contains any reference to the policies, activities, actions or enterprises of said Authority that involved, or were related to, or were in furtherance of the generation, transmission, distribution, or sale of electric energy by said Authority, to wit:

June 17,1933	January 19, 1934
June 26, 1933	March 17, 1934
July 11, 1933	March 30, 1934
July 30, 1933	April 13, 1934
August 5, 1933	May 20, 1934
August 10, 1933	June 30, 1934
August 24, 1933	July 17, 1934
August 25, 1933	July 27, 1934
September 13, 1933	September 18, 1934
September 14, 1933	October 9, 1934
September 18, 1933	November 21, 1934
September 21, 1933	November 20, 1935
September 29, 1933	November 27, 1935

* For convenience exhibits are printed in separate volumes of the Record; Appellants' Exhibits, Volumes 4 to 6; Appellees' Exhibits, Volume 7. For original exhibits such as maps and charts see volume "Reproductions of Certain Original Exhibits submitted by Appellants" and "Reproductions of Certain Original Exhibits submitted by Appellees".

COMPLAINANTS' EXHIBIT No. 1

[fol. 1919]

October 13, 1933	January 2, 1936
October 14, 1933	January 11, 1936
October 16, 1933	February 20, 1936
October 24, 1933	August 11, 1936
October 30, 1933	September 5, 1936
November 9, 1933	September 21, 1936
November 27, 1933	January 6, 1937
December 16, 1933	March 2, 1937
August 7, 1934	June 16, 1937
September 24, 1935	August 23, 1937
	September 14, 1937

and in addition to the foregoing, the minutes of any meeting or meetings of said Board of Directors of Tennessee Valley Authority containing any reference to any of the following subjects, to wit:

(a) The discussion, consideration, approval or adoption of a power policy;

(b) The discussion, consideration, approval or adoption of rates for the sale of electric energy at wholesale or retail to all classes of customers and including rates for firm, interruptable or secondary power;

(c) The discussion, consideration, approval or adoption of reports from or communications with the Federal Emergency Administration of Public Works having to do with the making or withholding of loans and grants for the construction of electric distribution or generating facilities by said Federal Emergency Administration of Public Works to the following municipalities, or any of them, to wit:

Decatur,	Alabama	Knoxville,	Tennessee
Sheffield,	"	Memphis,	"
Tuscumbia,	"	Newbern,	"
Courtland,	"	Paris,	"
Hartselle,	"	Somerville,	"
Muscle Shoals,	"	Jackson,	"
Russellville,	"	Fayetteville,	"
Guntersville,	"	Murfreesboro,	"
Tarrant City,	"	Lenoir City,	"
Bessemer,	"	Lewisburg,	"
Florence,	"	Columbia,	"
Starkville,	Mississippi	Chattanooga,	"
Okolona,	"		
Aberdeen,	"		

or the effect thereof upon the expansion of the sale of electric energy by Tennessee Valley Authority or upon the negotiations or efforts of Tennessee Valley Authority to acquire the generating, transmission, or distribution facilities of privately owned public utilities from October 1, 1933 to date;

(d) The discussion, consideration, approval or direction of the construction of any transmission, distribution or rural electric line in the states of Tennessee, Alabama, Kentucky, Georgia, Mississippi, North Carolina or Virginia or any of them;

[fol. 1920] (e) The discussion or approval of the assignment by Tennessee Valley Authority of its contract with Volunteer Portland Cement Company to the City of Knoxville, Tenn., in the year 1937;

(f) The discussion or approval of the contracts between Tennessee Valley Authority and Young and Rubicam, Inc., dated respectively April 11 and April 21, 1934, or the performance or termination thereof;

(g) The discussion or approval of the employment of George D. Munger as Sales Promotion Manager in March, 1934;

(h) The Authorization of the Office Manager of Tennessee Valley Authority to approve purchase requisitions for Electric Home and Farm Authority, Inc. in 1934 or thereafter;

(i) The discussion or consideration of reports concerning or communications from or to Rural Electrification Administration from May 11, 1935 to date, respecting the organization, financing or construction of lines for any rural electric cooperatives organized or to be organized under the laws of the states of Tennessee, Alabama, Kentucky, Georgia, or Mississippi, or any of them;

(j) The reports from or communications with National Power Policy Committee or any of the members or representatives thereof, from July 9, 1934, to date;

(k) The discussion, consideration, approval or authorization of any contract or contracts with any publicity or

public relations agent for the release and circulation of news items or articles concerning Tennessee Valley Authority or Electric Home and Farm Authority, Inc., from July 1, 1933 to date.

2. (Omitted.)

3. The contracts dated respectively April 11, 1934 and April 21, 1934, between Tennessee Valley Authority and Young and Rubicam, Inc.

4. A copy of all forms of letters, applications or subscription blanks, information or explanation sheets and contracts prepared or distributed by TVA or under its direction that described, related to or had to do with a so-called "Neighborhood Plan" for obtaining electric energy and all executed contracts relating thereto to which TVA or any of its agents or representatives was a party.

5. A copy of all forms of bulletins, circular letters or instructions or information sheets having to do with the method of operation, rates or policies of any municipality [fol. 1921] or cooperative association that was engaged in distributing and selling electric energy purchased from TVA sent or issued by TVA from or after April 1, 1934, to any municipality or cooperative association or any of the officers thereof.

6. The minutes, memoranda or notes or reports of all meetings held by TVA or any of its representatives with the managers or superintendents of the electric distribution systems or any municipality or cooperative association or any of them from April 1, 1934 to date, at which method of operation, rates or policies of any such distribution systems was discussed.

7. Correspondence between Tennessee Valley Authority, or certain of its representatives, and other persons, corporations, municipalities, political subdivisions or governmental agencies, or their representatives, having to do with the activities of said Authority in connection with the construction of dams or the generation, transmission, distribution or sale of electric energy or the creation of a market therefor or rates or costs thereof from July 1, 1933 to date, as follows:

COMPLAINANTS' EXHIBIT No. 1

Copy of questionnaire entitled "Questions for Power Users" sent by TVA to towns and cities or to civic organizations in the TVA area in August or September, 1933, and list of those to whom such questionnaires were sent.

Letter dated on or about August 7, 1933, from U. S. Senator Black of Alabama to TVA, re Wheeler Dam.

Copy of protest dated on or about August 23, 1933, to Federal Power Commission from TVA Director Lilienthal objecting to a granting of a license to Southern Industries & Utilities, Inc.

Copy of letter dated on or about August 24, 1933, from TVA to U. S. Senator Black, re Wheeler Dam.

Letter dated on or about September 8, 1933, from Senator Black to TVA, re construction of Wheeler Dam.

Telegram dated on or about September 22, 1933, from U. S. Senators Black and Bankhead of Alabama to TVA, re construction of Wheeler Dam.

Letter dated on or about October 16, 1933, from Harry Berry, Engineer of the Tennessee Public Works Board, to TVA or Director Lilienthal, and copy of reply thereto.

Copy of letter between the dates of October 16 and November 2, 1933, from TVA or Lilienthal to PWA or Administrator Ickes, mentioning letter from Harry Berry referred to above, and letter in reply thereto.

Telegram dated on or about December 4, 1933, from Glenn, Mayor of Florence, Ala., to TVA or Lilienthal, and reply thereto on or about December 5, 1933.

[fol. 1922] Copy of letter dated on or about December 7, 1933, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Copy of telegram dated on or about December 27, 1933, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Letter dated on or about January 4, 1934, from TVA (Lilienthal) to Mayor of Florence, Ala.

Copy of telegram dated on or about January 4, 1934, from Lilienthal to Sheffield and Tuscumbia, Ala., stating that PWA loans approved would be released.

Copy of letter dated on or about March 6, 1934, from Lee Glenn, Mayor of Florence, to Lilienthal.

Copy of letter dated on or about March 8, 1934, from Mayor Glenn to Lilienthal.

COMPLAINANTS' EXHIBIT No. 1

Copy of telegram dated on or about March 10, 1934, from Lilienthal to Lee Glenn, Mayor of Florence, Ala.

Letter dated on or about March 11, 1934, from Mayor Glenn to Lilienthal, together with enclosure therein.

Copies of letters or telegrams dated on or about March 13, 1934, from TVA to PWA or Ickes requesting appointment or describing the then status of negotiations for purchase by City of Knoxville of facilities of Tennessee Public Service Company.

Copy of letter dated on or about March 19, 1934, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Copy of letter dated on or about March 22, 1934, from TVA or Lilienthal to PWA or Harold Ickes, re negotiations for purchase of properties of Tennessee Public Service Company in and about Knoxville.

Copy of letter or letters dated on or before March 27, 1934, from TVA or Lilienthal to the President of the United States or Federal Trade Commission, requesting that an examination be made of the books and records and capitalization of Tennessee Public Service Company.

Copy of letter dated on or about May 20, 1934, from Lilienthal to Mayor W. W. Ramsey of Russellville, Ala., stating that Russellville will be using Muscle Shoals power in the near future.

Copy of letter dated on or about May 21, 1934, from TVA to Federal Power Commission.

Telegram dated on or about June 19, 1934, from W. L. Farr, Mayor of Tuscumbia, Ala., to TVA or Lilienthal.

[fol. 1923] Copy of telegram dated on or about June 20, 1934, from Lilienthal to Mayor Farr, of Tuscumbia, and copies thereof mailed to the Mayors of Sheffield and Florence, Ala.

Telegram dated on or about June 21, 1934, from Mayor Lee Glenn of Florence, Ala., to Lilienthal.

Telegram dated on or about June 27, 1934, from A. H. Carmichael to Lilienthal.

Copy of telegram dated on or about July 10, 1934, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Letter dated on or about October 5, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal in reference to applications for loans and grants or contracts with Bessemer and Tarrant City, Ala.

COMPLAINANTS' EXHIBIT No. 1

Copy of letter dated on or before October 15, 1934, from TVA (Lilienthal) to Mayor Overton of Memphis, relating to the possible purchase by TVA of Memphis Power & Light Company.

Letter dated on or about November 17, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal relating to TVA option to purchase Alabama Power Company properties in Alabama towns and copy of the reply thereto dated on or about November 22, 1934.

Letter dated on or about December 21, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal relating to Hartselle, Ala., and copy of reply thereto dated on or about December 28, 1934.

Copy of telegram from TVA dated between January 1 and January 15, 1935, to the Governor of Alabama, stating the terms and provisions of a proposed statute to be submitted to the legislature of Alabama.

Copy of circular letter dated on or about September 21, 1936 from TVA signed by B. S. Robinson entitled "Another Electrical Fair For Your Benefit".

Copy of letter dated on or about April 7, 1937, from E. W. Baughman, TVA Division Superintendent, to Mr. Wingo, Gibson County Agent.

Copy of letter dated on or about June 30, 1937, from Director H. A. Morgan to John N. Garner, President of the Senate.

Copy of letter dated on or about August 13, 1937, from Lilienthal to George R. Dempster, City Manager, Knoxville, Tenn.

Copy of letter dated on or about November 21, 1935, from the TVA Legal Department to Lenoir City in reference to assistance in defense of suit.

Copy of letter dated on or about February 21, 1936, from W. H. Halsey, Commercial Field Supervisor, to all cooperating dealers, distributors and wiring contractors.

[fol. 1924] Copy of letter dated on or about July 20, 1936, from TVA signed by J. M. Peavey, to K. T. Hutchinson, President, Middle Tennessee EMC.

Copy of letter dated August 27, 1937, from TVA to Tennessee PWA Administrator, probably Harry S. Berry or Kenneth Markwell, approving the plans of the City of Knoxville, Tenn., for an electric distribution system.

COMPLAINANTS' EXHIBIT No. 1

Copy of letter dated September 4, 1937, from Llewellyn Evans to the City Manager of the City of Knoxville, Tenn., (Dempster) approving the plans of said City for construction of an electric distribution system.

All letters and telegrams between TVA or any of its representatives and PWA or any of its representatives from and after July 1, 1933, relating to the applications of any of the cities or towns of Decatur, Sheffield, Tuscumbia, Courtland, Hartselle, Muscle Shoals, Russellville, Guntersville, Tarrant City, Bessemer and Florence, Alabama; Starkville, Okolona and Aberdeen, Mississippi; Knoxville, Memphis, Newbern, Paris, Somerville, Jackson, Fayetteville, Murfreesboro, Lenoir City, Lewisburg and Columbia, or Chattanooga, Tennessee, for federal loans and grants of funds from PWA for the construction of a municipal electric distribution system in any of said cities or towns.

All letters and telegrams between TVA or any of its representatives and PWA or any of its representatives from and after March 3, 1934, relating to negotiations for or attempts to purchase all or any part of the electric properties of Tennessee Public Service Company in and about Knoxville, Tenn., or the disposition to be made of the PWA allotment for the City of Knoxville for the construction of an electric distribution system.

All letters and telegrams between TVA or any of its representatives and National Power Policy Committee or any of its representatives or members, from July 9, 1934, to date.

All letters and telegrams between TVA or any of its representatives and Rural Electrification Administration or any of its representatives, from and after May 11, 1935, having to do with or discussing the organization, construction of lines, sale of electric energy to, or operating reports of any of the electric power cooperatives or electric membership associations in the states of Tennessee, Alabama, Mississippi, Georgia and Kentucky, or any of them.

A copy of all forms of letters, or other communications prepared by TVA or any of its representatives and de- [fol. 1925] livered or sent to any of the county agents engaged in cooperative extension work in agriculture and home economics in the states of Tennessee, Alabama, Mississippi, Georgia and Kentucky, or any of them, having to

do with or discussing the generation, transmission, distribution, sale or marketing of electric energy or benefits of farm or rural electrification or the creation of a consumers demand therefor, and any and all replies thereto or reports or memoranda received from TVA from any of said county agents.

8. (Omitted.)

9. (Omitted.)

10. All surveys made by Tennessee Valley Authority or by any individual, corporation, association or agency, either public or private, and furnished to Tennessee Valley Authority of any of the customers of any of the complainants, together with any estimates relating thereto showing the consumer demand, cost of service to or revenues from said customers or any of them.

11. Books and records of Tennessee Valley Authority showing (a) the number of employees in the Department of Electricity as of October 1, 1937, and (b) the headquarters or offices of each of said employees as of October 1, 1937.

12. The books and records of Tennessee Valley Authority showing the payments to the States of Alabama and Tennessee on account of the sale of electric power generated at any of the dams of Tennessee Valley Authority for each of the years 1933 to date, except as such information is contained in the Annual Reports of Tennessee Valley Authority for the fiscal years ending June 30, 1934, June 30, 1935 and June 30, 1936, respectively.

13. The books and records of Tennessee Valley Authority showing the amount expended in promotional and advertising expenses for the development of electric energy and sale for each of the years 1933 to date.

14. Copy of the outgoing news dispatch or press release dated on or about September 7 or 8, 1937, containing a summary of the power generation and gross revenue for the fiscal year ending June 30, 1937.

15. The books and records of TVA showing the payment of a fee, salary or wages to Walter E. Meyer on or before

December 1934 and the payment of the purchase price of 50,000 copies of the December 1934 issue of the Journal of National Education Association containing an article by said Walter E. Meyer entitled "The Tennessee Valley Looks To The Future."

[fol. 1926] (16) A copy of the speech given by David E. Lilienthal on or about November 17, 1933, before the Civitan and Shrine Clubs of Knoxville, Tennessee, or a copy of the report thereof or the portions or excerpts therefrom released, sent or handed out to newspapers at or about said date as a press release or otherwise.

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937. —— ——, By —— ——.

Let this writ issue. —— ——, Judge.

[fol. 1927] COMPLAINANTS' EXHIBIT No. 2

Stipulation Respecting Incorporation and Domestication of Complainant Companies

It is hereby stipulated and agreed by and between the parties hereto by their respective solicitors as follows:

1. That The Tennessee Electric Power Company is a public utility corporation organized and existing under the laws of the State of Maryland, is a citizen of said state, is duly qualified to carry on its business as a public utility in the States of Tennessee and Georgia, and is a resident of said states, having its principal office and place of business in the City of Chattanooga, Tennessee.

2. That Franklin Power & Light Company is a public utility corporation organized and existing under the laws of the State of Tennessee, is a resident and citizen of said state, duly authorized to carry on its business as a public utility therein, and has its principal office and place of business in the City of Franklin, Tennessee.

3. That Memphis Power & Light Company is a public utility corporation organized and existing under the laws of the State of New Jersey, is a citizen of said state, is

duly qualified to carry on its business as a public utility in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Memphis, Tennessee.

[fol. 1928] 4. That Southern Tennessee Power Company is a public utility corporation organized and existing under the laws of the State of Delaware, is a citizen of said state, is duly qualified to carry on its business as a public utility in the States of Alabama and Tennessee and is a resident of said states, having its principal office and place of business in the City of Chattanooga, Tennessee.

5. That Birmingham Electric Company is a public utility corporation organized and existing under the laws of the State of Alabama, is a citizen and resident of said state, duly authorized to carry on its business as a public utility therein and having its principal office and place of business in the City of Birmingham, Alabama.

6. That Mississippi Power Company is a public utility corporation organized and existing under the laws of the State of Maine, is a citizen of said state, is duly qualified to carry on its business as a public utility in the State of Mississippi, and is a resident of said state, having its principal office and place of business in the City of Gulfport, Mississippi.

7. That Appalachian Electric Power Company is a public utility corporation organized and existing under the laws of the State of Virginia, is a citizen of said state, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee and West Virginia, is a resident of said states, having its office and place of business in the City of Roanoke, Virginia.

8. That Carolina Power & Light Company is a public utility corporation organized and existing under the laws of the State of North Carolina, is a citizen of said state, is duly qualified to carry on its business as a public utility in the States of North Carolina and South Carolina, and is a resident of said states, having its principal office and place of business in the City of Raleigh, North Carolina.

9. That Tennessee Public Service Company is a public utility corporation organized and existing under the laws

of the State of Maine, is a citizen of said state, is duly [fol. 1929] qualified to carry on its business as a public utility in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Knoxville, Tennessee.

10. That Holston River Electric Company is a public utility corporation organized and existing under the laws of the State of Tennessee, is a resident and citizen of said state, duly authorized to carry on its business as a public utility therein and having its principal office and place of business in the City of Knoxville, Tennessee.

11. That Alabama Power Company is a public utility corporation organized and existing under the laws of the State of Alabama, is a resident and citizen of said state, duly authorized to carry on its business as a public utility therein and having its principal office and place of business in the City of Attalla, Alabama.

12. That Kentucky & West Virginia Power Company, Inc., is a public utility corporation organized and existing under the laws of the State of Kentucky, is a resident and citizen of said state, duly authorized to carry on its business as a public utility therein and having its principal office and place of business in the City of Ashland, Kentucky.

13. That Kingsport Utilities, Incorporated, is a public utility corporation organized and existing under the laws of the State of Virginia, is a citizen of said state, is duly qualified to carry on its business as a public utility in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Kingsport, Tennessee.

14. That Kentucky-Tennessee Light & Power Co. is a public utility corporation organized and existing under the laws of the State of Kentucky, is a citizen of said state, is duly qualified to carry on its business as a public utility in said state and in the State of Tennessee, and is a resident of said states, having its principal office and place of business in the City of Bowling Green, Kentucky.

[fol. 1930] 15. That West Tennessee Power & Light Company is a public utility corporation organized and existing

under the laws of the State of Florida, is a citizen of said state, is duly qualified to carry on its business as a public utility in the State of Tennessee, and is a resident of said state, having its principal office and place of business in the City of Jackson, Tennessee.

16. That Mississippi Power & Light Company, is a public utility corporation organized and existing under the laws of the State of Florida, is a citizen of said state, is duly qualified to carry on its business as a public utility in the State of Mississippi, and is a resident of said state, having its principal office and place of business in the City of Jackson, Mississippi.

17. That East Tennessee Light & Power Company, is a public utility corporation organized and existing under the laws of the State of Virginia, is a citizen of said state, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee and North Carolina, and is a resident of said states, having its principal office and place of business in the City of Bristol, Tennessee-Virginia.

18. That Tennessee Eastern Electric Company is a public utility corporation organized and existing under the laws of the State of Massachusetts, is a citizen of said state, is duly qualified to carry on its business as a public utility in the states of Virginia, Tennessee and North Carolina, and is a resident of said states, having its principal office and place of business in the City of Bristol, Tennessee-Virginia.

(Signed) Charles M. Seymour, Solicitor for Complainants. (Signed) John Lord O'Brian, Solicitor for Defendants.

[fol. 1931] COMPLAINANTS' EXHIBIT No. 3

Stipulation Respecting Franchises of Complainant Companies

It is hereby stipulated and agreed by and between the parties, by their respective solicitors, as follows:

1. That attached hereto and marked "Exhibit A" to this stipulation is a list designating, under the name of each of the complainant companies, certain counties and

incorporated towns and municipalities wherein each such company is now operating an electric power business and from which such company owns an existing franchise, license, or easement. Opposite each franchise is set out the year issued, the term thereof, and the name of the original grantee.

2. That each of such franchises, licenses, or easements owned by the respective complainants in the counties is by its language of one of the following three classes, and that each class includes some of the county franchises listed in "Exhibit A";

(a) Some purport to grant to the complainant claiming said franchise, license, or easement the right to occupy highways, streets, and alleys with poles, lines and other electrical facilities.

(b) Some purport to grant to the complainant claiming said franchise, license, or easement, for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the highways, streets, and alleys, with poles, lines and other electrical facilities;

(c) Some purport to grant to the complainant claiming said franchise, license, or easement the right to occupy the highways, streets, and alleys, with poles, lines, and other electrical facilities, and to engage in the business of selling and distributing electricity.

[fol. 1932] 3. That each of such franchises, licenses, or easements owned by the respective complainants in the municipalities is by its language of one of the following three classes, and that each class includes some of the municipal franchises listed in "Exhibit A":

(a) Some purport to grant to the complainant claiming said franchise, license, or easement the right to occupy highways, streets, and alleys, with poles, lines and other electrical facilities;

(b) Some purport to grant to the complainant claiming said franchise, license, or easement for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the highways, streets, and alleys, with poles, lines, and other electrical facilities;

(c) Some purport to grant to the complainant claiming said franchise, license, or easement the right to occupy the highways, streets, and alleys, with poles, lines, and other electrical facilities, and to engage in the business of selling and distributing electricity.

4. That attached hereto and marked "Exhibit B" to this stipulation is a list designating, under the name of each of the complainant companies, if any, wherein such company is now operating an electric power business and from which designated county or incorporated town or city the said company does not claim to now hold an existing or unexpired franchise.

5. Complainants and Defendants each hereby reserve their respective rights to offer evidence as to the breadth, scope and legal effect of any of the franchises, licenses, or easements enumerated in said "Exhibit A", hereto attached.

Complainants and defendants each hereby reserve their respective rights to offer evidence as to complainant's lawful right to continue to operate an electric power business in any of the localities enumerated in "Exhibit B", hereto attached.

6. That attached hereto and marked "Exhibit C" to this stipulation is a list of all pending suits in which any of the complainants herein are parties, involving in any way the validity, scope, or construction of any franchise claimed to be held by any one of the complainants herein, said list designating in each instance the names of the parties to the suit, the court wherein such case is pending, the name of the grantor, grantee, date and term of the franchise in [fol. 1933] question, and setting forth the contentions of the respective parties with reference thereto.

Each of the parties specifically reserves the right to object to the introduction of any of the facts stipulated above on the ground of relevancy or materiality.

Baker, Hostetler, Sidlo & Patterson, Frantz, McConnell & Seymour, Trabue, Hume & Armistead, by Charles M. Seymour, Solicitors for Complainants. James Lord O'Brian, Solicitors for Defendants.

Complainants' Exhibit No. 3

[fol. 1934]

Memorandum of Franchises of the Tennessee Electric Power Company

A. County Franchises

Tennessee:

County	Year Issued	Term	Original Grantee
1. Anderson	1923	Unlimited	The Tennessee Electric Power Company.
2. Bedford	1926	30 yrs.	Southern Cities Power Co.
3. Bledsoe	1926	20 yrs.	Southern Cities Power Co.
4. Blount	1903 & 1904	Unlimited	Rockford Electric Co.
5. Bradley	1911	Unlimited	Eastern Tennessee Power Co.
6. Campbell	1924	Unlimited	The Tennessee Electric Power Co.
7. Cannon	1926	Unlimited	The Tennessee Electric Power Co.
8. Carroll	1930	Unlimited	The Tennessee Electric Power Co.
9. Cheatham	1930	Unlimited	The Tennessee Electric Power Co.
10. Claiborne	1925	Unlimited	The Tennessee Electric Power Co.
11. Clay	1929	Unlimited	The Tennessee Electric Power Co.
12. Coffee	1928	25 yrs.	Southern Cities Power Co.
13. Cumberland	1923	30 yrs.	Cumberland Power Co.
14. Davidson	1924	Unlimited	The Tennessee Electric Power Co.
15. Decatur	1925	30 yrs.	Southern Cities Power Co.
16. Dekalb	1923	30 yrs.	Cumberland Power Co.
17. Dickson	1927	Unlimited	The Tennessee Electric Power Co.
18. Fentress	1929	Unlimited	The Tennessee Electric Power Co.
19. Franklin	1914	Unlimited	Stone Fort Power Co.
20. Giles	1924	30 yrs.	Southern Cities Power Co.
21. Grundy	1926	30 yrs.	Southern Cities Power Co.
22. Hamilton	1905	Unlimited	C. E. James & J. C. Guild
23. Hamilton	1909	Unlimited	Chattanooga Electric Co.
24. Hamilton	1920	Unlimited	Ooltewah Utilities Co.
25. Hardin	1925	30 yrs.	Southern Cities Power Co.

[fol. 1935]

26. Henderson	1925	30 yrs.	Southern Cities Power Co.
27. Hickman	1925	Unlimited	The Tennessee Electric Power Co.
28. Houston	1925	Unlimited	The Tennessee Electric Power Co.
29. Humphreys	1925	99 yrs.	Roy Carter, Trustee.
30. Jackson	1926	Unlimited	The Tennessee Electric Power Co.
31. Knox	1911	Unlimited	Eastern Tennessee Power Co.
32. Lawrence	1927	Unlimited	The Tennessee Electric Power Co.
33. Lewis	1925	Unlimited	The Tennessee Electric Power Co.
34. Lincoln	1925	30 yrs.	Southern Cities Power Co.
35. Loudon	1911	Unlimited	Eastern Tennessee Power Co.
36. McMinn	1911	Unlimited	Eastern Tennessee Power Co.
37. McNairy	1925	30 yrs.	Southern Cities Power Co.
38. Macon	1925	Unlimited	Smith County Electric Co.
39. Marion	1913	Unlimited	Tennessee Power Co.
40. Marshall	1924	30 yrs.	Public Light & Power Co.
41. Maury	1924	30 yrs.	Southern Cities Power Co.
42. Monroe	1937	20 yrs.	The Tennessee Electric Power Co.
43. Moore	1926	30 yrs.	Southern Cities Power Co.
44. Morgan	1924	Unlimited	The Tennessee Electric Power Co.
45. Overton	1923	35 yrs.	Cumberland Power Co.
46. Perry	1925	30 yrs.	Southern Cities Power Co.
47. Pickett	1929	Unlimited	The Tennessee Electric Power Co.
48. Polk	1911	Unlimited	Eastern Tennessee Power Co.
49. Putnam (One side of county roads only)	1923	30 yrs.	Cumberland Power Co.
50. Rhea	1925	30 yrs.	Southern Cities Power Co.
51. Roane	1925	30 yrs.	Southern Cities Power Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of the Tennessee Electric Power Company—Continued

County	Year Issued	Term	Original Grantee
52. Robertson Certain lines only.	1924	Unlimited	The Tennessee Electric Power Co.
53. Robertson Certain lines only.	1923	Unlimited	Davidson Light & Power Co.
54. Rutherford	1926	Unlimited	Murfreesboro Light & Power Co.
55. Scott	1925	Unlimited	The Tennessee Electric Power Co.
[fol. 1936]			
56. Sequatchie	1925	20 yrs.	Sequatchie Valley Power & Light Co.
57. Smith	1925	Unlimited	Smith County Electric Co.
58. Stewart Certain lines only	1926	Unlimited	The Tennessee Electric Power Co.
59. Sumner	1927	Unlimited	The Tennessee Electric Power Co.
60. Trousdale	1925	Unlimited	Smith County Electric Co.
61. Van Buren	1923	30 yrs.	Cumberland Power Co.
62. Warren	1925	Unlimited	The Tennessee Electric Power Co.
63. Wayne	1927	Unlimited	The Tennessee Electric Power Co.
64. White	1922-23	Unlimited	Cumberland Power Co.
65. Williamson	1927	Unlimited	The Tennessee Electric Power Co.
66. Wilson	1925	Unlimited	Smith County Electric Co.
Georgia:			
67. Catoosa	1916	Unlimited	Chattanooga Railway & Light Co.
68. Dade	1927	Unlimited	The Tennessee Electric Power Co.
69. Fannin	1926	Unlimited	Toccoa Electric Power Co.
70. Walker	1916	Unlimited	Chattanooga Railway & Light Co.

B. Municipal Franchises—

Tennessee:

Municipality	Year Issued	Term	Original Grantee
1. Adamsville	1926	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
2. Algood	1925	Unlimited	The Tennessee Electric Power Co.
3. Athens	1923	20 yrs.	The Tennessee Electric Power Co.
4. Baxter	1927	20 yrs.	The Tennessee Electric Power Co.
5. Bellbuckle	1926	30 yrs.	Southern Cities Power Co.
6. Benton	1925	Unlimited	The Tennessee Electric Power Co.
7. Bethel Springs	1927	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
8. Carthage	1916	25 yrs.	W. H. Eaves & Smith County Elec. Co.
9. Celina	1928	25 yrs.	Celina Electric Co.
10. Centerville	1925	Unlimited	The Tennessee Electric Power Co
[fol. 1937]			
11. Chapel Hill	1925	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
12. Charlotte	1928	25 yrs.	Suburban Power Co.
13. Chattanooga	1882	Unlimited	Brush Electric Light Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of the Tennessee Electric Power Company—Continued

Municipality	Year Issued	Term	Original Grantee
14. Chattanooga	1887	Unlimited	Hauss Electric Light & Power Co.
NOTE: Brush Electric Light Company and Hauss Electric Light & Power Company consolidated in 1888 to form the Chattanooga Electric Light Company.			
15. Cleveland (Naming all the streets in the city)	1929	20 yrs.	The Tennessee Electric Power Co.
16. Clinton	1925	25 yrs.	The Tennessee Electric Power Co.
17. Coal Creek	1924	20 yrs.	The Tennessee Electric Power Co.
18. Columbia	1888	Unlimited	Columbia Electric Light & Power Co.
19. Copperhill	1926 & 1931	Unlimited	Home Light and Power Co. and Toccoa Electric Power Co.
20. Cornersville	1909	Unlimited	Lewisburg Light & Power Co.
21. Cowan	1927	30 yrs. with privilege of renewal for 20 yrs.	Public Light & Power Co.
22. Crossville	1925	20 yrs.	The Tennessee Electric Power Co.
23. Cumberland City	1926	Unlimited	The Tennessee Electric Power Co.
24. Decaturville	1927	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
25. Decherd	1932	15 yrs.	The Tennessee Electric Power Co.
26. East Ridge	1925	Unlimited	The Tennessee Electric Power Co.
27. Englewood	1922	20 yrs.	The Tennessee Electric Power Co.
28. Erin	1925	Unlimited	The Tennessee Electric Power Co.
29. Fayetteville	1925	20 yrs.	Fayetteville Electric Power & Light Co.
30. Gainesboro	1926	Unlimited	The Tennessee Electric Power Co.
31. Gordonsville	1914	30 yrs.	F. A. Smith
32. Gra[illegible]sville	1925	Unlimited	The Tennessee Electric Power Co.
33. Greenbrier	1922	25 yrs.	Davidson Light & Power Co.
34. Harriman	1925	20 yrs.	The Tennessee Electric Power Co.
35. Hartsville	1916	25 yrs.	E. W. Rugg
36. Hickman	1925	Unlimited	The Tennessee Electric Power Co.
[fol. 1938]			
37. Hohenwald	1925	40 yrs.	The Tennessee Electric Power Co.
38. Jamestown	1929	20 yrs.	The Tennessee Electric Power Co.
39. Kingston	1916	30 yrs.	Public Light & Power Co.
40. LaFayette	1924	30 yrs.	Smith County Electric Co.
41. Lafollette	1937	5 yrs.	The Tennessee Electric Power Co.
42. Lenoir City	1927	15 yrs.	The Tennessee Electric Power Co.
43. Lewisburg	1908	Unlimited	Lewisburg Power & Light Co.
44. Lexington	1930	25 yrs.	The Tennessee Electric Power Co.
45. Linden	1925	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
46. Livingston	1916	25 yrs.	S. O. Kennedy
47. Loudon	1927	15 yrs.	The Tennessee Electric Power Co.
48. Lynchburg	1926	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
49. Lynnville	1919	20 yrs.	A. B. Sanders
50. Madisonville	1935	5 yrs.	The Tennessee Electric Power Co.
51. Manchester	1927	30 yrs.	Southern Cities Power Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of the Tennessee Electric Power Company—Continued

Municipality	Year Issued	Term	Original Grantee
52. McEwen	1925	25 yrs.	The Tennessee Electric Power Co.
53. McMinnville	1925	Unlimited	The Tennessee Electric Power Co.
54. Monterey	1925	20 yrs.	The Tennessee Electric Power Co.
55. Morrison	1925	Unlimited	The Tennessee Electric Power Co.
56. Murfreesboro	1925	Unlimited	The Tennessee Electric Power Co.
57. Nashville	1893	Unlimited	Cumberland Electric Light & Power Co.
58. Niota	1927	20 yrs.	The Tennessee Electric Power Co.
59. Oakdale	1925	Unlimited	The Tennessee Electric Power Co.
60. Oliver Springs	1925	Unlimited	The Tennessee Electric Power Co.
61. Oneida	1925	Unlimited	The Tennessee Electric Power Co.
62. Parsons	1927	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
63. Petersburg (Applies to only certain streets)	1925	20 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power C9.
[fol. 1939]			
Pikeville	1926	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
65. Pleasant Hill	1929	20 yrs.	The Tennessee Electric Power Co.
66. Richard City	1924	Unlimited	The Tennessee Electric Power Co.
67. Rockwood	1914	Unlimited	Rhea County Electric Light Co.
68. Savannah	1925	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
69. Scotts Hill	1935	20 yrs.	The Tennessee Electric Power Co.
70. Selmer	1926	20 yrs.	Southern Cities Power Co.
71. Shelbyville	1915	30 yrs.	Tennessee Valley Light & Power Co.
72. Smithville	1925	Unlimited	The Tennessee Electric Power Co.
73. Smyrna	1927	Unlimited	The Tennessee Electric Power Co.
74. South Pittsburg	1907 & 1914	Unlimited	D. A. Tate & South Pittsburgh Light Co.
75. Sparta	1922	20 yrs.	A. J. Dyer & Cumberland Power Co.
76. Spring Hill	1923	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
77. Sweetwater	1911	Unlimited	Eastern Tennessee Power Co.
78. Tellico Plains	1923	20 yrs.	The Tennessee Electric Power Co.
79. Viola	1926	30 yrs. with privilege of renewal for 20 yrs.	Southern Cities Power Co.
80. Wartrace	1931	15 yrs.	The Tennessee Electric Power Co.
81. Watertown	1934	5 yrs.	The Tennessee Electric Power Co.
82. Waverly	1925	50 yrs.	The Tennessee Electric Power Co.
83. Westmoreland	1927	Unlimited	The Tennessee Electric Power Co.
84. White Bluff	1927	Unlimited	The Tennessee Electric Power Co.
85. White House	1925	Unlimited	The Tennessee Electric Power Co.
86. Winchester	1914	30 yrs.	Tennessee Valley Light & Power Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of the Tennessee Electric Power Company—Coninued

Municipality	Year Issued	Term	Original Grantee
87. Woodbury	1926	Unlimited	The Tennessee Electric Power Co.

[fol. 1940]

Georgia			
88. Blue Ridge	1927	20 yrs.	Toccoa Electric Power Co.
89. Mineral Bluff	1926	Unlimited	Toccoa Electric Power Co.
90. Morganton	1926	Unlimited	Toccoa Electric Power Co.
91. McCaysville	1925	20 yrs.	Toccoa Power Co.

[fol. 1941]

Memorandum of Franchises of Franklin Power & Light Company

A. County Franchises—Tennessee:

County	Date Issued	Term	Original Grantee
1. Williamson	10- 7-29	Unlimited	Franklin Power & Light Company

B. Municipal Franchises—Tennessee:

Municipality	Date Issued	Term	Original Grantee
2. Franklin	6-24-29	10 years from 8-4-29	Franklin Power & Light Company
3. Franklin (Amends Ordinance of 6-24-29)	9-26-29	10 years from 8-4-29	Franklin Power & Light Company
4. Franklin (Amends Ordinance of 6-24-29)	3- 7-34	20 years from 8-4-29	Franklin Power & Light Company

[fol. 1942]

Memorandum of Franchises of Memphis Power & Light Company

Municipal Franchises—State of Tennessee:

Municipality	Year Issued	Term	Original Grantees, Its Successors and Assigns
1. Arlington	1925	30 Years	Memphis Power & Light Co.
2. Bartlett	1925	30 Years	Memphis Power & Light Co.
3. Collierville	1925	30 Years	Memphis Power & Light Co.
4. Germantown	1927	30 Years	Memphis Power & Light Co.
5. Memphis	1922	30 Years	Memphis Power & Light Co.
6. Millington	1925	30 Years	Memphis Power & Light Co.

Complainants' Exhibit No. 3

[fol. 1943]

Memorandum of Franchises of Birmingham Electric Company

County Franchises—Alabama:

County	Date Issued	Term	Original Grantee
1. Jefferson	7-30-12	Unlimited	Birmingham Railway, Light & Power Compnay

Municipal Franchises—Alabama:

Municipality	Date Issued	Term	Original Grantee
2. Bessemer	4-15-90	Unlimited	Bessemer Electric Company
3. Bessemer	11-12-01	Unlimited	Birmingham Railway, Light & Power Company
4. Birmingham	6-19-01	Unlimited	Birmingham Railway, Light & Power Company
5. Brighton	1- 5-06	Unlimited	Birmingham Railway, Light & Power Company
6. Fairfield	1-21-29	30 years	Birmingham Electric Company
7. Irondale	7- 1-24	30 years	Birmingham Electric Company
8. Jonesboro	8-21-06	Unlimited	Birmingham Railway, Light & Power Company
9. Lipscomb	7-18-12	Unlimited	Birmingham Railway, Light & Power Company
10. Tarrant City	8-19-21	Unlimited	Birmingham Railway, Light & Power Company

[fol. 1944]

Memorandum of Franchises of Mississippi Power Company

Municipal Franchises—State of Mississippi:

Municipality	Year Issued	Term	Original Grantee, Its Successors and Assigns
1. Aberdeen	1926	25 years	Mississippi Power Company
2. Ackerman	1925	25 years	Mississippi Power Company
3. Artesia	1930	25 years	Mississippi Power Company
4. Bay Springs	1926	25 years	City State Investment Co.
5. Ballefontaine	1930	25 years	Mississippi Power Company
6. Brooksville	1926	25 years	Mississippi Power Company
7. Calhoun City	1930	25 years	Mississippi Power Company
8. Chunky	1931	25 years	Mississippi Power Company
9. Columbus	1902	99 years	Columbus Light & Power Co.
10. Crawford	1926	25 years	Mississippi Power Company
11. Decatur	1930	25 years	Mississippi Power Company
12. DeKalb	1930	25 years	Mississippi Power Company
13. Derma	1930	25 years	Mississippi Power Company
14. DeSoto	1928	25 years	Mississippi Power Company
15. Ellisville	1924	25 years	Laurel Light & Railway Co.
16. Enterprise	1926	25 years	Mississippi Power Company
17. Eupora	1930	25 years	Mississippi Power Company
18. Forest	1926	25 years	General Utilities Company
19. French Camps	1930	25 years	Mississippi Power Company
20. Heidelberg	1927	25 years	Mississippi Power Company
21. Hickory	1930	25 years	Mississippi Power Company
22. Houston	1925	25 years	Mississippi Power Company
23. Lake	1930	25 years	Mississippi Power Company

[fol. 1945]

24. Laurel	1924	25 years	Laurel Light & Railway Co.
25. Lena	1931	25 years	Mississippi Power Company
26. Longview	1929	25 years	Mississippi Power Company

Complainants' Exhibit No. 3

Memorandum of Franchises of Mississippi Power Company—Continued

Municipality	Year Issued	Term	Original Grantee, Its Successors and Assigns
27. Louin	1930	25 years	Mississippi Power Company
28. Louisville	1925	25 years	Mississippi Power Company
29. Maben	1930	25 years	Mississippi Power Company
30. Macon	1929	25 years	Mississippi Power Company
31. Mathiston	1930	25 years	Mississippi Power Company
32. Meridian	1900	50 years	Meridian Street Railway & Power Co.
33. Montrose	1928	25 years	Mississippi Utilities Company
34. Moselle	1928	25 years	Mississippi Power Company
35. New Houlka	1930	25 years	Mississippi Power Company
36. Newton	1927	25 years	Inland Utilities Company
37. Noxapater	1927	25 years	Mississippi Power Company
38. Pachuta	1930	25 years	Mississippi Power Company
39. Pheba	1930	25 years	Mississippi Power Company
40. Philadelphia	1925	25 years	Mississippi Power Company
41. Prairie	1927	25 years	Mississippi Power Company
42. Quitman	1930	25 years	Mississippi Utilities Company
43. Sandersville	1927	25 years	Mississippi Power Company
44. Scooba	1930	25 years	Mississippi Power Company
45. Seminary	1930	25 years	Mississippi Power Company
46. Shubuta	1927	25 years	Mississippi Power Company
47. Shuqualak	1930	25 years	Mississippi Power Company
48. Slate Springs	1928	25 years	Mississippi Power Company
49. Soso	1928	25 years	Mississippi Power Company
50. Starkville	1925	25 years	Mississippi Power Company
51. Sturgis	1926	25 years	Mississippi Power Company

[fol. 1946]

52. Taylorsville	1930	25 years	Mississippi Power Company
53. Union	1928	25 years	Inland Utilities Company
54. Vardeman	1930	25 years	Mississippi Power Company
55. Walnut Grove	1930	25 years	Mississippi Power Company
56. Walthall	1930	25 years	Mississippi Power Company
57. Waynesboro	1927	25 years	Robert Golden
58. Weir	1928	25 years	Mississippi Power Company
59. West Point	1924	25 years	Mississippi Power & Light Company

[fol. 1947]

Memorandum of Franchises of Appalachian Electric Power Company

A. County Franchises—Virginia:

County	Date Issued	Term	Original Grantee
1. Bedford	Feb. 25, 1924	Unlimited	Roanoke Ry. & Elec. Co.
2. Bland	Apr. 22, 1912	"	Appalachian Power Co.
3. Botetourt	Feb. 11, 1924	"	Roanoke Ry. & Elec. Co.
4. Buchanan	Nov. 12, 1923	"	Appalachian Power Co.
5. Carroll	Apr. 13, 1912	"	" " "
6. Craig	Jan. 7, 1929	"	Appalachian Elec. Pr. Co.
7. Dickenson	Mar. 10, 1931	"	" " " "
8. Floyd	Jan. 14, 1936	"	" " " "
9. Franklin	Jan. 20, 1930	"	" " " "
10. Giles	*June 6, 1922	"	Appalachian Power Co.
11. "	*Apr. 3, 1923	"	" " "
12. Grayson	June 17, 1912	"	" " "

* Franchises thus indicated apply to a portion only of the county or municipality, being limited to described roads, streets, routes or districts.

Complainants' Exhibit No. 3

Memorandum of Franchises of Appalachian Electric Power Company—Continued

	County	Date Issued	Term	Original Grantee
13.	Henry	Feb. 23, 1925	Unlimited	Appalachian Power Co.
14.	Montgomery	Mar. 26, 1912	"	" " "
15.	"	May 27, 1913	"	" " "
16.	Pittsylvania	*May 4, 1925	"	New River Development Co.
17.	Pulaski	*Nov. 18, 1911	"	Appalachian Power Co.
18.	"	*Aug. 17, 1912	"	" " "
19.	"	*Nov. 15, 1913	"	" " "
20.	Roanoke	Mar. 16, 1925	"	Central Va. Power Co.
21.	Russell	Jan. 2, 1917	"	Appalachian Power Co.
22.	Smyth	June 17, 1912	"	" " "
23.	Tazewell	Dec. 11, 1911	"	" " "
24.	Wythe	*Dec. 4, 1911	"	" " "
25.	"	*Mar. 2, 1914	"	D. N. & L. G. Phillippi, doing business as Rural Retreat Lt. Co.
26.	"	*Aug. 8, 1916	"	Appalachian Power Co.
27.	"	*June 3, 1918	"	" " "
28.	"	*July 1, 1918	"	" " "
[fol. 1948]				
29.	"	*Nov. 1, 1920	"	" " "
30.	"	*Mar. 7, 1921	"	" " "
31.	"	*Apr. 4, 1921	"	" " "
32.	"	*Nov. 7, 1923	"	Rural Retreat Pr. Co. & Transferee Appalachian Power Co.

B. Municipal Franchises—Virginia:

	Municipality	Date Issued	Term	Original Grantee
1.	Bluefield	Apr. 16, 1934	15 years	Appalachian Elec. Pr. Co.
2.	Boone Mill	Mar. 26, 1929	30 "	" " " "
3.	Cambria	July 7, 1914	30 "	Appalachian Power Co.
4.	Cedar Bluff	Nov. 27, 1928	30 "	Appalachian Elec. Pr. Co.
5.	Chilhowie	Apr. 16, 1917	30 "	Chilhowie Lt. & Pr. Co.
6.	Christiansburg	Mar. 11, 1913	30 "	Appalachian Power Co.
7.	Clintwood	Feb. 5, 1917	30 "	Clintwood Lt. & Pr. Co.
8.	Dublin	Nov. 27, 1912	30 "	Appalachian Power Co.
9.	Fincastle	Sept. 24, 1925	30 "	Roanoke Ry. & Elec. Co.
10.	Floyd	Feb. 26, 1937	30 "	Appalachian Elec. Pr. Co.
11.	Fries	Nov. 9, 1936	30 "	" " " "
12.	Galax	Apr. 27, 1912	30 "	Appalachian Power Co.
13.	Gate City	Jan. 20, 1930	30 "	Appalachian Elec. Pr. Co.
14.	Grundy	Dec. 10, 1936	30 "	" " " "
15.	Honaker	Oct. 7, 1935	30 "	" " " "
16.	Independence	July 6, 1931	30 "	" " " "
17.	Lebanon	Mar. 5, 1917	30 "	Lebanon Light Co.
18.	Marion	Apr. 22, 1912	30 "	Appalachian Power Co.
19.	Narrows	May 14, 1937	30 "	Appalachian Elec. Pr. Co.
20.	New Castle	Dec. 4, 1928	30 "	" " " "
21.	No. Tazewell	Nov. 29, 1929	30 "	" " " "
22.	Pearisburg	Feb. 20, 1915	30 "	A. A. Miller
23.	Pocahontas	June 14, 1932	30 "	Appalachian Elec. Pr. Co.
[fol. 1949]				
24.	Pulaski	Mar. 27, 1911	30 years	New River Development Co.
25.	Richlands	*Mar. 10, 1927	yr. to yr.	Appalachian Elec. Pr. Co.

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Complainants' Exhibit No. 3

Memorandum of Franchises of Appalachian Electric Power Company—Franchises—Virginia—Continued

Municipality	Date Issued	Term	Original Grantee
26. Ridgeway	June 18, 1930	30 years	Appalachian Elec. Pr. Co.
27. Roanoke	Mar. 15, 1889	Unlimited	Roanoke Elec. Lt. & Pr. Co.
28. Rocky Mount	May 10, 1937	30 years	Appalachian Elec. Pr. Co.
29. Rural Retreat	Aug. 6, 1925	30 "	Appalachian Power Co.
30. Salem	Aug. 18, 1916	30 "	Roanoke Ry. & Elec. Co.
31. Saltville	Dec. 15, 1930	30 "	Saltville Elec. Co.
32. Tazewell	Oct. 3, 1924	25 "	Tazewell Elec. Lt. & Pr. Co.
33. Vinton	Apr. 30, 1910	30 "	Roanoke Ry. & Elec. Co.
34. Wytheville	Feb. 26, 1924	30 "	Appalachian Power Co.

C. County Franchises—West Virginia:

County	Date Issued	Term	Original Grantee
1. Boone	Aug. 1, 1932	50 years	Appalachian Elec. Pr. Co.
2. Cabell	Mar. 23, 1921	50 "	Consolidated Lt. Ht. & Pr. Co.
3. Fayette	Oct. 8, 1930	50 "	Appalachian Elec. Pr. Co.
4. Greenbrier	*Mar. 5, 1929	50 "	" " " "
5. "	*May 7, 1929	50 "	" " " "
6. "	*Mar. 1, 1932	50 "	" " " "
7. Jackson	Jan. 9, 1922	50 "	Clare Hood
8. Kanawha	Feb. 18, 1924	50 "	Kanawha Valley Power Co.
9. Logan	Feb. 3, 1932	50 "	Appalachian Elec. Pr. Co.
10. Mason	Oct. 18, 1924	50 "	Interstate Power Co.
11. Mercer	Nov. 18, 1911	50 "	Appalachian Power Co.
12. Mingo	July 5, 1922	50 "	Williamson Electric Co.
13. Nicholas	June 6, 1932	50 "	Appalachian Elec. Pr. Co.
14. Putnam	Oct. 7, 1924	50 "	Kanawha Valley Pr. Co.
15. Raleigh	May 1, 1928	50 "	Appalachian Elec. Pr. Co.
16. Wayne	Sept. 2, 1929	50 "	" " " "

[fol. 1950]

Municipal Franchises—West Virginia:

Municipality	Date Issued	Term	Original Grantee
1. Ansted	Dec. 1, 1930	50 years	Appalachian Elec. Pr. Co.
2. Athens	Nov. 14, 1916	40 "	John Evans
3. Barboursville	July 14, 1924	50 "	Consolidated Pr. & Lt. Co.
4. Beckley	Dec. 3, 1904	50 "	Beckley El. Lt. & Pr. Co.
5. Bluefield	Apr. 16, 1906	47 "	Bluestone Traction Co.
6. Bramwell	July 8, 1914	30 "	Appalachian Power Co.
7. Buffalo	June 11, 1928	50 "	Appalachian Elec. Pr. Co.
8. Cedar Grove	Aug. 16, 1927	50 "	" " " "
9. Ceredo	Sept. 14, 1936	10 "	" " " "
10. Charleston	Feb. 17, 1905	40 "	Kanawha Water & Lt. Co.
11. Clendenin	July 3, 1924	50 "	W. Va. Water & Elec. Co.
12. Danville	May 20, 1922	50 "	Ky. & W. Va. Pr. Co.
13. Dunbar	Feb. 6, 1922	50 "	Dunbar Land Company
14. East Bank	July 8, 1924	50 "	Montgomery Utilities Co.
15. Fayetteville	June 16, 1909	50 "	R. H. Dickinson
16. Gilbert	Jan. 29, 1926	50 "	Ky. & W. Va. Pr. Co.
17. Glasgow	June 14, 1927	50 "	Appalachian Elec. Pr. Co.
18. Huntington	Feb. 1, 1909	50 "	Consolidated Lt. & Ry. Co.
19. Central City (Huntington)	Nov. 22, 1905	40 "	" " " "
20. Kenova	May 18, 1912	30 "	" Lt. Ht. & Pr. Co.
21. Kermit	Apr. 17, 1923	50 "	Ky. & W. Va. Pr. Co.

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Complainants' Exhibit No. 3

Memorandum of Franchises of Appalachian Electric Power Company—Continued

Municipality	Date Issued	Term	Original Grantee
22. Keystone	June 12, 1913	30 "	Appalachian Power Co.
23. Leon	June 12, 1928	50 "	Appalachian Elec. Pr. Co.
24. Lester	Oct. 17, 1927	50 "	" " " "
25. Logan	Feb. 20, 1911	50 "	Logan Electric Co.
26. Mabscott	Dec. 9, 1929	50 "	Consumers Domestic Ser. Co.
27. Madison	Mar. 25, 1922	50 "	Ky. & W. Va. Pr. Co.
28. Man	Oct. 28, 1921	50 "	Man Power & Lt. Co.
29. Marmet	Aug. 5, 1924	50 "	W. Va. Water & Elec. Co.
30. Matewan	Nov. 15, 1911	50 "	G. T. Blankenship

[fol. 1951]

31. Matoaka	Jan. 21, 1911	50 years	Matoaka Elec. Pr. Co.
32. Meadow Bridge	May 5, 1930	50 "	Appalachian Elec. Pr. Co.
33. Milton	Sept. 30, 1924	50 "	Consolidated Pr. & Lt. Co.
34. Montgomery	Jan. 30, 1914	50 "	Montgomery Utilities Co.
35. Mt. Hope	Oct. 11, 1920	50 "	Sugar Cr. Coal & Coke Co.
36. Oak Hill	July 5, 1909	50 "	J. P. Staton
37. Oakvale	Jan. 7, 1929	30 "	Appalachian Elec. Pr. Co.
38. Peterstown	Jan. 24, 1931	50 "	Rich Cr.-Peterstown Pr. Co.
39. Pineville	July 7, 1925	50 "	Pineville Power Co.
40. Pratt	Apr. 17, 1924	50 "	Montgomery Utilities Co.
41. Princeton	Feb. 12, 1907	50 "	A. M. Sutton
42. Ripley	Mar. 2, 1937	40 "	Appalachian Elec. Pr. Co.
43. So. Charleston	Apr. 14, 1919	25 "	So. Charleston Util. Co.
44. St. Albans	July 6, 1936	20 "	Appalachian Elec. Pr. Co.
45. Thurmond	Apr. 9, 1929	50 "	" " " "
46. Wayne	Dec. 3, 1928	50 "	" " " "
47. Welch	Apr. 7, 1902	50 "	D. J. Howell
48. Whitesville	Feb. 2, 1928	50 "	Appalachian Elec. Pr. Co.
49. Winfield	Oct. 6, 1924	50 "	Kanawha Valley Pr. Co.
50. Williamson	Oct. 5, 1903	50 "	Mingo Light & Ice Co.

[fol. 1952]

Memorandum of Franchises of Carolina Power & Light Company

A. Municipal Franchises in the Company's Western Division:

Municipality	Year Issued	Term	Original Grantee Its Successors and Assigns
1. West Asheville, N. C.	1917	60 years	Asheville Power & Light Co.
2. Asheville, N. C.	1892	Unlimited	West Asheville Improvement Co.
3. Asheville, N. C.	1899	30 years	North Carolina Electrical Power Co.
4. Asheville, N. C. (Amending 1899 franchise)	1911	30 years (from October 1, 1911)	
5. Biltmore Forest, N. C.	1936	60 years	Carolina Power & Light Company
6. Black Mountain, N. C.	1924	60 years	Frank Silliman, Jr.
7. Canton, N. C.	1924	60 years	Frank Silliman, Jr.
8. Clyde, N. C.	1924	60 years	Frank Silliman, Jr.
9. Hazlewood, N. C.	1926	60 years	Carolina Power & Light Company
10. Hot Springs, N. C.	1926	60 years	Carolina Power & Light Company
11. Kenilworth, N. C.	1917	60 years	Asheville Power & Light Company
12. Marshall, N. C.	1910	30 years	North Carolina Electrical Power Co.
13. Spruce Pine, N. C.	1926	60 years	Carolina Power & Light Company
14. Weaverville, N. C.	1925	60 years	North Carolina Electrical Power Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of Carolina Power & Light Company—Continued

B. Municipal Franchises in Company's Eastern Division:

Municipality	Year Issued	Term	Original Grantee Its Successors and Assigns
15. Aberdeen, N. C.	1924	60 years	Carolina Power Company
16. Ansonville, N. C.	1928	60 years	Carolina Power & Light Company
17. Asheboro, N. C.	1924	60 years	Carolina Power Company
18. Bennettsville, S. C.	1930	30 years	Carolina Power & Light Company
19. Bethune, S. C.	1927	60 years	Carolina Power & Light Company
20. Biscoe, N. C.	1924	60 years	Carolina Power Company
21. Bishopville, S. C.	1919	60 years	Palmetto Power & Light Company
22. Blaney, S. C.	1927	60 years	Carolina Power & Light Company
23. Bonlee, N. C.	1924	60 years	Carolina Power Company
24. Camden, S. C.	1922	60 years	Palmetto Power & Light Company
25. Candor, N. C.	1924	60 years	Carolina Power Company
26. Carthage, N. C.	1924	60 years	Carolina Power Company
27. Cheraw, S. C.	1912	60 years	Yadkin River Power Company
28. Chesterfield, S. C.	1925	60 years	Yadkin River Power Company
29. Clio, S. C.	1926	60 years	Carolina Power & Light Company
[fol. 1953]			
30. Darlington, S. C.	1916	60 years	Carolina Central Electric Company
31. Dovesville, S. C.	1926	60 years	Carolina Power & Light Company
32. Ellerbe, N. C.	1924	60 years	Carolina Power Company
33. Elliott, S. C.	1926	60 years	Carolina Power & Light Company
34. Florence, S. C.	1912	60 years	Florence Electric & Utility Co.
35. Franklinville, N. C.	1924	60 years	Carolina Power Company
36. Gibson, N. C.	1930	60 years	Carolina Power & Light Company
37. Hamlet, N. C.	1911	60 years	Yadkin River Power Company
38. Hartsville, S. C.	1920	60 years	Palmetto Power & Light Company
39. Hemp, N. C.	1935	60 years	Carolina Power & Light Company
40. Hoffman, N. C.	1928	60 years	Carolina Power & Light Company
41. Jefferson, S. C.	1925	60 years	Yadkin River Power Company
42. LaMar, S. C.	1926	60 years	Carolina Power & Light Company
43. Laurinburg, N. C.	1925	60 years	Yadkin River Power Company
44. Liberty, N. C.	1924	60 years	Carolina Power Company
45. Lilesville, N. C.	1925	60 years	Yadkin River Power Company
46. Lynchburg, S. C.	1926	60 years	Carolina Power & Light Company
47. Manning, S. C.	1927	60 years	Carolina Power & Light Company
48. Mayesville, S. C.	1926	60 years	Carolina Power & Light Company
49. McBee, S. C.	1927	60 years	Carolina Power & Light Company
50. McColl, S. C.	1921	60 years	Palmetto Power & Light Company
51. Morven, N. C.	1924	60 years	Yadkin River Power Company
52. Mount Croghen, S. C.	1925	60 years	Yadkin River Power Company
53. Mount Gilead, N. C.	1924	60 years	Carolina Power Company
54. Olanta, S. C.	1926	60 years	Carolina Power & Light Company
55. Pageland, S. C.	1925	60 years	Yadkin River Power Company
56. Paxville, S. C.	1929	60 years	Carolina Power & Light Company
57. Peachland, N. C.	1927	60 years	Carolina Power & Light Company
58. Pine Bluff, N. C.	1924	60 years	Carolina Power Company
59. Pinewood, S. C.	1929	60 years	Carolina Power & Light Company
60. Polkton, N. C.	1927	60 years	Carolina Power & Light Company
61. Ramseur, N. C.	1924	60 years	Carolina Power Company
62. Rockingham, N. C.	1911	60 years	Yadkin River Power Company
63. Ruby, S. C.	1925	60 years	Yadkin River Power Company
64. Seagrove, N. C.	1927	60 years	Carolina Power & Light Company
65. Siler City, N. C.	1924	60 years	Carolina Power Company
[fol. 1954]			
66. Society Hill, S. C.	1926	60 years	Carolina Power & Light Company
67. Southern Pines, N. C.	1924	60 years	Carolina Power Company

Complainants' Exhibit No. 3

Memorandum of Franchises of Carolina Power & Light Company—Continued

Municipality	Year Issued	Term	Original Grantee Its Successors and Assigns
68. Staley, N. C.	1924	60 years	Carolina Power Company
69. Star, N. C.	1924	60 years	Carolina Power Company
70. Summerton, S. C.	1927	60 years	Carolina Power & Light Company
71. Sumter, S. C.	1926	60 years	Carolina Power & Light Company
72. Tatum, S. C.	1925	60 years	Yadkin River Power Company
73. Timmonsville, S. C.	1916	60 years	Carolina Central Electric Company
74. Troy, N. C.	1924	60 years	Carolina Power Company
75. Wadesboro, N. C.	1912	60 years	Yadkin River Power Company
76. Patrick, S. C.	1937	Indeterminate	Carolina Power & Light Company
77. Turbeville, S. C.	1935	Indeterminate	Carolina Power & Light Company

[fol. 1955]

Memorandum of Franchises of Tennessee Public Service Company

A. County Franchises—State of Tennessee:

County	Year Issued	Term	Original Grantees, Its Successors and Assigns
1. Cocke	1924	Unlimited	Newport Mill Co.
2. Grainger	1932	Unlimited	Tennessee Public Service Co.
3. Jefferson	1923	Unlimited	The Tennessee Electric Power Co.
4. Knox	1912	Unlimited	Knoxville Railway & Light Co.
5. Sevier	1929	Unlimited	Tennessee Public Service Co.
6. Union	1927	Unlimited	Knoxville Power & Light Co.

B. Municipal Franchises—State of Tennessee:

Municipality	Year Issued	Term	Original Grantees, Its Successors and Assigns
7. Dandridge	1914	99 years	E. C. Johnson
8. Jefferson City	1923	Unlimited	The Tennessee Electric Power Co.
9. Knoxville	1885	Unlimited	Schuyler Electric Light Co.
10. Newport	1923	Unlimited	Newport Mill Co.
11. Sevierville	1915	Expires 1954	Sevierville Light & Power Co.
12. White Pine	1923	Unlimited	The Tennessee Electric Power Co.

[fol. 1956]

Memorandum of Franchises of Holston River Electric Company

A. County Franchises—State of Tennessee:

County	Year Issued	Term	Original Grantees
1. Hamblen	1926	Unlimited	Holston River Electric Co.
2. Hawkins	1926	Unlimited	Holston River Electric Co.

B. Municipal Franchises—State of Tennessee:

Municipality	Year Issued	Term	Original Grantee, Its Successors and Assigns
3. Rogersville	1926	25 years	Holston River Electric Co.

Complainants' Exhibit No. 3

[fol. 1957]

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937

Grantor	Grantee	Date Granted	Date Expires
Abbeville[1]	Gulf Electric Company	6-24-25	No limitation
Akron	Alabama Power Company	6-30-27	"
Alabama City	Alabama Power Company	3-6-16	"
Albany (Consolidated with Decatur by Act of Legislature, Approved Feb. 4, 1927)	Alabama Power Company	7-7-19	1-27-50
Albertville	Alabama Power Company	9-25-23	No limitation
Aliceville	" " "	3-2-27	"
Altoona	" " "	10-21-25	"
Anniston	Anniston Electric Company	10-12-99	"
Arab	Alabama Power Company	5-14-28	"
Ashford[1]	Gulf Electric Company	10-20-25	"
Ashland	Alabama Power Company	3-30-16	"
Ashville	" " "	3-9-26	"
Atmore[1]	Gulf Electric Company	6-9-25	"
Attalla	Alabama Power Company	5-5-13	"
	" " "	1-19-14	"
Auburn	" " "	6-19-30	"
Austinville	" " "	9-6-15	"
Autaugaville	" " "	9-10-29	"
[fol. 1958]			
Bay Minette[1]	Gulf Electric Company	10-14-27	Terminable Permit
Bear Creek	Alabama Power Company	3-22-27	No limitation
Beatrice	" " "	11-7-29	"
Beaverton	" " "	11-21-28	"
Bellwood	" " "	12-6-29	"
Berry	" " "	10-1-24	"
Billingsley	" " "	12-12-30	"
Black	" " "	2-11-37	"
Blountsville	" " "	2-15-29	"
Boaz	" " "	10-3-23	"
Boligee	" " "	6-30-27	"
Boston	" " "	2-4-29	"
Brent	" " "	1-20-23	"
Brewton	" " "	9-18-28	Terminable Permit
Bridgeport	" " "	5-19-30	No limitation
Brookside	" " "	12-15-25	"
Butler	" " "	10-9-29	"
Calera	" " "	6-18-13	"
Camp Hill	" " "	12-29-16	"
[fol. 1959]			
Capitol Heights (Consolidated with Montgomery by Act of Legislature approved Aug. 26, 1927)	Richard Tillis & Associates (Ord. 3-8-23 confirming in A. P. Co. franchise rights heretofore granted to Montgomery L. & W. P. Co. & Montgomery L. & T. Company and to all other companies which such two companies have succeeded)	11-18-12	No limitation

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

Complainants' Exhibit No. 3

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937—Continued

Grantor	Grantee	Date Granted	Date Expires
Carbon Hill	Alabama Power Company	5-10-27	No limitation
Cardiff	" " "	1-30-26	"
Carrollton	" " "	9-9-26	"
Carrville	" " "	5-1-25	"
Castleberry	" " "	6-9-37	"
Centerville	" " "	1-20-23	"
Chapman	" " "	7-10-24	"
Cherokee	" " "	8-6-24	"
Childersburg	" " "	1-3-23	"
Citronelle	" " "	8-8-30	"
Clanton	Coosa Electric Company (Confirmed in A. P. Co. by Ord. 9-27-20)	1-2-20	"
Clayton[1]	Gulf Electric Company	12-15-25	"
Cloverdale (Consolidated with Montgomery by Act of Legislature approved 8-26-27)	Richard Tillis & Associates (Ord. 3-26-23 confirming in A. P. Co. franchise rights heretofore granted to Montgomery L. & W. P. Co. & Montgomery L. & T. Co. and to all other companies which such two companies have succeeded)	4-6-11	"
[fol. 1960]			
Coffee Springs	Alabama Power Company	5-10-29	No limitation
Collinsville	" " "	6-18-29	"
Columbia[1]	Gulf Electric Company	1-28-26	"
Columbiana	Alabama Power Company	4-24-25	"
Cordova	Alabama Power Co. (Trans. Lines)	4-24-17	"
	Cordova Light & Power Company (Confirmed in A. P. Co. by Ord. 4-2-29)	11-13-28	"
Cottonwood	Alabama Power Company	2-28-35	"
Courtland	" " "	7-16-24	"
Crossville	" " "	6-18-29	"
Cuba	" " "	5-19-25	"
Dadeville	" " "	12-1-22	"
Daviston	" " "	11-23-34	"
Dayton	" " "	12-30-35	"
Decatur	" " "	10-16-19	1-27-50
Demopolis	" " "	6-12-24	"
Dora	" " "	4-11-16	"
East Brewton	" " "	9-19-28	"
Eclectic	" " "	5-21-24	"
Eden	" " "	8-25-19	"
Edwardsville	" " "	1-23-36	"
Epes	" " "	7-1-27	"
[fol. 1961]			
Equality	Alabama Power Company	3-4-37	No limitation
Eufaula[1]	Alabama Power Co. (Limited to Customers of 50 hp. or more to 8-21-39. Thereafter franchise is general)	11-16-28	11-16-58

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

Complainants' Exhibit No. 3

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937—Continued

Grantor	Grantee	Date Granted	Date Expires
Eutaw	Alabama Power Company	8-9-27	No limitation
Falkville	" " "	11-16-25	"
Faunsdale	" " "	6-13-24	"
Fayette	" " "	9-30-24	"
Five Points	Alabama Power Co. (Trans. Lines)	11-20-19	"
	Alabama Power Company	5-22-24	"
Flomaton[1]	Gulf Electric Company	6-9-25	"
Florala[1]	J. N. McClung & Company (Confirmed in Gulf El. Co. by Ordinance 1-18-27)	2-17-25	"
Fort Deposit	Alabama Power Company	7-7-24	"
Fort Payne	" " "	6-18-29	"
Fruithurst	" " "	3-9-36	"
Gadsden	W. S. McCall & Associates	10-31-98	"
	Alabama City, Gadsden & Attalla Ry. Co. (Act of Legislature; Confirmed in A. C. G. & A. Ry. Co., the electric light and power rights under Act of 12-7-00, by Ordinance 5-14-06)	12-7-00	12-7-50
	Gadsden Light, Coal & Ice Co. (All confirmed in A. P. Co. by Ordinance 2-11-20)	11-11-02	No limitation
	Alabama Power Co. (Trans. Lines)	5-18-14	5-18-44
[fol. 1962]			
Gainesville	Alabama Power Company	6-24-32	No limitation
Gaylesville	" " "	8-15-29	"
Geiger	" " "	7-15-37	"
Geneva[1]	Gulf Electric Company	10-24-27	10-24-57
Georgiana	Alabama Power Company	7-10-24	No limitation
Goodwater	" " "	11-11-25	"
Gordo	" " "	10-14-26	"
Gordon	" " "	4-30-28	"
Greensboro	" " "	6-13-29	"
Greenville	" " "	8-9-23	"
Guin	" " "	5-13-24	"
Guntersville	" " "	7-5-15	"
Hackleburg	" " "	3-10-27	"
Haleyville	" " "	4-22-25	"
Hamilton	" " "	3-18-26	"
Hanceville	" " "	11-2-29	"
Hartselle	" " "	8-10-15	"
Headland	" " "	5-29-30	"
Heflin	" " "	1-14-25	"
Helena	" " "	8-1-24	"
Hobson City	" " "	1-3-16	"

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

COMPLAINANTS' EXHIBIT NO. 3

[fol. 1963]

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937—Continued

Grantor	Grantee	Date Granted	Date Expires
Hodges	Alabama Power Company	3-21-27	No limitation
Holly Pond	" " "	9-3-35	"
Hollywood (Jefferson Co.)	" " "	11-26-28	"
Hollywood (Jackson Co.)	" " "	5-16-30	"
Homewood	" " "	1-7-29	1-7-59
Huntsville	President, Huntsville Elec. Co. (Confirmed in A. P. Co. by Ord. 6-15-16)	5-17-87	No limitation
Hurtsboro[1]	Gulf Electric Company	12-22-25	"
Jackson[1]	" " "	3-8-27	"
Jacksonville	W. M. Hood (Transferred Jacksonville L. & P. Co.; J. L. & P. Co. sold to A. P. Co.)	7-27-15	"
	Ord. confirming J. L. & P. Co. franchise in A. P. Co.	2-2-16	"
Jasper	Alabama Power Company	7-2-17	7-11-47
Jemison	" " "	5-7-25	No limitation
Johns	" " "	6-27-27	"
Kennedy	" " "	5-9-28	"
LaFayette	Alabama Power Co. (Trans. Lines to Serve Customers of 50 hp. or more)	10-22-19	"
Leeds	W. M. Hood (Confirmed in A. P. Co. 6-16-15)	3-18-14	"
	Alabama Power Company	9-2-14	"

[fol. 1964]

Leighton	Alabama Power Company	7-22-24	No limitation
Lincoln	W. M. Hood (Confirmed in A. P. Co. 6-15-15)	3-3-14	"
	Alabama Power Company	1-19-15	"
Linden	Alabama Power Company	1-7-26	"
Lineville	Alabama Power Company	5-11-16	"
Lisman	Alabama Power Company	10-18-29	"
Livingston	Alabama Power Company	6-10-25	"
Lockhart	Alabama Power Company	8-18-31	"
Louisville[1]	Gulf Electric Company	12-29-25	"
Madison	Alabama Power Company	3-9-20	"
Madrid	Alabama Power Company	2-10-37	"
Malvern	Alabama Power Company	12-28-28	"
Marion	Alabama Power Company	5-16-17	"
Midland City[1]	Gulf Electric Company	4-9-25	"
Midway[1]	Gulf Electric Company	10-12-25	"
Millport	Alabama Power Company	5-9-28	"
Mobile[1]	Electric Lighting Company of Mobile	2-5-85	"
Monroeville	Alabama Power Company	12-11-29	"
Montevallo	Alabama Power Company	12-21-16	"
Montgomery	H. T. Beggs & Associates	3-17-90	"
	J. McC. Tharin & Associates	4-17-99	"
	Richard Tillis & Associates	9-30-10	10-3-40
	Confirmed in A. P. Co.	2-10-23	

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

COMPLAINANTS' EXHIBIT No. 3

[fol. 1985]

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937—Continued

Grantor	Grantee	Date Granted	Date Expires
Moulton	Alabama Power Company	6-29-25	No limitation
Moundville	" " "	7-14-27	"
McKenzie	" " "	5-3-28	"
Nauvoo	" " "	11-5-23	"
Newbern	" " "	6-14-29	"
New Brockton[1]	Gulf Electric Company (As amended by Ord. 3-27-26)	11-13-24	"
Newton	Alabama Power Company	2-27-29	"
Newville[1]	Gulf Electric Company	4-10-25	"
Northport	Tuscaloosa Ice & Light Co. (Confirmed in A. P. Co. by Ord. 10-1-23)	4-25-14	"
Notasulga	Alabama Power Company	4-27-21	"
Oakman	Alabama Power Company	11-24-19	"
Odenville	" " "	6-22-28	"
Oneonta	" " "	2-1-26	"
Opelika	Alabama Power Co. (Trans. Lines)	7-21-16	"
Orrville	Alabama Power Company	9-2-35	"
Oxford	" " "	8-1-17	8-1-47
Ozark[1]	Gulf Electric Company	7-22-26	No Limitation
Paint Rock	Alabama Power Company	6-15-28	"
Parrish	" " "	5-11-22	"
[fol. 1986]			
Pell City	W. M. Hood (Ord. 1-3-16 confirming in A. P. Co.) (See merger with A. P. Co. in charter)	3-2-14	No limitation
Phenix City (Girard)	Columbus Railroad Company	3-9-03	"
	" (Acquired by purchase by A. P. Co. 10-1-30)	3-18-03	"
Phil Campbell	Alabama Power Company	3-21-27	"
Piedmont	Alabama Power Co. (Trans. Lines)	8-4-15	"
Pinckard[1]	Gulf Electric Company	4-26-26	"
Pine Hill	Alabama Power Company	11-13-29	"
Pollard	" " "	4-3-29	"
Prattville	" " "	7-23-23	"
Ragland	W. M. Hood (Confirmed in A. P. Co. by Ord. 12-23-15)	3-31-14	"
	Alabama Power Company	5-7-14	"
Red Bay	Alabama Power Company	4-9-29	"
Reform	" " "	12-2-26	"
Riverside	" " "	2-21-36	"
Roanoke	" " "	11-6-17	"
Rockford	" " "	7-9-29	"
Russellville	" " "	6-28-23	"
Scottsboro	" " "	5-10-30	"

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

Complainants' Exhibit No. 3

[fol. 1967]

Municipal Electric Franchises Owned by Alabama Power Company as of July 1, 1937—Continued

Grantor	Grantee	Date Granted	Date Expires
Selma	Selma Light Company (Confirmed in A. P. Co. by Ord. 9-16-20)	9-16-19	9-12-50
Slocomb[1]	Gulf Electric Company	2-16-26	No Limitation
Smith Hill	Alabama Power Company	5-15-16	"
Springville	" " "	10-19-25	"
Steppville	" " "	10-25-29	"
Stevenson	Tennessee Valley Light & Power Company (Acquired by purchase by A. P. Co. 1-15-30)	3-29-15	3-29-45
Stroud	Alabama Power Company	8-13-27	No Limitation
Sulligent	" " "	8-17-25	"
Talladega	Alabama Power Development Co. (Vested in A. P. Co. by merger 7-29-13)	4-5-09	"
	Alabama Power Co. (Trans. Lines)	10-19-15	"
Talladega Springs	Alabama Power Company	9-27-35	"
Thomaston	" " "	6-21-27	"
Thomasville[1]	Gulf Electric Company (Ratified by Ord. 11-22-26)	6-9-26	"
Thorsby	Alabama Power Company	5-7-25	"
Town Creek	" " "	7-21-24	"
Tuscaloosa	" " "	9-25-23	9-25-53

[fol. 1968]

Tuskegee	Alabama Power Co. (Trans. Lines)	10-15-20	No limitation
Union Springs	Alabama Power Company	7-10-23	"
Uniontown	" " "	6-13-24	"
Valley Head	" " "	6-19-29	"
Vernon	" " "	8-17-25	"
Vina	" " "	3-10-27	"
Vincent	" " "	5-7-28	"
Wadley	" " "	12-22-25	"
Walnut Grove	" " "	6-26-29	"
Warrior	" " "	12-19-22	"
Waverly	" " "	2-5-23	"
Webb[1]	Gulf Electric Company	10-29-26	"
Wedowee	Alabama Power Company	12-21-25	"
West Blocton	" " "	6-17-15	"
Wetumpka	" " "	4-23-23	"
Wilsonville	" " "	9-18-29	"
Wilton	" " "	4-19-17	"
Winfield	" " "	5-13-24	"
Woodville	" " "	1-10-29	"
York	" " "	4-16-25	"

[1] All Gulf Electric Company franchises were vested in Alabama Power Company by consolidation agreement effective November 10, 1927. (See Charter.)

Complainants' Exhibit No. 3

[fol. 1969]

Memorandum of Franchises of Kentucky and West Virginia Power Company, Incorporated

A. County Franchises—Kentucky:

County	Date Issued	Term	Original Grantee
1. Boyd	Sept. 3, 1924	20 Years	Boyd County Electric Co.
2. Carter	July 2, 1926	20 "	Ky. & W. Va. Pr. Co.
3. Greenup	Oct. 17, 1923	20 "	Boyd County Electric Co.
4. Leslie	May 10, 1937	20 "	Ky. & W. Va. Pr. Co.
5. Rowan	Sept. 30, 1926	20 "	" " " " "

B. Municipal Franchises—Kentucky:

Municipality	Date Issued	Term	Original Grantee
1. Allen	Apr. 11, 1923	20 Years	Ky. & W. Va. Pr. Co.
2. Ashland	Aug. 4, 1931	20 Years	" " " " "
3. Blackey	May 5, 1924	20 Years	" " " " "
4. Catlettsburg	July 12, 1933	20 Years	" " " " "
5. Chinnville	July 7, 1924	20 Years	Boyd County Elec. Co.
6. Dwale	Jan. 7, 1924	20 Years	Ky. & W. Va. Pr. Co.
7. Elkhorn City	June 2, 1924	20 Years	" " " " "
8. Fullerton	Aug. 24, 1926	20 Years	Portsmouth Public Serv. Co.
9. Grayson	June 3, 1926	20 Years	Ky. & W. Va. Pr. Co.
10. Greenup	Nov. 7, 1923	20 Years	Boyd County Elec. Co.
11. Hazard	Nov. 12, 1931	20 Years	Ky. & W. Va. Pr. Co.
12. Hellier	July 5, 1926	20 Years	" " " " "
13. Hindman	June 6, 1932	20 Years	" " " " "
14. Jackson	Sept. 6, 1926	20 Years	" " " " "
15. Lackey	Nov. 17, 1924	20 Years	" " " " "
16. Martin	Apr. 11, 1924	20 Years	Martin Lt. & Pr. Co.
17. Neon	Oct. 2, 1925	20 Years	Ky. & W. Va. Pr. Co.
18. Paintsville	Aug. 8, 1927	20 Years	" " " " "
19. Pikeville	May 1, 1934	20 Years	" " " " "

[fol. 1970]

20. Prestonsburg	Mar. 7, 1927	20 Years	Ky. & W. Va. Pr. Co.
21. Russell	Dec. 22, 1936	20 "	" " " " "
22. Salyersville	Dec. 10, 1927	20 "	Byron T. Gifford
23. W. Van Lear	Dec. 29, 1926	20 "	Ky. & W. Va. Pr. Co.
24. Whitesburg	Oct. 3, 1922	20 "	" " " " "
25. Worthington	July 7, 1924	20 "	Boyd County Elec. Co.

[fol. 1971]

Memorandum of Franchises of Kingsport Utilities, Incorporated

A. County Franchises—Tennessee:

County	Date Issued	Term	Original Grantee
1. Hawkins	July 6, 1931	Unlimited	Kingsport Utilities, Inc.
2. Sullivan	July 6, 1931	"	" " " "

B. Municipal Franchises—Tennessee:

Municipality	Date Issued	Term	Original Grantee
1. Kingsport	May 24, 1917	99 Years	Kingsport Elec. Lt. & Pr. Co.

Complainants' Exhibit No. 3

[fol. 1972]

Memorandum of Franchises of Kentucky-Tennessee Light & Power Company

A. County Franchises—Kentucky:

County	Date Issued	Term	Original Grantee, Its Successors and Assigns
1. Allen	8-6-29	20 Years	Kentucky-Tennessee Light & Power Company
2. Barren	5-7-29	20 Years	Kentucky-Tennessee Light & Power Company
3. Breckenridge	6-14-27	20 Years	Kentucky Service Company
4. Bullitt	8-1-27	20 Years	Kentucky Service Company
5. Calloway	11-15-27	20 Years	Kentucky-Tennessee Light & Power Company
6. Christian	4-3-34	20 Years	Kentucky-Tennessee Light & Power Company
7. Edmondson	2-28-24	20 Years	Kentucky-Tennessee Light & Power Company
8. Estill	6-29-25	20 Years	Kentucky-Tennessee Light & Power Company
9. Franklin	7-5-29	20 Years	Kentucky-Tennessee Light & Power Company
10. Fulton	6-29-25	20 Years	Inter-States Utilities Co.
11. Graves	6-25-25	20 Years	Inter-States Utilities Co.
12. Hancock	6-6-25	20 Years	Inter-States Utilities Co.
13. Hickman	6-23-25	20 Years	Inter-States Utilities Co.
14. Larue	8-15-27	20 Years	Kentucky Service Company
15. Lee	3-12-25	20 Years	Inter-States Utilities Co.
16. Lincoln	11-13-28	20 Years	Huntonville Public Service Company
17. Logan	5-29-23	20 Years	Kentucky-Tennessee Light & Power Company
18. Marshall	8-16-29	20 Years	Kentucky-Tennessee Light & Power Company
19. Nelson	4-6-26	20 Years	Ohio Valley Public Service Company
20. Shelby	1-9-28	20 Years	Kentucky-Tennessee Light & Power Company
21. Spencer	11-10-25	20 Years	E. A. Opfergelt and John B. Thomas
22. Trigg	6-22-29	20 Years	Kentucky-Tennessee Light & Power Company

[fol. 1973]

23. Warran	1-19-35	20 Years	Kentucky-Tennessee Light & Power Company
24. Whitley	5-2-30	20 Years	Kentucky-Tennessee Light & Power Company

B. County Franchises—Tennessee:

25. Carroll	10-7-29	30 Years	Kentucky-Tennessee Light & Power Company
26. Gibson	1-6-30	Unlimited	Kentucky-Tennessee Light & Power Company
27. Henry	1-7-29	Unlimited	Kentucky-Tennessee Light & Power Company
28. Lake	2-15-28	20 Years	Southern Utilities Company
29. Montgomery	4-6-14	Unlimited	Kentucky Public Service Company
30. Obion	4-2-28	30 Years	Southern Utilities Company
31. Robertson	5-14-24	Unlimited	Kentucky-Tennessee Light & Power Company
32. Stewart	10-4-26	Unlimited	Dover Power Company
33. Weakley	7-1-29	Unlimited	Kentucky-Tennessee Light & Power Company

Complainants' Exhibit No. 3

Memorandum of Franchises of Kentucky-Tennessee Light & Power Company—Continued

C. Municipal Franchises—Kentucky:

Town	Date Issued	Term	Original Grantee, Its Successors and Assigns
34. Allensville	7-7-24	20 Years	Kentucky-Tennessee Light & Power Company
35. Beattyville	5-4-25	20 Years	Inter-States Utilities Company
36. Brownsville	4-23-25	20 Years	Kentucky-Tennessee Light & Power Company
37. Bloomfield	3-1-27	20 Years	Kentucky Service Company
38. Bowling Green	5-5-90	Unlimited	Bowling Green Gas-Light Company
39. Cadiz	10-10-36	10 Years	Kentucky-Tennessee Light & Power Company
40. Cerulean	6-3-29	20 Years	Kentucky-Tennessee Light & Power Company
41. Cloverport	5-4-25	20 Years	Cloverport Ice Company
42. Dexter	2-17-31	20 Years	Kentucky-Tennessee Light & Power Company
43. Elkton	12-6-29	20 Years	Kentucky-Tennessee Light & Power Company
44. Fancy Farm	6-7-29	20 Years	Kentucky-Tennessee Light & Power Company
[fol. 1974]			
45. Frankfort	4-24-82	Unlimited	Capitol Gas & Electric Company
46. Guthrie	6-2-34	15 Years	Kentucky-Tennessee Light & Power Company
47. Glasgow Junction	6-9-27	20 Years	Kentucky-Tennessee Light & Power Company
48. Hazel	4-21-27	20 Years	Kentucky-Tennessee Light & Power Company
49. Hawesville	5-4-25	20 Years	W. H. Williams
50. Hardinsburg	5-2-25	20 Years	Hardinsburg Electric Light Company
51. Hardin	11-25-25	20 Years	Kentucky-Tennessee Light & Power Company
52. Hopkinsville	2-9-26	20 Years	Kentucky-Tennessee Light & Power Company
53. Hustonville	4-5-27	20 Years	Kentucky Service Company
54. Irvine	6-27-23	20 Years	Kentucky River Utilities Company
55. Irvington	9-9-26	20 Years	Claude Mercer
56. Lebanon Junction	2-9-26	20 Years	Lebanon Junction Light & Power Company
57. Lewisport	5-2-25	20 Years	Inter-States Utilities Company
58. Mayfield	5-6-25	20 Years	Kentucky-Tennessee Light & Power Company
59. Murray	5-17-26	20 Years	R. H. Hood
60. New Haven	9-29-26	20 Years	Union Edison Company
61. Pembroke	4-6-31	20 Years	Kentucky-Tennessee Light & Power Company
62. Ravenna	10-1-23	20 Years	Kentucky River Utilities Company
63. Russellville	5-19-27	20 Years	Kentucky-Tennessee Light & Power Company
64. Scottsville	7-3-22	20 Years	Scottsville Utilities Company
65. Smiths Grove	4-9-24	19 Years	Smiths Grove Light & Ice Company
66. Taylorsville	9-8-27	20 Years	Kentucky Service Company
67. Trenton	1-1-34	20 Years	Kentucky-Tennessee Light & Power Company
68. Water Valley	6-7-26	20 Years	C. B. Bard
69. Wingo	8-2-26	20 Years	C. A. Orr

Complainants' Exhibit No. 3

[fol. 1975]

Memorandum of Franchises of Kentucky-Tennessee Light & Power Company—Continued

D. Municipal Franchises—Tennessee

Town	Date Issued	Term	Original Grantee, Its Successors and Assigns
70. Bradford	6-4-24	30 Years	Kentucky-Tennessee Light & Power Company
71. Clarksville	9-7-10	50 Years	Clarksville Railway & Light Company
72. Dresden	7-9-24	30 Years	Kentucky-Tennessee Light & Power Company
73. Dyer	7-10-24	30 Years	Kentucky-Tennessee Light & Power Company
74. Gallatin	8-10-27	30 Years	Kentucky-Tennessee Light & Power Company
75. Gleason	7-9-24	30 Years	Kentucky-Tennessee Light & Power Company
76. Greenfield	7-8-24	30 Years	Kentucky-Tennessee Light & Power Company
77. Henry	5-7-29	30 Years	Kentucky-Tennessee Light & Power Company
78. Huntingdon	1-13-25	30 Years	J. H. Byrd
79. Jellico	4-17-28	25 Years	Jellico Electric Light, Heat & Power Company
80. Kenton	8-27-24	30 Years	Kentucky-Tennessee Light & Power Company
81. Martin	7-7-24	30 Years	Kentucky-Tennessee Light & Power Company
82. McKenzie	6-11-26	25 Years	Kentucky-Tennessee Light & Power Company
83. Newbern	9-2-24	30 Years	Kentucky-Tennessee Light & Power Company
84. Obion	7-10-24	20 Years	Kentucky-Tennessee Light & Power Company
85. Paris	1-20-26	20 Years	Kentucky-Tennessee Light & Power Company
86. Ridgely	9-23-27	20 Years	Southern Utilities Company
87. Rives	9-3-35	10 Years	Kentucky-Tennessee Light & Power Company
88. Rutherford	7-10-24	30 Years	Kentucky-Tennessee Light & Power Company
89. Sharon	7-11-24	30 Years	Kentucky-Tennessee Light & Power Company
90. Tiptonville	9-23-29	17½ Years	Southern Utilities Company
91. Trezevant	12-6-27	30 Years	Kentucky-Tennessee Light & Power Company
92. Trimble	7-11-24	30 Years	Kentucky-Tennessee Light & Power Company
93. Troy	11-17-24	30 Years	Kentucky-Tennessee Light & Power Company

Complainants' Exhibit No. 3

[fol. 1976]

Memorandum of Municipal Franchises of West Tennessee Power & Light Company

Municipal Franchises—State of Tennessee:

Municipality	Year Issued	Term	Original Grantee, Its Successors and Assigns
1. Atoka	1925	30 Years	J. J. Brennan
2. Brighton	1927	30 Years	W. J. O'Brien
3. Brownsville	1924	30 Years	Brownsville Cotton Oil & Ice Company
4. Gates	1926	30 Years	W. J. O'Brien
5. Halls	1927	20 Years	Frank A. Reid
6. Henderson	1927	30 Years	Jackson Railway & Light Company
7. Henning	1925	25 Years	Trice M. Bell
8. Humboldt	1925	30 Years	Joseph H. Byrd
9. Jackson	1902	25 Years	Jackson & Suburban Street Railroad
10. Jackson (Extending time of 1902 franchise)	1913	50 Years From Oct. 21, 1913	Jackson Railway & Light Company
11. Mason	1930	30 Years	West Tennessee Power & Light Company
12. Medina	1926	30 Years	Jackson Railway & Light Company
13. Munford	1925	30 Years	J. J. Brennan
14. Ripley	1926	30 Years	W. J. O'Brien
15. Stanton	1929	30 Years	West Tennessee Power & Light Company
16. Whiteville	1925	30 Years	J. J. Brennan

[fol. 1977]

Memorandum of Franchises of Mississippi Power & Light Company

Municipal Franchises—Mississippi:

Municipality	Date Issued	Term	Original Grantee, Its Successors and Assigns
1. Alligator	12-14-27	25 yrs.	Mississippi Power & Light Co.
2. Anguilla	7-10-29	25 "	Mississippi Power & Light Co.
3. Arcola	3-16-26	25 "	The Mississippi Power & Light Co.
4. Batesville	7-7-25	20 "	Pinola Electric Light & Power Co.
5. Benoit	7-7-25	25 "	The Mississippi Power & Light Co.
6. Beulah	1-2-30	25 "	Mississippi Power & Light Co.
7. Bolton	1-20-29	25 "	Mississippi Power & Light Co.
8. Boyle	9-4-28	25 "	Mississippi Power & Light Co.
9. Brandon	6-27-30	25 "	Mississippi Power & Light Co.
10. Braxton	6-7-27	25 "	M. L. Culley
11. Byhalia	9-3-29	25 "	Mississippi Power & Light Co.
12. Carrollton	11-18-26	25 "	The Mississippi Power & Light Co.
13. Carthage	9-20-30	25 "	Mississippi Power & Light Co.
14. Cary	2-11-31	25 "	Mississippi Power & Light Co.
15. Charleston	6-5-28	25 "	Mississippi Power & Light Co.
16. Cleveland	11-4-27	25 "	The Mississippi Power & Light Co.
17. Clinton	1-1-25	25 "	The Mississippi Power & Light Co.
18. Coffeeville	6-10-27	25 "	The Mississippi Power & Light Co.
19. Coldwater	7-8-19	50 "	Town of Senatobia
20. Como	2-5-29	25 "	Mississippi Power & Light Co.
21. Courtland	3-4-30	25 "	Mississippi Power & Light Co.
22. Crenshaw	1-5-26	25 "	The Mississippi Power & Light Co.
23. Cruger	12-9-30	25 "	Mississippi Power & Light Co.
24. Crystal Springs	1-21-36	25 "	Mississippi Power & Light Co.
25. D'Lo	12-9-27	25 "	Mississippi Power & Light Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of Mississippi Power & Light Company—Continued

Municipality	Date Issued	Term	Original Grantee, Its Successors and Assigns
26. Doddsville (limited to industrials)	7-16-26	25 yrs.	The Mississippi Power & Light Co.
27. Drew	10-14-26	25 "	The Mississippi Power & Light Co.
28. Duck Hill	7-9-25	25 "	The Mississippi Power & Light Co.
29. Duncan	2-20-25	25 "	The Mississippi Power & Light Co.
[fol. 1978]			
30. Edwards	7-26-27	25 yrs.	The Mississippi Power & Light Co.
31. Enid	2-4-30	25 "	Mississippi Power & Light Co.
32. Ethel	6-28-28	25 "	Mississippi Utilities Co.
33. Flora	5-31-28	25 "	Mississippi Power & Light Co.
34. Florence	6-7-27	25 "	M. L. Culley
35. Friars Point	11-16-26	25 "	The Mississippi Power & Light Co.
36. Gallman	12-6-27	25 "	Mississippi Power & Light Co.
37. Georgetown	6-27-27	25 "	M. L. Culley
38. Glendora	7-12-27	25 "	S. B. Towns
39. Goodman	4-13-27	25 "	The Mississippi Power & Light Co.
40. Greenville	5-7-01	50 " from June 2, 1903	Delta Electric Light, Power & Mfg. Co.
41. Grenada	3-30-25	25 "	The Mississippi Power & Light Co.
42. Gunnison	9-17-27	25 "	The Mississippi Power & Light Co.
43. Guntown	2-8-24	25 "	The Mississippi Power & Light Co.
44. Hazlehurst	8-18-25	25 "	The Mississippi Power & Light Co.
45. Hernando	5-8-16	25 " from July 1, 1916	Wm. S. Bailey and H. G. Mitchell, Jr.
46. Holcomb	2-21-28	25 yrs.	Mississippi Power & Light Co.
47. Hollandale	11-16-26	25 "	The Mississippi Power & Light Co.
48. Independence	12-10-35	25 "	Mississippi Power & Light Co.
49. Indianola	2-10-26	25 "	The Mississippi Power & Light Co.
50. Inverness	9-15-36	25 "	The Mississippi Power & Light Co.
51. Isola	12-14-26	25 "	The Mississippi Power & Light Co.
52. Jackson	9-18-19	25 "	M. H. Grossman
53. Jonestown	1-8-25	25 "	Dan Bradera
54. Kilmichael	5-3-27	25 "	J. R. Phillips
55. Lambert	7-2-26	25 "	The Mississippi Power & Light Co.
56. Learned	6-13-26	25 "	Mississippi Power & Light Co.
57. Lexington	1-8-26	25 "	The Mississippi Power & Light Co.
58. Louise	3-6-28	25 "	M. L. Culley & A. R. Williams
59. Lula	4-1-25	25 "	Roane Waring
60. Lyon	10-4-27	50 "	Mississippi Delta Power & Light Co.
61. Magee	4-29-27	25 "	The Mississippi Power & Light Co.
62. Marks	10-8-24	25 "	Dan Braders
63. McCool	4-18-28	25 "	Mississippi Power & Light Co.
[fol. 1979]			
64. Merigold	2-21-25	25 yrs.	The Mississippi Power & Light Co.
65. Mize	6-14-27	25 "	The Mississippi Power & Light Co.
66. Moorhead	12-11-25	25 "	The Mississippi Power & Light Co.
67. Morton	9-8-26	25 "	The Mississippi Power & Light Co.
68. Mound Bayou	2-20-25	25 "	The Mississippi Power & Light Co.
69. Mt. Olive	8-22-28	25 "	Mississippi Utilities Co.
70. Nesbitt	8-5-30	25 "	Mississippi Power & Light Co.
71. New Hebron	6-27-27	25 "	M. L. Culley
72. North Carrolton	12-9-26	25 "	The Mississippi Power & Light Co.
73. Oakland	2-4-30	25 "	Mississippi Power & Light Co.
74. Olive Branch	7-15-29	25 "	Mississippi Power & Light Co.
75. Pace	9-29-25	25 "	The Mississippi Power & Light Co.
76. Pelahatchie	4-3-28	25 "	Mississippi Power & Light Co.

Complainants' Exhibit No. 3

Memorandum of Franchises of Mississippi Power & Light Company—Continued

Municipality	Date Issued	Term	Original Grantee, Its Successors and Assigns
77. Pickens	11-10-27	25 yrs.	The Mississippi Power & Light Co.
78. Pinola	7-6-27	25 "	M. L. Culley
79. Pope	6-2-26	25 "	L. R. Brooks
80. Raleigh	7-27-35	25 "	Mississippi Power & Light Co.
81. Raymond	8-6-25	25 "	The Mississippi Power & Light Co.
82. Ridgeland	1-19-28	25 "	Mississippi Power & Light Co
83. Rolling Fork	10-11-30	25 "	Mississippi Power & Light Co.
84. Rosedale	9-11-25	25 "	The Mississippi Power & Light Co.
85. Ruleville	9-11-26	25 "	The Mississippi Power & Light Co.
86. Sallis	5-9-28	25 "	Mississippi Power & Light Co.
87. Sardis	7-17-28	25 "	Mississippi Power & Light Co.
88. Senatobia	11-15-26	25 "	General Power & Light Co.
89. Shelby	2-20-25	25 "	The Mississippi Power & Light Co.
90. Sidon	10-17-26	25 "	The Mississippi Power & Light Co.
91. Silver City	5-1-28	25 "	Mississippi Utilities Co.
92. Silver Creek	11-1-27	25 "	The Mississippi Power & Light Co.
93. Sledge	12-30-25	25 "	The Mississippi Power & Light Co.
94. Stewart	10-2-28	25 "	Mississippi Power & Light Co.
95. Sumner	10-7-27	25 "	The Mississippi Power & Light Co.
96. Sunflower	11-3-26	25 "	The Mississippi Power & Light Co.
97. Tehula	5-17-27	25 "	The Mississippi Power & Light Co.
98. Terry	2-3-27	25 "	The Mississippi Power & Light Co.
99. Tillatoba	10-11-28	25 "	Mississippi Power & Light Co.
[fol. 1980]			
100. Tunica	2-6-23	25 yrs.	Planters Oil Mill
101. Tutwiler	7-12-27	25 "	The Mississippi Power & Light Co.
102. Vaiden	8-5-27	25 "	The Mississippi Power & Light Co.
103. Vicksburg	2-2-28	50 yrs.	Percival Steele
104. Weathersby	1-20-28	25 "	Mississippi Power & Light Co.
105. Webb	10-27-25	25 "	The Mississippi Power & Light Co.
106. West	1-26-28	25 "	Mississippi Power & Light Co.
107. Winona	5-1-25	25 "	The Mississippi Power & Light Co.

Complainants' Exhibit No. 3

[fol. 1981]

Memorandum of Franchises of East Tennessee Light & Power Company and Tennessee Eastern Electric Company

A. County Franchises—State of Tennessee:

County	Year Issued	Term	Original Grantee, Its Successors and Assigns
1. Carter	1936	Unlimited	Tennessee Eastern Electric Co. East Tennessee Light & Power Co.
2. Greene	1936	Unlimited	Tennessee Eastern Electric Co.
3. Johnson	1936	Unlimited	Tennessee Eastern Electric Co.; East Tennessee Light & Power Co.
4. Sullivan	1911	Unlimited	Bristol Gas & Electric Co.
5. Unicoi	1937	Unlimited	Tennessee Eastern Electric Co.; East Tennessee Light & Power Co.
6. Washington	1937	Unlimited	Tennessee Eastern Electric Co.; East Tennessee Light & Power Co.

B. Municipal Franchises:

State of Tennessee:

Municipality	Year Issued	Term	Original Grantee, Its Successors and Assigns
7. Bluff City	1905	99 Years	I. D. and W. W. Giles.
8. Bristol	1896	Unlimited	Consumers Electric Co. (C. C. Cochran)
9. Butler	1927	30 Years	Charles E. Ide.
10. Elizabethton	1911	50 Years	Watauga Power Co.
11. Erwin	1933	20 Years	East Tennessee Light & Power Co.
12. Greeneville*	1912	50 Years	LeRoy Park.
13. Johnson City*	1890	Unlimited	Watauga Lighting & Power Co. (charter rights)
14. Jonesboro*	1912	50 Years	W. V. N. Powelson

[fol. 1982]

15. Mountain City	1910	30 Years	Roan's Creek Light & Power Co.

State of Virginia:

16. Bristol	1897	Unlimited	Bristol Gas & Electric Co.
17. Mendota	1930	30 Years	East Tennessee Light & Power Co.

State of North Carolina:

18. Elk Park	1916	30 Years	E. E. Lineback
19. Newland	1936	50 Years	East Tennessee Light & Power Co.

* Tennessee Eastern Electric Company.

COMPLAINANTS' EXHIBIT No. 3

[fol. 1983] "Exhibit B"

1. The Tennessee Electric Power Company:
   (a) Town of Dunlap, Tennessee
   (b) " " Friendsville, Tennessee
   (c) " " Jacksboro, Tennessee
   (d) " " Jasper, Tennessee
   (e) " " Maryville, Tennessee
   (f) " " Mount Pleasant, Tennessee—Expired July 18, 1936
   (g) " " Normandy, Tennessee
   (h) " " Orme, Tennessee
   (i) " " Palmer, Tennessee
   (j) " " Ravenscroft, Tennessee
   (k) " " Signal Mountain, Tennessee
   (l) " " Spencer, Tennessee
   (m) " " Spring City, Tennessee—Expired May 4, 1937

2. Memphis Power & Light Company:
   (a) Shelby County, Tennessee—Expired November 1, 1935

3. Mississippi Power Company:
   (a) Town of Columbia, Mississippi
   (b) " " Pass Christian, Mississippi
   (c) City of Hattiesburg, Mississippi

4. Alabama Power Company:
   (a) Town of Center, Alabama
   (b) " " Grove Hill, Alabama
   (c) " " Prichard, Alabama
   (d) City of Sheffield, Alabama—Expired October—, 1932

5. Birmingham Electric Company:
   (a) Town of Homewood, Alabama

6. West Tennessee Power & Light Company:
   (a) Chester County, Tennessee
   (b) Crockett County, Tennessee
   (c) Fayette County, Tennessee

COMPLAINANTS' EXHIBIT No. 3

"Exhibit B"

[fol. 1984] (d) Gibson County, Tennessee
(e) Hardeman County, Tennessee
(f) Haywood County, Tennessee
(g) Lauderdale County, Tennessee
(h) Madison County, Tennessee

7. Mississippi Power & Light Company:

(a) Town of Bentonia, Mississippi

[fol. 1985] "Exhibit C"

1. The Tennessee Electric Power Company:

(a) City of Chattanooga vs. The Tennessee Electric Power Company.

The City of Chattanooga filed in the Chancery Court of Hamilton County, Tennessee, a bill seeking a declaratory judgment as to whether or not the franchise granted to Brush Electric Light Company in 1882 and Hauss Electric Light & Power Company in 1887, both of which are now held by The Tennessee Electric Power Company, could be revoked. The Chancellor held that such franchises could not be revoked at will and the case is now pending in the Supreme Court of Tennessee on appeal by the City of Chattanooga.

(b) The Tennessee Electric Power Company vs. The Town of Lewisburg, Tennessee, et al.

This suit was filed in the Chancery Court of Marshall County, Tennessee, against the Town of Lewisburg, its Commissioners, the Tennessee Valley Authority and Harold L. Ickes, Public Works Administrator, seeking to enjoin the issuance and sale of bonds by said town to PWA for the purpose of constructing a municipal electric plant in said town. The Town of Lewisburg and its Commissioners filed an answer and cross bill raising the question as to the validity of the franchise of The Tennessee Electric Power Company to operate in the Town of Lewisburg. Tennessee Valley Authority in its answer alleged that the complainant had no valid franchise. The suit was voluntarily dismissed as against Tennessee Valley Authority and

COMPLAINANTS' EXHIBIT No. 3

Harold L. Ickes, Public Works Administrator. The case is now pending as against the Town of Lewisburg and its Commissioners.

2. Birmingham Electric Company:

(a) Birmingham Electric Company vs. Harold L. Ickes and Tennessee Valley Authority, et al.

This case is pending in the Supreme Court of the District of Columbia. By this suit it was sought to enjoin PWA from making a loan and grant to Bessemer, Alabama. The town is not a party to the suit. The PWA in its answer attacks the validity of the franchise granted by the Town of Bessemer, Alabama, on or about November 12, 1901, to Birmingham Railway Light & Power Company.

3. West Tennessee Power & Light Company:

(a) West Tennessee Power & Light Company vs. City of Jackson, Tennessee.

[fol. 1986] This case was filed in the Federal Court for the Western District of Tennessee seeking to enjoin the City of Jackson, Tennessee, from engaging in the electric power distribution business, said city having entered into a contract with TVA for the purchase of power to be distributed by said city. The City of Jackson on May 1, 1906, granted Jackson Railway & Light Company an exclusive franchise to sell and distribute electricity in said town until June 22, 1937, and on June —, 1913, said city amended said franchise by extending the period of time to 1963. The City of Jackson filed a motion to dismiss the bill, and upon the hearing, it was sustained. An appeal is now being perfected to the United States Circuit Court of Appeals for the Sixth District.

[fol. 1987] COMPLAINANTS' EXHIBIT No. 4

Memorandum of Orders by the Tennessee Railroad and Public Utilities Commission Approving the Issuance of Franchises Held by The Tennessee Electric Power Co.

(Omitted)

COMPLAINANTS' EXHIBIT No. 5

Memorandum of Orders by the Tennessee Railroad and Public Utilities Commission Approving the Assignments of Franchises to The Tennessee Electric Power Co., and Consents by Municipalities to Assignments of Franchises to said Company.

(Omitted)

[fol. 1988]

Complainants' Exhibit No. 6

The Tennessee Electric Power Company

Taxes Paid for the Years 1932 to 1936 Inclusive and Estimated for 1937

Kind of Tax	1932	1933	1934	1935	1936	Est'd. Year 1937
Real and Personal Property	1,351,563.93	1,418,093.55	1,443,225.36	1,536,813.39	1,549,404.37	1,550,000.00
Federal Bond Tax Paid at Source	17,137.35	22,443.86	21,095.44	10,645.84	18,615.38	20,000.00
Federal Income	7,500.00	42,701.21	141,280.78	56,061.64	121,527.42*	197,000.00
Federal Capital Stock	16,002.00	20,000.00	19,269.00	35,000.00	34,338.00	34,338.00
Federal 3% Excise on Electric Sales	.....	50,238.27	147,379.04	169,343.95	189,581.05	215,500.00
Federal Excise on Bank Checks, Telephone & Telegraph Tolls	2,040.63	4,031.83	5,397.34	1,510.60	1,738.27	1,700.00
Federal Social Security	.....	.....	.....	.....	4,350.25	48,600.00
Federal Documentary Stamps	90.00	134.25	.....	350.00	400.00	100.00
State Capital Stock (Franchise)	.....	.....	.....	79,712.10	134,380.28	134,380.00
State Excise and Income	38,313.34	17.35	17.52	8,787.90	.....	34,295.00
State Self Insurers (Tennessee)	2,625.31	2,125.33	1,340.54	1,767.68	1,560.37	1,723.00
State Gross Receipts	.....	.....	.....	.....	.....	128,609.00
State Unemployment (Social Security)	.....	.....	.....	.....	38,725.05	77,500.00
State R. R. and Public Utility	5,044.55	9,310.77	7,252.49	15,737.67	16,132.23	.....**
Privilege License, Elec., Rwy., Bus, Water, Ice & Mdse	41,727.99	49,185.15	43,517.09	48,146.23	47,355.10	46,500.00
State Corporation Filing Fees	150.50	160.50	160.00	150.50	150.00	650.00
Motor Vehicle License Plates	10,162.29	8,730.85	10,545.20	13,354.55	12,106.94	12,800.00
Gasoline (Bus Dept. Only)	12,514.41	23,765.29	28,543.92	41,614.16	54,457.68	58,700.00
Nashville Railway Franchise	43,958.73	40,914.19	43,279.69	43,416.02	46,315.32	44,200.00
Maryland Franchise	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00
Pennsylvania Bond Tax Refunds	6,178.55	5,973.73	4,069.02	4,930.21	5,942.89	5,500.00
Total	1,556,809.58	1,699,626.13	1,918,172.43	2,069,142.44	2,278,880.60	2,613,895.00
Gross Revenue	11,540,510.14	11,250,351.96	12,225,494.23	13,216,964.20	14,795,642.88	16,118,793.00
Per Cent of Gross Revenue	13.5	15.1	15.7	15.7	15.4	16.2

* Final installment on 1936 Federal Income Tax of $40,500.00 has not been paid (due Dec. 15), therefore this amount is not included.

** Railroad and Public Utility Fees of $16,068.96 are being charged direct to Operating Expenses during the year 1937.

[fol. 1989] COMPLAINANTS' EXHIBIT No. 7

Map Entitled "Transmission System and Connections" of The Tennessee Electric Power Company

(Original Exhibit)

[fol. 1990] COMPLAINANTS' EXHIBIT No. 8

The Tennessee Electric Power Company Installed Capacity (Name Plate Ratings) of Generating Stations in Kilowatts

Owned:	Hydro-Electric	Steam	Fuel	Total
Ocoee No. 1	18,000	13,000	...	.....
Ocoee No. 2	18,800	.....	...	.....
Hales Bar	49,866	40,000	...	.....
Great Falls	29,370	.....	...	.....
Blue Ridge	20,000	.....	...	.....
Columbia	800	.....	...	.....
Estill Springs	800	.....	...	.....
Harms	192	.....	...	.....
Lillard's Mill	800	.....	...	.....
McMinnville	250	.....	...	.....
Murfreesboro	192	.....	...	.....
Shelbyville	432	.....	...	.....
Sparta	240	.....	...	.....
Nashville	.....	48,000	...	.....
Erin	.....	400	...	.....
Selmer	.....	250	...	.....
Mascot	.....	750	...	.....
Burns	.....	.....	280	.....
Lexington	.....	.....	100	.....
Jamestown	.....	320	90	.....
Oneida	.....	700	...	.....
Byrdstown	.....	.....	85	.....
Celina	.....	.....	172	.....
Linden	.....	.....	120	.....
Leased:				
Franklin Power & Light Co	.....	1,800	...	.....
Hardwick Woolen Mills	.....	500	...	.....
Penn-Dixie Cement Corp	.....	3,000	...	.....
Tennessee Copper Co	.....	1,200	...	.....
	139,742	109,920	847	250,509

[fol. 1991] COMPLAINANTS' EXHIBIT No. 9

List of the Tennessee Electric Power Company Interconnections

Company	Location	Federal Power Commission Capacity
Aluminum Company	Alcoa, Tenn.	25,000 kva.
Carolina Power & Light Company	Knoxville, Tenn.	60,000 kva.
Kentucky Utilities Company	Pruden, Tenn.	2,000 kva.
Alabama Power Company	Wilson Dam, Ala.	40,000 kva.
Georgia Power Company	Chattanooga, Tenn.	40,000 kva.

[fol. 1992]

COMPLAINANTS' EXHIBIT No. 10

The Tennessee Electric Power Company
(Consolidated)

Year	Miles of Transmission Line	Miles of Distribution Line	Installed Generating Capacity in Kilowatts	Number of Customers (Dec. 31)*	Total Kw-hr. Sales**	Total Industrial Sales	%
1927	803	1,641	214,232	91,259	405,680,862	312,154,986	76.9
1928	833	2,286	215,457	94,707	464,766,055	356,740,150	76.8
1929	913	2,515	216,574	115,239	532,778,034	414,088,210	77.7
1930	1,526	2,833	220,976	119,229	485,454,910	387,967,289	79.9
1931	1,553	4,098	240,680	115,929	438,196,805	309,274,010	70.6
1932	1,529	4,218	240,680	111,404	353,120,939	234,721,302	66.5
1933	1,518	4,264	241,880	108,715	383,859,026	266,677,888	69.5
1934	1,516	4,358	241,660	115,740	478,252,531	330,770,521	69.2
Year 1935	1,537	4,467	242,843	122,321	555,587,619	367,988,257	66.2
Ending 1936	1,557	4,996	250,509	132,413	682,272,122	446,871,399	65.5
Sept. 30, 1937	1,559	5,226	250,509	136,470	767,646,665	496,923,761	64.7

	Residential Kw-hr. Use per Customer	Residential Average Revenue Per Customer	Residential Average Rate per Kw-hr.	Communities Served
1927	412.6	$20.58	7.17 cents	123
1928	462.6	31.69	6.85	144
1929	503.1	33.45	6.65	287
1930	531.8	34.26	6.44	328
1931	575.9	35.70	6.20	351
1932	591.1	36.25	6.13	370
1933	611.7	35.31	5.77	395
1934	774.1	31.96	4.13	402
Year 1935	965.6	35.04	3.63	412
Ending 1936	1,175.8	36.77	3.13	443
Sept. 30, 1937	1,318.5	38.20	2.90	455

Notes: * Includes the customers of the Nashville Railway & Light Co., the physical properties of which were acquired by The Tennessee Electric Power Company in 1930.

** Excludes sales to Georgia Power Co., Alabama Power Co., Southern Tennessee Power Co., Carolina Power & Light Co., Franklin Power & Light Co., Kentucky-Tennessee Light & Power Co., Knoxville Power & Light Co., Tennessee Public Service Co. and Aluminum Co. of America.

[fol. 1993] COMPLAINANTS' EXHIBIT NO. 11

Residential Rate Reductions

	Annual Average Rate per Kw-Hr.
December, 1925	7.98¢
January 20, 1926. Revision of separate meter cooking and heating rate. May 1, 1926. Revision of lighting rate and lighting, cooking and refrigeration rate. May 22, 1926. Filing of new lighting, cooking and refrigeration rate.	
December, 1926	7.55¢
December, 1927	7.17¢
December, 1928	6.85¢
September 20, 1929. Revision of lighting rate.	
December, 1929	6.65¢
January 1, 1930. Filing of new lighting rate and new lighting, cooking and refrigeration rate for acquired territory. December 2, 1930. Revision of lighting rate and filing new lighting, cooking and refrigeration rate.	
December, 1930	6.44¢
December, 1931	6.20¢
January 1, 1932. Filing of new lighting rate and new lighting, cooking and refrigeration rate for towns not on transmission system.	
December, 1932	6.13¢
July 1, 1933. Filing of new lighting, cooking and refrigeration rate.	
December, 1933	5.77¢
February 1, 1934. Filing of new lighting, cooking and refrigeration rates.	
December, 1934	4.13¢
February 1, 1935. Revision of lighting, cooking and refrigeration rates. March 1, 1935. Revision of lighting, cooking and refrigeration rates.	
December, 1935	3.63¢
February 1, 1936. Revision of lighting, cooking and refrigeration rates. May 1, 1936. Filing of new lighting, cooking and refrigeration rate.	
December, 1936	3.13¢
May 1, 1937. Revision of lighting, cooking and refrigeration rate.	
September, 1937	2.90¢

[fol. 1994] COMPLAINANTS' EXHIBIT No. 12

Map of the State of Mississippi Showing the Transmission and Distribution System of Mississippi Power Company and the Transmission and Distribution Facilities of Others Within the State

(Original Exhibit)

[fol. 1995] COMPLAINANTS' EXHIBIT No. 13

Mississippi Power Company

Generating Plants Owned or Subject to Lease or Contract

Name of Plant	Type of Plant & Kind of Unit	Installed Capacity kw.
Owned:		
Bay Springs	Oil Engine	38
Columbus	Steam—T & E	780
Gulfport	Steam Turbo	7,500
Hattiesburg	Steam Turbo	1,000
Laurel	Steam Turbo	2,300
Meridian	Steam—T & E	4,720
Macon	Oil Engine	240
Newton	Oil Engine	840
Pascagoula	Steam Engine	192
Poplarville	Oil Engine	160
Purvis	Oil Engine	104
		17,874
Isolated Plants:		
Waynesboro	Oil Engine	480
Lucedale	Oil Engine	204
Leakesville	Oil Engine	144
		828
Total Owned		18,702
Customers' Plants:		
Alden Mills	Steam Engine	150
Stonewall Cotton Mill	Steam Turbo	1,000
West Point—City	Steam-Oil	700
		1,850
Purchased Capacities:		
Goodyear Yellow Pine Lumber Company	Steam Turbo	4,600
Total Installed Capacity		25,152

[fol. 1996] COMPLAINANTS' EXHIBIT NO. 4

Mississippi Power Company—Data on Cities, Towns and Communities Served by Mississippi Power Company

Town	Population	Date Acquired	Purchased or Constructed	Service Prior Acquisition by Company	Top Rate for Residential Service Prior Acquisition by Company
Aberdeen	3,925	3.9.26	Purchased	24 hrs.	15¢
Ackerman	1,169	6.25.25	"	18 hrs.	19¢
Artesia	612	9.1.28	"	24 "	15¢
Bassfield	334	5.1.30	"	24 "	12¢
Bay St. Louis	3,724	1.1.25	"	24 "	17¢
Bay Springs	927	4.1.30	"	24 "	20¢
Beaumont	200	4.10.26	Constructed	None	
Bellefontaine	129	8.13.30	"	"	
Beauvoir	150	1.1.25	Purchased	24 hrs.	15¢
Bent Oak	25	2.2.28	Constructed	None	
Biloxi	14,850	1.1.25	Purchased	24 hrs.	15¢
Bond	45	3.31.30	Constructed	None	
Brooklyn	250	3.31.30	"	None	
Brooksville	875	2.1.27	Purchased	18 hrs.	12¢
Calhoun City	1,012	9.1.28	"	24 "	15¢
Carriere	1,050	11.28.27	Constructed	None	
Carson	50	9.1.30	"	"	
Cartersville	50	.26	"	"	
Causerville	75	9.1.30	"	"	
Chunky	268	4.1.31	"	"	
Clermont Harbor	125	1.1.25	Purchased	24 hrs.	17¢
Columbia	4,833	3.1.25	"	24 "	15¢
Columbus	10,743	9.1.26	"	24 "	12 1/2¢
Crawford	349	6.1.27	Constructed	None	
Currie	20	3.31.30	"	"	
Cybur	75	.29	"	"	
Decatur	654	4.1.30	Purchased	24 hrs.	20¢
DeKalb	888	9.1.28	"	24 "	15¢
DeLisle	115	10.27.27	Constructed	None	
Derma	456	9.1.28	Purchased	24 hrs.	15¢
DeSoto	176	9.1.28	Constructed	None	
Eatonville	40	9.1.28	"	"	
Edgewater Park	30	12.12.25	"	"	
Ellisville	2,127	3.12.25	Purchased	24 hrs.	15¢
Escatawpa	250	6.1.29	Constructed	None	
Eastabuchie	.....	9.1.30	Constructed	"	
Eupora	1,092	9.1.28	Purchased	24 hrs.	15¢
Enterprise	792	11.4.26	"	6 to 8 hrs.	15¢
Forest	2,176	5.1.30	"	24 hrs.	12 1/2¢
Foxworth	300	7.27.28	Constructed	None	
French Camp	181	11.1.30	Constructed	"	
Fruitland Park	75	3.31.30	"	"	
Gitano	40	10.1.28	"	"	
Glendale	100	.29	"	"	
Gulf Hills	30	26	"	"	
Gulfport	12,547	1.1.25	Purchased	24 hrs.	15¢
Handsboro	750	1.1.25	"	24 "	15¢
Harmony	50	12.10.28	Constructed	None	

[fol. 1997]

Harvey	75	4.16.25	Constructed	None	
Harpersville	200	9.1.28	Purchased	24 hrs.	15¢
Hattiesburg	18,601	4.16.25	Purchased	24 hrs.	15¢
Heidelberg	653	1.1.28	Constructed	None	
Henderson Point	65	1.1.25	Purchased	24 hrs.	15¢

Complainants' Exhibit No. 14—Continued

Mississippi Power Company—Data on Cities, Towns, and Communities Served by Mississippi Power Company—Continued

Town	Population	Date Acquired	Purchased or Constructed	Service Prior Acquisition by Company	Top Rate for Residential Service Prior Acquisition by Company
Hickory	736	4.1.30	Purchased	24 hrs.	20¢
Hillsboro	100	8.1.25	Constructed	None	
Hillsdale	10	9.1.30	Constructed	None	
Houlka	579	2.10.28	Purchased	12 hrs.	17 1/2¢
Houston	1,477	4.7.25	Purchased	18 hrs.	15¢
Howison	25	7.12.28	Constructed	None	
Kewanee	75	9.1.28	Constructed	None	
Kreole	250	.29	Constructed	None	
Landon	60	2.10.29	Constructed	None	
Lake	375	9.1.28	Purchased	24 hrs.	15¢
Laurel	18,017	3.12.25	Purchased	24 hrs.	15¢
Lauderdale	270	5.10.28	Purchased	6 hrs.	$2.00 month
Lawrence	175	9.1.28	Purchased	24 hrs.	15¢
Leakesville	662	4.1.30	Purchased	24 hrs.	16¢
Lena	432	9.1.28	Purchased	24 hrs.	15¢
Lockhart	40	9.1.28	Constructed	None	
Longview	294	6.1.28	Constructed	None	
Louisville	3,013	6.23.25	Purchased	24 hrs.	20¢
Louin	582	4.1.30	Purchased	24 hrs.	20¢
Lucedale	834	4.1.30	Purchased	24 hrs.	15¢
Lumberton	2,374	5.1.30	Purchased	24 hrs.	14¢
Long Beach	1,346	1.1.25	Purchased	24 hrs.	15¢
Lux	60	9.1.28	Constructed	None	
Lyman	500	6.1.29	Constructed	None	
Maben	508	9.1.28	Purchased	24 hrs.	15¢
Macon	2,198	9.1.28	Purchased	24 hrs.	12¢
Marion	125	9.1.28	Constructed	None	
Mathiston	484	9.1.28	Purchased	24 hrs.	15¢
Maxie	20	3.31.30	Constructed	None	
Meridian	31,954	4.6.25	Purchased	24 hrs.	12¢
Mississippi City	500	1.1.25	Purchased	24 hrs.	15¢
McHenry	575	7.1.28	Constructed	None	
McNeil	450	6.1.28	Constructed	None	
McLain	250	4.10.28	Constructed	None	
Moss Point	2,453	7.10.25	Purchased	24 hrs.	25¢
Moselle	204	9.1.28	Constructed	None	
Montrose	312	5.1.30	Purchased	24 hrs.	12¢
Muldon	300	9.1.26	Purchased	24 hrs.	17 1/2¢
Neshoba	175	9.1.30	Constructed	None	
New Augusta	500	4.1.30	Purchased	24 hrs.	16¢
Newton	2,011	9.1.28	Purchased	24 hrs.	10¢
Noxapater	526	2.1.27	Purchased	18 hrs.	17 1/2¢
Nugent	50	2.10.29	Constructed	None	
Ocean Springs	1,663	1.1.25	Purchased	24 hrs.	15¢
Pachuta	338	5.1.30	Purchased	24 hrs.	12 1/2¢
Pascagoula	4,339	1.1.26	Purchased	24 hrs.	20¢
Pass Christian	3,004	1.1.25	Purchased	24 hrs.	15¢
Perkinston	350	7.12.28	Constructed	None	
Penn Station	25	9.1.28	Purchased	24 hrs.	15¢
Petal	300	4.15.25	Purchased	24 hrs.	15¢
Pheba	427	6.13.30	Constructed	None	
Philadelphia	2,560	3.10.25	Purchased	24 hrs.	25¢
[fol. 1998]					
Pine Hills	.....	12.12.26	Constructed	None	
Pineville	96	.29	Constructed	None	

COMPLAINANTS' EXHIBIT No. 14—Continued

Mississippi Power Company—Data on Cities, Towns, and Communities Served by Mississippi Power Company—Continued

Town	Population	Date Acquired	Purchased or Constructed	Service Prior Acquisition by Company	Top Rate for Residental Service Prior Acquisition by Company
Picayune	4,698	6.1.28	Purchased	24 hrs.	15¢
Poplarville	1,498	9.1.28	Purchased	24 hrs.	18¢
Prairie	155	7.17.27	Constructed	None	
Purvis	881	4.1.30	Purchased	24 hrs.	15¢
Quitman	1,872	5.1.30	Purchased	24 hrs.	15¢
Richton	950	4.12.28	Purchased	24 hrs.	18¢
Russell	50	9.1.28	Constructed	None	
Sandersville	365	1.1.28	Constructed	None	
Sanford	625	9.1.28	Constructed	None	
Saucier	130	7.12.28	Constructed	None	
Scooba	933	9.1.28	Purchased	24 hrs.	15¢
Seminary	324	5.1.30	Purchased	24 hrs.	12¢
Seymour	300	1.1.25	Purchased	24 hrs.	15¢
Shubuta	720	3.4.27	Purchased	18 hrs.	19¢
Shuqualak	810	9.1.28	Purchased	24 hrs.	12¢
Slate Springs	190	9.1.28	Purchased	24 hrs.	15¢
Soso	214	10-1-28	Constructed	None.	
Stafford Springs	25	12-15-27	Constructed	None.	
Starkville	3,612	3.14.25	Purchased	24 hrs.	12¢
Stonewall	1,075	8.1.28	Constructed	None	
Stringer	50	4.1.30	Purchased	24 hrs.	20¢
Strongs	100	9.1.26	Purchased	24 hrs.	17 1/2¢
Sturgis	477	10.1.26	Constructed	None	
Summerland	75	.28	Constructed	None	
Sumrall	1,364	5.1.30	Purchased	24 hrs.	15¢
Taylorsville	805	5.1.28	Purchased	24 hrs.	20¢
Toomsuba	300	9.1.28	Constructed	None	
Topton	25	9.1.28	Constructed	None	
Union	1,705	9.1.28	Purchased	24 hrs.	12¢
Vardaman	627	9.1.28	Purchased	24 hrs.	15¢
Vossburg	432	1.1.28	Constructed	None.	
Wahalak	315	9.1.28	Purchased	24 hrs.	15¢
Walthal	124	6.19.30	Constructed	None	
Waveland	663	1.1.25	Purchased	24 hrs.	17¢
Walnut Grove	753	9.1.28	Purchased	24 hrs.	15¢
Waynesboro	1,120	4.1.30	Purchased	24 hrs.	15¢
Weir	570	7.1.28	Constructed	None.	
Wiggins	1,074	5.1.30	Purchased	24 hrs.	15¢
Williamsville	75	3.1.28	Constructed	None.	
Wingate Station	25	.28	Constructed	None	

The following were municipally owned plants at date of purchase:

Aberdeen	3,925	3.9.25	Purchased	24 hrs.	15¢
Ackerman	1,169	6.25.25	"	18 "	19¢
Brooksville	875	2.1.27	"	18 "	12¢
Houston	1,477	4.7.25	"	18 "	15¢
Louisville	3,013	6.23.25	"	24 "	20¢
Moss Point	2,453	7.10.25	"	24 "	25¢
Pascagoula	4,339	1.1.26	"	24 "	20¢
Starkville	3,612	3.14.25	"	24 "	12¢

[fol. 1999] COMPLAINANTS' EXHIBIT No. 15

Mississippi Power Company

Year	Miles Transmission Pole Lines	Miles Distribution Pole Lines	Number Customers as of 12/31	Kwh. Sales to Regular Customers	Kwh. Sales to Industrial Customers
1925.....	37.	335.	12,381	18,952,063	.....
1926.....	321.86	383.50	19,893	33,340,087	.....
1927.....	388.66	426.35	25,472	56,233,502	.....
1928.....	693.72	615.62	31,068	70,975,679	.....
1929.....	827.29	783.20	36,441	92,307,222	.....
1930.....	901.08	913.75	37,994	92,510,126	42,729,430
1931.....	912.00	963.75	38,061	94,819,491	45,372,420
1932.....	912.00	978.20	35,964	81,697,522	37,181,539
1933.....	912.00	979.10	34,822	82,189,151	40,628,183
1934.....	794.70*	1,003.15*	34,336*	85,718,558	42,233,733
1935.....	794.70	1,006.10	34,095	96,501,995	48,883,828
1936.....	795.39	1,045.50	36,666	121,160,760	64,216,059
Yr. Ending 7/31/37...	857.41	1,080.50	38,417	136,031,850	44,247,805
* Reduction % Transf. to TVA.	113.30	167.11	4,134		

Year	Residential kwh. Use Per Customer	Residential Average Revenue Per Customer	Residential Average Rate Per kwh.	Towns and Communities Served
1925.....	190	25.84	13.6	27
1926.....	233	29.47	12.66	46
1927.....	355	30.15	8.49	67
1928.....	379	30.96	8.17	136
1929.....	431	33.07	7.67	145
1930.....	524	34.79	6.64	173
1931.....	576	35.84	6.22	179
1932.....	577	35.82	6.20	179
1933.....	555	34.19	6.16	179
1934.....	594	32.71	5.50	147*
1935.....	655	34.08	5.21	147
1936.....	758	35.50	4.68	147
Yr. Ending 7/31/37.....	803	36.68	4.57	147
* Reduction % Transf. to TVA				32

[fol. 2000]

COMPLAINANTS' EXHIBIT No. 16

Mississippi Power Company

Statement of Number of Customers, Kwh. Sales and Revenue from Customers 100 Miles, 150 Miles and 250 Miles from Pickwick Dam for Years 1933 and 1936

	1933			1936		
	No. Cust.	Sales kwh.	Revenue From Energy Sales	No. Cust.	Sales kwh.	Revenue From Energy Sales
100 Miles Radius Pickwick Dam:						
Properties Now Served	1,052	1,398,050	71,824.58	1,247	2,102,086	88,254.39
Properties Transferred TVA 1934	4,134	9,776,684	308,548.45	.....	.....	.....
Total	5,186	11,174,734	380,375.03	1,247	2,102,086	88,254.39
150 Miles Radius Pickwick Dam:						
Properties Now Served	5,052	8,134,047	358,203.84	6,068	14,816,009	484,839.85
Properties Transferred TVA 1934	4,134	9,776,684	308,548.45	.....	.....	.....
Total	9,186	17,910,731	666,752.29	6,068	14,816,009	484,839.85
250 Miles Radius Pickwick Dam:						
Properties Now Served	17,474	49,614,991	1,337,054.86	20,772	87,936,552	1,768,553.86
Properties Transferred TVA 1934	4,134	9,776,684	308,548.45	.....	.....	.....
Total	21,608	59,391,675	1,645,603.31	20,772	87,936,552	1,768,553.86

[fol. 2001]

COMPLAINANTS' EXHIBIT No. 17

Mississippi Power Company

Tax Payments for Years 1932-1937 Inclusive—1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Local Real Estate and Personal	253,000.00	263,061.07	236,700.76	241,638.35	305,228.73	317,394.8-
Federal Bond Tax Paid at Source	3,900.00	3,685.50	3,889.54	3,808.70	3,841.95	3,878,8-
Federal 3% Excise on Electric Sales	62,380.00	55,314.64	49,543.99	47,583.74	13,436.72	.....
Federal Excise, Documentary Stamps and Miscellaneous	.....	1,188.20	950.74	1,810.27	1,861.79	989.52
Federal Capital Stock	5,727.00	6,113.50	3,496.50	997.00	1,251.00	500.50
Pennsylvania and Massachusetts State Bond	4,800.00	4,995.51	4,900.21	4,722.30	5,292.48	5,915.13
Mississippi Capital Stock	9,587.00	9,526.00	9,417.00	10,757.00	12,009.00	11,042.00
Privilege Licenses	1,657.00	1,640.00	2,366.00	2,331.36	2,309.19	4,167.33
Motor Vehicle License Plates	2,100.00	2,740.86	2,759.59	3,054.35	3,939.58	3,257.73
State Gasoline Tax	.....	5,063.28	5,003.04	4,719.30	4,724.76	4,782.00
State Income	38,000.00	20,753.24	3,720.48	.....	.....	.....
Federal Income	20,650.00	.....	.....	.....	.....	.....
Federal Old Age Benefit	7,375.00	.....	.....	.....	.....	.....
Federal Unemployment	1,540.00	676.94	.....	.....	.....	.....
State Unemployment—Mississippi	12,600.00	6,320.74	.....	.....	.....	.....
Gross Receipts Tax	1,030.00	1,631.53	998.64	1,590.92	1,996.36	9,678.08
Maine Franchise Tax	1,425.00	1,425.00	1,425.00	1,425.00	1,425.00	1,575.0-
State Pole and Wire	12,060.00	12,045.00	12,045.00	12,985.38	13,931.24	8,106.88
State Vehicle Mileage	60.00	105.25	67.13	51.61	52.11	.....
Total Taxes	437,891.00	396,286.26	337,283.62	337,475.28	371,299.91	371,287.84
Gross Revenue	3,475,040.00	3,103,242.83	2,773,989.46	2,685,701.95	2,760,126.77	2,996,320.90
% of Gross Revenue	12.60	12.77	12.16	12.57	13.45	12.39

[fol. 2002] COMPLAINANTS' EXHIBIT No. 18

Copy of an Order by the Tennessee Railroad and Public Utilities Commission Approving the Issuance of an Electric Franchise by the Town of Franklin to Franklin Power & Light Company

(Omitted)

COMPLAINANTS' EXHIBIT No. 19

Copy of an Order by the Tennessee Railroad and Public Utilities Commission Approving the Extension of the Electric Franchise by the Town of Franklin to Franklin Power & Light Company

(Omitted)

[fol. 2003] COMPLAINANTS' EXHIBIT No. 20

Statement of Taxes Paid by Franklin Power & Light Co.

State & County	1932	1933	1934	1935	1936
Ad Valorem	40.00	80.00	120.00	120.00	140.00
Inspec. Fee & RR&PI	.....	120.59	180.74	193.50	207.21
Franchise Tax	.....	.....	.....	.....	262.50
Property	490.00	1,040.00	1,654.00	1,774.00	2,255.50
Privilege License	.....	41.00	192.00	192.00	192.00
Special School	.....	.....	120.00	120.00	.....
Total	530.00	1,281.59	2,266.74	2,399.50	3,057.21
Town of Franklin					
License	97.00	97.00	97.00	97.00	97.00
Property	.....	600.00	600.00	840.00	1,080.00
Total	97.00	697.00	697.00	937.00	1,177.00
U. S. Government					
Capital Stock	.....	300.00	200.00	200.00	200.00
Energy	.....	977.44	909.44	1,097.00	1,192.79
Unemployment	.....	.....	.....	.....	54.77
Total	.....	1,277.44	1,109.44	1,297.60	1,447.56

Summary

Year	State and County	Town of Franklin	U. S. Govm't	Total
1932	$530.00	$97.00	$ 0	$627.00
1933	1,281.59	697.00	1,277.94	3,256.53
1934	2,266.74	697.00	1,109.44	4,073.18
1935	2,399.50	937.00	1,297.60	4,634.10
1936	3,057.21	1,177.00	1,447.56	5,681.77

[fol. 2004] COMPLAINANTS' EXHIBIT No. 21

Copy of an Order by the Tennessee Railroad and Public Utilities Commission Approving the Charter of Incorporation of Franklin Power & Light Company as a Certificate of Necessity and Convenience and Approving the Issuance of Common Stock

(Omitted)

COMPLAINANTS' EXHIBIT No. 22

Copy of an Order by the Tennessee Railroad and Public Utilities Commission Approving the Issuance of Bonds by Franklin Power & Light Company in the Amount of $100,000.00

(Omitted)

[fol. 2005] COMPLAINANTS' EXHIBIT No. 23

Franklin Power & Light Company

Franklin, Tennessee

Year	Kwh. Sales to Regular Customers	Number of Customers	Gross Electric Revenue
1933	2,001,683	754	$61,196.60
1934	2,479,233	811	63,742.28
1935	2,727,871	859	68,240.36
1936	3,219,758	901	73,366.12
Year ending July 31, 1937	2,187,789	936	46,219.80

[fol. 2006]

COMPLAINANTS' EXHIBIT No. 24

Tennessee Public Service Company, Knoxville, Tennessee

Tax Payments for Years 1932-1937 Inclusive—1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Real Estate and Personal	$323,808.00	$310,338.78	$313,408.76	$295,341.02	$284,001.43	$282,654.21
Franchise—State of Maine	2,850.00	2,850.00	2,850.00	2,850.00	2,850.00	4,237.50
Franchise—State of Tennessee	17,000.00	16,933.50	16,285.23	.....	.....	.....
Privilege Licenses, Electric, Railway, Bus and Merchandise	3,120.00	10,718.30	10,543.08	10,691.02	10,684.52	8,817.04
Motor Vehicle License Plates	4,011.00	3,894.75	2,444.85	1,886.76	1,571.57	2,076.24
Gasoline Tax—State of Tennessee	31,500.00	23,454.05	17,356.50	8,877.54	6,952.45	7,284.27
Public Utilities Commission Inspection, Control and Supervision Fees	7,725.00	7,023.89	6,202.76	3,005.47	3,091.93	3,192.65
Self-Insurers—State of Tennessee	379.00	307.47	262.81	222.35	354.59	354.49
Excise—State of Tennessee	6,362.00	99.52	1,232.51	6,078.17	12,377.70	18,722.51
State Corporate Filing Fee—(Foreign Corporation Tax)	150.00	150.00	150.00	150.00	150.00	150.00
Unemployment—State of Tennessee	14,860.00	7,222.02	.....	.....	.....	.....
Gross Receipts Privilege (3%) State of Tennessee	38,042.00	.....	.....	.....	.....	.....
Federal Bond Tax Paid at Source	350.00	333.50	319.00	343.50	377.00	392.50
Federal—3% Tax on Electrical Energy	53,450.00	45,634.94	39,657.70	38,127.93	11,707.17	.....
Federal Excise, (Oil, Gasoline, Check Tax, Tires, Tubes, etc.)	7,130.00	6,387.93	3,852.51	2,475.09	2,098.21	730.04
Federal Capital Stock	3,928.00	3,964.00	5,755.00	7,505.00	6,173.00	2,423.00
Federal Income	66,455.00	31,220.24	19,398.61	14,261.99	.....	.....
Federal Old Age Benefits	7,961.00	.....	.....	.....	.....	.....
Federal Unemployment	1,652.00	802.44	.....	.....	.....	.....
Total Taxes	$590,733.00	$471,335.33	$439,719.32	$391,915.84	$342,389.57	$331,034.45
Gross Revenue	$3,929,540.00	3,501,139.87	3,046,665.36	2,911,499.10	2,890,997.98	3,134,927.35
% of Gross Revenue	15.03	13.46	14.43	13.46	11.84	10.56

[fol. 2007] COMPLAINANTS' EXHIBIT No. 25

Memorandum of Franchises Granted Tennessee Public Service Company and Approval Thereof by the Tennessee Railroad and Public Utilities Commission

(Omitted)

COMPLAINANTS' EXHIBIT No. 26

Memorandum of Consents by Municipalities and Orders of Approval by the Tennessee Railroad and Public Utilities Commission to Assignments of Municipal and County Franchises to Tennessee Public Service Company

(Omitted)

COMPLAINANTS' EXHIBIT No. 27

Map of Generation, Transmission and Distribution System of Tennessee Public Service Company

(Original Exhibit)

COMPLAINANTS' EXHIBIT NO. 28

Tennessee Public Service Company, Knoxville, Tennessee

Statement of Miles of Transmission and Distribution Lines; Average Annual Kwh. and Revenue per Residential Customer; Average Revenue per Kwh.—Residential; Number of Towns Served; Kwh. Sales to Regular Customers and Complainant Companies; Interdepartmental Kwh.; Industrial Kwh. Sales; and Percent Industrial Sales are of Kwh. Sales to Regular Customers.

Item	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	12 Months Ended 9-30-37
1. Number of Miles of Lines:											
(a) Transmission	126.97	126.97	126.97	180.58	180.58	180.58	180.58	180.58	180.58	179.38	180.58
(b) Distribution	536.86	599.80	636.08	696.15	702.49	703.52	706.34	711.63	795.17	974.15	1,063.77
2. Average Annual Kwh. per Residential Customer	383	410	457	504	550	567	571	623	736	856	926
3. Average Annual Revenue per Residential Customer	$31.92	$32.65	$34.06	$36.04	$37.96	$38.15	$35.58	$32.21	$31.58	$34.08	$35.27
4. Average Revenue per Kwh. Sold—Residential	8.33¢	7.97¢	7.46¢	7.14¢	6.90¢	6.73¢	6.23¢	5.17¢	4.29¢	3.98¢	3.81¢
5. Number of Towns and Communities Served	16	17	21	25	27	27	27	27	31	35	37
6. Kwh. Sold to Regular Customers (Thousands)	62,754	73,071	94,520	91,801	91,498	73,949	71,584	77,087	91,819	112,239	131,404
Kwh. Sold to Complainant Companies (Thousands)	103	161	448	695	958	1,161	1,223	1,424	1,530	1,731	1,949
Kwh. — Interdepartmental (Thousands)	10,594	10,146	10,172	9,298	8,090	7,071	6,341	6,804	6,108	5,762	5,623
Total Kwh. (Thousands)	73,451	83,378	105,140	101,794	100,546	82,181	79,148	85,315	99,457	119,732	138,976
7. Industrial Kwh. Sales (Thousands)	43,500	51,998	69,789	62,632	60,972	44,283	43,270	43,593	50,948	61,843	73,269
8. Percent Industrial Kwh. Sales are of Kwh. Sold to Regular Customers	69.32	71.16	73.84	68.23	66.64	59.88	60.45	56.55	55.49	55.10	55.76

Note: Tennessee Public Service Company acquired Knoxville Power & Light Company as of November 1, 1930. Figures on this statement are for these companies combined prior to that date.

[fol. 2009] COMPLAINANTS' EXHIBIT No. 29

Map of the Transmission and Distribution System of Holston River Electric Company

(Original Exhibit)

[fol. 2010] COMPLAINANTS' EXHIBIT No. 30

Holston River Electric Company, Knoxville, Tennessee

Statement of Number of Miles of Distribution Lines; Average Annual Kwh. and Revenue per Residential Customer; Average Revenue per Kwh.—Residential; Number of Towns Served; and Number of Kwh. Sold to Regular Customers

Item	1928	1929	1930	1931	1932	1933	1394	1935	1936	12 Months ended 9-30-37
1. Number of Miles of Distribution Lines	51.44	81.67	88.22	87.84	96.16	95.95	96.00	97.85	98.28	98.54
2. Average Annual Kwh. per Residential Customer	215	225	260	291	303	340	357	443	576	647
3. Average Annual Revenue per Residential Customer	$21.10	$19.47	$21.65	$23.72	$23.30	$25.15	$25.88	$24.07	$26.08	$27.60
4. Average Revenue per Kwh. Sold—Residential	9.80¢	8.66¢	8.33¢	8.16¢	7.69¢	7.39¢	7.25¢	5.44¢	4.53¢	4.14¢
5. Number of Towns and Communities Served	8	8	9	9	9	9	9	9	9	9
6. Kwh. Sold to Regular Customers (Thousands)	256	347	545	774	950	1,030	1,223	1,262	1,414	1,560

[fol. 2011]

COMPLAINANTS' EXHIBIT NO. 31

Holston River Electric Company, Knoxville, Tennessee

Tax Payments for Years 1932-1937 Inclusive—1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Real Estate and Personal	$3,250.00	$3,434.82	$3,434.82	$3,332.58	$3,377.45	$3,293.34
Franchise—State of Tennessee	355.00	355.50	172.50	.....	.....	.....
Privilege Licenses, Electric and Merchandise	135.00	340.00	349.98	337.00	300.34	231.11
Motor Vehicle License Plates	33.00	23.11	19.55	42.43	44.12	50.17
Gasoline Tax—State of Tennessee	219.00	227.29	193.80	187.48	183.68	197.78
Public Utilities Commission Inspection, Control and Supervision Fees	117.00	111.50	122.12	80.27	77.39	80.78
State Corporate Filing Fee—(Domestic CorporationTax)	5.00	5.00	5.00	5.00	5.00	5.00
Unemployment—State of Tennessee	130.00	65.13	.....	.....	.....	.....
Gross Receipts Privilege (3%) State of Tennessee	330.00	.....	.....	.....	.....	.....
Federal—3% Tax on Electrical Energy	900.00	803.87	753.64	753.42	222.78	.....
Federal Excise (Gasoline, lubricants, telephone tolls, check, etc.)	51.00	41.01	38.75	52.22	46.56	19.03
Federal Old Age Benefits	72.00	.....	.....	.....	.....	.....
Federal Unemployment	14.00	7.24	.....	.....	.....	.....
Total Taxes	$5,611.00	$5,414.47	$5,090.16	$4,790.40	$4,257.32	$3,877.21
Gross Revenue	$47,500.00	$42,913.71	$41,119.05	$44,110.49	$39,840.17	$39,729.22
% of Gross Revenue	11.81	12.62	12.38	10.86	10.69	9.76

[fol. 2012] COMPLAINANTS' EXHIBIT No. 32

Memorandum of Franchises Granted Holston River Electric Company and Approvals Thereof by the Tennessee Railroad and Public Utilities Commission

(Omitted)

COMPLAINANTS' EXHIBIT No. 33

Map entitled "Distribution System" of Birmingham Electric Company

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 34

Copy of an Order of the Alabama Public Service Commission Dated November 5, 1925 Establishing Territories Within which Electric Service shall be Rendered singly by each of the applicants, Birmingham Electric Company and Alabama Power Company

(Omitted)

[fol. 2013] COMPLAINANTS' EXHIBIT No. 35

Birmingham Electric Company

	Year	Miles of Distribution Pole Lines	Number of Customers as of 12-31	* Total Energy Sales	Inter-depart-mental
	1927	920.56	58,855	250,438,269	47,971,419
	1928	990.76	64,507	263,332,277	48,330,407
	1929	1,017.43	65,223	258,510,156	46,547,986
	1930	1,038.31	59,105	248,166,678	43,071,968
	1931	1,046.42	57,535	224,043,902	37,808,219
	1932	1,046.47	51,080	171,715,670	34,673,994
	1933	1,043.77	56,744	167,707,652	33,269,847
	1934	1,044.95	59,278	188,218,224	36,929,878
Year	1935	1,048.73	59,836	199,452,895	36,711,941
ending	1936	1,052.81	64,971	243,758,587	35,645,187
August 31..	1937	1,057.52	68,110	262,031,584	34,014,479

	Year	Kwh. use per Residential Customer	Average Annual Revenue per Residential Customer	Residential Average rate Per Kwh.—$
	1932	519	33.24	.0641
	1933	493	29.19	.0592
	1934	521	27.22	.0522
Year	1935	599	28.41	.0474
ending	1936	684	28.69	.0419
August 31..	1937	732	28.70	.0392

Year	Industrial Sales Kwh.	% of Total Energy Sales
1933	74,084,194	44.17
1936	116,429,366	47.76

* Total Energy Sales includes Interdepartmental.

[fol. 2014]

COMPLAINANTS' EXHIBIT No. 36

Birmingham Electric Company Tax Payments for Years 1932–1937 Inclusive—1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Local Real Estate and Personal	494,660.00	496,075.05	494,974.38	487,927.55	519,862.11	542,407.79
Federal Bond Tax Paid at Source	1,962.00	1,950.00	1,970.26	1,821.00	2,050.00	1,800.00
Federal 3% Excise on Electric Sales	93,095.00	85,560.86	78,084.11	75,925.65	19,971.57	.....
Federal Excise, Documentary Stamps and Miscellaneous	9,444.00	12,033.69	2,719.57	2,037.84	2,012.84	221.88
Federal Capital Stock	11,686.00	12,920.10	8,346.90	8,184.00	7,326.00	.....
Pennsylvania State Bond	1,136.00	1,032.25	746.81	772.07	660.21	694.42
Alabama Franchise	25,382.00	25,382.72	25,382.72	49,380.72	49,380.72	49,410.72
Privilege Licenses, Electric, Railway, Bus, Steam and Merchandise	151,791.00	139,343.04	133,431.97	121,559.55	136,035.46	164,897.74
Motor Vehicle License Plates	14,474.00	8,139.76	5,018.32	4,934.97	4,534.78	4,441.98
State Gasoline Tax	28,250.00	15,331.30	8,330.12	7,804.32	7,520.28	.....
Public Utility Commission Fee	11,665.00	9,718.81	9,446.63	8,551.87	9,476.75	2,751.82
State Income	14,664.00	.....	.....	.....	.....	.....
State Sales	1,027.00	.....	.....	.....	.....	.....
State Corporate Filing Fees	100.00	100.00	100.00	100.00	100.00	110.00
Federal Income	82,434.00	.....	.....	.....	.....	.....
Federal Old Age Benefits	20,423.00	.....	.....	.....	.....	.....
Federal Unemployment	4,667.00	2,100.58	.....	.....	.....	.....
State Unemployment—Alabama	42,010.00	18,905.31	.....	.....	.....	.....
Gross Receipts Tax—Merchandise	459.00	.....	.....	.....	.....	.....
Total Taxes	1,009,329.00	828,593.47	768,551.79	768,999.54	758,930.72	766,736.35
Gross Electric Operating Revenue	4,993,609	4,602,312	4,154,197	3,947,920	3,734,685	4,320,150
Gross Total Operating Revenue	7,527,522	6,798,203	6,112,541	5,931,087	5,334,579	5,951,168
% of Gross Total Operating Revenue	13.41	12.19	12.57	12.97	14.23	12.88

November 1, 1937.

[fol. 2015] COMPLAINANTS' EXHIBIT No. 37

Map of the Transmission and Distribution System of Memphis Power & Light Company

(Original Exhibit)

(Here follows one paster, side folios 2016-2017)

[fol. 2016]

COMPLAINANTS' EXHIBIT No. 38

Memphis Power & Light Company, Statistical Data

Year	Miles of Trans. Lines	Miles of Dist. Lines	Number Customers End of Yr.	Total Kwh. Sales to Customers	Kwh. Sales to Compl. & Non-Compl. Companies	Kwh. Sales to Customers in Co. Territory	Kwh. Sales to Industrial Customers	Kwh. Sales to Industrial Customers % of Territorial Sales	Residential Kwh. used per Customer	Revenue per Residential Customer	Residential Average Rate per Kwh.	Number Communities Served
1924.....	56	377	34,687	92,759,000	.....	92,759,000	23,502,000	25.34	345	26.21	.0758	3
1925.....	127	403	39,996	101,894,000	.....	101,894,000	27,955,000	27.44	363	27.51	.0761	15
1926.....	157	440	41,022	117,200,000	.....	117,200,000	33,244,000	28.37	365	27.39	.0751	23
1927.....	186	465	45,322	145,645,000	16,210,000	129,435,000	36,208,000	27.97	415	30.56	.0735	24
1928.....	241	500	46,990	153,069,000	16,710,000	136,359,000	40,837,000	29.95	453	32.78	.0724	28
1929.....	272	540	49,338	160,766,000	11,304,000	149,462,000	48,948,000	32.75	509	35.91	.0705	28
1930.....	284	577	48,144	170,850,000	14,356,000	156,494,000	43,940,000	28.08	573	38.68	.0675	28
1931.....	290	623	48,247	166,535,000	15,708,000	150,827,000	42,281,000	28.03	594	39.50	.0665	28
1932.....	299	644	46,562	149,654,000	12,292,000	137,362,000	34,520,000	25.13	618	39.52	.0640	29
1933.....	299	648	47,632	141,861,000	10,500,000	131,361,000	34,369,000	26.16	606	34.83	.0575	30
1934.....	303	666	51,364	162,507,000	12,023,000	150,484,000	44,752,000	29.74	612	30.98	.0506	30
1935.....	308	716	52,935	169,822,000	13,265,000	156,557,000	43,438,000	27.75	66–	32.61	.0493	31
1936.....	313	845	55,737	193,767,000	19,295,000	174,472,000	51,783,000	29.68	721	34.80	.0482	37
July 1937 (12 Mo.).....	319	905	56,952	212,386,000	20,498,000	191,888,000	61,841,000	32.23	755	35.78	.0474	37

[fol. 2017]

COMPLAINANTS' EXHIBIT No. 39

Memorandum of Franchises Granted Memphis Power and Light Company and Approvals Thereof by the Tennessee Railroad and Public Utilities Commission

(Omitted)

[fol. 2018]

COMPLAINANTS' EXHIBIT No. 40

Memphis Power & Light Company

Statement of Taxes Paid—By Years to Which They Are Applicable—1932 to 1937 Inclusive (1937 Estimated)

	1932	1933	1934	1935	1936	(Estimated) 1937
1 Federal Income	148,968.94	120,806.21	131,791.79	179,173.94	{147,064.03* / 147,064.04}	364,869.00
2 Federal Bond Tax at Source	2,495.10	2,570.90	2,531.75	2,127.45	2,109.55	2,200.00
3 Federal 3% Energy Sales	.....	24,440.32	83,941.32	88,937.06	95,878.57	103,000.00
4 Federal Capital Stock	5,557.00	9,957.00	9,100.00	11,700.00	14,370.00	15,000.00
5 Federal Check Tax	536.00	731.74	1,021.53	.....	.....	.....
6 Federal Unemployment	.....	.....	.....	.....	1,559.10	3,300.00
7 Federal Old Age Benefit	.....	.....	.....	.....	.....	15,000.00
8 Federal Miscellaneous	44.70	.....	.....	.....	.....	.....
9 Ad Valorem—State of Tennessee	16,444.20	16,440.21	16,454.62	16,441.74	16,440.90	17,214.00
10 Ad Valorem—County of Shelby	187,062.93	187,007.05	187,152.62	182,913.91	180,890.24	180,400.00
11 Ad Valorem—City of Memphis	400,707.00	395,141.63	395,141.63	395,141.63	395,141.63	395,142.00
12 Ad Valorem—Small Incorporated Towns	704.08	581.32	664.03	634.38	622.25	772.00
13 Privilege—State of Tennessee	6,696.39	6,283.09	5,867.17	7,026.40	5,622.28	5,000.00
14 Privilege—State of Tennessee Gross Receipts	.....	.....	.....	.....	.....	107,975.00
15 Privilege—County of Shelby	2,927.94	3,239.77	3,217.49	3,229.99	3,214.45	3,300.00
16 Privilege—City of Memphis	8,231.66	8,159.86	8,224.69	8,513.29	8,411.78	9,000.00
17 Privilege—Small Incorporated Towns	28.00	33.00	25.00	20.00	10.00	25.00
18 State of Tennessee Corporation Excise Tax	41,244.70	34,919.38	27,965.22	21,800.56	29,695.49	30,000.00
19 State of Tennessee Franchise Tax	.....	.....	.....	8,977.69	.....	30,750.00
20 State of Tennessee Unemployment Tax	.....	.....	.....	.....	14,031.94	28,800.00
21 State of Tennessee Railroad and Public Utilities Commission Supervision Fee	3,572.85	3,480.78	3,348.89	7,025.37	7,482.34	7,500.00
22 State of New Jersey Franchise Tax	1,979.54	1,980.00	1,980.00	1,980.00	1,980.00	1,980.00
23 State of Pennsylvania Bond Tax	187.68	203.52	335.59	284.70	206.23	300.00
Total Taxes	827,388.71	815,975.78	878,783.34	935,928.11	1,071,794.82	1,321,527.00
Gross Revenues—Electric Energy Sales	4,528,400.17	4,059,674.33	4,148,799.95	4,400,352.74	4,847,992.33	5,390,000.00
Gross Revenues—Electric Other	8,028.09†	18,569.79	16,949.17	14,881.62	20,619.31	50,000.00
Gross Revenues—Electric Total	4,520,372.08	4,078,244.12	4,165,749.12	4,415,234.36	4,868,611.64	5,440,000.00
Gross Revenues—Gas	2,138,401.93	2,078,145.77	2,233,012.59	2,593,460.00	2,996,911.61	3,100,000.00
Gross Revenues—Miscellaneous	36,596.69	10,012.12	9,442.11	11,419.49	41,356.42	30,000.00
Gross Revenues—Total	6,695,370.70	6,166,402.01	6,408,203.82	7,020,113.85	7,906,879.67	8,570,000.00
Per cent of Gross Revenues	12.29	13.18	13.66	13.23	13.55	15.42

* To be paid after 7-31-37.

†Red in copy.

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[fol. 2019] COMPLAINANTS' EXHIBIT No. 41

Map of Properties of Carolina Power and Light Company

(Original Exhibit)

[fol. 2020] COMPLAINANTS' EXHIBIT No. 42

Carolina Power & Light Company

Installed Capacity of Generating Plants Owned

Name of Plant	Installed Capacity in Kilowatts Name Plate Rating
Waterville Hydro-Electric Plant	108,000
Tillery Hydro-Electric Plant	62,000
Blewett Hydro-Electric Plant	24,600
Marshall Hydro-Electric Plant	3,000
Buckhorn Hydro-Electric Plant	2,900
Weaver Hydro-Electric Plant	2,500
Carbonton Hydro-Electric Plant	1,000
Lockville Hydro-Electric Plant	1,000
Eury Hydro-Electric Plant	600
Lower Hydro-Electric Plant	450
Cape Fear Steam-Electric Plant	30,000
Elk Mountain Steam-Electric Plant	13,000
Total all Plants	249,050

[fol. 2021] COMPLAINANTS' EXHIBIT No. 43

The Federal Power Commission

License On Navigable Waters

Project No. 432

North Carolina

Carolina Power & Light Company

Whereas, by Act of Congress, approved June 10, 1920 (41 Stat., 1063) designated therein as "The Federal Water Act" and hereinafter called "the Act," The Federal Power Commission, hereinafter called "the Commission," is au-

thorized and empowered, inter alia, to issue licenses for the purpose of constructing, operating, and maintaining dams, water conduits, reservoirs, power houses, transmission lines, or other project works necessary or convenient for the development, transmission and utilization of power across, along from or in any of the navigable waters of the United States, or upon any part of the public lands and reservations of the United States (including the Territories), or for the purpose of utilizing the surplus water or water power from any Government dam; and

Whereas, Carolina Power & Light Company hereinafter called "the Licensee," a corporation organized and existing under the laws of the State of North Carolina and having its office and principal place of business in the city of Raleigh, in the State of North Carolina has made application in due and proper form to the Commission for a license for a power project designated as Project No. 432 on the records of the Commission, and for authority to construct, maintain and operate, in the Big Pigeon River, in the vicinity of Waterville, in the County of Haywood, State of North Carolina certain project works, as hereinafter described, necessary or convenient for the development and improvement of navigation and for the development, transmission and utilization of power across, along, from and in navigable waters of the United States; and

Whereas, the Licensee has submitted to the Commission satisfactory evidence of its compliance with the laws of the State of North Carolina as required by Section 9, subsection (b) of the Act, and the Commission is satisfied as to the ability of the Licensee to carry out the plans for said project as filed with said application; and

Whereas, notice of said application has been given and published by the Commission, as required by Section 4 of the Act; full opportunity has been given to all interested parties to be heard, and no application for said project, or in conflict therewith, has been filed by any State or municipality; and

Whereas, the maps, plans and specifications of said project and of said project works, as hereinafter described, have [fol. 2022] been provisionally approved by the Commission, and the plans of the dam and other structures affecting

navigation have been approved by the Chief of Engineers and the Secretary of War; and

Whereas, the Commission has found that said project, as hereinafter described, will be best adapted to a comprehensive scheme of improvement and utilization of said waterway for the purposes of navigation, of water power development and other beneficial public uses; and

Whereas, the Commission did on the 20th day of October, 1926 find that the contemplated improvement is desirable and justified in the public interest for the purpose of improving or developing a waterway, namely, said Big Pigeon River for the use or benefit of interstate and foreign commerce, a certified copy of the records of the Commission containing such finding being hereto attached; and

Whereas, the Licensee, on the first day of November, 1926 pursuant to an authorization of its board of directors, a copy of the record thereof being hereto attached, accepted in writing all the terms and conditions of the Act and of this license;

Now, therefore, the Commission hereby issues this license to the Licensee for the purpose of constructing, operating and maintaining certain project works necessary or convenient for the development and improvement of navigation and for the development, transmission and utilization of power across, along, from or in the Big Pigeon River, navigable waters of the United States, and constituting a part of the project hereinafter described; said license, including the period thereof, being subject to all the terms and conditions of the Act and of the rules and regulations of the Commission pursuant thereto as amended and made effective on the first day of April, 1924 as though fully set forth herein, which said rules and regulations are attached hereto and made a part hereof, and being subject also to the following express conditions and limitations, to wit:

Article 1. This license is issued for a period of fifty (50) years from the date hereof, and in consideration of such license and the benefits and advantages accruing thereunder to the Licensee it is expressly agreed by the Licensee that the entire project, project area and project works as hereinafter designated and described, whether or not lo-

cated in, on or along said Big Pigeon River or upon lands of the United States, shall be subject to all the terms and conditions of this license, including the terms and conditions of the Act and of the rules and regulations of the Commission pursuant thereto and made a part of this license.

Article 2. The project covered by and subject to this license consists of

A. All lands constituting the project area and inclosed, or the location of which is shown, by the project boundary, and/or interests in such lands necessary or useful for the purposes of the project, whether such lands or interests therein are owned or held by the Licensee or by the United States; such project area and project boundary being more fully shown and described by certain exhibits which accompanied said application for license and which are designated and described as follows:

[fol. 2023] Exhibit J—Map in one sheet, designated "General Map Showing Inter-connected System, E-26725" (F. P. C. No. 432-1).

Exhibit K—Map in one sheet, designated "Plan Showing Land Ownership, Project Boundary, and Location of Structures, F-26699" (F. P. C. No. 432-2).

Exhibit J signed August 3, 1926 and Exhibit K July 30, 1926, Carolina Power & Light Company, By E. W. Hill, Vice President.

B. All project works consisting of—

(a) A dam and reservoir across and in said Big Pigeon River;

(b) A water conduit about 6 1/3 miles long, comprising an intake structure, a tunnel, and penstocks: and

(c) A power house and appurtenant equipment;

such project works being more fully shown and described by certain exhibits which accompanied said application for license and which are designated and described as follows:

Exhibits J and K cited above.

Exhibit L—Map in one sheet, designated "Plans, Profile, and Sections, F-26700" (F. P. C. No. 432-3).

Exhibit M—One typewritten sheet, designated "Description of Mechanical and Electrical Equipment."

Each of the above exhibits signed July 30, 1926, Carolina Power & Light Company, by E. W. Hill, Vice President.

Exhibit L-1—Plan in one sheet, designated "Plan and Sections of Dam, F-27240" (F. P. C. No. 432-4). Signed Carolina Power & Light Company, by Wm. Darbee, Vice President.

C. All other structures, fixtures, equipment, or facilities used or useful in the maintenance and operation of the project and located upon the project area, including such portable property as may be used and useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as a part of the project works is approved or acquiesced in by the Commission; also all other rights, easements, or interests the ownership, use, occupancy or possession of which is necessary or appropriate in the maintenance and operation of the project or appurtenant to the project area.

Article 3. The maps, plans, specifications, and statements designated and described in Article 2 hereof as Exhibits J, K, L, L-1 and M, respectively, and provisionally approved by the Executive Secretary for the Commission in accordance with its authorization of October 20, 1926, are hereby [fol. 2024] made a part of this license, and no substantial change shall hereafter be made in said exhibits, or any of them, until such change shall have been approved by the Commission: Provided, however, that if the Licensee deems it necessary or desirable that said approved maps, plans, specifications and statements, or any of them, be changed there shall be submitted to the Commission for approval amended, supplemental, or additional maps, plans, specifications and statements covering the proposed changes, and upon approval by the Commission of such proposed changes such amended, supplemental or additional maps, plans, specifications and statements shall become a part of this license and shall supersede, in whole or in part, such map,

plan, specification, or statement, or part thereof, theretofore made a part of this license as may be specified, respectively, in the order or endorsement of approval.

Article 4. Said project works shall be constructed in substantial conformity with the approved maps, plans and specifications thereof made a part of this license and designated and described in Articles 2 and 3 hereof or as changed in accordance with the provisions of said Article 3. Except when emergency shall require for the protection of navigation, life, health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works constructed under this license without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission shall direct. Minor changes in or divergence from such approved maps, plans, and specifications may be made in the course of construction, if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any such minor changes made without the prior approval of the Commission which in its judgment have produced or will produce any of such results shall be subject to such alteration as the Commission may direct.

Article 5. The work of construction under this license, whether or not conducted upon lands of the United States, shall be subject to the inspection and approval of the District Engineer, U. S. E. Office, Chattanooga, Tenn., or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall notify such representative of the date upon which work will begin, and as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of construction for a period of more than one week, and of its resumption and completion.

Article 6. Before beginning construction of the project works, the Licensee shall drill the dam site, shall submit to the representative of the Commission plans of all structures in sufficient detail to permit the checking of their safety and

adequacy, and shall obtain the approval by said representative of the plans for such structures before commencing the construction thereof.

Subject to the provisions of section 13 of the Act, the Licensee shall begin the construction of said project works within one year from the date of issuance hereof, shall thereafter, in good faith and with due diligence, prosecute such construction, and shall—

[fol. 2025] (a) On or before December 31, 1929 complete the initial installation to a capacity of not less than 35,000 horsepower; and

(b) From time to time thereafter construct such portions of the balance of said development, as in the judgment of the Commission may be necessary to supply the reasonable market demands, until the development shall have been completed to a capacity of not less than 70,000 horsepower; Provided, That all of said project works shall be completed on or before December 31, 1933.

Article 7. Upon the completion of the project works, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements, in so far as necessary to show any divergence from or variations in the project area as finally located or in the project works as constructed when compared with the area shown and the works designated or described in this license or in the maps, plans, specifications, and statements approved by the Commission under the provisions of Article 3 hereof, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statements shall, if and when approved by the Commission, be made a part of this license and shall, to the extent and in the particulars set forth in the order or endorsement of approval, be substituted for the maps, plans, specifications and statements theretofore approved by the Commission under the provisions of Article 3 hereof. The maps finally approved by the Commission and made a part of this license under the provisions of Article 3 and/or 7 hereof shall show

the project area to an adequate scale and the boundary thereof either by legal subdivisions, by metes and bounds survey, or by uniform offsets from center-line survey. Said project area shall include all lands without respect to ownership and whether or not the exact boundaries can be definitely fixed and determined, the use and occupancy of which are or will be valuable or serviceable in the maintenance and operation of the project; on which are located or to which are appurtenant the project works (other than portable property) and the rights, easements, or interests likewise valuable ar l serviceable; and the ownership or possession, or the right of use and occupancy, of which are subject to acquisition by the United States under the provisions of Section 14 of the Act. Said maps shall show the ownership of each parcel of land in said project area, and with respect to each parcel to which the Licensee has not the fee title, the character of the right of use and occupancy possessed by the Licensee together with the term of such right.

Article 8. In so far as any material is dredged or excavated in the prosecution of the work herein authorized, it shall be removed and deposited so it will not interfere with navigation and to the satisfaction of said District Engineer.

Article 9. For the purpose of determining the stage and flow of the stream or streams from which water is to be diverted for the operation of said project works and of the amount of water held in and drawn from storage, the Licensee shall install, as soon as practicable and thereafter maintain, a standard recording gage in the reservoir and such gaging stations or other means of stream-flow measurements as the representative of the Commission, hereinafter designated to supervise such work, may deem necessary and best adapted to the requirement; shall provide for the required readings of such gages and for the adequate rating of said station or stations. The Licensee shall also install [fol. 2026] and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters or other measuring devices, and the method of operation thereof may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval

of the Commission or its authorized representative or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of the District Engineer of the United States Geological Survey having charge of stream gaging operations in the region of said project, and the Licensee shall reimburse the said United States Geological Survey for costs incurred in such supervision or for such part thereof as said District Engineer may deem equitable in the circumstances. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, shall make return of such records annually, at such time and in such form as the Commission may prescribe.

Article 10. The Licensee shall be liable for all damages occasioned to the property of others by the construction, maintenance or operation of said project works, or of the works appurtenant or accessory thereto, and in no event shall the United States be liable therefor.

Article 11. In the construction and maintenance of the project works herein specified, the Licensee shall place and maintain suitable structures to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling and obstructing traffic and endangering life on highways, streets, or railroads.

Article 12. The Licensee shall allow officers and employees of the United States free and unrestricted access in, through and across the said project and project works in the performance of their official duties.

Article 13. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure built under the provisions of this license shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure, as may be made from time to

time by the Secretary of War. Such rules and regulations may include the maintenance and operation by the Licensee at its own expense of such lights and signals as may be directed by the Secretary of War, and such fishways as may be prescribed by the Secretary of Commerce.

Article 14. The Licensee shall construct and install such appliances as are necessary for furnishing power for the operation of navigation facilities, including lights and signals, whether constructed by the Licensee or by the United States; and shall furnish free of cost to the United States power for the operation of such navigation facilities.

Article 15. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of War as may be necessary for the purposes of navigation.

[fol. 2027] Article 16. The operations of the Licensee, so far as they affect the use, storage, and discharge from storage of the water of the Big Pigeon River, shall at all times be controlled by such reasonable rules and regulations as the Secretary of War may prescribe in the interest of navigation and as the Federal Power Commission may prescribe in the interest of flood control and of the fullest practicable utilization of the waters of said river for power purposes.

Article 17. The Licensee shall during the period of construction, preserve to the greatest practicable extent the scenic beauty of the territory within the project area, and before the completion of said construction shall restore, in so far as it is possible at reasonable cost, such scenic beauty as may have been injured by operations under control of the Licensee. Borrow pits and dumps shall be so located as to cause least scenic injury consistent with reasonable construction costs. Excavations and fills when unavoidable shall be left in a neat condition, and shall, if not thereby interfering with the operations of the project, be planted with grass, vines or shrubs. Unnecessary cutting of trees except when complete clearing is required shall be avoided and all brush and refuse incident to cutting or clearing shall be removed or destroyed. When any operations pertaining to the construction, maintenance or operation of

the project works are proposed that would materially mar the natural beauty, such operations shall not be undertaken unless and until the approval of the representative of the Commission charged with supervision of the project has been secured as to the method of conducting such work and the means proposed to be employed to protect the scenery and to remedy any damage temporarily inflicted.

Article 18. The Licensee shall permit the free use by the public for navigation or recreational purposes of the reservoir formed by said dam, and shall, when not inconsistent with the operation of said project, allow the construction of wharves or landings in the interest of navigation.

Article 19. The Licensee shall cut and remove or destroy to the satisfaction of said District Engineer, all brush and trees from that zone, within and adjacent to the area to be submerged, which is included between the contour of elevation 2,150 feet above mean sea level and a line 15 feet horizontally from the outside of the contour of elevation 2,200 feet above mean sea level for the initial development, and of the contour of elevation 2,250 above mean sea level for the ultimate development, and shall remove or destroy all floatable refuse or other material within said areas to be submerged. The Licensee shall also cut in such manner or so remove or destroy brush or trees within said area to be submerged that no part of such brush or trees shall project above said elevation of 2,150 feet.

Article 20. The Licensee shall take such measures as may be required by the Commission for the effective prevention of the breeding of malarial mosquitoes in the reservoir, and shall, before permitting the storage of water in said reservoir, submit to the Commission and secure its approval of a plan to accomplish this purpose.

Article 21. The Licensee shall, on or before December 31, 1927 prepare and submit to the Commission a complete engineering, economic, and financial report, satisfactory to the Commission, of the water storage and power possibilities of the Big Pigeon River between the upper limit of the [fol. 2028] project and Canton, North Carolina. Any field work necessary for such report shall be done by and at the expense of the Licensee, but the results thereof and all

information in the report may be made public at the option of the Commission.

Article 22. The Licensee hereby agrees as a condition of this license that the amount to be entered upon the fixed capital accounts of said project and reported to the Commission as representing the actual legitimate cost thereof and the actual legitimate investment therein up to the date of this license, whether consisting of expenditures actually made, of charges accrued, or of liabilities or obligations incurred, shall be determined by the Commission in accordance with the provisions of the Act and of the regulations established thereunder; and it is further agreed by the Licensee that upon completion of the construction of each of the separable parts of said project for which dates of completion are specified in article 6 hereof or of any addition to or betterment of said project the Licensee shall file with the Commission a statement, under oath in duplicate, in such detail as the Commission may require, showing the actual legitimate cost of construction thereof, together with the price paid for water rights, rights of way, lands or interest in lands constituting any part of the project property subject to the provisions of this license, all as specified in regulation 20, section 2, of said rules and regulations. Such statement or statements shall include all proper and legitimate costs, whether incurred prior to the date of this license or on and after such date; and the Licensee shall, if requested by the Commission, show separately on such statement or statements the items and amounts of cost incurred prior to the issuance of this license as determined by the Commission as hereinbefore in this article provided, with such other details with respect to the cost of the project or any part thereof as the Commission may require. Each and every item of cost included in such statements shall be supported by proper voucher or other record; and any such voucher or record, or certified copy thereof, in support of any item properly includible in said cost shall become a part of the permanent records of said project and shall be kept and retained by the Licensee in the manner required by the Commission.

Article 23. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of such reservoir or other improvement for such part of the annual charges for interest, maintenance and depreciation thereon as the Commission may deem equitable. The proportion of such charges to be paid by the Licensee shall be determined from time to time by the Commission. Whenever such reservoir or other improvement is constructed by the United States the Licensee shall pay similar charges into the Treasury of the United States upon bills rendered by the Commission.

Article 24. The Licensee shall pay to the United States reasonable annual charges for the purpose of reimbursing the United States for the costs of the administration of the Act and for recompensing it for the use, occupancy and enjoyment of its lands or other property hereinbefore described. The payment by the Licensee of such annual charges for any calendar year shall be made to the United States at the end of the year, or within thirty days thereafter, upon bills rendered or approved by the Commission. Such charges shall be determined in accordance with the provisions of Regulation 14 of said rules and regulations of the Commission, and for the purposes of such determination the power capacity of the project shall be taken as 23,760 horsepower.

[fol. 2029] Article 25. After the first twenty years of operation of said project under this license, out of surplus earned thereafter, if any, accumulated in excess of a specified reasonable rate of return upon the actual, legitimate investment of the Licensee in said project, all as defined in and determined by the provisions of Regulation 17 of said rules and regulations of the Commission, the Licensee shall establish and maintain amortization reserves, which reserves shall, in the discretion of the Commission, be held until the termination of the license or be applied from time to time in reduction of the net investment. Such specified rate of return shall, subject to the proviso of Paragraph A, Section 3 of said regulation, be one and one-half (1½) times the weighted average annual interest rate payable on

the par value of the bona fide interest-bearing debt of the Licensee actually outstanding, in whole or in part, on account of project property at the beginning of the period of amortization and of each calendar year thereafter; such weighted average annual interest rate being determined as provided in Paragraphs B and C of Section 3 of said Regulation 17: Provided, That, if at the beginning of the period of amortization or of any calendar year thereafter, the outstanding interest-bearing debt of the Licensee on account of the project or projects under license, together with any other works or property operated in connection therewith, is less than 25 per cent of the actual, legitimate investment of the Licensee in said project or projects, then and in such event for the calendar year next following the specified rate of return shall be two (2) times the legal rate of interest in the State in which the project or major part thereof is located.

Subject to the provisions of Section 6 of said regulation, the following proportions of such surplus earnings shall be paid into and held in such amortization reserves: Of all surplus earnings up to and including 2 per cent upon the actual, legitimate investment, 30 per cent thereof shall be so paid; of all surplus earnings in excess of 2 per cent and not in excess of 4 per cent upon such investment, 50 per cent thereof shall be so paid; of all surplus earnings in excess of 4 per cent and not in excess of 6 per cent, 70 per cent thereof shall be so paid, and of all surplus earnings in excess of 6 per cent, 90 per cent thereof shall be so paid: Provided, That if at the end of any calendar year of the amortization period the Commission shall find that the accumulated earnings of the Licensee during the period of operation, including the first twenty (20) years thereof, have not yielded a fair return upon the actual, legitimate investment in the project or projects under license, the proportion of such surplus earnings for such calendar year, and for succeeding calendar years to be paid into such amortization reserves shall be ten (10) per cent thereof until such time as the accumulated earnings of the Licensee represent, in the judgment of the Commission, a fair return upon such investment for such period of operation.

Article 26. No lease of said project or part thereof whereby the lessee is granted the exclusive occupancy, possession or use of project works for purposes of generating, transmitting or distributing power shall be made without the prior written approval of the Commission; and the Commission may, if in its judgment the situation warrants, require that all the conditions of this license, of the Act, and of said rules and regulations of the Commission shall be applicable to such lease and to such property so leased to the same extent as if the lessee were the Licensee hereunder: Provided, That the provisions of this article shall not apply to parts of the project or project works which may be used by another jointly with the Licensee under a [fol. 2030] contract or agreement whereby the Licensee retains the occupancy, possession, and control of the property so used and receives adequate consideration for such joint use, or to leases of land while not required for purposes of generating, transmitting, or distributing power, or to buildings or other property not built or used for said purposes, or to minor parts of the project or project works the leasing of which will not interfere with the usefulness or efficient operation of the project by the Licensee for said purposes.

Article 27. It is hereby understood and agreed that the Licensee, its successors and assigns will, during the period of this license, retain the possession of all project property covered by this license as issued or as hereafter amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and that none of such properties valuable and serviceable to the project and to the development, transmission, and distribution of power therefrom will be voluntarily sold, transferred, abandoned, or otherwise disposed of without the approval of the Commission: Provided, That a mortgage or trust deed or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article. The Licensee further agrees, on behalf of itself, its successors and assigns, that, in the event said project is taken over by the United States upon the termination of this license, as provided in Section 14 of the Act, or is transferred to a new Licensee under the

provisions of Section 15 of the Act, it will be responsible for and will make good any defect of title to or of right of user in any such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge or will assume responsibility for payment and discharge of all liens or incumbrances upon said project or project property created by said Licensee or created or incurred after the issuance of this license: Provided, That the provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear, or to require the Licensee for the purpose of transferring the project to the United States or to a new Licensee to acquire any different title or right of user in any such project property than was necessary to acquire for its own purposes as Licensee.

Article 28. The Licensee shall abide by such reasonable regulation of the services to be rendered to customers or consumers of power, and of rates and charges of payment therefor, as may from time to time be prescribed by any duly constituted agency of the State in which the service is rendered or the rate charged; and in case of the development, transmission distribution, sale or use of power in public service by the Licensee or by its customers engaged in public service within a State which has not authorized and empowered a commission or other agency or agencies within said State to regulate and control the services to be rendered by the Licensee or by its customers engaged in public service, or the rates and charges of payment therefor, or the amount or character of securities to be issued by any of said parties, it is agreed as a condition of this license that jurisdiction is hereby conferred upon the Commission, upon complaint of any person aggrieved or upon its own initiative, to exercise such regulation and control until such time as the State shall have provided a commission or other authority for such regulation and control: Provided, That the jurisdiction of the Commission shall cease and determine as to each specific matter of regulation [fol. 2031] and control prescribed in this Article as soon as

the State shall have provided a commission or other authority for the regulation and control of that specific matter.

Article 29. With the written consent of the Licensee, the Commission may by order made under its seal, and after the public notice required by Section 6 of the Act, modify, alter, enlarge or omit, in so far as authorized by law, any one or more of the conditions or provisions of this license.

Article 30. The enumeration herein of any rights reserved to the United States or to any State or municipality under the Act, or of any requirement of the Act or of said rules and regulations of the Commission shall not be construed in any degree as impairing any other rights so reserved by the Act or as limiting the force of any other requirement of said Act or of said regulations.

In Witness Whereof, the Federal Power Commission has caused its name and seal to be hereto signed and affixed by its Executive Secretary, O. C. Merrill, this 23rd day of November, 1926.

Federal Power Commission, by O. C. Merrill, Executive Secretary. (Seal.)

[fol. 2032] In testimony of acceptance of all the terms and conditions of the Federal Water Power Act of June 10, 1920, and of the further conditions imposed in the foregoing license, the Licensee, this first day of November 1926 has caused its name and corporate seal to be hereto signed and affixed by Wm. Darbee its Vice President pursuant to a resolution of its board of its directors, passed on the first day of November 1926 a certified copy of the record thereof being hereto attached.

Carolina Power & Light Company, by Wm. Darbee, Vice President.

Attest: E. P. Summerson, Secretary. (Seal.)

[fol. 2033] Carolina Power & Light Company

Resolved that Carolina Power & Light Company hereby accepts all the terms and conditions of the Federal Water Power Act of June 10, 1920, and the further conditions im-

posed in the License to said Company authorized by the Federal Power Commission on October 20th, 1926, and that the President or a Vice President of such Company be and hereby is authorized and directed to execute under the corporate seal of said Company, attested by its Secretary or an Assistant Secretary, the acceptance of all the terms and conditions of said Act and of said License required by said Act.

I hereby certify that the above and foregoing is a true, correct and complete copy of a resolution duly adopted by the Board of Directors of Carolina Power & Light Company at a meeting thereof duly convened and held on November 1, 1926.

Witness my hand and the seal of Carolina Power & Light Company this 1st day of November, 1926.

E. P. Summerson, Secretary, Carolina Power & Light Company. (Seal.)

[fol. 2034] [Endorsed:] The Federal Power Commission to Carolina Power & Light Company. License Project No. 432. Waterville.

[fol. 2035] COMPLAINANTS' EXHIBIT No. 44

Federal Power Commission

Amendment No. 1 of License

Project No. 432—North Carolina

Carolina Power & Light Company

Whereas, under authority of the Federal Water Power Act of June 10, 1920 (41 Stat. 1063), the Federal Power Commission, hereinafter called "the Commission," on November 23, 1926, issued to the Carolina Power & Light Company, a corporation existing under the laws of the State of North Carolina and hereinafter called "the Licensee," a license for a power project designated as project No. 432 on the records of the Commission: and

Whereas, the Licensee filed applications on January 28, 1927, August 17, 1927, September 20, 1928, October 3, 1931, and January 3, 1934, with the Commission to amend said

license to provide for establishment of the project boundary and area, for a change in design of the project works, for a revised construction program, for a modification of the reservoir area to be cleared, and for approval of the maps, plans, and specifications of the project as finally constructed; and

Whereas, the Licensee by letter dated May 3, 1929, submitted to the Commission for approval, in accordance with the provisions of article 20 of the license, a proposed plan of the measures to be taken for the effective control of the breeding of malarial mosquitoes in the reservoir; and

Whereas, notice of said applications, in so far as they constitute an alteration of the license within the meaning of section 6 of the act, has been given and published by the Commission, and no objections to said applications have been filed; and

Whereas, the plans of the dam and other structures affecting navigation have been approved by the Chief of Engineers and the Secretary of War; and

Whereas, the Commission upon due consideration of said applications, at its meetings on October 15, 1934, and February 21, 1935, approved the revised maps, plans, and specifications of said redesigned project works and the method of controlling the breeding of malarial mosquitoes, and ordered that the license be amended, subject to certain conditions:

Now, Therefore, the license issued to the Licensee, as aforesaid, is hereby amended as follows, upon the express condition, however, that such amendment shall not operate to alter or amend said license in any other respect than as herein specified and shall not in any way constitute a waiver of any other part, provision, or condition of said license:

Paragraph I. Article 2 of said license is amended by superseding all exhibits cited therein by a new set of exhibits; so that said article shall read as follows:

[fol. 2036] Article 2. The project covered by and subject to this license consists of—

"A. All lands constituting the project area and inclosed, or the location of which is shown, by the project boundary, and/or interests in such lands necessary or useful for the

purposes of the project, whether such lands or interests therein are owned or held by the Licensee or by the United States; such project area and project boundary being more fully shown and described by certain exhibits which accompanied said applications for amendment of license and which are designated and described as follows:

Exhibit K—Map in one sheet bearing serial No. F-32142, showing project boundary, and signed September 10, 1931, by Wm. Darbee, Vice President (FPC No. 432-18);

Exhibit K (a)—Map in one sheet bearing serial No. RF-6141, showing right of way for that part of 11 kv. power line to dam not on tunnel right of way, and signed December 26, 1933, by L. V. Sutton, President (FPC No. 432-24).

"B. All project works consisting of—

(a) A dam and reservoir across and in said Big Pigeon River;

(b) A water conduit about 6⅓ miles long, comprising an intake structure, a tunnel, and penstocks;

(c) A power house with three 49,000-horsepower turbines and three 36,000-kilowatt generators, and appurtenant equipment; and

(d) An 110,000-volt step-up outdoor substation and an 11,000-volt power line between the power house and dam;

such project works being more fully shown and described by certain exhibits which accompanied said applications for amendment of the license and which are designated and described as follows:

Exhibits K and K(a) cited above

Exhibit L—Plans in 5 sheets signed September 10, 1931, by Wm. Darbee, Vice President:

Sheet 1 bearing serial No. F-32141 showing plans, profile, and sections of intake, conduits, power house, and substation (FPC No. 432-19);

Sheet 2 bearing serial No. F-32137 showing plan and sections of dam (FPC No. 432-20);

[fol. 2037] Sheet 3 bearing serial No. F-32138 showing design data, plan, and section of dam (FPC No. 432-21);

Sheet 4 bearing serial No. F-32139 showing profiles on center line of dam and at the right abutment (FPC No. 432-22); and

Sheet 5 bearing Serial No. F-32140 showing tabulation of stresses in dam (FPC No. 432-23);

Exhibit M—A typewritten document in 7 sheets containing a description of mechanical and electrical equipment, signed December 26, 1933, by L. V. Sutton, President, and received in the office of the Commission on February 2, 1934

"C. All other structures, fixtures, equipment, or facilities used or useful in the maintenance and operation of the project and located upon the project area, including such portable property as may be used and useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as a part of the project works is approved or acquiesced in by the Commission; also all other rights, easements, or interests, the ownership, use, occupancy, or possession of which is necessary or appropriate in the maintenance and operation of the project or appurtenant to the project area."

Paragraph II. Article 3 of said license is amended by deleting the words in the second, third, and fourth lines, reading "as Exhibits J, K, L, L-1, and M, respectively, and provisionally approved by the Executive Secretary for the Commission in accordance with its authorization of October 20, 1926," and substituting therefor the words "and approved by the Commission"; so that said article shall read as follows:

"Article 3. The maps, plans, specifications, and statements designated in article 2 hereof and approved by the Commission are hereby made a part of this license, and no substantial change shall hereafter be made in said exhibits or any of them until such change shall have been approved by the Commission; provided, however, that if the Licensee deems it necessary or desirable that said approved maps, plans, specifications, and statements or any of them be changed, there shall be submitted to the Commission for ap-

proval amended, supplemental, or additional maps, plans, specifications, and statements covering the proposed changes and upon approval by the Commission of such proposed changes, such amended, supplemental, or additional maps, plans, specifications, and statements shall become a part of this license and shall supersede in whole or in part such map, plan, specification, or statement or part thereof theretofore made a part of this license as may be specified, respectively, in the order or endorsement of approval."

Paragraph III. Article 6 of said license is amended by deletion of the first paragraph, by changing the capacity and number of units to be initially installed, and by changing the capacity of the ultimate installation; so that said article shall read as follows:

[fol. 2038] "Article 6. Subject to the provisions of section 13 of the act, the Licensee shall begin the construction of said project works on or before November 23, 1927, shall thereafter, in good faith and with due diligence, prosecute such construction, and shall—

"(a) On or before July 1, 1930, complete the construction of the dam to full height and the installation of two units and appurtenant equipment having a capacity of not less than 98,000 horsepower; and

"(b) On or before December 31, 1933, complete the project Works including the installation of a third unit and appurtenant equipment to a total capacity of not less than 147,000 horsepower."

Paragraph IV. Article 16 of said license is amended by adding another sentence; so that said article shall read as follows:

"Article 16. The operations of the Licensee, so far as they affect the use, storage, and discharge from storage of the water of the Big Pigeon River, shall at all times be controlled by such reasonable rules and regulations as the Secretary of War may prescribe in the interest of navigation and as the Federal Power Commission may prescribe in the interest of flood control and of the fullest practicable utilization of the waters of said river for power purposes.

Unless otherwise directed by the Secretary of War in the interest of navigation, the Licensee may in the normal operation of the reservoir, draw down the pool to a minimum elevation of 2,169 feet above mean sea level."

Paragraph V. Article 19 of said license is amended by eliminating the clearing for the initial development and substituting the elevations 2,169 feet and 2,258 feet for 2,150 feet and 2,250 feet, respectively; so that said article shall read as follows:

"Article 19. The Licensee shall cut and remove or destroy to the satisfaction of said District Engineer, all brush and trees from that zone, within and adjacent to the area to be submerged, which is included between the contour of elevation 2,169 feet above mean sea level and a line 15 feet horizontally from and outside of the contour of elevation 2,258 feet above mean sea level, and shall remove or destroy all floatable refuse or other material within said area to be submerged. The Licensee shall also cut in such manner or so remove or destroy brush or trees within said area to be submerged that no part of such brush or trees shall project above said elevation 2,169 feet."

Paragraph VI. Article 20 of said license is amended by substituting therefor an entirely new article of like number and reading as follows:

"Article 20. In the interest of public health, the Licensee shall control mosquito production in shallow upper reaches of the reservoir by distribution of oil or diluted Paris green at such times and in such manner as may be directed by the Commission or by the State Board of Health of North Carolina and shall at all times be subject to the lawful jurisdiction of said Board of Health."

[fol. 2039] Paragraph VII. The following article is hereby added to said license:

"Article 31. The Licensee shall construct, when directed by the Commission, such works as the Commission may deem necessary for the protection of the toe of the dam against erosion."

COMPLAINANTS' EXHIBIT No. 44

In Witness Whereof, the Commission has caused its name and seal to be hereto signed and affixed by Frank R. McNinch, its Chairman, this 21st day of March, 1935.

Federal Power Commission, by Frank R. McNinch, Chairman.

Attest: G. W. Lineweaver, Secretary. (Seal.)

RWC*TL.

[fol. 2040] In Testimony of Acceptance of all the terms and conditions of the foregoing instrument amending the license for project No. 432, the Licensee this 13th day of March, 1935, has caused its name and corporate seal to be hereto signed and affixed by L. V. Sutton, its President, pursuant to resolution of its board of directors passed on the 13th day of March 1935, a certified copy of the record thereof being hereto attached.

Carolina Power & Light Company, by L. V. Sutton, President.

Attest: H. L. Martin, Asst. Secretary. (Seal.)

(Executed in triplicate.)

[fol. 2041] Carolina Power & Light Company

Resolved that Carolina Power & Light Company hereby accepts all the terms and conditions of amendment No. 1 of license Project No. 432—North Carolina—authorized by the Federal Power Commission to be granted to Carolina Power & Light Company, and that the President or a Vice President of this Company be and hereby is authorized and directed to execute, under the corporate seal of this Company, attested by its Secretary or Assistant Secretary, the acceptance of all the terms and conditions of said amendment No. 1.

I hereby certify that the above and foregoing is a true, correct and complete copy of a resolution duly adopted by the Board of Directors of Carolina Power & Light Company at a meeting thereof duly convened and held on March 13, 1935.

Witness my hand and the seal of Carolina Power & Light Company this 13th day of March, 1935.

H. L. Martin, Assistant Secretary. (Seal.)

COMPLAINANTS' EXHIBIT No. 44

[fol. 2042] [Endorsed:] Federal Power Commission to Carolina Power & Light Company. Amendment No. 1 of License Project No. 432—Waterville.

[fol. 2043] COMPLAINANTS' EXHIBIT No. 45

Map of the Transmission and Rural Distribution System of Carolina Power & Light Company, Communities Served and Location of Its Generating Facilities and Interconnections Within a 100 Mile, 150 Mile and 250 Mile Radius of Fontana Dam Site.

(Original Exhibit)

[fol. 2044]

COMPLAINANTS' EXHIBIT No. 46

Carolina Power & Light Company, Raleigh, N. C.

Annual Kilowatt-Hour Sales

	Total Incl. Sales to Other Companies	To Regular Customers Only			
		Total Entire Area Served	In Area Within 100 Miles of Fontana Dam Site	In Area Within 150 Miles of Fontana Dam Site	In Area Within 250 Miles of Fontana Dam Site
All Classes—1933	807,787,829	375,515,053	74,010,009	75,568,790	209,557,390
Industrial—1933	.....	.....	53,970,316	55,321,968	.....
All Classes—1936	867,039,798	536,521,801	115,802,557	118,167,621	309,197,905
Industrial—1936	.....	.....	83,553,403	85,530,602	.....

[fol. 2045] COMPLAINANTS' EXHIBIT No. 47

Carolina Power & Light Company, Raleigh, N. C.

Year	Miles of Line 35 KV and Above Pole Lines	Miles of Line Less than 35 KV Pole Lines	Number of Customers As of 12-31
1927	1049	2336	63102
1928	1004	2812	69787
1929	1098	3139	70548
1930	1190	3484	66158
1931	1169	3614	65656
1932	1169	3659	62543
1933	1185	3632	65496
1934	1210	3798	69733
1935	1209	3933	74428
1936	1238	4996	83836
Year ending July 31, 1937	1256*	5921*	90204

Year	Residential Annual KWH Use Per Average Customer	Residential Average Annual Revenue per Customer	Residential Average Rate Per KWH	No. Towns and Communities Served
1927	456	$34.80	7.67¢	190
1928	480	35.52	7.40	208
1929	515	37.14	7.20	217
1930	594	40.31	6.79	231
1931	654	42.07	6.44	236
1932	684	42.63	6.23	240
1933	659	39.24	5.96	240
1934	680	39.75	5.85	240
1935	858	39.67	4.62	241
1936	1020	38.78	3.80	267
Year ending July 31, 1937	1109	39.28	3.54	272*

* As of June 30, 1937.

COMPLAINANTS' EXHIBIT No. 48

Carolina Power & Light Company

Tax Payments for Years 1932–1937, Inclusive—1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Local Real Estate and Personal	$585,000.00	$487,995.15	$489,049.53	$474,147.62	$479,758.64	$585,730.15
Privilege License, Electric, Ry. and Bus	22,300.00	22,311.50	21,446.43	22,061.62	21,912.85	21,239.60
State Privilege License	2,160.00	2,160.00	2,160.00	1,700.00	1,585.00	4,362.01
State 3% General Sales	30,000.00	17,895.30	21,755.54	16,256.27	6,444.80	0
State Gross Receipts Tax	492,000.00	443,105.35	402,335.66	403,593.99	394,795.68	326,681.03
Motor Vehicle License Plates	7,250.00	7,428.57	5,331.73	5,875.98	6,927.87	6,744.34
State Net Income Tax	179,000.00	114,768.75	77,195.80	36,981.02	37,303.06	35,366.87
Public Utility Commission Fee	15,000.00	12,157.06	8,779.90	8,879.01	9,308.45	6,010.61
State Corporate Filing Fee	10.00	10.00	10.00	10.00	150.00	150.00
State Real Estate and Personal	20,800.00	20,761.14	21,047.79	20,765.29	20,917.97	14,432.71
Kwh. Generating Tax	15,000.00	9,203.85	6,780.59	4,465.14	8,040.65	0
State Unemployment	55,500.00	17,882.28	0	0	0	0
Federal Tax on Checks	0	0	51.44	1,350.96	1,361.53	360.22
Federal 3% Tax on Electrical Energy	139,400.00	121,649.85	112,427.26	109,235.67	19,603.31	0
Federal Capital Stock Tax	19,000.00	20,000.00	9,890.00	10,667.00	8,574.00	8,574.00
Federal Net Income Tax	326,900.00	212,422.74	106,518.38	14,000.00	0	3,173.19
Federal Old Age Benefits	4,000.00	0	0	0	0	0
Federal Unemployment	21,000.00	1,988.14	0	0	0	0
Federal Tax on Bond Interest	14,000.00	13,964.75	13,992.45	16,234.75	16,247.20	16,835.70
Penn. State Tax on Bonds	6,800.00	6,829.58	5,457.48	4,048.49	4,627.78	6,422.16
State Gasoline Tax	50,000.00	45,728.42	47,170.74	38,159.23	15,975.66	10,754.40
Federal Excise and Miscellaneous	23,000.00	22,307.48	20,659.45	17,633.69	20,238.02	0
Self Insurers' Tax	1,300.00	1,287.67	1,180.80	1,223.69	1,197.31	1,627.89
Federal Regulatory Tax (Waterville)	6,020.00	6,020.00	6,020.00	6,020.00	6,020.00	6,020.00
Total Taxes	2,035,440.00	1,607,877.58	1,379,260.97	1,210,309.42	1,080,989.78	1,054,484.88
Gross Electric Revenue from sales of energy	11,650,000.00	10,521,730.27	9,490,332.12	9,209,866.83	8,873,969.24	8,702,336.16
Gross Revenues, Including non-operating and Other Income	12,135,000.00	10,977,485.23	9,975,438.69	9,637,416.04	9,205,274.14	9,021,803.91
% of Gross Revenue	16.77	14.65	13.83	12.56	11.74	11.69

October 31, 1937.

160—973

2537

[fol. 2047] COMPLAINANTS' EXHIBIT No. 49

Map entitled "Facilities of and Territory Served by Appalachian Electric Power Company, Kentucky & West Virginia Power Company, Inc., and Kingsport Utilities, Incorporated."

(Original Exhibit)

(Here follow four photolithographs, side folios 2048-2051)

2538A

COMPLAINANTS' EXHIBIT NO. 50

Exhibit No. _____

APPALACHIAN ELECTRIC POWER COMPANY
INSTALLED GENERATING PLANT CAPACITY
AS OF NOVEMBER 1, 1937

Steam Electric Plants

Name of Plant	Installed Capacity	
Cabin Creek	116,340 kw	
Logan	90,400 "	
Glen Lyn	80,000 "	
Kenova	40,000 "	
Roanoke	9,750 "	
Total Steam		336,490 kw

Hydro Electric Plants

Byllesby	21,600 "	
Buck	7,740 "	
Reusens	12,500 "	
Niagara	2,910 "	
Rocky Mount	150 "	
Total Hydro		44,900 "
Total Installed Capacity		381,390 "
Purchased Capacity •		43,500 "
Total Capacity		424,890 "

• This includes 9,000 kw of capacity purchased from The Ohio Power Company and the entire output of the Kanawha Valley Power Company.

2048

COMPLAINANTS' EXHIBIT NO. 51

~~Exhibit~~ X

KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED
INSTALLED GENERATING PLANT CAPACITY
AS OF NOVEMBER 1, 1937

Steam Electric Plants

Name of Plant	Installed Capacity
Hazard	19,500 kw

Hydro Electric Plants

None	
Total Installed Capacity	19,500 kw

COMPLAINANTS' EXHIBIT NO. 52

Exhibit _____

KINGSPORT UTILITIES, INCORPORATED
INSTALLED GENERATING PLANT CAPACITY
AS OF NOVEMBER 1, 1937

Steam Electric Plants

Name of Plant	Installed Capacity
Kingsport	11,400 kw

Hydro Electric Plants

None	
Total Installed Capacity	11,400 kw

25380

COMPLAINANTS' EXHIBIT NO. 55

Exhibit _____

APPALACHIAN ELECTRIC POWER COMPANY
KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED
KINGSPORT UTILITIES, INCORPORATED
SUMMARY OF INSTALLED GENERATING PLANT CAPACITY
AS OF NOVEMBER 1, 1937

Appalachian Electric Power Company

Total Steam Plant Capacity	336,490 kw	
Total Hydro Plant Capacity	44,900 "	
Purchased Capacity	43,500 "	
Total		424,890 kw

Kentucky and West Virginia Power Company, Incorporated

Total Steam Plant Capacity	19,500 "

Kingsport Utilities, Incorporated

Total Steam Plant Capacity	11,400 "
Total Combined Installed Capacity	455,790 kw

2051

[fol. 2052] COMPLAINANTS' EXHIBIT No. 54

Chart Entitled "Development of the Interconnection and Coordination of the Properties of Appalachian Electric Power Company, Kentucky & West Virginia Power Company, Inc., and Kingsport Utilities, Incorporated."

(Original Exhibit)

APPALACHIAN ELECTRIC POWER COMPANY

Customers, Sales and Revenue within
Zones of Varying Distance from Norris Dam

Year	Within 100 Mi. Radius of Norris Dam			Within 150 Mi. Radius of Norris Dam			Within 250 Mi. Radius of N	
	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh
1928	270	158,920	$9,115	5,197	67,782,648	$1,336,035	86,349	820,156,175
1929	248	166,719	10,032	6,027	77,598,779	1,450,397	93,685	1,040,180,331
1930	320	164,108	10,732	5,443	67,706,678	1,347,567	98,142	1,066,400,747
1931	276	177,831	11,338	6,264	60,492,445	1,275,794	100,723	924,903,905
1932	290	200,951	12,190	6,211	52,408,690	1,123,865	99,989	780,001,666
1933	290	212,701	12,382	6,201	54,385,699	1,081,594	100,447	882,380,628
1934	317	234,348	13,334	6,482	56,412,815	1,129,741	111,512	1,023,032,272
1935	363	281,693	14,940	7,011	61,573,706	1,203,770	118,189	1,107,643,818
1936	439	337,550	16,236	8,171	69,263,102	1,312,443	126,700	1,283,307,996
1937 Seven Months Ended July 31	498	265,312	10,750	8,842	44,165,297	781,273	134,186	789,569,773

COMPLAINANTS' EXHIBIT NO. 55

POWER COMPANY

Revenue within
e from Norris Dam

In 250 Mi. Radius of Norris Dam			System Total			
of ular omers ber 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Large Light and Power Customers (Industrial Sales) kwh	Total Sales To Regular Customers kwh	Revenue
349	820,156,175	$14,781,479	95,706	697,884,078	843,533,935	$15,537,155
685	1,040,180,331	16,613,984	103,378	910,338,769	1,066,225,540	17,402,160
142	1,066,400,747	16,903,298	108,711	932,780,587	1,094,833,681	17,734,887
723	924,903,905	15,667,869	110,872	783,310,336	958,110,552	16,551,133
989	780,001,666	14,037,191	109,272	640,187,451	810,237,519	14,884,118
447	882,380,628	13,969,234	111,945	746,435,473	912,886,788	14,825,630
512	1,023,032,272	15,545,682	122,231	906.038.579	1,062,012,985	16,486,125
189	1,107,643,818	16,341,575	129,228	984,202,734	1,154,213,284	17,345,152
700	1,283,307,996	17,690,540	137,970	1,153,567,845	1,351,653,286	18,847,555
186	789,569,773	10,537,459	145,933	703,843,598	830,910,109	11,226,741

KENTUCKY AND WEST VIRGINIA POWER COMPA

Customers, Sales and Revenue
Zones of Varying Distance from

Year	Within 100 Mi. Radius of Norris Dam			Within 150 Mi. Radius of Norris Dam			Within 250 Mi.	
	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	
1928	3,216	36,066,147	$819,852	7,250	68,318,199	$1,584,723	16,237	1
1929	3,314	36,299,140	819,923	7,822	73,512,869	1,675,377	17,368	1
1930	3,495	32,446,078	776,631	8,349	66,108,028	1,622,084	18,080	1
1931	3,172	30,527,752	752,238	8,239	58,311,309	1,515,572	18,058	1
1932	2,956	27,608,173	672,906	7,631	52,447,107	1,333,044	16,796	1
1933	3,016	26,042,246	623,260	7,521	52,398,826	1,267,168	17,184	1
1934	3,276	24,971,981	632,207	8,288	56,949,360	1,407,465	18,328	1
1935	3,422	27,334,651	661,457	9,094	66,472,107	1,551,299	19,659	2
1936	3,713	30,078,589	685,969	9,919	87,946,055	1,700,159	21,170	2
1937 Seven Months Ended July 31	3,870	17,633,506	385,368	10,567	59,003,080	1,008,663	22,236	1

COMPLAINANTS' EXHIBIT NO. 56

WER COMPANY, INCORPORATED

EXHIBIT _____

i Revenue within
nce from Norris Dam

250 Mi. Radius of Norris Dam			System Total			
of lar mers Year 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Large Light and Power Customers (Industrial Sales) kwh	Total Sales To Regular Customers kwh	Revenue
1937	178,437,061	$3,021,671	16,237	162,299,290	178,437,061	$3,021,671
1968	187,157,193	3,092,093	17,368	170,382,091	187,157,193	3,092,093
1980	150,309,290	2,896,195	18,080	132,998,823	150,309,290	2,896,195
1958	147,539,496	2,734,718	18,058	129,876,614	147,539,496	2,734,718
1996	121,881,220	2,407,927	16,796	105,047,633	121,881,220	2,407,927
1984	150,833,558	2,437,926	17,184	134,653,761	150,833,558	2,437,926
1928	171,186,399	2,720,296	18,328	154,258,240	171,186,399	2,720,296
1959	213,386,945	3,050,189	19,659	194,428,051	213,386,945	3,050,189
1970	254,600,861	3,314,345	21,170	232,243,229	254,600,861	3,314,345
19 Seven 36 Ended	150,664,068	1,923,824	22,236	136,180,510	150,664,068	1,923,824

KINGSPORT U

Customers, S
Zones of Varyin

Year	Within 100 Mi. Radius of Norris Dam				Within 150 Mi. Radius of	
	No. of Regular Customers December 31	Sales to Large Light and Power Customers (Industrial Sales) kwh	Total Sales To Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh
1928	2,880	44,707,270	46,919,912	$536,518		
1929	3,090	30,900,357	33,341,931	447,339		
1930	3,027	33,733,383	36,591,841	485,661		
1931	3,073	27,778,913	30,623,228	433,296		
1932	2,862	23,007,693	25,981,943	394,580	Same as 100-Mile	
1933	3,054	21,999,934	25,210,197	390,866		
1934	3,365	23,304,220	27,895,230	435,681		
1935	3,795	24,115,160	29,406,221	459,819		
1936	4,358	30,356,870	37,468,385	506,150		
1937 Seven Months Ended July 31	4,931	21,163,440	26,137,983	325,787		

COMPLAINANTS' EXHIBIT NO. 57

UTILITIES, INCORPORATED

Exhibit _____

Sales and Revenue within
ng Distance from Norris Dam

Norris Dam	Within 250 Mi. Radius of Norris Dam			System Total		
Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue	No. of Regular Customers December 31	Sales to Regular Customers kwh	Revenue
Zone	Same as 100-Mile Zone			Same as 100-Mile Zone All customers and sales are within the 100-mile zone.		

2055

S
E

COMPLAINANTS' EXHIBIT NO. 58

~~EXHIBIT~~_____

APPALACHIAN ELECTRIC POWER COMPANY

TRANSMISSION AND DISTRIBUTION LINES

Date	Pole Miles 22 Kv to 132 Kv	Pole Miles Below 22 Kv	Total Pole Miles
December 31, 1928	1,475.10	2,062.53	3,537.63
December 31, 1929	1,579.70	2,585.52	4,165.22
December 31, 1930	1,602.50	2,783.64	4,386.14
December 31, 1931	1,639.14	2,982.20	4,621.34
December 31, 1932	1,640.28	3,203.28	4,843.56
December 31, 1933	1,636.79	3,276.32	4,913.11
December 31, 1934	1,653.54	3,552.86	5,206.40
December 31, 1935	1,704.69	3,814.60	5,519.29
December 31, 1936	1,758.83	4,194.40	5,953.23
July 31, 1937	1,767.88	4,663.79	6,431.67

Date	100 Mile Zone • 22 Kv to 132 Kv	100 Mile Zone • Below 22 Kv	150 Mile Zone • 22 Kv to 132 Kv	150 Mile Zone • Below 22 Kv	250 Mile Zone • 22 Kv to 132 Kv	250 Mile Zone • Below 22 Kv
December 31, 1936	9.00	24.00	257.04	319.30	1,628.28	3,780.53
July 31, 1937	9.00	40.50	257.04	383.64	1,637.33	4,222.18

• Lines in areas bounded by circles of 100, 150 and 250 mile radii from Norris Dam.

All of the lines of the Appalachian Electric Power Company with the exception of 572.16 miles fall within the 250 mile circle.

COMPLAINANTS' EXHIBIT NO. 59

~~ENTERED~~ _____

KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED

TRANSMISSION AND DISTRIBUTION LINES

Date	Pole Miles 22 Kv to 132 Kv	Pole Miles Below 22 Kv	Total Pole Miles
December 31, 1928	329.42	281.60	611.02
December 31, 1929	349.21	295.16	644.37
December 31, 1930	404.82	322.00	726.82
December 31, 1931	406.92	348.13	755.05
December 31, 1932	407.66	414.73	822.39
December 31, 1933	409.22	418.06	827.28
December 31, 1934	409.22	427.17	836.39
December 31, 1935	417.28	476.33	893.61
December 31, 1936	435.53	491.23	926.76
July 31, 1937	435.53	553.01	988.54

Date	100 Mile Zone •		150 Mile Zone •		250 Mile Zone •	
	22 Kv to 132 Kv	Below 22 Kv	22 Kv to 132 Kv	Below 22 Kv	22 Kv to 132 Kv	Below 22 Kv
December 31, 1936	117.66	99.05	360.14	300.61	435.53	491.23
July 31, 1937	117.66	131.63	360.14	356.85	435.53	553.01

• Lines in areas bounded by circles of 100, 150 and 250 mile radii from Norris Dam

All lines of Kentucky and West Virginia Power Company, Incorporated are within the 250 mile circle.

COMPLAINANTS' EXHIBIT NO. 60 .

EXHIBIT _____

KINGSPORT UTILITIES, INCORPORATED
TRANSMISSION AND DISTRIBUTION LINES

Date	Pole Miles 22 Kv to 132 Kv	Pole Miles Below 22 Kv	Total Pole Miles
December 31, 1928	22.36	58.80	81.16
December 31, 1929	22.36	54.66	77.02
December 31, 1930	22.61	64.78	87.39
December 31, 1931	22.61	75.96	98.57
December 31, 1932	22.61	80.10	102.71
December 31, 1933	22.61	82.15	104.76
December 31, 1934	5.75 ••	92.07	97.82
December 31, 1935	5.75 ••	110.61	116.36
December 31, 1936	5.75 ••	116.44	122.19
July 31, 1937	5.75 ••	133.53	139.28

Date	100 Mile Zone • 22 Kv to 132 Kv	100 Mile Zone • Below 22 Kv	150 Mile Zone • 22 Kv to 132 Kv	150 Mile Zone • Below 22 Kv	250 Mile Zone • 22 Kv to 132 Kv	250 Mile Zone • Below 22 Kv
December 31, 1936	5.75	116.44	5.75	116.44	5.75	116.44
July 31, 1937	5.75	133.53	5.75	133.53	5.75	133.53

• Lines in areas bounded by circles of 100, 150 and 250 miles radii from Norris Dam.

All lines of Kingsport Utilities, Incorporated are within the 100 mile circle.

•• 132 Kv transmission line sold to Appalachian Electric Power Company in 1934.

COMPLAINANTS' EXHIBIT NO. 61

~~EXHIBIT~~ _____

APPALACHIAN ELECTRIC POWER COMPANY

Increase in Domestic Use of Electricity and
Reduction in Cost to Consumers
(Includes Rural Customers)

Year	Average Residential Kw-hr Use per Customer (Annual)••	Residential Average Revenue per Customer (Dollars-Annually)••	Residential Average Rate per Kw-hr (Cents)	Towns and Communities Served
1928	492	$32.67	6.64	265
1929	525	34.71	6.61	376
1930	519	33.36	6.42	404
1931	585	33.76	5.77	415
1932	608	33.92	5.58	444
1933	627	34.57	5.52	452
1934	603	35.65	5.38	461
1935	703	35.10	5.00	473
1936	761	33.84	4.45	522
Year Ending July 31, 1937	807	31.86	3.95	522 •

• Change since January 1, 1937 not readily available.

•• Where a single residential customer was served by two meters the data given shows the kilowatt hours or revenue obtained from the two meters.

COMPLAINANTS' EXHIBIT NO. 62

~~EXHIBIT~~ _____

KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED

Increase in Domestic Use of Electricity and
Reduction in Cost to Consumers
(Includes Rural Service)

Year	Average Residential Kw-hr Use per Customer (Annual)••	Residential Average Revenue per Customer (Dollars-Annually)••	Residential Average Rate per Kw-hr (Cents)	Towns and Communities Served
1928	463	$29.83	6.44	70
1929	444	30.57	6.88	74
1930	442	31.88	7.21	76
1931	482	32.12	6.66	92
1932	498	30.44	6.12	92
1933	521	31.02	5.95	92
1934	524	30.94	5.91	92
1935	563	30.42	5.40	96
1936	613	29.74	4.85	100
Year Ending July 31, 1937	653	28.03	4.29	100 •

• Change since January 1, 1937 not readily available

•• Where a single residential customer was served by two meters the data given shows the kilowatt hours or revenue obtained from the two meters.

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COMPLAINANTS' EXHIBIT NO. 63

[redacted] _____

KINGSPORT UTILITIES, INCORPORATED

Increase in Domestic Use of Electricity and
Reduction in Cost to Consumers
(Includes Rural Customers)

Year	Average Residential Kw-hr Use per Customer (Annual)**	Residential Average Revenue per Customer (Dollars-Annually)**	Residential Average Rate per Kw-hr (Cents)
1928	462	$31.24	6.77
1929	469	31.33	6.68
1930	578	36.32	6.29
1931	593	35.69	6.02
1932	655	36.72	5.61
1933	714	38.26	5.36
1934	758	36.92	4.87
1935	826	36.61	4.43
1936	914	35.68	3.90
Year Ending July 31, 1937	950	33.23	3.50

** Where a single residential customer was served by two meters the data given shows the kilowatt hours or revenue obtained from the two meters.

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[fol. 2062] COMPLAINANTS' EXHIBIT No. 64 (Excluded)

Tabulation Entitled "History of, and Savings Due to, Rate Reductions for all Customer Classes of Appalachian Electric Power Company (West Virginia Portion of the System)"

(Omitted)

[fol. 2063] COMPLAINANTS' EXHIBIT No. 65 (Excluded)

Tabulation Entitled "History of, and Savings Due to, Rate Reductions for all Customer Classes of Kentucky and West Virginia Power Company, Incorporated"

(Omitted)

[fol. 2064] COMPLAINANTS' EXHIBIT No. 66 (Excluded)

Tabulation Entitled "History of, and Savings Due to, Rate Reductions for all Customer Classes of Kingsport Utilities, Incorporated"

(Omitted)

(Here follow four photolithographs, side folios 2065-2068)

[fol. 2069] COMPLAINANTS' EXHIBIT No. 70

Memorandum of Approval and Consent Data as to Franchises Held by Kingsport Utilities, Incorporated

(Omitted)

COMPLAINANTS' EXHIBIT No. 71

Memorandum of Franchises Granted West Tennessee Power & Light Company and Approvals Thereof by the Tennessee Railroad and Public Utilities Commission

(Omitted)

COMPLAINANTS' EXHIBIT No. 72

Memorandum of Consents of Municipalities and Orders of Approval by the Tennessee Railroad and Public Utilities Commission to Assignments of Municipal and County Franchises to West Tennessee Power & Light Company.

(Omitted)

(Here follows one photolithograph, side folio 2070)

[fol. 2071] COMPLAINANTS' EXHIBIT No. 74

Map of Facilities of and Territory Served by West Tennessee Power & Light Company

(Original Exhibit)

[fol. 2072] COMPLAINANTS' EXHIBIT No. 75

Number, Rating in kw. and location of Generators owned and leased by West Tennessee Power & Light Company as of August 31, 1937

	Steam Turbines		Steam Engines		Internal Combustion	
Location	No.	Rating	No.	Rating	No.	Rating
Owned:						
Jackson	4	3650 kw.				
Brownsville			2	310 kw.		
Ripley	1	300 kw.	1	200 kw.		
Halls			1	60 kw.	1	60 kw.
Henderson					2	78 kw.
Leased:						
Humboldt	1	300 kw.	1	120 kw.		
			1	150 kw.		
Totals	6	4250 kw.	6	840 kw.	3	138 kw.

Grand Total in kw. 5228.

(Here follows 1 photolithograph, side folio 2073)

[fol. 2074] COMPLAINANTS' EXHIBIT No. 77

Memorandum of Consents of Municipalities and Orders of Approval by the Tennessee Railroad and Public Utilities Commission to Assignments of Franchises to East Tennessee Light & Power Company and Tennessee Eastern Electric Company

(Omitted)

COMPLAINANTS' EXHIBIT No. 78

Memorandum of Franchises Granted East Tennessee Light & Power Company and Tennessee Eastern Electric Company and Approvals Thereof by the Tennessee Railroad and Public Utilities Commission

(Omitted)

COMPLAINANTS' EXHIBIT No. 79

Memorandum of Virginia Highway Permits of East Tennessee Light & Power Company

(Omitted)

(Here follow two photolithographs, side folios 2075 and 2076)

[fol. 2077] COMPLAINANTS' EXHIBIT No. 82

Map of Transmission, Distribution, and Generating System of East Tennessee Light and Power Company and Tennessee Eastern Electric Company

(Original Exhibit)

[fol. 2078] COMPLAINANTS' EXHIBIT No. 83

Generating Facilities

East Tennessee Light & Power Company
Tennessee Eastern Electric Company

Nolichucky Hydro:		
Unit #1	2550	
Unit #2	2550	
Unit #3	2550	
Unit #4	2910	
Total		10,560
Wilbur Hydro:		
Unit #1	1200	
Unit #2	1250	
Unit #3	1250	
Total		3,700
Elk Park Hydro:		
Unit #1	80	
Total		80
Maymead Oil Engine:		
Unit #1	48	
Total		48
Watauga Steam:		
Unit #1	500	
Unit #2	1500	
Unit #3	1500	
Unit #4	5000	
Total		8,500
Grand Total		22,888 kw.

(Here follow 3 photolithographs, side folios 2079-2081)

[fol. 2082] COMPLAINANTS' EXHIBIT No. 87

Memorandum of Orders by the Alabama Public Service Commission and Consents of Municipalities to the Assignment of Franchises to Alabama Power Company

(Omitted)

COMPLAINANTS' EXHIBIT No. 88

Memorandum of Certificates of Convenience and Necessity Issued by Alabama Public Service Commission and Held by Alabama Power Company as of July 1, 1937

(Omitted)

COMPLAINANTS' EXHIBIT No. 89

Map Entitled "Electric Transmission and Distribution System" of Alabama Power Company

(Original Exhibit)

[fol. 2083] COMPLAINANTS' EXHIBIT No. 90

Alabama Power Company

Generating Plants Owned by Company

October, 1937

Name of Plant	Installed Capacity in Kilowatts
Hydro Plants:	
Lay Dam	81,000
Mitchell Dam	52,500
Jordan Dam	100,000
Martin Dam	99,000
Upper Tallahassee	32,000
Thurlow Dam	50,000
Total Hydro Plants	414,500

COMPLAINANTS' EXHIBIT No. 90

Name of Plant	Installed Capacity in Kilowatts
Steam Plants:	
Gorgas No. 1	70,000
Gorgas No. 2	60,000
Gadsden	10,000
Montgomery	5,000
Mobile	3,000
Magazine	8,000
Total Steam Plants	156,000
Internal Combustion Plants (5 small plants)	1,244
Total Capacity In Owned Plants	571,744

[fol. 2084] COMPLAINANTS' EXHIBIT No. 91

Excerpts and Other Matters Taken from Applications to Federal Power Commission for Licenses and from Licenses Issued to Alabama Power Company by Federal Power Commission, to be Introduced in evidence

Jordan Dam

(a) Application filed June 15, 1925:

Application for License by Alabama Power Company, Birmingham, Alabama, to Federal Power Commission, Washington, D. C. for Hydro-Electric Power Project Near Wetumpka, on Coosa River, in Alabama, dated June 13, 1925.

"Application for License

"Alabama Power Company, a corporation organized and existing under and by virtue of the laws of the State of Alabama and having its principal place of business at Attalla in said State, hereby makes application to the Federal Power Commission for a license for a project described herein and shown on general and detailed maps signed by the applicant on the 13th day of June, 1925, which maps are filed herewith and made a part hereof, said license to authorize the construction, operation and maintenance of certain project works, the principal ones of which are designated as follows on said maps:

(a) A dam across the Coosa River and the reservoir created thereby.

(b) A power house for use in connection with said dam.

"2. The location of the project applied for is as follows:

(a) In the State of Alabama.

(b) In the counties of Elmore, Chilton and Coosa.

[fol. 2085] (c) On the following named stream: Coosa River navigable for carrying commerce to the following extent: The upper portion from Rome, Georgia, to Lock 5 in Alabama, and the lower portion from the foot of the rapids below Wetumpka to where it empties into the Alabama River which empties into Mobile Bay is navigable in fact, carrying a very limited amount of traffic.

(d) In the region of the following named cities: Wetumpka, Clanton, Rockford, Dadeville, Tuskegee, Union Springs, Calera, Montgomery, Birmingham, Anniston, Gadsden, Talladega, Roanoke and Opelika, together with other cities and towns served by applicant or in proximity to its transmission system as indicated on the map filed herewith and marked Exhibit J, Map No. 2.

"3. The proposed scheme of development of this project is as follows:

The applicant proposes to construct a dam for power use on the same general plans as those used for its other major developments on this River.

"4. The proposed use or market for the power to be developed is as follows:

For sale to the public through the distribution system of the Alabama Power Company and its associated companies.

Applicant is at present serving hydro-electric power to the cities and most of the principal towns in northern and central Alabama and is planning to furnish electric power to a number of cities and towns in South Alabama, now being served from isolated steam plants, and it is contemplated that this development will assist these and other towns

COMPLAINANTS' EXHIBIT NO. 67

APPALACHIAN ELECTRIC POWER COMPANY

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED

Description of Tax	1937 Estimated	1936	1935	1934
West Virginia				
Foreign Corporation	3,760.00	3,760.00	3,760.00	3,760.00
State Gross Sales	606,300.00	583,587.55	585,967.40	592,141.73
Public Service Commission	40,500.00	40,583.41	42,742.47	35,198.93
Real, Personal and Intangible Property	877,339.02	814,184.85	841,097.61	854,292.06
Municipal Franchise	13,600.00	13,463.17	11,837.44	11,006.05
Municipal License	9,600.00	6,923.19	2,499.68	21.00
Merchants License	132.50	153.00	138.00	100.50
State Unemployment	55,200.00	21,801.31	-- --	-- --
State Motor Vehicle	5,547.03	5,861.96	5,685.16	7,271.75
State Gasoline	14,475.68	11,651.32	10,741.12	9,597.80
Virginia				
Registration Fee	50.00	55.00	55.00	50.00
State Franchise	158,054.41	140,841.98	131,543.12	122,663.96
State Corporation Commission	10,661.96	9,514.47	8,894.54	8,302.60
Real, Personal and Intangible Property	264,000.00	251,469.13	248,302.35	245,064.42
Municipal Franchise	100.00	100.00	435.78	722.74
Municipal License	11,300.00	10,955.20	10,500.47	9,701.20
Merchants License	235.01	189.96	120.50	162.04
State Unemployment	21,600.00	10,419.86	-- --	-- --
State Motor Vehicle	2,497.89	2,218.95	2,121.38	1,885.16
State Gasoline	6,946.92	6,078.40	5,512.55	4,826.75
Tennessee				
Foreign Corporation	150.00	150.00	150.00	-- --
Privilege License	81.00	81.00	81.00	-- --
State Gross Receipts	2,737.96	-- --	-- --	-- --
State Excise	1,028.24	369.27	-- --	-- --
State Franchise	675.00	619.38	-- --	-- --
Railroad and Public Utilities Fee	465.35	392.65	-- --	-- --
Real and Personal Property	6,360.00	5,247.00	6,813.18	-- --
State Unemployment	175.00	127.38	-- --	-- --
Bondholders Tax Pennsylvania and Maryland	17,300.00	17,218.04	14,226.43	12,362.87
Federal Income	590,350.00	565,494.73	428,027.46	342,640.36
Federal Capital Tax	46,775.00	45,888.00	45,000.00	29,578.00
Federal Excise on Electric Service	201,280.00	196,319.65	186,782.24	171,830.25
Federal Surtax on Undistributed Profits	22,420.00	22,420.56	-- --	-- --
Carried Forward	2,991,697.97	2,788,140.37	2,593,034.88	2,463,180.17

COMPLAINANTS' EXHIBIT NO. 67

APPALACHIAN ELECTRIC POWER COMPANY

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Virginia						
ign Corporation	3,760.00	3,760.00	3,760.00	3,760.00	3,760.00	3,768.00
e Gross Sales	606,300.00	583,587.55	585,967.40	592,141.73	307,016.85	37,553.27
ic Service Commission	40,500.00	40,583.41	42,742.47	35,198.93	6,337.17	-- --
, Personal and Intangible Property	877,339.02	814,184.85	841,097.61	854,292.06	843,412.73	1,294,283.94
cipal Franchise	13,600.00	13,463.17	11,837.44	11,006.05	9,837.93	10,000.68
cipal License	9,600.00	6,923.19	2,499.68	21.00	21.00	10.00
hants License	132.50	153.00	138.00	100.50	97.50	50.00
e Unemployment	55,200.00	21,801.31	-- --	-- --	-- --	-- --
e Motor Vehicle	5,547.03	5,861.96	5,685.16	7,271.75	5,411.48	5,362.28
e Gasoline	14,475.68	11,651.32	10,741.12	9,597.80	9,395.20	9,691.98
nia						
istration Fee	50.00	55.00	55.00	50.00	50.00	50.00
e Franchise	158,054.41	140,841.98	131,543.12	122,663.96	45,382.59	50,218.41
e Corporation Commission	10,661.96	9,514.47	8,894.54	8,302.60	8,068.02	4,463.86
, Personal and Intangible Property	264,000.00	251,469.13	248,302.35	245,064.42	244,141.91	251,543.79
cipal Franchise	100.00	100.00	435.78	722.74	716.08	439.37
cipal License	11,300.00	10,955.20	10,500.47	9,701.20	9,999.42	10,751.22
chants License	235.01	189.96	120.50	162.04	309.69	510.31
te Unemployment	21,600.00	10,419.86	-- --	-- --	-- --	-- --
te Motor Vehicle	2,497.89	2,218.95	2,121.38	1,885.16	1,777.70	1,806.00
te Gasoline	6,946.92	6,078.40	5,512.55	4,826.75	4,500.00	4,370.15
ssee						
eign Corporation	150.00	150.00	150.00	-- --	-- --	-- --
vilege License	81.00	81.00	81.00	-- --	-- --	-- --
te Gross Receipts	2,737.96	-- --	-- --	-- --	-- --	-- --
te Excise	1,028.24	369.27	-- --	-- --	-- --	-- --
te Franchise	675.00	619.38	-- --	-- --	-- --	-- --
lroad and Public Utilities Fee	465.35	392.65	-- --	-- --	-- --	-- --
l and Personal Property	6,360.00	5,247.00	6,813.18	-- --	-- --	-- --
te Unemployment	175.00	127.38	-- --	-- --	-- --	-- --
dholders Tax Pennsylvania and aryland	17,300.00	17,218.04	14,226.43	12,362.87	12,820.53	12,744.92
eral Income	590,350.00	565,494.73	428,027.46	342,640.36	456,702.29	468,616.72
eral Capital Tax	46,775.00	45,888.00	45,000.00	29,578.00	30,000.00	40,000.00
eral Excise on Electric Service	201,280.00	196,319.65	186,782.24	171,830.25	43,355.06	-- --
eral Surtax on Undistributed rofits	22,420.00	22,420.56	-- --	-- --	-- --	-- --
Carried Forward	2,991,697.97	2,788,140.37	2,593,034.88	2,463,180.17	2,043,113.15	2,206,226.90

COMPLAINANTS' EXHIBIT NO. 67

APPALACHIAN ELECTRIC POWER COMPANY

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATE

Description of Tax	1937 Estimated	1936	1935	193
Brought Forward	2,991,697.97	2,788,140.37	2,593,034.88	2,463,18
Tennessee (Cont'd)				
Federal Excise Old Age	42,500.00	-- --	-- --	-
Federal Excise Unemployment	9,550.00	3,594.28	-- --	-
Federal Check	-- --	-- --	-- --	2,84
Federal Coupon	25,300.00	25,278.42	23,023.39	30,23
Total Taxes	3,069,047.97	2,817,013.07	2,616,058.27	2,496,26
Revenue - Sales of Energy	21,277,000.00	20,327,847.89	18,681,012.30	17,660,47
% of Revenue	14.42	13.86	14.00	

September 15, 1937.

COMPLAINANTS' EXHIBIT NO. 67

APPALACHIAN ELECTRIC POWER COMPANY

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED (Cont'd)

	1937 Estimated	1936	1935	1934	1933	1932
ard	2,991,697.97	2,788,140.37	2,593,034.88	2,463,180.17	2,043,113.15	2,206,226.90
	42,500.00	-- --	-- --	-- --	-- --	-- --
	9,550.00	3,594.28	-- --	-- --	-- --	-- --
	-- --	-- --	-- --	2,847.80	2,382.62	1,479.46
	25,300.00	25,278.42	23,023.39	30,232.57	27,610.09	26,663.09
	3,069,047.97	2,817,013.07	2,616,058.27	2,496,260.54	2,073,105.86	2,234,369.45
	21,277,000.00	20,327,847.89	18,681,012.30	17,660,477.29	15,779,778.46	15,778,507.63
	14.42	13.86	14.00	14.13	13.14	14.16

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COMPLAINANTS' EXHIBIT NO. 68

KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED

Description of Tax	1937 Estimated	1936	1935	1934
Public Service Commission	5,095.70	4,895.92	3,995.00	4,250.00
State Income	14,122.75	18,192.87	-- --	-- --
Real Estate, Personal and Franchise	217,700.00	201,373.92	185,314.38	172,147.14
State Unemployment	9,200.00	3,182.55	-- --	-- --
Merchants License	52.00	52.00	-- --	10.50
State Motor Vehicle	801.71	492.51	365.11	1,130.32
State Gasoline	2,900.00	2,639.05	2,442.75	2,105.00
Federal Income	61,246.87	78,897.96	72,161.36	44,038.10
Federal Capital Stock	7,100.00	7,075.00	7,000.00	2,966.00
Federal Excise on Electric Services	26,500.00	26,282.72	24,385.32	22,599.68
Federal Excise Unemployment	1,200.00	1,019.56	-- --	-- --
Federal Excise Old Age	5,000.00	-- --	-- --	-- --
Federal Check	-- --	-- --	-- --	341.68
Total Taxes	350,919.03	344,104.06	295,663.92	249,588.42
Revenue - Sales of Energy	3,380,000.00	3,314,345.12	3,050,189.01	2,720,295.59
% of Revenue	10.38	10.38	9.69	9.17

September 15, 1937.

COMPLAINANTS' EXHIBIT NO. 68

KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED

on of Tax	1937 Estimated	1936	1935	1934	1933	1932
ission	5,095.70	4,895.92	3,995.00	4,250.00	-- --	-- --
	14,122.75	18,192.87	-- --	-- --	-- --	-- --
al and Franchise	217,700.00	201,373.92	185,314.38	172,147.14	184,034.78	191,044.15
	9,200.00	3,182.55	-- --	-- --	-- --	-- --
	52.00	52.00	-- --	10.50	-- --	-- --
	801.71	492.51	365.11	1,130.32	1,250.49	1,235.24
	2,900.00	2,639.05	2,442.75	2,105.00	1,980.65	1,921.75
	61,246.87	78,897.96	72,161.36	44,038.10	25,634.97	31,488.29
ck	7,100.00	7,075.00	7,000.00	2,966.00	3,000.00	4,000.00
lectric Services	26,500.00	26,282.72	24,385.32	22,599.68	5,680.86	-- --
ployment	1,200.00	1,019.56	-- --	-- --	-- --	-- --
Age	5,000.00	-- --	-- --	-- --	-- --	-- --
	-- --	-- --	-- --	341.68	302.60	141.88
	350,919.03	344,104.06	295,663.92	249,588.42	221,884.35	229,831.31
Energy	3,380,000.00	3,314,345.12	3,050,189.01	2,720,295.59	2,437,926.39	2,407,926.56
	10.38	10.38	9.69	9.17	9.10	9.54

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COMPLAINANTS' EXHIBIT NO. 69

KINGSPORT UTILITIES, INCORPORATED

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATE

Description of Tax	1937 Estimated	1936	1935	
Virginia Registration Fee	25.00	25.00	25.00	
Foreign Corporation	150.00	150.00	150.00	
Privilege Licenses	31.00	1,153.50	1,153.50	1.
State Gross Receipts	8,878.96	-- --	-- --	
State Excise	4,212.10	1,991.32	1,212.55	
State Franchise	1,920.24	601.85	-- --	
Railroad and Public Utilities Fee	1,588.61	1,417.29	1,327.15	
Real and Personal Property	27,864.28	25,246.28	21,275.69	28.
State Motor Vehicle	197.70	227.90	168.96	
State Gasoline	870.00	757.12	625.10	
State Unemployment	1,620.00	669.97	-- --	
Federal Income	27,800.00	18,663.75	14,434.53	10.
Federal Capital Stock	1,550.00	1,534.00	1,500.00	1.
Federal Excise on Electric Services	6,500.00	6,013.17	5,396.03	4.
Federal Surtax on Undistributed Profits	1,200.00	1,171.87	-- --	
Federal Excise Old Age	850.00	-- --	-- --	
Federal Excise Unemployment	180.00	74.44	-- --	
Federal Check	-- --	-- --	-- --	
Total	85,437.89	59,697.46	47,268.51	47.
Revenue - Sales of Energy	590,000.00	512,442.78	460,228.19	435.
% of Revenue	14.48	11.65	10.27	

COMPLAINANTS' EXHIBIT NO. 69

KINGSPORT UTILITIES, INCORPORATED

TAX PAYMENTS FOR YEARS 1932 - 1937 INCLUSIVE - 1937 ESTIMATED

Tax	1937 Estimated	1936	1935	1934	1933	1932
	25.00	25.00	25.00	25.00	25.00	25.00
	150.00	150.00	150.00	150.00	150.00	150.00
	31.00	1,153.50	1,153.50	1,153.50	1,235.00	1,153.50
	8,878.96	-- --	-- --	-- --	-- --	-- --
	4,212.10	1,991.32	1,212.55	483.17	589.31	1,702.06
	1,920.24	601.85	-- --	-- --	-- --	-- --
;ies Fee	1,588.61	1,417.29	1,327.15	650.50	678.93	751.87
	27,864.28	25,246.28	21,275.69	28,086.17	26,271.20	23,691.00
	197.70	227.90	168.96	168.58	199.67	238.80
	870.00	757.12	625.10	571.48	455.70	447.02
	1,620.00	669.97	-- --	-- --	-- --	-- --
	27,800.00	18,663.75	14,434.53	10,296.15	5,406.27	6,476.84
	1,550.00	1,534.00	1,500.00	1,012.00	1,000.00	600.00
Services	6,500.00	6,013.17	5,396.03	4,822.03	,352.09	-- --
buted Profits	1,200.00	1,171.87	-- --	-- --	-- --	-- --
	850.00	-- --	-- --	-- --	-- --	-- --
t	180.00	74.44	-- --	-- --	-- --	-- --
	-- --	-- --	-- --	58.96	52.58	25.38
	85,437.89	59,697.46	47,268.51	47,477.54	37,415.75	35,261.47
	590,000.00	512,442.78	460,228.19	435,779.62	390,869.09	394,582.47
	14.48	11.65	10.27	10.89	9.57	8.94

COMPLAINANTS' EXHIBIT NO. 73

WEST TENNESSEE POWER & LIGHT COMPANY - TAX PAYMENTS FOR YEARS

1932-1937 INCLUSIVE - 1937 ESTIMATED

	1937 Estimated	1936	1935	1934	1933	1932
City License & Privilege	$2,200.00	$2,268.82	$2,215.25	$2,218.90	$2,207.51	$1,842.38
State & County License & Privilege	5,000.00	5,645.92	5,671.11	5,341.75	5,342.98	3,966.89
Public Utilities Commission's Fee	2,972.07	2,463.85	2,184.58	1,014.00	1,047.96	1,077.54
Special Corporation	150.00	150.00	150.00	150.00	150.00	150.00
Self Insurers	75.00	66.56	76.17	62.07	66.20	77.62
Gross Receipts - 1/2 year	7,211.16					
State Income (Excise)	1,624.45	-	-	-	-	1,689.97
City Merchants	190.00	184.50	159.99	98.93	99.14	100.71
State & County Merchants	442.00	391.29	407.68	132.78	126.71	130.26
State & County Automobile	307.00	306.53	341.15	416.31	397.38	
City Automobile	80.00	79.33	69.71	79.71	41.76	
Federal Income	24,000.00	18,550.87	7,069.28	375.00		
Federal Unemployment	200.00	194.28				
Federal Old Age Retirement	1,320.00					
Federal Capital Stock	1,300.00	1,282.34	1,028.83	825.00	848.00	425.50
Federal 3% Excise on Electric Energy	13,000.00	12,352.67	11,625.14	10,319.30	3,133.76	
State Unemployment	3,900.00	1,748.51				
State Property - Real Estate & Personal	1,511.20	1,511.20	1,511.20	1,511.20	1,511.20	1,513.60
State Franchise	8,040.00	8,039.40	3,406.05			
County Property - Real Estate & Personal	38,000.00	36,968.16	36,012.05	35,333.59	36,185.17	31,852.50
City Property - Real Estate & Personal	28,000.00	27,466.22	27,418.56	27,442.19	27,443.31	27,239.87
TOTAL TAXES	$140,122.88	$119,670.44	$99,426.75	$85,320.73	$78,601.08	$70,066.84
Gross Revenue - All Departments	$1,009,742.00	$953,804.15	$849,222.89	$760,168.37	$727,906.55	$762,388.47
Per Cent of Gross	13.88	12.55	11.71	11.22	10.80	9.10

HRB/mp
10/30/37

COMPLAINANTS' EXHIBIT NO. 76

WEST TENNESSEE POWER & LIGHT COMPANY
JACKSON, TENNESSEE

EXHIBIT NO._____

	12 Months Ended July 31,1937	Year 1936	Year 1935	Year 1934	Year 1933	Year 1932	Year 1931	Year 1930	Year 1929	Year 1928	Year 1927
Revenue from Residential and Farm Customers	$217,611	$218,265	$209,118	$190,289	$197,664	$226,287	$227,088	$211,975	$198,230	$170,261	$134,999
Energy Sales to Residential and Farm Customers - KWH	4,827,088	4,386,295	3,770,253	3,324,874	2,977,147	3,127,409	3,088,852	2,856,496	1,988,875	1,441,807	1,120,225
Energy Sales to All Other Customers - KWH	14,495,190	13,943,291	9,854,287	8,748,068	8,369,116	8,739,306	8,888,212	9,779,089	10,013,285	8,268,866	6,235,893
TOTAL ENERGY SALES TO CUSTOMERS - KWH	19,322,248	17,297,586	13,624,780	12,074,922	11,346,263	11,866,717	11,972,064	12,636,585	11,961,110	9,710,373	7,356,126
Interchange Sales - KWH	0	0	960	1,440	480	1,440	35,040	31,201	10,800	109,710	0
Interdepartmental Sales -KWH	1,334,164	1,328,121	1,481,771	1,309,109	1,454,282	1,565,249	1,668,000	1,906,800	1,730,000	1,568,189	1,210,000
TOTAL ENERGY SALES - KWH	20,656,412	18,625,807	15,107,511	13,385,471	12,801,275	13,433,406	13,675,104	14,574,786	13,681,910	11,388,272	8,566,126
Industrial Sales - KWH	8,080,609	7,119,776	5,174,198	4,755,145	4,730,755	4,730,209	4,273,425	5,603,837	7,251,644	5,126,240	4,460,997
Per Cent of Industrial KWH Sales to Total KWH Sales	38.74	37.75	34.25	35.00	36.96	35.21	31.27	38.98	55.00	53.89	52.08
Total Customers End of Period	10,680	9,955	9,416	8,929	8,650	8,486	8,765	8,798	8,964	8,402	6,880
K.W.H.Use per Average Residential & Farm Customer	626	556	528	491	460	474	456	397	309	252	218
Revenue per Average Residential & Farm Customer	$28.14	$29.34	$29.52	$28.11	$30.51	$34.00	$35.60	$31.61	$30.61	$29.78	$24.71
Rate per KWH - Average Residential & Farm Customer - Cents	4.50	5.01	5.55	5.72	6.64	7.17	7.36	7.97	9.98	11.83	12.25

Excluded

Years 1927 to 1931 inclusive, Intradepartmental KWH eliminated from Total Energy Sales.
Years 1932 to 1937 inclusive, No Intradepartmental KWH billed.

11/8/37

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COMPLAINANTS' EXHIBIT NO. 80

EAST TENNESSEE LIGHT & POWER CO.

Tax Payments 1932-1937, Inclusive - 1937 Estimated

Description	1937 Est.	1936	1935	1934	1933	1932
Local Real Estate and Personal	$49,993.38	$46,793.10	$42,269.86	$ 41,675.26	$46,992.63	$46,146.26
Federal Bond Tax Paid at Source	220.00	138.30	196.35	211.05	194.55	200.30
Federal 3% Excise on Electric Sales	14,910.80	14,427.11	13,031.18	12,184.49	11,582.75	6,012.57
Federal Excise, Documentary Stamps & Misc.	273.46	241.77	290.85	507.38	444.81	393.13
Federal Capital Stock Tax	1,237.50	1,133.00	1,008.00	750.00	250.00	-
State Franchise Tax - Tenn.	2,028.00	1,927.50	2,904.75	-	-	-
State Franchise Tax - Va.	5,770.52	5,016.49	4,669.93	4,596.76	2,882.28	3,594.18
Privilege License - Gas, Elec., Misc. & Coke	6,624.74	7,791.93	7,436.06	7,495.98	7,649.53	7,297.53
Motor Vehicle License Plates	691.20	515.20	696.07	690.02	731.34	731.38
State Gasoline Tax (Va., Tenn., & N.C.)	2,226.83	1,914.93	1,701.50	1,633.17	1,348.72	1,751.03
Public Utility Commission Fees	1,961.45	1,759.31	1,640.12	1,091.85	1,102.34	997.44
State Income (Excise) - Tennessee	1,269.96	538.12	-	-	-	364.69
State Income Tax - North Carolina	62.12	62.12	75.66	69.60	7.72	65.59
State Corporate Filing Fees	175.00	180.00	295.00	295.00	295.00	295.00
Federal Income Tax	6,700.00	3,054.73	7,325.61	4,429.30	-	6,342.83
Federal Old Age Benefit Tax	2,203.40	-	-	-	-	-
Federal Unemployment Tax	213.93	193.98	-	-	-	-
State Unemployment - Tenn.	4,335.62	1,724.66	-	-	-	-
State Unemployment - North Carolina	25.87	21.13	-	-	-	-
Gross Receipts Tax	4,773.81	-	-	-	-	-
TOTAL TAXES	105,687.57	87,431.38	83,479.56	75,629.86	73,531.47	74,182.05
Gross Revenue	860,573.00	764,163.74	690,024.49	646,122.85	631,565.92	668,052.67
% of Gross Revenue	12.28	11.44	12.10	11.71	11.64	11.10

COMPLAINANTS' EXHIBIT NO. 81

TENNESSEE EASTERN ELECTRIC COMPANY

Tax Payments for Years 1932-1937, Inclusive - 1937 Estimated

Description	1937 Est.	1936	1935	1934	1933	1932
Local Real Estate and Personal	$74,419.59	$74,188.65	$69,198.94	$64,788.36	$69,665.53	$70,577.58
Federal Bond Tax Paid at Source	1,345.00	1,302.75	1,222.80	1,339.80	1,253.85	1,298.80
Federal 3% Excise on Electric Sales	13,876.23	12,180.96	10,633.79	9,813.60	9,819.38	5,276.58
Federal Excise, Documentary Stamp, and Misc.	161.05	180.24	185.91	325.57	401.42	384.28
Federal Capital Stock	2,070.00	2,000.00	795.00	800.00	800.00	-
State Franchise - Tennessee	4,544.00	4,467.72	3,798.00	-	-	-
Privilege Licenses - Elec. & Misc.	5,394.62	5,702.54	5,509.33	5,421.67	5,441.54	4,713.78
Motor Vehicle License Plates	399.00	387.80	421.38	380.48	467.25	438.77
State Gasoline Tax	992.60	1,022.98	870.88	1,306.45	1,687.63	2,054.99
Public Utility Commission Fee	1,883.56	1,582.92	1,483.07	734.22	789.15	844.15
State Income (Excise) - Misc.	342.00	338.11	361.06	237.06	321.86	364.84
State Income (Excise) - Tenn.	7,200.00	1,822.20	-	-	648.30	-
State Corporate Filing Fees	160.00	160.00	160.00	160.00	160.00	160.00
Federal Income	68,138.08	23,786.81	-	1,854.87	-	-
Federal Old Age Benefit	1,536.52	-	-	-	-	-
Federal Unemployment	310.03	136.65	-	-	-	-
State Unemployment - Tenn.	2,832.54	1,229.87	-	-	-	-
Gross Receipts Tax	5,065.64					
TOTAL TAXES	190,380.40	130,419.90	94,666.87	87,131.68	91,565.11	86,113.78
Gross Earnings	896,126.00	765,286.69	654,429.27	584,027.69	568,780.84	598,421.22
% of Gross Earnings	21.25	17.04	14.47	14.92	16.10	14.39

COMPLAINANTS' EXHIBIT NO . 84

EAST TENNESSEE LIGHT & POWER CO.

Item	Miles of Transmission Line	Miles of Distribution Line	Total No. of Customers	No. of Towns & Communities Served	Kwh Sold to Regular Customers
Yr. End. Dec. 31:					
1927	26.6	128.7	5830	20	10,426,636
1928	45.0	172.4	6770	20	12,728,381
1929	58.0	245.1	8112	20	16,125,261
1930	69.0	288.0	8849	20	16,856,268
1931	79.0	307.7	8941	21	16,329,901
1932	79.0	317.7	8781	21	14,536,884
1933	79.0	319.5	8396	21	14,252,343
1934	79.0	322.0	8706	21	15,849,485
1935	79.0	327.6	9158	21	18,838,849
1936	65.7	354.4	9815	21	22,894,648
Yr. End. July 31, 1937	86.5		10512	22	25,681,737

Item	No. Residential Customers Urban	Rural	Total	Kwh Per Residential Cust. Urban	Rural	Total	Rev. per Res. Customer Urbin	Rural	Total	Average Residential Rate Urban	Rural	Total
Yr. End. Dec. 31:												
1927	4532		4532	311		311	$26.80		$26.80	.085		.085
1928	5206	53	5259	359	480	361	28.67	$56.02	28.93	.080	.114	.080
1929	6285	126	6411	381	406	381	30.16	41.71	30.20	.079	.103	.079
1930	6645	244	6889	420	472	422	29.36	32.72	29.30	.069	.069	.069
1931	6946	228	7174	478	482	479	31.72	35.68	31.71	.065	.074	.066
1932	6328	724	7052	508	524	508	32.30	38.34	32.31	.064	.073	.065
1933	5668	1079	6747	525	489	529	35.09	35.73	35.56	.062	.071	.063
1934	5943	1060	6983	597	578	596	31.96	33.13	32.12	.053	.057	.054
1935	6235	1151	7386	706	627	693	33.13	30.96	32.79	.047	.049	.047
1936	6806	1573	7979	825	664	797	35.24	31.01	34.51	.043	.047	.043
Yr. End. July 31, 1937	6815	1572	8387	887	686	849	35.89	30.91	34.96	.040	.045	.041

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COMPLAINANTS' EXHIBIT NO. 85

TENNESSEE EASTERN ELECTRIC CO.

Item	Miles of Transmission Line	Miles of Distribution Line	Total No. of Customers	No. of Towns & Communities Served	Kwh Sold to Regular Customers
Yr. End. Dec. 31:					
1927	68.5	173.0	6448	23	18,492,608
1928	68.5	214.0	7134	23	18,738,925
1929	68.5	255.5	7797	23	17,894,531
1930	68.5	288.2	7576	24	16,083,268
1931	68.5	343.9	7669	24	15,961,365
1932	68.5	340.4	7420	24	14,490,332
1933	68.5	342.0	7035	24	13,417,458
1934	68.5	354.6	7209	35	14,672,430
1935	68.5	376.4	7596	45	18,873,728
1936	65.7	442.7	8198	51	24,548,589
Yr. End. July 31, 1937	65.7		8642	57	27,879,817

Item	No. Residential Customers			Kwh Per Residential Cust.			Rev. Per Res. Customer			Average Residential Rate (EXCLUDED)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Yr. End. Dec. 31:												
1927	4605		4605	238		238	$24.76		$24.76	.104		.104
1928	4947		4947	264		264	27.00		27.00	.075		.075
1929	6058		6058	378		378	28.32		28.32	.075		.075
1930	4589	1420	6009	534	300	479	33.42	20.36	30.34	.062	.068	.063
1931	4616	1460	6076	565	508	552	32.65	33.36	32.82	.058	.066	.060
1932	4378	1520	5898	639	496	606	35.59	32.17	34.86	.056	.065	.058
1933	4000	1522	5522	663	490	616	36.24	31.82	34.84	.055	.065	.057
1934	4080	1652	5732	745	516	679	34.89	28.00	32.90	.047	.054	.048
1935	4278	1788	6066	879	607	799	36.09	25.24	33.92	.041	.047	.042
1936	4511	2035	6546	1029	695	925	38.51	30.78	36.10	.037	.044	.039
Yr. End. July 31,.1937	4619	2304	6923	1105	714	973	39.47	31.19	36.71	.036	.044	.038

COMPLAINANTS' EXHIBIT NO. 86

SOUTHERN TENNESSEE POWER COMPANY

TAXES PAID FOR THE FOLLOWING YEARS.

	1932	1933	1934	1935	1936	Estimated 1937
Property	2,970.78	2,968.68	2,966.70	3,278.58	3,341.88	3,400.00
Federal Income			428.92	807.47	1,206.33	1,200.00
Federal Capital Stock		1.00	100.00	103.00	150.00	156.00
Federal Excise on Bank Checks	.24	.60	.80			
Alabama Franchise	982.20	991.40	991.40	991.40	1,000.40	1,000.00
Delaware Franchise	75.00	75.00	75.00	75.00	75.00	75.00
Tennessee Franchise				28.35	11.16	10.00
Alabama Registration Fee	100.00	100.00	100.00	100.00	100.00	100.00
Delaware " "	2.00	2.00	2.00	2.00	2.00	2.00
Tennessee Filing Fee	150.00	150.00	10.00	10.00	10.00	10.00
Total	4,280.22	4,288.68	4,674.82	5,395.80	5,896.77	5,953.00

COMPLAINANTS' EXHIBIT No. 91

where progress and development are being hampered for the lack of hydro-electric power, to secure same.

• • • • • • •

"6. The following exhibits are filed herewith and made a part of this application:" (pp. 1-3)

• • • • • • •

[fol. 2086] "Exhibit 'G'

"Statement as to Applicant's Financial Ability

"The applicant is one of the largest public utility corporations operating in the Southern States with an established and constantly increasing business as a public utility, serving hydro-electric power through practically the entire State of Alabama. Applicant has an established and ready market for its securities, and through the sale of these, contemplates financing this project." (p. 15)

• • • • • • •

"Exhibit 'H'

"Effect of Project on Stream Flow

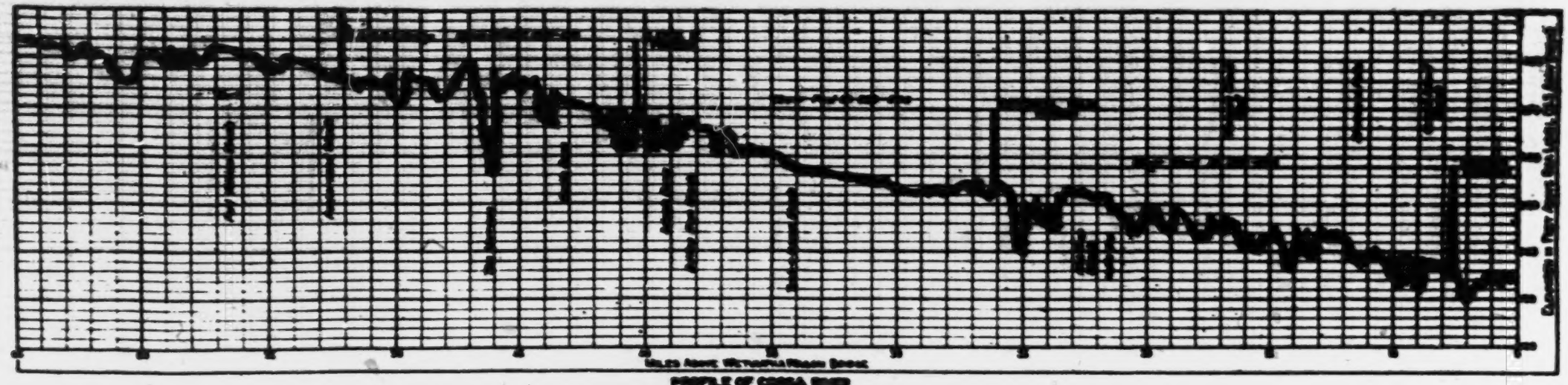
"The plants make provision for a future lock at the west end of the dam. The project will provide a navigable pool extending from the dam site to Mitchell Dam, located approximately twenty miles above this site. It is proposed to build the dam to a height which will provide for a permissible drawdown of five feet below the level of the crest of the spillway, and at the same time provide for a six-foot navigation up to the lower entrance of the future lock at Mitchell Dam. The relation of the project now applied for to a comprehensive scheme of navigation improvement is shown by Map No. 1 of Exhibit 'J'. The applicant proposes to release water so that whenever the flow of the Alabama River at Montgomery, Alabama, is less than 6,000 cubic feet per second, and whenever directed so to do by the Secretary of War, there shall be released from the Lock 18 reservoir sufficient water to produce a flow of 6,000 cubic feet per second at said place: provided that the

applicant shall not be required to release for the purpose above named more than the normal flow of the river when this flow is below 5,000 cubic feet per second, and provided further that the applicant will not be required to pass more than 5,000 cubic feet per second at any stage unless it desires to do so for the production of power or for release of flood waters." (p. 16)

* * * * * * *

(Here follow 2 photolithographs, side folios 2087 and 2088)

Complainants' Exhibit No. 91



PROFILE OF COOSA RIVER
Showing
PRESENT AND PROPOSED DEVELOPMENTS

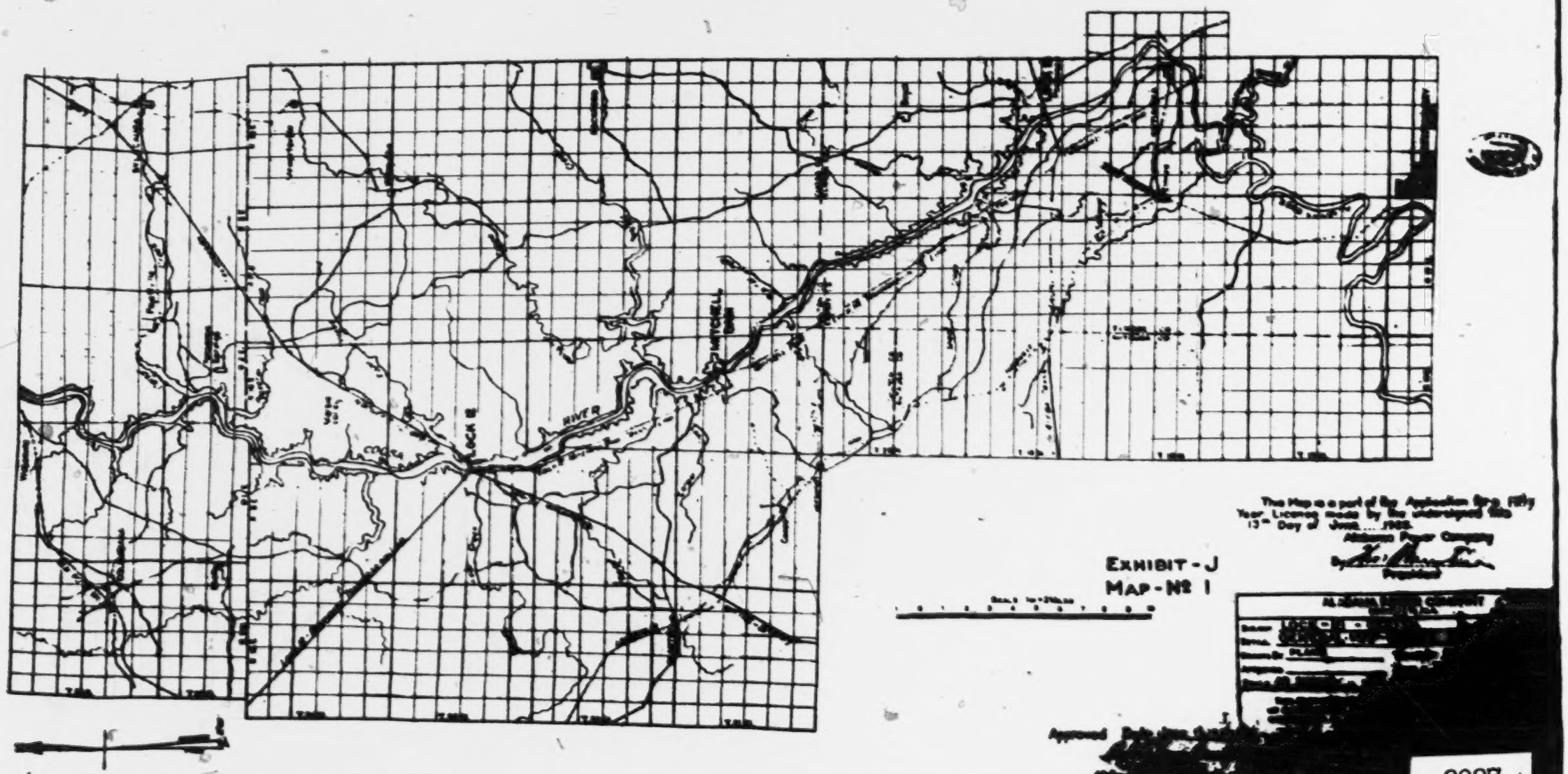
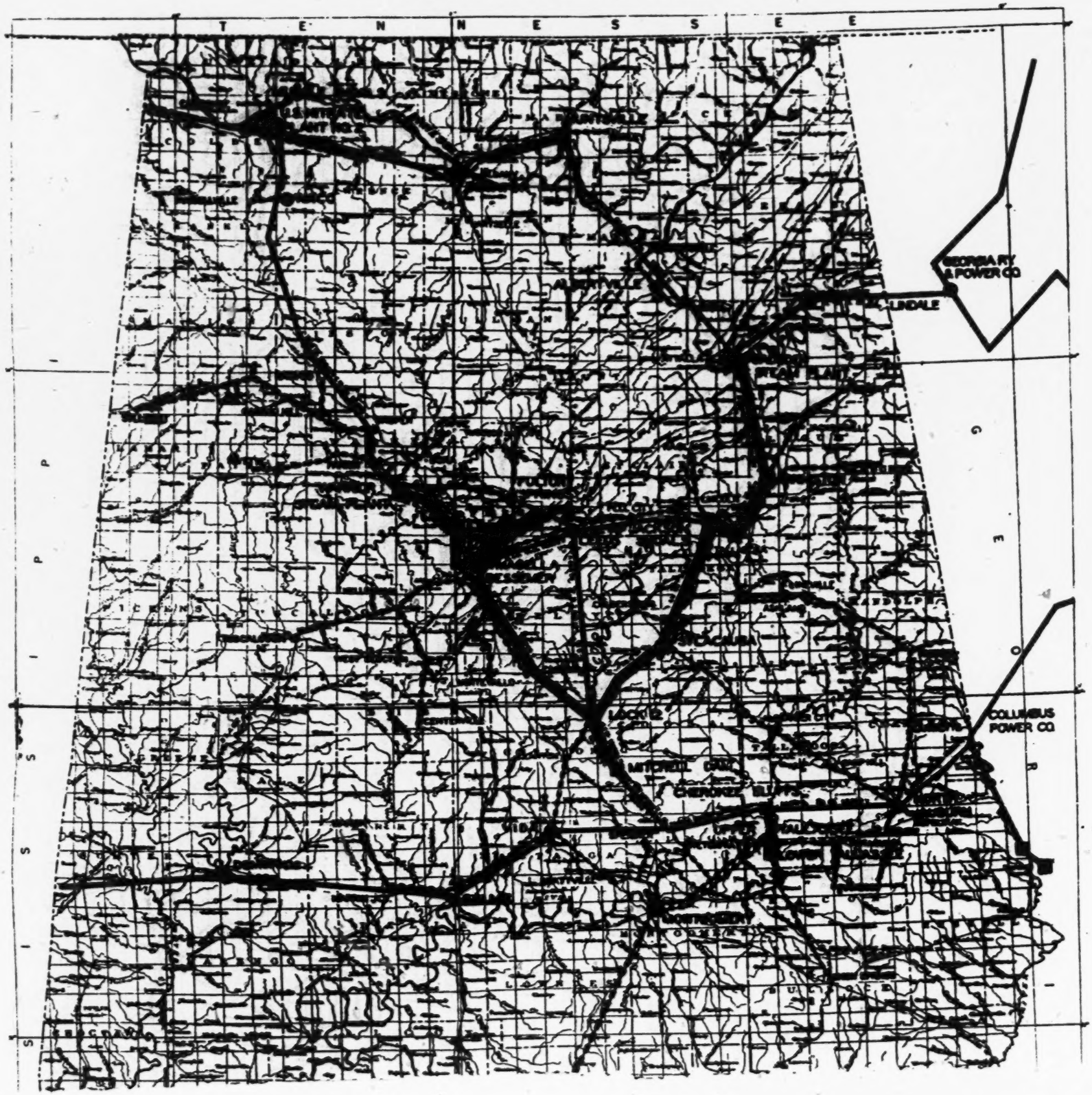


EXHIBIT - J
MAP - Nº 1

Complainants' Exhibit No. 91



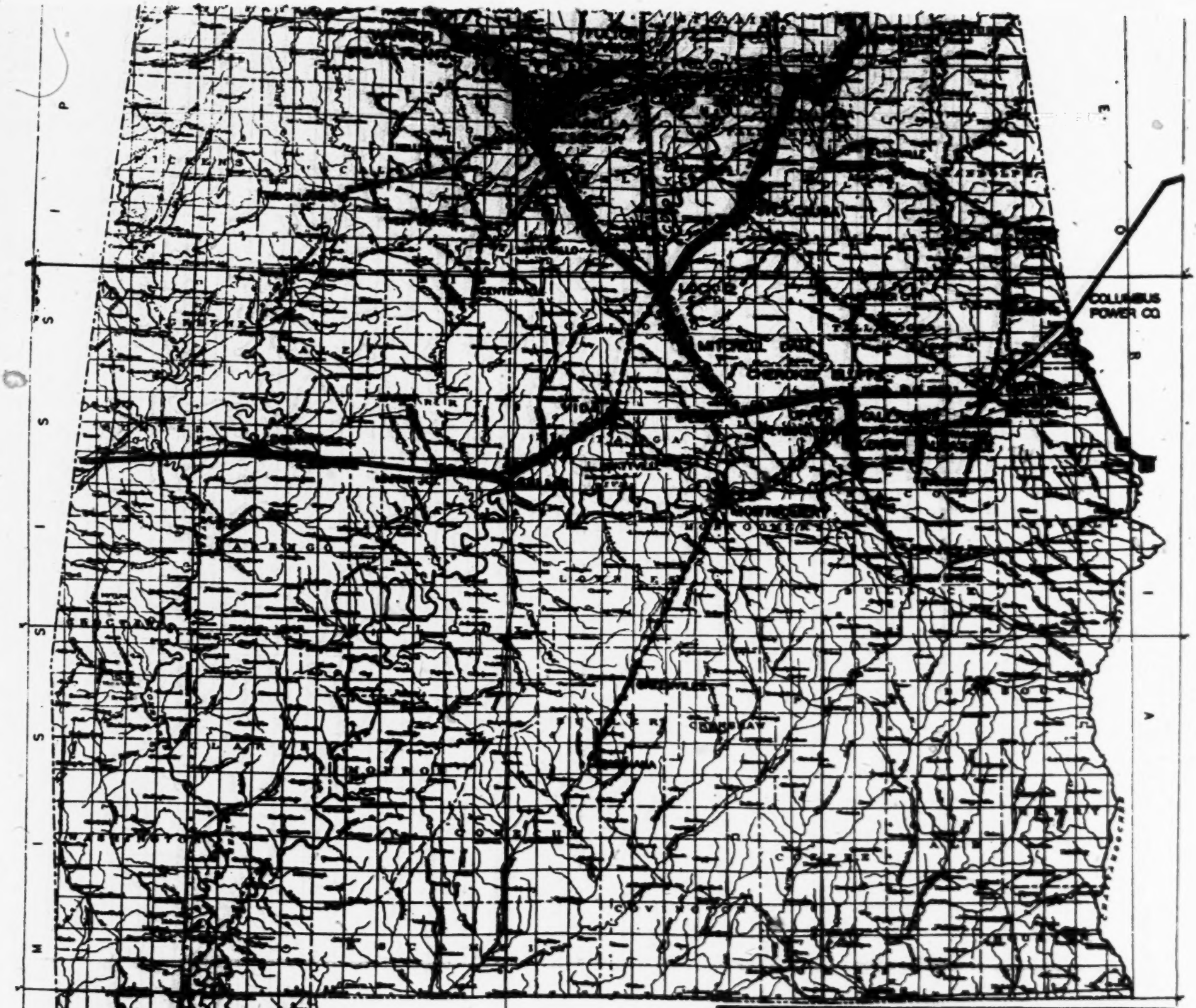


EXHIBIT J
MAP Nº 2

This Map is a part of the Application for a Fifty Year License made by the undersigned this 13 day of June 1925

By _____
President.

Approved, Date June 13 1925

_____
Chief Engineer Alabama Power Co.

ALABAMA POWER CO
ELECTRICAL DISTRIBUTING SYSTEM

TRANSMISSION LINES 110,000 VOLTS
" " 44,000 "
OTHER COMPANIES' LINES
HYDRO-ELECTRIC PLANT
STEAM PLANT
SUBSTATION

SCALE OF MILES

2088

APRIL 1925

COMPLAINANTS' EXHIBIT No. 91

• • • • • • •

[fol. 2089] "Exhibit 'M'

"General Description and General Specifications of Mechanical, Electrical and Transmission Equipment and Appurtenances

"This project contemplates the construction of a dam and power house on Coosa River in vicinity of site known as Lock 18 as designated by survey of Coosa River from Lock No. 4 in Alabama to Wetumpka, Alabama, made August 2, 1903, to December 19, 1903, under the direction of J. B. Cavanaugh, Corps of Engineers, U. S. A. and by D. M. Andrews, Assistant Engineer, and N. A. Yuille, Chief of Party as indicated in Exhibit 'K' and 'L' herewith attached.

"The dam will be of solid concrete masonry construction, raising elevation of pool approximately 95 feet above present low water level.

"The power house will consist of foundations for five generating units, two units of which will be installed in first construction. Further provisions will be made for three more generating units to be constructed from time to time to meet the reasonable market demands for power.

"The generating units in first construction will consist of two vertical type water wheels of approximately 36,000 hp. each driving generators of approximately 25,000 kw. capacity each.

"Power will be generated at 13,200 volts, stepping up to 110,000 volts for transmission.

"This station will be connected to the transmission line system of the Alabama Power Company by means of the now existing transmission line in the vicinity of this site." (p. 18)

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COMPLAINANTS' EXHIBIT No. 91

[fol. 2090] "Exhibit 'N'

"Estimated Cost of Project

"Earth and Rock Excavation	275,000 cubic yards.
Concrete	354,000 cubic yards.
Railroad	10 miles.
Initial Installation	72,000 horsepower.
Lands for Reservoir	8000 acres.
Total Estimated Cost of Initial Installation	$13,250,000" (p. 20)

* * * * * * *

"Exhibit 'O'

"A Detailed Statement of the Time Required for Completing the Preliminary Construction and for Beginning and Completing the Construction of The Project

"The applicant desires to begin preliminary construction of the project works on or before December 1, 1925. It is estimated that it will require approximately three years for the initial installation. The time required for installation of each additional unit is estimated to be approximately one year, and it is proposed to construct the additional units from time to time to meet the reasonable market demands for power." (p. 21)

* * * * * * *

(b) License:

The following copy of the license issued by the Federal Power Commission to construct Jordan Dam is typical of the licenses issued to construct Mitchell Dam and the Cherokee Bluffs unit (Martin Dam):

[fol. 2091] (Here the Entire Jordan Dam License will be introduced in Evidence as Typical of All Other Licenses)

Complainants' Exhibit No. 91

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UNITED STATES OF AMERICA

FEDERAL POWER COMMISSION

I, LEON M. FUQUAY, Acting Secretary of the Federal Power Commission, hereby certify that the attached document is a full, true and correct copy of a license issued on November 7, 1925 by the Federal Power Commission to Alabama Power Company, a corporation organized and existing under the laws of the State of Alabama, for the construction, operation and maintenance of a hydro-electric project, known as project No. 618 on the Coosa River, in the Counties of Elmore, Chilton and Coosa in the State of Alabama.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Federal Power Commission at the City of Washington, District of Columbia, on the 20th day of July, 1936.

Leon M. Fuquay
Acting Secretary.

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11-38-a

THE FEDERAL POWER COMMISSION.

LICENSE ON NAVIGABLE WATERS.

Project No. 618
ALABAMA

ALABAMA POWER COMPANY.

WHEREAS, by Act of Congress, approved June 10, 1920 (41 Stat., 1063) designated therein as "The Federal Water Power Act" and hereinafter called "the Act," the Federal Power Commission, hereinafter called "the Commission," is authorized and empowered, inter alia, to issue licenses for the purpose of constructing, operating, and maintaining dams, water conduits, reservoirs, power houses, transmission lines, or other project works necessary or convenient for the development, transmission and utilization of power across, along, from or in any of the navigable waters of the United States, or upon any part of the public lands and reservations of the United States (including the Territories) or for the purpose of utilizing the surplus water or water power from any Government dam; and

WHEREAS, Alabama Power Company, ———————————————

hereinafter called "the Licensee," a public-utility corporation organized and existing under the laws of the State of Alabama, and having its office and principal place of business in the city of Attalla, in the State of Alabama, has

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made application in due and proper form to the Commission for a license for a power project designated as Project No. 618 on the records of the Commission, and for authority to construct, maintain and operate, at the site of the proposed United States Dam, designated as Old No. 18 in H.D. 253, 63rd Congress, first session in the vicinity of Columbiana in the Counties of Elmore, Chilton and Coosa, State of Alabama, certain project works, as hereinafter described, necessary or convenient for the development and improvement of navigation and for the development, transmission and utilization of power across, along, from and in navigable waters of the United States; and upon the public lands and reservations of the United States; and ———

WHEREAS, the Licensee has submitted to the Commission satisfactory evidence of its compliance with the laws of the State Alabama, as required by Section 9, subsection (b) of the Act, and the Commission is satisfied as to the ability of the Licensee to carry out the plans for said project as filed with said application; and

WHEREAS, notice of said application has been given and published by the Commission, as required by Section 4 of the Act; full opportunity has been given to all interested parties to be heard, and no application for said project, or in conflict therewith, has been filed by any State or municipality; and

WHEREAS, the maps, plans and specifications of said project and of said project works, as hereinafter described, have been approved by the Commission, and the plans of the dam and other structures affecting navigation have been approved by the Chief of Engineers and the Secretary of War; and

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WHEREAS, the Commission has found that said project, as hereinafter described, will be best adapted to a comprehensive scheme of improvement and utilization of said waterway for the purposes of navigation, of water power development and other beneficial public uses; and

WHEREAS, the Commission did on the Third day of [illegible], find that the contemplated improvement is desirable and justified in the public interest for the purpose of improving or developing a waterway, namely, said Cocsa River, ———— [illegible] ———— for the use or benefit of interstate and foreign commerce, a certified copy of the records of the Commission containing such finding being hereto attached; and

WHEREAS, the Licensee, on the [illegible] day of [illegible], pursuant to an authorization of its board of directors, a copy of the record thereof being hereto attached, accepted in writing all the terms and conditions of the Act and of this license;

NOW, THEREFORE, the Commission hereby issues this license to the Licensee for the purpose of constructing, operating and maintaining certain project works necessary or convenient for the development and improvement of navigation and for the development, transmission and utilization of power across, along, from or in said Cocsa River ———— ———— ———— , navigable waters of the United States, and constituting a part of the project hereinafter described; said license, including the period thereof, being subject to all the terms and conditions of the Act and of the rules and regulations of the Commission pursuant

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thereto as amended and made effective on the first day of April, 1924, as though fully set forth herein, which said rules and regulations are attached hereto and made a part hereof, and being subject also to the following express conditions and limitations, to wit:

Article 1. This license is issued for a period of fifty (50) years from the date hereof, and in consideration of such license and the benefits and advantages accruing thereunder to the Licensee it is expressly agreed by the Licensee that the entire project, project area and project works as hereinafter designated and described, whether or not located in, on or along said Coosa River, or upon lands of the United States, shall be subject to all the terms and conditions of this license, including the terms and conditions of the Act and of the rules and regulations of the Commission pursuant thereto and made a part of this license.

Article 2. The project covered by and subject to this license is located at the proposed U.S. Dam in the vicinity of Wetumpka, Alabama, No. 18, as said dam is designated in H. D. 253, 67rd Congress, first session, and consists of—

A. All lands constituting the project area and inclosed, or the location of which is shown, by the project boundary, and/or interests in such lands necessary or useful for the purposes of the project, whether such lands or interests therein are owned or held by the Licensee or by the United States; such project area and project boundary being more fully shown and described by certain exhibits which accompanied said application for license and which are designated and described as follows:

Exhibit J - In one sheet with title - "General Map, Showing Location of Site" (No. D-14451):

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Exhibit K - In 19 sheets with titles as follows:

Sheets 1 to 11, inclusive - "Map of Reservoir" (No. D-14450);

Sheet 12 - "Detail Topography and Soundings at Site" (No. D-14455);

Sheets 13 to 19, inclusive - "Soundings Below Mitchell Dam for Boat Channel" (No. D-6525).

Each of the above exhibits signed by Thomas W. Martin, President, June 13, 1925.

B. All project works, consisting of a dam, a power house with appurtenant equipment and an outdoor substation; the location, nature, and character of which project works are more fully shown and described by certain exhibits which accompanied said application for license and which are designated and described as follows:

Exhibit L - Plans, in three sheets, with titles as follows:

No. 1 - "General Layout" (No. D-14454);

No. 2 - "Plan and Section of Power House" (No. D-14453);

No. 3 - "Typical Sections of Dam and Stress Diagrams" (No. D-14452);

Exhibit M - General description and general specifications of mechanical, electrical, and transmission equipment and appurtenances.

Exhibit P - Maps in six sheets with titles as follows:

No. 1 - "Map of Site Showing Borings and Test Pits" (No. D-14449);

No. 2 - "Cross Section of Site Showing Borings and Test Pits" (No. D-14449);

No. 3 - "Map Showing Borings and Test Pits" (No. D-14449);

No. 4 - "Cross Sections of Site Showing Borings and Test Pits" (No. D-16446);

No. 5 - "Cross Sections of Locks Showing Borings and Test Pits" (No. D-16447);

No. 9 - "General Plan and Sections of Lock Wall and Approaches" (No. D-16436);

All of said exhibits having been signed by Thomas W. Martin, President, June 13, 1925.

D. All other structures, fixtures, equipment, or facilities used or useful in the maintenance and operation of the project and located upon the project area, including such portable property as may be used and useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as a part of the project works is approved or acquiesced in by the Commission; also all other rights, easements, or interests the ownership, use, occupancy or possession of which is necessary or appropriate in the maintenance and operation of the project or appurtenant to the project area.

Article 3. The maps, plans, specifications, and statements designated and described in Article 2 hereof as Exhibits J, K, L, M, and P, respectively, and approved by the Executive Secretary for the Commission in accordance with its authorization of October 3, 1925, are hereby made a part of this license, and no substantial change shall hereafter be made in said exhibits, or any of them, until such change shall have been approved by the Commission: Provided, however, that if the Licensee deems it necessary or desirable that said approved maps, plans, specifications and statements, or any of them, be changed there shall be submitted to the Commission for approval amended, supplemental, or additional maps, plans, specifications and statements covering the proposed changes, and upon approval by the Commission of such proposed changes such amended, supplemental or additional maps, plans, specifications and statements shall become a part of this license and shall supersede, in whole or in part, such map, plan, specification, or statement, or part thereof, theretofore made a part of this license as may be specified, respectively, in the order or endorsement of approval.

Article 4. Said project works shall be constructed in substantial conformity with the approved maps, plans and specifications thereof made a part of this license and designated and described in Articles 2 and 3 hereof or as changed in accordance with the provisions of said Article 3. Except when emergency shall require for the protection of navigation, life, health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works constructed under this license without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission shall direct. Minor changes in or divergence from such approved maps, plans, and specifications may be made in the course of construction, if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any such minor changes made without the prior approval of the Commission which in its judgment have produced or will produce any of such results shall be subject to such alteration as the Commission may direct.

Article 5. The work of construction under this license, whether or not conducted upon lands of the United States, shall be subject to the inspection and approval of the U. S. District Engineer at Montgomery, Alabama, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall notify such representative of the date upon which work will begin, and as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of construction for a period of more than one week, and of its resumption and completion.

Article 6. Subject to the provisions of Section 13 of the Act, the Licensee shall begin the construction of said project works within nine months after issuance of this license, shall thereafter, in good faith and with due diligence prosecute such construction; and shall

(a) On or before December 31, 1928, complete said project to an installation of two units having an aggregate capacity of not less than 72,000 horsepower, and

(b) From time to time thereafter, as the Commission may direct, install three additional units having an aggregate capacity of approximately 108,000 horsepower.

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Article 7. Upon the completion of the project works, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements, in so far as necessary to show any divergence from or variations in the project area as finally located or in the project works as constructed when compared with the area shown and the works designated or described in this license or in the maps, plans, specifications, and statements approved by the Commission under the provisions of Article 3 hereof, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statements shall, if and when approved by the Commission, be made a part of this license and shall, to the extent and in the particulars set forth in the order or endorsement of approval, be substituted for the maps, plans, specifications and statements theretofore approved by the Commission under the provisions of Article 3 hereof. The maps finally approved by the Commission and made a part of this license under the provisions of Article 3 and/or 7 hereof shall show the project area to an adequate scale and the boundary thereof either by legal subdivisions, by metes and bounds survey, or by uniform offsets from centerline survey. Said project area shall include all lands without respect to ownership and whether or not the exact boundaries can be definitely fixed and determined, the use and occupancy of which are or will be valuable or serviceable in the maintenance and operation of the project; on which are located or to which are appurtenant the project works (other than portable property) and the rights, easements, or interests likewise valuable and serviceable; and the ownership or possession, or the right of use and occupancy, of which are subject to acquisition by the United States under the provisions of Section 14 of the Act. Said maps shall show the ownership of each parcel of land in said project area, and with respect to each parcel to which the Licensee has not the fee title, the character of the right of use and occupancy possessed by the Licensee together with the term of such right.

Article 8. In so far as any material is dredged or excavated in the prosecution of the work herein authorized, it shall be removed and deposited so it will not interfere with navigation and to the satisfaction of said District Engineer.

Article 9. For the purpose of determining the stage and flow of the stream or streams from which water is to be diverted for the operation of said project works and of the amount of water held in and drawn from storage, [redacted] and that required for navigation, the Licensee shall, upon completion of said project works, install and thereafter maintain a standard gage in the reservoir and another in the tailwater immediately below the power house; shall, before completion of said project works, install and thereafter maintain a standard gaging station at a point in the Alabama River in the vicinity of Montgomery, Alabama; and

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shall provide for the required readings of such gages and for the adequate rating of said station or stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters or other measuring devices, and the method of operation thereof may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or its authorized representative or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of the District Engineer of the United States Geological Survey having charge of stream gaging operations in the region of said project, and the Licensee shall reimburse the said United States Geological Survey for costs incurred in such supervision or for such part thereof as said District Engineer may deem equitable in the circumstances. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, shall make return of such records annually, at such time and in such form as the Commission may prescribe.

Article 10. The Licensee shall be liable for all damages occasioned to the property of others by the construction, maintenance or operation of said project works, or of the works appurtenant or accessory thereto, and in no event shall the United States be liable therefor.

Article 11. In the construction and maintenance of the project works herein specified, the Licensee shall place and maintain suitable structures to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling and obstructing traffic and endangering life on highways, streets, or railroads.

Article 12. The Licensee shall allow officers and employees of the United States free and unrestricted access in, through and across the said project and project works in the performance of their official duties.

Article 13. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure built under the provisions of this license shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of War. Such rules and regulations may include the maintenance and operation by the Licensee at its own expense of such lights and signals as may be directed by the Secretary of War, and such fishways as may be prescribed by the Secretary of Commerce.

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Article 14. The Licensee shall construct and install such appliances as are necessary for furnishing power for the operation of navigation facilities, including lights and signals, whether constructed or installed by the Licensee or by the United States; and shall furnish free of cost to the United States power for the operation of such navigation facilities.

Article 15. The operations of the Licensee, so far as they affect the use, storage, and discharge from storage of the water of the Coosa River, shall at all times be controlled by such reasonable rules and regulations as the Secretary of War may prescribe in the interests of navigation and as the Federal Power Commission may prescribe in the interest of flood control and of the fullest practicable utilization of the waters of said river for power purposes.

Article 16. Whenever the United States shall desire to construct, complete, or improve navigation facilities at said dam, the Licensee shall convey to the United States, free of cost, such of its lands and rights of way and such right of passage through its dam or other structures, and permit such control of pools as may be required to complete such navigation facilities.

Article 17. The Licensee shall make provision in said dam for the future construction of a lock by the United States in accordance with plans approved by the Commission, the Chief of Engineers, and the Secretary of War, and shall excavate the upper approach channel to elevation 270 feet above mean sea level (U. S. Army datum) before the impounding of water behind said dam.

Article 18. Whenever the flow of the Alabama River, at Montgomery, Alabama, is less than 6,000 cubic feet per second, and when directed to do so by the Secretary of War, the Licensee shall release at said dam sufficient water to maintain a flow of 6,000 cubic feet per second at Montgomery: Provided, That the Licensee shall not be required to release more than the normal natural flow of the river at said dam or more than 5,000 cubic feet per second; and Provided, Further, That if and when said normal natural flow is materially increased by the construction of storage or diversion works above said dam, the requirements of this article shall, upon request of the Secretary of War, be revised to require the maintenance at Montgomery, Alabama, of a larger flow which shall be proportionate to the increase in said normal natural flow at said dam.

Article 19. The Licensee shall, in the interest of public health, cut and remove or destroy to the satisfaction of said District Engineer, all brush and trees from that zone within and adjacent to the area to be submerged which is included between the elevation of 276 feet above mean sea level, such elevation being hereinafter called "Contour A," and 15 feet horizontally from and outside of the elevation of 290 feet above mean sea level, said elevation of 290 feet being hereinafter called "Contour B;" and shall remove or destroy all floatable refuse or other material within said "Contour B:" Provided, That the Licensee shall not be required to cut and remove or destroy trees on lands over which it exercises neither ownership nor control.

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The Licensee shall in the general public interest and to the satisfaction of said District Engineer, also cut in such manner or so remove or destroy brush or trees within said area to be submerged and below said "Contour A" that no part of such brush or trees shall project above said "Contour A."

The said District Engineer shall make inspection, from time to time, and as requested by the Licensee, of the work required to be performed by the Licensee under this article and shall request the appropriate health officers of the State or States in which the project is located to make certificate of approval of so much of said work as is comprised within the first paragraph of this article. As said District Engineer determines that the Licensee is complying with the provisions of the foregoing paragraphs of this article, he shall make written reports thereupon, respectively, to the Commission; and as it shall appear that the Licensee has complied with the provisions of the second paragraph of this article to the satisfaction of the Commission, the Executive Secretary shall certify such fact to the Licensee and the Licensee may thereupon proceed gradually as authorized by the certificate of the Executive Secretary with the impounding of water by said dam up to elevation of said "Contour A;" and when it shall appear that the Licensee has complied with the provisions of the first paragraph of this article to the satisfaction of the Commission, the Executive Secretary shall certify such fact to the Licensee and the Licensee may thereupon proceed with the impounding of water up to the elevation of said "Contour B."

Article 29. The Licensee shall provide at the time of initial construction of the project, in accordance with written instructions of the State Board of Health of Alabama, small ponds or other waters suitable for the propagation of top minnows (Cambusia) in sufficient numbers to stock the reservoir, together with its branches, bights, and indentations, for effective mosquito control.

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Article 21 . Upon the completion of the construction of said project or of each of the separable parts thereof for which dates of completion are specified in Article 6 hereof, or of any addition to or betterment of said project, the Licensee shall file with the Commission a statement under oath in duplicate showing the actual legitimate cost of construction thereof and the price paid for water rights, lands, or interest in lands appurtenant to such construction as required by Regulation 20, Section 2, of said rules and regulations of the Commission. Any such statement shall include all proper and legitimate costs, whether incurred prior to issuance of license or on and after such date; and the Licensee shall, if requested by the Commission, show separately on any such statement, or on a special report or reports, the items and amounts of cost incurred prior to date of issuance of license, with such other details as the Commission may require. Each and every item of cost included in any such statement shall be supported by proper voucher or other evidence; and any such voucher or evidence or certified copy thereof, in support of any item properly includible in said cost shall become a part of the permanent records of said project and shall be kept and retained by the Licensee in the manner required by the Commission. Any statement or report submitted to the Commission under the provisions of this article shall be subject to the provisions of Section 6 of said Regulation 20.

Article 22 . Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of such reservoir or other improvement for such part of the annual charges for interest, maintenance and depreciation thereon as the Commission may deem equitable. The proportion of such charges to be paid by the Licensee shall be determined from time to time by the Commission. Whenever such reservoir or other improvement is constructed by the United States the Licensee shall pay similar charges into the Treasury of the United States upon bills rendered by the Commission.

Article 23 The Licensee shall pay to the United States reasonable annual charges for the purpose of reimbursing the United States for the costs of the administration of the Act and for recompensing it for the use, occupancy and enjoyment of its lands or other property hereinbefore described. The payment by the Licensee of such annual charges for any calendar year shall be made to the United States at the end of the year, or within thirty days thereafter, upon bills rendered or approved by the Commission. Such charges shall be determined in accordance with the provisions of Regulation 14 of said rules and regulations of the Commission, and for the purposes of such determination the power capacity upon which shall be based the charges of reimbursing the United States for the cost of administration of the Act and for recompensing it for the use, occupancy, and enjoyment of lands of the United States shall, subject to the provisions of Section 3 of said Regulation 14, be taken as 30,400 horsepower.

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Article 24. After the first twenty years of operation of said project under this license, out of surplus earned thereafter, if any, accumulated in excess of a specified reasonable rate of return upon the actual, legitimate investment of the Licensee in said project, all as defined in and determined by the provisions of Regulation 17 of said rules and regulations of the Commission, the Licensee shall establish and maintain amortization reserves, which reserves shall, in the discretion of the Commission, be held until the termination of the license or be applied from time to time in reduction of the net investment. Such specified rate of return shall, subject to the proviso of Paragraph A, Section 3 of said regulation, be one and one-half (1½) times the weighted average annual interest rate payable on the par value of the bona fide interest-bearing debt of the Licensee actually outstanding, in whole or in part, on account of project property at the beginning of the period of amortization and of each calendar year thereafter; such weighted average annual interest rate being determined as provided in Paragraphs B and C of Section 3 of said Regulation 17: Provided, That, if at the beginning of the period of amortization or of any calendar year thereafter, the outstanding interest-bearing debt of the Licensee on account of the project or projects under license, together with any other works or property operated in connection therewith, is less than 25 per cent of the actual, legitimate investment of the Licensee in said project or projects, then and in such event for the calendar year next following the specified rate of return shall be two (2) times the legal rate of interest in the State in which the project or major part thereof is located.

Subject to the provisions of Section 6 of said regulation, the following proportions of such surplus earnings shall be paid into and held in such amortization reserves: Of all surplus earnings up to and including 2 per cent upon the actual, legitimate investment, 30 per cent thereof shall be so paid; of all surplus earnings in excess of 2 per cent and not in excess of 4 per cent upon such investment, 50 per cent thereof shall be so paid; of all surplus earnings in excess of 4 per cent and not in excess of 6 per cent, 70 per cent thereof shall be so paid, and of all surplus earnings in excess of 6 per cent, 90 per cent thereof shall be so paid: Provided, That if at the end of any calendar year of the amortization period the Commission shall find that the accumulated earnings of the Licensee during the period of operation, including the first twenty (20) years thereof, have not yielded a fair return upon the actual, legitimate investment in the project or projects under license, the proportion of such surplus earnings for such calendar year and for succeeding calendar years to be paid into such amortization reserves shall be ten (10) per cent thereof until such time as the accumulated earnings of the Licensee represent, in the judgment of the Commission, a fair return upon such investment for such period of operation.

Article 25. No lease of said project or part thereof whereby the lessee is granted the exclusive occupancy, possession or use of project works for purposes of generating, transmitting or distributing power shall be made without the prior written approval of the Commission; and the Commission may, if in its judgment the situation warrants, require that all the conditions of this license, of the Act, and of said rules and regulations of the

Commission shall be applicable to such lease and to such property so leased to the same extent as if the lessee were the Licensee hereunder: Provided, That the provisions of this article shall not apply to parts of the project or project works which may be used by another jointly with the Licensee under a contract or agreement whereby the Licensee retains the company, possession and control of the property so used and receives adequate consideration for each joint use, or to leases of land while not required for purposes of generating, transmitting, or distributing power, or to buildings or other property not built or used for said purposes, or to minor parts of the project or project works the leasing of which will not interfere with the usefulness or efficient operation of the project by the Licensee for said purposes.

Article 26. It is hereby understood and agreed that the Licensee, its successors and assigns will, during the period of this license, retain the possession of all project property covered by this license as issued or as hereafter amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and that none of such properties valuable and serviceable to the project and to the development, transmission, and distribution of power therefrom will be sold, transferred, abandoned, or otherwise disposed of without the approval of the Commission. The Licensee further agrees, on behalf of itself, its successors and assigns, that in the event said project is taken over by the United States upon the termination of this license, as provided in section 14 of the Act, or is transferred to a new licensee under the provisions of section 15 of the Act, it will be responsible for and will make good any defect of title to or of right of user in any such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge or will assume responsibility for payment and discharge of all liens or incumbrances upon said project or project property: Provided, That the provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; or to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title or right of user in any such project property than was necessary to acquire for its own purposes as licensee.

Article 27. The Licensee shall abide by such reasonable regulation of the services to be rendered to customers or consumers of power, and of rates and charges of payment therefor, as may from time to time be prescribed by any duly constituted agency of the State in which the service is rendered or the rate charged; and in case of the development, transmission, distribution, sale or use of power in public service by the Licensee or by its customers engaged in public service within a State which has not authorized and empowered a commission or other agency or agencies within said State to regulate and control the services to be rendered by the Licensee or by its customers engaged in public service, or the rates and charges of payment therefor, or the amount or character of securities to be issued by any of said parties, it is agreed as a condition of this license that jurisdiction is hereby conferred upon the Commission, upon

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complaint of any person aggrieved or upon its own initiative, to exercise such regulation and control until such time as the State shall have provided a commission or other authority for such regulation and control: Provided, That the jurisdiction of the Commission shall cease and determine as to each specific matter of regulation and control prescribed in this Article as soon as the State shall have provided a commission or other authority for the regulation and control of that specific matter.

Article 28. With the written consent of the Licensee, the Commission may by order made under its seal, and after the public notice required by Section 6 of the Act, modify, alter, enlarge or omit, in so far as authorized by law, any one or more of the conditions or provisions of this license.

Article 29. The enumeration herein of any rights reserved to the United States or to any State or municipality under the Act, or of any requirement of the Act or of said rules and regulations of the Commission shall not be construed in any degree as impairing any other rights so reserved by the Act or as limiting the force of any other requirement of said Act or of said regulations.

IN WITNESS WHEREOF, the Federal Power Commission has caused its name and seal to be hereto signed and affixed by its Executive Secretary, O. O. Merrill, this 7th day of November, 1925.

FEDERAL POWER COMMISSION

By

Executive Secretary.

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In testimony of acceptance of all the terms and conditions of the Federal Water Power Act of June 10, 1920, and of the further conditions imposed in the foregoing license, the Licensee, this 4th day of November, 1925, has caused its name and corporate seal to be hereto signed and affixed by Thos. W. Martin, its President, pursuant to a resolution of its board of directors, passed on the 14th day of October, 1925, a certified copy of the record thereof being hereto attached.

ALABAMA POWER COMPANY,

By Thos. W. Martin

President.

Attest:

James A. Whitney

Secretary, Alabama Power Company.

Complainants' Exhibit No. 91

C E R T I F I C A T E

I, Lamar Aldridge, Secretary of Alabama Power Company, do hereby certify that the following is a full, true and correct copy of a resolution unanimously adopted by the Board of Directors of said Company at a meeting of said Board duly called and held at the office of the Company in the City of Birmingham, Alabama, on October 14, 1925, a quorum of the Board being present, as shown by the records in my custody as such Secretary, to-wit:

RESOLVED by the Board of Directors of Alabama Power Company that Thomas W. Martin, President of this Company, R. A. Mitchell or E. A. Yates, Vice-Presidents thereof, be and hereby is authorized and empowered to make, sign, execute and deliver for and on behalf of this Company and as its act and deed, the acceptance of this Company of a license from the Federal Water Power Commission for a water power project designated as Project No. 618, Alabama, in the records of said Commission, and of all the terms and conditions of the Federal Water Power Act approved June 10, 1920 (41 Statutes 1063), and of the conditions imposed by said license.

Given under my hand and the seal of said Company at its office in the City of Birmingham, Alabama, on this the 22nd day of October, 1925.

Secretary, Alabama Power Company.

2110

COMPLAINANTS' EXHIBIT No. 91

[fol. 2111] "Certificate of Federal Power Commission Authorizing Licensee for Project No. 618, Alabama Power Company, to Raise the Water to the Elevation of 290 Feet

"Whereas, article 19 of the license for project No. 618, issued to Alabama Power Company, requires that the licensee in the interest of public health and of the general public, cut and remove or destroy to the satisfaction of the District Engineer of the War Department, acting as the representative of the Commission, certain brush and trees in the area to be submerged up to the contour elevation of 290 feet and in the area extending 15 feet horizontally from and outside said contour, and remove or destroy all floatable refuse or other material within said contour; and

"Whereas, said district engineer, acting as such representative, has reported in writing to the Commission that the licensee has complied with Article 19 of the license by cutting and removing or destroying to the satisfaction of said district engineer, the brush and trees in the area to be submerged up to the contour elevation of 290 feet and in the area extending 15 feet horizontally from and outside said contour, and by removing or destroying to his satisfaction all floatable refuse or other material within said contour, and that the State Health Officer of the State of Alabama has approved the work required to be done by the licensee under said article 19 before raising the water to the elevation of 290 feet; and the Commission is satisfied that the licensee has in all respects complied with the requirements of the license as to clearing the reservoir area before raising the water to the elevation of 290 feet;

"Now, Therefore, I, O. C. Merrill, Executive Secretary of the Federal Power Commission, under authority of the Commission, do hereby certify that the reservoir area has been satisfactorily cleared as required of the licensee by said article 19, and that the Alabama Power Company may proceed with the impounding of the water of said reservoir up to elevation 290 feet.

"In Witness Whereof, I have hereto affixed my signature and the seal of the Federal Power Commission this 29th day of May, 1928.

(Signed) O. C. Merrill, Executive Secretary. (Seal.)"

COMPLAINANTS' EXHIBIT No. 91

[fol. 2112] Mitchell Dam

(a) Application filed May 3, 1921:

The proposed development is

* * * * * * *

"(d) In the region of the following named cities and towns: Birmingham, Montgomery, Anniston, Gadsden, Selma, Talladega, Tuscaloosa, Huntsville, Roanoke, Decatur, Albany and Piedmont, together with other cities and towns served by applicant, or in proximity to its transmission system as indicated on the map herewith filed and marked 'Exhibit D.'

"(e) The proposed scheme of development for the project is as follows:—The applicant proposes to construct a dam and power plant on Coosa River at a point known as Duncan's Riffle between Wetumpka, Alabama, and Lock No. 12 on the Coosa River. Provision is to be made for the future installation of a lock to be located on the left bank of the river.

"It is proposed to install two 24,000 horsepower water wheel driven generators of the vertical, single runner type initially, and to provide for the ultimate installation of a total of five units of the total capacity of 120,000 horsepower, the type and capacity of each unit to be determined from time to time by the progress of the art. The normal static head at this point will be approximately seventy-two feet. A transmission line will be constructed from said proposed power house to some point of junction with applicant's interconnected primary transmission system near Lock 12 on the Coosa River. It is proposed at a future date, when the needs of navigation require, to excavate a channel from the lower entrance of Lock 12 to deep water, to a depth which will provide six foot navigation when the reservoir pool level is lowered for the purpose of forebay storage to make the greatest use of the river flow during the fluctuations of the load, the minimum elevation of the pool level to be 346 feet.

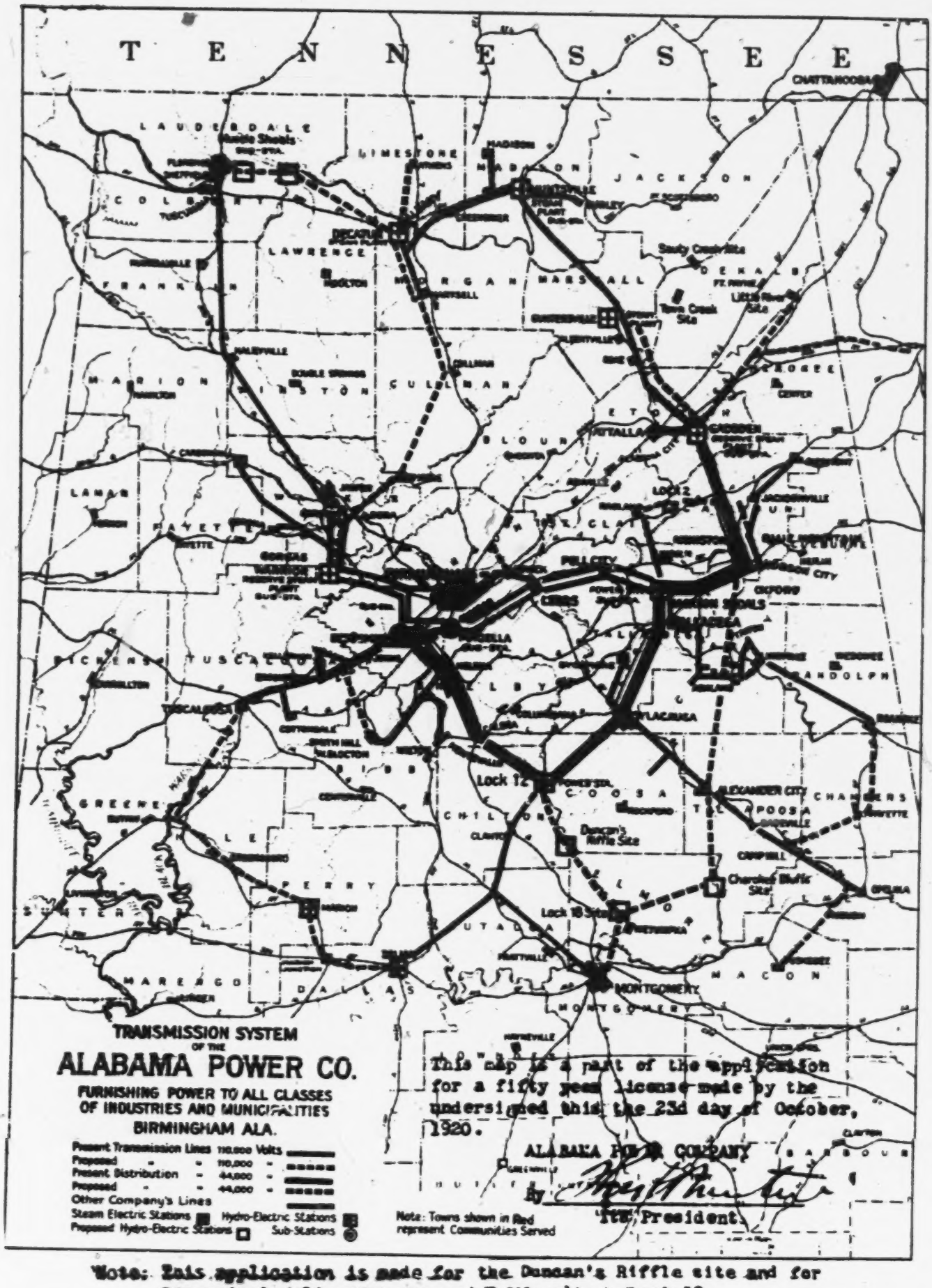
"(f) The proposed use or market for the power to be developed is as follows:—It is proposed to distribute the power from this development by connecting same with the system of the Alabama Power Company." (Sheet 2 of Exhibit B)

* * * * * * *

(Here follows one photolithograph, side folio 2113)

Complainants' Exhibit No. 91

"EXHIBIT D."



Note: This application is made for the Duncan's Riffle site and for transmission line from Duncan's Riffle site to Lock 12.

2113

25884

COMPLAINANTS' EXHIBIT No. 91

[fol. 2114] "'Exhibit 1.'

"October 23, 1920.

"Effect of Project on Navigation:—The project will provide navigation from the dam site to Lock 12, approximately fourteen miles, and it is proposed to build the dam to a height which will provide for a permissible draw down of four feet below the level of the crest of the spillway gates, and at the same time provide for six foot navigation up to the lower entrance of the future lock at Lock 12 by excavating a navigation channel in the shallow reaches of the river at that point. Until the construction of the dam at the site of Lock 18 on the Coosa River, about twenty miles downstream from the project now applied for, it is proposed to pass the extreme low flow of the river continually at this point, carrying variations in load on the Lock 12 plant, making use of the four feet of storage in the reservoir in accomplishing this result. After the completion of the construction of Lock 18, it is proposed to carry variations of load during low flows at Duncan's Riffle as well as at Lock 12 and to pass the low flows continuously at Lock 18. The relation of the project now applied for to the Lock 12 dam and power house heretofore constructed and now owned by applicant and to the proposed Lock 18 project is shown on Map No. 1 of 'Exhibit C.'"

* * * * * *

"'Exhibit M.'

(Sheet 1)

"October 23, 1920.

"Estimates of the cost of developing the project:—The principal quantities involved in the initial construction are as follows:

Main line railroad	12 miles
Double circuit 110 KVA transmission line	14 "
Concrete	204,000 c.y.
Rock excavation	90,000 "
Initial installation	48,000 h.p.
Estimate of cost of initial installation	$10,000,000"

* * * * * * * *

COMPLAINANTS' EXHIBIT No. 91

[fol. 2115] "Exhibit M

(Sheet 2)

"General Description and General Specifications of Mechanical, Electrical and Transmission Equipment and Appurtenances.

"This project contemplates the construction of a dam and power house on Coosa River at site known as Duncan's Riffle, by Alabama Power Company designated as Mitchell Dam, as indicated in Exhibits K. and L. herewith attached.

"The dam will be solid concrete masonry construction raising elevation of pool approximately 70 feet above present low water level.

"The Power House will consist of foundations for 5 units, 2 units of which will be installed in first construction.

"The Generating Units will consist of 2 vertical type water wheels of approximately 22,000 H. P. each, driving generators of approximately 16,000 K. W. capacity each.

"Power will be generated at 13,200 volts, stepping up to 110,000 volts for transmission.

"The transmission line connecting Lock 12 with Mitchell Dam will be constructed for 110,000 volts and will consist of two circuits of =0000 B & S gauge copper wire, 60 cycle, 3 phase, or equivalent aluminum steel reinforced."

* * * * * * *

"'Exhibit X'

(Sheet 1)

"October 23, 1920.

"The applicant desires to supply data as to its ability to finance the project applied for as follows:

"The corporation has an authorized issue of common stock of $40,000,000, of which $18,751,000.00 is outstanding; has an authorized issue of preferred stock of $10,000,000.00, none of which was issued or sold prior to the current year, but which is now being sold on local market, and about $600,000.00 of which has been sold during the past few months.

[fol. 2116] "The company has an outstanding mortgage dated March 1, 1916, securing an issue of Five Per Cent.

Thirty Year Gold Bonds due March 1, 1946, for $100,000,000.00, under which mortgage approximately $15,000,000.00 of bonds are outstanding, about $3,000,000.00 of which bonds are deposited as security for its Five Year Notes. Additional bonds may be issued in accordance with the terms of the mortgage for eighty per cent. of cash cost of extensions and additions to the property.

"With the sale of unsold securities now authorized as above indicated, and by the issuance of such other securities as the Company may from time to time find desirable, the Company anticipates that the necessary funds for carrying on the project will be available."

* * * * * * *

(b) License:

The license was authorized by the Federal Power Commission on June 27, 1921 for a period of fifty years from date of issuance. The following articles are taken from the license:

"Article 7. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure built under the provisions of this license shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of War. Such rules and regulations may include the maintenance and operation by the Licensee at its own expense of such lights and signals as may be directed by the Secretary of War.

"Article 8. The Licensee shall construct and install such appliances as are necessary for furnishing power for the operation of navigation facilities, including lights and signals, whether constructed by the Licensee or the United States, and shall furnish free of cost to the United States power for the operation of such navigation facilities.

"Article 9:

A. Whenever a project for navigation on the section of the river between Wetumpka, Alabama, and the East Ten- [fol. 2117] nessee Virginia and Georgia Railroad bridge

is adopted, the Licensee will be required to provide a navigation channel between said Mitchell Dam and Dam No. 12, at least 200 feet wide and having a bottom elevation not higher than 338 feet above the datum plane described in paragraph (a) of Article 1 of this license.

B. Whenever a project for navigation on the section of the river between Wetumpka, Alabama, and the East Tennessee, Virginia and Georgia Railroad bridge is adopted, the Licensee shall convey to the United States, free of cost, such of its lands and its right of way, and such right of passage through its dams or other structures, and permit such control of pools as may be required to complete such navigation facilities as are required by the adopted project.

C. Until such time as the Secretary of War may require otherwise under the authority granted to him by section 18 of the Act, the Licensee is authorized to utilize a drawdown of the pool created by the dam for the purpose of pondage of 10 feet, or to an elevation of 340 feet above said datum plane described in paragraph 'a' of Article 1 hereof. If and when a project for navigation on this section of the Coosa River as described above is adopted, the Licensee, unless otherwise required by the Secretary of War, will be permitted a drawdown of 4 feet, or to an elevation of 346 feet above said datum plane.

D. The Licensee will be required to permit, unless otherwise authorized by the Secretary of War, the continuous discharge past this dam of all water discharged into the pool created by said dam, when this discharge is 5,000 cubic feet per second or less, and at all greater discharges into the pool, shall provide a minimum discharge past said dam of not less than 5000 cubic feet per second. The measure of water thus to be discharged shall include all water discharged through any canal, lock, or system of locks that may hereafter be built in connection with said dam" (pp. 8-10).

• • • • • • •

[fol. 2118] The power capacity upon which the charges are based for reimbursing the United States for the cost of the administration of the Act is taken as 21,760 horsepower (Article 15).

COMPLAINANTS' EXHIBIT No. 91

(c) Approval:

On December 7, 1922 the Commission found that the Licensee had complied with the provisions and requirements of Article 10 of the license (relating to clearing the reservoir) and authorized the Licensee to proceed with the impounding of water up to the elevation of 350 feet.

[fol. 2119] Martin Dam

(a) Application for license filed May 17, 1923:

The proposed development is

* * * * * * *

"(d) In the region of the following named cities and towns: Birmingham, Montgomery, Anniston, Opelika, and the nearer towns of Heflin, Wetumpka, Dadeville, Alexander City, Lineville, Ashland, Auburn, Camp Hill, Notasulga, Tuskegee, Wedowee and Roanoke, all in Alabama" (pp. 1-2).

* * * * * * *

"4. The proposed use or market for the power to be developed is as follows: It is expected that the power developed will be distributed over the transmission lines of the Alabama Power Company for municipal, domestic and industrial uses. There is a growing demand for power in this region due to the development of the natural resources and industrial activity in the territory (p. 2).

"5. The location and capacity of all power projects owned or operated by the applicant, the markets supplied thereby, and the relation thereof to the project applied for are briefly described as follows:

"The applicant does not own or operate any water power projects, but is a subsidiary of the Alabama Power Company, which has constructed a project under Project License No. 82 at Mitchell Dam on the Coosa River, in Coosa and Chilton Counties, Alabama, which project will have an ultimate installation of 120,000 horsepower; the Alabama Power Company also has at Lock 12 on the Coosa River, in

Coosa and Chilton Counties, Alabama, a hydro-electric power development with an installation of 110,000 horsepower capacity; also a hydro-electric power development on the Tallapoosa River in Elmore and Tallapoosa Counties, Alabama, near the City of Montgomery, with an installation of 9000 horsepower capacity, temporarily out of use by reason of damage by flood, which is now being repaired; and also one of 2,400 horsepower at Jackson Shoals on Choccolocco Creek, in Talladega County, Alabama, also auxiliary steam plants located at various points in the territory served. The power from these developments is [fol. 2120] and will be used in furnishing power for municipal, domestic and industrial uses, to all places reached by the Alabama Power Company's transmission system, which includes the principal cities and towns in North and Central Alabama; including Birmingham and Montgomery, as well as in furnishing power during emergencies, and, when it has an excess, to various consumers in Georgia, North and South Carolina, by virtue of the physical connections of the transmission lines of the Alabama Power Company, with the transmission lines of other companies in Georgia, as indicated on general map of the Alabama Power Company's system" (pp. 2-3).

* * * * * * *

"Exhibit G

"Applicant's Ability to Finance the Project

"The applicant is a subsidiary of the Alabama Power Company, a going concern serving over 60,000 consumers with electric power and with a constantly increasing business as a public utility, which has placed on the market large amounts of securities, the proceeds of which have been and are being invested in hydro-electric development in the State of Alabama, and has established a market for its securities. Applicant therefore believes that the necessary funds for carrying on the project will be available."

* * * * * * *

"Exhibit H

"Statement of effect of the proposed operation of the project works on the normal flow of the stream, including

a statement of the minimum flow proposed to be released during periods of low water and full exposition of the release of any proposed pondage of the flow, and the conservation and utilization in the public interest of the available water resources for the purpose of power, navigation, reclamation, flood control and municipal water supply.

[fol. 2121] "At such time as the flow of the Alabama River at Montgomery, Alabama, is less than 6000 cubic feet per second the applicant proposes that it may be required to release water from said reservoir sufficient to produce a flow at Montgomery of 6000 cubic feet per second, but it shall never be required to release in excess of 2000 cubic feet per second, and it shall never be required to release water when the elevation of said reservoir is at a point of 30 feet or more below the spillway crest of the dam.

"As other project units on the Tallapoosa River are completed, the requirements for passing 2000 cubic feet per second at Cherokee Bluffs may be revised, but in no case shall the applicant be required to release water at Cherokee Bluffs in excess of 3000 cubic feet per second or to release water when the elevation of said reservoir is at a point of 30 feet or more below the spillway crest of the dam."

* * * * * * *

(Here follows one photolithograph, side folio 2122)

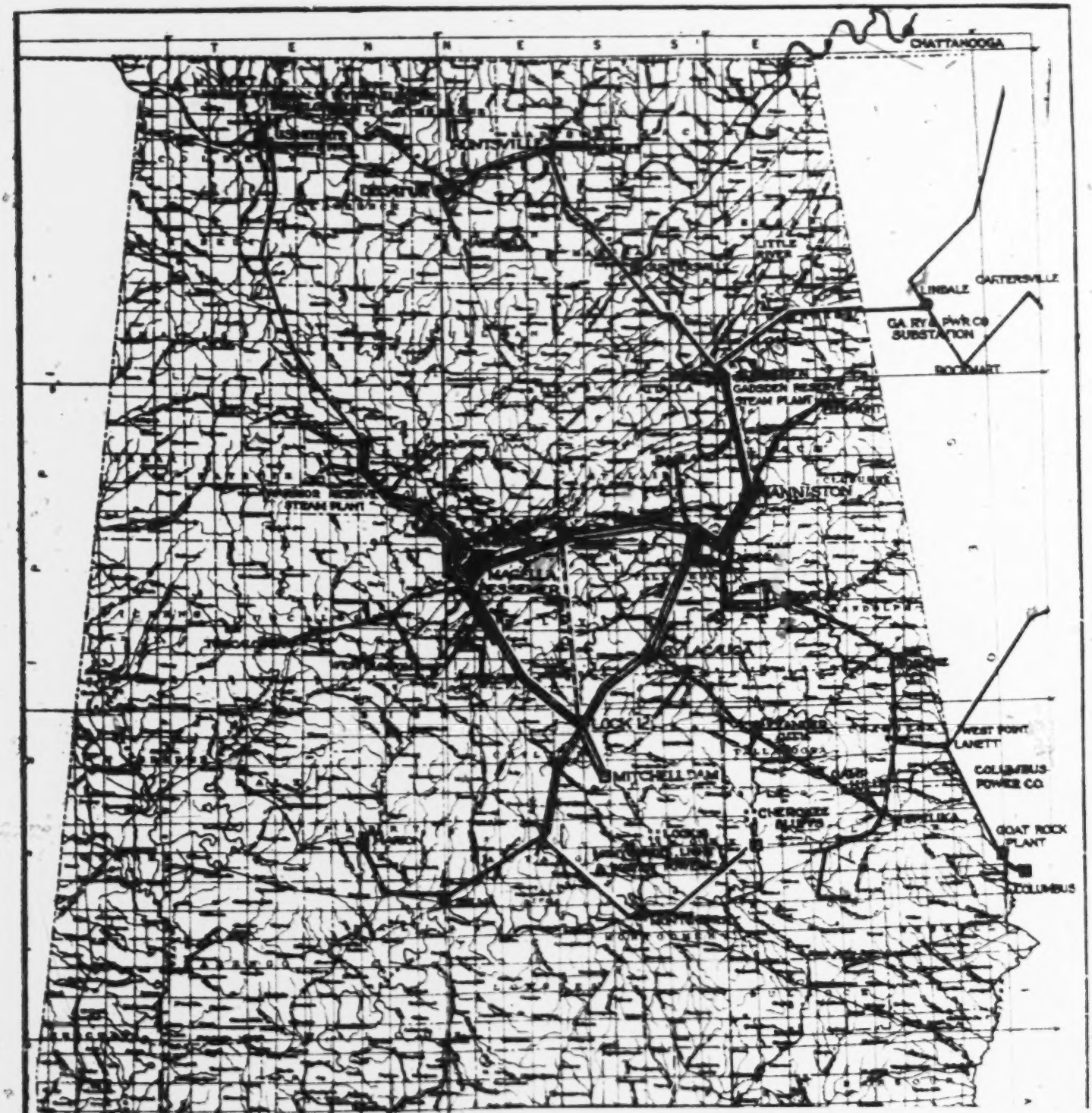


EXHIBIT J.
Map No. 2.

This exhibit is a part of the application for license made by the undersigned, this the 12th day of May, 1923.

ALABAMA INTERSTATE POWER COMPANY,

Attest:

By _____ Its President.

_____ Its Secretary.

2122

COMPLAINANTS' EXHIBIT No. 91

[fol. 2123] "Exhibit N

"Estimate of cost

"The principal quantities involved in the construction of the project works at Site No. 4 are as follows:

Concrete	175,000 cubic yards.
Rock Excavation	75,000 cubic yards.
Main Line Railroad	20 miles.
Initial Installation	60,000 kva.
Estimate of cost of installation at Site No. 4	$10,000,000."

. . . . . .

(b) License for Project No. 349:

The license for Project 349 (Martin Dam) was issued to Alabama Interstate Power Company June 9, 1923 for a period of fifty years.

The power capacity upon which the charges are based for reimbursing the United States for the cost of the administration of the Act is taken as 16,920 horsepower (Article 16).

(c) Transfer:

The license for Project 349, together with all other rights in land and all rights, title and interests in franchises, licenses and permits granted to Alabama Interstate Power Company in and about the water power development at Cherokee Bluffs (Martin Dam) were transferred to Alabama Power Company under date of June 20, 1923. This transfer was approved by the Federal Power Commission on June 22, 1923.

(d) Amendment to License:

The amendment to license dated June 4, 1924 amends Article 8 of the original license to read as follows:

"'Article 8. Whenever the flow of the Alabama River at Montgomery, Ala., is less than 6000 cubic feet per second, and whenever directed so to do by the Secretary of

COMPLAINANTS' EXHIBIT No. 91

War the Licensee shall release from said Cherokee Bluffs reservoir sufficient water to produce a flow of said amount [fol. 2124] at said place: Provided, that the Licensee shall not be required to release for the purpose above named more than 3000 cubic feet per second: and Provided further, that whenever the water in said reservoir is drawn to a point 60 feet or more below the elevation of the top of the spillway gates when closed. The Licensee shall not be required to release for said purpose more than the natural flow of said Tallapoosa River' " (p. 4).

* * * * * * *

(e) Certificate authorizing Raising of Water Level:

Certificate authorizing Licensee for Project 349 to raise the water to the elevation of 490 feet was issued by the Commission on December 16, 1926.

[fol. 2125] COMPLAINANTS' EXHIBIT No. 92

Copy of an Act of Congress (34 Stat. at L. 288, Approved March 4, 1907) Permitting the Erection of a Dam by Alabama Power Company on the Coosa River, in Alabama, at the Place Selected for the Location of Lock and Dam Numbered Twelve on Said River.

(Omitted)

[fol. 2126] COMPLAINANTS' EXHIBIT No. 93

Approval by Secretary of War of Plans Concerning Location of Lock at Lock 12

Whereas, By an Act of Congress approved March 4, 1907, entitled "An act permitting the erection of a dam across Coosa River, Alabama, at the place selected for lock numbered 12 on said river" (34 Stats., 1288), the Alabama Power Company, a corporation existing under the laws of the State of Alabama, was authorized, subject to the reservations, provisos and conditions of said act, to build a dam, of such height as the Chief of Engineers, United

States Army, and the Secretary of War may approve, across the Coosa River in Alabama at the place selected for the location of lock and dam numbered 12 on said river, located as described in said act, for the development of water power and such works and structures in connection therewith, as may be necessary or convenient in the development of said power and in the utilization of the power thereby developed:

And Whereas, It was provided that plans for the construction of said dam and appurtenant works, shall be submitted to and approved by the Chief of Engineers, United States Army, and the Secretary of War, before the commencement of the construction of the same;

And Whereas, The said Alabama Power Company has submitted, for examination and approval, general plans for a dam proposed to be built across Coosa River, in Alabama, at the site selected for the location of lock and dam numbered 12, as described above, which general plans have been approved by the Chief of Engineers and recommended for the approval of the Secretary of War, subject to the reservations, provisos and conditions specified in said Act of Congress, and also upon, and subject to, the conditions hereinafter specified:

Now, Therefore, This is to certify that the general plans submitted as aforesaid, and which are hereto attached, (which are omitted herein) are hereby approved by the Secretary of War, subject to the reservations, provisos and conditions specified in said Act of Congress and upon, and subject to, the following conditions, in addition thereto:

I. That a decision as to the location for a lock through the dam itself or in a canal around the end of the dam shall be left open for determination until such time in the future as provision shall be made by Congress for its construction.

II. That this approval applies only to the general plans of the structure now presented covering the location, height, and type of dam, and is expressly conditioned upon the use of material and workmanship in actual construction which shall be satisfactory to the Engineer Department, decision as to details of dam and appurtenant works being reserved until plans therefor shall have been formulated and furnished the Department for consideration.

COMPLAINANTS' EXHIBIT No. 93

[fol. 2127] III. That should the United States in future construct storage reservoirs on the headwaters of the Coosa River for the benefit of navigation, the company shall pay a just and equitable charge for any increased power created by the reservoirs and utilized by the company.

IV. That the work of construction shall be subject to the supervision and approval of the engineer officer of the U. S. Army in charge of the locality.

Witness my hand this third day of March, 1910.

J. M. Dickinson, Secretary of War.

Approval by Secretary of War of Supplemental Plans for Construction of Lock 12

Instrument of approval (No. 2) of supplemental plans submitted by the Alabama Power Company of Alabama for the construction of a dam across the Coosa River in Alabama at the site selected for lock and dam numbered twelve.

Whereas, By an Act of Congress approved March 4, 1907, entitled "An Act permitting the erection of a dam across Coosa River, Alabama, at the place selected for lock numbered twelve on said river" (34 Stat. 1288), the Alabama Power Company, a corporation existing under the laws of the State of Alabama, was authorized, subject to the reservations, provisos and conditions of said Act, to build a dam of such height as the Chief of Engineers, United States Army, and the Secretary of War may approve, across the Coosa River in Alabama at the place selected for lock and dam numbered twelve on said river, located as described in said Act, for the development of water power and such works and structures connected therewith as may be necessary or convenient in the development of said power and in the utilization of the power thereby developed;

And Whereas, It was provided that plans for the construction of said dam and appurtenant works shall be submitted to and approved by the Chief of Engineers, United States Army, and the Secretary of War before the commencement of the construction of the same;

And Whereas, The said Alabama Power Company heretofore submitted for examination and approval general plans for the dam proposed to be built across said river at

the said site as described above, which general plans were approved by the Chief of Engineers and by the Secretary of War, subject to the reservations, provisos and conditions specified in said Act of Congress, and also upon and subject to certain special conditions specified in the instrument of [fol. 2128] approval dated the third day of March, nineteen hundred and ten; and thereupon the work of construction at the said site, in accordance with the aforesaid approval, was commenced and prosecuted;

And Whereas, Further study of the problems connected with the proposed constructions and the experience gained in actual operations have demonstrated the necessity of a modification of the original plans and specifications by new and supplemental plans of a general character, which new and supplemental plans are now submitted in accordance with the aforesaid Act of Congress approved March 4, 1907, and with the Act of June 23, 1910, entitled "An Act to amend an Act entitled 'An Act to regulate the construction of dams across navigable waters,' approved June 21, 1906," to the Secretary of War and the Chief of Engineers for their approval;

Now, Therefore, This is to certify that the said plans now submitted, which are attached hereto, (which are omitted herein) are hereby approval by the Chief of Engineers and the Secretary of War, subject to the reservations, provisos and conditions specified in the said Act of Congress approved March 4, 1907, and to the following conditions in addition thereto:

1. That all the stipulations and conditions enumerated in the said instrument of approval of March 3, 1910, shall remain in full force and effect.

2. That the said Alabama Power Company will permit the continuous discharge past said dam of all water flowing in the Coosa River whenever the discharge into the pool created by the dam is five thousand cubic feet per second or less, and, at all greater discharges into the pool of said dam, shall provide a minimum discharge past said dam of not less than five thousand cubic feet per second. The measure of the water thus to be discharged as above specified shall include all the water discharged through any canal, lock or

COMPLAINANTS' EXHIBIT No. 93

system of locks that may hereafter be built in connection with said dam.

3. That the said Alabama Power Company shall reimburse the United States for all expenses which have been incurred by the United States in connection with said project, including the cost of any investigations necessary for the approval of the plans, and which may be incurred in connection with the supervision of construction.

4. That the construction, operation and maintenance of this dam and all appurtenant works shall be subject to all pertinent provisions of the Act of Congress approved June 23, 1910, entitled "An Act to amend an Act entitled 'An Act to regulate the construction of dams across navigable waters,' approved June 21, 1906."

5. That the plans hereby approved shall supersede those heretofore approved on March 3, 1910, except with respect to the location, height and type of dam and power-house.

Witness our hands at the City of Washington this the Eighth day of July, nineteen hundred and thirteen.

Lindley M. Garrison, Secretary of War.
W. H. Bixby, Chief of Engineers.

[fol. 2129] COMPLAINANTS' EXHIBIT No. 94

Copy of the approval by the Federal Power Commission, dated November 12, 1931, of the transfer of licenses issued by said Commission for projects Nos. 82, (issued June 27, 1921 to the Alabama Power Company for the so-called Mitchell Dam Project, as amended on September 24, 1921 and August 31, 1922) 349, (issued June 9, 1923, to the Alabama Interstate Power Company for the so-called Martin Dam Project, transferred on June 22, 1923, to the Alabama Power Company and amended June 7, 1924 and June 13, 1930) and 618, (issued November 1, 1925, to the Alabama Power Company for the so-called Jordan Dam Project) to Alabama Power Company (consolidated) from the original licensees

(Omitted)

[fol. 2130] COMPLAINANTS' EXHIBIT No. 95

Alabama Power Company

Annual Revenue and Kilowatt Hour Sales to Customers Within The State Including Birmingham Electric Company:

Year	Total	In Area Within 100 Miles of TVA Dams	In Area Within 150 Miles of TVA Dams	In Area Within 250 Miles of TVA Dams
1933				
Revenue	$13,002,093 40	$7,828,199 17	$10,407,998 34	$11,307,339 82
Kwh	1,042,407,837	715,390,127	897,423,764	930,634,896
1936				
Revenue	$15,809,259 31	$8,913,916 12	$12,676,716 02	$13,873,606 36
Kwh	1,440,189,164	991,392,274	1,241,276,833	1,297,665,713

Regular Customers Only, Excluding Birmingham Electric Company:

Year	Total	In Area Within 100 Miles of TVA Dams	In Area Within 150 Miles of TVA Dams	In Area Within 250 Miles of TVA Dams
1933				
Revenue	$11,778,115 66	$6,004,221 43	$9,184,020 60	$10,083,362 08
Kwh	846,396,069	519,378,359	701,411,996	734,623,128
1936				
Revenue	$14,280,311 67	$7,384,968 48	$11,147,768 38	$12,346,658 72
Kwh	1,160,632,515	711,835,625	961,720,184	1,018,109,064

(Here follow 2 photolithographs, side folios 2131-2132)

COMPLAINANTS' EXHIBIT NO. 96

Alabama Power Company

Year	Miles of Transmission Lines	Miles of Distribution Lines	Miles of Rural Lines	Number of Customers Meters
1927	2,799	1,956	470	88,748
1928	3,160	2,096	856	96,261
1929	3,413	2,250	1,282	105,674
1930	3,419	2,270	1,754	108,062
1931	3,609	2,300	1,858	104,726
1932	3,609	2,350	1,914	98,350
1933	3,592	2,390	2,085	99,709
1934	3,575	2,440	2,118	107,699
1935	3,575	2,550	2,400	114,187
1936	3,459	2,700	3,561	123,759
Year Ending June 30, 1937	3,455	2,810	4,519	130,634

Year	Residential Annual Kwh Use Per Average Customer	Residential Average Annual Revenue Per Customer	Residential Average Rate Per Kwh	No. Towns and Communities Served (Direct)
1927	444	$ 33.56	7.56 ¢	267
1928	496	36.08	7.28	328
1929	571	31.76	5.56	415
1930	694	35.06	5.05	474
1931	765	37.16	4.86	481
1932	796	38.25	4.79	483
1933	795	36.65	4.62	484
1934	871	35.44	4.04	487
1935	997	36.35	3.64	515
1936	1,149	36.75	3.20	564
Year Ending June 30, 1937	1,227	37.49	3.05	594

EXCLUDED

Year	Total Kwh Sales Exclusive of Sales to Utilities	Total Kwh Sold Industrial Customers	Percent Industrial Sales of Total
1927	749,157,160	651,751,082	87.0 %
1928	745,569,156	647,391,200	86.8
1929	781,673,759	668,854,417	85.6
1930	769,174,887	638,150,060	83.0
1931	805,541,280	669,736,166	83.1
1932	777,386,001	649,725,214	83.6
1933	854,600,929	714,147,613	83.6
1934	824,149,742	685,162,160	83.1
1935	929,694,175	764,492,181	82.2
1936	1,145,267,755	948,565,825	82.8
Year Ending June 30, 1937	1,241,280,740	1,028,957,804	82.7

COMPLAINANTS' EXHIBIT NO. 97

ALABAMA POWER COMPANY

Tax Payments for Years 1932-1937 Inclusive - 1937 Estimated

Description of Tax	1937 Estimated	1936	1935	1934	1933	1932
Real and Personal Property (Includes State, County and Municipal)	$ 1,317,000.00	$ 1,315,167.77	$ 1,312,204.94	$ 1,320,250.57	$ 1,328,225.99	$ 1,325,355.55
Federal Tax on Bond Interest Assumed	26,800.00	26,054.03	25,668.38	26,326.48	27,198.93	25,318.52
Federal Excise Tax on Elec Energy	183,500.00	168,911.54	150,532.70	135,907.47	24,389.31	-
Federal Excise Tax (Tax on Checks, Telephone, Telegrams, etc.)	2,400.00	2,212.10	1,918.21	4,678.64	5,041.37	2,319.70
Federal Capital Stock Tax	44,800.00	48,010.00	33,712.00	37,520.50	16,767.00	2.50
State Tax on Bond Int Assumed	8,000.00	8,178.80	6,375.27	4,885.97	8,046.75	7,684.01
State Corp Franchise and Annual Permit	170,000.00	170,086.35	174,946.45	175,007.17	175,062.53	174,279.18
State and County License	1,500.00	1,522.73	1,499.99	-	-	-
State Motor Vehicle License	11,000.00	10,900.84	10,167.78	9,601.59	10,031.21	10,362.50
State Regulatory Comm Taxes	24,000.00	21,877.37	20,196.21	20,294.84	21,057.26	3,000.00
State Income Tax	90,000.00	-	14,654.78	-	13,016.95	-
Federal Income Tax	515,000.00	-	105,750.51	-	25,516.67	-
Federal Old Age Benefits	38,100.00	-	-	-	-	-
Federal Unemployment	7,900.00	3,770.00	-	-	-	-
State Unemployment	71,400.00	33,926.43	-	-	-	-
State Public Utility License	61,500.00	54,180.63	48,392.75	48,751.50	50,655.17	54,694.56
State Hydro Generation	364,000.00	337,691.08	301,201.47	275,324.40	275,525.78	289,844.76
State Chain Store License	7,800.00	7,726.00	5,074.50	4,075.50	4,604.00	5,641.00
Municipal and Local License	160,000.00	147,749.36	136,142.72	125,947.74	168,857.49	111,041.55
Federal Power Commission License	22,600.00	22,590.92	22,590.92	22,590.92	22,590.92	22,590.92
State of Georgia Registration Fee (Ga-Ala. Utilities Co)	.50	.50	.50	.50	.50	-
	$ 3,126,400.50	$ 2,380,556.45	$ 2,371,030.06	$ 2,211,141.79	$ 2,176,587.63	$ 2,050,154.71
Gross Revenue	$20,316,783.00	$18,712,810.99	$16,794,482.82	$15,416,216.81	$15,486,254.04	$15,563,839.88
% of Gross Revenue	15.39	12.72	14.12	14.34	14.05	13.03

[fol. 2133] COMPLAINANTS' EXHIBIT No. 98

Chart entitled "Running Weekly Territorial Loads of Alabama Power Company (exclusive of Magazine generation until Nov. 8, 1935)"

(Original Exhibit)

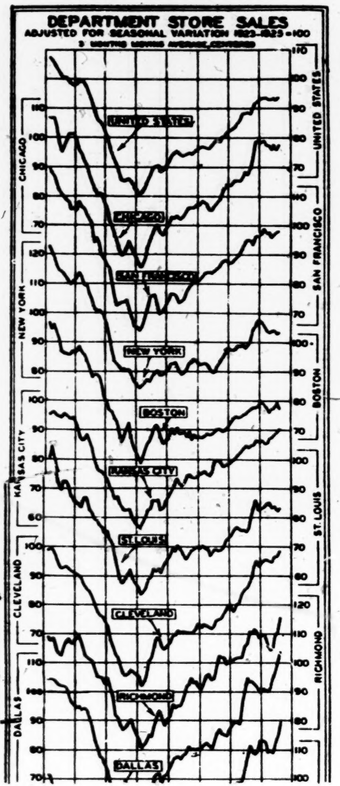
(Here follow 2 photolithographs, side folios 2134 and 2135)

COMPLAINANTS' EXHIBIT No. 99 (Excluded)

COMPLAINANTS' EXHIBIT No. 99a

THE ANNALIST

Friday, Oct. 22,1937

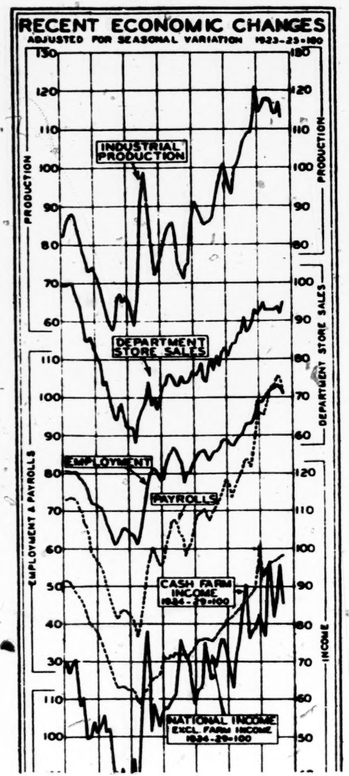


COMPLAINANTS' EXHIBIT No. 99 (Excluded)

COMPLAINANTS' EXHIBIT No. 99a

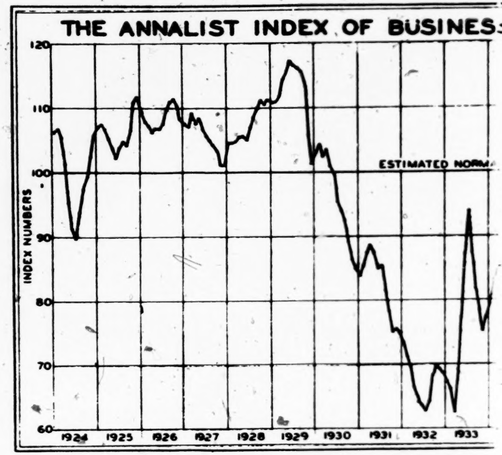
THE ANNALIST

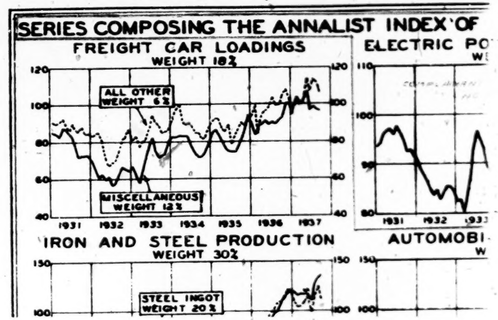
Friday, Oct. 22,1937

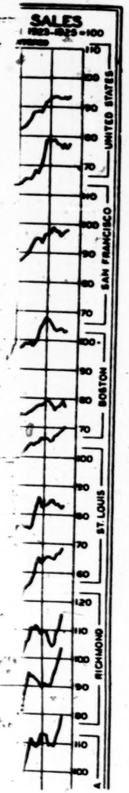


THE ANNALIST

Friday, October 22,1937





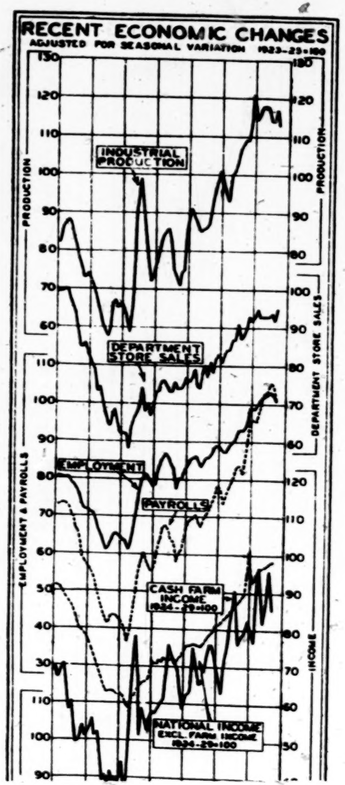


COMPLAINANTS' EXHIBIT No. 99 (Excluded)

COMPLAINANTS' EXHIBIT No. 99a

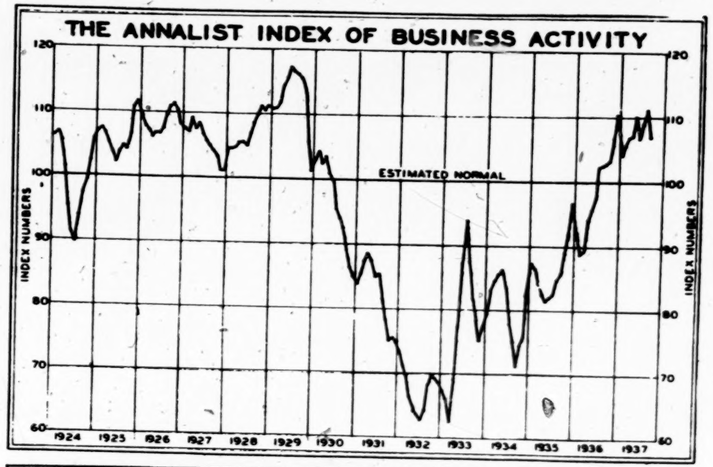
THE ANNALIST

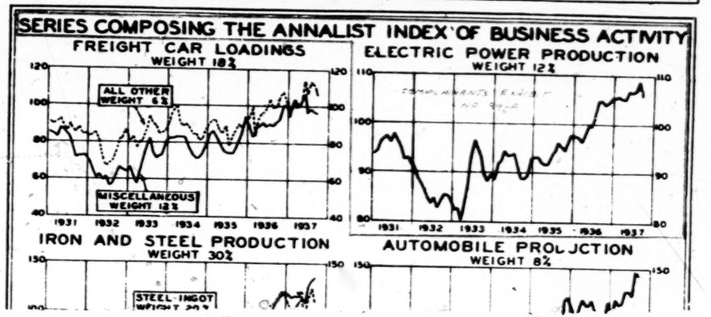
Friday, Oct. 22,1937

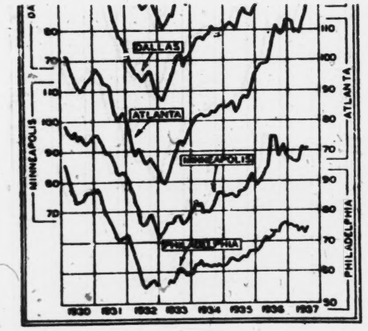


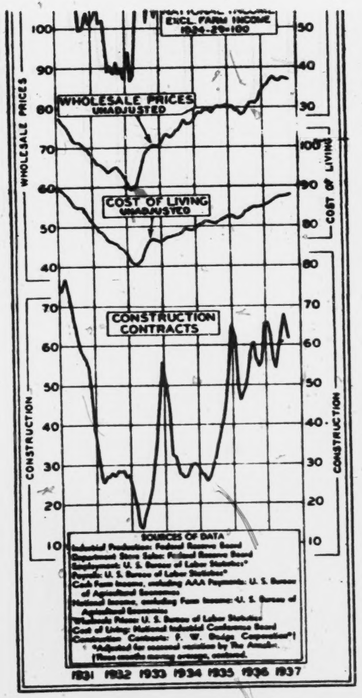
THE ANNALIST

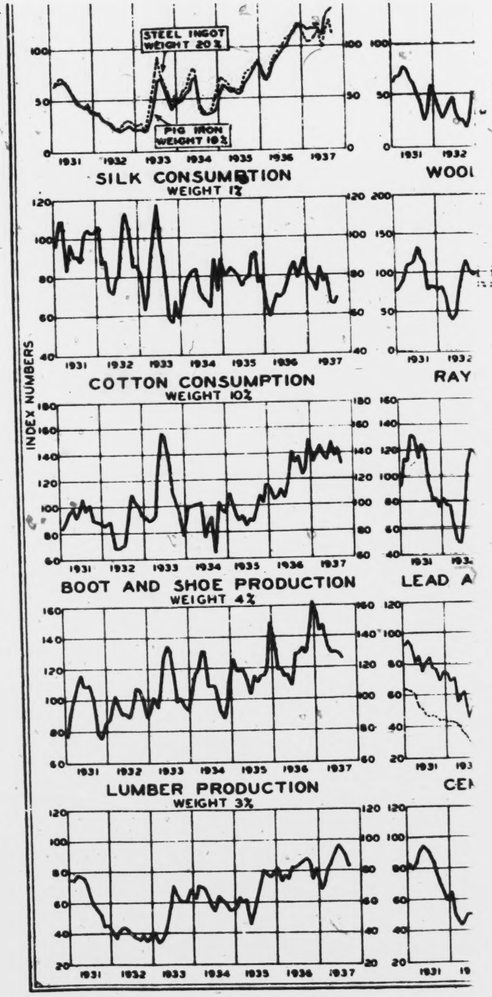
Friday, October 22,1937

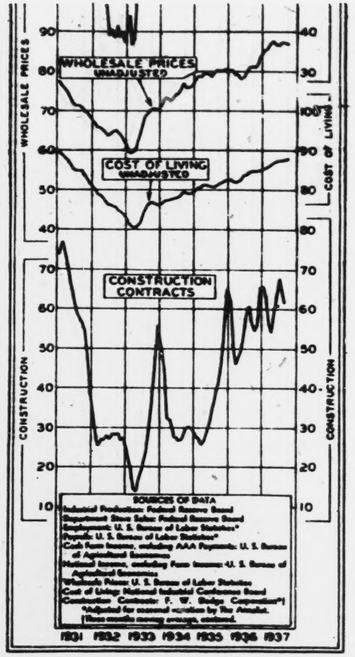


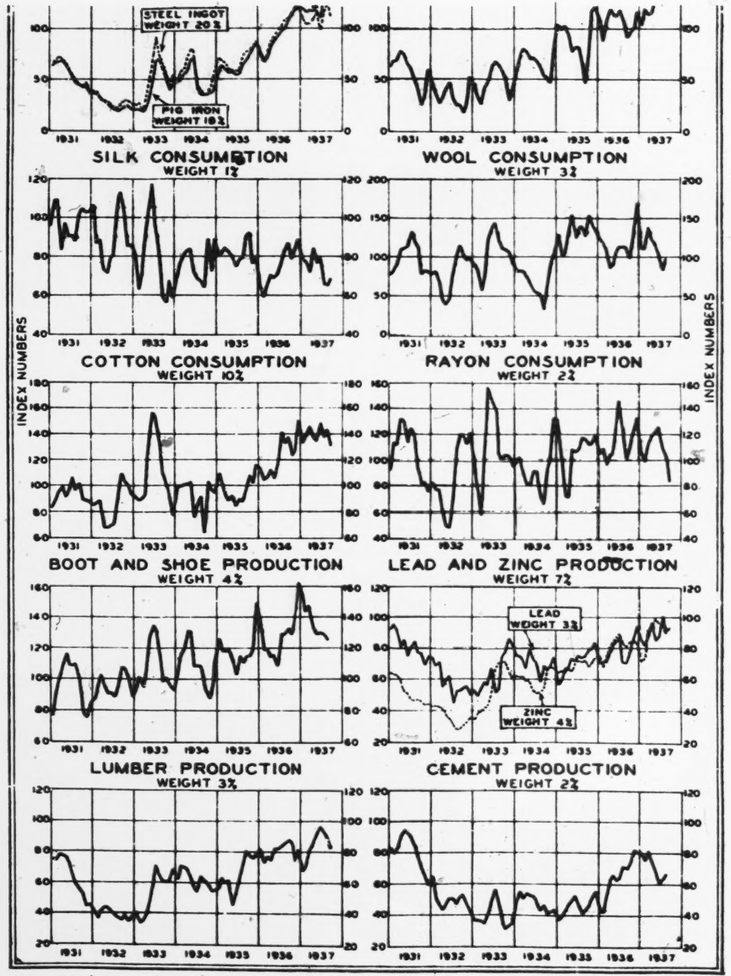



DALLAS
ATLANTA
MINNEAPOLIS
PHILADELPHIA
1930 1931 1932 1933 1934 1935 1936 1937


ENGL. FARM INCOME 1924-29=100
WHOLESALE PRICES UNADJUSTED
COST OF LIVING UNADJUSTED
CONSTRUCTION CONTRACTS
WHOLESALE PRICES
CONSTRUCTION
COST OF LIVING
SOURCES OF DATA
1931 1932 1933 1934 1935 1936 1937


STEEL INGOT WEIGHT 20%
PIG IRON WEIGHT 10%
SILK CONSUMPTION
WEIGHT 1%
COTTON CONSUMPTION
WEIGHT 10%
BOOT AND SHOE PRODUCTION
WEIGHT 4%
LUMBER PRODUCTION
WEIGHT 3%
INDEX NUMBERS
1931 1932 1933 1934 1935 1936 1937


WHOLESALE PRICES UNADJUSTED
COST OF LIVING UNADJUSTED
CONSTRUCTION CONTRACTS
WHOLESALE PRICES
CONSTRUCTION
COST OF LIVING
SOURCES OF DATA
1931 1932 1933 1934 1935 1936 1937


STEEL INGOT WEIGHT 20%
PIG IRON WEIGHT 10%
SILK CONSUMPTION
WEIGHT 1%
WOOL CONSUMPTION
WEIGHT 3%
COTTON CONSUMPTION
WEIGHT 10%
RAYON CONSUMPTION
WEIGHT 2%
BOOT AND SHOE PRODUCTION
WEIGHT 4%
LEAD AND ZINC PRODUCTION
WEIGHT 7%
LEAD WEIGHT 3%
ZINC WEIGHT 4%
LUMBER PRODUCTION
WEIGHT 3%
CEMENT PRODUCTION
WEIGHT 2%
INDEX NUMBERS
1931 1932 1933 1934 1935 1936 1937

COMPLAINANTS' EXHIBIT NO. 100

MISSISSIPPI POWER & LIGHT COMPANY
Tax Statement
Taxes Assessed and Paid

Description of Tax	1932	1933	1934	1935	1936	1937 Est.
Fed. Surtax	-	-	-	-	-	48,826.00
Fed. Income	48,913.49	875.00	2,250.00	None	34,030.82	45,000.00
Fed. Cap. Stock	-	4,106.00	5,502.00	5,252.00	7,506.25	7,500.00
Fed. 3% Energy	24,988.45	65,190.03	64,261.62	62,245.07	72,280.87	84,600.00
Fed. Tel. & Tel.	-	561.09	842.07	759.28	864.13	900.00
Fed. Excise 8 & 9	-	-	-	-	1,121.94	15,180.00
Fed. Bond Int.	5,601.48	5,591.51	5,654.96	5,626.26	5,417.75	5,600.00
Fed. Bank Checks	449.88	894.04	826.18	56.02	-	-
St. & Loc. Adval.	323,815.85	321,552.05	319,263.20	323,627.87	408,756.90	450,000.00
State Sales	59,395.50	74,031.61	82,249.56	87,954.39	102,970.79	120,000.00
State Franchise	16,540.00	16,441.00	17,363.41	15,131.00	16,578.00	15,120.00
State Auto Mil.	-	-	246.46	358.67	725.24	1,000.00
State M. C. Mil.	-	-	-	13,502.61	-	-
State Unemploy.	-	-	-	-	10,466.04	22,770.00
State Fuel Oil	-	-	-	-	5,273.65	7,000.00
State & Loc. Priv.	33,917.84	35,974.00	36,144.00	36,048.50	36,260.75	45,000.00
State Bond Int.	822.63	919.68	504.84	808.95	758.07	800.00
State Income	75.76	1,142.30	11,503.00	None	35,483.41	50,536.00
Total Taxes	488,518.36	525,278.31	546,611.30	551,548.62	738,463.61	918,832.00
Gross Electric Operating Revenue	3,560,000.62	3,402,561.55	3,652,069.98	3,660,104.52	4,251,527.59	4,842,880.00
Gross Revenue	4,591,181.07	4,403,546.12	4,812,957.53	5,038,455.39	5,941,216.14	6,721,515.00
% of Gross Revenue	10.64	11.93	11.36	10.95	12.43	13.67

[fol. 2136] COMPLAINANTS' EXHIBIT No. 101

Map of Facilities of and Territory Served by Mississippi Power & Light Company

(Original Exhibit)

[fol. 2137] COMPLAINANTS' EXHIBIT No. 102

Mississippi Power & Light Company
Comparative Statement by Zones

	1933			1936		
Zone	Customers	Kwh. Sales	Revenue	Customers	Kwh. Sales	Revenue
1	6434	11,855,769	$505,813.40	7779	18,734,247	$743,744.92
2	24651	69,974,358	2,347,449.47	29454	117,792,338	3,063,194.36

Note:

Zone 1—Area inclosed by an arc having a radius of 150 miles of Pickwick Dam.
Zone 2—Area between arcs drawn at radii of 150 and 250 miles of Pickwick Dam.

[fol. 2138] COMPLAINANTS' EXHIBIT No. 103

Mississippi Power & Light Company
Installed Generating Capacity
December 31, 1936

Location	Installed kw. Capacity		
	Steam	Diesel	Total
Jackson	5500	....	5500
Natchez	....	2500	2500
Vicksburg	2350	....	2350
Fernwood	2250	....	2250
Greenville	1776	....	1776
Brookhaven	540	....	540
Grenada	200	336	536
Crystal Springs	....	360	360
Merit	....	340	340
Winona	270	....	270
Cleveland	266	....	266
Sardis	....	240	240
Tylertown	....	222	222
Rolling Fork	....	215	215
Mt. Olive	....	213	213
Carthage	....	184	184
Senatobia	....	160	160
Tunica	....	136	136
Charleston	....	136	136
Lexington	....	136	136
Port Gibson	72	48	120
Liberty	....	80	80
Miscellaneous small plants	....	616	616
Total Generating Capacity.	13224	5922	19146

(Here follows one photolithograph, side folio 2139)

COMPLAINANTS' EXHIBIT NO. 104

MISSISSIPPI POWER & LIGHT COMPANY

STATISTICS - ELECTRIC

Year	No. Cust. as of 12/31	Total Energy Sales	Total Industrial Sales	% Ind. Sales To Total Sales	Miles of Transmission as of 12/31	Miles of Distribution as of 12/31
1927	23,693	44,197,258	16,678,571	37.7%	352.3	1050.2
1928	29,981	59,877,783	22,531,822	37.6%	405.7	1792.5
1929	37,504	78,971,410	36,908,320	46.7%	397.7	1937.3
1930	37,834	105,338,197	48,601,033	46.1%	457.8	2288.1
1931	37,176	111,190,502	55,758,945	50.1%	456.8	2345.1
1932	35,423	101,717,919	50,624,810	49.8%	456.8	2333.9
1933	38,196	101,146,482	52,601,035	52.0%	456.8	2334.2
1934	38,349	115,017,000	62,394,000	54.2%	456.8	2376.2
1935	39,678	131,311,000	71,926,000	54.8%	456.8	2398.0
1936	45,373	157,608,000	87,673,000	55.6%	456.8	2628.2
Ending Aug. 31, 1937	47,963	174,903,000	96,811,000	55.4%		

Year	Avg. KWH Consumption Per Res. Cust.	EXCLUDED Avg. Rate Per KWH Res. Sales	Avg. Rev. Per. Res. Customer	EXCLUDED Avg. Rate Per KWH Total Sales	Communities Served Electric	
1927	314	11.07¢	$ 34.70	4.89¢	135	
1928	399	9.24¢	36.89	4.47¢	205	
1929	503	8.15¢	40.97	4.30¢	226	
1930	586	7.01¢	41.11	3.86¢	266	
1931	634	6.77¢	42.88	3.58¢	276	
1932	608	6.93¢	42.12	3.54¢	277	
1933	568	7.14¢	40.60	3.37¢	277	
1934	579	6.82¢	39.45	3.17¢	280	
1935	654	5.83¢	38.10	2.76¢	284	
1936	693	5.65¢	39.10	2.68¢	308	
Ending Aug. 31, 1937	737	5.57¢	41.03	2.70¢	312	2139

[fol. 2140] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 105 FOR IDENTIFICATION, BEING PART I OF HOUSE DOCUMENT 328, 71ST CONGRESS, 2ND SESSION (Excluded)

Par. 8, p. 2

As required by law, the district engineer shows the ultimate use that may be made of the waters of the Tennessee Basin by the United States and its citizens. He shows an estimate of the cost of all possible uses and a plan for the same in Charts I and II (pls. 7 and 8) of Appendix A of his report. The total estimate of cost given is $1,200,000,000. But this sum is to be in nowise confused with the cost of any project to be executed at the expense of the United States Government. It is a vast plan possible to a proper combination of private enterprise and public works. The total cost is of no special interest in this report since only a minor part of it enters into prospective operations by the General Government.

Par. 10, p. 3

The system includes 149 hydroelectric power developments, together with certain auxiliary steam stations. The district engineer has worked out very completely the methods by which all these plants could be operated as a single system so as to effect the utmost economy and produce the maximum amount of power. Such coordinated operation includes the connection of all the plants by transmission lines and the exchange of power between plants which can generate surplus power at certain times of the year and those which have a deficiency of power at such periods. It provides for compensating the storage reservoirs for the benefits which they furnish to other plants in the form of regulated river flow. In this analysis it was assumed that the entire cost of the combined system for navigation, power development, and flood control would be charged to power except the cost of locks, barge lifts, and channel work required solely for navigation. Under these assumptions the system could produce about 3,000,000 kilowatts of firm power under a 50 per cent load factor, at an average cost of 4⅓ mills per kilowatt-hour at the high-tension bus bars of the stations. While this price is not remarkably low for a large hydroelectric power development, it is [fol. 2141] considered sufficiently low to constitute an eco-

nomically feasible and desirable project whenever the demand for power has grown sufficiently to produce a market which could absorb such large quantities.

Par. 16, pp. 4 & 5

If the development of navigation were desired without being combined with power development, a project could be constructed which would provide a 9-foot navigation from the mouth of the river to Knoxville by means of 32 low dams with locks at an estimated cost of about $56,000,000, if provided with locks 56 feet wide and 360 feet long which are approximately the dimensions of those proposed for the high dams. If the locks are made 110 feet wide and 600 feet long, which are the dimensions of those in use on the Ohio River, the cost would be about $75,000,000. The district engineer does not think that such a project should be built. However, he uses the cost of such a project as a measure of the benefits to navigation which are secured by the construction of the high dams and locks, and considers that a series of low dams might be adopted as an alternative in any section of the river on which, for some reason, the construction of a high dam was found to be impracticable at the present time. The district engineer discusses three methods of providing for the construction of this project:

(a) The projects to be constructed by parties holding licenses from the Federal Power Commission, the Federal Government carrying out detailed investigation of dam sites, constructing the lock, and participating in such other part of the development as may be equitable.

(b) The Federal Government to construct the navigation facilities and the dam, reservoir, and power house fore bay and to receive from the licensees reimbursement for such part of the cost of these structures as is chargeable to power production.

(c) The sites at Aurora Landing, Pickwick Landing, Chickamauga, White Creek, and Coulter Shoals to be constructed under plan (a) while Dam No. 3 and Guntersville, which are less attractive as power propositions, are constructed under plan (b).

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 105 FOR IDENTIFICATION (Excluded)

He finds various objections to each of these plans and suggests as an alternative that the United States adopt a project for the improvement of the river by means of a series of low dams with locks with the proviso that a high dam built by other interests under the provisions of the Federal water power act may be substituted for any two or more of these low dams, if the cost to the United States [fol. 2142] is thereby decreased and the adequacy of the navigation facilities is not thereby impaired. He concludes that this alternative plan is the most satisfactory one.

Par. 17, p. 5

The district engineer therefore recommends the adoption of the project for the improvement of the Tennessee River to Knoxville by low dams with locks of Ohio River standards, to be completed within 10 years, at an estimated cost of $74,709,000 with $40,000 annually for the maintenance and operation of each dam, provided that under the provisions of the Federal water power act a high dam may be substituted for any two or more of the proposed low dams if the resulting cost to the United States will thereby be reduced and the navigable capacity of the waterway will not be lessened.

Par. 23, pp. 6 & 7

After due consideration I concur generally with the district engineer and recommend that the adopted project by the United States for the improvement of the Tennessee River from its mouth to Knoxville be for a navigable depth of 9 feet at low water by low dams in the number and approximate location as set forth in the report of the district engineer: Provided, That under the provisions of the Federal water power act a high dam with locks may be substituted for any two or more of the low dams and built by private interests, States, or municipalities: And provided further, That in case high dams are built before the United States shall have built the projected locks and low dams which are to be replaced, the United States shall contribute to the cost of the substituted structures an amount equal to the estimated cost of the works of navigation for which substitution is made.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 105 FOR IDENTIFICATION (Excluded)

Par. 24(a), p. 7

I do not concur in full with other advisory authorities in the following respects:

(a) The district engineer.—He sets a time limit on the completion of the project. No time limit can be set at this time since this project must take its economic place in the general array of projects over the entire country and await the availability of money for its economical prosecution.

Par. 21, p. 16

The total power output in the Tennessee River Basin in 1927 was approximately 1,182,600,000 kilowatt-hours. The demand for 1950 is estimated as 5,900,000,000 kilowatt-hours. The projects investigated will develop 25,000,000,000 kilowatt-hours per annum, of which 12,500,000,000 kilowatt-hours can be developed on the main stream. * * *

[fol. 2143] Par. 3, p. 88

The total firm power which may be economically developed by projects laid out for the development of the Tennessee River and its tributaries amounts to approximately 25,000,000,000 kilowatt-hours per annum, of which approximately 12,500,000,000 kilowatt-hours would be developed by projects on the main stream and 12,500,000,000 kilowatt-hours by projects on tributaries.

Par. 78, p. 97

Plan D—Navigation only.—All of the above plans for the development of the waterway require the cooperation of power companies. That a sound basis for such cooperation may be had, it is essential that a satisfactory project for a progressive development of the main stream for navigation alone be adopted by Congress.

With this idea in view, a plan has been prepared which contemplates the improvement of the Tennessee River from its junction with the Ohio to Knoxville by a system of 32 locks and dams of relatively low lift, which system has been designed to afford navigation facilities on a par with those now existing on the Ohio River.

Excerpts From Complainants' Exhibit No. 105 For Identification (Excluded)

In the detailed cost estimate for this plan (pp. 98-100), the cost of small locks has been given as well as that for locks of Ohio River size. The district engineer does not believe that the small locks are satisfactory for the low dam system. Their cost is included here for comparative purposes only.

Par. 79-80, pp. 100-101

79. As indicated above, this system of low dams will provide for navigation only. There will be no benefits to flood protection, and no power, except a very small amount for the operation of the dams themselves, will be developed. The plan, however, will provide a waterway comparable in every way with the improved Ohio and adapted to incorporation with a consolidated inland waterway system of 9-foot depth. On such a waterway large tows of from 10,000 to 16,000 net cargo tons can be transported at costs, depending upon quantities and facilities offered, of from 1 to 2 mills per ton-mile.

The district engineer believes that no lesser project will provide an adequate waterway for modern barge traffic and therefore believes that if there be any modification of the plan by the substitution for any two or more low dams of a high dam to develop power or provide flood protection, that the capacity of the waterway for the economical movement of modern barge traffic, should not thereby in any way be lessened. It is believed absolutely essential that in any high fixed dam there must be two locks in parallel to provide for dependable navigation.

[fol. 2144] 80. Recommendation.—It is recommended that the general plan proposed for the combined development of the Tennessee River and its tributaries for navigation, power, and flood control be adopted as a general guide, subject to such modifications as may be found necessary and approved by the Chief of Engineers and Secretary of War, for navigation and flood control on the Tennessee River and its tributaries, and subject further to such modifications as may be found necessary in carrying out the provisions of the Federal water power act.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 105 FOR IDENTIFICATION (Excluded)

It is recommended that a project for the progressive improvement of the Tennessee River from its mouth to Knoxville, by a system of movable or low fixed dams and by locks of Ohio River standards be adopted to be completed within a period of 10 years at an estimated cost of $75,000,000 at the rate of $3,000,000 for the first year and $8,000,000 for each year thereafter until completion, with $40,000 for annual operation, care, and maintenance for each dam and pool; with the proviso that under the provision of the Federal water power act there may be substituted for any two or more of the low dams herein provided for, a high dam if the resulting cost to the Federal Government will be less than by the estimate herein for the low dams thus rendered unnecessary, and provided further that the capacity of the waterway for the economical movement of modern barge traffic will not be in any way lessened.

Lewis H. Watkins, Major, Corps of Engineers,
District Engineer.

(Here follows two photolithographs, side folios 2145 and 2146)

Excerpts From Complainants' Exhibit No. 105 for Identification
(Excluded)

High floods of record at four stations on the Tennessee River

KNOXVILLE, TENN.

[Mile station, 4.5; drainage area, 8,990 square miles]

	Stage (feet)		Stage (feet)
March, 1867	44.4	November, 1906	23.0
March, 1875	39.0	January, 1908	16.9
February, 1884	16.1	February, 1908	15.2
March, 1884	22.3	February, 1909	13.7
March, 1886	29.6	June, 1909	14.0
January, 1887	13.4	February, 1911	13.2
February, 1887	14.3	March, 1911	14.5
March, 1888	13.3	April, 1911	14.2
February, 1889	15.0	March, 1912	12.8
February, 1890	23.0	April, 1912	17.0
March, 1890	14.6	March, 1913	21.6
February, 1891	21.9	December, 1914	17.3
March, 1891	16.9	February, 1915	12.7
January, 1892	23.3	December, 1915	14.9
February, 1893	18.0	February, 1916	13.9
February, 1894	15.4	July, 1916	29.9
January, 1895	18.5	March, 1917	28.2
April, 1896	28.7	January, 1918	24.2
February, 1897	26.0	October, 1918	18.7
March, 1897	22.5	December, 1918	13.0
February, 1899	23.1	January, 1919	16.2
March, 1899	28.2	March, 1920	13.0
January, 1901	16.0	April, 1920	26.7
April, 1901	17.1	February, 1921	17.8
May, 1901	34.8	January, 1922	19.0
August, 1901	17.2	February, 1922	14.7
December, 1901	31.0	March, 1922	13.0
March, 1902	36.4	December, 1922	12.4
February, 1903	19.9	February, 1923	16.8
March, 1903	24.0	March, 1923	13.4
April, 1903	24.6	December, 1926	14.5
January, 1906	22.4		

NOTE.—Gage heights at flood stage vary as follows: 1883–1898, 12.7 feet; 1899, 13.3 feet; 1900–1907, 15 feet; 1908–1917, 12.6 feet; 1917 to date, 12 feet.

CHATTANOOGA, TENN.

[Mile station, 188; drainage area, 21,400 square miles]

	Stage (feet)		Stage (feet)
March, 1867	58.6	February, 1897	34.8
March, 1875	53.6	March, 1897	37.9
December, 1875	34.2	March, 1899	38.2
January, 1879	38.0	March, 1899	40.0
March, 1880	37.6	January, 1902	40.8
January, 1882	40.2	March, 1902	38.0
January, 1883	38.2	November, 1906	33.3
February, 1884	36.7	March, 1913	33.3
March, 1884	42.8	December, 1914	33.1
April, 1886	52.2	December, 1915	34.3
March, 1890	42.5	March, 1917	47.7
February, 1891	37.5	February, 1918	42.5
March, 1891	38.9	April, 1920	43.6
January, 1892	37.9	February, 1921	34.5
April, 1892	34.3	January, 1922	35.8
February, 1893	33.4	December, 1926	38.4
April, 1896	41.5		

NOTE.—Gage height at flood stage equals 33 feet.

Excerpts From Complainants' Exhibit No. 105 for Identification.
(Withdrawn)

FLORENCE, ALA.

[Mile station 306; drainage area, 30,800 square miles]

	Stage (feet)		Stage (feet)
March, 1867	31.1	August, 1901	19.0
April, 1874	26.0	January, 1902	21.0
March, 1875	29.4	March, 1902	21.7
January, 1876	19.8	March, 1903	18.7
April, 1877	19.4	February, 1909	19.0
January, 1879	21.5	March, 1909	19.6
March, 1880	24.5	April, 1911	22.0
January, 1882	29.6	December, 1911	18.2
January, 1883	20.3	April, 1912	19.6
March, 1884	25.2	March, 1913	18.5
April, 1886	28.1	December, 1914	19.2
March, 1888	20.5	June, 1916	19.3
February, 1889	19.8	July, 1916	20.5
March, 1890	23.3	March, 1917	24.6
March, 1891	22.2	February, 1918	21.8
January, 1892	20.0	March, 1919	19.2
April, 1892	24.0	April, 1920	23.5
February, 1893	20.8	February, 1921	18.7
April, 1896	19.9	March, 1922	21.5
March, 1897	32.5	February, 1923	18.2
March, 1899	25.2	December, 1926	26.4
April, 1900	19.2		

NOTE.—Gage height at flood stage equals 18 feet.

JOHNSONVILLE, TENN.

[Mile station, 538; drainage area, 30,500 square miles]

	Stage (feet)		Stage (feet)
March, 1880	37.7	April, 1902	35.6
January, 1882	43.8	March, 1903	33.7
February, 1884	44.3	February, 1909	33.0
April, 1886	42.1	April, 1911	36.1
February, 1887	31.4	April, 1912	35.4
April, 1888	33.3	March, 1913	33.3
March, 1890	37.7	January, 1916	32.5
March, 1891	38.2	March, 1917	38.9
April, 1892	35.8	March, 1919	35.3
February, 1893	33.6	April, 1920	35.9
February, 1894	31.1	March, 1922	36.4
March, 1897	48.0	March, 1923	31.2
March, 1899	39.7	January, 1927	40.5

NOTE.—Gage height at flood stage equals 31 feet.

NATURAL FLOOD FLOW CHARACTERISTICS OF THE TENNESSEE RIVER

An inspection of the Tennessee River flood hydrographs will show clearly that the rate of discharge during the advance of a flood is approximately the same for the entire length of the river. The slope of the advancing hydrograph is solely determined by the local run-off. During the period of precipitation the river stage throughout its entire length rises at an equal rate and shortly after the cessation of rainfall the headwater stages will have reached their crest and begin to recede. The lower-basin stages continue to rise slightly after rainfall ceases and hold near maximum for several days due to the arrival of the headwater run-off. The peak discharge contains very little water from the head tributaries, the effect of the latter being to broaden the hydrograph after the peak has passed.

[fol. 2147] COMPLAINANTS' EXHIBIT No. 105

House Document 328, 71st Congress, 2d Session, "Tennessee River and Tributaries, North Carolina, Tennessee, Alabama and Kentucky"

(Original Exhibit)

(Here follow two photolithographs, side folios 2148 and 2149)

COMPLAINANTS' EXHIBIT NO. 105(a)

Table appearing at pp. 98-99 of Complainants'

Exhibit No. 105

Cost estimate, low dams: navigation only

PLAN D

Project	Miles above mouth	Pool elevation		Lift	Foundation	Approximate length of dam	Cost of dam	Cost of lock, 56 by 360 feet	Cost of lock, 110 by 600 feet
		Lower	Upper						
				Feet		*Feet*			
Paducah to Muscle Shoals:									
Aurora Landing	42.2	302	315	13	Hard gravel	1,600	$1,280,000	$910,000	$1,490,000
White Oak Landing	83.3	315	328	13	do	1,400	1,200,000	940,000	1,535,000
Perryville	135.6	328	343	15	do	1,800	1,335,000	1,000,000	1,635,000
Wolf Island	192	343	353	10	do	1,400	1,020,000	850,000	1,400,000
Big Bend Shoals	204.6	353	367	14	Rock	1,000	1,040,000	970,000	1,590,000
Colbert Shoals Canal	226.6	367	390.6	23.6	do		1,511,000	924,300	1,890,000
Head Colbert Shoals	234.6	390.6	404	13.4	do	4,800	2,130,000	940,000	1,535,000
Subtotal				102			8,496,000	6,534,000	11,045,000
Muscle Shoals to Chattanooga:									
Dam No. 3	275.1	506	520	13	Rock	4,000	1,950,000	1,000,000	1,625,000
Lock B	285.1	520	530	10	do		48,000	850,000	1,440,000
Milton Bluff	297.7	530	541	11	do	4,000	1,750,000	883,000	1,445,000
Indian Creek Bar	321.2	541	548	7	do	1,300	980,000	760,000	1,310,000
Beards Reef	335.8	548	564	16	do	1,400	1,220,000	1,030,000	1,670,000
Mink Creek	374.2	564	575	11	do	1,400	970,000	890,000	1,445,000
Bellefonte	390.6	575	583	8	do	1,300	880,000	790,000	1,310,000
Widows Bar		583	592	9	do	1,300	200,000	820,000	1,395,000
Subtotal				87			7,918,000	7,110,000	11,640,000
Total, Paducah to Chattanooga							16,414,000	13,644,000	22,685,000
Chattanooga to Knoxville:									
Sherman Hill	468.7	629	641	12	Rock	1,200	810,000	910,000	1,490,000
U. S. Quarry	486.4	641	653	12	do	1,200	810,000	910,000	1,490,000
Sale Creek	494.8	653	663	10	do	1,200	730,000	850,000	1,400,000
Kelly Shoals	510.8	663	673	10	do	1,200	730,000	850,000	1,400,000
Watts Bar	529.9	673	683	10	do	1,200	730,000	850,000	1,400,000
White Creek Island	543.9	683	693	10	do	1,200	730,000	850,000	1,400,000
Half Moon Island	550.6	693	703	10	do	900	670,000	850,000	1,400,000
Caney Creek Island	562.9	703	713	10	do	900	670,000	850,000	1,400,000
Seven Island Shoals	575.1	713	723	10	do	900	670,000	850,000	1,400,000
Sweetwater Island	584.3	723	733	10	do	900	670,000	850,000	1,400,000
Rock Quarry Bar	594.3	733	743	10	do	900	670,000	850,000	1,400,000
Sister Island Shoals	604.6	743	753	10	do	900	670,000	850,000	1,400,000
Coulter Shoals	608.6	753	763	10	do	900	670,000	850,000	1,400,000
Rogers Island	618.1	763	773	10	do	890	640,000	850,000	1,400,000
Georges Branch	630.6	773	783	10	do	800	640,000	850,000	1,400,000
Little River Shoals	634.9	783	793	10	do	700	580,000	850,000	1,400,000
Williams Island	638.6	793	803	10	do	700	580,000	850,000	1,400,000
Subtotal							11,430,000	14,570,000	23,980,000

Summary of costs

110 by 600 feet locks mouth to Chattanooga	$22,685,000
110 by 600 feet locks Chattanooga to Knoxville	23,980,000
Total	46,665,000
56 by 360 feet locks mouth to Chattanooga	16,414,000
56 by 360 feet locks Chattanooga to Knoxville	11,430,000
Total	27,844,000

103554—H. Doc. 328, 71-2, pt 1——8

COMPLAINANTS' EXHIBIT NO. 105(b)

Table appearing at p. 100 of Complainants' Exhibit No. 105

Comparative summary of costs for low dams (movable) on Tennessee River with single locks, 110 by 600 feet

Section	Number of locks	Pool length	Lift		Estimated cost	Cost per structure	Cost per mile	Cost per foot of lift
			Total	Average				
		Miles	*Feet*	*Feet*				
Paducah to Muscle Shoals	17	210	102	14.6	$19,541,000	$2,800,000	$23,000	$192,000
Muscle Shoals to Chattanooga	18	154	87	11.1	19,558,000	2,430,000	127,000	225,000
Chattanooga to Knoxville	17	180	174	10.6	35,610,000	2,050,000	198,000	200,000
Total or average	32	544	363	11.3	74,709,000	2,330,000	.....	205,000

[1] Includes new lock and dam at Colbert Shoals.
[2] Includes new lock at Widows Bar.

Comparison of Ohio River Dams 4 to 39, inclusive

Number of locks	36
Length of pools (miles)	516
Total lift (feet)	263
Average lift (feet)	7.3
Cost adjusted to present level	$75,000,000
Cost per structure	$2,080,000
Cost per structure with allowance for increase in average lift to 11.3 feet	$2,080,000
4 feet on lock, at $45,000 per foot	$180,000
4 feet on dam	$200,000
Total	$2,460,000

[fol. 2150] COMPLAINANTS' EXHIBIT No. 105(c)

Appendix A, Plate 7 of Part II of House Document 328, entitled the "Location of Existing and Proposed Navigation, Hydro Electric and Reservoir Projects" prepared by the Corps of Engineers, United States Army, dated December 15, 1928

(Rejected in evidence as an excerpt from Part II of House Document No. 328, 71st Congress 2nd Session, but received in evidence as part of such Document which the court ordered filed in evidence).

(Original Exhibit)

[fol. 2151] COMPLAINANTS' EXHIBIT No. 105(d)

Appendix A, Plate 8 of Part II of House Document 328, entitled the "Actual or Tentative Locations of Navigation Dams and Hydro Electric Power Sites" prepared by the Corps of Engineers, United States Army, dated December 15, 1928

(Rejected in evidence as an excerpt from Part II of House Document No. 328, 71st Congress 2nd Session, but received in evidence as part of such document which the Court ordered filed in evidence).

(Original Exhibit)

[fol. 2152] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 106 FOR IDENTIFICATION, BEING "PART I OF THE ANNUAL REPORT OF THE CHIEF OF ENGINEERS, U. S. ARMY, 1932" (Excluded)

P. 1206

Existing project.—This provides for a channel 9 feet deep at low water from the mouth to Knoxville, Tenn., a distance of 652 miles, to be obtained by the construction of low dams, provided, that under the provisions of the Federal water power act a high dam with locks may be substituted for any two or more of the low dams and built

by private interests, States, or municipalities; and, provided further, that in case high dams are built before the United States shall have built the projected locks and low dams which are to be replaced, the United States shall contribute to the cost of the substituted structures an amount equal to the estimated cost of the works of navigation for which substitution is made.

The Chief of Engineers was directed to ascertain and report to Congress on the first day of the first regular session of the Seventy-second Congress, advising the prospective cooperation offered by responsible interests, under the Federal water power act, in the program of construction recommended by the Chief of Engineers, providing for the 9-foot project by means of high dams.

The total number of low navigation dams now included in the project is 32 (exclusive of those already built under previous projects).

The following table (Marked for Identification as Complainants' Exhibit 106(A)) contains information concerning various features of the proposed locks and low dams, and such existing locks and dams as are included in this project:

(Here follows one photolithograph, side folio 2153)

Complainants' Exhibit No. 106 (a)

(Excluded as an excerpt from Complainants' Exhibit No. 106 but received in evidence as part of such document.)

Table Appearing on pp. 1207 - 08.

Name	Location		Lock								
	Miles above mouth	Distance from nearest town or mouth of navigable tributary	Dimensions			Pool elevation above mean sea level		Character of foundation	Percentage of completion	Year opened to navigation	Estimated or actual cost of each lock and dam
			Width of chamber	Length available for full width	Lift	Lower	Upper				
			Feet	*Feet*	*Feet*	*Feet*	*Feet*				
Aurora Landing	42.2	11.2 miles above Birmingham, Ky	110	600	13	302	315	Hard gravel	(1)	(1)	$2,780,000.00
White Oak Landing	63.3	52.3 miles above Birmingham, Ky	110	600	13	315	328	do	(1)	(1)	2,734,000.00
Perryville	135.6	At Perryville, Tenn	110	600	15	328	343	do	(1)	(1)	2,980,000.00
Wolf Island	192	2.5 miles above Savannah, Tenn	110	600	10	343	353	do	(1)	(1)	2,420,000.00
Big Bend Shoals	204.6	2.6 miles above Hamburg, Tenn	110	600	14	353	367	Rock	(1)	(1)	2,620,000.00
Colbert Shoals Canal	226.6	0.6 miles above Riverton, Ala	110	600	23.6	367	390.6	do	(1)	(1)	[2] 3,201,000.00
Head Colbert Shoals	234.6	8.6 miles above Riverton, Ala	110	600	13.4	390.6	404	do	(1)	(1)	2,664,000.00
Dam No. 1	256.7	0.2 mile above railroad bridge at Florence, Ala	60	300	12.1	404	416.1	Limestone (Lauderdale chert)	100	1927	[3] 988,315.25
Wilson Dam (Dam No. 2)	259.2	2.9 miles above Florence, Ala	60	[4] 300	[4] 89	416.1	508.1	do	99	1927	[3] 47,737,944.27
General Joe Wheeler Dam	275.1	18.6 miles above Florence, Ala	110	600	15	505	520	Rock	(1)	(1)	[5] 2,875,000.00
Lock B	285.1	19.3 miles below Decatur, Ala	110	600	10	520	530	do	(1)	(1)	[6] 1,488,000.00
Milton Bluff	297.7	16.7 miles below Decatur, Ala	110	600	11	530	541	do	(1)	(1)	2,196,000.00
Indian Creek Bar	321.2	16.8 miles above Decatur, Ala	110	600	7	541	548	do	(1)	(1)	2,200,000.00
Beards Reef	355.8	2.3 miles below Guntersville, Ala	110	600	16	548	564	do	(1)	(1)	2,980,000.00
Mink Creek	374.2	16.1 miles above Guntersville, Ala	110	600	11	564	575	do	(1)	(1)	2,415,000.00
Bellefonte	390.6	32.5 miles above Guntersville, Ala	110	600	8	575	583	do	(1)	(1)	2,200,000.00
Widows Bar	408	86.1 miles below Chattanooga, Tenn	[7] 110	[7] 600	9	[7] 883	[7] 892	do	(7)	(7)	[7] 1,995,000.00
Hales Bar Lock and Dam	431	23 miles below Chattanooga, Tenn	60	257	37	592	[8] 629	do	100	1913	[9] 296,988.87
Sherman Hill	468.7	4.6 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	12	629	641	do	(1)	(1)	2,980,000.00
United States Quarry	486.4	22.3 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	12	641	653	do	(1)	(1)	2,980,000.00
Sale Creek	494.8	30.7 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	10	653	663	do	(1)	(1)	2,130,000.00

[1] Proposed dam, no work performed; estimated cost.
[2] Will submerge existing Riverton Lock of Colbert Shoals Canal.
[3] Actual cost.
[4] Flight of 2 locks, authorized under section 124, national defense act of June 3, 1916 (H. Doc. No. 1262, 64th Cong., 1st sess.).
[5] Will submerge existing Locks Nos. 1 and 2 of Muscle Shoals Canal.
[6] Existing Lock B (Elk River Shoals Canal) to be reconstructed to provide 9-foot depth. Estimated cost shown is for reconstruction. Present Lock A will be drowned out.
[7] Existing dam will be reconstructed to provide 9-foot depth and size of lock increased. Estimated cost shown is for reconstruction.
[8] Present elevation of dam (626.2) is increased 3 feet at present by flashboards. Modification to provide 9-foot instead of 6-foot depth will be required.
[9] Actual cost to United States of existing lock; cost to power company was about $6,696,700.

Name	Location		Lock								
	Miles above mouth	Distance from nearest town or mouth of navigable tributary	Dimensions			Pool elevation above mean sea level		Character of foundation	Percentage of completion	Year opened to navigation	Estimated or actual cost of each lock and dam
			Width of chamber	Length available for full width	Lift	Lower	Upper				
			Feet	*Feet*	*Feet*	*Feet*	*Feet*				
Kelly Shoals	516.8	46.7 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	10	663	673	Rock	(1)	(1)	$2,130,000.00
Watts Bar	529.9	37.9 miles below Kingston, Tenn	110	600	10	673	683	do	(1)	(1)	2,130,000.00
White Creek Island	543.9	23.9 miles below Kingston, Tenn	110	600	10	683	693	do	(1)	(1)	2,130,000.00
Half Moon Island	556.6	17.2 miles below Kingston, Tenn	110	600	10	693	703	do	(1)	(1)	2,070,000.00
Caney Creek Island	562.9	4.9 miles below Kingston, Tenn	110	600	10	703	713	do	(1)	(1)	2,070,000.00
Seven Island Shoals	575.1	7.3 miles above Kingston, Tenn	110	600	10	713	723	do	(1)	(1)	2,070,000.00
Sweetwater Island	584.3	7.2 miles below Loudon, Tenn	110	600	10	723	733	do	(1)	(1)	2,070,000.00
Rock Quarry Bar	594.3	2.8 miles above Loudon, Tenn	110	600	10	733	743	do	(1)	(1)	2,070,000.00
Sister Island Shoals	604.6	13.1 miles above Loudon, Tenn	110	600	10	743	753	do	(1)	(1)	2,070,000.00
Coulter Shoals	608.6	17.1 miles above Loudon, Tenn	110	600	10	753	763	do	(1)	(1)	2,070,000.00
Rogers Island	618.1	26.9 miles below Knoxville, Tenn	110	600	10	763	773	do	(1)	(1)	2,040,000.00
Georges Branch	626.6	14.4 miles below Knoxville, Tenn	110	600	10	773	783	do	(1)	(1)	2,040,000.00
Little River Shoals	634.9	10.1 miles below Knoxville, Tenn	110	600	10	783	793	do	(1)	(1)	1,980,000.00
Williams Island	638.6	6.4 miles below Knoxville, Tenn	110	600	10	793	803	do	(1)	(1)	1,980,000.00

[1] Proposed dam, no work performed; estimated cost.

[fol. 2154] COMPLAINANTS' EXHIBIT No. 106

Annual Report of the Chief of Engineers, United States Army, 1932

(Original Exhibit)

[fol. 2155] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 107 FOR IDENTIFICATION, BEING PART I OF THE ANNUAL REPORT OF THE CHIEF OF ENGINEERS OF THE U. S. ARMY, 1936" (Excluded)

P. 1032

Existing project.—This provides for a channel 9 feet deep at low water from the mouth to Knoxville, Tenn., a distance of 647.7 miles, to be obtained by the construction of low dams; provided, that under the provisions of the Federal Water Power Act a high dam with locks may be substituted for any two or more of the low dams and built by private interests, States, or municipalities; and provided further that in case high dams are built before the United States shall have built the projected locks and low dams which are to be replaced, the United States shall contribute to the cost of the substituted structures an amount equal to the estimated cost of the works of navigation for which substitution is made.

The total number of low navigation dams now included in the project is 19 (exclusive of those already built under former projects and those eliminated by the construction of high navigation power dams at the Pickwick Landing site, mile 206.7, General Joe Wheeler site, mile 274.9, Guntersville site, mile 349.0, and the Chickamauga site, mile 471.0).

The following table (Marked for Identification as Complainants' Exhibit 107(A)) contains information concerning various features of the proposed locks and low dams and such existing locks and dams as are included in this project:

Complainants' Exhibit No. 107 (a)

(Excluded as an excerpt from Complainants' Exhibit 107 but received in evidence as part of such document.)

Table Appearing on pages 1033 - 34.

Name of project	Location: Miles above mouth	Location: Distance from nearest town, or mouth of navigable tributary	Lock: Dimensions: Width of chamber	Lock: Dimensions: Length available for full width	Lock: Dimensions: Lift	Lock: Pool elevation above mean sea level: Lower	Lock: Pool elevation above mean sea level: Upper	Character of foundation	Percentage of completion	Year opened to navigation	Estimated or actual cost of each lock and dam
			Feet	*Feet*	*Feet*	*Feet*	*Feet*				
Aurora Landing	42.2	11.2 miles above Birmingham, Ky	110	600	13	302	315	Hard gravel	(1)	(1)	$2,750,000.00
White Oak Island	83.3	52.3 miles above Birmingham, Ky	110	600	13	315	328	do	(1)	(1)	2,735,000.00
Perryville	138.1	At Perryville, Tenn	110	600	15	328	343	do	(1)	(1)	2,990,000.00
Wolf Island	192.0	2.2 miles above Savannah, Tenn	110	600	10	343	353	do	(1)	(1)	2,420,000.00
Big Bend Shoals	204.6	2.3 miles above Hamburg, Tenn	110	600	14	353	367	Rock	(1)	(1)	2,620,000.00
Pickwick Landing [2] [3]	206.7	4.4 miles above Hamburg, Tenn	110	605.3	[4] 81	352	413	do	(5)		[6] 4,858,962.00
Colbert Shoals Canal	228.8	0.9 mile above Riverton, Ala	110	600	23.6	367	390.6	do	(1)	(1)	3,391,000.00
Head Colbert Shoals	234.6	5.7 miles above Riverton, Ala	110	600	13.4	390.6	404	do	(1)	(1)	2,665,000.00
Lock and dam no. 1	258.8	0.3 mile above railroad bridge at Florence, Ala.	60	298.5	12.1	404	416.1	Limestone (Lauderdale chert)	100	1926	[7] 989,215.25
Wilson Dam (Dam no. 2)	259.4	2.9 miles above Florence, Ala	(60 / 60	297.5) / 300	[8] 89	416.1	505.1	do	100	1927	[7] 46,613,947.62
General Joe Wheeler Dam (dam no. 3) [9] [10]	274.9	18.4 miles above Florence, Ala	60	360.5	49.9	505.1	555	Rock	(11)	1934	[12] 1,651,711.66
Lock B	288.1	19.4 miles below Decatur, Ala	110	600	10	520	530	do	(1)	(1)	1,468,000.00
Milton Bluff	297.7	16.8 miles below Decatur, Ala	110	600	11	530	541	do	(1)	(1)	3,195,000.00
Indian Creek Bar	321.2	16.7 miles above Decatur, Ala	110	600	7	541	548	do	(1)	(1)	2,200,000.00
Guntersville [9] [13]	349.0	9.1 miles below Guntersville, Ala	60	360	39	555	594	do	(14)		
Beards Reef	355.8	2.3 miles below Guntersville, Ala	110	600	16	548	564	do	(1)	(1)	2,800,000.00

[1] Proposed dam, no work performed; estimated cost.
[2] Lock and dam under construction by Tennessee Valley Authority.
[3] Will submerge existing Riverton Lock and Colbert Shoals Canal and eliminate Colbert Shoals Canal and Head Colbert Shoals low-dam projects.
[4] Above low water.
[5] Lock 80 percent completed; dam 10 percent completed.
[6] Estimated cost of lock only.
[7] Actual cost of lock and dam.
[8] Flight of 2 locks, authorized under sec. 124, National Defense Act of June 3, 1916 (H. Doc. No. 1262, 64th Cong., 1st sess.).
[9] Dam under construction by Tennessee Valley Authority.
[10] Will submerge existing locks nos. 1 and 2 of Muscle Shoals Canal, locks A and B of Elk River Shoals Canal, and eliminate lock B, Milton Bluff and Indian Creek Bar low-dam projects.
[11] Lock opened to navigation Nov. 27, 1934, 95 percent completed; dam 92 percent completed.
[12] Actual cost of lock only.
[13] Will submerge existing Widows Bar lock and dam and eliminate Beards Reef, Mink Creek, and Bellefonte low-dam projects.
[14] Lock 12 percent completed; dam 10 percent completed.

Name of project	Location: Miles above mouth	Location: Distance from nearest town, or mouth of navigable tributary	Lock: Dimensions: Width of chamber	Lock: Dimensions: Length available for full width	Lock: Dimensions: Lift	Lock: Pool elevation above mean sea level: Lower	Lock: Pool elevation above mean sea level: Upper	Character of foundation	Percentage of completion	Year opened to navigation	Estimated or actual cost of each lock and dam
			Feet	*Feet*	*Feet*	*Feet*	*Feet*				
Mink Creek	374.2	16.1 miles above Guntersville, Ala	110	600	11	564	575	Rock	(1)	(1)	2,415,000.00
Bellefonte	388.6	32.5 miles above Guntersville, Ala	110	600	8	575	583	do	(1)	(1)	2,200,000.00
Widows Bar lock and dam	407.6	56.5 miles above Chattanooga, Tenn	110	600	[15] 9.6	[15] 583	[15] 592.6	do	[16]	[16]	[16] 1,565,000.00
Hales Bar lock and dam	431.2	22.6 miles below Chattanooga, Tenn	60	265	36.6	592.6	[15] 629.2	do	100	1913	[17] 256,398.87
Sherman Hill	468.7	4.6 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	11.8	629.2	641	do	(1)	(1)	2,300,000.00
Chickamauga [9] [18]	471.0	6.9 miles above Market Street Bridge, Chattanooga, Tenn.	60	360	50	635	685	do	(19)		
United States Quarry	486.4	22.3 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	12	641	653	do	(1)	(1)	2,300,000.00
Sale Creek	496.0	30.9 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	10	653	663	do	(1)	(1)	2,130,000.00
Kelly Shoals	516.8	46.7 miles above Market Street Bridge, Chattanooga, Tenn.	110	600	10	663	673	do	(1)	(1)	2,130,000.00
Watts Bar	529.9	37.9 miles below Kingston, Tenn	110	600	10	673	683	do	(1)	(1)	2,130,000.00
White Creek Island	543.9	23.9 miles below Kingston, Tenn	110	600	10	683	693	do	(1)	(1)	2,130,000.00
Half Moon Island	548.6	19.2 miles below Kingston, Tenn	110	600	10	693	703	do	(1)	(1)	2,070,000.00
Caney Creek Island	563.8	6.0 miles below Kingston, Tenn	110	600	10	703	713	do	(1)	(1)	2,070,000.00
Seven Island Shoals	575.1	7.3 miles above Kingston, Tenn	110	600	10	713	723	do	(1)	(1)	2,070,000.00
Sweetwater Island	584.3	7.2 miles below Loudon, Tenn	110	600	10	723	733	do	(1)	(1)	2,070,000.00
Rock Quarry Bar	598.0	3.5 miles above Loudon, Tenn	110	600	10	733	743	do	(1)	(1)	2,070,000.00
Sister Island Shoals	601.6	13.1 miles above Loudon, Tenn	110	600	10	743	753	do	(1)	(1)	2,070,000.00
Coulter Shoals	608.6	17.1 miles above Loudon, Tenn	110	600	10	753	763	do	(1)	(1)	2,070,000.00
Rogers Island	616.6	31.1 miles below Knoxville, Tenn	110	600	10	763	773	do	(1)	(1)	2,040,000.00
Georges Branch	626.6	17.1 miles below Knoxville, Tenn	110	600	10	773	783	do	(1)	(1)	2,040,000.00
Little River Shoals	636.0	12.7 miles below Knoxville, Tenn	110	600	10	783	793	do	(1)	(1)	1,980,000.00
Williams Island	638.4	9.3 miles below Knoxville, Tenn	110	600	10	793	803	do	(1)	(1)	1,980,000.00

[1] Proposed dam, no work performed; estimated cost.
[9] Lock and dam under construction by Tennessee Valley Authority.
[15] Existing dam to be reconstructed to provide a 9-foot navigable depth and size of lock increased. Estimated cost is shown for reconstruction.
[16] Normal elevation of dam (626.1) is at present increased 3 feet by flash boards.
[17] Actual cost to United States of existing lock; cost of existing lock and dam to power company was about $6,606,700.
[18] Will eliminate United States Quarry, Sale Creek, and Kelly Shoals low-dam projects.
[19] Lock 10 percent completed; dam 2 percent completed.

2156

(Here follows one photolithograph, side folio 2156)

[fol. 2157] COMPLAINANTS' EXHIBIT No. 107

Annual Report of the Chief of Engineers, United States Army, 1936 (Part 1)

(Original Exhibit)

[fol. 2158] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 108 FOR IDENTIFICATION, BEING HEARING BEFORE SUB-COMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS, 73RD CONGRESS, 1ST SESSION (Excluded)

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The Chairman: * * * Out of this $3,300,000,000, $50,000,000 is allocated, to remain available until expended, for the Tennessee Valley.

Dr. Morgan is here on this item, and we would like to hear from him on it. Doctor, please explain how the money is to be expended, and give us a breakdown of it, if possible.

Construction of Cove Creek Dam in Tennessee Valley

Dr. Morgan: The largest single item in this estimate is that for the construction of the Cove Creek Dam in the Tennessee Valley, above Muscle Shoals.

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Mr. Collins: I do not understand just exactly what kind of dam you are going to build. Are you going to build the same type of dam and a dam of the same height and length that you would build if you expected to utilize all of the power that could be generated there?

Dr. Morgan: Yes, sir; almost absolutely the same, so far as I can see now. This dam will be 225 feet high. It will be of the same type as though used entirely for power. It will be used partly for flood control. There will be gates in it to regulate its use for flood control. When finally the valley is fully developed there may be 50 dams in the valley 25 years from now, and then there will be a less amount of storage required for flood control at this particular dam.

Mr. Collins: You will build the same type of dam that

you would build if there was a scarcity of power, and you were building it for the development of further power. In other words, you will build that kind of dam.

Dr. Morgan: Yes, sir.

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Mr. Oliver: I think it is important that a part of the fund be definitely understood as being allocated for building a transmission line from Muscle Shoals to Cove Creek.

Dr. Morgan: Yes, sir.

Mr. Oliver: Since, as I understand it, that is a definite and basic part of the project.

Dr. Morgan: Yes, sir; if that transmission line is necessary we must either build it or buy it. That is $6,000,000.

[fol. 2159] Page 29

Mr. Arnold: Referring to the transmission line from Muscle Shoals to Cove Creek, the cost of purchasing the power required there would be about equal to the interest on the investment required to build the new line, as I understand it. What do you say about that?

Dr. Morgan: I do not know. I cannot tell you. It would depend upon what by-product there would be from building the transmission line. If it was simply a question of taking power from Muscle Shoals to Cove Creek to build the Cove Creek Dam, I would say, do not do it; but if we are to go into a territory that we will serve, that would be another situation.

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Dr. Morgan: There another thing. To build power plants but no transmission lines would not do us any good, because Cove Creek will develop 100,000 horsepower. Now, horsepower is no good unless it can be disposed of. It is written all through the bill that the purpose of the bill is to distribute power to the small user. And what is the use of building a dam if you do not have any place to sell that power?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 108 FOR IDENTIFICATION (Excluded)

Mr. Bolton: Of course, the dam is partly valuable for navigation purposes.

Dr. Morgan: Yes; but so far as power is involved—that is what I am talking about. You see, after the dam is built—it is not only the building of a dam that requires power; if it were that, we would purchase power, even if it was at high cost. If you are going to have power, you have to have some way of getting that power where it is going to be used.

Also the entire portion of Complainants' Exhibit No. 108 for identification relating to the Tennessee Valley Authority appearing at pages 23 to 36, inclusive, thereof.

[fol. 2160] COMPLAINANTS' EXHIBIT NO. 108

Hearing Before the Subcommittee of House Committee on Appropriations on the Fourth Deficiency Appropriation Bill for 1933, 73rd Congress, 1st Session.

(Original Exhibit)

[fol. 2161] EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION, BEING EXTRACTS FROM HEARINGS BEFORE THE SUBCOMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS, 73RD CONGRESS, 2ND SESSION (Excluded)

Statement of Dr. Arthur E. Morgan, Chairman

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The Chairman: We have an estimate before us for not to exceed $48,000,000 for the Tennessee Valley Authority, which is supposed to come out of the emergency appropriation. We would like to know why that is necessary.

Allocations under or Original Appropriation of $50,000,000

Dr. Morgan: When I appeared before the committee a year ago there was before you an item of $50,000,000 for the Tennessee Valley Authority, and I said at that time

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

it would take about 2 years for the expenditure of those funds.

That $50,000,000 falls chiefly in these items: For the construction of the Norris Dam, $34,000,000; for the construction of a transmission line from the Wilson Dam to the Norris Dam, $6,000,000; for the acquirement of electric power properties, which I do not think I discussed before, but which has been carried through since then, amounting to $3,000,000.

The fertilizer program is not costing us as much as we anticipated. Our estimate for the past year and the year to come is 4 or 5 million, and that leaves 2 or 3 million dollars, for all of the other purposes of the Authority, and those are distributed over a considerable range.

. . . . . .

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Mr. Arnold: I would like to have you develop that thought further, as to why you do not go along and finance yourselves.

Dr. Morgan: There are a number of reasons why the Tennessee Valley Authority has not considered issuing bonds. One reason is as to the adding to the financial obligations of the Government. We would want any bond issue to be a part of the fiscal policy of the Government, as to how many bonds should be sold at any one time.

Another thing is this. For a number of years to come the resources of the Tennessee Valley Authority in its power program ought to be used, I think, in extending that program, in the extension of rural lines, and the building up of a system.

It will be some time before that program ought to be returning its cost, I think. That is to say, there are just two ways of doing it.

One is to go ahead and build a dam with bonds and to use the income to pay interest and provide a sinking fund. [fol. 2162] and then to call for further appropriations for extensions. The other is to build that dam out of appropriations and then have the income for extensions.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

It is six of one and half a dozen of the other, practically.

That is to say, for instance, we have a certain project to develop there. Suppose we should consume that bond-issuing capacity in building a dam now, then the further development would have to come out of appropriations.

Mr. Collins: Your outside limit is $50,000,000?

Dr. Morgan: Yes; our outside limit is $50,000,000.

Mr. Collins: You could not begin to do the work contemplated with that amount.

Dr. Morgan: Another thing we have in mind is that this appropriation will carry some of these dams only partly to completion. We might find ourselves very much embarras-ed with one or two dams partly built and nothing to complete them with. We would like to have a backlog to enable us to round out a program of completing one or two partially finished dams at any time we find ourselves with no other resources at hand.

If we could build the Wheeler Dam, for instance, with a bond issue, our bond-selling resources would be gone, approximately.

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Mr. Arnold: Do I understand your present intention is to come to Congress and ask for a sum total of $130,000,000 as the years go by.

Dr. Morgan: As the years go by that is the intention.

Mr. Arnold: To build the dams, and the proceeds from the industry there will be used entirely for outside development; is that right?

Dr. Morgan: What do you mean by "outside?"

Mr. Arnold: Well, the extension of lines and the service to the municipalities in that community.

Dr. Morgan: Or possibly the completion of some of the dams.

We have this program we are presenting. Those dams will have to be connected by transmission lines. What we are trying to work out is an integrated program for the development of the Tennessee River.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

Power Which Can Be Developed at Muscle Shoals

I may say this in explanation. The Tennessee River has great power possibilities. Whether or not that development is economical depends upon whether it is worked out as a unit. Take, for instance, the Muscle Shoals project. Taken as a single unit the Muscle Shoals project is not [fol. 2163] profitable.

During the last summer, for instance, the power at Muscle Shoals ran down to 25,000 kilowatts. There is almost no storage above it. It can only use the water as the river runs.

In a wet winter the flow is enough to produce power up to 600,000 kilowatts. We have a variation in capacity from 25,000 kilowatts to 600,000 kilowatts. Taken alone, that is not a profitable development.

When we build the Norris Dam we can use the storage at the Norris Dam to fill in the low periods in the flow at Muscle Shoals, and we can have a minimum supply of power of from 150,000 to 200,000 kilowatts, instead of 25,000. That combination of dams is what makes the development profitable.

If we can develop this power in an integrated way in a number of units, the cost per unit of electric power will be less than half of what it is with one of these operated by itself.

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Mr. Olver: Let the doctor tell us what he has spent first.

Dr. Morgan: On the power program we have contracted to acquire power facilities from the Commonwealth & Southern Co. amounting to $2,900,000. In rural electrification the amount expended is $400,000.

In the Norris-Wheeler-Wilson transmission line, from the Norris Dam to the Wheeler Dam, our expenditures, up to the 1st of July, amount to $876,000.

Then there are other electrical extensions amounting to $274,000, making a total for the power program of $4,478,000.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

On the fertilizer program, the chief item is the construction of our fertilizer plant, using part of plant No. 2, the amount for which is $658,000. The total for the fertilizer items is $921,000.

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Mr. Olver: What other items are included in the $50,000,000, which you are drawing on now?

Dr. Morgan: The item of $34,000,000 for the Norris Dam, $9,000,000 for power, about $4,000,000 for fertilizer; and that leaves about $3,000,000 for all the rest of the activities of the Authority, which are a good many.

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Mr. Olver: And all of that is very essential to the operation of your basic plans, we might say?

[fol. 2164] Dr. Morgan: For those large projects coming through to completion all of that expenditure is essential so that it will not be a complete fiasco.

All of that is included in these few items, $34,000,000 for construction: $9,000,000 for power: that is, presuming we do not do anything else in power. We have an expenditure of $5,000,000 for power purchases under negotiation now, that we may make in the next month, but that cannot be included in the $50,000,000. Then we have $4,000,000 for fertilizer and $3,000,000 for all the other purposes I have described.

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Value and Necessity for Building Four Dams

Mr. Thurston: Do you think it is good business to start in to build four dams when you have not been able to sell all of the power you generate in one or two of them?

Dr. Morgan: The question of the power you can sell will depend to a considerable degree upon the cost of the power. If we can get a unified system there we will generate our power at about half the cost of present power at Muscle Shoals, with the balance of navigation.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

Mr. Thurston: I can understand that with respect to the first dams, but not in the case of the last two dams.

Dr. Morgan: The same thing applies to them. Suppose we build what is called the "Pickwick Dam" on the Tennessee River and the Aurora Dam. Each one will be three times as valuable with the Norris Dam as without it. Operating as a unit that is profitable, but the Norris Dam alone is not profitable. Muscle Shoals alone is not profitable, but taking those together it is a profitable enterprise.

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Mr. Bolton: Will all this work be done with due regard to navigation?

Dr. Morgan: As to these dams, the Aurora Dam, on the Tennessee River, which is one of those that we plan to begin, the Government has already committed itself by legislation to the navigation of the Tennessee River, and two-thirds of the cost of that Dam would take the place of a series of small navigation dams. The Government is committed to a series of small navigation dams, with no power possibilities in connection with them. By adding about 50 percent more, we can build one high dam, instead of several small ones, and secure power as well as navigation facilities.

[fol. 2165] Mr. Taber: There is no navigation project in connection with the Cove Creek Dam, is there?

Dr. Morgan: No.

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Mr. Ayres: Dr. Morgan, how many dams are intended to be constructed? Aside from the Wheeler Dam and Norris Dam, what dams does the plan contemplate?

Dr. Morgan: The plan, so far as we have made any estimate of any kind, contemplates four other dams.

Mr. Ayres: How many does that make, all told?

Dr. Morgan: Including the Wilson Dam at Muscle Shoals, the Wheeler Dam, and the Norris Dam, there would be seven.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

Mr. Ayres: How many have you under construction at this time?

Dr. Morgan: Two.

Mr. Ayres: Those are the Wheeler and Norris Dams?

Dr. Morgan: Yes, sir.

. . . . . .

Page 152-3

Mr. Bacon: Those six new dams you contemplate will cost how much?

Mr. Oliver: There are four new dams.

Dr. Morgan: Six dams include the Norris Dam and the Wheeler Dam.

Mr. Bacon: Yes; including the Norris Dam.

Dr. Morgan: Approximately $200,000,000 altogether.

Mr. Bacon: In addition to that, you are making an appraisal of the properties of the Wilson Dam available for use.

Dr. Morgan: Yes.

Mr. Bacon: That will amount to what?

Dr. Morgan: I hate to guess.

Mr. Bacon: $50,000,000?

Dr. Morgan: No; they are not worth that.

[fol. 2166] Mr. Bacon: $25,000,000?

Dr. Morgan: I would say $20,000,000 at a guess.

Mr. Bacon: Then, the cost of the total installation will be $220,000,000.

Dr. Morgan: Yes.

Primary and Secondary Power to be Developed with Seven Dams

Mr. Bacon: How much power do you intend to develop with those seven dams? What will be the total quantity, or the possible output of power?

Dr. Morgan: There we get into the distinction between primary and secondary power. Of primary power, I think we might have three-quarters of a million to a million kilowatts. We are also looking forward to the effort to make the secondary power more valuable.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

Mr. Bacon: You say you would have three-quarters of a million of primary power. How much secondary power would you have?

Dr. Morgan: Possibly a million of secondary power.

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Dr. Morgan: Our estimate for the coming year is that we will have income of $1,250,000 for power, but that we will use about $375,000 for operation and approximately a half million for the rehabilitation of the plants and extensions, and we will have about $500,000 surplus over operations.

Mr. Arnold: What becomes of that money?

Dr. Morgan: That will be used for extensions of lines.

Mr. Arnold: It goes into the Treasury, and then you pay it out for extensions and development work?

Dr. Morgan: Yes.

Possibility of Taking Over Private Companies on Completion of Project

Mr. Bacon: On the question of the market for power, do you intend to take power into the big cities, like Birmingham and the other industrial centers of that region?

Dr. Morgan: In purchasing from the Commonwealth & Southern Co., we made an agreement with them that we would not invade their territory for the present, until the Norris Dam is completed. After that, we hope we can make some arrangement for a division of territory.

[fol. 2167] Mr. Thurston: Will you build dams first, or will you make the division before you build the dams?

Dr. Morgan: We are building the dams.

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Mr. Bacon: When you eventually develop three-quarters of a million kilowatts, it would almost seem logical to take over whatever companies are operating there. Will not that project be sufficient for the entire section?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

Dr. Morgan: It would seem to me to be reasonable to take over certain ones. I do not think the project will be sufficient for the entire section.

Mr. Bacon: That is what I want.

Dr. Morgan: In our opinion, if we can carry through the program we have, we may cause a temporary disadvantage to the immediate power interests around there—to the companies immediately surrounding us. We are trying to make arrangements with them to purchase their utilities. This project is an effort to set up a governmental development of power, and, if that is adopted, it seems to me a reasonable set-up that it should not be hamstrung and so limited that it is bound to fail.

Mr. Bacon: That is the reason I was asking about costs for power development.

Dr. Morgan: We are trying to set up a unit that will be comparable to a well-managed private unit. It requires an adequate area. During the years Muscle Shoals was under dispute, the private companies surrounded Muscle Shoals with distribution lines; they sterilized it so it would be useless.

Mr. Bacon: You are taking over the distribution lines?

Dr. Morgan: We are trying to take them over. We were in negotiation with the Commonwealth & Southern, and we have come to an agreement; as the other plants come into operation, we ought to take over more. It is my opinion, in the course of years, we may have a preliminary period when we are in the red. I hope we can help to establish a policy for the power industry, and I believe we are going to get power down to a low rate and that the use of it is going to so greatly expand that the utilities will be on a sound basis, will be assured a fair income, but where there is not such an acute controversy as to whether the income is excessive.

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Pages 159-60

The Chairman: Do you contemplate buying any hillsides for reforestation that will not be under water?

Dr. Morgan: Yes.

The Chairman: How much?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

[fol. 2168] Dr. Morgan: We have an item for something like 60,000 acres. To indicate the need of it, over in North Carolina there are reservoirs full of mud. We have to protect against that contingency, and we are picking out those areas where the hillsides are washing worst.

The Chairman: Are you buying hillsides not under water for the purpose of protecting reservoirs from filling up with mud or for the purpose of reforestation?

Mr. Morgan: The purchase will serve both purposes.

The Chairman: Are you only buying those hillsides in order to keep the reservoirs from filling up with sediment?

Dr. Morgan: We will buy less than 10 percent of what we would like to buy for that purpose.

The Chairman: You will buy none of the hillsides for reforestation alone?

Dr. Morgan: No; not for reforestation alone.

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Pages 162-3

Dr. Morgan: On the next page you will find other expenses in connection with the power program.

The Chairman: What do you mean by the Commonwealth & Southern contract?

Dr. Morgan: As I said this morning, if this project is to work at all it must have some area to work in. We must in some way acquire an area to work in, either by setting up competing facilities to the present facilities, or by purchasing the facilities of present utilities.

The Chairman: That is, purchase their facilities?

Dr. Morgan: We have purchased those already.

The Chairman: This corporation has authority, has it, to enter into a contract or agreement for the purchase of certain lines in certain territory, without any supervision or approval from any higher authority?

Dr. Morgan: As a matter of fact, we have had the approval of the President in each step.

The Chairman: I mean in regard to the price you give for them.

Dr. Morgan: We have asked the approval of the President in each significant step.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

The Chairman: You have been charged with giving too much for some of the lines. In fact, you have been charged with giving more for some of the lines than you could construct brand-new lines for. You knew that, did you not?

[fol. 2169] Dr. Morgan: I was not aware of that.

Mr. Bacon: In purchasing these transmission lines, you have come to an agreement with the companies, but it is really an agreement under duress, is it not, because if they did not sell to you, you would duplicate their lines?

Dr. Morgan: Yes.

Mr. Bacon: So they were compelled to sell?

Dr. Morgan: Yes—they were not obliged to; they could take the other course.

Mr. Bacon: I understand.

Dr. Morgan: Here we have a project as a whole. This project is for a yardstick for power, taking the set-up here. If there is no place to sell that power it is not a project, but only an idea we have to see this as a whole, or else we cannot achieve it at all.

Mr. Bacon: I understand the necessity for taking over their transmission lines, but they were forced to sell to you because if they did not sell to you you would put power lines in and put them out of business.

Dr. Morgan: We are not going to sell power unless we sell it somewhere.

Mr. Bacon: Naturally, they will make the best deal with you that they can, of course.

Dr. Morgan: I hope they will deal with us. We are carrying on some negotiations where the course is not so smooth.

Mr. Bacon: If you hold a man up with a pistol, if he can get off with half of his possessions, he is going to do it.

Mr. Oliver: It was contemplated at the time the appropriation was made last year, and the hearings so disclose, that that was what the authority intended doing namely, by free and open negotiation endeavor to purchase existing distribution lines, and if they could not be purchased at a fair price, then the authority would consider building lines of its own. That was all gone into in the hearings last year.

Mr. Bacon: I appreciate that.

Dr. Morgan: One utility company, I understand, suggested

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

that we buy their entire property, and we could not do it because we did not have the money.

Within certain limits, if this is going to grow we must have money with which to purchase properties, or else compete.

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[fol. 2170] Pages 165-6

The Chairman: Let us get back to the bill. You have estimated, as I understand it, that $130,000,000 will complete the seven dams and carry out the other contemplated improvements in connection therewith, making a total of $230,000,000. Now, to carry on other improvements connected therewith, that is your estimate?

Dr. Morgan: No; because that would mean taking over or acquiring a very considerable distributing system.

The Chairman: I understood that was included in that.

Dr. Morgan: No.

The Chairman: Then what would it take to complete the seven dams as you now plan the program, and also your distributing system, and anything else connected with the efficient operation of the entire enterprise, as far as those seven dams are concerned?

Dr. Morgan: I cannot tell you here.

The Chairman: Is there no way for us to know what we are going into and how much will be involved?

Dr. Morgan: Let me tell you why I cannot tell you.

We have a contract with the city of Knoxville to furnish power to the city of Knoxville. Suppose the city of Knoxville would acquire its own distributing system and pay for it from time to time itself. Then our money does not go into that at all.

Suppose, on the other hand, the city is not going to organize and operate its own distributing system, just as the power company does now. There is a difference of $5,000,000 between the two. We do not know which road we can take.

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EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

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The Chairman: What I am trying to get at is an estimate of the total cost of putting in this unit of seven dams, and carrying out your program for the system so far as those seven dams are concerned, putting them in shape for complete operation. I want to know approximately what it will cost to do that.

Dr. Morgan: For the six dams, not counting the Wilson Dam already built, the cost will be about $200,000,000.

The Chairman: That is just for the dams?

Dr. Morgan: Just for the dams and the power plants. Of that, about one-third, roughly, would be a proper part for navigation and flood control.

Then, as to the transmission and distribution system, if we should have to acquire the distribution systems—and we will not have to acquire them all; we know that, but we do not know what part we would have to acquire—there might be another hundred million dollars to be spent in the course of years to build distribution systems and transmission systems so that this will be an integrated and whole unit.

[fol. 2171] The Chairman: And what else?

Dr. Morgan: So far as power development is concerned, that is the story.

The Chairman: As to power, sale, and distribution, that is the story—$300,000,000?

Dr. Morgan: Yes. I do not think we will have to acquire all of that, or buy it. The cities would probably acquire their own plants; but if they do not we would have to come to the rescue.

* * * * * * *

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Dr. Morgan: We have made no plans for roads, except as necessary in the construction of dams. The cost of the dams would be, I should say, $200,000,000. That will build the six dams; and unless the localities can acquire facilities that are necessary, another hundred million might be necessary to set this up with plant and facilities comparable to those of our private utilities, and that is the end of expense for that program.

* * * * * * *

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

Pages 170-1

The Chairman: I notice you have a tentative breakdown here of the $50,000,000 you have already had and of the $48,000,000 you are requesting now.

Dr. Morgan: Yes, sir.

The Chairman: This statement shows about the way you expect the expenses will run this year.

Dr. Morgan: During the coming year, yes, sir.

The Chairman: The first page consists of what you might call the project lump sum, and that project lump sum is further broken down into several projects.

Dr. Morgan: Yes, sir.

The Chairman: You may put that in the record of your testimony on this $48,000,000, because it is a pretty intelligent showing as to that.

(The statement referred to is as follows:)

[fol. 2172]

Tennessee Valley Authority—Summary of major programs, fiscal years 1934 and 1935

Programs	Fiscal year 1934	Fiscal year 1935
I. Dam and Power House Construction Program		
Major construction work on Norris and Wheeler Dams, including installation of generating equipment; purchase and clearing of land for the reservoirs; railway, highway, and cemetery relocation. Also preliminary work on the construction of several additional dams needed in the control and utilization of water resources of the Tennessee Valley	$16,310,606	$44,501,167
II. Power Program		
To promote the increased use of electricity at lower rates, including construction of transmission lines; purchase of power systems in certain counties of Alabama, Tennessee, and Mississippi; construction of rural electrification lines in those counties; further extension of present system; and research and demonstrations in the electric appliance field	6,678,974	18,570,783
III. Fertilizer Program		
To develop and demonstrate new processes for producing fertilizer at low prices, including design and construction of blast and electric furnaces; use of existing plant at Muscle Shoals; development of new methods of marketing and the supervision of practical demonstrations of farm use	1,964,080	3,187,073

Excerpts from Complainants' Exhibit No. 109 for Identification (Excluded)

Tennessee Valley Authority—Summary of major programs, fiscal years 1934 and 1935—Continued

Programs	Fiscal year 1934	Fiscal year 1935
IV. Plans and Demonstrations for the Development of the Tennessee Valley		
Surveys of water resources as a basis for unified control of the Tennessee River and tributaries; soil erosion control; reforestation; the further use of mineral resources; the promotion and coordination of industry and agriculture; surveys and plans for the use of land and the physical development of the Valley; cooperation with local, State and Federal agencies	$1,073,786	$5,229,488
[fol. 2173]		
V. Supervision and Coordination		
Undistributed expense of board of directors, coordination office, legal financial, and employment services	250,000	500,000
Total estimated cost	26,277,446	71,988,513
Less appropriation OX645	26,277,446	23,722,554
Additional amount required		48,265,959

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The Chairman: You have a little organization down there in which you and another Mr. Morgan are on the board of directors.

Dr. Morgan: Do you mean the Electric Home and Farm Authority?

The Chairman: Yes; the Electric Home and Farm Authority. Does any of this money go for that?

Dr. Morgan: Not unless it would be a few thousand dollars for lending them an accountant, or something of that sort. I suppose it would be not more than $10,000 at the outside. The TVA may use the Electric Home and Farm Authority as an agent in building up a market for its power.

[fol. 2174]

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Mr. Bolton: I mean the development of the waterway; are you developing it to conform to the other inland developments? Will you have some special proposition, or is it the same general plan?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 109 FOR IDENTIFICATION (Excluded)

Dr. Morgan: We are following the Army plans; they are approving the plans as we go along.

Mr. Bacon: You stated a while ago that approximately one-third of the cost should be allocated to flood control and navigation.

Dr. Morgan: Yes, sir.

. . . . . .

Dr. Morgan: With cheap power, we hope to develop navigation. It happens that in Ohio we have beds of salt. In the Tennessee region we have chemicals.

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Dr. Morgan: In the stretch of river above the Aurora Dam, the navigation dams that have been authorized by Congress would cost two-thirds as much as the power dam that would displace them.

Page 184

Mr. Bolton: Do you know how much tonnage is expected on the river?

Dr. Morgan: That will be a matter of growth.

Mr. Bolton: There is no estimate as to the potential tonnage to be developed?

Dr. Morgan: I have none.

Page 185

Cost of Aurora Dam

Mr. Taber: The Aurora Dam; what is the cost of that?

Dr. Morgan: That is 42 millions.

Mr. Taber: And how many acre-feet there?

Dr. Morgan: That is a run of the river plan; that is a down the river plat. It uses the water out as it comes from above, and has very little storage.

Mr. Taber: That is not all storage; it is an operating proposition.

Dr. Morgan: Yes.

[fol. 2175] Mr. Taber: That is, you can get enough revenue out of them so that in 25 years after you begin operations you can pay for them; is that the idea?

Dr. Morgan: I personally believe that we should get enough revenue to pay for them entirely, after a preliminary period of getting the project under way.

Mr. Taber: That means something like $25,000,000 a year, a little more or less, including the interest and all other charges.

Dr. Morgan: I have not calculated the total income that will be necessary.

Mr. Taber: And what will be your maintenance?

Dr. Morgan: The maintenance would be—well, at Muscle Shoals, for instance, it is about $250,000 a year.

Mr. Taber: It has always run more than that ever since we have had it. It will run nearer $500,000, will it not, when you get to it?

Dr. Morgan: They tell me it will be $250,000.

Mr. Taber: That is what it has been, but you say it has run down, which means you will probably have to pay a little bit more than you have been paying.

Dr. Morgan: Say $300,000.

Mr. Taber: It will run nearer $500,000, will it not?

Dr. Morgan: No.

Mr. Taber: How much will the other plants run?

Dr. Morgan: About the same.

Mr. Taber: Seven of them will run about $300,000 or more?

Dr. Morgan: Yes; say $2,000,000 a year.

Mr. Taber: Do you think that will do it?

Dr. Morgan: I think so. That will not run the locks for navigation, but the Army has those in charge.

Mr. Taber: Then if you are going to amortize it in 25 years, you will have about $12,000,000 a year in amortization.

Dr. Morgan: Yes; about that.

Mr. Bolton: That is for the interest charge alone?

Mr. Taber: No; they say it is $10,000,000 for the interest, at 3 per cent. That would be $25,000,000 a year.

Dr. Morgan: You do not have your full capital charge during all of the whole time. If you spread that out, you will have that much amortization, less capital.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

Total Primary Horsepower

(See p. 186)

Mr. Taber: You will have 750,000 primary horsepower?

Dr. Morgan: From 750,000 to a million, depending on what you call primary.

Mr. Taber: Say it is a million. That means getting $25 per kilowatt per year.

Total Cost Charged to Power

Dr. Morgan: You have charged the whole thing to power, have you not, and none of it to navigation?

[fol. 2176] Mr. Taber: How much height is there in that?

Dr. Morgan: Either 40 or 50 feet. That is undetermined.

Mr. Taber: Depending on the height of low water?

Dr. Morgan: There is the Pickwick Landing Dam above. If we make it 50, we cut off ahead of the Pickwick Landing Dam; we get more flow below.

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Market for Power to be Developed

Mr. Taber: Have you a market there now for this quantity of power, or is that a development proposition?

Dr. Morgan: That must be a development.

Mr. Taber: You have power enough now there to take care of the present demands? I mean, in that territory there is power enough to take care of the demands?

Dr. Morgan. Yes.

Pages 187-8

Size of Territory to be Served

Mr. Taber: How many square miles are there in the territory that naturally would be served by this entire project?

Dr. Morgan: The law says we shall distribute power within reasonable transmission distance. That would take in possibly 350,000 square miles.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

Distance Power Can be Transmitted Economically

The Chairman: How far can the wires carry power economically?

Dr. Morgan: It is entirely feasible within 250 miles; then 300 miles is possible, and greater distances are in the offing. It is entirely feasible within 250 miles.

Pages 192-3-4

Revenues and Cost of Operation and Maintenance

Mr. Taber: How much revenue do you expect to get out of this power?

Dr. Morgan: I said we would try to furnish you that. It is my personal opinion that in general such investments as these plants should be amortized in 25 years.

[fol. 2177] Page 193

Mr. Taber: That is, you can get enough revenue out of them so that in 25 years after you begin operations you can pay for them; is that the idea?

Dr. Morgan: I personally believe that we should get enough revenue to pay for them entirely after a preliminary period of getting the project underway.

Mr. Taber: That means something like $25,000,000 a year, a little more or less, including the interest and all other charges.

Dr. Morgan: I have not calculated the total income that will be necessary.

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Mr. Taber: It has always run more than that ever since we have had it. It will run nearer $500,000, will it not, when you get to it?

Dr. Morgan: They tell me it will be $250,000.

Mr. Taber: That is what it has been, but you say it has run down, which means you will probably have to pay a little bit more than you have been paying.

Dr. Morgan: Say $300,000.

Mr. Taber: It will run nearer $500,000, will it not?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 109 FOR IDENTIFICATION (Excluded)

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Mr. Bolton: That is for the interest charge alone?

Mr. Taber: No; they say it is $10,000,000 for the interest, at 3 per cent. That would be $25,000,000 a year.

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Total Primary Horsepower

(See p. 186)

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Dr. Morgan: From 750,000 to a million, depending on what you call primary.

Mr. Taber: Say it is a million. That means getting $25 per kilowatt per year.

Total Cost Charged to Power

Dr. Morgan: You have charged the whole thing to power, have you not, and none of it to navigation?

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Mr. Taber: That is correct.

[fol. 2178] Dr. Morgan: You cut that down to about two-thirds.

Mr. Taber: Do you think you can do that?

Dr. Morgan: Can do what?

Mr. Taber: Cut down a third for navigation?

Dr. Morgan: I think navigation and flood control should cut it one-third; we should charge two-thirds of it to power.

[fol. 2179] COMPLAINANTS' EXHIBIT No. 109

Official "Extracts from Hearings Before the Subcommittee of House Committee on Appropriations, 73rd Congress, 2nd Session"

(Original Exhibit)

[fol. 2180] COMPLAINANTS' EXHIBIT No. 110

Statement With Reference to the Relevancy, Materiality and Competency of the Minutes of the TVA Described in Paragraph 1 of the Subpoena Duces Tecum

1. Minutes of the Board of Directors containing references to Authority's actions with respect to the generation, transmission, distribution or sale of electric energy under the following dates:

June 17, 1933:

These minutes are of a meeting held the day following, or the continuation of the organization meeting of the TVA, and will show the initial plans of the Board of Directors and that, among other things, there were considered questions relating to the generation, transmission, distribution and sale of electric energy.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

June 26, 1933:

These minutes will show that the TVA Directors decided that no employee should make any statements respecting future policies or activities before such policies or activities had been brought before the Board and action taken, and that the Board directed counsel to request the Federal Power Commission not to grant further licenses in the Tennessee River Basin and authorized counsel to file appearances and take appropriate action to oppose the granting of such further licenses.

COMPLAINANTS' EXHIBIT No. 110

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII, p. 60 et. seq., XXII, p. 70) and that the defendants are proposing to proceed with the ultimate development of all the power sites in the Tennessee River Basin which, when generating facilities are installed, will ultimately produce 25,000,000 Kw-Hr. of energy annually. (XIV, pp. 44-45, XV, pp. 45-46.)

[fol. 2181] July 11, 1933:

These minutes will show that the Directors considered a proposed agreement with privately owned utilities and the entering into wholesale power contracts with the Cities of Florence, Tuscumbia and Sheffield, Alabama, using these Cities as a proving ground and entering wedge.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII p. 60 et seq., XXII p. 70) and that the defendants' program contemplates the acquisition of the entire market for electricity in the Tennessee River Basin. (XV, p. 45, et seq.)

July 30, 1933:

These minutes will show that the directors discussed policies concerning the power project and considered proposals concerning the size of the initial area in which the Authority might buy up the private power company properties to market its power and considered the possible condemnation of all power sites located by the Army Engineers in the Tennessee Basin in order that the Tennessee Valley Authority would have control of future power development in the area and considered the building of the transmission line from Wilson Dam to Cove Creek Dam.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in,

operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII, p. 60 et seq. XXII p. 70) and that the defendants' program contemplates the acquisition of the entire market for electricity in the Tennessee River Basin; (XV, p. 45, et seq.) and the ultimate development of all power sites in said Basin. (XV, p. 45 et seq.)

August 5, 1933:

These minutes will show that the Board decided that all publicity should issue through the Publicity Department and that special publicity dealing with particular phases of the work should have the approval of the Director concerned before it was released.

These minutes will tend to prove the allegations of the Bill that the defendants have been carrying on a campaign of propaganda and solicitation for the purpose of disrupting the good relationships between the complainants and their customers in order that defendants might be enabled thereby to acquire complainants' properties and seize the entire market in the area. (XVII — 24, p. 55.)

August 10, 1933:

These minutes will show that the TVA Directors separated their duties and that one of the Directors to wit, [fol. 2182] David E. Lilienthal, was placed in charge of the Power Program and projects of the Authority.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII p. 60 et seq., XXII p. 70) and that a campaign of publicity and solicitation was carried on to disrupt the relations of privately owned utilities with their customers for the purpose of enabling defendants to acquire their properties or seize the entire market for electricity in the area. (XVIII — 24.)

August 25, 1933:

These minutes will show that the Board of Directors adopted a power policy which described the initial and ulti-

mate market area to be acquired or seized by the Authority.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII p. 60, et seq. XXII p. 70) and that defendants have been and are now conducting a campaign of propaganda and solicitation for the purpose of disrupting the established business relations between complainants and their customers, destroying good will and seizing complainants' markets. (XVII (24) p. 55, et seq.)

September 13—September 14, 1933:

These minutes will show that the Board of Directors adopted rates for the sale at wholesale and retail of electric energy.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business: that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that the rates announced were for the purpose of accomplishing regulation of the privately owned utilities by competition; (XX p. 65 et seq.) that the rates had no relationship to cost of production and were designed to foster public ownership and particularly public distribution of electric power. (XV p. 48.)

September 18, 1933:

These minutes will show that the Board of Directors of TVA discussed the building of Wheeler Dam and considered that it must not ruin its power market by making available at once extraordinary large amounts of power.

[fol. 2183] These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate or secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that the dams are constructed primarily for the purpose of produc-

ing electric energy and in execution of the power program of the Authority (XVII (3) p. 50.)

September 21, 1933:

These minutes will show that the Board of TVA approved a statement of policy with respect to the construction of Wheeler Dam and determined that the Board approved the construction of Wheeler Dam only upon the condition that it be built with Public Works money and not with TVA money, and that carrying charges and construction costs should not be charged to the TVA until the demand for power justified the construction for that purpose.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

September 29, 1933:

These minutes will show that the Board of TVA considered an application by a committee from Hamilton County, Tennessee, relative to the construction of Chickamauga Dam and resolved that if such dam was built with funds other than those of TVA there would be no power operation unless and until TVA agreed or unless the operation was done directly by the TVA.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

October 13, 1933:

These minutes will show that the Board of TVA Directors considered the basis for negotiation with privately owned utilities and objected to any agreement limiting the territory in which the Authority might market electricity; considered whether or not the TVA power program would provide a "yardstick" for the power industry and con-

sidered the necessity of increasing the per customer power consumption and the marketing of electrical appliances.

[fol. 2184] These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts: (XVIII, p. 60 et seq., XXII, p. 70); that defendants propose and threaten to acquire the entire market for electricity in the area and are constructing or contemplating the construction of rural lines in the States of Mississippi, Tennessee and Alabama (XVII-19, p. 54); and that defendants propose to regulate complainants' rates by federally subsidized competition. (XX p. 65 et seq.)

October 14, 1933:

These minutes will show that the TVA Directors were ordered to proceed with the construction of Wheeler Dam by the President with TVA's own funds and that the President undertook to have Congress reimburse the corporation at the next session.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

October 16, 1933:

These minutes will show that the Board considered a memorandum entitled "Basic Provisions For Contracts Between The Authority and Municipalities For Power" by which the Authority by contract was to regulate the rates of the resale of the power by municipalities and the manner in which the city should dispose of revenues from the operation of its municipal electric system and the provisions as to accounting; that the Authority resolved to enter into contracts to supply power to Alabama towns and others located along the Tupelo transmission line as had or would construct suitable power transmission facilities at rates in

COMPLAINANTS' EXHIBIT No. 110

accordance with the wholesale rate schedule for Tupelo transmitted power.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that these defendants are inducing and inciting the residents of this area to cooperate with defendants in their scheme to develop a great federally owned and operated electric power utility [fol. 2185] (XVII-24, p. 56); that the defendants' program contemplates the acquisition of the entire market for electricity in the Tennessee River Basin (XV, p. 45, et seq.)

October 24, 1933:

These minutes will show TVA's efforts to regulate privately owned utilities by the "yardstick" principle and that it was attempting to acquire a market for electric energy; that there was an excess power capacity in the area and that TVA proposed to increase the sale of electric appliances to increase the consumption of electric energy in its market area.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that defendants have attempted to purchase or promote the purchase of retail distribution systems in the area and are attempting to coerce and compel complainants to sell their facilities to defendants (XVII-22-25); that defendants are seeking to enter into contracts with the municipalities for the sale of power. (XVII-23, p. 55.)

October 30, 1933:

These minutes will show the actions of the Board of TVA in acquiring markets by purchasing facilities from private companies and to increase per customer consumption of electricity through the sale of electric appliances.

COMPLAINANTS' EXHIBIT No. 110

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

November 9, 1933:

These minutes will show that the TVA Board was actively [fol. 2186] attempting to acquire an area within which it could market its electricity and increase the per customer consumption of electric energy through sale of electric appliances; that defendants cooperated and acted in concert with Harold L. Ickes to acquire the Knoxville distribution area as a potential market.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts, (XVIII, p. 60 et seq., XXII, p. 70); that the defendants have been and are now conspiring and confederating with Harold L. Ickes to carry on a campaign to coerce complainants to sell their distribution systems and other properties to TVA (XIX, p. 62, 63).

November 27, 1933:

These minutes will show that the Board of TVA was attempting to acquire an area for its power operations and to make an arrangement with privately owned utilities which would be comparable to the relations which might exist between two such companies as a means of cutting down its power construction budget and investment through the elimination of costly transmission lines.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

COMPLAINANTS' EXHIBIT No. 110

December 16, 1933:

These minutes will show that the Board of Directors approved a project for the construction of rural electric transmission lines in six counties in Mississippi and Alabama. That the distribution over such lines may be in charge of a cooperative association to be set up by the industrial and agricultural section of TVA.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendant is to engage in, operate and carry on a proprietary electric utility business; [fol. 2187] that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that defendants are conducting and supervising the business of transmitting and distributing electrical energy as a proprietary business, without reference to state laws respecting such business. (XXIII pp. 70-71); that defendants constructed and are contemplating the construction of rural lines in the states of Mississippi, Alabama and Tennessee. (XVII (19) p. 54.)

January 19, 1934:

These minutes will show that the Board considered establishing complete control and jurisdiction over all power sites in the Tennessee Valley, so that the power resources of the Valley could be developed in a systematic and efficient manner.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII p. 70); that defendants contemplate the ultimate development of all of the power sites in the Tennessee River Basin. (XV p. 45 et seq.)

March 17, 1934:

These minutes will show that the Board of Directors employed or contributed to the wages of George Munger who

was acting as the sales manager of Electric Home and Farm Authority, Inc.

These minutes will tend to prove the allegations of the Bill, that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII p. 60 et seq., XXII p. 70); that defendants are conducting and supervising the business of transmitting and distributing electric energy as a proprietary business without reference to state laws respecting such business. (XXIII, pp. 70-71.)

March 30, 1934:

These minutes will show that the Board of Directors approved a project for the development of the Tennessee Valley which recited, among other things, that the Authority was embarking upon a hydro-electric program which will completely change the physical structure of large sections of the valley, and will affect every part of it.

[fol. 2188] These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70)

April 13, 1934:

These minutes will show the approval by the Directors of a project entitled "Marketing of power produced by the Tennessee Valley Authority", and related to the employment of an advertising agency to lay plans for the marketing of power, assisting municipal customers to increase their consumption, and to assist in reducing the distribution cost of appliances in municipalities that distributed TVA power.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that defendants are

conducting and supervising the business of transmitting and distributing electric energy as a proprietary business without reference to state laws respecting such business. (XXIII pp. 70-71.)

May 20, 1934:

These minutes will show that the Board of TVA opposed the granting of a license for the construction of a dam at Aurora on the Tennessee River to private utility interests, for the reason, among others, that the operation of the other dams constructed by the Authority on the river would probably more than double the ultimate value of the power possibilities at Aurora.

These minutes tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60, et seq., XXII, p. 70.)

June 30, 1934:

These minutes will show that the Board of TVA determined to purchase from privately owned utilities electrical distribution properties in northern Alabama and operate the same until it became advisable to sell the distribution systems to the various cities in that territory.

These minutes will tend to prove the allegations of the bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

[fol. 2189] July 17, 1934:

These minutes will show that the Board of TVA approved David E. Lilienthal's acceptance of the President's invitation to serve on the National Power Policy Committee, whose function it will be to work out a plan to unify the power resources of the country and to develop a national policy designed to make an abundant supply of power available to the consumer at reasonable rates.

COMPLAINANTS' EXHIBIT No. 110

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); that TVA, PWA and other Federal agencies are cooperating in carrying out a national power policy (XII, p. 32); that defendants by competition are accomplishing the regulation of rates of the privately owned utilities. (XX, p. 65 et seq.)

July 27, 1934:

These minutes will show that the Board of TVA contemplated the ultimate development of the entire territory when and as its power supply was sufficiently increased; that the Board approved a contract for the purchase of power from Carolina Power & Light Company to be supplied to the City of Knoxville, Tennessee, for distribution.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII, p. 60 et seq., XXII, p. 70); that defendants are seeking to enter into contracts with municipalities for the sale of power. (XVII (23), p. 55.)

August 7, 1934:

That the minutes will show the consideration of the budget for the Authority's operations for the fiscal year ending June 30, 1935, and items entitled "Sales Promotion EHFA" and "Sales Promotion Chattanooga Merchants Display".

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 50 et seq., XXII, p. 70.)

COMPLAINANTS' EXHIBIT No. 110

[fol. 2190] September 18, 1934:

These minutes will show that a representative of the Board was conferring with representatives of the City of Memphis with regard to supplying the City with power.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

October 9, 1934:

These minutes will show that the Board definitely refused to comply with the orders of State Public Utilities Commissions with respect to the generation, transmission or sale of electric energy with said States.

These minutes will tend to prove the allegations of the bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII, p. 60 et seq., XXII, p. 70) that defendants are conducting and supervising the business of transmitting and distributing electric energy as a proprietary business without reference to State laws respecting such business. (XXIII, pp. 70-71.)

November 21, 1934:

These minutes will show the Board of Directors were opposing the development by privately owned utility interests of any of the hydro electric sites in the Tennessee River Basin.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

COMPLAINANTS' EXHIBIT No. 110

September 24, 1935:

These minutes will show that the Board of Directors authorized the construction of a transmission loop to serve eight West Tennessee towns.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility busi- [fol. 2191] ness; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts; (XVIII, p. 60 et seq., XXII, p. 70) that defendants have attempted to purchase or promote the purchase of retail distribution systems in the area and are attempting to coerce and compel complainants to sell their facilities to defendants. (XVII, (22) and (25).)

November 20, 1935:

These minutes will show that the Board of Directors approved contracts with cities purchasing TVA power and was considering the construction of the Guntersville dam.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

November 27, 1935:

These minutes will show that the Board of Directors authorized the construction of the Guntersville dam.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

January 2, 1936:

These minutes will show that the Board of Directors authorized the construction of Chickamauga dam.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage

in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

January 11, 1936:

These minutes will show the approval of the Board of Directors of contracts with customers, or steps taken to expand their electric transmission system.

These minutes will tend to prove the allegations of the [fol. 2192] Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary, and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

February 20, 1936:

These minutes will show the approval by the Board of Directors of contracts with four cities for the purchase of electric power.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

August 11, 1936:

These minutes will show the consideration by the Board of Directors of a power pooling arrangement with privately owned utilities.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

September 5, 1936:

These minutes will show the consideration by the Board of Directors of the power pooling arrangement and the negotiation or approval of contracts for the sale of power.

COMPLAINANTS' EXHIBIT No. 110

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

September 21, 1936:

These minutes will show that the Board of Directors was negotiating a contract with the City of Chattanooga.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

January 6, 1937:

These minutes will show that the Board of Directors [fol. 2193] approved a reorganization of their administrative department and considered contracts with power customers.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

March 2, 1937:

These minutes will show the approval by the Board of Directors of contracts with power customers.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

June 16, 1937:

These minutes will show approval of the Chattanooga contract and a reorganization of administrative depart-

ments to more actively carry out the power policies of the Authority.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

August 23, 1937:

These minutes will show that the Board of Directors approved a contract with industrial customers for the sale of electric energy.

These minutes will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

September 14, 1937:

These minutes will show the assignment of the TVA contract with Volunteer Portland Cement Company to the City of Knoxville.

These minutes will tend to prove the allegations of the [fol. 2194] Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

The minutes described in the subpoena by subject matter in addition to those of the foregoing dates will tend to prove the allegations of the Bill that the primary activity of defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70.)

By the brief descriptions of the documents in this statement we have described merely enough to enable the Court to identify the documents described in the subpoena. The

COMPLAINANTS' EXHIBIT No. 110

references to the Bill herein contained are not intended to be exclusive.

Trabue, Hume & Armistead, Frantz, McConnell & Seymour, Baker, Hostetler, Sidlo & Patterson.

STATE OF TENNESSEE,
County of Hamilton:

S. D. L. Jackson, Jr., being first duly sworn, says that he has read the foregoing statement: that he has either personally examined parts of the minutes hereinabove described, or in the preparation of this case has obtained information as to the substance and existence of such minutes, and believes the same are in the possession of defendants and that the descriptions thereof contained in the foregoing statement are substantially true and correct: that the meetings described were held on or about each of the dates mentioned: that said minutes contain evidence material and relevant to the issues in this cause.

S. D. L. Jackson, Jr.

Sworn to before me and subscribed in my presence this 18th day of November, 1937. W. A. Broyles, Notary Public. (Seal.)

[fol. 2195] COMPLAINANTS' EXHIBIT No. 111

Statement With Reference to the Relevancy and Competency of Documents and Papers Described in Paragraphs 3 to 16, Both Inclusive, of Subpoena Duces Tecum.

2. We understand that copies of all contracts described in paragraph 2 of the subpoena duces tecum have been furnished except in one or two instances.

3. TVA—Young & Rubicam contracts.

These contracts will show that TVA employed Young & Rubicam, Inc., as advertising agents at a fee of some $100,000.00 to assist TVA in obtaining customers for electricity generated by it by a campaign of publicity featuring "TVA

Electricity For All," to assist TVA in its efforts in increasing the present customer consumption of electric energy generated by TVA through the purchase of electric appliances, and to aid TVA power development in its territory.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business: that the other purposes of Defendants are subordinate and secondary, and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70): that the Defendants have been and are now conducting a campaign of propaganda and solicitation for the purpose of disrupting the established business relations between Complainants and their customers, destroying good will and seizing Complainants' markets. (XVII (24) p. 55, et seq.)

4. Forms of documents re: "Neighborhood Plan"

These documents, supplied and widely circularized by Defendants, are used in the solicitation of prospective customers and include an agreement on the part of such customers to consume a specified number of KWH per month and to purchase sufficient electric appliances to insure that amount of energy consumption.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business: that the other purposes of Defendants are subordinate and secondary, and are in fact non-existent or merely pretexts (XVIII, p. 60, et seq., XXII, p. 70): that these Defendants are inducing and inciting the residents of this area to cooperate with Defendants in their scheme to develop a great Federally-owned and operated electric power utility (XVII (24), p. 56): and that the Defendants are constructing rural lines or contemplating construction of rural lines in the territories of Complainants in the States of Mississippi, Tennessee and Alabama (XVII (19), p. 54). They prove a specific step in the execution of the statutory plan to establish a Federal electric utility—a step which carries a threat of unlimited expansion of such Federal utility.

COMPLAINANTS' EXHIBIT No. 111

5. Forms of bulletins or instructions from Defendants respecting policies or operations of municipal or cooperative systems.

These documents which were and are being sent or delivered by Defendants to those engaged in the operation of [fol. 2196] municipal or cooperative distribution systems that distribute electric energy purchased from TVA under contract or otherwise, will show the practice, and the degree and extent to which said practice has been and is being followed, whereby Defendants direct the means and methods of carrying on the business of such municipal and cooperative distribution systems.

These documents will tend to prove the allegations of the Bill that the primary activity of the Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary, and are in fact non-existent or merely pretexts (XVIII, p. 60, et seq., XXII, p. 70); that Defendants are conducting and supervising the business of transmitting and distributing electric energy as a proprietary business without reference to State laws respecting the rules, regulations and rates of such business. (XXIII, pp. 70-71, XV, p. 48.) This system by which TVA dictates the rates at which electricity may be resold places TVA in the business of retailing electric energy.

6. Minutes or reports of meetings held by TVA with managers of municipal or cooperative distribution systems.

These documents will show the practice, and the degree and extent to which the said practice has been and is being followed, whereby Defendants or their representatives direct the conduct of the business of municipal and cooperative distribution systems that distribute electric energy purchased from TVA.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary, and are in fact non-existent or merely pretext (XVIII, p. 60, et seq., XXII, p. 70); and that Defendants are conducting and supervising the business of transmit-

ting and distributing electric energy as a proprietary business without reference to State laws respecting the rules, regulations and rates of such business. (XXIII, pp. 70-71.)

7. Correspondence between TVA and others relating to power.

(a) Questionnaire—"Questions for Power Users".

This document, sent by Defendants to towns, cities or civic organizations within transmission distance of Wilson, Wheeler or Norris Dams in the summer of 1933, contained questions concerning the source of supply and possible consumption of electric energy in the several localities.

This document will tend to prove the allegations of the Bill that the primary activity of Defendants was to engage in, operate and carry on a proprietary electric utility business that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); that Defendants have attempted to purchase or promote the purchase of retail distribution systems in the area and are attempting to coerce and compel Complainants to sell their facilities to Defendants (XVII (22) (25) pp. 55, 57); that Defendants are seeking to enter into contracts with municipalities for the sale of power (XVII (23), p. 55); and that industrial customers of some of the Complainants have been solicited to purchase TVA power. (XVII (30), p. 59.)

[fol. 2197] (b) Letter, August 7, 1933, from U. S. Senator Black to TVA.

Letter, August 24, 1933, from TVA to U. S. Senator Black.

Letter, September 8, 1933, from U. S. Senator Black to TVA.

Telegram, September 22, 1933, from U. S. Senators Black and Bankhead to TVA.

These letters will show the efforts of the United States Senators from Alabama to have the TVA proceed immediately with the construction of Wheeler Dam primarily as an unemployment relief measure. They also show, in connection with other material documents, that the Board of Directors of TVA were unwilling to proceed with the con-

struction of Wheeler Dam until such time as the market for power was sufficiently developed so that the power to be produced at Wheeler Dam when constructed would find a ready market.

These documents will tend to prove the allegations of the Bill that the primary activity of the Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70).

(c) Protest dated August 23, 1933, from TVA to Federal Power Commission.
Letter, May 21, 1934, from TVA to Federal Power Commission.

These documents will show that the TVA undertook to exclude private interests from developing any of the power sites in the Tennessee River Basin by filing protests with the Federal Power Commission objecting to the granting of a license to Southern Industries & Utilities, Inc., for the construction of a dam at or near Aurora upon the Tennessee River for the reasons that the construction and operation of such dam by private interests would interfere with the TVA power program, and that the dams the TVA was constructing would so increase the prime power possibilities at Aurora dam that its value for power would be greatly enhanced.

These documents tend to prove the allegations of the Bill that the primary activity of Defendant is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendant are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70).

(d) Letter, October 16, 1933, from Berry to TVA.
Letter, October 16-November 2, 1933, from TVA to PWA Administrator Ickes.
Telegram December 4, 1933, from Glenn to TVA.
Letter, December 7, 1933, from TVA to Glenn.
Letter, January 4, 1934, from TVA to Glenn.
Telegram, January 4, 1934, from TVA to Sheffield and Tuscumbia.

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Letter, March 6, 1934, from Glenn to TVA.

[fol. 2198] Letter, March 8, 1934, from Glenn to TVA.

Telegram, March 10, 1934, from TVA to Glenn.

Letter, March 11, 1934, from Glenn to TVA.

Letters or telegrams, March 13, 1934, from TVA to PWA or Administrator Ickes.

Letter, March 19, 1934, from TVA to Glenn.

Letter, March 22, 1934, from TVA to PWA or Ickes.

Telegram, June 19, 1934, from Farr to TVA.

Telegram, June 20, 1934, from TVA to Farr.

Telegram, June 21, 1934, from Glenn to TVA.

Telegram, June 27, 1934, from Carmichael to TVA.

Telegram, July 10, 1934, from TVA to Glenn.

Letter, October 5, 1934, from PWA to TVA.

Letter, November 17, 1934, from PWA to TVA and reply.

Letter, December 21, 1934, from PWA to TVA and reply.

Letter, August 13, 1937, from TVA to Dempster.

Letter, August 27, 1937, from TVA to Tennessee PWA Administrator.

Letter, September 4, 1937, from TVA to City Manager of Knoxville.

All letters, etc., between TVA and PWA relating to the applications of several named cities.

All letters, etc., between TVA and PWA relating to negotiations to purchase facilities to complainant companies.

All of these letters are communications between TVA and PWA, or TVA and the officials or representatives of cities that had applied for loans and grants from PWA for municipal distribution systems. They will show the efforts of TVA to obtain such loans and grants for such cities in order that such cities might purchase electric energy from TVA and in order that TVA might force the private utilities serving such cities to sell their property therein to the city or to

TVA at an arbitrary price to avoid duplication of distribution facilities of such companies.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendant is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendant are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et-seq., XXII, p. 70); that the Defendants have been and are now conspiring and confederating with Harold W. Ickes to carry on a campaign to coerce Complainants to sell their distribution systems and other property to TVA (XIX, p. 62, 63); that TVA, PWA and other Federal [fol. 2199] Agencies are cooperating in carrying out a National Power Policy (XII, p. 32); that Defendants have unlawfully conspired with PWA, its officers and agents to take unlawfully Complainants' business (XI, p. 31); and that the PWA loans and grants are among the factors which cause the TVA yardstick for measuring distribution costs to be unfair and confiscatory. (XX, (3) and (5) on p. 68.)

(e) Letter or letters, March 27, 1934, from TVA to the President or Federal Trade Commission.

In this letter Defendants requested an investigation of the Tennessee Public Service Company to be made by the Federal Trade Commission so as to assist TVA in its negotiations with that company in which TVA was seeking to compel the Tennessee Public Service Company to sell its properties in Knoxville, Tennessee, to the City of Knoxville or to TVA at a price arbitrarily fixed by Defendants in order that Defendants might engage in the business of supplying electric energy for distribution in the City of Knoxville.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); and that Defendants have purchased and attempted to purchase retail distribution systems in various cities (XVII (22), p. 54).

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(f) Letter, May 20, 1934, from Lilienthal to Ramsey.
Circular letter, September 21, 1936, from TVA.
Letter, April 7, 1937, from TVA to Wingo.
Letter, November 21, 1935, from TVA to Lenoir City.
Letter, February 21, 1936, from TVA to dealers.
Letter, July 20, 1936, from TVA to Hutchinson.
Copy of all forms of letters, etc., prepared by TVA and sent to county agents.

These letters will show some of the efforts of Defendants to promote and build up a great public interest in Defendants' program of selling electricity and stimulating the demand therefor in the area within transmission distance from the TVA dams, and thus to build up Defendants' business as a public utility.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); that Defendants are conducting a campaign of propaganda to disrupt Complainants' systems and are attempting to coerce Complainants to sell their properties (XVII (24) (25), pp. 55-57); that Defendants are constructing rural lines or contemplating construction of rural lines in the States of Mississippi, Tennessee and Alabama (XVII (19), p. 54); and that Defendants are [fol. 2200] inducing and inciting the residents of this area to cooperate with Defendants in their scheme to develop a great Federally-owned and operated electric power utility. (XVII (24), p. 56.)

(g) Letter dated on or before October 15, 1934, from TVA to Mayor Overton of Memphis.

In this letter TVA indicated its willingness to purchase the steam plant of Memphis Power & Light Company at Memphis, Tennessee, so as to use the same for stand-by purposes in the event Memphis executed a contract to purchase its electricity from TVA.

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This document tends to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); and that Defendants have attempted to promote the purchase of the retail distribution system in Memphis (XVII (22), p. 54.)

(h) Telegram from TVA, January 1-15, 1935, to the Governor of Alabama.

This telegram will show that TVA advised the Governor of Alabama of the terms and provisions of the statute which the TVA desired the Alabama Legislature to pass relieving TVA from the regulation of the State Utilities Commission or providing for the organization of cooperative associations.

This document tends to prove that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that Defendants have caused bills to forward their power program to be submitted to state legislatures and have lobbied for such bills. (XVII, 26.)

(i) Letter, June 30, 1937, from TVA to John N. Garner, President of the United States Senate.

This letter will show that TVA advised Vice President Garner that the TVA did not submit to Congress (within the time provided by Statute) the allocations of the value of Wilson Dam between power, navigation, flood control or national defense.

This action constitutes a specific instance where Defendants are violating the statute under which they claim to be acting, and the figures withheld would tend to prove the allegations of the Bill that the TVA yardstick for wholesale rates is unfair and confiscatory. (XX, p. 66, Section (1).)

(j) Letters, etc., between TVA or David Lilienthal and National Power Policy Committee.

These documents will show that Mr. Lilienthal served as a member of the National Power Policy Committee, begin-

ning in July 1934, and as such has participated in its activities and actions.

[fol. 2201] These documents tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); that TVA is one of several agencies furthering a National Power Policy of the Federal Government (XII, p. 32); and that TVA has been engaged in carrying out a power policy of its own, which is in furtherance of the National Power Policy in the TVA area (XIII, p. 34, et seq.) and has cooperated with Harold L. Ickes to accomplish a campaign to coerce and intimidate the Complainants to sell their distribution and transmission systems. (XIX, P. 62 et seq.)

(k) Letters, etc., between TVA and Rural Electrification Administration

These documents will show that Rural Electrification Administration is cooperating with the Defendants for the construction of rural lines by loaning money to cooperatives to repay TVA for lines which it builds for the purpose of distributing TVA power.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary, and are in fact non-existent or merely pretexts (XVIII, p. 60, et seq., XXII, p. 70); that Defendants are constructing rural lines or contemplating the construction of rural lines in the territory of Complainants in the States of Mississippi, Tennessee and Alabama (XVII (19), p. 54); and that TVA and REA are cooperating to accomplish the National Power Policy (XII, p. 32.)

s and 9.

With respect to these items we have been furnished within the last day or two certain maps and tabulations

should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low-cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately owned utility.

7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite regions and to develop its program in those areas before going outside.

8. The initial areas selected by the Authority may be roughly described as (a) the region immediately proximate to the route of the transmission line soon to be constructed by the Authority between Muscle Shoals and the site of Norris Dam; (b) the region in proximity to Muscle Shoals, including northern Alabama and northeastern Mississippi; and (c) the region in the proximity of Norris Dam (the new source of power to be constructed by the Authority on the Clinch River in northeast Tennessee).

At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia, and North Carolina, and [fol. 2213] that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size (such as Chattanooga and Knoxville) and, ultimately, at least one city of more than a quarter million, within transmission distance, such as Birmingham, Memphis, Atlanta, or Louisville.

While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately owned utilities in the area do not cooperate in the working out of the program.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 113 FOR IDENTIFICATION (Excluded)

Nothing in the procedure here adopted is to be construed in any sense a commitment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest require. Where special considerations exist, justifying the Authority's going outside this initial area, the Authority will receive and consider applications based on such special considerations. Among such special considerations would be unreasonably high rates for service and a failure or absence of public regulation to protect the public interest.

9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis.

10. Accounting should show detail of costs, and permit a comparison of operations with privately owned plants, to supply a "yardstick" and an incentive to both private and public managers.

11. The accounts and records of the Authority as they pertain to power will always be open to inspection by the public.

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• • • Wholesale power rates were announced in September 1933, after careful careful study of the available market and the probable costs of generating and transmitting electric power. Approved retail rates were announced at the same time after a similar careful study of the cost of distributing power.

[fol. 2214] Page 56

Requests for information were being received in large numbers even before the formal organization of the Authority on June 16, 1933. Numerous press releases were prepared to meet these urgent demands, and this service has been continued in connection with announcements by the Authority. Regular news organizations are given such ac-

with respect to such maps which have not yet been checked but which may possibly supply the information requested by these two paragraphs of the subpoena. At the present time Complainants are not urging these two paragraphs, but expect that a satisfactory stipulation will be entered into.

10. Surveys made by TVA of Complainants' Customers.

These documents will show that surveys of Complainants' customers have been conducted at the instance of TVA to ascertain the customer power consumption of these customers of Complainants in areas where the TVA lines are now constructed or may readily be constructed.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts (XVIII, p. 60 et seq., XXII, p. 70); that large industrial customers of some of the Complainants have been solicited to purchase TVA electric energy (XVII (30), p. 59); and that pursuant to the Act, Defendants have promulgated a plan unlawfully to disrupt the good relations existing between Complainants and their respective [fol. 2202] customers. (XI, p. 31.)

11. Records showing number of employees in Department of Electricity and headquarters of each.

These records will show that Defendants have a widespread organization of employees in their Department of Electricity of more than 1045 people, located in areas where Defendants now maintain lines, where Defendants propose to construct lines and in areas served by Complainants where Defendants at this time have no lines.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); and that Defendants have established offices and installed per-

sonnel throughout the area to disseminate propaganda even where TVA is not yet doing business. (XVII, 27.)

12. Records showing payments to States of Alabama and Tennessee.

These records will show the only payments that TVA makes to any State, Federal or local subdivision of government under the TVA Act. (16 U. S. C. Sec. 831-1.)

These documents will tend to prove the allegations of the Bill that Defendants are relieved of all Federal income and excise taxes and all State property, income and other taxes. (XX (4) p. 67, (2) P. 68), and that the TVA wholesale yardstick is thus unfair and confiscatory.

13. Books and records of TVA showing amounts expended in promotional and advertising expenses.

These records will show the sums Defendants have expended to advertise and promote their electricity program.

These documents will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); and that Defendants have conducted and are still conducting a studied, systematic campaign of propaganda for the purpose of disrupting the relations between Complainants and their customers. (XVII (24), p. 56.)

14. News dispatch about September 7, 1937, containing summary of generation and gross revenue for last fiscal year.

This news item contained approximate figures obtained from TVA showing 789,000,000 kilowatt hours generated and gross revenues of $1,650,000 for the fiscal year ending June 30, 1937.

This document will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage [fol. 2203] in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact, non-existent or

merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that TVA is disposing of its electric energy below cost and at rates that are non-compensatory and confiscatory and are made possible only through the subsidization of its operations. (XX, p. 65 et seq.)

15. Records showing payment to Walter E. Meyer and purchase of magazine article.

These records will show that TVA had Mr. Meyer on its payroll while the article in question was written and purchased 50,000 copies of it for widespread public distribution.

This document will tend to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); that TVA is engaged in the execution of a National Power Policy (XII, pp. 31, 32) which, among other things, is designed to promote and bring about public ownership; and that Defendants have been and are now conducting a campaign of propaganda and solicitation for the purpose of disrupting the established business relations between Complainants and their customers, destroying good will and seizing Complainants' markets. (XVII (24), p. 55 et seq.)

16. Copy of speech by D. E. Lilienthal, on or about November 17, 1933, at Knoxville.

This document contains the remarks delivered by Mr. Lilienthal at Knoxville just before the municipal election which was held November 25, 1933. It will appear from said document that Mr. Lilienthal said that the dams that the TVA were building were power dams and were being built for the purpose of producing electric energy.

This document tends to prove the allegations of the Bill that the primary activity of Defendants is to engage in, operate and carry on a proprietary electric utility business; that the other purposes of Defendants are subordinate and secondary and are in fact non-existent or merely pretexts. (XVIII, p. 60 et seq., XXII, p. 70); and that

COMPLAINANTS' EXHIBIT No. 111

Defendants have carried on a campaign of propaganda designed to disrupt Complainants' business relations and to acquire Complainants' markets for themselves. (XVII (24), p. 55 et seq.)

By the brief descriptions of the documents in this statement we have described merely enough to enable the court to identify the documents described in the subpoena. The references to the Bill herein contained are not intended to be exclusive.

Trabue, Hume & Armistead, Frantz, McConnell & Seymour, Baker, Hostetler, Sidlo & Patterson, Solicitors for Complainants.

[fol. 2204] STATE OF TENNESSEE,
County of Hamilton, ss:

S. D. L. Jackson, Jr., being first duly sworn, says that he has read the foregoing statement; that he has either personally examined copies of a number of the documents described in the subpoena, or, in the preparation of this case, has obtained information as to the existence and substance of such documents from the examination of other documents or from published statements, reports or statements of individuals with respect thereto and believes that such documents are in the possession of Defendants and that the descriptions thereof contained in the foregoing statement are substantially correct, and affiant believes that said documents are material and relevant to the issues in this cause.

S. D. L. Jackson, Jr.

Subscribed and sworn to before me this 18th day of November, 1937. W. A. Broyles, Notary Public. (Seal.)

[fol. 2205] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION, BEING "EXTRACT FROM HEARINGS BEFORE THE SUB-COMMITTEE OF THE COMMITTEE ON APPROPRIATIONS, U. S. SENATE, 73RD CONGRESS, 2ND SESSION (Excluded)

Pages 262-3

Senator Dickinson: Well now, in connection with these dams, the entire purpose is the production of electrical energy?

Dr. Morgan: That is the major purpose. The purpose of the Tennessee Valley Authority Act, of which these dams are a part, is to try to encourage and organize an orderly economic and social development in that region in place of the past haphazard development. With reference to the Tennessee River in particular, if we can develop the power on the Tennessee River by a unified and integrated program, we can, I think, develop power at not over half the rate that it would cost by a series of unrelated dams.

Senator Dickinson: Now, under the law, you are obligated to charge for your power, for your energy, the cost of production. What do you take into account in making out your cost of production?

Dr. Morgan: We take into account the costs of operating these power plants, and their maintenance; the cost of the interest on the investment; of amortization of the investment; and of depreciation and of taxes.

There may be some minor items that I have not included.

Senator Dickinson: Then, according to your theory, it is your expectation that you will be able to pay back into the Treasury the capital investment that the Government is now making in this project.

Dr. Morgan: Yes.

Senator Dickinson: And that is going to be done out of the sale of electrical energy?

Dr. Morgan: Yes.

Senator Dickinson: And, where are you going to sell this electrical energy?

Dr. Morgan: The law says within transmission distance from the power plants.

Senator Dickinson: And what is the transmission distance?

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EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION (Excluded)

Dr. Morgan: About 250 miles is reasonable transmission distance.

Senator Dickinson: That is, a sector with 250 miles as a diameter?

Senator Adams: As a radius, I gather.

Dr. Morgan: As a radius.

Senator Dickinson: As a radius?

Dr. Morgan: Yes.

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Senator Dickinson: Well now, with the completion of these additional dams that we have already discussed here, how fast will you increase the capacity for production of electrical energy down there?

[fol. 2206] Dr. Morgan: We will have considerable increase in production of prime power, as soon as the Norris Dam is completed. We will actually decrease the production of secondary power. We will give a more even flow to the river. We can produce 105,000 kilowatts of prime power at Wilson Dam by supplementing hydroelectric power during the low-water periods of the year with the steam standby plant at nitrate plant no. 2. With the completion of Norris Dam our prime power output will be approximately doubled.

Pages 266-7

Senator Dickinson: Well, now, when you extend your sale into these various localities, what do you do with competing organizations that are already in these various localities?

Dr. Morgan: So far we have purchased the plants of those utilities.

Senator Hale: Your rates are below their rates, always; are they?

Dr. Morgan: Yes.

Senator McKellar: May I ask, while my friend is hesitating just a minute, is it not true that the private companies have greatly reduced their rates throughout this region since the putting in of the Tennessee Valley Authority rates?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION (Excluded)

Dr. Morgan: Since the Tennessee Valley Authority adopted its rates, the other major companies around there have reduced their rates very substantially.

Senator Dickinson: Now, is that universal, or just in a limited number of cases?

Dr. Morgan: It is true, I think, in the Tennessee Electric Power Co., Alabama Power Co., Georgia Power Co., the Mississippi Power Co., the Tennessee Public Service Co., which is under the Electric Bond & Share ownership, toward the east end of our district. We are negotiating with the latter for the purchase of their entire system there.

Senator McKellar: If I recall aright, all of them have reduced their rates in the whole Tennessee Valley, the States of Tennessee and Mississippi; in Georgia, and Alabama.

Dr. Morgan: I think that just recently the Tennessee Utilities Commission ordered a decrease which included the eastern part also.

Senator Dickinson: You mean by that that the Tennessee Utilities Commission has been derelict in its duty in permitting the charge of excess rates down there in previous years?

Dr. Morgan: I have no opinion to express on the work of the utilities commission.

Senator McKellar. But, you do know that since you started operating down there that these rates have gone down 30 percent, to the benefit of all the people.

[fol. 2207] Dr. Morgan: Yes; and we believe that the rates we are charging are abundant to pay all costs—depreciation, amortization, taxes, and maintenance, and service.

Senator Hale: And, if there are other private companies, then they have to go out of business.

Senator McKellar: Dr. Morgan says that they are endeavoring to buy all of them.

Dr. Morgan: We are negotiating to purchase the private companies. If I may make a short statement.

Senator Dickinson: Yes.

Dr. Morgan: The establishment of the power policy of the Tennessee Valley Authority, which is, by the way, only one item in its program—it has other functions besides power—is an effort, to use the President's language, to

establish a yardstick whereby there could be a case of public ownership to develop what reasonable costs of power may be. In order for that to actually happen, it must have an area in which to sell power. You cannot sell power theoretically. You have to sell it somewhere. That means that these power plants must have some area in which they can actually sell power. If this is to be a fair comparison it means that the area must be adequate; it must be such an area as a well-equipped, well-proportioned utility should have.

To give a power plant no territory in which to sell that power would be just one way of killing it. If there is to be a fair comparison as between a public-operated project and a private-operated project, it must have the qualities of a well-proportioned power development.

Now, in order to get that it must purchase properties that are already there, because all of the time that Muscle Shoals was in contest here, the private companies were surrounding that property with transmission lines, so that when the Government did adopt the policy of selling power, that territory was already fully occupied by the private utilities who had occupied it during the time of this controversy. So, as soon as the Government adopts the policy it finds the territory already occupied. We must acquire the territory. It is the policy of the Tennessee Valley Authority not to enter into destructive competition, if possible.

We have approached the power companies and have tried to enter into agreements with them, in which we would purchase some of their plants, so that this policy of the Government may find expression in the only way in which it can find expression; that is, by occupying certain territory.

So, we have occupied no territory except after agreement and purchase from the private companies, and we hope that will continue in the future.

Senator Dickinson: What will be your policy in case you find you cannot acquire their properties?

[fol. 2208] Dr. Morgan: Well, for instance, we are undertaking now to acquire a certain property. We find that just a few years ago a private utility company added 40

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION (Excluded)

percent to its capitalization without adding anything to its properties. Now, we are refusing to buy that water. We are offering to pay the full value of the real investment; but we are refusing to pay a 40-percent inflation of the capital assets.

Now, if we can buy that at a fair capitalization we will. If not, the municipality to which we sell power may have to go in and compete; but we——

Senator Dickinson (interposing). That is, you will contruct a competing utility, install a competing plant there?

Dr. Morgan: Yes; if we cannot purchase at what the property is actually worth, the communities we serve may be forced to compete.

Senator Dickinson: What do you do with reference to the high lines to carry the electricity?

Dr. Morgan: We are offering to purchase those, too.

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Senator Dickinson: In other words, as I understand it now, you are setting up in a municipality, a municipal cooperative organization for the purpose of buying from you electric current and distributing it among the patrons of that locality.

Dr. Morgan: We are cooperating with an association of citizens.

Senator Dickinson: And in that cooperative organization, what influence do you have on rates?

Dr. Morgan: We make a contract with them in which we prescribe the maximum rates that they may charge.

Senator Dickinson: And that is as to the consumer.

Dr. Morgan: That is as to the consumer.

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Senator Dickinson: Well, in your testimony before the House committee, did you not suggest that your development would expand where it would include 300,000 or 325,000 square miles?

Dr. Morgan: I beg your pardon. They asked how much area would be in transmission distance of it and I said about 300,000 square miles.

* * * * * * *

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION (Excluded)

Senator Hale: But you might at any time reach out and sell your power a good distance away from the home plant?
Dr. Morgan: Yes.

[fol. 2209] Pages 275-6

Dr. Morgan: Now, in that case, it is our business, as I see it, to try to make a study as to how a well balanced economy can exist in that region.

We just now have a project up with a company making carbide. It must have cheap power. It needs cheap coal and the fact that we have cheap power there is the reason for it coming there to use coal. Coal is a chemical to it and not only fuel, and the fact of our being there with cheap power is bringing a new use of coal into that region. It is our business to see how we can best balance that economy so that a benefit in one line is not balanced by a loss in another. That is a part of reasonable planning, to see how benefits can come without suffering losses.

Pages 280-1

Senator McKellar: Well, while we are waiting on Senator Dickinson, Doctor, is there anything that you desire to say to the committee on your own account?

Dr. Morgan: I do not think so. We are endeavoring to carry out the purposes and policies of the Tennessee Valley Authority Act in spirit and in letter so far as the legislative program is concerned, which has been discussed here. We are trying to carry that out in the only way that is feasible; that is, in having a unit that is of such size and such proportion that it can be representative of a well-organized power unit, and these things we are doing are necessary to bring that about.

I would say also that so far as the development of the water power of the Tennessee River is concerned, that a single power plant on the Tennessee River, such as Muscle Shoals, is not even economically feasible. Muscle Shoals, taken by itself, is not an economically feasible unit. If it can be united with others so that reservoir projects can supply it with water in low season, we can make it at least three times as effective per dollar invested as it is today;

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 112 FOR IDENTIFICATION (Excluded)

and the same way with Norris Dam. Taken alone it is not a good investment, but taken in connection with its effects upon the other plants downstream, it becomes a very good investment.

If we can carry out this project as a whole we can produce electric current at not over half what it would cost at a single plant here and there.

Senator McKellar: As I understood your view, in the early part of your testimony you said while there were 45,000 kilowatts produced at Wilson Dam, not including the stand-by plant, that by reason of the building of the Cove Creek or Norris Dam, that there would be over three times as much, or about 150,000 kilowatts.

Dr. Morgan: Yes.

Senator McKellar: Which has a tremendous effect on the cost of current, I imagine.

[fol. 2210] Dr. Morgan: It does. As I say, Muscle Shoals taken alone, is an expensive, inefficient thing. With the project taken as a whole, we can produce the cheapest electric power in America, I believe. That is due to the fact that the Government can coordinate these things, and make them into one unit.

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Senator Dickinson: And, if it takes $300,000,000 to put in or make this experiment on behalf of the citizens involved here, might I inquire if you would state what you would think it would take from the public treasury and the taxpayers of the United States to help the people in the rest of the United States under a similar program?

Dr. Morgan: Most of that $300,000,000 is for power development, and will be gradually repaid out of revenues. I think it will cost the taxpayers of America altogether less than it is now costing in the rest of the United States. For instance, in Knoxville, the people now are paying a certain rate for electric power. We believe that we can cut that rate decidedly and yet that the people can pay for their entire installation in 10 years out of the rest. That is, the rates they are paying now are so excessive, the taxes they are paying, in the form of electric rates now are so excessive that we can cut that 30 percent and yet out of the rest of it that they can pay the whole thing back in 10 years.

[fol. 2211] COMPLAINANTS' EXHIBIT No. 112

Official "Extract from Hearings Before the Subcommittee of the Committee on Appropriations, United States Senate, 73rd Congress, 2nd Session"

(Original Exhibit)

[fol. 2212] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 113 FOR IDENTIFICATION, BEING "ANNUAL REPORT OF THE TENNESSEE VALLEY AUTHORITY FOR THE FISCAL YEAR ENDED JUNE 30, 1934" (Excluded)

Pages 22-3-4

Power Policy

The formulation of a power policy was the first step in carrying out the power program required by the act. The following policy was announced on August 25, 1933:

1. The business of generating and distributing electric power is a public business.

2. Private and public interests in the business of power are of a different kind and quality and should not be confused.

3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant or setting up a competing plant, as circumstances may dictate.

6. The fact that action by the Authority may have an adverse economic effect upon a privately owned utility

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 113 FOR IDENTIFICATION (Excluded)

cess to Authority news as they desire. Many send special writers and others request the Authority to prepare articles and information for their special use.

Several hundred requests for detailed information continue to reach the Authority each week. All are answered by individual letters; no material is sent to private individuals except upon request.

The major projects of the Authority are natural attractions for tourists and other visitors. As of June 30, more than a thousand visitors daily were registering at Wilson Dam at Muscle Shoals and at the sites where Norris and Wheeler Dams are under construction. Trained guides have been employed to insure the safety of visitors and to provide accurate information.

[fol. 2215] COMPLAINANTS' EXHIBIT NO. 113

Annual Report of the Tennessee Valley Authority for the Fiscal Year Ending June 30, 1934

(Original Exhibit)

[fol. 2216] EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 114 FOR IDENTIFICATION, BEING "HEARING BEFORE THE SUBCOMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS, 74TH CONGRESS, 1ST SESSION" (Excluded)

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Dr. Arthur E. Morgan: We expect to complete the Wheeler and Norris Dams during the coming year. That will leave the Pickwick among those now begun but not yet finished this year.

The Chairman: Will they produce the principal parts of your electrical energy?

Dr. Arthur E. Morgan: Yes.

* * * * * * *

The Chairman: I am speaking now of stopping your expenditure of money on all but 3 or 4 big projects, and if you get those projects completed they will be revenue-producing projects.

Dr. Arthur E. Morgan: Yes.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 114 FOR IDENTIFICATION (Excluded)

The Chairman: Then after that, with the revenues you get you could make other improvements as the revenue increased, with perhaps a small appropriation by Congress.

Dr. Arthur E. Morgan: I think the revenues for considerable time probably will be necessary to provide facilit-es.

The Chairman: Facilit-es for what?

Dr. Arthur E. Morgan: For distribution and transmission.

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Mr. Arnold: How far can you economically transmit electric current, Doctor?

Dr. Arthur E. Morgan: You can transmit it about 250 miles. But that is not the whole story.

For instance, in the case of a national emergency it could be sent 200 miles to take the place of current that would be sent another 200 miles. We could make current available in Cleveland out of the Tennessee Valley by sending it as far north as possible, and then having that transferred further north.

Mr. Arnold: You mean by having a booster station?

Dr. Arthur E. Morgan: It would not need a booster station. You would transmit it from any center. They send current in all directions.

The Chairman: You have a current center?

Dr. Arthur E. Morgan: You have a current center, yes. Say Columbus, Ohio: Instead of sending current 100 miles south, we send it all to the north. That from the south would come up to meet it. You could by that kind of substitution get clear up to Cleveland or Detroit.

[fol. 2217]

Page 534-5

The Chairman: What are you going to do with this $4,415,000 for transmission lines and substations?

Mr. Lilienthal: My attention has been called to the fact that that figure, which was just revised last night, is incorrect. In the revision the total at the bottom of the column for 1936 is correct, but the figure $4,415,000 should be $3,495,000, because an item of $920,000 was taken out, which could reasonably be deferred until some future year.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 114 FOR IDENTIFICATION (Excluded)

Taking that figure $3,495,000 in lieu of the recorded figure of $4,415,000, the analysis is something of this kind: Two large items make up most of the total. One is an item of $1,100,000 for transmission lines to the site of construction activities.

The Chairman: From where?

Mr. Lilienthal: From Hiwassee Dam to the site of Guntersville Dam and Chickamauga Dam.

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Mr. Lilienthal: * * * The other large item, about 3½ million dollars, is for the construction of a transmission line connecting the present transmission line at Pickwick Dam in Alabama, near Tennessee, into a group of 20 counties in west Tennessee which have been petitioning for a source of supply for rural electrification, which they do not now have. * * *

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Mr. Lilienthal: Then there is a projected line and substation totaling $185,000 from the Wheeler Dam, connecting the Wheeler Dam to Decatur and down to Cullman, which is in northern Alabama. Cullman, Ala., has a municipally owned plant, an old steam plant, quite expensive to operate, and the demand has about exceeded the capacity. The county is a reasonably prosperous county and needs rural electrification. That item represents a line to a market at Cullman, Ala., principally.

Then there are a number of small items—a substation at Decatur, Ala., which the engineers require as a part of this big interconnecting line; a substation at Corinth, Miss., $70,000, which is required by reason of the greatly increased load there, plus a change in the source of supply for Mississippi.

That makes up the total of 3½ million dollars.

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Rural Lines for Temporary Operation in Alabama, Mississippi, and Tennessee

The Chairman: We have here an item for rural lines for temporary operation, which I do not understand.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 114 FOR IDENTIFICATION (Excluded)

[fol. 2218] There is an estimate of $215,000 for Alabama, $420,000 for Mississippi, and $905,000 for Tennessee; a total of $1,540,000. Explain that, please.

Mr. Lilienthal: In the States of Alabama and Mississippi we now own property engaged in the serving, primarily, of farmers.

The Chairman: You own property? You mean you own farms?

Mr. Lilienthal: No; we own farm lines and lines serving very small villages. A considerable number of those farms did not have service prior to this time. The policy of the board has been to operate directly, to serve consumers directly only for a temporary period, then to turn the lines over to cooperative organizations, chiefly county associations, or municipalities, with a security arrangement on the property and the revenues. The TVA then sells power to these public agencies at wholesale. That is the permanent policy.

The Chairman: The Authority owns rural lines?

Mr. Lilienthal: The Authority does own some rural lines; yes, sir.

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Amount of Horsepower to be Developed by Norris, Wilson, and Wheeler Dams by 1937

Mr. Bacon: How much developed horsepower will you have by 1937 in all your properties?

Mr. Lilienthal: An installed capacity of 424,000 horsepower.

Mr. Bacon: Only 424,000 horsepower?

Mr. Lilienthal: With the Wheeler, Wilson, and Norris Dams.

Excerpts from Complainants' Exhibit No. 114 for Identification (Excluded)

Page 605

Comparative rates for residential service—Tennessee Valley region

Name of community Company serving	Bills as of Jan. 1, 1935			
	25 kilowatt-hours		100 kilowatt-hours	
	Revenue per kilowatt-hour	Percent saving under Tennessee Valley Authority rate	Revenue per kilowatt-hour	Percent saving under Tennessee Valley Authority rate
	Cents	Percent	Cents	Percent
Asheville, N. C. (Carolina Power & Light Co.)	7 52	60.1	4.25	41.2
Atlanta, Ga.	6.48	53.7	4.57	45.3
(Georgia Power Co.) objective.	5.80	48.3	3.95	36.7
Birmingham, Ala. (Birmingham Electric Co.)	6.20	51.6	4.05	38.3
Chattanooga, Tenn.	6.52	54.0	4.58	45.4
(Tennessee Electric Power Co.) objective	5.80	48.3	3.95	36.7
Knoxville, Tenn.	6.52	54.0	4.58	45.4
(Tennessee Public Service Co.) objective	5.80	48.3	3.95	36.7
Memphis, Tenn. (Memphis Power & Light Co.)	5.52	45.7	4.25	41.2
Montgomery, Ala.	6.20	51.6	4.05	38.3
(Alabama Power Co.) objective	5.80	48.3	3.95	36.7
Nashville, Tenn.	6.52	54.0	4.58	45.4
(Tennessee Electric Power Co.) objective	5.80	48.3	3.95	36.7
Tennessee Valley Authority	3.00	....	2.50	....
	250 kilowatt-hours		500 kilowatt-hours	
Asheville, N. C. (Carolina Power & Light Co.)	2.90	31.0	2.20	37.3
Atlanta, Ga.	3.33	39.9	2.06	33.0
(Georgia Power Co.) objective.	2.63	24.0	1.71	19.3
Birmingham, Ala. (Birmingham Electric Co.)	3.12	35.9	2.51	45.0
Chattanooga, Tenn.	3.33	39.9	2.37	41.8
(Tennessee Electric Power Co.) objective	2.63	24.0	1.94	28.9
Knoxville, Tenn.	3.33	39.9	2.42	43.0
(Tennessee Public Service Co.) objective	2.63	24.0	1.94	28.9
Memphis, Tenn. (Memphis Power & Light Co.)	3.50	42.9	3.25	57.5
Montgomery, Ala.	3.04	34.2	2.27	39.2
(Alabama Power Co.) objective	2.63	24.0	1.94	28.9
Nashville, Tenn.	3.33	39.9	2.37	41.8
(Tennessee Electric Power Co.) objective	2.63	24.0	1.94	28.9
Tennessee Valley Authority	2.00	....	1.38	....

Source.—Data from Federal Power Commission, electric rate survey preliminary report, rate series no. 1.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 114 FOR IDENTIFICATION (Excluded)

[fol. 2219] Pages 615-6

Power Development, Norris Dam

Mr. Taber: How much power are you expecting to develop at Norris Dam?

Dr. Arthur E. Morgan: This is primarily a storage dam. It will have 100,000 installed horsepower, but we may use all that in 3 months of the year. That will be used whenever there is a shortage of power because of low water down the river.

Mr. Taber: That is, you will not let the water out there except when there is a demand for water in the other dams; is that it?

Dr. Arthur E. Morgan: Yes, sir; and then we will make power as we let it through, and it will make power again as it goes to the dams.

Mr. Taber: The Norris Dam will be tight while there is plenty of water below?

Dr. Arthur E. Morgan: Yes, sir; except that we will let out somewhat less than 10 percent of the normal flow to keep the river at an average flow.

Mr. Taber: Will that be used for power?

Dr. Arthur E. Morgan: Yes; it will be used for power to correct voltage on the transmission line.

Mr. Taber; But that will not amount to a large power consumption?

Dr. Arthur E. Morgan: No.

Mr. Taber: Then your power development at Norris is not anything that can be used commercially except to take care of a special demand or something of that kind?

Dr. Arthur E. Morgan: Oh, it can be used commercially. It is the most valuable power in the whole system, because we will have to connect a transmission line from Wilson to Norris, so that we can use the power anywhere along that line. But whether it comes from Wilson or whether it comes from Norris, or both, will depend upon whether the rivers are high or whether they are low. During high water it will

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 114 FOR IDENTIFICATION (Ecluded)

all come from the main river below; during low water it will come from Norris Dam, and that same water makes power below.

Page 617

Power Development, Wheeler Dam

Mr. Taber: How much power is the Wheeler Dam supposed to produce?

Dr. Arthur E. Morgan: We are installing 35,000 kilowatts.

Mr. Taber: And is that what you regard as the prime capacity of it?

Dr. Arthur E. Morgan: No, sir.

Mr. Taber: Or is that just a temporary installation?

Dr. Arthur E. Morgan: That is the initial installation.

Mr. Taber: How much do you figure that that will carry, as the minimum?

Dr. Arthur E. Morgan: One hundred and ninety-two thousand kilowatts installation.

[fol. 2220]

Page 635

New Dams to be Started in 1936

Mr. Bacon: I want to clear up one thing that is in doubt in my mind.

Which new dams are you going to begin in the fiscal year 1936 out of the money that is proposed to be appropriated in this act?

The Chairman: If any.

Dr. Arthur E. Morgan: The Hiwassee Dam.

Mr. Bacon: And Guntersville?

Dr. Arthur E. Morgan: We might begin the Guntersville Dam.

Mr. Bacon: Any others?

Dr. Arthur E. Morgan: Guntersville or Chickamauga.

Mr. Bacon: You might begin either Guntersville or Chickamauga?

Dr. Arthur E. Morgan: Yes, sir.

Mr. Bacon: And Hiwassee certain.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 114 FOR IDENTIFICATION (Excluded

Dr. Arthur E. Morgan: Yes, sir. We need an upper river dam to supply water at low stages.

Mr. Bacon: As between Guntersville and Chickamauga, you do not know which you would build?

Dr. Arthur E. Morgan: No, sir. As to Aurora, we have not decided between them.

Mr. Bacon: Of the three, Aurora, Guntersville, and Chickamauga, you will begin only one.

Dr. Arthur E. Morgan: That is my judgment, but possibly two.

[fol. 2221] COMPLAINANTS' EXHIBIT No. 114

Hearing Before the Subcommittee of House Committee on Appropriations, Second Deficiency Appropriation Bill for 1935, 74th Congress, 1st Session.

(Original Exhibit)

[fol. 2222] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 115 FOR IDENTIFICATION, BEING PART OF "HEARING BEFORE THE SUB-COMMITTEE OF HOUSE COMMITTEE ON APPROPRIATIONS, 74TH CONGRESS, 2ND SESSION" (Excluded).

Pages 113-4

Estimate Requested for 1937

The Chairman. We have before us an estimate of $43,000,000 for the Tennessee Valley Authority for the next fiscal year. This estimate appears on page 83 of the 1937 Budget for Regular Public Works requirements of the Government.

I notice on page 1 of your justification you refer to what you call a summary. I suppose those figures you have set down in the summary are correct?

Dr. A. E. Morgan. Substantially so.

The Chairman. Then we will insert in the record the last paragraph on page 1 of your justification, down to the middle of page 2.

Dr. A. E. Morgan. Yes, sir.

Excerpts from Complainants' Exhibit No. 115 for Identification (Excluded)

(The statement referred to is as follows:)

The summary statement at the beginning of section B of this report shows for 1937 estimated receipts of $3,271,350, estimated expenditures on an obligation basis of $47,489,166, leaving $44,217,816 to be financed out of appropriations. Balances to be reappropriated are estimated to be $1,217,816, leaving a net of $43,000,000 to be financed out of a new appropriation. This appropriation contemplates a lower rate of expenditure than during the present fiscal year, for in addition to the $36,000,000 in new funds appropriated for 1936, about $24,000,000 was reappropriated from unexpended balances, against an estimated $1,217,816 reappropriated for 1937. The request for $43,000,000 has been reviewed and approved by the Bureau of the Budget. The estimates included herein have been revised to show more accurately TVA financial requirements than those included in the printed budget for 1937.

Total financing from June 16, 1933, when the TVA was organized, to June 30, 1937, will require total appropriations of $154,000,000, of which $111,000,000 has been made available either by allocation or by direct appropriation. The difference of $43,000,000 in these two items is the estimate of the appropriation now being requested.

Pages 114-5

Mr. Taylor. How many more dams do you think you can build?

Dr. A. E. Morgan. The River and Harbor Act of 1930 together with the TVA Act committed Congress to a navigable channel from Knoxville to the mouth of the river. The higher dams there are, the fewer there are.

[fol. 2223] In addition to those that have been authorized it will require three more dams on the Tennessee River to complete that navigable channel from Knoxville to the mouth. We have not asked to start any larger number of dams than approved last year. We have here a schedule indicating the rate at which these dams would have to be built, just on the basis of good engineering progress. That does not include the beginning in the coming fiscal year of the Watts Bar, the Coulter Shoals, or the Gilbertsville dams.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 115 FOR IDENTIFICATION (Excluded)

We already have approval for one tributary dam, but we do not ask for another one.

Mr. Taber: What does the white line on this chart indicate?

Dr. A. E. Morgan: That is the preliminary work, such as building access roads on the dam site, getting ready for the actual construction of the dam. The black line shows the actual construction of the dam.

Mr. Taber: And the length of the line means the length of time, and has nothing to do with the dollars and cents that are spent on it; is that right?

Dr. A. E. Morgan: The longer ones usually indicate the bigger job. It just represents the length of time.

Pages 121-2

The Chairman: Take the dams that either have been built or have been started, first, to which the Government is absolutely committed then we will come to the others afterward.

Dr. A. E. Morgan: On the main river the highest dam is the Chickamauga Dam, above Chattanooga.

The Chairman: Started when?

Dr. A. E. Morgan: This past year, in the present fiscal year.

Next below that is the Guntersville Dam, near the north line of Alabama, at Guntersville, Ala. That was started during the past year.

The next below that is the Wheeler Dam, which is just about finished. That will be finished in the present fiscal year, except for the installation of the power equipment.

The one below that is the Wilson Dam, and then 2 miles below that is what is called lock and dam no. 1, a small structure, which raises the water 14 feet.

The Chairman: That is already in?

Dr. A. E. Morgan: That was built before the T. V. A. was organized. Fifty miles below Wilson Dam is the Pickwick Landing Dam. That was begun in the fiscal year before the present one. Those are the dams that are now under construction or completed.

[fol. 2224] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 115 FOR IDENTIFICATION (Excluded)

Page 123

Tennessee Valley Authority—Tabulation of principal features of dam projects

Projects	Miles from mouth of river	Length of dam Feet	Normal lock lift Feet	Length of reservoir Miles	Normal area of reservoir Acres	Total volume of reservoir Acre-feet	Initial power installation Kilowatts	Ultimate power installation provided for Kilowatts	Estimated cost initial stage	Estimated cost channel improvement below locks and in pools
Main river projects, existing or under construction:										
Pickwick	206.7	7,715	56	52.7	41,600	1,032,000	68,000	204,000	$31,331,475	$1,200,000
Wilson	259.4	4,860	92	15.5	14,500	500,000	184,000	445,000	46,950,748	500,000
Wheeler	274.9	6,335	50	74.1	66,000	1,260,000	64,000	256,000	[1] 33,585,423	100,000
Guntersville	349.0	4,070	39	82.1	63,300	951,000	.....	82,000	28,300,000	1,200,000
Hales Bar	431.1	2,500	35	40.0	6,500	100,000	.....	.....	.....	.....
Chickamauga	471.0	5,800	48	58.9	32,500	705,000	.....	160,000	31,650,000	4,000,000
Total	.....	.....	...	.....	.....	4,548,000	316,000	1,147,000	171,816,646	7,000,000
Main river projects, proposed:										
Gilbertsville	22.5	8,300	55	184.2	143,000	4,650,000	.....	256,000	[2] 74,000,000	.....
Watts Bar	529.9	2,900	63	73.6	42,800	1,188,000	.....	150,000	30,400,000	600,000
Coulter Shoals	603.5	2,100	65	53.4	12,900	328,000	.....	54,000	19,250,000	750,000
Total	.....	.....	...	.....	.....	6,166,000	.....	460,000	123,650,000	1,350,000
Tributary projects, under construction: Norris	.....	1,872	194	72.0	34,200	3,400,000	100,000	100,000	[3] 36,025,230	.....
Tributary projects, proposed:										
Fowler Bend	.....	1,265	254	22.0	6,300	480,000	.....	80,000	15,250,000	.....
Fontana	.....	1,750	413	25.0	9,200	1,500,000	.....	180,000	32,500,000	.....
Total	.....	.....	...	.....	.....	1,980,000	.....	260,000	47,750,000	.....
Grand total	.....	.....	...	.....	.....	16,094,000	416,000	1,967,000	379,241,876	8,350,000

[1] Including cost of lock built by Corps of Engineers, U. S. Army. In the initial stage, power installation is included at Pickwick, Wilson, Wheeler, and Norris only.

[2] For maximum surcharge to El. 370. For surcharge to El. 362, deduct $14,000,000.

[3] Includes highways, town of Norris, forest lands, etc.

In accordance with available engineering analysis the total minimum flood control storage will be approximately 7,000,000 acre-feet or 300,000,000 cubic feet.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 115 FOR IDENTIFICATION (Excluded)

Page 275

Rural Line Construction

(See p. 284)

The Chairman: You want some rural-line construction.

Mr. Lilienthal: Yes, sir.

The Chairman: That is $1,000,000. It is a considerable increase over the amount you have this year of $200,000.

Mr. Lilienthal: Mr. Chairman, I want to call *to* your attention to the fact that in the Tennessee Valley area we have almost no rural electrification. I think the percentage is about 3 out of 100 farmers using electricity.

The Chairman: It looks like this would be under the new bill, or under the rural electrification program. If they want to get together, and have the current provided——

[fol. 2225] Mr. Lilienthal (interposing): Mr. Chairman, we have been exploring that possibility, and in some cases there can be cooperation with that proposed agency. It is quite difficult, however, in an area where we have a power system such as this, to do any considerable part of the job through another agency, where there is already an agency on the ground.

Excerpts from Complainants' Exhibit No. 115 for Identification (Excluded)

Page 279

Schedule II—Case II. Estimated cost and annual expense for projects, ultimate stage

	Gilbertsville	Pickwick	Wilson	Wheeler	Guntersville	Chickamauga	Watts Bar
Estimated cost of dams, locks, and reservoirs	$74,000,000	$25,800,000	$23,900,000	$24,300,000	$28,300,000	$31,650,000	$30,400,000
Estimated cost of power-houses and power facilities	13,000,000	10,000,000	29,300,000	15,400,000	9,300,000	9,850,000	10,400,000
Total estimated cost	87,000,000	35,800,000	53,200,000	39,700,000	37,600,000	41,500,000	40,800,000
Estimated annual operation and maintenance on dams, locks, and reservoirs	212,000	97,000	72,000	112,000	141,000	117,000	122,000
Estimated power expenses, 9 percent of investment [1]	1,170,000	900,000	2,637,000	1,386,000	837,000	886,000	936,000
Estimated total annual expense	1,382,000	997,000	2,709,000	1,498,000	978,000	1,003,000	1,058,000
nstalled capacity.....kilowatts	224,000	136,000	366,000	192,000	82,000	108,000	150,000

	Coulter Shoals	Norris	Fontana	Fowler Bend	Improvements in navigation channel	Intertie transmission lines between dams	Totals
Estimated cost of dams, locks, and reservoirs	$19,250,000	$30,000,000	$32,500,000	$15,250,000	$8,350,000	.....	$343,700,000
Estimated cost of power-houses and power facilities	5,150,000	6,000,000	9,900,000	5,150,000	.....	$12,000,000	135,450,000
Total estimated cost	24,400,000	36,000,000	42,400,000	20,400,000	8,350,000	12,000,000	479,150,000

Total estimated cost.....	24,400,000	36,000,000	42,400,000	20,400,000	8,350,000	12,000,000	479,150,000
Estimated annual operation and maintenance on dams, locks, and reservoirs.....	110,000	82,000	63,000	42,000	.....	.....	1,170,000
Estimated power expenses, 9 percent of investment [1].....	464,000	540,000	891,000	464,000	.....	1,080,000	12,191,000
Estimated total annual expense.....	574,000	622,000	954,000	506,000	.....	1,080,000	13,361,000
Installed capacity.....kilowatts	54,000	100,000	180,000	80,000	.....	.....	1,672,000

Liquidation of Investment Through Sale of Power by Tennessee Valley Authority

Continuous capacity of integrated system.....kilowatts		660,000
Annual primary output.....kilowatt-hours		5,780,000,000
Estimated gross annual wholesale power revenue.....		$23,120,000
Estimated annual power expense [1].....	$12,200,000	
Estimated annual dam, lock, and reservoir expense.....	1,170,000	
Estimated total annual expense.....		13,370,000
Estimated annual net revenue for amortization.....		9,750,000
Estimated annual dam, lock, and reservoir expense.....	1,170,000	
Estimated total annual expense.....		13,370,000
Estimated annual net revenue for amortization.....		9,750,000

Approximate time to amortize total estimated cost, 50 years.[2]

[1] Includes: Interest 3½ percent; depreciation 3 percent; taxes 1 percent; operation 1½ percent; all on the total investment in power.
[2] From the date of completion of structures and development of market for power output, estimated from about 1950.

This table has been revised to include the cost of lock at Wheeler Dam and the total historical cost of Wilson Dam.

The cost of Gilbertsville is for surcharge pool elevation 370. The surcharge to elevation 362 would cost $14,000,000 less and reduce the flood-control storage by 1,580,000 acre-feet.

Except for Pickwick, Wilson, Wheeler, and Norris, the estimates of cost are preliminary, and engineering data therefore are incomplete.

The installed capacities given above are the most economical for this system of projects, but space for additional power capacity is provided as shown by table inserted at page 608 transcript to permit utilization of additional regulation of flow by possible future storage.

An amount of $20,000,000 in general contingencies has not been included in this table as it is not an anticipated expenditure to be amortized.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 115 FOR IDENTIFICATION (Excluded)

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Mr. Lilienthal: Yes, sir. That is on schedule I, the footnote.

I hope the committee will observe that since we are planning to liquidate all the capital expenditure for flood control and navigation it is extremely important that we be given an opportunity to market the power, so as ultimately to liquidate this investment.

You will note that we expect power revenues to liquidate the entire investment in 50 years, and to be on a self-supporting basis soon after the construction period is over.

Rural Line Construction

Mr. Taber: Have you finished with that rural-line construction proposition? I have a question that I want to ask on that.

Mr. Lilienthal: Yes, sir.

Mr. Taber: The 1,500 miles that you already have built are figured on the same basis that the 800 are? They are the same type of construction and ought to cost about the same?

[fol. 2226] Mr. Lilienthal: I am sorry I am not familiar with what you are referring to.

Mr. Taber: That is on page B-72.

Mr. Taylor: Here is what you say:

This amount is to be used in financing rural lines that will be turned over to municipalities and associations. Over 1,500 miles of such lines will be completed and in use by June 30, 1936. The estimate for 1937 provides for approximately an additional 800 miles.

Page 285

Mr. Taylor: What do you mean by this:

This expenditure will be amortized out of increased revenues derived from this new construction.

When and how?

Mr. Lilienthal: These lines are placed on a self-supporting basis. They are not built unless the farmers along the line do two things: Agree to take a certain number of kilowatt-

hours per mile, 662 kilowatt-hours is the figure which is the minimum—and second, support that commitment of 662 kilowatt-hours with valid contracts for the purchase of electric appliances which will use them that total. So that before a rural line is built, or before any group of lines is built, the TVA central office has figures showing that the line will produce revenues to support that line.

[fol. 2227] COMPLAINANTS' EXHIBIT No. 115

"Hearing Before the Subcommittee of House Committee on Appropriations, First Deficiency Appropriation Bill for 1936, 74th Congress 2nd Session" (Part I).

(Original Exhibit)

Hearings Respecting TVA pp 113 to 355

(Here follows one photolithograph, side folio 2228)

EXCERPTS FROM COMPLAINANTS'

EXHIBIT NO. 116 FOR IDENTIFICATION
BEING "HEARINGS BEFORE THE SUBCOMMITTEE
OF THE COMMITTEE ON APPROPRIATIONS, HOUSE
OF REPRESENTATIVES, 75TH CONGRESS 1ST
Page 403 SESSION" (EXCLUDED)

Tabulation of principal features of present and proposed dam and reservoir projects of Tennessee Valley Authority

Projects	Miles from mouth of river	Length of dam	Maximum lock lift	Length of reservoir	Normal area of reservoir	Total volume of reservoir	Controlled storage	Initial power installation	Ultimate power installation provided for	Estimated cost	
										Initial stage	Ultimate stage
Main river projects:											
Existing or under construction:		*Feet*	*Feet*	*Miles*	*Acres*	*Acre-feet*	*Acre-feet*	*Kilowatts*	*Kilowatts*		
Pickwick	206.7	7,716	61	52.7	41,000	1,052,000	416,000	72,000	216,000	$33,190,497	$42,431,497
Wilson	259.4	4,860	90	15.5	16,100	611,000	43,000	184,000	444,000	[1] 46,960,748	[2] 57,960,748
Wheeler	274.9	6,336	53	74.1	64,200	1,100,000	330,000	128,000	256,000	[3] 37,157,057	[3] 44,757,057
Guntersville	349.0	4,000	45	62.1	62,300	961,000	342,000	80,000	160,000	34,125,000	38,826,000
Hales Bar	431.1	2,500	40	37.0	6,300	100,000					
Chickamauga	471.0	6,025	51	59.0	32,000	630,000	325,000	80,000	160,000	40,435,045	45,233,045
Total						4,453,000	1,873,000	484,000	1,116,000	191,867,307	229,208,477
Proposed:											
Gilbertsville	22.5	5,300	66	184.0	148,000	4,880,000	3,700,000	None	192,000	96,000,000	112,000,000
Watts Bar	529.9	2,900	71	72.3	42,600	1,186,000	246,000	None	180,000	29,200,000	36,000,000
Coulter Shoals	602.4	2,070	71	53.5	11,900	234,000	107,000	None	60,000	25,000,000	30,000,000
Total						6,372,000	4,053,000	None	432,000	149,200,000	181,000,000
Tributary projects:											
Under construction:											
Norris	[4] 74.8	1,872	None	72.0	34,200	2,567,000	2,020,000	100,800	160,800	26,310,270	[4] 26,310,270
Hiwassee	[4] 75.8	1,280	None	22.0	6,240	439,000	365,000	None	80,000	17,296,061	22,491,861
Total						3,006,000	2,385,000	100,800	180,800	43,606,331	48,801,931
Proposed: Fontana	[4] 60.8	1,700	None	30.0	9,200	1,500,000	920,000	None	180,000	40,000,000	51,000,000
Grand total						15,310,000	8,731,000	584,800	1,878,800	434,673,638	530,000,338

[1] Includes $359,503 maintenance during cessation of work in construction period.
[2] Includes $500,000 for raising Wilson Dam.
[3] Includes cost of lock ($1,939,693), built by Corps of Engineers, U. S. Army.
[4] Hiwassee Dam is on the Hiwassee River, which enters the Tennessee River at mile 502.5; Norris Dam is on the Clinch River, which enters the Tennessee River at mile 567.7; and the proposed Fontana Dam is on the Little Tennessee River, which enters the Tennessee River at mile 601.3.
[5] Includes highways, town of Norris, forest lands, etc.

NOTE.—In the initial stage, power installation is included at Pickwick, Wilson, Wheeler, Guntersville, Chickamauga, and Norris. Estimates for river channel improvement are included in the cost estimates as follows: Pickwick, $1,800,000; Wheeler, $130,000; Guntersville, $1,136,400; Chickamauga, $3,810,700; Watts Bar, $662,000; Coulter Shoals, $900,000.

Page 407. MR. WOODRUM. Tell us something about this contract authority for $5,500,000. What project does that refer to?

DR. A. E. MORGAN. That is for ordering generating equipment, which would not be finished during that fiscal year but will extend beyond.

[fol. 2229] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 116 FOR IDENTIFICATION (Excluded)

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B. Structures and Improvements—Detail

	Actual prior years	Actual fiscal year 1936	Estimated fiscal year 1937	Estimated fiscal year 1938
8. Electrical Plant and equipment:				
(a) Transmission lines and substations	$1,346,769	$4,642,655	$4,500,000	$4,700,000
(b) Investment in distribution properties	1,369,816	1,997,391	750,000	300,000
(c) General equipment and inventories	1,082,666	545,799	125,000	100,000
Total	3,799,251	6,094,247	5,375,000	5,100,000

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Justification of estimates.—In order to dispose of the power generated at the navigation and flood-control works of the Authority, to connect them into an integrated system, and to furnish power for the construction of projects in progress, it is necessary to construct a network of transmission lines throughout the area. In order to increase the distribution of electricity chiefly to rural consumers, the Authority has purchased and constructed distribution properties. These are being sold to cooperative associations and municipalities which repay the Authority over a period of years. The estimate for 1938 for these activities is slightly less than that for 1937. The following map shows the location of the transmission and distribution facilities now in service or under construction.

Transmission lines and substations, $4,700,000.—The individual lines to be constructed out of this estimate cannot be definitely determined for 1938 at this time due to uncertainties as to the outcome of litigation and pending negotiations. During 1937 a considerable amount of this work has been held up by litigation. Uncertainties as to the status of this litigation during 1938 still exists, but it is expected that the Authority will be enabled to expend approximately the [fol. 2230] same amount in 1938 as in 1937. A number of commitments have been entered into with prospective municipal and industrial customers, which will have to be consummated if conditions permit, and for which the estimate

makes provision. It is only by taking power to new markets that the Authority can realize the revenues included in this Budget and at the same time carry out the program set forth in the Tennessee Valley Authority Act of 1933 as amended. This estimate also provides funds for the construction of additional lines and substations needed to interconnect the generating plants at the various dams. With such connections the integrated control of the Tennessee River system for flood control, navigation, and water-power development as directed by Congress becomes feasible.

Investment in distribution properties, $300,000.—This estimate provides for the construction or purchase of rural lines by the Authority for cooperative associations and municipalities, which pay for them over a period of 20 years or less. Some lines are financed by the Rural Electrification Administration, through which the Authority is reimbursed as soon as the construction is completed.

As of June 30, 1936, the investment of the Authority represented by outstanding obligations of the municipalities and associations was nearly $1,000,000. Properties purchased and operated by the Authority pending transfer to municipalities and associations amounted to over $1,000,000. About $1,000,000 more was represented by properties constructed or in process of construction, pending their transfer to municipalities and associations.

No allocation of the 1938 estimate by individual associations and municipalities is possible at this time. Construction of some projects will depend upon the construction of transmission lines to areas not now served. The lines to be financed by the Authority will be limited to areas in which it already has a considerable investment in distribution properties. Work in remaining areas, including that done for new cooperatives, will be financed, it is expected, by the Rural Electrification Administration.

Pages 454-5

Transmission Lines and Substations

Mr. Woodrum: With reference to item (a), transmission lines and substations, $4,700,000, will you give us some information on that program?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 116 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: Initially a study was made of all the lines it was felt were necessary in order to carry forward the job of tying the dams together and meeting contractual commitments for power from various communities or industrials or associations, or private utilities. And it was found that a very large figure was called for, a figure of some 13 million dollars. That was a larger figure than the Budget could stand and that was whittled down to $6,000,000 and has since been, through the necessities of keeping the Budget in line, whittled down to $4,700,000.

[fol. 2231] Just how that portion of the lines which ought to be built will actually be expended, it is difficult to say, because there are several needs for every dollar available. But we have broken it down by areas.

Mr. Woodrum: I am just wondering, Mr. Lilienthal, if in order to get a chronological picture of this situation, it would not be a good idea for you to make a brief statement of what you have done up to date in the way of building these transmission lines, your commitments, and so forth, and give us the present situation; what you expect to do in the future, and so forth, in order that we may have in our hearings a chronological story.

Mr. Lilienthal: Through the fiscal year, with an estimate, of course, for the remaining months, but quite an accurate estimate, the following figures, I think, will supply the information you want.

A total of transmission investment, investment under this heading of transmission lines and substations of $11,350,546.

Mr. Woodrum: From the beginning of the program?

Mr. Lilienthal: From the beginning of the program; yes.

Mr. Woodrum: Through the fiscal year 1937.

Mr. Lilienthal: Yes.

Mr. Woodrum: How many lines have you got and how many substations, and what do they do?

Mr. Taber: Does that include the 1937 appropriations, or does it not?

Mr. Lilienthal: That brings us to July 1 of this year.

Mr. Taber: Does it include the expenditure of the whole $4,500,000 that was allocated to you for that purpose in 1937?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 116 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: It does.

Mr. Woodrum: Have you not been tied up in litigation on that a good deal?

Mr. Lilienthal: Yes, we have.

Mr. Woodrum: Will you spend that money in 1937, or commit it?

Mr. Lilienthal: Yes. The injunction did not prevent the construction of all lines that were in progress. It did prevent their use in some instances. But this contemplates the expenditure of commitment of the entire appropriation for that purpose.

Mr. Woodrum: The 1937 appropriations?

Mr. Lilienthal: Yes.

Mr. Woodrum: How many miles of transmission lines and how many substations have you, and where are they located?

Mr. Lilienthal: We have this in very considerable detail. I might summarize it and then put these two sheets in the record?

Mr. Woodrum: I suggest that you do that.

Mr. Lilienthal: In the table that is appended, we have a list of all the transmission lines constructed or installed or under construction or authorized by the Authority as of March 1, which is as near the end of the fiscal year as we can get.

[fol. 2231½] Mr. Wigglesworth: Does it show which were constructed and which were purchased?

Mr. Lilienthal: These are constructed. We can supply a separate statement showing the transmission lines acquired.

The total length of miles is 1,078.55 miles. The plant in service cost, as of March 1, $2,865,995.

The estimated total cost of additional work in progress—there are many of them partially constructed—is $4,730,566.

The cost to March 1 of this additional work is $3,677,068.

Then with respect to substations, we will supply the total for the record.

The estimated total cost of substations under construction is $1,689,710.

The cost to March 1 was $1,093,928.

Many of the substations are physically completed. Some

of them are not. The tables show the situation in that respect.

Mr. Wigglesworth: They show how many and where they are?

Mr. Lilienthal: Yes, it designates them.

For example, the table shows as to substations, in case you may want greater detail, Wilson Dam, Ala., and so forth; giving the town or the place where these are.

Page 460

Mr. Woodrum: What dams are generating power now?

Mr. Lilienthal: The Wilson Dam, the Norris Dam, and the Wheeler Dam are.

Mr. Woodrum: Those three dams are now in operation and generating power?

Mr. Lilienthal: Yes.

(Here follow three photolithographs, side folios 2232-2234)

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

Pages
464-5

Operations of Tennessee Valley Authority Department of Electricity, fiscal year 1936

SUMMARY OF GENERATION, ENERGY DISTRIBUTION, AND REVENUES

	Total, 12 months	1935						1936					
		July	August	September	October	November	December	January	February	March	April	May	June
GENERATION													
Wilson Dam:													
Hydroelectric plant	467, 146, 200	71, 288, 800	46, 646, 000	44, 589, 500	44, 365, 500	43, 308, 500	64, 411, 100	17, 260, 900	17, 000, 600	16, 500, 400	14, 849, 000	16, 565, 800	69, 571, 100
Steam plant	209, 000				74, 100			174, 900					
Corinth stand-by steam plant	234, 400		18, 000	120, 000	74, 200	6, 400	8, 000		1, 200	5, 200	1, 400		
Tupelo stand-by steam plant	23, 800	8, 400	10, 000	2, 200						3, 000			
Blue Mountain Diesel plant	3, 120	720	600	1, 440	480								
Myrtle Diesel plant													
Gross generation	467, 696, 220	71, 297, 920	46, 674, 480	44, 713, 140	44, 514, 280	43, 314, 900	64, 419, 100	17, 465, 800	17, 500, 800	16, 508, 600	14, 850, 400	16, 565, 800	69, 571, 100
DISTRIBUTION OF ENERGY GENERATED													
Municipalities	21, 362, 782	1, 553, 340	1, 765, 140	1, 760, 000	1, 856, 530	1, 725, 400	1, 814, 300	1, 972, 000	1, 712, 280	1, 747, 356	1, 594, 600	1, 775, 297	2, 044, 510
County power associations	12, 606, 600	901, 800	804, 200	1, 144, 020	1, 157, 880	1, 270, 240	1, 295, 900	1, 164, 100	991, 000	979, 810	952, 800	1, 094, 800	1, 122, 850
Other electric corporations	286, 038, 484	54, 481, 745	32, 897, 338	32, 057, 417	34, 626, 720	23, 233, 382	52, 857, 344	3, 372, 425	693, 744	654, 444	307, 350	475, 223	51, 830, 214
Subtotal, wholesale sales	320, 010, 849	56, 726, 885	35, 466, 818	34, 961, 437	37, 642, 910	26, 229, 022	55, 967, 548	6, 508, 525	3, 397, 024	2, 072, 752	2, 754, 750	3, 295, 320	55, 027, 574
Retail sales (Tennessee Valley Authority power districts)	4, 497, 449	236, 231	250, 580	438, 655	415, 736	213, 985	147, 302	92, 750	123, 536	113, 894	150, 868	945, 164	1, 156, 533
Total, outside sales	234, 508, 697	57, 053, 216	35, 817, 408	33, 420, 092	36, 056, 646	36, 443, 037	56, 114, 910	6, 601, 284	3, 490, 562	2, 186, 646	2, 905, 648	4, 230, 567	56, 188, 107
Fertilizer works	56, 214, 545	8, 004, 345	4, 886, 176	3, 979, 513	376, 776	323, 930	376, 536	2, 712, 743	6, 511, 980	7, 560, 706	7, 191, 607	7, 215, 382	7, 085, 758
Other Tennessee Valley Authority activities	46, 728, 056	3, 504, 949	3, 444, 960	2, 911, 972	3, 836, 530	4, 607, 138	5, 370, 120	5, 583, 491	5, 167, 248	4, 175, 868	2, 909, 236	2, 567, 336	2, 559, 166
Station use, losses, and unaccounted for	30, 245, 622	2, 745, 410	2, 716, 934	2, 401, 563	2, 342, 328	1, 940, 835	2, 557, 532	2, 568, 278	2, 331, 000	2, 675, 288	1, 753, 909	2, 532, 493	3, 760, 052
Gross generation	467, 696, 220	71, 297, 920	46, 874, 480	44, 713, 140	44, 514, 280	43, 314, 900	64, 419, 100	17, 465, 800	17, 500, 800	16, 508, 600	14, 850, 400	16, 565, 800	69, 571, 100
Total, KWH sold	437, 450, 698	65, 562, 510	44, 157, 548	42, 311, 577	42, 271, 952	41, 374, 035	61, 861, 568	14, 877, 522	15, 169, 800	13, 923, 312	13, 096, 491	14, 033, 307	65, 811, 048

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EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

REVENUE FROM SALE OF ENERGY														
Municipalities	$120,989.70	$8,814.84	$9,730.55	$10,262.97	$10,576.41	$10,214.89	$10,714.51	$10,675.25	$9,656.37	$9,714.09	$9,248.01	$10,094.08	$11,208.03	
County power associations	72,054.03	3,853.46	4,723.63	7,027.34	6,570.47	7,477.73	6,966.89	6,969.17	5,601.94	5,532.08	5,582.60	5,788.75	6,239.97	
Other electric corporations	888,801.93	82,843.28	59,822.15	58,625.01	61,399.86	59,895.05	81,048.94	22,945.37	17,918.42	15,848.32	16,849.85	17,495.87	94,350.81	
Subtotal, wholesale sales	781,845.66	95,511.58	74,006.33	75,915.32	78,546.74	77,587.37	98,770.34	40,309.79	33,176.73	31,094.49	31,680.46	33,378.70	111,867.81	
Retail sales (Tennessee Valley Authority power districts) [1]	73,230.56	7,407.31	7,433.25	9,457.87	9,712.18	4,804.53	2,735.78	1,931.20	2,289.01	2,299.21	2,619.92	9,523.19	13,017.11	
Total, outside sales	855,076.22	102,918.89	81,439.58	85,373.19	88,258.92	82,391.90	101,506.12	42,240.99	35,465.74	33,393.70	34,300.38	42,901.89	124,884.92	
Fertilizer works	120,321.15	15,564.18	10,486.32	8,536.12	2,072.75	2,359.63	2,454.53	6,557.94	13,296.58	15,122.08	14,619.89	14,655.77	14,303.36	
Other Tennessee Valley Authority activities	222,395.00	16,538.09	16,560.75	15,304.32	18,670.43	23,633.13	23,072.02	23,036.44	22,174.75	19,031.94	16,336.08	14,496.26	13,620.79	
Total revenue	1,197,992.37	135,021.16	108,486.65	109,413.63	109,002.10	108,384.66	127,032.67	71,855.37	71,037.07	67,547.72	65,256.35	72,053.92	152,809.07	

[1] Red figures.
[2] Gross (before deduction of local operating expenses).

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Pages 466-7

Operations of Tennessee Valley Authority, Department of Electricity, fiscal year, 1935

GENERATION, ENERGY DISTRIBUTION, AND REVENUES-SUMMARY

	Total	1934						1935					
		July	August	September	October	November	December	January	February	March	April	May	June
GENERATION													
Wilson Dam hydroelectric plant	122,370,300	5,973,000	6,275,100	5,057,700	5,639,500	8,736,200	10,812,200	12,705,900	13,053,300	11,381,100	13,339,200	14,470,600	14,947,000
Corinth stand-by steam plant	15,300			800		2,400			7,000		4,400		1,000
Tupelo stand-by steam plant	16,200			9,000	7,200								
Blue Mountain Diesel plant	212,240	32,080	31,480	16,360	28,320	29,160	30,960	32,640	10,360	120	360		
Myrtle Diesel plant	15,900	600	1,700	7,500	300	900	1,100	2,900	900				
Gross generation	122,629,940	6,005,680	6,308,280	5,091,360	5,665,320	8,768,660	10,844,260	12,741,040	13,071,760	11,381,220	13,332,960	14,470,600	14,948,000
DISTRIBUTION OF ENERGY GENERATED													
Municipalities	12,814,300	985,800	750,840	917,520	972,360	954,960	1,053,300	1,294,080	1,203,200	1,101,720	1,209,300	1,315,120	1,278,620
County power associations	4,251,300	294,200	318,800	322,200	322,800	294,400	313,400	344,400	290,000	305,000	403,400	432,000	520,100
Other electric corporations	2,902,620	1,715,900	1,220,451	(916,200)	(434,040)	(132,670)	567,710						873,404
Subtotal, wholesale sales	19,968,220	2,675,900	2,290,091	323,516	860,532	1,116,910	1,944,618	1,638,480	1,490,860	1,376,720	1,612,700	1,747,720	2,681,214
Retail sales (Tennessee Valley Authority power districts)	3,984,494	202,450	261,557	405,783	398,224	330,360	395,120	331,498	337,080	267,851	331,308	373,661	368,060
Total, outside sales	23,952,714	2,878,350	2,560,648	729,299	1,258,756	1,447,270	2,250,757	1,969,978	1,827,940	1,644,571	1,943,908	2,121,381	3,049,274
Fertilizer works	42,545,394		294,005	263,334	261,536	1,812,516	3,323,654	4,950,000	6,025,000	4,234,491	6,125,461	7,823,719	7,999,951
Other Tennessee Valley Authority activities	34,233,034	1,859,654	2,131,935	2,239,367	2,702,722	3,331,361	2,898,258	3,725,850	3,181,931	3,095,213	3,319,270	2,675,419	3,162,005
Station use, losses, and unaccounted for	21,948,798	1,267,667	1,381,692	1,859,360	1,472,306	2,177,505	2,371,591	2,094,295	2,036,134	2,378,915	1,944,301	2,080,081	1,017,051
Gross generation	122,629,940	6,005,680	6,308,280	5,091,360	5,665,320	8,768,660	10,844,260	12,741,040	13,071,760	11,381,220	13,332,960	14,470,600	14,948,000
Total kilowatt-hours sold	100,681,142	4,736,013	4,926,588	3,232,000	4,193,014	6,591,155	8,472,669	10,646,745	11,035,626	9,104,305	11,388,639	12,349,519	13,931,849
REVENUE FROM SALE OF ENERGY													
Municipalities	$74,013.20	$3,640.58	$4,140.18	$5,180.20	$5,413.60	$5,726.70	$6,158.16	$7,196.05	$7,399.25	$7,230.30	$7,230.27	$7,457.15	$7,228.70
County power associations	24,573.50	1,663.60	1,739.40	1,863.50	1,804.60	1,803.60	1,852.50	1,932.40	1,763.80	2,253.60	2,337.20	2,449.80	2,930.30
Other electric corporations	202,459.42	19,953.64	19,098.02	14,798.96	14,996.61	15,751.25	17,852.14	16,200.00	16,200.00	16,200.00	16,200.00	16,200.00	19,024.82
Subtotal, wholesale sales	301,082.40	25,297.82	24,987.60	21,842.74	22,206.21	23,281.35	25,862.80	25,328.45	25,363.05	25,703.90	25,767.47	26,146.95	29,213.97
Retail sales (Tennessee Valley Authority power districts) [1]	102,144.81	5,978.02	7,034.13	10,457.80	9,961.52	9,602.79	8,697.57	8,611.71	8,509.89	7,275.02	8,080.65	8,655.15	9,193.07
Total, outside sales	403,229.21	31,275.84	32,021.73	32,310.33	32,207.73	32,974.14	34,560.37	33,940.16	33,872.94	32,979.01	33,838.12	34,802.10	38,207.04
Fertilizer works	36,891.95		802.02	660.00	1,870.10	12,532.20	13,634.06	21,949.57	33,560.32	18,903.94	(78,817.74)	3,811.98	15,844.98
Other Tennessee Valley Authority activities	158,066.62	8,728.03	9,558.42	10,344.35	12,427.66	16,107.61	12,269.33	15,084.67	13,819.42	13,432.68	19,684.19	14,193.74	12,432.40
Total revenue	598,187.78	40,003.87	42,382.17	43,344.68	46,505.49	61,613.95	60,464.36	70,984.40	71,252.28	65,315.63	(25,294.43)	52,797.70	66,084.42

[1] Gross (before deduction of local operating expenses).

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

[fol. 2235] Page 469

Present and Proposed Transmission System Investment and Revenues—Summary

Investment

Area	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Middle Tennessee area	$1,481,774	$2,043,200	$3,524,974
West Tennessee area	1,995,003	1,477,000	3,472,003
Alabama area	1,065,994	277,500	1,343,494
Mississippi area	1,212,473	215,000	1,427,473
Chickamauga area	154,641	1,778,700	1,933,341
Norris area	447,705	.....	447,705
Dam substations and inter-connecting lines	4,992,956	2,716,000	7,708,956
Total	$11,350,546	$8,507,400	$19,857,946
Less adjustments and transfers to future years' programs [1]	861,122	3,807,400	4,668,522
Total to June 30, 1938	$10,489,424	$4,700,000	$15,189,424

[fol. 2236] Page 470

Revenue

Consumer	Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Existing customers (1936 revenues):			
Middle Tennessee area	27,180	169,500,000	$459,400
West Tennessee area	2,540	10,900,000	62,000
Alabama area	10,220	32,300,000	187,000
Mississippi area	10,190	44,900,000	233,700
Chickamauga area	1,120	5,000,000	33,200
Norris area	.....	.....	.....
Customers served at dams	43,000	150,500,000	550,000
Total, existing customers	94,250	413,100,000	1,525,300
Estimated for First Full Year of Service			
Prospective customers (first year revenues):			
Middle Tennessee area	50,560	227,400,000	515,000
West Tennessee area	71,700	347,300,000	1,093,000
Alabama area	9,870	32,175,000	231,400
Mississippi area	6,000	24,000,000	100,000
Chickamauga area	21,300	120,000,000	535,000
Norris area	60,000	240,000,000	540,000
Customers served at dams	50,000	300,000,000	760,000
Subtotal, prospective customers	272,030	1,266,775,000	3,739,700
Total	366,310	1,679,275,000	5,265,000
Less temporary direct service, Alabama	5,400	4,000,000	64,000
Total consumption and revenue	360,910	1,675,275,000	5,201,000

[1] Estimated value of transmission property included in statement of distribution investment as "Unclassified." This property was acquired from the Alabama Power Co. and final determination of allocation to various classes of property has not yet been made.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

This estimate covers the cost of proposed transmission-system construction which will be required during the fiscal years 1938 and 1939, in order to take care of the load growth of existing customers and provide service to prospective additional customers, including municipalities, cooperative associations, industrial customers, Tennessee Valley Authority activities, privately owned utilities and others.

The order in which these projects will be undertaken depends entirely upon the outcome of present legal proceedings, the acquisition or construction of distribution systems by certain municipalities, the outcome of negotiations with prospective customers with whom contracts have not yet been signed, the determination of certain policies, and other factors which are indefinite at the present time. The contingencies in connection with each project are given in detail on the attached sheets, together with a list of the individual lines and substations, their estimated costs, and the revenues to be derived from each. It will be noted that the estimated revenue in connection with each of the projects is sufficient to justify the construction cost involved, and it is not proposed to undertake construction in any case until the corresponding revenue is assured and the project has been specifically approved by the Board.

[fol. 2237] It is anticipated that construction totaling at least $4,700,000 will be required during the fiscal year 1938 in order to take advantage of opportunities to obtain additional revenues as the several situations develop. The balance of the program set forth herein will probably be postponed until the fiscal year 1939, although it is not possible at this time to predict the rate of development.

The estimated revenues from prospective customers, as shown above, will not all be realized during the fiscal year 1938, since many of them may not be connected until late in the fiscal year or until the following fiscal year. On the other hand, there are a number of prospective customers throughout the Tennessee Valley Authority area not included in the estimates above who may be connected during the present fiscal year. The estimated revenue for the fiscal year 1938 is shown in another tabulation under the heading "Operations."

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

Pages 478–485

Present and Proposed Transmission System Investment and Revenues
Middle Tennessee Area

Project	Estimated cost prior years	Estimated cost fiscal year 1938	Estimated total cost
Investment			
Existing transmission system (established as of June 30, 1937):			
Lines	$906,353	.....	.....
Substations	575,421	.....	.....
Total as of June 30, 1937	1,481,774	.....	.....
Additional lines and substations:			
Second line to Columbia (for Monsanto service)	.....	$720,000	.....
Substation at dam (for Montsanto service)	.....	80,000	.....
Substation at Columbia (for Montsanto service)	.....	100,000	.....
Columbia-Shelbyville	.....	104,000	.....
Shelbyville substation	.....	35,000	.....
Shelbyville-Murfreesboro	.....	78,000	.....
Connection to Tennessee Electric Power Co	.....	115,000	.....
Elkton-Fayetteville	.....	83,200	.....
Fayetteville substation	.....	28,000	.....
Columbia-Nashville (for Tennessee Electric Power Co. interchange)	.....	600,000	.....
Additions to Columbia substation (for Tennessee Electric Power Co. interchange)	.....	100,000	.....
Total proposed additions, fiscal year 1938	.....	2,043,200	.....
Total investment	1,481,774	2,043,200	$3,524,974

Revenues

Consumer	Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Existing customers (1938 revenues):			
City of Dickson, Tenn	510	2,300,000	$13,800
City of Pulaski, Tenn	770	3,300,000	20,600
Duck River Electric Membership Corp	450	1,900,000	12,000
Middle River Electric Membership Corp	450	1,900,000	12,000
Monsanto Chemical Co	25,000	160,000,000	400,000
Lincoln County Power District	.....	100,000	1,000
Subtotals, existing customers	27,180	169,500,000	459,400
Estimated for First Full Year of Service			
Prospective customers (first-year revenues):			
Southwest Tennessee Electric Membership Corporation	560	2,400,000	$15,000
Tennessee Electric Power Co.:			
Nashville	40,000	180,000,000	400,000
Columbia	10,000	45,000,000	100,000
Subtotals, prospective customers	50,560	227,400,000	515,000
Total, consumption and revenues	77,740	396,900,000	974,400

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

[fol. 2238] The second circuit to Columbia, which will be a 154-kilovolt transmission line extending from either Wilson Dam, Wheeler Dam, or a point on the Norris line, is required in order to fulfill the requirements of the existing contract with Monsanto Chemical Co., and it is to be in service not later than January 1, 1938. The ultimate revenue from the Monsanto Co. is expected to exceed $750,000 annually.

Construction of the Columbia-Nashville line is contingent upon the execution of a contract with the Tennessee Electric Power Co. to provide additional service facilities in the Nashville area in order to supply the power deficiency which already exists at that point, and to replace a certain amount of steam generation.

The Columbia-Shelbyville, Shelbyville-Murfreesboro, and Pulaski-Fayetteville 44-kilovolt lines will probably be required in order to supply adequate service to take care of the load growth of the existing cooperative associations in middle Tennessee.

The 44-kilovolt connection to the Tennessee Electric Power Co. at Columbia is contingent upon an agreement with the Tennessee Electric Power Co., and if undertaken, will provide reinforcement to their 44-kilovolt system in the southern portion of the middle Tennessee area.

West Tennessee Area

Project Investment	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (established as of June 30, 1937):			
Lines	$1,550,789	.....	.....
Substations	444,214	.....	.....
Total as of June 30, 1937	1,995,003	.....	.....
Additional lines and substations:			
Completion of south Memphis substation	.....	$65,000	.....
Jackson-Covington-Memphis line	.....	475,000	.....
Memphis substation, north	.....	241,000	.....
Connection to Arkansas Power & Light Co.:			
Line	.....	100,000	.....
Sub	.....	150,000	.....
Jackson substation additions, 110 kilovolts	.....	65,000	.....
Conversion to 154 kilovolts at Memphis	.....	275,000	.....
Jackson-Trenton line	.....	106,000	.....
Total additional, fiscal year 1938	.....	1,477,000	.....
Total investment, west Tennessee	1,995,003	1,477,000	$3,472,003

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

[fol. 2239]

Consumer	Revenues: Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Existing customers (1938 revenues):			
City of Bolivar, Tenn	235	1,000,000	$6,500
City of Jackson, Tenn	430	1,800,000	10,000
City of Milan, Tenn	460	2,000,000	11,000
City of Somerville, Tenn	185	800,000	5,000
Pickwick Electric Membership Corporation	370	1,600,000	9,500
Gibson County Electric Membership Corporation	860	3,700,000	20,000
Subtotal, existing customers	2,540	10,900,000	62,000
Estimated for First Full Year of Service			
Prospective customers (first-year revenues):			
City of Memphis, Tenn	30,000	140,000,000	$600,000
Electric Bond & Share Corporation (Arkansas)	40,000	200,000,000	450,000
City of Trenton, Tenn	1,100	5,000,000	28,000
Southwest Tennessee Electric Membership Corporation	600	2,300,000	15,000
Subtotal, prospective customers	71,700	347,300,000	1,093,000
Total, consumption and revenues, west Tennessee	73,240	358,200,000	1,155,000

The above estimates cover the cost of the necessary transmission system construction in order to provide service to Memphis, Tenn., and to interconnect with the Electric Bond & Share system near Memphis and at Covington, Tenn., for the purpose of supplying their power deficiency in eastern Arkansas and west Tennessee; and also service to other prospective customers in the west Tennessee area.

The necessity for this work depends upon (a) the outcome of court proceedings in the Nineteen Companies suit; (b) ability of the city of Memphis to complete the acquisition or construction of a distribution system; (c) outcome of present negotiations with the Arkansas Power & Light Co. and associated companies; (d) determination of policy with respect to interconnection with these utilities.

In addition to the investment of $1,477,000 for market lines in this area, an investment of $1,125,000 for interconnecting lines between hydro plants will be required. Although this latter amount is not entirely assignable to the west Tennessee area, the necessity for undertaking these particular lines during the coming fiscal year is dependent upon the acquisition of the loads above mentioned.

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

The total investment and total annual revenues by the end of the fiscal year 1938 for this area may be summarized as follows:

Investment, including market and interconnecting lines	$2,602,000
Annual revenues from additional customers	1,093,000

[fol. 2240] Alabama Area

Investment

Project	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (estimated as of June 30, 1937):			
Lines	$111,673	.....	.....
Substations	93,199	.....	.....
Total, as of June 30, 1937	204,872	.....	.....
Additional lines and substations:			
110-kilovolt connection from Decatur substation to Guntersville line	.....	$27,500	.....
Substation, 25,000 kilovolt-amperes, 154/110 kilovolts	.....	250,000	.....
Total proposed additions, fiscal year 1938	.....	277,500	.....
Estimated value of transmission property in north Alabama, not yet classified (included in statement of distribution property acquired from Alabama Power Co. (approximate))	861,122	.....	.....
Total investment	1,065,994	277,500	$1,343,494

Revenues

Consumer	Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Existing customers (1938 revenues):			
City of Athens, Ala	1,000	4,500,000	$25,000
City of Florence, Ala	2,600	11,600,000	58,000
City of Muscle Shoals, Ala	80	600,000	3,800
City of Sheffield, Ala	800	3,500,000	20,000
City of Tuscumbia, Ala	340	1,500,000	10,200
Cullman County Electric Membership Corporation	2,000	9,000,000	6,000
Lauderdale County power district	500	800,000	7,000
Colbert County power district	900	800,000	7,000
Alabama power district	4,000	3,000,000	50,000
Total, existing customers	10,220	32,300,000	187,000

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 116 FOR IDENTIFICATION (Excluded)

Consumer	Kilowatt demand	Kilowatt hour consumption	Annual revenue
Estimated for First Full Year of Service			
Prospective customers (first year revenue):			
Morgan and Lawrence Counties, Ala. (including industrials)	4,000	9,000,000	100,000
Lauderdale County Corporation, Ala	500	2,500,000	15,000
Colbert County Corporation, Ala	900	3,000,000	20,000
City of Decatur, Ala	3,000	12,000,000	60,000
City of Russellville, Ala	1,100	4,200,000	26,100
City of Hartselle, Ala	150	600,000	4,200
City of Courtland, Ala	120	475,000	3,300
City of Cherokee, Ala	100	400,000	2,800
Subtotal, prospective customers	9,870	32,175,000	231,400
Total	20,090	64,475,000	418,400
Less temporary rural service	5,400	4,600,000	64,000
Total, consumption and revenues	14,690	59,875,000	354,400

[fol. 2241] The only additional transmission system construction contemplated in the Alabama area for the fiscal year 1938 consists of a 110-kilovolt connection from the Guntersville line to the Decatur substation, including installation of a 154/110-kilovolt substation near Decatur. This construction, or, as an alternate, the acquisition of the existing 110-kilovolt line between Decatur and Wilson Dam, now owned by the Alabama Power Co., will be required in order to eliminate the interchange at Decatur.

In the tabulation of revenues given above, it will be noted that 1938 revenues are shown for the Lauderdale, Colbert, and Alabama power districts for a portion of the year only, and that in the list of prospective customers, revenues from corresponding cooperative associations are shown for a full year. This makes it necessary to deduct the power district revenues from the total in order to eliminate the duplication. The reason for the above is that temporary rural service in the power districts will be discontinued at some time during the fiscal year 1938, at which time the operations will be assumed by electric membership corporations or municipalities.

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Mississippi Area

Investment

Project	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (estimated as of June 30, 1937):			
Lines	$497,515	.....	.....
Substations	714,959	.....	.....
Total, as of June 30, 1937	1,212,473	.....	.....
Additional lines and substations:			
Tupelo-Pontotoc line	.....	$83,000	.....
Pontotoc substation	.....	40,000	.....
Increase 2,300-volt capacity:			
Tupelo	.....	57,000	.....
Iuka	.....	35,000	.....
Total additions, fiscal year, 1938	.....	215,000	.....
Total investment, Mississippi area	1,212,473	215,000	$1,427,473

Revenues

Consumer	Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Existing customers (1938 revenues):			
Alcorn County Electric Power Association	2,000	9,000,000	$45,000
Monroe County Electric Power Association	350	1,500,000	8,000
Pontotoc County Electric Power Association	550	2,400,000	15,800
Prentiss County Electric Power Association	670	2,900,000	18,000
Tishomingo County Electric Power Association	390	1,600,000	10,500
Tombigbee County Electric Power Association	1,400	6,000,000	24,000
Amory, Miss	440	1,900,000	11,700
Holly Springs, Miss	370	1,600,000	10,000
New Albany, Miss	900	3,900,000	21,000
Okolona, Miss	420	1,800,000	11,700
Tupelo, Miss	2,700	12,300,000	58,000
Subtotal, existing customers	10,190	44,900,000	233,700
Estimated for First Full Year of Service			
Prospective customers (first year revenue):			
Sardis Dam (U. S. Army)	5,000	20,000,000	80,000
Pontotoc Cotton Oil Co	500	2,000,000	10,000
Southern Cotton Oil Co	500	2,000,000	10,000
Subtotal, prospective customers	6,000	24,000,000	100,000
Total, consumption and revenues, Mississippi area	16,190	68,900,000	333,700

[fol. 2242] The Tupelo-Pontotoc 44-kilovolt line and the 44-kilovolt substation at Pontotoc will be required in connection with the proposed service to the Sardis Dam project.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

An additional line from Pontotoc to Sardis will be constructed by the Army Engineers or by the dam contractor.

The increased 2,300-volt capacity at Tupelo and Iuka will be required in order to take care of the normal load growth at those locations.

The changing of the Burnsville-Tupelo line to 110 kilovolts, the construction of the Tupelo 110-kilovolt substation, and the New Albany-Pontotoc 44-kilovolt transmission line have all been included in the 1937 estimate, since it is probable that the majority of the commitments and expenditures in connection with these items will be made during the present fiscal year.

The revenue estimate above includes only those customers who are now being served or who appear to be immediately in prospect. The transmission system, upon completion of the proposed 1938 construction, will be of sufficient capacity to take care of a considerable increase in load without further capital expenditures except for line extensions.

Chickamauga Area

Investment

Project	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (estimate as of June 30, 1937):			
Lines	$88,956	.....	.....
Substations	65,685	.....	.....
Total as of June 30, 1937	154,641	.....	.....
Additional lines and substations:			
Chickamauga-Cave Springs, 75 miles 110 kilovolts	.....	$412,500	.....
Cave Springs substation, 15,000 kilovolt-amperes, 110 kilovolts	.....	180,000	.....
Chickamauga - Dalton - Cartersville, 75 miles, 110 kilovolts	.....	412,500	.....
Dalton-Lafayette, 22 miles, 44 kilovolts	.....	57,200	.....
Dalton substation, 110 kilovolts	.....	175,000	.....
Lafayette substation, 44 kilovolts	.....	26,000	.....
Cartersville substation, 110 kilovolts	.....	183,000	.....
Cartersville-Cave Springs, 35 miles, 110 kilovolts	.....	192,500	.....
Additional oil circuit breakers	.....	140,000	.....
Total additions, fiscal year 1938	.....	1,778,700	.....
Total investment	154,641	1,778,700	$1,933,341

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Chickamauga Area—Continued

Consumer	Kilowatt demand	Kilowatt-hour consumption	Revenues Annual revenue
Existing customers (1938 revenues):			
City of Dayton, Tenn	400	1,800,000	$11,700
Meigs County Electric Membership Corporation, Tennessee	300	1,300,000	9,000
North Georgia Electric Membership Corporation, Georgia	420	1,900,000	12,500
Total, existing customers	1,120	5,000,000	33,200
Estimated for First Full Year of Service			
Prospective customers (first-year revenues):			
City of Dalton, Ga	1,300	5,800,000	32,000
City of Lafayette, Ga	400	1,400,000	10,000
City of Cartersville, Ga	1,400	5,500,000	31,500
American Thread Co. (Dalton)	2,000	6,000,000	30,000
Crown Cotton Mills (Dalton)	1,200	4,000,000	20,000
Boylston-Crown Mills (Dalton)	650	1,300,000	6,600
Dalton Brick & Lumber Co. (Dalton)	150	300,000	1,500
Duane Chair Co. (Dalton)	200	400,000	5,700
Lafayette Cotton Mills (Lafayette)	560	2,000,000	10,000
Walker County Hosiery Mills (Lafayette)	100	200,000	3,000
Goodyear-Clearwater Mill (Cartersville)	3,800	18,000,000	102,000
New Riverside Ochre Co. (Cartersville)	170	1,000,000	8,000
Cave Springs Paper Mill (Cave Springs)	12,000	50,000,000	240,000
Total, prospective customers	23,930	95,900,000	500,300
Total, consumption and revenues	25,050	100,900,000	533,500

[fol. 2243] The construction of additional transmission facilities in the Chickamauga area, comprising southeast Tennessee and north Georgia, is contingent upon obtaining contracts from the municipalities of Dalton, Lafayette, and Cartersville, Ga., and with the several industrial consumers in the vicinity of these cities, as well as a large industrial user at Cave Springs, near Rome, Ga. It is possible that only a portion of the load will be obtained, which may justify the construction of a part of the ultimate system.

It may be possible to eliminate the construction of certain of these facilities if interchange agreements can be worked out.

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Norris, Tenn., Area

Investment

Project	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (estimated as of June 30, 1937):			
Lines	$421,546	.....	.....
Substations	26,159	.....	.....
Total as of June 30, 1937	447,705	.....	.....
Total investment	447,705	.....	$447,705

Additional lines and substations: (None contemplated during 1938).

Revenues

Consumer	Kilowatt demand	Kilowatt-hour consumption	Annual revenue
Prospective customers (first year revenues): Aluminum Co. of America	[1] 60,000	[1] 240,000,000	[1] 540,000
Total consumption and revenues	[1] 60,000	[1] 240,000,000	[1] 540,000

[1] Estimated for first full year of service.
Note.—Existing customers (1938 revenues): None.

[fol. 2244] The existing investment in transmission facilities in the Norris area consists of the Norris-Alcoa line, which is now under construction, for providing service to the Aluminum Co. of America, and the Clinch River substation, which was installed by the Tennessee Electric Power Co. on behalf of the Authority, to provide service to Norris Dam during the construction period.

Although the revenue estimate for the fiscal year 1938 includes only $100,000 revenue from the Aluminum Co. of America, it is expected that this amount will be greatly exceeded if the present negotiations with the Aluminum Co. of America are completed. A maximum demand of 60,000 kilowatts is anticipated by January 1, 1938, and the probable ultimate demand will be at least 100,000 kilowatts, with an annual revenue of about $1,800,000. Additional transmission facilities will undoubtedly be required in the future to take care of this increase in load.

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Dam Substations and Interconnecting Lines

Investment

Project	Estimated cost, prior years	Estimated cost, fiscal year 1938	Estimated total cost
Existing transmission system (estimated as of June 30, 1937):			
Lines	$4,069,730	.....	.....
Substations	923,226	.....	.....
Total as of June 30, 1937	4,992,956	.....	.....
Additional lines and substations required for west Tennessee services:			
154 kilovolt connection at Wilson Dam	.....	$225,000	.....
Additional connections at Pickwick Dam	.....	450,000	.....
Second Wilson-Pickwick line	.....	450,000	.....
Subtotal	.....	1,125,000	.....
Required for north Georgia services:			
Connections to Chickamauga line at Watts Bar	.....	85,000	.....
Substation at Chickamauga, 154/110 kilovolts	.....	315,000	.....
Subtotal	.....	400,000	.....
Connection between Guntersville and Chickamauga:			
Connection at Guntersville	.....	125,000	.....
Guntersville-Chickamauga line	.....	939,000	.....
River crossing at Chickamauga	.....	42,000	.....
Connection at Chickamauga	.....	85,000	.....
Subtotal	.....	1,191,000	.....
Estimated total investment	4,992,956	2,716,000	$7,708,956

Revenues from Customers Served at Dams

Consumer	Kilowatt demand	Kilowatt-hours consumption	Annual revenue
Existing customers (1938 revenues):			
Chickamauga Dam construction	6,000	22,000,000	$100,000
Fertilizer works, Wilson Dam (U. S. N. P. 2)	15,000	60,000,000	130,000
Guntersville Dam construction	6,000	22,000,000	100,000
Muscle Shoals operations (U. S. Government Reserve)	1,000	3,500,000	21,000
Navigation locks	.....	500,000	2,000
Town of Norris, Tenn	2,000	6 500,000	26,000
Pickwick Dam construction	7,000	22,000,000	100,000
Hiwassee Dam construction	4,000	9,000,000	45,000
Other main river dam construction	2,000	5,000,000	26,000
Total, existing customers	43,000	150,500,000	550,000
Estimated for First Full Year of Service			
Prospective customers (first year revenues):			
Commonwealth & Southern Corporation	50,000	309,000,000	760,000
Total consumption and revenues	93,000	450,500,000	1,310,000

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)

[fol. 2245] The construction of additional facilities for interconnecting the hydroelectric generating plants is necessary in order to provide for the transfer of electrical energy between plants, as load and stream conditions may require, in order to make fullest use of the capacity of the integrated system. The cost of such work cannot be allocated strictly to any particular transmission system project or area, but should be considered rather as a part of the generating cost since, in effect, it increases the availability of electrical energy at each of the plants without a corresponding increase in generating capacity.

The necessity for constructing those lines at this particular time, however, is more or less closely identified with the requirements of the respective market areas and may be allocated approximately as above.

The revenues shown above are from customers who are served at the dams and are, therefore, not assignable to any particular market area. It will be noted, of course, that there is no particular relationship between the revenues from these customers and the investment in interconnecting lines.

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Mr. Woodrum: Now, Mr. Lilienthal, will you say something briefly about these other two items on page 28—"Investment for distribution property, $300,000?"

Mr. Lilienthal. The item of $300,000 for investment in distribution properties is quite well described in the note on page 28, which, I assume, will be in the record.

Generally speaking, the item is to enable the Authority to purchase on the account of the rural cooperatives, the farm cooperatives, operated by associations and corporations, operating rural projects, capital for small extensions.

The rural projects by and large are financed by the R. E. A.; and some of these associations will have need of relatively small extensions, say for 5 or 10 miles to reach additional customers, which will improve their financial situation. But if the R. E. A. finances those small projects, there will be a great many difficulties in the way of having too many different liens on the same property. It has been found much more expeditious for the T.V.A. to advance that

money rather than to get two bankers into the same association.

Frequently these associations are purchasing existing small lines; and this is for the purpose as authorized under our statute of lending money for that purpose.

Mr. Woodrum: Do you mean that you have a working arrangement with the R.E.A.?

Mr. Lilienthal: Yes. We have a very cooperative arrangement with R.E.A. by which they are furnishing by far the bulk of the financing through this area. But these are exceptional cases. They are not authorized to loan money for the purchase of existing lines for one thing. And then, where you have a small extension where we already have advanced the money, it is very awkward to have two sets of loans, and very expensive.

[fol. 2246] Page 490

2. Electricity operations, $2,649,000 (net credit).—This estimate for electricity operations is based on estimates of operating revenues, operating expenses, revenue deductions, and nonoperating income. These estimates will be explained in the following analysis:

A. Operating revenues, $3,700,000: The 1938 estimate of operating revenues is more than double the corresponding estimate for 1937. As shown in the supporting table, following this test, substantial increases are anticipated from practically all sources. A large increase in power demand in the area over last year, with every indication of continuing increase, has produced a very favorable market situation for the sale of surplus power and increase in revenues. Estimated sales to municipalities are estimated to increase from $248,600 in 1937 to $700,000 in 1938. This estimate is based on normal growth in the requirements of present customers, together with the addition of a few other municipalities where it seems certain that power sales will begin during the fiscal years 1937 or 1938. Much of the increase over the 1937 estimate results from the fact that many of the 1937 estimates are for only part of a fiscal year. Sales to cooperative associations are expected to increase from

$131,400 in 1937 to $275,000 in 1938. This is based on increasing load requirements of present associations. Sales to industries are expected to increase from $50,000 in 1937 to $600,000 in 1938. This increase is based almost entirely on present contracts for the sale of power to industries. Sales to utilities are expected to increase from $756,000 in 1937 to $1,510,000 in 1938. This increase is based on growth in loads on private systems for which no existing generating capacities are available, excepting those being placed in operation by the Authority. During the dry seasons of 1935 and 1936 the Authority was unable to supply the demands of private utilities. With generating units now being completed, it is believed that the Authority will be able to supply these increasing demands. A reduced estimate is included in the 1938 budget for net revenue from power districts. It is planned to dispose of all these properties as rapidly as possible by sales to cooperatives associations. Interdepartmental transfers are expected to increase from $444,000 in 1937 to $550,000 in 1938. This estimate covers the power used in fertilizer manufacture and construction operations.

B. Operating expenses, $941,000: The 1938 estimate for operating expenses exceeds the 1937 estimate by $146,000. As shown in the supporting table following this text the estimate for production expense is increased by $50,000; the remaining increase is accounted for by growth in expense for operation and maintenance of transmission lines and substations, increased electrical development expense and increased general administration expense. These increases are necessary in order to care for the increasing volume of business as shown under operating revenue estimates.

C. Revenue deductions, $185,000: The estimate for revenue deductions is computed on the basis of section 13 of the Tennessee Valley Authority Act, as amended, which requires that 5 per cent of gross revenues from the sale of power shall be paid to the States of Alabama and Tennessee based on the amount of power generated by projects located in these States.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 116 FOR IDENTIFICATION (Excluded)

[fol. 2247] Page 488

Mr. Woodrum: What rate of interest do you charge on those loans?

Mr. Lilienthal: Threé and one-half per cent.

Mr. Wigglesworth: Does that probably amount to about a million dollars?

Mr. Lilienthal: That is about correct.

Mr. Wigglesworth: What collateral, if any, do you have?

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[fol. 2248] D. Nonoperating income, $75,000: This amount represents estimated interest on properties transferred to municipalities and associations together with other miscellaneous nonoperating receipts.

Pages 510-11

Memorandum on Firm and Secondary Power Rate—Schedule C-1

Availability.—Transmitted firm and secondary power purchased in combination by large industrial customers, with a minimum contract firm demand of 8,000 kilowatts. Firm power shall be available to customer at all times. Secondary power shall be available to customer for at least 300 days, to be selected by Authority out of each calendar year.

Demand charge.—For firm power, $.90 per kilowatt of demand per month.

For secondary power, $.30 per kilowatt of demand per month when secondary power is available.

Energy charge.—For total energy consumed including firm and secondary use; first 100,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 200,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; next 700,000 kilowatt-hours consumed per month at 2.5 mills per kilowatt-hour; excess over 1,000,000 kilowatt-hours consumed per month at 2 mills per kilowatt-hour.

Charge for energy in excess of 360 times the total measured demand as hereinafter defined shall be subject to a reduction of 0.5 mills per kilowatt-hour from the otherwise applicable rate.

Excerpts From Complainants' Exhibit No. 116 for Identification (Excluded)

Determination of Demand

Demand measurement shall be made by suitable instruments at the point of delivery. Total measured demand for any month shall be defined as the highest integrated simultaneous load during 60 consecutive minute period during the month for which determination is made.

For periods during which secondary power is not available, firm demand shall be taken as 100 per cent of the total measured demand or the contract firm demand, whichever is the greater, and there shall be no charge for secondary demand.

For months during which secondary power is available, firm demand shall be taken as 35 per cent of the total measured demand, but in no case shall the firm demand be taken as less than the highest firm demand billed customer during any period when secondary power was not available within the previous consecutive 12 months. Secondary demand shall be taken as the difference between total measured demand and firm demand. During any fractional month for which secondary demand charges are applicable, such charges shall be prorated.

[fol. 2249] Adjustment of Demand Charge for Power Factor

The customer's demand shall, whenever the normal power factor is less than 85 per cent, be determined upon the basis of 85-per cent power factor; that is, whenever said normal power factor is less than 85 per cent, the demand in kilowatts shall be taken to be 85 per cent of the kilovolt-amperes indicated.

Minimum Monthly Bill

The customer agrees to pay each month for firm power, including demand and energy, an amount not less than: $0.90 times three-quarters of the highest measured monthly firm demand in kilowatts occur-ing during any month, during the previous 12-month period, or $0.90 times the contract firm demand in kilowatts, whichever is the greater; and

Customer further agrees to pay each month for secondary power, an amount not less than $0.30 times three-quarters of the highest measured monthly secondary demand occur-

ring during any month, during the previous 12-month period, or the contract secondary demand, whichever is the greater, except that in the event secondary power is not available there will be no minimum bill for secondary service. If secondary power is available for only a fraction of a month, the minimum bill for the secondary service shall be prorated. Customer shall not be obligated to pay a minimum bill for secondary power for more than 300 days in each year.

Discount for Nontransmitted Power

If necessary transmission facilities are furnished by customer and power is purchased at the switchboard of the Authority's hydroelectric generating plants, there shall be no demand charge for secondary power and the above rates shall be subject to a discount of 10 per cent.

Single Point Delivery

The above rates are based upon the supply of service through a single delivery and metering point, and at a single voltage. Separate supply for the same customer at other points of consumption, or at different voltage, shall be separately metered and billed.

Page 513

Mr. Wigglesworth: You gave us yesterday a list of the various transmission lines you are contemplating constructing if this appropriation is approved. In revising your statement, will you indicate in each case the available service in respect to the territory served.

Mr. Lilienthal: Yes, sir.

Mr. Wigglesworth: Please show the available power in the territories which the new lines will serve and the power which is actually being used in each instance in the territories served.

[fol. 2249½] Mr. Lilienthal: I do not know that I quite understand your question.

Mr. Wigglesworth: You are contemplating, for instance, a line from point A to point B, to serve point B. I think it would be interesting to the committee to know what power facilities there may be at the present time available at

point B, the amount available, the sources from which it comes, and the present demand.

Mr. Lilienthal: In some instances that will be quite easy to do, but in others, where an area is involved, there may be some difficulty. I think, perhaps, a map will help to show the existing lines.

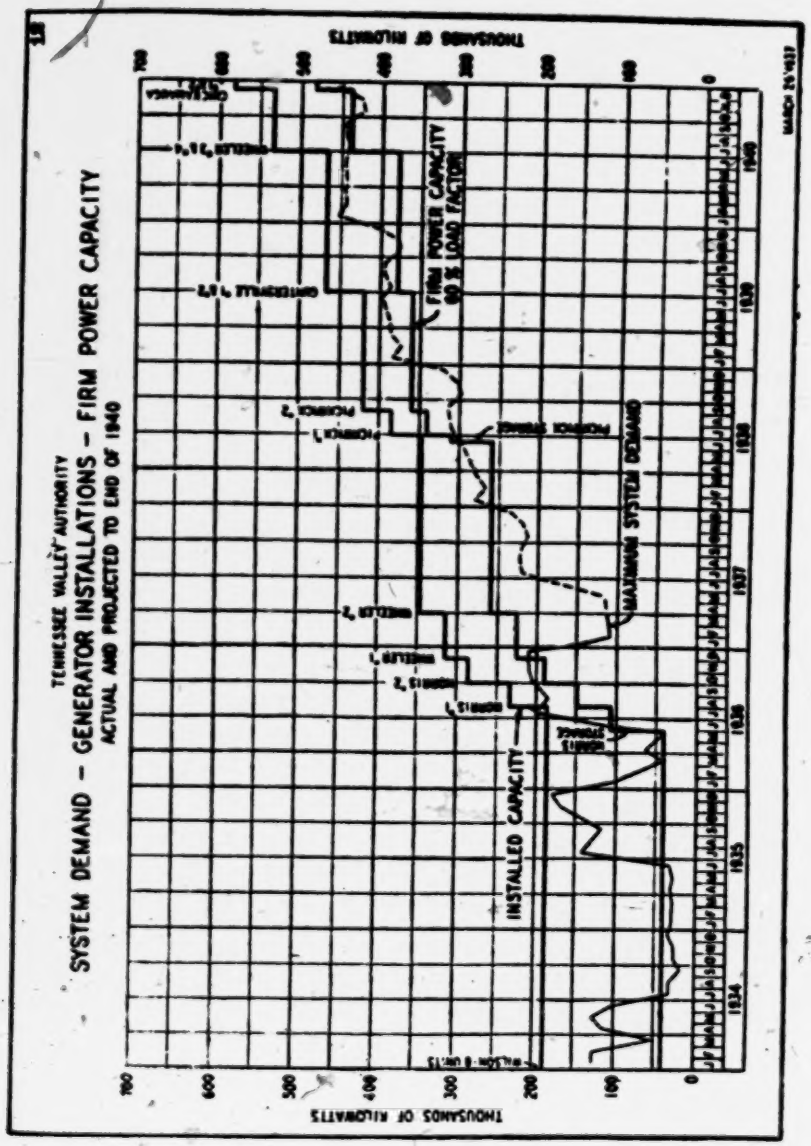
Mr. Wigglesworth: I would like to get it also in terms of power consumption and power available at the present time in each instance, as nearly as you can give it to us.

Mr. Lilienthal: We will try to give it to you as nearly as we can.

(Note by Mr. Lilienthal.—We find it impossible to answer the question in the terms in which it is stated. The question is answered in substance in testimony elsewhere in this record on power markets by areas, and by the map accompanying this statement.)

(Here follows one photolithograph, side folio 2250)

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 116 FOR IDENTIFICATION (Excluded)



[fol. 2251] COMPLAINANTS' EXHIBIT No. 116

Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives, 75th Congress, 1st Session, on the Second Deficiency Appropriation Bill for 1937

(Original Exhibit)

(Here follows one photolithograph, side folio 2252)

COMPLAINANTS' EXHIBIT NO. 116-A

Statement showing approximate distribution of Tennessee Valley Authority employees to programs and projects as of Jan. 1, 1937

Divisions	Total	Engineering administration investigation and design	Norris	Wheeler	Pickwick	Hiwassee	Guntersville	Chickamauga	Electricity	Fertilizer and soil conservation	National defense	Regional studies	Other distributed
Board of Directors	17												17
Coordinator's Office	18												18
Social and Economic Research	37											37	
Reservoir Family Removal	22												22
General Office Service:													
Knoxville	297												297
Washington	12												12
Chattanooga	100												100
Muscle Shoals Operations	271										271		
Norris Town Oprations	219		219										
Camp Operations	234			31	98		81	26					185
Personnel	185												185
Health and Safety	198												198
Finance	198												207
Materials and Transportation	207												83
Legal	83												49
Information and Library	49												48
Land Acquisition	211			1	22	21	71	38					
Department of Electricity	1,069								1,049				
Engineering Administration	131	131											
Engineering Service	339	339											
Reservoir Construction	578	49	39	123	40	292	17	15					
Dam Construction	5,397		172	372	1,736	132	1,524	1,461					
Reservoir Clearing	1,180	11			632		537						
Fertilizer Department	617									617			
Agriculture	37									37			
Agricultural Industries	51									51			
Transportation Economics	7												7
Ceramics Research	16									16			
Cooperative Research	2											2	
Land Planning and Housing	68											68	
Engineering Planning and Design	1,030	1,030											
Gage Observers (part time)	209	209											
Geologic	32	32											
Forestry	141									141			
Total	13,167	1,791	430	527	2,536	445	2,230	1,550	1,049	862	271	107	1,379

[fol. 2253] COMPLAINANTS' EXHIBIT No. 117

Power Contract Between TVA and City of Athens, Alabama

This agreement, made and entered into this 6th day of April, 1934, pursuant to the Tennessee Valley Authority Act of 1933, between the Tennessee Valley Authority, hereinafter called "Authority" a corporation created by and acting under said Act, and the city of Athens, a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Alabama, hereinafter called "Contractor."

Whereas Authority, by section 10 of said Act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to states, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas, by section 11 of said Act, it is provided that the sale of power by Authority shall be primarily for the benefit of the People of the Section as a whole, and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, contractor owns and operates a municipal electric distribution system, and

Whereas, Contractor desires to purchase power from Authority for municipal purposes and for re-sale and proposes to make the necessary appropriations in payment therefor; and

Whereas Contractor has by ordinance of its Council duly authorized the making of this contract, and Authority, by its by-laws and resolutions, has likewise so authorized;

Now, therefore, for and in consideration of the mutual covenants herein contained the parties hereto mutually covenant and agree as follows:

1. Term of contract: This contract shall become effective upon the execution hereof, and shall continue in effect for twenty years: Provided, however, That all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "Date of initial delivery") as Authority shall have acquired, by purchase or construction, such transmission facilities as may be necessary for service to Contractor, and Contractor may legally take such service: Provided

further, that in any case Authority may designate said date of initial delivery by giving not less than 200 days notice to contractor; and all service and payment periods hereinafter referred to shall be computed from the date of initial delivery.

[fol. 2254] 2. Acquisition of transmission facilities: Authority agrees to use all reasonable diligence in acquiring by construction or purchase transmission facilities for service to contractor.

3. Power supply: Authority will, from the date of initial delivery to the expiration hereof, supply electrical energy to contractor for municipal purposes and for resale. Contractor agrees to purchase from Authority, and Authority agrees to supply, the entire power requirements of contractor. Said energy will be delivered in the form of three phase current at approximately 60 cycles per second and approximately 2300 volts, or at such voltage as the parties may from time to time agree. The maximum amount of electricity (called "Reserve Power") which Authority agrees to supply within the first two year period, is 2000 kw., but thereafter Contractor shall have the right to increase such maximum demand as herein specified, and Authority shall deliver the same to Contractor. After two years from the date of initial delivery, as contractor foresees the necessity for more than 2000 kw. Contractor shall make written demand upon Authority for an increase of reserve power. Such increase shall take effect nine months after date of demand if the amount demanded be less than 5000 kw., twelve months after date of demand if the amount be over 5000 kw., and not over 10,000 kw., and two years after date of demand if the amount demanded be in excess of 10,000 kw.

4. Point of delivery: The energy to be supplied contractor hereunder shall be delivered at the main switchboard of contractor's present substation in the city of Athens, or at such other point as Authority may select which will not occasion greater cost to Contractor.

5. Schedule of rates: Attached hereto, and hereby made a part hereof by reference, the same as though physically incorporated herein, is a "Schedule of Rates and Charges."

Contractor agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A, entitled "Tennessee Valley Authority Wholesale Power Rates."

6. Resale rates: In order to carry out the obligations of Authority with respect to the promotion of a wider use of electricity throughout the area in which it operates, contractor agrees to charge all of its consumers the rates prescribed for the several classes of consumers in Schedule B, entitled "Tennessee Valley Authority Resale Rates," and not to depart therefrom except with the written consent of Authority. Authority may from time to time prescribe additional resale schedules for special classes of customers or special uses of electricity, and Contractor agrees to be bound thereby. If it should appear that the rates provided for in said schedule with the surcharges provided for therein do not under economical and efficient management by contractor produce revenues sufficient to maintain the system on a self-supporting and financially sound basis then upon application by contractor, Authority shall con- [fol. 2255] sent to such changes in rates as will provide for such increased revenues as will place the system upon a self-supporting and financially sound basis when operated under economical and efficient management.

7. Rules and regulations of Authority: Attached hereto and hereby made a part hereof, by reference, the same as though physically incorporated herein, is a schedule entitled "Schedule of Rules and Regulations," and it is understood that several provisions of said Schedule, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract, and that their violation by Contractor renders this contract voidable at the option of Authority, unless such violations are cured upon reasonable notice.

The Schedule of Rules and Regulations is standard and of uniform applicability to all municipal customers of Authority, and the Contractor hereby agrees to be bound, during the term hereof, by any future additions or amendments of such schedules or rules and regulations, prescribed after conference with representatives of contractor, the same as though such additions or amendments were incorporated therein. If there should be any conflict be-

tween any rules or regulations prescribed pursuant to this and the following article, and the terms of this Contract, the contract shall control.

8. Rules and Regulations of Contractor: In the interest of uniformity and for the protection of both Contractor and Authority Contractor agrees to adopt and enforce such rules and regulations for the sale of electricity to the public as Authority may, after conference with representatives of contractor, from time to time prescribe during the term of this contract for uniform application to all of the municipal customers of Authority deemed to have similar characteristics.

9. Declaration of Policy: This contract is entered into in a spirit of cooperation and with the desire on the part of Authority and contractor so to administer the relationship established by this contract as to operate to the benefit of Contractor and its residents and of the residents of the Tennessee Valley. In furtherance of this cooperative relationship Authority will, by every means within its power, seek to further the economic welfare of contractor by fostering and promoting the increased use of electricity within contractor's corporate limits, and by such other means as are provided by law. Contractor agrees to cooperate with Authority in such program within contractor's area of operations, and to work with Authority in furthering the economic well-being of the entire Tennessee Valley. This contract shall be construed and administered in accordance with this statement of policy.

10. Contract not transferable: Neither this contract nor any interest therein shall be transferable or assignable by contractor to any other party without the consent of Authority.

[fol. 2256] In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, (Signed) by Arthur E. Morgan, Chairman Board of Directors.

Attest: C. A. Bock, Acting Secretary.

City of Athens, (signed) by R. H. Richardson, Jr., Mayor.

Attest: R. A. Smith, City Clerk.

COMPLAINANTS' EXHIBIT No. 117

Approved as to form and correctness, as adopted by the Council of the City of Athens, Alabama.

Edward Goodrich, City Attorney.

Schedule of Rates and Charges

Schedule A—Tennessee Valley Authority Wholesale Power Rates.

Wholesale Rate: Demand charge, $0.90 per kw. per month.

Demand, maximum integrated sixty (60) minute period.

Charge for energy up to and including 360 times the demand: First 100,000 kilowatt hours per month, at 4 mills per kilowatt hour; next 200,000 kilowatt hours per month at 3 mills per kilowatt hour; next 700,000 kilowatt hours per month at 2.5 mills per kilowatt hour; over 1,000,000 kilowatt hours per month at 2 mills per kilowatt hour.

Charge for energy in excess of 360 times the demand shall be subject to a reduction of 0.5 mills per kw. hr. from the otherwise applicable rate.

Minimum monthly bill: The minimum bill for any month shall be equal to the demand charge for said month, but in no case less than the charge for sixty per cent (60%) of the highest demand occurring during any month within the previous twelve (12) months period.

[fol. 2257] Allowance on sales to residential consumers: Authority will adjust bill so that Contractor shall be billed at two mills per kw. hr. for at least so much energy as may be sold by contractor under the residential resale schedule at 4 mills per kw. hr.

Adjustment of demand charge: Demand charge may be adjusted if and when Authority deems necessary to correct for power factors lower than eighty-five (85%) per cent. Such adjustments will be made in such manner as to bring the demand charge to the equivalent of eighty-five (85%) power factor.

Schedule B—Tennessee Valley Authority

Resale Rates

Standard Residential Rates

Available: To residential customers for domestic use in single family residences or apartments, at local distribu-

tion secondary voltage, either 2-wire or 3-wire service as Contractor may require.

First 50 kilowatt hours per month at 3 cents per kilowatt hour; next 150 kilowatt hours per month at 2 cents per kilowatt hour; next 200 kilowatt hours per month at 1 cent per kilowatt hour; next 1000 kilowatt hours per month at 0.4 cents per kilowatt hour; excess over 1400 kilowatt hours per month at 0.75 cents per kilowatt hour.

Minimum monthly bill: 5-ampere meter, $0.75; 15-ampere meter, $1.00; 50-ampere meter, $1.50.

Basic Commercial Rate

Available: To commercial customers taking service from Contractor's secondary system:

First 250 kilowatt hours per month at 3 cents per kilowatt hour; next 750 kilowatt hours per month at 2 cents per kilowatt hour; next 1000 kilowatt hours per month at 1 cent per kilowatt hour; excess over 2000 kilowatt hours per month at 0.8 cents per kilowatt hour.

Minimum monthly bill: 5-ampere meter, 50 kilowatt hours, $1.50; 15-ampere meter, 66⅔ kilowatt hours, $2.00; 50-ampere meter, 100 kilowatt hours, $3.00.

Surcharge: Basic rate subject to a surcharge as provided for in rules and regulations.

Basic Industrial Rate

Available: To industrial power users having demands in excess of 10 kw. service at primary-distribution voltage or secondary-distribution voltage at discretion of Contractor. [fol. 2258] Demand charge: $1.00 per kw. per month. Demand-maximum integrated Thirty (30) Minute Period.

Energy charge: First 10,000 kilowatt hours per month at 10 mills per kilowatt hour; next 25,000 kilowatt hours per month at 6 mills per kilowatt hour; next 65,000 kilowatt hours per month at 4 mills per kilowatt hour; next 400,000 kilowatt hour- per month at 3 mills per kilowatt hour; excess over 500,000 kilowatt hours per month at 2.5 mills per kilowatt hour.

Minimum monthly bill: $1.00 per kw. of maximum demand, but in no case shall the maximum demand for billing purposes be taken as less than sixty per cent (60%) of the

maximum monthly demand billed during the preceding twelve (12) consecutive months.

Small-power rate: Customers having a load of 10 kw. demand or less to be billed on basic commercial rate.

Service taken under the small-power rate will be subject to a minimum bill prescribed for commercial customers.

Surcharge: Basic rate (including small-power rate) subject to surcharge, as provided for in Rules and Regulations.

Seasonal loads: Contractor may in its discretion discontinue service on seasonal loads and establish a minimum payment for idle months sufficient to cover costs involved.

Tennessee Valley Authority Schedule of Rules and Regulations

1. Measurement of demand and energy: Demand measurement shall be made by suitable instruments at the point or points of delivery, or may, at the option of Authority, be installed at some other point or points where housing facilities are available or may be made available and/or operation simplified: Provided, however, That in the event that metering is effected at some other location than at point of delivery, suitable correction shall be made of the amounts determined at such location so that the adjusted amounts will so far as possible reflect the exact quantities delivered at the actual point or points of delivery.

Demand for any month for the purpose of this contract shall be defined as the highest integrated load furnished to contractor during any 60 minute period during the month for which the determination is made.

Energy measurements shall be made by suitable watt-hour meters with the same reservation with respect to location of meters as is applicable to demand meters.

Authority will, at its own expense, install and maintain the necessary meters for measuring the maximum demand and amount of energy furnished contractor: Provided, That should these meters fail or be found inaccurate the maximum demand and amount of energy delivered will be estimated from the best information available.

[fol. 2259] 2. Space heating appliances: Contractor shall keep an accurate record of the space heating appliances installed in residences, and shall, on request furnish Authority

with a correct schedule of all such installations showing maximum connected load in kilowatts. Contractor's monthly maximum demand shall be subject to a reduction of not to exceed sixty-five per cent of the total amount of the above schedule during the heating season beginning October 15th, and ending April 15th. The exact amount of reduction for any given month will be determined by a comparison of demand and usage before and after the heating season, and by the use of other relevant data, and will be adjusted in such manner as will not effect a reduction in billed monthly demand greater than its actual use for residence space heat purposes.

3. Failure to make payments: Payment for energy used in any calendar month shall be due on the 15th of the succeeding month, or five days after receipt of bill from Authority, whichever is the later. Upon failure of Contractor to pay for the energy used in any calendar month within fifteen (15) days after due date, Authority shall have the right to discontinue the supply of energy and refuse to resume delivery so long as any part thereof remain unpaid. Discontinuance of supply under this section or under Section 12 hereof will not relieve Contractor of its liability for the agreed minimum monthly payment during the time the supply of energy is so discontinued. To any amount remaining unpaid on the first day of the calendar month following the due date, there shall be added a penalty of one (1) per cent and an additional one (1) per cent shall be added on the first day of each succeeding month until the amount is paid in full. All payments shall be made to Authority at its offices at Wilson Dam, Florence, Alabama.

4. Interruption of service: Authority will furnish energy as agreed upon continuously so far as reasonable diligence will permit, but Authority, its officers, agents, or employees shall not be liable for damages when, for any reason, suspensions of the operation of the generation and transmission system serving contractor, or any part thereof, interfere with the delivery of electric energy to contractor, nor shall such an interruption constitute a breach of this contract on the part of Authority: Provided, That Authority shall make appropriate adjustment of the demand charge in the event of an interruption.

5. Lower rates to other municipalities: If at any time during the term of this agreement Authority should supply electricity to any municipality at a lower rate than that applicable to contractor, and such lower rate shall not be justified by different conditions of service, making the cost to such other municipality relatively less than to Contractor, such lower rate shall be made available to contractor so long as such lower rate shall be given to such other municipality while this contract is in force.

6. Developmental surcharge: Contractor agrees not to depart from the resale rates set forth in Schedule B of the Schedule of Rates and Charges without first securing the [fol. 2260] consent of Authority: Provided, however, That contractor may apply a prompt payment discount or penalty of not to exceed 10 per cent: And provided further, That in order to maintain Contractor's Revenues in the developmental period in which the increased demand for power may not compensate for the greatly reduced rates provided for in Schedule B, Contractor may impose a surcharge upon such classes of consumers subject to a surcharge under the provisions of said Schedule. Contractor may initially determine and may from time to time vary such surcharge, with the understanding, however, that all revenues over those required for the appropriations set forth in Section 10 (a) herein shall be applied to the reduction or elimination of surcharges. Surcharges shall be based on a straight percentage of net bills, and shall apply uniformly to all members of classes as to which surcharges are authorized.

7. Adjustment of rates: In the event of a major increase or decrease in general price and wage levels of such a substantial character as materially and substantially to change the cost basis upon which the wholesale rates fixed by this contract are predicated, the parties hereto agree, by supplemental contract or contracts, or otherwise, to make appropriate adjustment of such rates. Should the cost of living index for the United States as a whole compiled by the Department of Labor of the United States show a decrease for a period of six consecutive calendar months, or for any month in said period, if index figures are not reported for each month thereof, of 20 per cent or more under the index

figures for the index period including the month in which this contract is signed, or for any month in said period if index figures are not reported for each month thereof, contractor may in writing request authority to agree to such a reduction in rates as the circumstances may warrant, and should such index figures show a 20 per cent or more increase for the same period or month, as the case may be, Authority may in writing request Contractor to agree to such an increase in rates as the circumstances may warrant. If within thirty days after the receipt of such a request the parties shall be unable to agree to a satisfactory adjustment, the question shall be submitted to three arbitrators, one to be appointed by each of the parties, and a third to be appointed by the two so selected. A decision of the arbitrators shall require only a majority vote, and such a decision shall be final and binding upon both parties. Should either of the parties fail or refuse to appoint an arbitrator within fifteen days after receipt of written request from the other party to make such an appointment, or should the arbitrators so appointed fail to agree upon a third arbitrator within such period, Contractor shall only be liable, if costs have decreased, for the amount of its bill as computed under the rates provided for herein, less such a percentage as it may fix, such percentage in no event to exceed the per cent of decrease in the cost of living as determined by the Department of Labor; and if costs have increased, Contractor shall be liable for such an additional amount as Authority may fix, such increase not to exceed the percentage of increase in the cost of living as determined by the Department of Labor. The rates as adjusted pursuant to this Section shall be applied to the billing for the first calendar month following their determination, and shall remain in effect for the duration of the contract, unless there should be other major changes in general price levels, in which case [fol. 2261] the procedure of rate adjustment herein prescribed shall be applicable to successive changes in rates. Should the Department of Labor fail to compile and publish indices on changes in the cost of living, or publish such indices less frequently than once in every six months, other reliable indices on such changes may be used in their stead.

8. Reduction in rates: Authority agrees to reduce the wholesale rates herein fixed whenever, in the opinion of

Authority, reduction in the cost of generating and transmitting energy make feasible such reductions in rates; it being the intention of the parties that Contractor shall participate in the benefits of reductions in the cost of generation and transmission.

9. Administration of Contractor's System: Contractor agrees:

(a) To administer its electric system as a separate department and not to mingle funds or accounts with those of any other of its operations.

(b) To keep its electric system accounts according to a system of accounts to be prescribed by Authority after conference with Contractor, which system of accounts will so far as possible be uniform with other systems prescribed and applied in other municipalities purchasing electrical energy from Authority. Authority agrees at its own expense to render advisory accounting service in the setting up and administering of such accounts.

(c) To furnish promptly to Authority such operating and financial statements relating to electric system operations as may be requested by Authority.

(d) To all the duly authorized agents of Authority to have free access to all books and records relating to electric system operations.

(e) To sell and distribute energy without discrimination between consumers of the same class, and no rate shall be charged or practice adopted which will grant a discriminatory rate, rebate or other special concession to any consumer served by Contractor. Contractor shall observe the principle that the sale of energy for industrial use shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue to permit the domestic use and such rural use as may take place under the terms of this contract at the lowest possible rates, and in such manner as to encourage increased domestic and rural use of electricity.

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10. Disposition of Contractor's revenues. Contractor agrees to dispose of revenues from the operation of its municipal electric system in the following manner:

(a) Revenues will first be used for operating expenses, after which, in the order named, revenues shall be made applicable to interest on electric system bonds and/or other indebtedness applicable to said electric system, amortization of such bonds or other indebtedness, reasonable reserves for [fol. 2262] new construction and other contingencies, payment to the general fund of contractor for Taxes at rates equivalent to the taxes assessed against other property of a similar nature, and a return on Contractor's equity of not more than 6 per cent per annum.

(b) After the appropriation of the above amounts Contractor agrees that all remaining revenue shall be applied to the reduction or elimination of surcharges, if there are any, and the balance to reduction in the rates to consumers.

11. Service to nearby areas: Contractor agrees to serve nearby rural and suburban areas whenever such service can feasibly be rendered, and to charge for said service such rates as may be agreed upon between Contractor and Authority.

12. Construction and maintenance of Contractor's equipment: All equipment, material and work in connection with Contractor's electrical installation must conform to accepted modern practice.

13. Sub-metering: Contractor shall not sell current for sub-metering or resale purposes except under a contract obligating the customer to charge no more for such service than Contractor's own rates therefor.

14. Sub-stations: If at the request of Contractor service is rendered from more than one sub-station, or at more than one voltage at the same sub-station, Authority will bill for each point of voltage separately.

[fol. 2263] Power Contract Between TVA and the City of Dayton, Tennessee, Dated September 12, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 750 kw.

2. The point of delivery shall be at the outgoing side of the main switch or switches on the low tension side of the main step-down transformers of a substation to be constructed at the expense of TVA on a site within the corporate limits of the City of Dayton, to be selected by TVA and municipality shall, if requested by TVA, furnish such a site.

[fol. 2264] Power Contract Between TVA and the City of Muscle Shoals, Alabama, Dated January 19, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 750 kw.

2. The point of delivery shall be at or adjacent to the corporate limits of the City of Muscle Shoals at a point to be designated by TVA.

[fol. 2265] Power Contract Between TVA and the City of Pulaski, Tennessee, Dated March 8, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 2000 kw.

[fol. 2266] Power Contract Between TVA and the City of Tupelo, Mississippi, Dated November 13, 1933

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply during the first five years of operation is 7500 kva.

2. The point of delivery shall be "at the outgoing side of main switch or switches on the low tension side of the main

COMPLAINANTS' EXHIBIT No. 117

step-down transformers of a substation to be constructed, owned and maintained by Authority (TVA)".

[fol. 2267] Power Contract Between TVA and the City of Amory, Mississippi, dated March 9, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 1500 kw.

[fol. 2268] Power Contract Between TVA and the City of Okolona, Mississippi

This agreement, made and entered into this 23rd day of April, 1935, between the Tennessee Valley Authority, hereinafter called "Authority, a corporation created by and acting under the Tennessee Valley Authority Act of 1933, and the city of Okolona, a municipal corporation duly organized created, and existing under and by virtue of the laws of the State of Mississippi, hereinafter sometimes called "Municipality", and sometimes "Contractor," and

Witnesseth:

Whereas Authority, by section 10 of said act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas by section 11 of said act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas Municipality owns and operates a municipal electric distribution system within and adjacent to its limits, and

Whereas Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to make the necessary appropriations in payment therefor; and

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Whereas Municipality's electric plant will require improvement to take care of the additional load anticipated for the future; and

Whereas, Municipality has by ordinance of its counsel duly authorized the making of this contract and Authority, by its by-laws and resolutions, has likewise so authorized;

Now, therefore, for and in consideration of the mutual covenants herein contained, the parties hereto mutually covenant and agree as follows:

1. Term of contract: This contract shall become effective upon the execution hereof, and shall continue in effect for twenty years; Provided, however, That all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Authority shall have acquired, by purchase or construction and installation, such transmission and transformer facilities as may be necessary for service to Municipality. All service and payment periods hereinafter referred to shall be computed from the date of initial delivery.

[fol. 2269] 2. Acquisition of transmission facilities: Authority agrees to use all reasonable diligence in the acquisition and installation of such transmission and transformer facilities for service to Municipality.

3. Power supply: Authority will, from the date of initial delivery to the expiration hereof, supply electrical energy to Contractor for municipal purposes and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire power requirements of Municipality. Said energy will be delivered in the form of three phase, alternating current at approximately 60 cycles per second and approximately 2,300 volts, or at such voltage as the parties may from time to time agree.

4. Point of delivery: The energy to be supplied Municipality hereunder shall be delivered at the main switchboard of the present city light plant in the city of Okolona, or at such other point as Authority may select which will not occasion greater cost to Municipality. Municipality agrees to grant Authority a franchise, in form satisfactory to Authority, for the use of such streets and alleys within Munici-

pality's limits as may be necessary to enable Authority to deliver energy at said city light plant. Municipality agrees also to lease to Authority for the terms of this contract, at a rental of one dollar ($1.00) annually, a plot of ground suitable in nature and location for a substation site.

5. Schedule of rates: Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges." Municipality agrees to pay for the energy supplied by Authority at the rates fixed in schedule A-1 entitled "Tennessee Valley Authority Wholesale Power Rates."

6. Resale rates: In order to promote the more abundant use of electricity throughout the area in which Municipality operates, Municipality agrees to charge consumers the rates prescribed for the several classes thereof in schedules B-1 to B-5, inclusive, of the said Schedule of Rates and Charges, and not to depart therefrom except with the written consent of Authority: Provided, however, That Municipality shall add to its resale rates a temporary amortization charge, applicable to all customers, of one cent (1¢) per kw.-hr. for the first one hundred kw.-hr. used per month, such charge to be not less than $0.25 nor more than $1.00 per customer per month, but such amortization charge shall be temporary only and shall be discontinued as soon as Municipality has paid in full the principal and interest of the pledge orders now outstanding upon its present generating plant, and shall be considered only as a means of amortizing Municipality's indebtedness on this plant which is not now necessary for Municipality's electric operations; and the proceeds of such amortization charge shall be deposited in a special fund to be used only for such amortization. Authority may from time to time prescribe additional resale schedules for special classes of consumers or special uses of electricity, and Municipality agrees to be bound thereby. If it should appear that the rates provided for in said resale schedules with the surcharges provided for therein, do not under economical and efficient management by Municipality produce revenues sufficient to maintain the Municipality's electric system on a self-supporting and financially sound basis, then upon appli- [fol. 2270] cation by Municipality, Authority shall consent to such changes in rates as will provide for such increased revenues as will place the system upon a self-supporting and

financially sound basis when operated under economical and efficient management.

7. Construction of rural lines: Authority agrees, upon request of Municipality, to construct such additional rural lines on the Municipality's electric system, within or adjacent to Chickasaw County, State of Mississippi as the parties may agree, or at its option to assist in such construction in the manner set out below. Should the Authority elect to construct said lines, at its option it may do so, (a) by construction for and on behalf of Municipality, as Municipality's agent for such construction; or (b) by construction on its own account and conveying the lines so constructed to Municipality; or (c) by construction on its own account and leasing the same to Municipality for a period of fifty years (50). If Authority should elect alternative (b) or (c) of this paragraph, Municipality agrees, at request of the Authority promptly to secure the necessary easements, franchises, and rights of way for such lines at its own expense and to transfer and assign such easements, franchises, and rights of way to Authority without charge.

At the election of Authority, in lieu of constructing the rural lines agreed upon, Authority may assist in construction by supplying Municipality with the poles, wire, transformers, hardware, and other materials and equipment necessary in the construction of such lines and with supervisory assistance, whereupon Municipality shall itself construct said lines in accordance with approved engineering standards and subject to Authority's supervision.

Authority agrees in addition to supply and at the request of Municipality, to install such additional meters, of good substantial design, and of appropriate sizes, as are required to make available a meter for every customer now served by Municipality. Municipality agrees that within three (3) months from the date hereof every customer shall be served only through a meter of good and substantial design. At the request of Municipality, Authority shall furnish such additional materials and supplies as the parties may agree.

Municipality agrees to pay Authority for any lines constructed by Authority pursuant to this paragraph for all meters, materials, supplies, and equipment furnished pursuant hereto, and for all work of construction and installa-

tion, at the actual cost thereof as billed by Authority, plus interest at four per cent (4%) per annum on the unpaid balance from its operating revenues, in the manner set forth in section 9 hereof. In computing the cost of work performed by Authority, the costs of overhead, as billed by Authority, shall be added to direct costs.

All payments shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

8. Operation, maintenance, and insurance of rural lines: Municipality agrees to operate the rural lines constructed by Authority, or constructed with supplies furnished by Authority, as a part of its distribution system, and to render rural electric service at the same rates and on the same terms and conditions as its urban electric service, except as specified in the "Schedule of Rates and Charges." Municipality [fol. 2271] agrees that it will at all times make, or cause to be made, at its own expense, such repairs, maintenance, renewals and replacements as shall be necessary to maintain, preserve, and keep the rural lines so constructed and the meters so installed in good repair, working order, and condition, and to maintain and preserve the efficiency thereof, and to execute such work of maintenance or improvement as Authority may deem necessary for the protection of its interest in said property, to pay all taxes and assessments thereon, of whatever nature or description, to save harmless Authority from any liability for taxes on the property sold, or leased to or constructed for Municipality, including taxes for the year 1935, and to save Authority harmless from any liability arising out of the operation of said lines or the use of said meters. Municipality agrees to keep such property, whether constructed by Authority as agent for Municipality, or constructed, purchased, or leased by Municipality, insured in such manner and amount as Authority may deem prudent and desirable, for the protection of Authority as its interest may appear.

9. Disposition of Municipality's revenues: Municipality agrees to dispose of its gross revenues from electric operations in the following manner, except as provided in section 6 hereof:

(a) Revenues shall first be used for the payment of all operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale, and insurance.

(b) From remaining revenues Municipality shall next pay the interest on all bonds or other indebtedness applicable to Municipality's electric system, and amortization charges on all such bonds or indebtedness other than the indebtedness to authority created hereby for construction or the furnishing of meter and other equipment.

(c) Thereafter revenues shall be used to set up reasonable reserves for new construction and for contingencies, and to create a reasonable cash working capital fund. As security for Municipality's indebtedness to Authority, Municipality agrees that that Authority may in its discretion fix maximum amounts for the reserves and the fund herein authorized to be set up.

(d) From remaining revenues Municipality shall thereafter pay into its general fund a return on its investment and a tax equivalent as provided in the financial and accounting policy in the Schedule of Rules and Regulations attached hereto: Provided, however, That notwithstanding any other provision in this contract or of the rules and regulations, the amount paid into the general fund as a tax equivalent shall not exceed fifty mills per dollar of property value, less such taxes as may actually be paid to other governmental agencies.

(e) Remaining surplus revenues shall thereafter be paid over to Authority until Municipality's indebtedness to Authority on account of the construction of rural lines or the furnishing of meters and equipment by Authority, shall be satisfied.

(f) All remaining surplus revenues shall be used to reduce or eliminate surcharges to consumers, and thereafter to the reduction of rates.

[fol. 2272] Surplus revenues shall be computed as of December 31 and June 30 of each year, and shall be paid not later than February 1 and August 1, respectively.

10. Municipality's investment in its electric system: For the purpose of this agreement the investment of Municipality in its electric system as of the date hereof is agreed to be the sum of $10,816.82, determined as follows:

Replacement cost, new	$73,943.00	
Less accrued depreciation	22,772.00	
Present value		$50,271.00
Bonds applicable to electric system plus accrued interest	17,650.50	
Pledge orders plus accrued interest	21,803.68	
Total indebtedness applicable to electric system		39,454.12
Net investment		10,816.83

11. Payment for Municipality's energy requirements: Municipality agrees to pay its electric fund from appropriate general or special funds, for all energy required by Municipality for street lighting, water pumping, and other operations and uses not related to the operation of its electric plant, at the regular resale rates.

12. Alienation or encumbrances of property or revenues: Municipality agrees not to sell, pledge, mortgage, assign, hypothecate or otherwise alienate or encumber its electric distribution property or revenues, or any part thereof, without first securing the written approval of Authority, except that it may dispose of stocks of wares and merchandise at retail in the normal course of business.

13. Rules and regulations of Authority: Attached hereto, and hereby made a part hereof by reference, the same as though physically incorpo ated herein, is a schedule entitled "Schedule of Rules and Regulations", and it is understood that the several provisions of said schedule, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract and that their violation by Municipality renders this contract voidable at the option of Authority, unless such violations are cured upon reasonable notice.

The Schedule of Rules and Regulations is standard and of uniform applicability to all municipal customers of

Authority, and the Municipality hereby agrees to be bound, during the term hereof, by any future additions or amend- [fol. 2273] ments of such Schedule of Rules and Regulations, prescribed after conference with representatives of Municipality, the same as though such additions or amendments were incorporated herein. If there should be any conflict between any rules or regulations prescribed pursuant to this and the following article, and the terms of this contract, the contract shall control.

14. Rules and regulations of Contractor: In the interest of uniformity, and for the protection of both Municipality and Authority, Municipality agrees to adopt and enforce such rules and regulations for the sale of electricity to the public as Authority may, after conference with representatives of Municipality, from time to time prescribe during the term of this contract for uniform application to all of the municipal customers of Authority deemed to have similar characteristics.

15. Reports to Authority: Municipality agrees that, not later than the first day of August of each year, it will render a report to Authority as to the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may request. Such reports shall be made in such form as Authority may prescribe. From time to time Municipality agrees promptly to render such additional reports or information to Authority as Authority may request.

16. Discrimination: Municipality agrees to render service without discrimination between consumers of the same class, and this contract shall be voidable at the option of Authority, if a discriminatory rate, rebate, or other special concession is made or given to any customer.

17. Declaration of policy: This contract is entered into in a spirit of cooperation and with the desire on the part of Authority and Municipality so to administer the relationship established by this contract as to operate to the benefit of Municipality and its residents, and of the residents of the Tennessee Valley. In furtherance of this cooperative relationship Authority will seek to further the economic welfare of Municipality by fostering and promoting the in-

creased use of electricity within Municipality's operating area, and by such other means as are provided by law. Municipality agrees to cooperate with Authority in such program. This contract shall be construed and administered in accordance with this statement of policy.

18. Contract not transferable: Neither this contract nor any interest therein shall be transferable or assignable by Municipality to any other party without the consent of Authority.

In witness whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors.

Attest: Charles E. Hoffman, Assistant Secretary.

City of Okolona, Mississippi, by H. S. Wilson, Mayor.

Attest: Edward D. Elias, City Clerk.

[fol. 2274] Approved as to form and correctness, as adopted by the Board of Aldermen of the city of Okolona, Mississippi.

Thos. G. Abernethy, City Attorney.

Schedule A-1.—Tennessee Valley Authority

Wholesale Power Rate

Availability: Available to all Municipal Contractors served from the transmission system of Tennessee Valley Authority.

Rate: Demand charge, $0.90 per kw. of demand per month.

Energy charge: First 100,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 200,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; next 700,000 kilowatt-hours consumed per month at 2.5 mills per kilowatt-hour; excess over 1,000,000 kilowatt-hours consumed per month at 2 mills per kilowatt-hour.

Charge for energy in excess of 360 times the demand shall be subject to a reduction of 0.5 mill per kw.-hr. from the otherwise applicable rate.

Determination of Demand: Demand measurement shall be made by suitable instruments at the point or points of delivery. Demand for any month shall be defined as the highest integrated load during any sixty (60) minute period during the month for which determination is made.

Adjustment of demand charge for power factor: Demand charge may be adjusted if and when Authority deems necessary to correct for power factors lower than eighty-five per cent (85%). Such adjustments will be made in such manner as to bring the demand charge to the equivalent of eighty-five per cent (85%) power factor.

Minimum monthly bill: $0.90 per kw. of demand, but in no case shall the minimum bill be less than the charge for sixty per cent (60%) of the highest demand occurring during any month within the previous consecutive twelve (12) months' period.

Allowance on sales to residential consumers: Authority will adjust bill so that Contractor shall be billed at 2 mills per kilowatt-hour for at least so much energy as may be sold by Contractor under the residential resale schedule at 4 mills per kilowatt-hour.

Discount: Rates above are net.

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Schedule B-1—Standard Residential Rate

Availability: Available for domestic use to all residential customers served from local alternating current distribution systems.

Character of service: Alternating current service at approximately 60 cycles, 110 or 220 volts, either single-phase, two-wire or three-wire; or three-phase, three-wire or four-wire, as may be required by contractor.

[fol. 2275] Rate: First 50 kilowatt-hours consumed per month at 3¢ per kilowatt-hour; next 150 kilowatt-hours consumed per month at 2¢ per kilowatt-hour; next 200 kilowatt-hours consumed per month at 1¢ per kilowatt-hour; next 1,000 kilowatt-hours consumed per month at 0.4¢ per kilowatt-hour; excess over 1,400 kilowatt-hours consumed per month at 0.75¢ per kilowatt-hour.

Minimum monthly bill: $0.75 per meter.

Payment: Above rates including amortization charge are net, the gross rates being ten per cent (10%) higher. In

the event that the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations prescribed by Tennessee Valley Authority.

Schedule B-2—Basic Commercial Rate

Availability: Available to all commercial and all small nonresidential light, heat, and power customers whose average monthly usage does not exceed 4,000 kw.-hr. Customers using in excess of 4,000 kw.-hr. per month will be billed according to the basic industrial rate, schedule B-3.

Character of service: Alternating current service from the local distribution system at approximately 60 cycles, 110 or 220 volts; either single-phase, two-wire or three-wire; or, three-phase, three-wire or four-wire, as may be required by contractor.

Rate: First 250 kilowatt-hours per month at 3¢ per kilowatt-hour; next 750 kilowatt-hours per month at 2¢ per kilowatt-hour; next 1,000 kilowatt-hours per month at 1¢ per kilowatt-hour; excess over 2,000 kilowatt-hours per month at 0.8¢ per kilowatt-hour.

Minimum monthly bill: $1.00 per meter.

Surcharge: Rate is subject to a developmental surcharge as provided in rules and regulations.

Payment: Above rates including surcharge and amortization charge are net, the gross rates being ten per cent (10%) higher. In the event the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations prescribed by Tennessee Valley Authority.

Schedule B-3—Basic Industrial Rate

Availability: Available to all industrial and all large nonresidential light, heat, and power customers having demands of not less than 10 kw. Service may be at primary or secondary distribution voltage at the discretion of Contractor. Small power customers of 10 kw. or less will be billed on the basic commercial rate, schedule B-2.

Character of service: Alternating current, three-phase, sixty cycles. Voltage supplied will be at the discretion of

[fol. 2276] Contractor and will be determined by the voltage available from distribution lines in the vicinity and/or other conditions.

Rate: Demand charge: $1.00 per kw. of demand per month.

Energy charge: First 10,000 kilowatt-hours consumed per month at 10 mills per kilowatt-hour; next 25,000 kilowatt-hours consumed per month at 6 mills per kilowatt-hour, next 65,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 400,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; excess over 500,000 kilowatt-hours consumed per month at 2.5 mills per kilowatt-hour.

Determination of demand: Demand measurement shall be made by suitable instruments at the point or points of delivery, except, at the option of Contractor, demand may be determined by inspection or test. Demand for any month shall be defined as the highest integrated load during any thirty (30) minute period during the month for which determination is made.

Adjustment of demand charge for power factor: Demand charge may be adjusted, if and when Contractor deems necessary, to correct for power factors lower than eighty-five per cent (85%). Such adjustments will be made in such manner as to bring the demand charge to the equivalent of eighty-five per cent (85%) power factor.

Minimum monthly bill: $1.00 per kw. of demand but in no case shall the minimum bill be less than the charge for sixty per cent (60%) of the highest demand occurring during any month within the previous consecutive twelve (12) months' period.

Surcharge: Rate is subject to developmental surcharge as provided in rules and regulations.

Payment: Above rates including surcharge and amortization charge are net, the gross rates being ten per cent (10%) higher. In the event the current monthly bill is not paid within ten days (10) from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations prescribed by Tennessee Valley Authority.

COMPLAINANTS' EXHIBIT No. 117

Schedule B-4—Seasonal Industrial Rate (Optional)

Availability: Available for seasonal service not to exceed six (6) consecutive months per year, only to industrial and large power users having demands not less than 40 kw., whose operations and business are by nature seasonal.

Character of service: Alternating current, three-phase, sixty cycles. Voltage supplied will be at the discretion of Contractor and will be determined by the voltage available from distribution lines in the vicinity and/or other conditions.

Application of rate: For the first four (4) consecutive months per season, customer will be billed according to part I of the schedule, and for remainder of such season (not to exceed two months) customers will be billed according to part II of the schedule. Rules governing payment and deposit and other rules and regulations for service under this classification apply to both part I and part II of this schedule.

[fol. 2277] Part I. Rate: Demand charge: $1.60 per kw. of demand per month.

Energy charge: First 10,000 kilowatt-hours per month at 10 mills per kilowatt-hour; next 25,000 kilowatt-hours per month at 6 mills per kilowatt-hour; next 65,000 kilowatt-hours per month at 4 mills per kilowatt-hour; next 400,000 kilowatt-hours per month at 3 mills per kilowatt-hour; excess over 500,000 kilowatt-hours per month at 2.5 mills per kilowatt-hour.

Determination of demand: Demand measurement shall be made by suitable instruments at the point or points of delivery. except, at the option of Contractor, demand may be determined by inspection or test. Demand for any month shall be defined as the highest integrated load during any thirty (30) minute period during the month for which determination is made.

Adjustment of demand charge for power factor: Demand charge may be adjusted, if and when Contractor deems necessary, to correct for power factors lower than eighty-five per cent (85%). Such adjustments will be made in such manner as to bring the demand charge to the equivalent of eighty-five (85%) per cent power factor.

Minimum monthly bill: Minimum monthly bill shall be $1.60 per kw. of demand, but in no case shall the minimum charge for the season be less than $4.80 per kw. of the highest demand occurring during any month of the seasonal period.

Surcharge: Rate is subject to developmental surcharge as provided in rules and regulations.

Part II. Rate: Demand charge: None.

Energy charge: First 250 kilowatt-hours per month, at 3 cents per kilowatt-hours; next 750 kilowatt-hours per month, at 2 cents per kilowatt-hour; next 1,000 kilowatt-hours per month, at 1 cent per kilowatt-hour; excess over 2,000 kilowatt-hours per month, at 0.8 cents per kilowatt-hour.

Minimum monthly bill: $3.00 per meter.

Surcharge: Rate is subject to developmental surcharge as provided in rules and regulations.

Payment: Above rates, including surcharge and amortization charge, are net, the gross rates being ten per cent (10%) higher. In the event the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

Deposit: A deposit or suitable guarantee may be required from each customer, such deposit to be not more than twice the amount of the customer's normal monthly bill as established by application of part I of this schedule.

Service under this classification is subject to rules and regulations prescribed by Tennessee Valley Authority.

Schedule B-5.—Standard Street Lighting Rate

[fol. 2278] Availability: Available for street or roadway lighting for term of not less than one (1) year.

Character of service: Alternating-current service, either series or multiple system or combination.

Application of rate: Where Contractor's electric system bears the cost of operation and maintenance of the equipment used in the street or roadway lighting system, the rate consists of an energy charge at basic commercial rate, schedule B-2, and a maintenance charge.

Where Contractor's electric system does not bear the cost of operation and maintenance of the equipment used in the street or roadway lighting system, only the energy charge will apply.

Rate: Energy charge: Same as basic commercial rate, scheduled B-2.

Maintenance charge:

Lamp rating:	Unit charge per month
1,000 Lumen series, or 100 watt multiple	$0.80
2,500 Lumen series, or 150 watt multiple	1.05
4,500 Lumen series, or 200 watt multiple	1.40
6,000 Lumen series, or 300 watt multiple	1.70
10,000 Lumen series, 500 watt multiple	2.15

Surcharge: Energy charge is subject to a developmental surcharge as provided in rules and regulations. Maintenance charge is not subject to surcharge.

Payment: Above rates including surcharge are net, the gross rates being ten per cent (10%) higher. In the event the current monthly bill is not paid within ten (10) days from date of bill the gross rates shall apply.

Service under this classification is subject to rules and regulations prescribed by Tennessee Valley Authority.

The schedule of Rules and Regulations attached to and made a part of this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Athens, Alabama, except the following is in lieu of Section 10 of the Rules and Regulations of the TVA-City of Athens, Alabama, contract:

[fol. 2279] 10. Financial and accounting policy: Municipality agrees to be bound by the following statements of financial and accounting policy:

(a) Present value of Electric System: Wherever accounting records are complete and have been properly kept, the present value of the Electric System as of the date of initial delivery shall be taken as the actual historical cost of the property then in use or useful in the distribution of electricity as shown on the books less accrued depreciation. If adequate reserves have not been set up for depreciation, the

amount of depreciation accrued shall be estimated by engineering appraisal. Wherever accounting records are incomplete or have not been kept in such manner as to permit the determination of actual historical cost, the present value shall be determined as the replacement cost new of the property in use or useful in the distribution of electricity less accrued depreciation. For the purpose of determining replacement cost new all existing property devoted to the distribution of electricity shall be included in a physical inventory. The items of such physical inventory shall then be priced on the basis of labor and materials cost then prevailing. The total direct cost of construction shall be increased by not more than 15% for general overheads.

(b) Contractor's investment: The investment of Contractor shall be defined as the present value of the system less all outstanding liabilities. Wherever general obligations have been issued by Contractor the proceeds of which have been used in electric operation and for general city purposes, an estimate shall be made of the amount of such proceeds which actually were used in the Electric System. That part of the total indebtedness which is represented by this amount shall then be allocated or assigned as an obligation of the Electric System.

(c) Maximum return: The amount of Contractor's investment in the Electric System shall be determined as of the initial date of delivery and shall be adjusted subsequently at the end of each fiscal year. Contractor shall receive a return on this investment not to exceed one-half (½) of one (1) per cent per month, computed on the basis of the investment as of the last day of the month next preceding.

(d) Payments in lieu of taxes: The Contractor shall be allowed from the revenues or funds of the Electric Department an amount in lieu of taxes, to be determined as follows:

(1) Tax equivalent to city property tax: The prevailing city property tax rate shall be applied to the value of the property used in electric operations.

(2) Tax equivalent to county and State property tax: If the electric operations of Contractor are not subject to

county and State taxation, the tax equivalent paid to the city under (1) above shall be increased by application of the county and State tax rates to the value of the Electric System. If, however, the county and State governments levy taxes upon the municipal Electric System, this county and State tax equivalent will not be allowed to Contractor.

[fol. 2280] (3) Sales tax equivalent: If there is in effect in the State in which the Municipality is located a sales tax applicable to privately owned Electric Systems and such tax is not applicable to municipally owned Electric Systems, an amount equivalent to the application of such sales tax to the revenues of the municipal Electric System may be paid to the city in addition to the tax equivalent payments set forth above. The payment of this tax shall cease at such time as the State may impose a tax upon municipal Electric Systems.

(4) In determining the amount to which Contractor is entitled in lieu of taxes under (1) and (2) above the tax rate shall be applied to the value of the property as determined in paragraph (a) above plus additions, less retirements. The computations shall be made monthly and shall be based upon the value as determined in paragraph (a) above plus additions, less retirement as shown by the books at the beginning of each current taxable year.

(e) Payment by Electric Department for services: The Electric Department shall pay the salary of those persons who devote their full time to the operation of the Electric System, and an equitable portion of the salary of those persons devoting part time to the operation of the Electric System.

(f) Excessive withdrawals and reinvestments by Contractor: If, at any time, Contractor should withdraw from the funds of the Electric Department amounts, in excess of the allowable return on investment and of the tax equivalent, the city's investment shall be reduced in the amount of such excess withdrawals: Provided, however, That withdrawals of Contractor's investment shall be made only at such times and in such amounts as not to interfere with the efficient operation of the Electric System: Provided, further, That in no event shall the excess withdrawals in any fiscal year ex-

ceed ten per cent (10%) of Contractor's investment on the initial date of delivery as set out above without the written consent of the Authority: And provided further, That in no event shall the excess withdrawals by Contractor exceed the amount of Contractor's investment in the Electric System. If, at any time, Contractor should fail to withdraw the full amount of return due on account of its investment and/or on account of tax equivalent, that part or whole of the return and/or tax equivalent which is not withdrawn shall be added to Contractor's investment.

(g) Short-term loans and advances: Contractor may borrow funds from or lend funds to the Electric Department only on a short-term basis (one year or less without the right of renewal). The amount so borrowed or loaned shall bear a rate of interest the same as the rate of return on investment determined by the governing body of Contractor not to exceed six (6%) per cent per annum. At the end of each fiscal year all borrowings and advances by Contractor and the Electric Department shall be paid or closed out by adjustment of Contractor's investment account: Provided, however, That any short-term obligations then outstanding which are to be paid in the succeeding fiscal year may remain outstanding for the unexpired term, in the discretion of the board of aldermen, or other governing body of Contractor.

(h) Action by governing body of Contractor: Except as limited in this statement, the board of aldermen or other [fol. 2281] governing body of the municipality shall determine the rate or return on Contractor's investment and/or the interest rate on loans and advances. No transfer of funds shall be made between Contractor and the Electric Department, nor shall any change in Contractor's investment in the Electric System be made except pursuant to a resolution of the board of aldermen or other governing body of Contractor.

(i) Publication of statement of Contractor's equity: The board of aldermen or other governing body of the municipality shall publish a statement of the amount of Contractor's investment in its Electric System, the outstanding short-term borrowings and advances, and all other accounts

existing between Contractor and the Electric Department, at the close of each fiscal year. A copy of such statement shall be forwarded to Authority immediately at its office at Wilson Dam, Alabama. After the closing of the books at the end of each month, the board of aldermen or other governing body of the municipality shall make known upon demand to any taxpayer or Contractor or customer of the Electric System the amount of Contractor's investment in the Electric System.

[fol. 2282] Power Contract Between TVA and the City of New Albany, Mississippi, Dated September 13, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Okolona, Mississippi, except:

1. The point of delivery shall be at the main switchboard of the city light plant in the City of New Albany or at such other point as TVA may select which will not occasion greater cost to municipality.

2. It does not value the investment of the municipality in its electric system.

3. The Schedule of Rates and Schedule of Rules and Regulations are substantially the same as those attached to and made a part of the TVA-City of Athens, Alabama, contract.

[fol. 2283] Power Contract Between TVA and Alcorn County (Mississippi) Electric Power Association

This agreement, made and entered into this 1st day of June, 1934, pursuant to the Tennessee Valley Authority Act of 1933, between the Tennessee Valley Authority, hereinafter called "Authority", a corporation created by and acting under said act, and Alcorn County Electric Power Association, a non-profit civic improvement corporation organized, created, and existing under and by virtue of the laws of the State of Mississippi, hereinafter called "Association".

Witnesseth:

Whereas, Authority, by section 10 of said act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, coun-

ties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas by section 11 of said act, it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, Authority now owns, has under construction and/or has under option to purchase from the Mississippi Power Company certain properties and facilities for the distribution of electricity in Alcorn County, State of Mississippi; and

Whereas, Association desires to acquire by purchase and/or lease certain of said properties and facilities and to operate them in the distribution of electricity on a membership basis and without profit to the residents and farmers in the area of its operations and for commercial, industrial, and municipal purposes in said area; and

Whereas, Association desires to purchase power from Authority at wholesale for use in its operations, and whereas Association and Authority have by their bylaws and resolutions authorized the execution of this contract;

Now therefore, for and in consideration of the mutual covenants herein contained, the parties hereto mutually convenant and agree as follows:

1. Incorporation of other documents: This contract is executed and shall be construed in connection with certain other conveyances and agreements of even date which are contained in a certain instrument entitled, "Sale, Lease, Trust, and Security Contract Between Tennessee Valley Authority, United States of America, and Alcorn County Electric Power Association", which instrument is attached hereto and hereby made a part hereof. Said conveyances [fol. 2284] and agreements comprise and include the following:

(a) A conveyance by Authority to Association of certain personal property of Authority, used or useful in distributing electricity at retail in Alcorn County, State of Mississippi.

(b) A lease for the term of fifty years of certain rights-of-way and easements of the United States of America en-

trusted to Authority, used or useful in distributing electricity at retail in Alcorn County, State of Mississippi.

(c) Certain covenants intended as security for the obligations to Authority assumed herein by Association. This contract shall not become effective unless and until the instrument hereinabove described shall have been executed.

2. Term of Contract: This contract shall become effective upon the execution hereof and of the instruments hereinabove described, and shall continue in effect for 20 years; Provided, however, That Association's obligations with respect to the payment for property purchased and/or leased from Authority shall continue until such obligations have been satisfied and that Authority may continue to exercise all the power and privileges granted herein, and in the instrument described in article 1, as security for the payment of Association's indebtedness until such indebtedness shall have been satisfied.

3. Power Supply: Authority agrees to supply electrical energy to Association for its own use and for resale. Association agrees to purchase from Authority, and Authority agrees to supply the entire power requirements of Association. Said energy will be delivered in the form of three phase, alternating current at approximately 60 cycles per second and approximately 2,300 volts, or at such voltage as the parties may from time to time agree. The maximum amount of electricity (called "reserve power") which Authority agrees to supply within the first two year period is 2,500 kw., but thereafter Association shall have the right to increase such maximum demand as herein specified, and Authority shall deliver the same to Association. After two years from the date of initial delivery, as Association foresees the necessity for more than 2,500 kw., Association shall make written demand upon Authority for an increase of reserve power. Such increase shall take effect nine months after date of demand if the amount demanded is less than 5,000 kw., twelve months after date of demand, if the amount demanded is over 5,000 kw., and less than 10,000 kw., and two years after date of demand if the amount demanded is 10,000 kw. or more.

4. Point of Delivery: The energy to be supplied Association hereunder shall be delivered at the outgoing side of the main switch or switches on the low tension side of the main step-down transformers of the substation located at Cox and White Streets in the city of Corinth, Alcorn County, Mississippi, or at such other point as Authority may select which shall not occasion greater cost to Association.

5. Payment for Property: In consideration for the property which Authority shall convey to Association by the conveyance described in article 1 (a) hereof and for the property which Authority and/or the United States of [fol. 2285] America shall lease to Association by the lease described in article 1(b) hereof, Association agrees to pay to Authority the sum of one hundred and fourteen thousand, six hundred and thirty two dollars and sixty cents ($114,632.60), hereinafter called the "principal obligation." Association agrees to pay interest upon unpaid balances at the rate of three and one-half (3½) per centum annually. Interest shall be computed semiannually, beginning six calendar months after the date of execution of this contract.

6. Construction of rural lines: Authority agrees to construct, and after construction, to lease for a period expiring not sooner than the lease described in Article 1(b) hereof and/or to convey to Association, at the option of Authority, such additional rural electric distribution or transmission lines, in or adjacent to Alcorn County, State of Mississippi, as Authority may deem advisable, but Authority shall not be obligated to construct any such lines as, added to the rural distribution or transmission lines already owned or leased by Association, shall exceed one hundred (100) miles of such lines. Association agrees to pay, in addition to the principal obligation, the actual cost to Authority, as billed by Authority, of any lines constructed and leased and/or conveyed pursuant to this article, and said additional indebtedness shall be secured in the same manner and to the same extent as the principal obligation, and shall carry the same rate of interest: Provided, however, That Association's liability for such rural lines shall not exceed $125,000.00 without its consent in writing.

COMPLAINANTS' EXHIBIT No. 117

7. Method of payment for property. Association agrees to pay over to Authority on account of its indebtedness, and until such indebtedness shall have been totally repaid, all membership fees received; provided, however, That Association may initially, and until its working capital is built up from its operations, retain so much of its membership fees as may be necessary to enable it to maintain a total cash working capital balance of $2,500.00; Provided, further, That the indebtedness of Association to Authority shall be decreased or satisfied only by the amounts actually paid to Authority.

8. Repayment of Indebtedness: Association agrees, until it has repaid its total indebtedness to Authority, to pay to Authority, in addition to all other amounts provided for in this contract, its total surplus revenues as hereinafter defined. Such surplus revenues, if any, shall be computed as of the 15th day of each month, and shall be paid not later than the first day of the following month. All payments shall be made to Authority at its offices at Wilson Dam, Florence, Alabama, or at such other places as Authority may from time to time designate.

9. Disposition of Association's revenues: Association agrees to dispose of its gross revenues in the following manner:

(a) Revenues shall first be used for the payment of operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale, taxes and insurance.

(b) Thereafter revenues shall be used to set up reasonable reserves for new construction and for contingencies, [fol. 2286] and to create a reasonable cash working capital fund. As further security for Association's indebtedness to Authority, Association agrees that Authority may in its discretion fix maximum amounts for the reserves and the fund herein authorized to be set up, and may direct the investment or disposition of such reserves and funds.

(c) After the payment or setting aside of the above amounts all remaining revenues shall be considered surplus revenues and shall be paid over to Authority in the

manner prescribed above, until Association's indebtedness to Authority on account of accrued interest shall be satisfied.

(d) Remaining surplus revenues shall thereafter be paid over to Authority until Association's indebtedness to Authority on account of property purchased or leased from Authority shall be satisfied.

(e) After payment to Authority in full for property purchased from Authority, all surplus revenues shall be paid over to Authority in the manner prescribed above until Association's remaining indebtedness to Authority and/or the United States of America shall be satisfied.

(f) After the satisfaction of the indebtedness to Authority and/or the United States of America, all surplus revenues shall be used to reduce or eliminate surcharges of Association's members.

(g) After the elimination of surcharges, all surplus revenues shall be used to reimburse members to the extent of not more than the stated value of their memberships (less $10.00 per membership, which shall be non-reimbursable) and/or to the reduction of Association's rates, as Association may determine.

10. Alienation or incumbrance of property or revenues: Association agrees not to sell, pledge, mortgage, assign, hypothecate, or otherwise alienate or incumber its electric property or revenues, or any part thereof, without first securing the written approval of Authority, except that it may dispose of stocks or wares and merchandise at retail in the normal course of business.

11. Maintenance and insurance of property: Association agrees that it will at all times make, or cause to be made, at its own expense, such repair maintenance, renewals, and replacements as shall be necessary to maintain, preserve and keep the rural lines constructed by Association in good repair, working order, and condition, and to maintain and preserve the efficiency thereof (of the plants and properties) and to execute such work of maintenance or improvement as Authority may deem necessary for the protection of its interest in said property, to pay all taxes and assessments

thereon, of whatever nature or description, and to save harmless Authority from any liability for taxes on the property sold or leased to or constructed for Association, including taxes for the year 1934. Association agrees to keep such property, whether purchased or leased, insured in such manner and amount as Authority may deem prudent and desirable, for the protection of Authority as its interest may appear.

[fol. 2287] 12. Schedule of rates: Attached hereto, and hereby made a part hereof by reference, the same as though physically incorporated herein, is a "Schedule of Rates and Charges". Association agrees to pay for the energy supplied by Authority at the rates fixed in schedule A, entitled "Tennessee Valley Authority Wholesale Power Rates".

13. Resale Rates: (a) In order to carry out the obligations of Authority with respect to the promotion of a wider use of electricity throughout the area in which it operates, in order to further the purposes of civic improvement for which Association was organized, and as further security for the indebtedness of Association to Authority, Association agrees to charge all of its members, and non-member governmental customers, if any, the rates prescribed for the several classes of consumers in schedule B, entitled "Tennessee Valley Resale Rates" and not to depart therefrom except with the written consent of Authority. Authority may from time to time prescribe additional resale schedules for special classes of members or special uses of electricity, and Association agrees to be bound thereby. If it should appear that the rates provided for in said schedule with the surcharges provided for therein do not under economical and efficient management by Association produce revenues sufficient to maintain the system on a self supporting and financially sound basis, then upon application by Association, Authority shall consent to such changes in rates as will provide for such increased revenues as will place the system upon a self-supporting and financially sound basis when operated under economical and efficient management.

(b) Association may charge non-member customers other than governmental customers, such higher and different rates

as may be required to yield the full cost of operation to Association, but Association agrees that such rate shall not be discriminatory as between non-member customers or classes thereof and that its non-member operations shall not be conducted for the purpose of making a profit.

14. Non-member Service: Association agrees that it will not, except after having first secured the approval of Authority, serve any non-members: Provided, however, That this provision shall not apply to service to customers who are at the time of the acquisition of any given lines by Association, taking services from such lines and who continue to take service without change of residence, nor to municipal corporations or other political agencies or subdivisions, who shall constitute "governmental customers" as used herein.

15. Terms of membership in Association: Association agrees to make its memberships available without discrimination to any person, corporation, co-partnership, association, municipality, or political body or subdivision within the area of its service. The initial stated value of memberships shall be $100.00, but such value shall be subject to reduction as hereinafter provided. Members who pay the full membership fee in advance shall be entitled to a reduction of not to exceed 20 per cent and the advance payments of balances shall be subject to such reduction as Association may from time to time fix, not to exceed 20 per cent. [fol. 2288] The minimum initial installment on memberships shall not be fixed at less than $10.00 without first securing the written consent of Authority, and the balance shall be payable at the rate of 1 cent per kilowatt hour for each kilowatt hour used per month up to and including 100 kilowatt-hours per month, but in no case less than twenty-five cents ($0.25) per month. The stated value of memberships shall, from time to time, be reduced by the amount of reimbursements made pursuant to article 9 hereof, and new members shall be admitted at the new stated value thus arrived at.

16. Rules and Regulations of Authority: Attached hereto and hereby made a part hereof by reference, the same as though physically incorporated herein, is a schedule entitled "Schedule of Rules and Regulations", and it is understood

that the several provisions of said schedule, as well as the several provisions of this contract and of the Schedule of Rates and Charges are of the essence of this contract, and that their violation by Association renders this contract voidable at the option of Authority, unless such violations are cured upon reasonable notice.

Association hereby agrees to be bound, during the term hereof, by any future additions or amendments of such Schedule of Rules and Regulations, prescribed after conference with representatives of Association, the same as though such additions or amendments were incorporated herein. If there should be any conflict between the rules or regulations prescribed pursuant to this and the following article, and the terms of this contract, the contract shall control.

17. Rules and Regulations of Association: In the interest of uniformity, and for the protection of both Association and Authority, Association agrees to adopt and enforce such rules and regulations for the sale of electricity to both members and nonmembers as Authority may, after conference with representatives of Association, from time to time prescribe during the term of this contract for uniform application to all of the wholesale customers of Authority deemed to have similar characteristics.

18. Rendition of Advisory Services by Authority: Authority agrees to render advisory services to Association in problems of personnel and administration, to secure the attendance of its district engineer at meetings of the board of association, so far as may be practicable and convenient, and to make available to Association the facilities and services of its personnel division so far as may be necessary in the selection of Association's employees. Association agrees that it will not employ or retain in its employ any person deemed by Authority not to qualify for his position or whose services Authority may deem to be unnecessary.

19. Customers Deposits and Accounts Receivable: Authority agrees to turn over to Association all deposits of active customers served by the lines conveyed pursuant to article 1 (a) hereof, with accrued interest thereon, plus all

accounts receivable from such customers for sales of electricity and electrical appliances and merchandise. Association agrees to assume full responsibility for the disposition of such deposits and accrued interest and to save Authority harmless with respect thereto, and agrees further to act as agent of Authority in the collection of ac- [fol. 2289] counts receivable, and promptly to remit to Authority all collections of such accounts. Association agrees to use all customary and usual methods of collecting such accounts, including exercise of the right of discontinuance of service for failure of payment thereof.

20. Use of Association's Lines: Authority shall have the right, to the extent of the transmission capacity of Association's lines, to the free use of Association's poles and wires for transmission purposes, and for service to industrial customers with a demand of 1,000 KW or more who elect to take service from Authority.

21. Reports to Authority: Association agrees that, not later than the first of February of each year, it will render a report to Authority as to the results of its operations of the preceding year, the condition of its property, and such other information as Authority may request. Such reports shall be made in such form as Authority may prescribe. From time to time Association agrees promptly to render such additional reports or information to Authority as Authority may request.

22. Bonding of Employees: Association agrees to bond in a reasonable amount all employees whose duties require or permit them to handle or dispose of money belonging to Association.

23. Discrimination: Association agrees to render service without discrimination between consumers of the same class, and this contract shall be voidable at the option of Authority, if a discriminatory rate, rebate, or other special concession is made or given to member or non-member customers.

24. Declaration of Policy: This contract is entered into in a spirit of cooperation and with the desire on the part of Authority and Association so to administer the relation-

ship established by this contract as to operate to the benefit of the area served by Association and the residents thereof and of the residents of the Tennessee Valley. In furtherance of this cooperative relationship, Authority will, by every means within its power, seek to further the economic welfare of such area by fostering and promoting the increased use of electricity therein, and by such other means as are provided by law. Association agrees to cooperate with Authority in such program within Association's area of operation and to work with Authority in furthering the economic well-being of the entire Tennessee Valley. This contract shall be construed and administered in accordance with this statement of policy.

25. Contract not transferable: Neither this contract nor any interest therein shall be transferable or assignable by Association to any other party without first securing the written consent of Authority.

In witness whereof, the parties hereto have caused this instrument to be signed and attested at Corinth, Mississippi, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors.

Attest: C. A. Bock, Acting Secretary.

Alcorn County Electric Power Association, by B. F. Liddon, President.

Attest: J. M. Peavey, Secretary.

[fol. 2290] The schedule of Rates and Charges and schedule of Rules and Regulations are substantially the same as those attached to and made a part of the TVA-City of Athens, Alabama, contract.

[fol. 2291] Power Contract Between TVA and Pontotoc County (Mississippi) Electric Power Association, Dated February 15, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Alcorn County (Mississippi) Electric Power Association, except:

COMPLAINANTS' EXHIBIT No. 117

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 1000 kw.

2. The point of delivery shall be at the metering equipment used on the Lee-Pontotoc county line or at such other point as may be mutually agreed upon.

3. The amount to be paid for the property which TVA shall convey to Pontotoc County Electric Power Association and for the property which TVA shall lease to said Association is stated to be $67,645.36.

4. The Association's liability for additional rural lines shall not exceed $40,000 without its written consent.

[fol. 2292] Power Contract Between TVA and Prentiss County (Mississippi) Electric Power Association

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Alcorn County (Mississippi) Electric Power Association, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 2000 kw.

2. The point of delivery shall be at the metering equipment situated on the low tension side of the substation in Booneville, Mississippi, or at such other point as may be mutually agreed upon.

3. The amount to be paid for the property which TVA shall convey to Prentiss County Electric Power Association and for the property which TVA shall lease to said Association is stated to be $82,923.77.

4. The Association's liability for additional rural lines shall not exceed $25,000 without its written consent.

[fol. 2293] COMPLAINANTS' EXHIBIT No. 118

Power Contract Between TVA and City of Dickson, Tennessee

This agreement, made and entered into this 23rd day of October, 1935, between the Tennessee Valley Authority,

hereinafter called Authority, a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the town of Dickson, Tenn., a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Tennessee, hereinafter called municipality, its successors and assigns.

Witnesseth:

Whereas Authority, by section 10 of said act is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas municipality, by legislative authority, owns and operates a municipal electric distribution system; and

Whereas municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefor; and

Whereas, after investigation by Authority, it appears that quantities of power generated at Wilson Dam, Ala., sufficient to meet the requirements of municipality, under the terms of this contract, will be available for sale by Authority after all requirements of authority and of the United States have been fulfilled; and

Whereas all parties to this contract have duly authorized its execution:

Now, therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. Term of contract.—This contract shall become effective upon the execution thereof, and shall continue in effect for 20 years: Provided, however, That all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Authority shall have constructed and installed the transmission and transformation facilities necessary in the opinion of Authority [fol. 2294] for such service. All service and payment periods hereinafter referred to shall be computed from the date of initial delivery.

2. Construction of transmission facilities.—Authority agrees, with all reasonable diligence, and within one year from the date hereof, to construct and install the transmission and transformation facilities reasonably necessary in the opinion of Authority for continuous and dependable service, giving due consideration to the actual magnitude of municipality's load requirements.

3. Power Supply.—Authority will, from the date of initial delivery to the expiration hereof, supply electricity to municipality for municipal purposes and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of municipality: Provided, however, That should such requirement be in excess of 750 kilowatts demand, Authority shall not be obligated to deliver such excess except on written demand and after reasonable notice, as hereinafter provided. As municipality forsees the necessity for more than 750 kilowatts it may, from time to time, make such written demand for additional power, which demand shall take effect 9 months after date of demand if amount demanded be 5,000 kilowatts or less, 12 months after date of demand if the amount demanded be over 5,000 kilowatts but not over 10,000 kilowatts, and 2 years after date of demand if the amount demanded be in excess of 10,000 kilowatts. Said energy shall be delivered in the form of 3-phase, alternating current, at approximately 60 cycles per second and approximately 2,300 volts, or at such other voltage as the parties may, from time to time, agree. While it is not the function of Authority to guarantee accurate time by the maintenance of accurate frequency, Authority agrees to supply such frequency as is recognized to be good commercial frequency on a hydroelectric system.

4. Point of delivery.—Authority will deliver the electricity purchased hereunder at the present city light plant, located in the third ward, on a plot of ground 50 feet by 50 feet, to be furnished gratis to Authority by municipality for the period hereof and Authority shall have free right of ingress and egress from said plot. The energy to be supplied hereunder shall be metered at the low tension side of the stepdown transformer bank or banks of the substation or substations to be constructed, owned, and operated

by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks and the transmission lines or transmission lines supplying energy to such substations.

5. Schedule of rates.—Attached hereto, and hereby made a part hereof, is a "schedule of rates and charges." Munici- [fol. 2295] pality agrees to pay for the energy supplied by authority at the rates fixed in schedule A-1 entitled "Wholesale power rate." All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

6. Resale rates.—In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, and in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which municipality operates, municipality agrees to charge consumers the rates set forth for the several classes thereof in schedules B-1 to B-5, inclusive, of the said schedule of rates and charges, and not to depart therefrom except by agreement of the parties: Provided, however, That this contract shall not affect the rights of municipality under any existing contract of lease whereby rentals are made a part of electricity rates, not to take and deposit in its general funds any excess revenues under such contract over the revenues from the rates set forth herein. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties. The term "contractor" in said schedule shall be construed to mean municipality. If it should appear that the rates provided for in said resale schedules with the surcharge provided for therein do not produce revenues sufficient to operate and maintain municipality's electric system on a selfsupporting and financially sound basis.

7. Disposition of municipality's revenues.—Municipality, deeming it necessary for the purpose of this contract, and for the purpose of providing reasonable rates for electric service pursuant to this contract and to the law, agrees to dispose of its gross revenues from electric operations in the following manner:

(a) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale, and insurance.

(b) From remaining revenues municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(c) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction and for contingencies, and to provide a reasonable amount of cash working capital.

(d) From remaining revenues municipality shall thereafter pay into its general fund a return on its investment and a tax equivalent as provided in the financial and accounting policy in the schedule of terms and conditions of [fol. 2296] contract attached hereto.

(e) All remaining revenues shall be considered surplus revenues and may be devoted by municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates.

Surplus revenues shall be computed as of December 31 and June 30 of each year.

8. Municipality's investment in electric system.—For the purpose of this agreement the investment of municipality in its electric system, including stand-by value of generating plant, as of the date hereof is agreed to be the sum of $60,315, determined as follows:

Replacement cost new of distribution system	$60,450
Less accrued depreciation	18,135
Present value of distribution system	42,315
Present stand-by value of generating plant	18,000
Total	60,315

Bonds applicable to electric system plus accrued interest	None.
Other indebtedness applicable to electric system	None.
Total indebtedness applicable to electric system	None.
Net Investment	$60,315

9. Payment for municipality's energy requirements.—Municipality agrees to pay into its electric funds from appropriate general or special funds for all electric service required by municipality for street lighting, waterpumping and other operations and uses, at the resale rates as set forth in the schedule of rates and charges with such modifications and additions as may from time to time be agreed upon by the parties.

10. Terms and conditions; rules and regulations.—Attached hereto, and hereby made a part hereof, are two schedules, entitled respectively "Schedule of terms and conditions of contract" and "Schedule of rules and regulations", and it is understood and agreed that the provisions of either or both schedules may from time to time be changed or supplemented by agreement of municipality and Authority. The term "Distributor" in the latter schedule shall be construed to mean municipality. It is understood and agreed that the several provisions of the said schedules, [fol. 2297] with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the schedule of rates and charges, are of the essence of this contract. Municipality hereby adopts said schedule of rules and regulations as the rules and regulations of municipality.

11. Reports to Authority.—Municipality agrees that, not later than the first day of September of each year, it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may reasonably request, municipality agrees promptly to render such additional reports and information to Authority as Authority may from time to time reasonably request.

12. Discrimination.—Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate or other special concession will be made or given to any customer.

13. Waiver of defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

14. Contract not transferable.—Neither this contract nor any interest therein shall be transferable or assignable by municipality to any other party without the consent of Authority.

In witness whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors J. C. S., Leg. Div.

Attest: Charles E. Hoffman, Assistant Secretary.

Town of Dickson, Tenn., by D. B. Beasley, Mayor.

Attest: Robert S. Clement, Recorder.

[fol. 2298] Schedule of Rates and Charges

(Wherever the term "Schedule of terms and conditions" is used it refers to the schedule of terms and conditions of contract of which the schedule of rates and charges is a part.)

Wholesale Power Rate-Schedule A-1

Rate

Demand Charge.—Ninety cents per kilowatt of demand per month.

Energy charge.—First 100,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 200,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; next 700,000 kilowatt-hours consumed per month at 2.5 mills

per kilowatt-hour; excess over 1,000,000 kilowatt-hours consumed per month at 2 mills per kilowatt-hour. Charge for energy in excess of 360 times the demand shall be subject to a reduction of 0.5 mills per kilowatt-hour from the otherwise applicable rate.

Determination of Demand

Demand measurement shall be made by suitable instruments at the point or points of delivery. Demand for any month shall be defined as the highest integrated simultaneous load during any 60-minute period during the month for which determination is made.

Adjustment for Demand Charge for Power Factor

Demand charge may be adjusted if and when Authority deems necessary to correct for power factors lower than 85 percent. Such adjustments will be made in such manner as to bring the demand charge to the equivalent of 85 percent power factor.

Minimum Monthly Bill

Ninety cents per kilowatt of demand, but in no case shall the minimum bill be less than the charge for 60 percent of the highest demand occur-ing during any month within the previous consecutive 12 months' period.

Allowance on Sales to Residential Consumers

Authority will adjust bill so that contractor shall be billed at 2 mills per kolowatt-hour for at least so much energy as may be sold by contractor under the residential resale schedule at 4 mills per kolowatt-hour.

Discount

Rates above are net.

[fol. 2299] Standard Residential Rate—Schedule B-1

Availability

Availability for domestic use to all residential customers served from local alternating-current distribution systems.

Character of Service

Alternating-current service at approximately 60 cycles, 110 or 220 volts, either single phase, 2-wire or 3-wire, or 3-phase, 3-wire, or 4-wire, as may be required by contractor.

Rate

First 50 kilowatt-hours consumed per month at 3 cents per kilowatt-hour; next 150 kilowatt-hours consumed per month at 2 cents per kilowatt-hour; next 200 kilowatt-hours consumed per month at 1 cent per kilowatt-hour; next 1,000 kilowatt-hours consumed per month at 0.75 cents per kilowatt hour.

Minimum Monthly Bill

Seventy-five cents per meter.

Payment

Above rates are net, the gross rates being 10 percent higher. In the event that the current monthly bill is not paid within 10 days from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations of contractor.

Basic Commercial Rate—Schedule B-2

Availability

Available to all commercial and all small non-residential light, heat, and power customers having demands not greater than 20 kilowatts and whose average monthly usage does not exceed 4,000 kilowatt-hours. Customers with demands exceeding 20 kilowatts and/or using on the average in excess of 4,000 kilowatt-hours per month will be billed according to the basic industrial rate, schedule B-3.

Character of Service

Alternating-current service from the local distribution system at approximately 60 cycles, 110 or 220 volts; either single-phase, 2-wire or 3-wire; or, 3-phase, 3-wire, or 4-[fol. 2300] wire, as may be required by contractor.

Rate

First 250 kilowatt-hours per month at 3 cents per kilowatt-hour; next 750 kilowatt-hours per month at 2 cents per

kilowatt-hour; next 1,000 kilowatt-hours per month at 1 cent per kilowatt-hour; excess over 2,000 kilowatt-hours per month at 0.8 cent per kilowatt-hour.

Determination of Demand

In the event of question arising as to the demand, or upon the written request of the customer, it shall be determined by inspection or test, at the option of contractor. The demand for any month shall be defined as the highest integrated load during any 30-minute period during the month for which the determination is made.

Minimum Monthly Bill

$1 per meter.

Surcharge

Rate is subject to a surcharge as provided in schedule of terms and conditions.

Payments

Above rates, including surcharge, are net, the gross rates being 10 percent higher. In the event the current monthly bill is not paid within 10 days from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations of contractor.

Basic Industrial Rate—Schedule B-3

Availability

Available to all industrial and all large non-residential light, heat, and power customers having demands greater than 20 kilowatts and/or customers whose average monthly usage exceeds 4,000 kilowatt-hours. Customers with demands not greater than 20 kilowatts and using on the average not in excess of 4,000 kilowatt-hours per month will be billed according to the basic commercial rate, schedule B-2.

Character of Service

Alternating current, 3-phase, 60 cycles. Voltage supplies will be at the discretion of contractor and will be determined

by the voltage available from distribution lines in the vicinity and/or other conditions.

[fol. 2301]

Rate

Demand Charge.—$1 per kilowatt of demand per month.

Energy Charge.—First 10,000 kilowatt-hours consumed per month at 10 mills per kilowatt-hour; next 25,000 kilowatt-hours consumed per month at 6 mills per kilowatt-hour; next 65,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 400,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; excess over 500,000 kilowatt-hours consumed per month at 2.5 mills per kilowatt-hour.

Determination of Demand

Demand measurement shall be made by suitable instruments at the point or points of delivery, except, at the option of contractor, demand may be determined by inspection or test. Demand for any month shall be defined as the highest integrated load during any 30-minute period during the month for which determination is made.

Adjustment of demand charge for power factor

Demand charge may be adjusted, if and when contractor deems necessary, to correct for power factors lower than 85 per cent. Such adjustments will be made in such manner as to bring the demand charge to the equivalent of 85 per cent power factor.

Minimum Monthly Bill

$1 per kilowatt of demand, but in no case shall the minimum bill be less than the charge for 60 per cent of the highest demand occurring during any month within the previous consecutive 12 months' period.

Surcharge

Rate is subject to a surcharge as provided in schedule of terms and conditions.

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Payment

Above rates, including surcharge, are net, the gross rates being 10 per cent higher. In the event the current monthly bill is not paid within 10 days from date of bill, the gross rates shall apply.

Service under this classification is subject to rules and regulations of contractor.

[fol. 2302] Seasonal Industries Rate (Optional)—Schedule B-4

Availability

Available for seasonal service not to exceed 6 consecutive months per year only to industrial and large power users having demands not less than 25 kilowatts whose operations and business are by nature seasonal.

Character of Service

Alternating current, 3-phase, 60 cycles. Voltage supplied will be at the discretion of contractor and will be determined by the voltage available from distribution lines in the vicinity and/or other conditions.

Application of Rate

For the first 4 consecutive months per season customer will be billed according to part I of the schedule, and for remainder of such season (not to exceed 2 months) customer will be billed according to part II of the schedule. Rules governing payment and deposit and other rules and regulations for service under this classification apply to both part I and part II of this schedule.

Rate—Part I

Demand charge.—$1.60 per kilowatt of demand per month.

Energy charge.—First 10,000 kilowatt-hours per month, at 10 mills per kilowatt-hour; next 25,000 kilowatt-hours per month at 6 mills per kilowatt-hour; next 65,000 kilowatt-hours per month at 4 mills per kilowatt-hour; next 400,000 kilowatt-hours per month at 3 mills per kilowatt-hour; ex-

cess over 500,000 kilowatt-hours per month at 2.5 mills per kilowatt-hour.

Determination of Demand

Demand measurement shall be made by suitable instruments at the point or points of delivery, except, at the option of the contractor, demand may be determined by inspection or test. Demand for any month shall be defined as the highest integrated load during any 30-minute period during the month for which determination is made.

Adjustment of Demand Charge for Power Factors

Demand charge may be adjusted, if and when contractor deems necessary, to correct for power factors lower than 85 per cent. Such adjustments will be made in such manner as to bring the demand charge to the equivalent of 85 per cent power factor.

[fol. 2303] Minimum Monthly Bill

Minimum monthly bill shall be $1.60 per kilowatt of demand, but in no case shall the minimum charge for the season be less than $4.80 per kilowatt of the highest demand occurring during any month of the seasonal period.

Surcharge

Rate is subject to a surcharge as provided in schedule of terms and conditions.

Rate—Part II

Demand charge.—None.

Energy charge.—First 250 kilowatt-hours per month at 3 cents per kilowatt-hour; next 750 kilowatt-hours per month at 2 cents per kilowatt-hours; next 1,000 kilowatt-hours per month at 1 cent per kilowatt-hour; excess over 2,000 kilowatt-hours per month at 0.8 cent per kilowatt-hour.

Minimum Monthly Bill

$3 per meter.

Surcharge

Rate is subject to a surcharge as provided in schedule of terms and conditions.

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Payment

Above rates including surcharge are net, the gross rates being 10 per cent higher. In the event the current monthly bill is not paid within 10 days from date of bill the gross rates shall apply.

Deposit

A deposit or suitable guarantee may be required from each customer, such deposit to be not more than twice the amount of the customer's normal monthly bill as established by application of part of this schedule.

Service under this classification is subject to rules and regulations of contractor.

Standard Street Lighting Rate—Schedule B-5

Availability

Available for street or roadway lighting for term of not less than 1 year.

[fol. 2304] Character of Service

Alternating-current service, either series or multiple system or combination.

Application of Rate

Where contractor's electric system bears the cost of operation and maintenance of the equipment used in the street or roadway lighting system, the rate consists of an energy charge at basic commercial rate, schedule B-2, and a maintenance charge.

Where contractor's electric system does not bear the cost of operation and maintenance of the equipment used in the street or roadway lighting system, only the energy charge will apply.

Rate

Energy charge.—First 250 kilowatt-hours per month at 3 cents per kilowatt-hour; next 750 kilowatt-hours per month at 2 cents per kilowatt-hour; next 1,000 kilowatt-hours per month at 1 cent per kilowatt-hour; excess over 2,000 kilowatt-hours per month at 0.8 cent per kilowatt-hour.

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Maintenance charge

Lamp rating:	Unit charge per month
1,000 Lumen series, or 100-watt multiple	$0.80
2,500 Lumen series, or 150-watt multiple	1.05
4,000 Lumen series, or 200-watt multiple	1.40
6,000 Lumen series, or 300-watt multiple	1.70
10,000 Lumen series, or 500-watt multiple	2.15

Surcharge

Energy charge is subject to a surcharge as provided in schedule of terms and conditions.

Payment

Above rates, including surcharge, are net, the gross rates being 10 per cent higher. In the event the current monthly bill is not paid within 10 days from date of bill the gross rates shall apply.

[fol. 2305] Service under this classification is subject to rules and regulations of contractor.

Schedule of Terms and Conditions of Contract

1. Measurement of demand, energy, and power factor.—Demand and energy measurements shall be made by suitable instruments at the point or points of delivery or may, at the option of Authority, be made at some other point or points where housing facilities are available or may be made available and/or operation simplified; Provided, however, that in the event the metering is effected at some other location than at point of delivery, suitable correction shall be made by Authority of the amounts determined at such location so that adjusted amounts will so far as possible reflect the exact quantities delivered at the actual point or points of delivery.

Authority will, at its own expense, install and maintain the necessary meters for measuring the maximum demand and the amount of energy furnished municipality; Provided, that should these meters fail or be found inaccurate the maximum demand and amount of energy delivered will be

estimated by Authority from the best information available. Authority may also, at its option, from time to time measure power factor. Municipality shall permit the use of its housing facilities, ducts, and supports for Authority's metering equipment.

Municipality shall have the right to install, equip and maintain at its own expense suitable instruments for measuring demand, power factor, and energy adjacent to Authority's measuring devices for purposes of a check on said devices, and Authority agrees that it will so far as practicable provide suitable facilities for the installation of such metering devices within its substation enclosures.

2. Meter tests.—Authority will, at its own expense, and in the presence of representatives of municipality, make periodical tests and inspections of its meters in order to maintain a high standard of accuracy. Authority will make additional tests or inspections of its meters at the request of municipality, and in the presence of representatives of municipality. If such additional tests show that the meter is accurate within 2 per cent, slow or fast, no adjustment will be made in municipality's bill and the testing charge will be paid by municipality. In case the tests show the meter to be in excess of 2 per cent, fast or slow, an adjustment shall be made in municipality's bill over a period of not over 30 days prior to date of such test, and cost of making test shall be borne by Authority.

3. Municipality's lines and equipment—Ownership.—All lines and substations from point of delivery (as defined in the contract of which these terms and conditions are a part), and all electrical equipment, except the metering equipment of Authority, located on Municipality's side of such point of delivery, shall be furnished and maintained by Municipality.

[fol. 2306] 4. Inspections.—Authority shall have the right, but shall not be obligated, to inspect any installation before electricity is introduced or at any later time, and reserves the right to reject any wiring or equipment not in accordance with Authority's reasonable standards; but such inspection, or failure to inspect, or to reject, shall not render Authority liable or responsible for any loss or damage re-

sulting from defects in the installation of any electrical equipment, or from violation of the contract of which these terms and conditions are a part, or from accidents which may occur upon municipality's premises.

5. Municipality's responsibility for Authority's property. —All meters, service connections, and other equipment furnished by Authority shall be, and remain, the property of Authority. Municipality shall exercise proper care to protect the property of Authority or municipality's premises, and in the event of loss or damage to Authority's property, arising from neglect of municipality to care for same, the cost of necessary repairs or replacement shall be paid by municipality.

6. Right of access.—Authority's identified employees shall have access to municipality's premises at all reasonable times for the purpose of reading meters and for testing, repairing, renewing, or exchanging any or all equipment belonging to Authority.

7. Additional load.—The service connection, transformers, meters, and equipment supplied by Authority for municipality have definite capacity and no addition to the equipment or load connected thereto, in excess of such capacity, shall be made except after reasonable notice to Authority. Failure to give such notice of additions or changes in load shall render municipality liable for any damage to Authority's lines or equipment caused by the additional or changed installation.

8. Municipality's lines and equipment Standards.—All lines and equipment of municipality must conform to accepted modern practice, as exemplified by the requirements of the National Electrical Safety Code and the National Electric Code.

9. Accounting and handling of funds.—Municipality agrees:

(a) To administer its electric system as a separate department, to establish and maintain a separate fund for its revenues from electrical operations, and not to mingle funds or accounts with those of any other of its operations.

(b) To keep the general books of accounts of its electric system according to a system of accounts to be prescribed

by Authority after conference with municipality, which system of accounts will so far as possible be uniform with other systems prescribed and applied in other municipalities purchasing electrical energy from Authority. Authority will render such advisory accounting service in the setting up and administering of such accounts as Authority may deem reasonable.

(c) To furnish promptly to Authority such operating and financial statements relating to electric system operations [fol. 2307] as may reasonably be requested by Authority.

(d) To allow the duly authorized agents of Authority to have free access at all reasonable times to all books and records relating to electric system operations.

10. Financial and accounting policy.—Municipality agrees to be bound by the following statement of financial and accounting policy:

(a) Present value of electric system.—Wherever account records are complete and have been properly kept, the present value of the electric system as of the date of initial delivery shall be taken as the actual historical cost of the property then in use or useful in the distribution of electricity as shown on the books, including reasonable spare capacity for expansion and reasonable quantities of materials and supplies, less accrued depreciation, plus property under construction and a reasonable amount of cash working capital. If adequate reserves have not been set up for depreciation, the amount of depreciation accrued shall be estimated by engineering appraisal. Whenever accounting records are incomplete or have not been kept in such manner as to permit the determination of actual historical cost, the present value shall be determined as the replacement cost new of the property devoted to the distribution of electricity shall be included in a physical inventory. The items of such physical inventory shall then be priced on the basis of labor and materials cost then prevailing. The total direct cost of construction shall be increased by not more than 15 per cent for general overheads.

(b) Municipality's investment. The initial investment of municipality shall be defined as the present value of the system (i. e., as of the date of initial delivery), less all

outstanding liabilities incurred in connection with the construction or acquisition of the electric system. Wherever general obligations have been issued by municipality, the proceeds of which have been used for both electric construction on operations and for general city purposes, an estimate shall be made of the amount of such proceeds which actually were used in the electric system. That part of the total indebtedness which is represented by this amount shall then be allocated or assigned as an obligation of the electric system. The initial investment as above defined shall be increased only as herein specifically provided and by the payment of moneys from the funds of municipality (other than the electric fund) for the payment of debt incurred by or on account of the electric system or otherwise for the benefit of the electric system.

(c) Maximum returns.—The amount of municipality's investment in the electric system shall be determined as of the date of initial delivery and shall thereafter be adjusted as necessary from time to time and in any case at the end of each fiscal year. Municipality shall receive a return on this investment each month not to exceed one-half of 1 per cent per month, computed on the basis of the investment as of the last day of the month next preceding.

[fol. 2308] (d) Payments in lieu of taxes.—Municipality may take from the electric department revenues or funds for the general funds of municipality an amount in lieu of taxes, to be determined as follows:

(1) The prevailing municipal property tax rate shall be applied to the value of the property used in electric operations within the municipal limits.

(2) The tax equivalent paid to municipality's general funds under (1) above shall be increased by application of the county and State tax rates to the value of the electric system, unless the county and/or State governments levy property taxes upon the electric system, in which case municipality shall not take the county and State tax equivalent for such taxes as are assessed.

(3) In determining the amount to which municipality is entitled in lieu of taxes under (1) and (2) above the tax

rate shall be applied to the value of the property as determined in paragraph (a) above plus additions, less retirements. The tax computations and remittances in lieu of such taxes shall be made monthly and shall be based upon the value as determined in paragraph (a) above plus additions, less retirements as shown by the books at the beginning of each current taxable year.

(e) Payment by electric department for services.—The electric department shall pay the salary of those persons who devote their full time to the operation of the electric system, and an equitable portion of the salary of those persons devoting part time to the operation of the electric system.

(f) Withdrawals and reinvestments by municipality.—If, at any time, municipality should withdraw from the funds of the electric department for municipality's general funds amounts in excess of the allowable return on investment and of the tax equivalent, municipality's investment shall be reduced in the amount of such excess withdrawals. Withdrawals of municipality's investment shall be made only at such times and in such amounts as will not interfere with the efficient operation of the electric system, including requirements for expansion. In no event shall the excess withdrawals by municipality exceed the amount of municipality's investment in the electric system. If, at any time, municipality should fail to withdraw the full amount due on account of its investment and/or on account of tax equivalent, that part or whole of the return and/or tax equivalent which is not withdrawn shall be added to municipality's investment to the extent such amounts are needed by or used in the operation of the electric system.

(g) Short term loans and advances.—The electric department may lend funds or extend credit to the general fund of municipality only on a short-term basis (1 year or less, without the right of renewal). The amount so lent shall bear a rate of interest the same as the rate of return on investment determined by the governing body of municipality, not to exceed 6 per cent per annum, payable monthly. [fol. 2309] At the end of each fiscal year all such matured loans and advances not yet paid shall be paid or closed out by adjustment of municipality's investment account.

(h) Action by governing body of municipality. Except as limited in this statement, the governing body of municipality shall determine the rate of return on municipality's investment and/or the interest rate on loans and advances to it.

(i) Publication of statement of municipality's investment. Municipality shall publish a statement of the amount of municipality's investment in the electric system and the outstanding loans and advances at the close of each fiscal year. A copy of such statement shall be forwarded to Authority immediately at its office at Wilson Dam, Ala. After the closing of the books at the end of each month, municipality shall make known, upon demand, to any taxpayer of municipality or to any customer of the electric system the amount of municipality's investment in said electric system.

11. Billing.—Payment for energy used in any calendar month shall be due on the fifteenth of the succeeding month, or 5 days after receipt of bill from Authority, whichever is the later. Upon failure of municipality to pay for the energy used in any calendar month within 60 days after due date, Authority shall have the right, upon reasonable notice, to discontinue the supply of energy and refuse to resume delivery so long as any part thereof remains unpaid. Discontinuance of supply under this section will not relieve municipality of its liability for the agreed minimum monthly payment during the time the supply of energy is so discontinued. To any amount remaining unpaid on the first day of the calendar month following the due date there shall be added a penalty of 1 per cent and an additional 1 per cent shall be added on the first day of each succeeding month until the amount is paid in full. All payments shall be made to the Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

12. Interruption of service.—Authority will furnish energy as agreed upon continuously so far as reasonable diligence will permit; but Authority, its officers, agents, or employees shall not be liable for damages when, for any reason, suspensions of the operation of the generation and transmission system serving municipality, or any part thereof, interfere with the delivery of electric energy to municipality nor shall such an interruption constitute a breach

of this contract on the part of Authority, but Authority shall make appropriate adjustment of the demand charge in the event of an interruption.

13. Lower rates to other municipalities.—If at any time during the term of this agreement Authority should supply electricity to any municipality, municipal division or department, or cooperative association, at a lower rate schedule than that applicable to municipality, and such lower rate schedule shall not be justified in the judgment of Authority by different conditions of service, making the cost to such other municipality, division, department, or cooperative relatively less than to municipality, such lower rate shall be [fol. 2310] made available to municipality so long as such lower rate schedule shall be given to such other municipality while this contract is in force.

14. Developmental surcharge.—In order to maintain municipality's revenues in the developmental period in which the increased demand for power may not compensate for the greatly reduced rates provided for in schedule B, municipality may also impose a surcharge upon those classes of consumers subject to a surcharge under the provisions of said schedule. Municipality may initially determine and may from time to time vary such surcharges, with the understanding, however, that all surplus revenues (as defined in the contract of which this schedule is a part) shall serve as the basis for the reduction or elimination of such surcharges. Surcharges shall be based on a straight percentage of bills, and shall apply uniformly to all members of classes as to which surcharges are authorized.

15. Adjustment of rates.—In the event of a major increase or decrease in general price and wage levels of such a substantial character as materially and substantially to change the cost basis upon which the wholesale rates fixed by this contract are predicated, the parties hereto agree to an adjustment of such rates. Should the cost-of-living index for the United States as a whole compiled by the Department of Labor of the United States show a decrease for a period of 6 consecutive calendar months, or for any month in said period if index figures are not reported for each month thereof, of 30 per cent or more under the index figures for

the index period including the month in which this contract is signed, or for any month in said period if index figures are not reported for each month thereof, municipality and Authority agree to such a reduction in rates as will conform to the decreased costs of electricity supply, and should such index figures show a 30 per cent or more increase for the same period or month, as the case may be, Authority and municipality agree to such an increase in rates as will conform to the increased costs of electricity supply. Municipality and Authority agree, promptly upon receipt of a request by the other, to confer with each other on the changes in rates necessary to conform to changes in the cost of electricity supply, and to endeavor to agree upon new rates which shall so conform. The new rates shall be substituted for the wholesale rates set forth in the contract of which this schedule is a part.

16. Reduction in rates.—Authority agrees to reduce the wholesale rates herein fixed wherever, in the opinion of Authority, reductions in the cost of generating and transmitting energy make feasible such reductions in rates; the intention of the parties being that municipality shall participate in the benefits of reductions in the cost of generation and transmission.

17. Voltage fluctuations caused by municipality.—Electric service must not be used in such a manner as to cause unusual fluctuations or disturbances to Authority's system. Authority may require municipality at its own expense to install suitable apparatus to reasonably limit such fluctuations.

18. Balancing of loads.—Municipality shall at all times take and use energy in such manner that the load will be bal- [fol. 2311] anced between phases to within nominally 10 percent. In the event of unbalanced polyphase loads, Authority reserves the right to require municipality at its own expense to make the necessary changes to correct this condition, or to compute the balancing demand on the assumption that the load of each phase is equal to that on the greatest phase.

19. Notice of trouble.—Municipality shall notify Authority immediately should the service be unsatisfactory for any reason, or should there be any defects, trouble, or accidents

affecting the supply of electricity. Such notices, if verbal, should be confirmed in writing.

20. Single-point delivery.—Unless otherwise specifically provided in this contract, if service is rendered for more than one substation, or through more than one transformation at the same substation, Authority will bill municipality for energy (but not demand) at each substation on additional transformation separately.

21. Submetering.—Municipality shall not sell electricity for submetering or further resale.

22. Conflict.—In case of conflict between any express contractual provision or any provision of the schedule of rates and charges and these terms and conditions, the contract or rate schedule shall apply.

Schedule of Rules and Regulations Applicable to All Classes of Service

1. Application for service.—Each prospective customer desiring electric service may be required to sign distributor's standard form of application for service on contract before service is supplied by the distributor.

2. Determination of classification.—Service under the standard residential rate shall apply only to electric service in a single private dwelling and its appurtenances, the major use of which is for lighting and household appliances, for the personal comfort and convenience of those residing therein. Private dwellings in which space is occasionally used for the conduct of business by a person residing therein will be served under the standard residential rate. Where premises have mixed use the classification shall be determined by predominatory use of floor space. The residential rate shall not apply to service to:

(a) Institutions such as clubs, fraternities, orphanages, or homes.

(b) Recognized rooming or boarding houses.

(c) The space in an apartment or other residential building primarily devoted to a professional or other office, studio, or other gainful pursuit. Availability of service

under the standard commercial and industrial rates shall be determined according to the schedule of rates and charges.

3. Deposits.—A deposit or suitable guaranty not exceeding twice the average monthly bill may be required of any customer before electric service is supplied. Distributor may at its option return deposit to customer after 1 year. Upon termination of service, deposit may be applied by distributor against unpaid bills of customer, and if any balance [fol. 2312] remains after such application is made, said balance shall be refunded to customer.

4. Point of delivery.—The point of delivery is the point, as designated by distributor, on customer's premises where current is to be delivered to building or premises. All wiring and equipment beyond this point of delivery shall be maintained by the customer.

5. Customer's wiring-Standards.—All wiring of customer must conform to municipal requirements and accepted modern standards, as exemplified by the requirements of the National Electrical Safety Code, and the National Electric Code.

6. Inspections.—Distributor shall have the right, but shall not be obligated, to inspect any installation before electricity is introduced or at any later time, and reserves the right to reject any wiring or appliances not in accordance with distributor's standards; but such inspection or failure to inspect or reject shall not render distributors liable or responsible for any loss or damage resulting from defects in the installation, wiring, or appliances, or from violation of distributor's rules, or from accidents which may occur upon customer's premises.

7. Underground service lines.—Customers desiring underground service lines from distributor's overhead system must bear the excess cost incident thereto. Specifications and terms for such construction will be furnished by distributor on request.

8. Customer's responsibility for distributor's property.—All meters, service connections, and other equipment fur-

nished by distributor shall be, and remain, the property of the distributor. Customers shall provide a space for, and exercise proper care, to protect the property of distributor on its premises; and in the event of loss or damage to distributor's property, arising from neglect of customer to care for same, the cost of necessary repairs or replacements shall be paid by customer.

9. Right of access.—Distributor's identified employees shall have access to customer's premises at all reasonable times for the purpose of reading meters, testing, repairing, removing, or exchanging any or all equipment belonging to distributor.

10. Billing.—Bills will be rendered monthly and shall be paid within 10 days from date of bill at the office of distributor. Failure to receive bill will not release customer from payment obligation. Should bills not be paid as above, the distributor may at any time thereafter, upon 5 days' written notice to customer, discontinue service. Bills paid on or before the final date of payment shall be payable at the net rates, but thereafter the gross rates shall apply, as provided in schedule of rates and charges. Should the final date for payment of the bill at the net rates fall on a Sunday or holiday, the business day next following the final date will be held as a day of grace for delivery of payment. Net rate remittances received by mail after the time limit for payment of said net rates will be accepted by distributor, if the incoming envelope bears United States Post Office date stamp of the final date for payment of the net amount, or any date prior thereto.

11. Discontinuance of service by distributor.—The distributor may refuse to connect or may discontinue service for the violation of any of its rules and regulations, or for [fol. 2313] violation of any of the provisions of the schedules of rates and charges, or of the application of customer or contract with customer. Distributor may discontinue service to customer for the theft of current or the appearance of current theft devices on the premises of customer. The discontinuance of service by distributor for any causes as stated in this rule does not release customer from his obligation to distributor for the payment of minimum bills

as specified in application of customer or contract with customer.

12. Reconnection charge.—Whenever service has been discontinued by distributor, as provided above, a charge of not less than $1 may be collected by distributor before service is restored.

13. Termination of contract by customer.—Customers who have fulfilled their contract terms and wish to discontinue service must give at least 3 days written notice to that effect, unless contract specifies otherwise. Notice to discontinue service prior to expiration of contract term will not relieve customer from any minimum or guaranteed payment under any contract or rate.

14. Service charges for temporary service.—Customers requiring electric service for a period not exceeding 30 days may be required by distributor to pay all costs for connection and disconnection incidental to the supplying and removing of service. This rule applies to circuses, carnivals, fairs, temporary construction, and the like.

15. Interruption of service.—The distributor will use reasonable diligence to provide a regular and uninterrupted supply of current, but in case the supply of current should be interrupted for any cause, distributor shall not be liable for damages resulting therefrom.

16. Voltage fluctuations caused by customer.—Electric service must not be used in such a manner as to cause unusual fluctuations or disturbances to distributor's system. Distributor may require customer, at his own expense, to install suitable apparatus which will reasonably limit such fluctuations.

17. Additional load.—The service connection, transformers, meters, and equipment supplied by distributor for each customer have definite capacity, and no addition to the equipment or load connected thereto will be allowed except by consent of distributor. Failure to give notice of additions or changes in load, and to obtain distributor's consent for same, shall render the customer liable for any damage to any of distributor's lines or equipment caused by the additional or changed installation.

18. Stand-by and resale service.—All purchased electric service (other than emergency or stand-by service) used on the premises of customer shall be supplied exclusively by distributor, and the customer shall not, directly or indirectly, sell, sublet, assign, or otherwise dispose of the electric service or any part thereof.

19. Single-point delivery.—The rates named in the schedule of rates and charges for each class of service are based [fol. 2314] upon the supply of service to the entire premises through a single delivery and metering point and at a single voltage. Separate supply for the same customer at other points of consumption, or at a different voltage, shall be separately metered and billed.

20. Notice of trouble.—Customer shall notify distributor immediately should the service be unsatisfactory for any reason, or should there be any defects, trouble, or accidents affecting the supply of electricity. Such notices, if verbal, should be confirmed in writing.

21. Nonstandard service.—The customer shall pay the cost of any special installation necessary to meet his peculiar requirements for service at other than standard voltages, or for the supply of closer voltage regulation than required by standard practice.

22. Meter tests.—Distributor will, at its own expense, make periodical tests and inspections of its meters in order to maintain a high standard of accuracy. Distributor will make additional tests or inspections of its meters at the request of customer. If such test show that the meter is accurate within 2 per cent, slow or fast, no adjustment will be made in customer's bill and the testing charge of $1 per meter will be paid by customer. In case the test shows meter to be in excess of 2 per cent, slow or fast, an adjustment shall be made in the customer's bill over a period of not over 30 days prior to date of such test, and cost of making test shall be borne by distributor.

23. Filling and posting.—A copy of these rules and regulations, together with a copy of distributor's schedule of rates and charges, shall be kept open to inspection at the offices of distributor.

COMPLAINANTS' EXHIBIT No. 118

24. Scope.—This schedule of rules and regulations is a part of all contracts for receiving electric service from distributor, and applies to all service received from distributor, whether the service is based upon contract, agreement, signed application, or otherwise.

25. Revisions.—These rules and regulations may be revised, amended, supplemented, or otherwise changed from time to time. Such changes, when effective, shall have the same force as the present rules and regulations.

26. Conflict.—In case of conflict between any provision of any rate schedule and the schedule of rules and regulations, the rate schedule shall apply.

[fol. 2315] Power Contract Between TVA and the City of Somerville, Tennessee, Dated December 31, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Dickson, Tennessee, except:

1. The maximum amount of electricity which TVA shall be obligated to deliver shall not be in excess of 750 kw. except on demand and notice as provided for in said contract between TVA and the City of Dickson, Tennessee.

2. The point of delivery shall be at a substation located adjacent to the present generating plant of said municipality.

3. In lieu of Section 8 of the contract between TVA and the City of Dickson, the following appears:

10. Municipality's investment in electric system.—For the purpose of this agreement the investment of municipality in its electric system as of the date hereof is agreed to be the sum of $00.00, as determined as follows:

Replacement costs, new	$18,900
Less accrued depreciation	7,560
Present value	11,340
Bonds and other indebtedness applicable to electric system	11,340
Net investment	None

COMPLAINANTS' EXHIBIT No. 118

[fol. 2316] Power Contract Between TVA and the City of Milan, Tennessee, Dated December 31, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Dickson, Tennessee, except:

1. The maximum amount of electricity which TVA shall be obligated to deliver shall not be in excess of 1000 kw. except on demand and notice as provided for in said contract between TVA and the City of Dickson, Tennessee.

2. The point of delivery shall be at the present city light plant.

3. In lieu of Section 8 of the contract between TVA and the City of Dickson, the following appears:

8. Municipality's investment in electric system. For the purpose of this agreement the investment of municipality in its electric system as of the date hereof is agreed to be the sum of —, determined as follows:

Replacement cost new of distribution system	$60,312
Less accrued depreciation	23,927
Present value of distribution system	36,385
Present stand-by value of generating plant	15,365
Total	51,750
Bonds applicable to electric system, plus accrued interest	51,750
Other indebtedness applicable to electric system	None.
Total indebtedness applicable to electric system	51,750

[fol. 2317] Power Contract Between TVA and the City of Bolivar, Tennessee, Dated December 31, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Dickson, Tennessee, except:

1. The maximum amount of electricity which TVA shall be obligated to deliver shall not be in excess of 450 kw. ex-

cept on demand and notice as provided for in said contract between TVA and the City of Dickson, Tennessee.

2. The point of delivery shall be at the present city light plant on West Market Street in said City of Bolivar.

3. In lieu of Section 8 of the contract between TVA and the City of Dickson the following appears:

8. Municipality's investment in electric system. For the purpose of this agreement the investment of municipality in its electric system, including generating plant, as of the date hereof is agreed to be the sum of $00.00, determined as follows:

Replacement cost, new, of distribution system	$17,808
Less accrued depreciation	5,083
Present value of electric distribution system	12,725
Present stand-by value of generating plant	7,275
Total	20,000
Bonds applicable to electric system plus accrued interest	20,000
Other indebtedness applicable to electric system	None.
Total indebtedness applicable to electric system	20,000
Net investment	None.

[fol. 2318] Power Contract Between TVA and the City of Holly Springs, Mississippi, Dated November 12, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Dickson, Tennessee, except:

1. The maximum amount of electricity which TVA shall be obligated to deliver shall not be in excess of 450 kw. except on demand and notice as provided for in said contract between TVA and the City of Dickson, Tennessee.

2. The point of delivery shall be at the present city light plant.

3. In lieu of Section 8 of the contract between TVA and the City of Dickson the following appears:

COMPLAINANTS' EXHIBIT No. 118

8. Municipality's investment in electric system. For the purpose of this agreement the investment of municipality in its electric system as of the date hereof is agreed to be the sum of $25,257, determined as follows:

Replacement cost, new	$41,255
Less accrued depreciation	10,313
Present value	30,942
Stand-by value of generating plant	19,315
Total	50,257
Bonds applicable to electric system plus accrued interest	25,000
Other indebtedness applicable to electric system	None.
Total indebtedness applicable to electric system	25,000
Net investment	25,257

[fol. 2319] Power Contract Between TVA and the City of Sheffield, Alabama

This agreement, made and entered into as of the 16th day of March, 1936, pursuant to the Tennessee Valley Authority Act of 1933, between the Tennessee Valley Authority, hereinafter called Authority, a corporation created by and acting under said Act, and the city of Sheffield, hereinafter called Municipality, a municipal corporation duly organized, created and existing under and by virtue of the laws of the State of Alabama.

Whereas Authority, by section 10 of said Act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, Counties, Municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas by Section 11 of said Act it is provided that the sale of power by Authority shall be primarily for the benefit of the People of the section as a whole, and particularly the domestic and rural consumers to whom the power can economically be made available; and

COMPLAINANTS' EXHIBIT No. 118

Whereas the electors of the municipality have by referendum authorized municipality to acquire by construction or purchase a municipal electric distribution system, and municipality intends, with all possible diligence and expedition, to acquire by construction or purchase, and to operate such a system; and

Whereas municipality desires to purchase power from Authority for municipal purposes, and for resale and proposes to pay therefor; and

Whereas municipality has by ordinance of its council duly authorized the making of this contract, and Authority, by its by-laws and resolutions, has likewise so authorized;

Now, therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. Term of contract.—This contract shall be effective as of the 16th day of March, 1936, and all service and payment periods hereinafter referred to shall be computed as from that date. The contract shall continue in effect for twenty (20) years.

2. Acquisition of system.—Municipality agrees to use all reasonable diligence in acquiring by construction or purchase a complete municipal distribution system for the city of Sheffield, and to do all acts and things which it may legally do, which may be necessary or helpful in effectuating such acquisition.

3. Power Supply.—Authority will, from the effective date of this contract to the expiration thereof, supply electricity to municipality for municipal purposes, and for resale. Municipality agrees to purchase from Authority, and Au- [fol. 2320] thority agrees to supply, the entire electricity requirements of municipality. Should municipality during the period of this contract desire to increase its purchases in excess of 4,500 kilowatts, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as 9 months after date of demand if the additional requirements are 5000 kilowatts or less, 12 months after date of demand if the additional requirements

are over 5000 kilowatts, but not over 10,000 kilowatts and 2 years after date of demand if additional requirements are in excess of 10,000 kilowatts. Said energy shall be delivered in the form of 3-phase alternating current, at approximately 60 cycles per second, and approximately 11,000 volts, or at such other voltage as the parties may from time to time agree. While it is not the function of Authority to guarantee accurate time by the maintenance of accurate frequency Authority agrees to supply such frequency as is recognized to be good commercial frequency on a hydro-electric system.

4. Point of delivery.—Authority shall deliver the electricity purchased hereunder at the metering equipment situated at the west boundary of the United States Government reservation known as Nitrate Plant No. 2, or at such other point or points as shall be mutually agreed upon.

5. Schedule of rates.—Attached hereto, and hereby made a part hereof, is a schedule of rates and charges. Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale rate." All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

6. Resale rates.—In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, and in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which municipality operates, municipality agrees to charge consumers the rates set forth for the several classes thereof in schedules B-1 to B-5, inclusive, of the said schedule of rates and charges, and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers, or special uses of electricity may be added from time to time by agreement of the parties. The term "contractor" in said schedule shall be construed to mean municipality. If it should appear that the rates provided for in said resale schedules with the surcharge provided for therein do not produce revenues sufficient to operate and maintain municipality's electric system on a self-supporting and financially sound basis, then municipality shall, by agreement

with Authority, prescribe and enforce such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis.

7. Disposition of municipality's revenues.—Municipality, deeming it necessary for the purposes of this contract, and for the purpose of providing reasonable rates for electric service, pursuant to this contract and to the law, agrees to dispose of its gross revenues from electric operations in the following manner.

(a) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials, and supplies, power at wholesale, and insurance.

[fol. 2321] (b) From remaining revenues municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking-fund payments thereon.

(c) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction, and for contingencies, and to provide a reasonable amount of cash working capital.

(d) From remaining revenues municipality shall thereafter pay into its general fund a return on its investment, and a tax equivalent as provided in the financial and accounting policy in the schedule of terms and conditions attaching hereto.

(e) All remaining revenues shall be considered surplus revenues and may be devoted by municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates. Surplus revenues shall be computed as of December 31 and June 30th of each year.

8. Payment for municipality's energy requirements.—Municipality agrees to pay into its electric funds from ap-

propriate general or special funds for all electric service required by municipality for street lighting, water pumping, and other operations and uses, at the resale rates as set forth in the schedule of rates and charges, with such modifications and additions as may from time to time be agreed upon by the parties.

9. Terms and conditions; rules and regulations.—Attached hereto and hereby made a part hereof, are two schedules, entitled respectively "Schedule of terms and conditions," and "Schedule of rules and regulations." The provisions of either or both schedules may from time to time be changed or supplemented by agreement of municipality and Authority without limitation on the right of municipality from time to time, upon not less than 10 days written notice to Authority to prescribe and enforce such additional reasonable rules and regulations as it may determine, not inconsistent with this contract (including the schedules thereof). The term "distributor" in the latter schedule shall be construed to mean municipality. It is understood and agreed that the several provisions of the said schedules with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the schedule of rates and charges are of the essence of this contract. Municipality hereby adopts said schedule of rules and regulations as the rules and regulations of municipality.

10. Reports to Authority.—Municipality agrees that, not later than the 1st day of September of each year, it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year, ending June 30th the condition of its property and such other information as Authority may reasonably request. Municipality agrees promptly to render such additional reports and information to Authority as Authority may from time to time reasonably request.

[fol. 2322] 11. Discrimination.—Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

12. Waiver of defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other parties hereto, and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

13. Contract not transferable.—Neither this contract nor any interest therein shall be transferable nor assignable by municipality to any other party without the consent of Authority.

14. Renewal or extension.—Authority agrees to enter into negotiations with municipality looking to the renewal or extension of this contract, so far as may be permitted by law, at least 2 years before the expiration thereof.

In witness whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

City of Sheffield, by Hoyt Greer, President of the Board of Commissioners and Ex-Officio Mayor. (Seal.)

Attest: Peter Stout (?), City Clerk.

The schedule of Rates and Charges, schedule of Terms and Conditions and schedule of Rules and Regulations attached to and made a part of this contract are substantially the same as the schedule of Rates and Charges, schedule of Terms and Conditions and schedule of Rules and Regulations attached to and made a part of the TVA-City of Dickson, Tennessee, contract.

[fol. 2323] Power Contract Between TVA and the City of Memphis, Tennessee, Dated November 23, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Sheffield, Alabama, except:

1. The maximum amount of power agreed to be furnished by TVA shall not be in excess of 50,000 kw. except upon

notice as provided for in the contract between TVA and the City of Sheffield, Alabama.

2. TVA agrees to construct transmission facilities on its own rights of way, to or adjacent to the corporate limits of said municipality, and, at the corporate limits, company will connect either directly to substation apparatus or to suitable transmission facilities of the municipality.

3. The municipality agrees to pay TVA the following amounts annually as a minimum:

First year after date of initial delivery	$72,000
Second year after date of initial delivery	72,000
Third year after date of initial delivery	120,000
Fourth year after date of initial delivery	180,000
Fifty year after date of initial delivery	240,000
Each year after the fifty year after the date of initial delivery	240,000

[fol. 2324] Power Contract Between TVA and the City of Knoxville, Tennessee, Dated February 19, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Sheffield, Alabama, except:

1. The initial amount of power agreed to be furnished by TVA shall not be in excess of 35,000 kw.

2. The point of delivery shall be at a point or points to be selected by TVA within the corporate limits of the City of Knoxville.

3. It supersedes the contract dated March 1934 between TVA and the City of Knoxville.

[fol. 2325] Supplemental Contract Between TVA and the City of Knoxville, Tennessee, Dated May 18, 1936

This contract, omitting the formal parts thereof, is as follows:

Whereas it is desirable that the intention of the parties, as evidenced by the said contract, be clarified, and that all ambiguities be resolved:

Now, therefore, in consideration of the premises, the parties hereto mutually agree as follows:

COMPLAINANTS' EXHIBIT No. 118

1. That the provision in the paragraph preceding section 1 of the said contract, reading "and subject to all of the provisions of the Tennessee Valley Authority Act of 1933", is intended and shall be construed as for the purpose only of limiting the obligations of the Authority to such as may be undertaken pursuant to said act, and is not intended to subject municipality to any obligations or conditions not specifically set out in the other provisions of said contract of February 19, 1936.

2. The last sentence of section 6 of said contract, providing that under certain conditions "Municipality shall, by agreement with Authority, prescribe and enforce such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis", is intended to and shall be construed to mean that, under the circumstances set out in such sentence, Authority shall agree to such changes in rates.

3. Section 9 of said contract, providing that municipality may prescribe and enforce such additional reasonable rules and regulations as it may determine, not inconsistent with said contract and the schedules thereof, is intended to and shall mean that the schedule of rules and regulations are the rules and regulations of municipality, and are intended for its sole benefit, and may be modified, repealed, or supplemented at any time by municipality, upon giving 10 days' written notice to Authority; except that such charges shall not be inconsistent with the express terms of the contract, the schedule of rates and charges and the schedule of terms and conditions thereof; and except that paragraphs 2 and 19 of said schedule of rules and regulations were intended to be and shall be considered to be interpretations of the schedule of rates and charges, subject to alteration only in the manner provided for the latter schedule.

[fol. 2326] Power Contract Between TVA and the City of Jackson, Tennessee, Dated October 16, 1935

(Omitted)

[fol. 2327] Power Contract Between TVA and North Georgia Electric Membership Corporation

This agreement, made and entered into this 15th day of June 1936, by and between the Tennessee Valley Authority

(hereinafter called Authority), a corporation created by the Tennessee Valley Authority Act of 1933, and the North Georgia Electric Membership Corporation (hereinafter called corporation), a corporation duly organized, created, and existing under and by virtue of the laws of the State of Georgia.

Witnesseth:

Whereas Authority, by section 10 of the Tennessee Valley Authority Act of 1933, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas by Section 11 of said act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas corporation has been organized under the laws of the State of Georgia for the purpose of acquiring facilities for the purchase and distribution of electric power to its members at the lowest cost consistent with sound business practice and without profit; and

Whereas corporation desires to purchase electric power from Authority to be distributed and sold by corporation to its members, and after investigation by Authority it appears that quantities of power generated at Wilson Dam, Ala., sufficient to meet the requirements of corporation under the terms of this contract will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas the parties to this contract have duly authorized its execution;

Now, therefore, for and in consideration of the mutual covenants herein contained (the obligations of Authority being subject to all of the provisions of the Tennessee Valley Authority Act of 1933) the parties hereto mutually covenant and agree as follows:

1. Term of contract.—This contract shall become effective upon the execution hereof and shall continue in effect for 20 years: Provided, however, That all obligations of

[fol. 2328] the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "Date of initial delivery") as corporation shall have acquired its distribution system, or any part thereof, and shall be in a position to take such service for its system or part thereof. All service and payment periods shall be computed as from the date of initial delivery.

2. Power supply.—Authority will, for the term hereof, supply electricity to corporation for corporate purposes and for resale. Corporation agrees to purchase from Authority and Authority agrees to supply the entire electricity requirements of corporation. Corporation's demand on Authority shall not exceed 300 kilowatts before January 1, 1937. Should corporation desire to increase its purchases in excess of 300 kilowatts subsequent to January 1, 1937, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Such electricity shall be delivered in the form of three-phase, alternating current, at approximately 12,000 volts, Y-corrected, or at such other voltage as the parties may from time to time agree upon. While it is not the function of Authority to guarantee accurate time by the maintenance of accurate frequency, Authority agrees to supply such frequency as is recognized to be good commercial frequency on a hydroelectric system.

3. Point of delivery.—Authority will deliver the electricity purchased hereunder at the low-tension side of the substation located at Ooltewah, Tenn., or at such other point as may be mutually agreed upon. The energy to be supplied corporation hereunder shall be metered at the low-tension side of the step-down transformer bank or banks of a substation to be constructed, owned, and operated by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks and/or the transmission line or lines supplying energy to such substation.

4. Corporation agrees that it will not repeal or alter the provisions of article II, sections 4 and 6, and article IV of

the bylaws adopted by its board of directors on June —, 1936, or adopt any bylaws or rules and regulations inconsistent therewith, during the term of this power contract.

5. Schedule of rates.—Attached hereto, and hereby made a part hereof, is a schedule of rates and charges. Corporation agrees to pay for the energy supplied by Authority at the rates fixed in schedule A-1 entitled "Wholesale Power Rate." All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

6. Resale rates.—In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which corporation operates, in order to further the purposes for which corporation was organized, and as further security for any and all indebtedness which corporation has incurred or may incur to Authority, corporation agrees to charge consumers the rates set forth for the several classes thereof in schedule B-1 to B-5, inclusive, of the said schedule of rates and charges and not to depart therefrom except by agreement of the parties. Addi- [fol. 2329] tional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties. The term "contractor" in said schedule shall be construed to mean corporation. If it should appear that the rates provided for in said resale schedule with the surcharge provided for therein do not produce revenues sufficient to operate and maintain corporation's electric system on a self-supporting and financially sound basis, then corporation and Authority shall agree upon, and corporation shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis.

7. Amortization charges.—Corporation agrees to collect the amortization charges provided for in the schedule of rates and charges until all its long-term obligations to Authority have been fully discharged. Such charges, when collected, shall be considered trust funds and shall be de-

voted exclusively to the payment of the funded obligations of corporation according to the priority of those obligations.

8. Disposition of corporation's revenues.—Corporation, for the purpose of providing reasonable rates for electric service pursuant to this contract and to law, agrees to dispose of its gross revenues (not including amortization charges, which shall be disposed of as hereinbefore provided) in the following manner:

(a) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials, and supplies, power at wholesale, and insurance;

(b) From remaining revenues corporation shall next currently provide for the payment, at maturity, of interest on all bonds or other indebtedness applicable to corporation's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon;

(c) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction, and for contingencies, and to provide a reasonable amount of cash working capital;

(d) All remaining revenues shall be considered surplus revenues and shall be devoted by corporation to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity;

(e) Thereafter surplus revenues shall serve as a basis for the reduction or elimination of amortization charges and surcharges to consumers, and thereafter for the reduction of rates.

Surplus revenues shall be computed as of December 31 and June 30 of each year.

9. Terms and conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled "Schedule of Terms and Conditions.": The provisions of this schedule may from time to time be changed or supplemented by agreement of corporation and Authority. It is understood

and agreed that the several provisions of said schedule, with such changes as may from time to time be adopted pursuant thereto, as well as the several provisions of this contract and of the schedule of rates and charges, are of the essence of this contract.

[fol. 2330] 10. Rules and regulations.—Attached hereto, and hereby made a part hereof, is a schedule of rules and regulations. Corporation hereby adopts said schedule as the rules and regulations of corporation. The provisions of said schedule may be amended by corporation at any time upon 10 days' written notice to Authority setting forth the nature of and the reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "distributor" shall be construed to mean corporation.

11. Rendition of advisory services by Authority.—Authority agrees to render advisory services to corporation in problems of personnel and administration, to secure the attendance of its officers at meetings of the corporation, its board or executive committee, so far as may be practicable and convenient. Corporation agrees to pay the reasonable value of such advisory services as are rendered by Authority at the request of corporation. Corporation agrees that it will not employ or retain in its employ any person whom Authority reasonably considers unqualified for his position, or whose services Authority reasonably deems to be unnecessary.

12. Use of corporation's lines.—Authority shall have the right, to the extent of the transmission capacity of corporation's lines, to the use of corporation's poles and wires for transmission purposes, and for service to industrial customers with a demand of 1,000 kilowatts or more, who elect to take service from Authority: Provided, however, That Authority shall compensate corporation for such use by such amounts as may be mutually agreed upon, or by an interchange of electricity, compensating corporation for line losses, or both.

COMPLAINANTS' EXHIBIT No. 118

13. Reports to Authority.—Corporation agrees that not later than the first day of September of each year it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may reasonably request. Corporation agrees promptly to render such additional reports and information to Authority as Authority may from time to time reasonably request.

14. Bonding of employees.—Corporation agrees to bond in a reasonable amount all employees whose duties require or permit them to handle or dispose of money belonging to corporation.

15. Discrimination.—Corporation agrees that the surplus power purchased hereunder shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

16. Waiver of defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

[fol. 2331] 17. Contract not transferable.—Neither this contract nor any interest therein shall be transferable or assignable by corporation to any other party without the consent of Authority.

In witness whereof, the parties hereto have caused this instrument to be signed and attested in duplicate by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, By Harcourt A. Morgan, Vice Chairman of the Board of Directors. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

North Georgia Electric Membership Corporation, By R. H. Bandy, President. (Seal.)

Attest: J. C. Johnston, Secretary.

COMPLAINANTS' EXHIBIT No. 118

The schedule of Rates and Charges, schedule of Terms and Conditions and schedule of Rules and Regulations attached to and made a part of this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee.

[fol. 2332] Power Contract Between TVA and Meigs County (Tennessee) Electric Membership Corporation, Dated October 14, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and North Georgia Membership Corporation, except:

1. The point of delivery shall be at the low tension side of a substation to be constructed by TVA at a point in or adjacent to Decatur, Tennessee.

[fol. 2333] Power Contract Between TVA and Monroe County (Mississippi) Electric Power Association, Dated July 19, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Alcorn County Electric Power Association, except:

1. The point of delivery shall be at such point as may be mutually agreed upon.

2. It does not contain Sections 1, 5, 6, 7, 8, 10, 11, 18, 19 and 20 of the contract between TVA and Alcorn County Electric Power Association.

3. Schedule of Terms and Conditions and Schedule of Rules and Regulations substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, are attached to and made a part of this contract.

4. It contains the words "subject to" instead of "pursuant to" in the enacting clause.

[fol. 2334] Power Contract Between TVA and Tishomingo County (Mississippi) Electric Power Association, Dated July 19, 1935

COMPLAINANTS' EXHIBIT No. 118

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Alcorn County Electric Power Association, except:

1. The point of delivery shall be at the metering equipment situated on the low tension side of the substations in Iuka and Burnsville, Mississippi, or at such other points as may be mutually agreed upon.

2. It does not contain Sections 5 and 7 of the contract between TVA and Alcorn County Electric Power Association.

3. Schedule of Terms and Conditions and Schedule of Rules and Regulations substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, are attached to and made a part of this contract.

4. It contains the words "subject to" instead of "pursuant to" in the enacting clause.

[fol. 2335] Power Contract Between TVA and Tombigbee Electric Power Association, Dated October 19, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Alcorn County Electric Power Association, except:

1. The point of delivery shall be on the low tension side of the substations in Fulton and Tupelo, Mississippi, or at such other points as may be mutually agreed upon.

2. It does not contain Sections 6, 7 and 11 of the contract between TVA and Alcorn County Electric Power Association.

3. Schedule of Terms and Conditions and Schedule of Rules and Regulations substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, are attached to and made a part of this contract.

4. It contains the following provision in lieu of Paragraph 16 of the contract between TVA and Alcorn County Electric Power Association:

12. Terms and conditions; rules and regulations.—Attached hereto, and hereby made a part hereof, are two schedules, entitled respectively, "Schedule of Terms and Conditions of Contract" and "Schedule of Rules and Regulations", and it is understood and agreed that the provisions of either or both schedules may from time to time be changed or supplemented by agreement of corporation and Authority. The term "distributor" in the latter schedule shall be construed to mean corporation. It is understood and agreed that the several provisions of the said schedules, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the schedule of rates and charges, are of the essence of this contract. Corporation hereby adopts said schedule of rules and regulations as the rules and regulations of corporation.

5. It contains the words "subject to" instead of "pursuant to" in the enacting clause.

[fol. 2336] Power Contract Between TVA and Pontotoc County (Mississippi) Electric Power Association

This agreement, made and entered into this 12th day of February 1936, by and between the Tennessee Valley Authority (hereinafter called Authority), a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the Pontotoc County Electric Power Association, a nonprofit civic improvement corporation, duly organized, created, and existing under and by virtue of the laws of the State of Mississippi (hereinafter called association), its successors and assigns,

Witnesseth:

Whereas, Authority, by section 10 of said act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas association owns and operates an electric transmission and distribution system in and adjacent to Pontotoc County, Miss.; and

COMPLAINANTS' EXHIBIT No. 118

Whereas by a certain instrument designated "Sale, lease, trust, and security contract" (hereinafter referred to as sale, lease, contract) executed as of February 15, 1935, Authority and United States of America disposed of to association, in part by sale and in part by lease, certain electric transmission and distribution facilities in and near Pontotoc County, Miss., and association agreed to pay Authority therefor the sum of $67,645.36, with interest on unpaid balances at the rate of 3½ per cent per annum, payable semiannually; and

Whereas association is now purchasing power from Authority under a certain power contract between Authority and association, dated February 15, 1935 (hereinafter called power contract), and the parties hereto desire to cancel, annul, and rescind said power contract and to enter into a new contract for the purchase of power by association from Authority; and

Whereas association's principal obligation to Authority has been increased from $67,645.36 to $116,831.57 by reason of certain construction and rehabilitation work done by Authority for association, and certain other properties sold by Authority to association, all under the terms of said sale, lease contract, and said power contract; and

Whereas under a certain contract entitled "Sale and Loan Contract Between Tennessee Valley Authority, United States of America, and Pontotoc County Electric Power Association" (hereinafter called sale and loan contract), [fol. 2337] executed on even date herewith and rescinding said sale, lease contract, Authority is loaning to association the further sum of $4,000 to be used in acquiring the Bruce distribution system, and $25,000, or such part thereof as may be required by association, to construct an interconnecting transmission line, making a total principal obligation of association to Authority of $145,831.57, as of the date of execution hereof (subject to deduction if all of the $25,000 is not advanced for the construction of said line); and

Whereas after investigation by Authority, it appears that quantities of power generated at Wilson Dam, Ala., sufficient to meet the requirements of association, under the terms of this contract, will be available for sale by Authority

after all requirements of Authority and of the United States have been fulfilled; and

Whereas the parties to this contract have duly authorized its execution;

Now, therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. Rescission of prior contract.—The power contract between Authority and association, dated February 15, 1935, is hereby canceled, annulled, and rescinded, without prejudice, however, to any rights or obligations of the parties thereto which may have accrued thereunder by reason of any breach thereof by either of the said parties prior to the date hereof.

2. Term of contract.—This contract shall become effective upon the execution hereof, and shall continue in effect for 20 years.

3. Power Supply.—Authority will, for the term hereof, supply electricity to association for corporate purposes and for resale. Association agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of association. Should association during the period of this contract desire to increase its purchases in excess of 1,000 kilowatts Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Such electricity shall be delivered in the form of three-phase, alternating current, at approximately 60 cycles per second and approximately 12,450 volts, or at such other voltage as the parties may from time time agree. While it is not the function of Authority to guarantee accurate time by the maintenance of accurate frequency, Authority agrees to supply such frequency as is recognized to be good commercial frequency on a hydroelectric system.

4. Point of delivery.—Authority will deliver the electricity purchased hereunder at the metering equipment situated on the Lee-Pontotoc County line or at such other point as may be mutually agreed upon. The energy to be

[fol. 2338] supplied association hereunder shall be metered at the low-tension side of the step-down transformer bank or banks of a substation to be constructed, owned, and operated by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks and/or the transmission line or lines supplying energy to such substation.

5. Schedule of rates.—Attached hereto, and hereby made a part hereof, is a schedule of rates and charges. Association agrees to pay for the energy supplied by Authority at the rates fixed in schedule A-1 entitled "Wholesale Power Rate." All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

6. Resale rates.—In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which association operates, in order to further the purposes for which association was organized, and as further security for the indebtedness of association to Authority, association agrees to charge consumers the rates set forth for the several classes thereof in schedules B-1 to B-5, inclusive, of the said schedule of rates and charges, and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties. The term "contractor" in said schedule shall be construed to mean association. If it should appear that the rates provided for in said resale schedules with the surcharge provided for therein do not produce revenues sufficient to operate and maintain association's electric system on a self-supporting and financially sound basis, then association shall, by agreement with Authority, prescribe and enforce such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis.

Association may charge nonmember customers, other than governmental customers, such other and different rates as may be required to yield the full cost of operation to as-

sociation but association agrees that such rates shall not be discriminatory as between nonmember customers or classes thereof and that its nonmember operations shall not be conducted for the purpose of making a profit: Provided, however, That all such rates prescribed by association shall be subject to the written approval of Authority.

7. Nonmember service.—Association agrees that it will not, except after having first secured the approval of Authority, serve any nonmembers: Provided, however, That this provision shall not apply to service to customers who are at the time of the acquisition of any given lines by association, taking service from such lines, and who continue to take service without change of residence; nor to "governmental customers" which shall be defined as any agency, instrumentality, district, municipality, corporation, or subdivision of the State of Mississippi or of the United States of America: Provided, further, That the association may charge such customers, with the exception of "governmental [fol. 2339] customers", such other and additional rates as provided in section 6.

8. Terms of membership in association.—Association agrees to make its memberships available without discrimination to any person, corporation, copartnership, association, municipality, or political body or subdivision within the area of its service. The initial stated value of memberships shall be $100, but such value shall be subject to reduction as hereinafter provided. Members who pay the full membership fee in advance shall be entitled to a reduction of not to exceed 20 per cent and the advance payments of balances shall be subject to such reduction as association may from time to time fix, not to exceed 20 per cent. The minimum initial installment on memberships shall not be fixed at less than $10 without first securing the written consent of Authority, and the balance shall be payable at the rate of 1 cent per kilowatt-hour for each kilowatt-hour used per month up to and including 100 kilowatt-hours per month, but in no case less than 25 cents per month. The stated value of memberships shall, from time to time, be reduced by the amount of the reimbursements made to members pursuant to section 12 hereof, and new members shall be admitted at the new stated value thus arrived at.

9. Payment of principal obligation.—Association hereby acknowledges its indebtedness to Authority as of the date hereof, on account of property conveyed to or constructed for association and money loaned to association, to be $145,831.57, subject to proper deductions if association does not require and Authority does not advance all of a certain $25,000 loan made by Authority to association to aid association in constructing a certain rural transmission line, as provided in the sale and loan contract, and agrees in consideration thereof to pay that amount to Authority, which sum shall be hereinafter called "principal obligation." Association agrees to pay interest upon unpaid balances as of the first of each calendar month at the rate of 3½ per cent per annum, payable semiannually, beginning on March 1, 1936. Association agrees to pay to Authority on account of said principal obligation, and on account of all indebtedness of association to Authority incurred under this contract, and until such principal obligation and indebtedness shall have been totally repaid: (a) All payments on memberships received; (b) the total surplus revenue as hereinafter defined. The amount received as payments on memberships together with all surplus revenue, if any, shall be computed as of the close of business on the last day of each calendar month and shall be paid to Authority not later than the fifteenth day of the following calendar month. All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate. Failure on the part of association to make the payments as provided herein shall constitute a default and Authority may forthwith at its option declare this contract and the sale and loan contract terminated and/or exercise all rights and powers granted Authority on the failure of association to perform any of its obligations or promises.

10. Electric Home and Farm Authority accounts.—Association hereby assumes the rights and obligations of [fol. 2340] Authority with respect to the collection of those accounts of the Electric Home and Farm Authority, Inc. (collected by Authority prior to the execution of the power contract), in the area in which association operates.

11. Security for indebtedness.—There is executed by association in connection herewith, and as of the date hereof,

a certain mortgage as security for the principal obligations of association to Authority, as it may from time to time appear, and for the interest thereon, and to secure the obligations of this contract.

12. Disposition of association's revenues.—Association, for the purpose of providing reasonable rates for electric service pursuant to this contract and to law, agrees to dispose of its gross revenues, not including membership fees, which shall be paid over to Authority immediately after collection as hereinbefore provided, in the following manner:

(a) Revenue shall first be used for the payment of operating expense, including salaries, wages, cost of materials and supplies, power at wholesale, taxes, and insurance.

(b) Thereafter revenues shall be used to set up reasonable reserves for new construction and for contingencies, and to create a reasonable cash working fund. As further security for association's indebtedness to Authority, association agrees that Authority may in its discretion fix maximum amounts for the reserves and the funds herein authorized to be set up, and may direct the investment or disposition of such reserves and funds.

(c) After the payment or setting aside of the above amounts all remaining revenues shall be considered surplus revenues and shall be paid over to Authority in the manner prescribed above, until association's indebtedness to Authority on account of accrued interest shall be satisfied. All interest not paid when due shall, from the date hereof, be added to the principal obligation.

(d) Remaining surplus revenues shall thereafter be paid over to Authority until association's indebtedness to Authority on account of property constructed for association, property purchased or leased from Authority and/or the United States of America, and on account of any loan of money made by Authority pursuant hereto, shall be satisfied. All principal not paid when due shall, from the date thereof, bear interest at the rate of 6 per cent per annum.

(e) After the satisfaction of its indebtedness to Authority and/or the United States of America, all association's

surplus revenues shall be used to reduce or eliminate surcharges to association's members.

(f) After the elimination of such surcharges, all surplus revenues shall be used to reimburse members to the extent of not more than the stated value of their memberships (less $10 per membership which shall be nonreimbursable) and/or for the reduction of association's rates, as association may determine.

[fol. 2341] 13. Alienation or encumbrance of property or revenues.—Association agrees not to sell, pledge, mortgage, assign, hypothecate, or otherwise alienate or encumber its property or revenues, or any part thereof, without first securing the written approval of Authority, except that it may dispose of stocks of wares and merchandise at retail in the normal course of business.

14. Terms and conditions; rules and regulations.—Attached hereto and hereby made a part hereof, are two schedules, entitled respectively "Schedule of Terms and Conditions" and "Schedule of Rules and Regulations." The provisions of either or both schedules may from time to time be changed or supplemented by agreement of association and Authority. Association may, upon reasonable notice to Authority in advance thereof, make and put into effect such additional rules and regulations as it may determine if the same are not inconsistent with this contract (including the schedules thereof). The term "distributor" in the latter schedule shall be construed to mean association. It is understood and agreed that the several provisions of the said schedules, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the schedule of rates and charges, are of the essence of this contract. Association hereby adopts said schedule of rules and regulations as the rules and regulations of association.

15. Rendition of advisory services by Authority.—Authority agrees to render advisory services to association in problems of personnel and administration, to secure the attendance of its officers at meetings of the association, its board, or executive committee, so far as may be practicable and convenient, and to make available to association the

facilities and services of its personnel division so far as may be necessary in the selection of association's employees. In the event professional services are rendered at association's request association agrees to pay the reasonable value thereof as billed by Authority. Association agrees that it will not employ or retain in its employ any person deemed by Authority not to qualify for his position or whose services Authority may deem to be unnecessary.

16. Use of association's lines.—Authority shall have the right, to the extent of the transmission capacity of association's lines, to the use of association's poles and wires for transmission purposes, and for service to industrial customers with a demand of 1,000 kilowatts or more who elect to take service from Authority: Provided, however, That Authority shall compensate association for such use by such amounts as may be mutually agreed upon, or by an interchange of electricity, compensating association for line losses, or both.

17. Reports to Authority.—Association agrees that, not later than the first day of September of each year, it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may reasonably request. Association agrees promptly to render [fol. 2342] such additional reports and information to Authority as Authority may from time to time reasonably request.

18. Bonding of employees.—Association agrees to bond in a reasonable amount all employees whose duties require or permit them to handle or dispose of money belonging to association.

19. Discrimination.—Association agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

20. Waiver of defaults.—Any waiver at any time by either party hereto of its rights with respect to any default

of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

21. Contract not transferable.—Neither this contract nor any interest therein shall be transferable or assignable by association to any other party without the consent of Authority.

In witness whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

Pontotoc County Electric Power Association, by M. L. Higgs, President

Attest: Jas. I. Wilson, Secretary.

STATE OF TENNESSEE,
County of Knox,
City of Knoxville, ss:

On this 12th day of February 1936 before me appeared Arthur E. Morgan and Charles E. Hoffman, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board of Directors and the Assistant Secretary, respectively, of the Tennessee Valley Authority, and that the seal affixed to said instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by au- [fol. 2343] thority of its board of directors, and said Arthur E. Morgan and Charles E. Hoffman acknowledged said instrument to be the free act and deed of said corporation.

L. B. Bolt, Jr., Notary Public in and for Knox County, State of Tennessee. My Commission expires October 7, 1936. (Seal.)

COMPLAINANTS' EXHIBIT No. 118

STATE OF MISSISSIPPI,
County of Pontotoc, ss:

On this 13th day of February 1936 before me appeared M. L. Higgs and Jas. I. Wilson, to me personally known, who, being by me duly sworn did say that they are the president and secretary, respectively, of Pontotoc County Electric Power Association, and that the seal affixed to said instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said M. L. Higgs and Jas. I. Wilson acknowledged said instrument to be the free act and deed of said corporation.

Mrs. Ludye Williams, Notary Public in and for Pontotoc County, State of Mississippi. My commission expires February 2, 1938. (Seal.)

The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee (Complainants' Exhibit No. 118).

[fol. 2344] Power Contract Between TVA and Monsanto Chemical Company

This agreement made this 15th day of May 1936 between Tennessee Valley Authority, a corporation created by the Tennessee Valley Authority Act of 1933, hereinafter called Authority, and Monsanto Chemical Co., a corporation organized and existing under the laws of the State of Delaware, hereinafter called customer,

Witnesseth:

Whereas, by said Tennessee Valley Authority Act of 1933, Authority was entrusted with and is now operating Wilson Dam in the State of Alabama, including generating equipment for the generation of surplus power created by said dam; and

Whereas customer intends to erect a chemical plant at Estes Bend on the Duck River near Columbia, Tenn., and may require up to 50,000 kilowatts of electric power in the operation of said plant; and

Whereas, customer has requested Authority to supply all of its purchased power requirements, and Authority has and will continue to have sufficient power available for the performance of this contract after fulfilling the requirements of the Authority and the United States and without prejudice to any preferential rights of States, counties, municipalities, and nonprofit organizations of citizens and farmers, to purchase electric power from Authority,

Now, therefore, in consideration of the mutual covenants and agreements hereinafter set forth, and subject to the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually agree as follows:

1. Construction of plant.—As an expression of good faith to Authority, customer has begun construction of a chemical plant at Estes Bend on the Duck River near Columbia, Tenn., which will include electric furnaces capable of utilizing not less than approximately 20,000 kilowatts of electricity, and customer agrees to continue said construction to completion with diligence and good faith; and should customer fail to so continue, Authority shall have the right upon 30 days' notice to cancel this agreement and terminate all of its obligations assumed herein, provided, however, that Authority shall not have such right of cancelation if the continuance of said construction is prevented, delayed, or impeded by reason of injunction, strike, riot, invasion, fire, accident, break-down, act of God or any other causes beyond customer's control; and provided further, that [fol. 2345] should Authority give notice of cancelation pursuant to this section, customer may within said 30-day notice period elect to pay the demand charges specified in columns 5 and 6 of the schedule contained in section 4 hereof and in such case Authority shall not have power to cancel this contract until 12 months from the date of said notice, and then only if during said 12-month period customer has failed to continue the construction of said plant with diligence and good faith. In the event of interruption due to any causes beyond customer's control, customer agrees to resume construction of said plant with diligence and good faith. In the event of interruption due to any causes beyond customer's control, customer agrees to resume construction and continue the same to completion as soon as

reasonably possible, and in the event of the failure so to do Authority shall be entitled to exercise the right of cancelation contained herein, subject, however, to customer's right to postpone such right of cancelation as set out above.

2. Sale of electric power.—Authority shall sell and deliver to customer and customer shall, except as hereinafter provided, take and buy from Authority all of customer's electric power requirements for the operation of customer's chemical plants, equipment, and facilities to be erected and installed at the above-mentioned location, in amounts hereinafter set forth, all in accordance with this contract and with the terms and conditions which are attached hereto and hereby made a part hereof. Nothing herein contained shall prevent customer from generating all or any part of the power required in the operation of its chemical plants as byproduct power derived from its manufacturing or processing operations, subject, however, to customer's obligation for minimum charges as hereinafter provided.

If at any time during the period of this contract, or any extension thereof, customer requires in its operations electric power in amounts in excess of the amount that Authority is obligated, or at the time willing, to supply under the terms of this contract, customer shall have the right to purchase from other sources or to generate any such excess requirements.

3. Contract duration.—This contract shall be for a period of 10 years, commencing on the date hereof, provided that customer, by written notice to Authority on or before the fifth anniversary date of this contract, shall have the right to renew this contract upon the same terms and conditions as those herein contained for an additional period of either 5 or 10 years at the option of customer. Such renewal period to date from the date of the expiration of this contract. In the event that said right of renewal is not exercised on or before said fifth anniversary date, customer shall not have any such right of renewal.

It is agreed, however, that if, during the period of this contract, unforeseen conditions arise which make the continued operation of customer's electric-furnace operations in the State of Tennessee disadvantageous, customer shall have the right, provided its said furnacing operations in

[fol. 2346] said State are completely and permanently discontinued, to cancel this contract upon 1 year's written notice, said cancelation to be effective, however, not earlier than 5 years from the date hereof; provided, however, that customer shall not be entitled to exercise this right of cancelation unless its obligations under section 1 hereof have been completely performed.

4. Service specifications and delivery.—Firm power shall be available to customer at all times during the life of this contract. Secondary power shall be available to customer for at least 300 days to be selected by Authority out of each calendar year in amounts up to 65 per cent of the demand, primary and secondary, then contracted for or the excess over 8,000 kilowatts of total demand, whichever is the lesser; but in any 4 successive months there shall not be interruptions of more than 65 days nor interruptions of more than 80 days in any 9 successive months. Authority shall give not less than 14 days' written notice before interrupting the secondary power service and not less than 14 days' written notice before resuming secondary power service and Authority shall not interrupt the secondary service for more than two periods in any calendar year.

Electric power delivered hereunder shall be supplied by Authority and taken by customer in the respective amounts and at the respective dates set forth below, provided that if difficulties beyond the control of Authority should delay completion of construction beyond August 15, 1936, the obligation of Authority to deliver and customer to take power on November 15, 1936, shall be postponed to the extent of the delay beyond August 15, 1936, provided, however, that delivery shall be commenced not later than December 15, 1936, in any event.

Tabulation at top of page 197 to be in photostat form and attached hereto.

Column 1 of the above table sets out the minimum notices which customer shall give Authority before Authority is required to make available the respective amounts of power set out in the corresponding lines of column 4. Column 2 sets out the respective dates when Authority is obligated, upon receipt of proper notice, to make available the respective amounts of power set out in the corresponding lines

of column 4. Column 3 sets out the dates when customer is obligated to pay, as a minimum, demand charges on the demands set out in the corresponding lines of columns 5 and 6, unless it has obligated itself to take power earlier by giving notice as specified in column 1. Column 4 sets out the amounts of power Authority is obligated to make available at the respective dates set out in the corresponding lines of column 2, upon receipt of proper notice from customer. Column 5 sets out the contract firm demands upon which minimum bills will be based, after service is made available in the amounts set out in column 4. Column 6 sets out the corresponding contract secondary demands upon which minimum bills will be based, after service is made available in the amounts set out in column 4.

The electric power supplied hereunder shall be in the form of 3-phase, 60-cycle, 11,900-volt alternating current. [fol. 2347] Said frequency, generation, transmission, service, and voltage shall be maintained in accordance with the best commercial standard for hydroelectric systems. Voltage variations at primary bus shall not exceed 2½ per cent up or down for normal, except in case of temporary interruption to service.

5. Point of delivery.—Point of delivery shall be on the 11,900-volt side of the Authority's substation to be located on customer's property at Estes Bend on the Duck River near Columbia, Tenn. Customer shall furnish Authority without charge a suitable substation site for the transformers and other equipment of Authority necessary for service hereunder and with the necessary rights-of-way for transmission lines over customer's property to such site, and Authority shall have the right of ingress to and egress from said site and rights-of-way. The route of said rights-of-way and the location of said substation site shall be agreed upon between the parties hereto, provided that the substation site shall be located within 1,000 feet from customer's furnace plant.

Maintenance by Authority at the point of delivery of the stated voltage and frequency, and the capacity contracted for shall constitute delivery of electric power for the purposes of this contract, but nothing herein contained shall require customer to pay for energy (as contrasted with demand) not consumed.

Authority agrees, at its own expense, from and after January 1, 1938, to make available at least two transmission circuits over different routes from the sources of supply, each of which shall be of adequate capacity to enable Authority to comply with its obligations as to delivery hereunder.

Authority agrees to install and maintain an oil circuit breaker in the 11,900-volt circuit.

6. Electric-power rates.—Customer shall pay Authority for electricity in accordance with the following rate schedule.

Demand charge.—For firm power, 90 cents per kilowatt of demand per month; for secondary power, 30 cents per kilowatt of demand per month when secondary power is available.

Energy charge.—For total energy consumed including firm and secondary use; First 100,000 kilowatt-hours consumed per month at 4 mills per kilowatt-hour; next 200,000 kilowatt-hours consumed per month at 3 mills per kilowatt-hour; next 700,000 kilowatt-hours consumed per month at 2.5 mills per kilowatt-hour; excess over 1,000,000 kilowatt-hours consumed per month at 2 mills per kilowatt-hour. Charge for energy in excess of 360 times the total measured demand as hereinafter defined shall be subject to a reduction of 0.5 mills per kilowatt-hour from the otherwise applicable rate. It is understood, however, that there shall be no energy charge except to the extent that energy is actually consumed by customer.

[fol. 2348] Determination of Demand

Demand measurement shall be made by suitable instruments at the point of delivery. Total measured demand for any month shall be defined as the highest integrated simultaneous load during any 60 consecutive minute period during the month for which determination is made.

For periods during which secondary power is not available, firm demand shall be taken as 100 per cent of the total measured demand, and there shall be no charge for secondary demand.

For months during which secondary power is available, firm demand shall be taken as 35 per cent of the total measured demand. In no case shall firm demand be taken as

less than 1,000 kilowatts in the period from December 15, 1936, to June 1, 1937, and then after not less than 8,000 kilowatts, even though said 1,000 or 8,000 kilowatts, as the case may be, shall be in excess of 35 per cent of the total measured demand. Secondary demand shall be taken as the difference between total measured demand and firm demand. During any fractional month for which secondary demand charges are applicable, such charges shall be prorated.

Adjustment of Demand Charge for Power Factor

The customer's demand shall, whenever the normal power factor is less than 85 per cent, be determined upon the basis of 85 per cent power factor; that is, whenever said normal power factor is less than 85 per cent, the demand shall be taken to be 85 per cent of the kilovolt amperes indicated, unless such low power factor is due to causes beyond customer's control.

Adjustment During Developmental Period

Authority recognizing that the rate schedule applicable to electricity delivered hereunder results in a relatively high average power cost to customer during customer's developmental period, agrees to charge customer each month at an average rate not exceeding 3½ mills per kilowatt-hour during the first year of service hereunder.

Minimum Monthly Bill

The customer agrees to pay each month for firm power, including demand and energy, an amount not less than 90 cents times three-quarters of the highest measured monthly firm demand occurring during any month, during the previous 12-month period, or the contract firm demand whichever is the greater; and customer further agrees to pay each month for secondary power, including demand and energy, an amount not less than 30 cents times three-quarters of the highest measured monthly secondary demand occurring during any month, during the previous 12-month [fol. 2349] period, or the contract secondary demand, whichever is the greater, except that in the event secondary power is not available, there will be no minimum bill for

secondary service. If secondary power is available for only a fraction of a month, the minimum bill for secondary service shall be prorated. Customer shall not be obligated to pay a minimum bill for secondary power for more than 300 days in each year.

7. Curtailment.—If, during the life of this contract, conditions in customer's business are such that customer cannot economically operate so as to use all of the then contracted capacity, customer shall have the right upon giving Authority 12 months' written notice to reduce the then existing contract demand to an amount to be designated by customer, but to not less than 14,000 kilowatts of demand, of which not less than 8,000 kilowatts or 35 per cent (whichever is the greater) shall be primary demand, if the curtailed contract demand is less than 23,000 kilowatts, customer shall have the right, upon 12 months' notice, to increase its contract demand to not over 23,000 kilowatts, of which not less than 8,000 kilowatts or 35 per cent (whichever is the greater) shall be primary demand, but customer shall not thereafter have the right to increase its demand in excess of 23,000 kilowatts or the curtailed contract demand, whichever is the greater, except by agreement of Authority.

8. Adjustment of rates.—Pursuant to the Authority's general policy of nondiscrimination, Authority will in good faith throughout the period of this contract attempt to prevent a situation arising in which electric power generated by the Authority is sold either directly or indirectly in substantial amounts during sustained periods of time to any competitor of customer at lower rates or upon more favorable terms and conditions than those provided in this contract. Authority agrees that, if at any time during the period of this contract, customer calls to its attention any such situation, Authority will in good faith endeavor to agree with customer upon some adjustment in the rates or in the terms and conditions contained herein sufficient to remedy such situation, and Authority agrees that if at any time during the life of this contract Authority should supply transmitted electric power of the same quality as that supplied hereunder to any other industrial customer engaged in substantial manufacture and production sim-

ilar to that carried on to a substantial extent by customer at its Estes Bend plant, at lower rates than that provided by this contract, Authority shall extend to customer the benefit of such lower rates, for the quality of power to which such rates are applicable and to the extent such power is utilized in manufacture or production similar to that of the customer to whom lower rates are available, during the period such lower rates are available to any such other customer; and if during said period Authority should sell nontransmitted electrie power of such quality to any such customer under such circumstances at a rate schedule lower than that set forth in schedule A attached hereto and hereby made a part hereof, customer shall be entitled to a reduction in rates equalling the difference, for the quality of power to which applicable, between the rate schedule set out in schedule A and the lower rate schedule made applicable in such case, during the period such lower rate schedule is available to any such other customer. Authority further agrees that if at any time it lowers its basic demand rate or its basic energy rate for a class of [fol. 2350] quality or service similar to that rendered customer, it will make corresponding reductions in the rate to customer for the class or quality of service as to which the reduction has been made, so long as such reduced rates remain the basic rates of Authority for such class or quality of service.

9. Arbitration.—In case any dispute arises respecting the interpretation or performance of this contract or the rights and duties of either party hereunder, and the parties shall be unable to agree with respect to the matter or matters in dispute, the same shall, at the option of either party, be submitted for determination to a board of arbitrators chosen as herein determined. The party desiring arbitration shall give written notice to the other party setting forth in general terms the matters to be arbitrated and the section or sections of this contract under which the right of arbitration arises and appoint an arbitrator. The other party may in like manner add to the points in dispute and cause them to be submitted to such arbitration and shall within 10 days appoint second arbitrator, but if such appointment is not so made, the party desiring arbitration

may make application to any judge of the United States Court of Appeals for the Sixth Circuit for the appointment of such second arbitrator. The two arbitrators so appointed shall within 10 days after the appointment of the latter select a third arbitrator but if they shall fail to do so within said period of 10 days either party, after notice to the other, may make application to any of the judges aforesaid and it is hereby agreed that said judge may appoint such arbitrator. Should any arbitrator fail or refuse to act, successors shall be appointed in the same manner as the original arbitrators. The arbitrators, however, named, may act as a majority and shall forthwith hear the parties and shall consider and decide the dispute and shall likewise fix their own compensation and decide how the expense of arbitration shall be borne and shall notify the parties in writing of their decision. Such decision shall be binding upon the parties, subject, however, to such appeal as may at the time be provided by the laws of Tennessee.

In case of dispute, if neither party has given notice to the other of its desire to have such dispute arbitrated, and one party has brought suit against the other on account of matters arising out of the contract, or its alleged breach, then the right to arbitrate shall not apply to the particular matters of dispute then involved in the suit.

10. Previous agreements.—All previous agreements between the parties hereto, whether oral or written, with reference to the subject matter of this agreement, are hereby abrogated. This agreement constitutes the entire contract between the parties and there are no understandings, representations, or warranties of any kind not expressly set forth herein.

11. Waiver of defaults.—Any waiver at any time by either party hereto of its rights with respect to the other party or with respect to any other matter arising in connection with this contract, shall not be considered a waiver with respect to any subsequent default or matter.

[fol. 2351] 12. Assignment.—This contract shall inure to the benefit of and be binding upon the respective successors and assigns of the parties hereto: Provided, however, That

the parties hereto shall remain liable for the faithful performance of this contract in all respects by such successors or assigns, and the successors and assigns by acceptance of such transfer or assignment shall likewise become bound for the full performance of the contract until the expiration thereof.

In witness whereof the parties hereto have caused this contract to be executed by their officers, each thereunto duly authorized, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan.

Attest: F. X. Reynolds.

Monsanto Chemical Co., by W. W. Schneider, Secretary.

Attest: C. J. Colley.

Terms and Conditions

1. Metering.—Authority shall at its expense install and maintain the necessary meters of generally approved make and type for measuring electricity supplied to customer. Customer shall have the right to install and maintain at its expense meters for similar purposes, adjacent to Authority's meters, as a check of Authority's meters, and Authority agrees to provide suitable space and facilities for the installation of customer's meters within Authority's substation and to give customer access thereto. All such measurements shall be on the 11,900-volt or low-tension side of Authority's step-down transformers.

Authority shall at its expense and in the presence of representatives of customer upon reasonable notice given to customer make periodical tests and inspections of its meters and transformers in order to maintain a high standard of accuracy.

Authority shall make additional tests and inspections of its meters upon request of customer and in the presence of customer's representatives. If such additional tests show that the meters are accurate within 1 per cent fast or slow at the average low during the preceding 30 days, no adjustment shall be made in customer's bills and the cost of

making such additional tests or inspections shall be paid by customer. If such additional tests or inspections show the meters to be in excess of 1 per cent fast or slow, the cost of such additional tests or inspections shall be borne by Authority and an adjustment shall be made in customer's [fol. 2352] bills in accordance therewithin over a period not exceeding 30 days prior to the date of such tests. Any of Authority's meters or other equipment found to be defective or more than 1 per cent inaccurate shall be promptly repaired, replaced, or readjusted by Authority. Should Authority's meters at any time fail to register, the consumption during the period of failure shall be determined from customer's meters or by other mutually satisfactory means.

2. Billing.—Bills for electric power service hereunder shall be rendered monthly in accordance with the rates provided for herein. Payment for electric power used in any calendar month shall be due on the fifteenth day of the succeeding month or 10 days after receipt of bill from Authority, whichever is the later. Upon failure of customer to pay for electric power used in any calendar month within 15 days after the due date, Authority shall have the right upon 10 days' written notice to customer to discontinue the supply of electric power and to refuse the resumption of delivery so long as any past due account remains unpaid. To any amount remaining unpaid on the first day of the calendar month following the due date there shall be added a penalty of 1 per cent and an additional 1 per cent shall be added on the first day of each succeeding month until the amount is paid in full; provided, that when any dispute arises as to the correctness of the amount billed, Authority shall not have the right to discontinue supply of electric service nor shall any penalties accrue if within such period of 10 days after such written notice the parties cannot agree on the amount due and within a further period of 10 days thereafter customer pays to Authority the amount which it believes to be due and gives written notice to Authority of its desire to submit the dispute to arbitration and appoints an arbitrator, whereupon the amount due shall be determined by arbitration as herein provided for matters which may be submitted to arbitration.

All payments shall be made to Authority at its offices at Wilson Dam, Ala., or at such other place as Authority may from time to time designate.

3. Resale of electric power.—The electric power supplied hereunder is for the use of customer's plant, equipment, and facilities, and the plant, equipment, and facilities of any wholly owned or controlled subsidiary of customer at the specified location and shall not be resold. Power delivered to such a subsidiary shall be deemed part of customer's requirements and shall be billed to and paid by customer in the same manner as if customer were using all of said power, provided, that Authority shall be obligated to maintain only a single point of delivery for service to customer and that customer shall be responsible for the redelivery of such part of the power sold hereunder as customer may wish to redeliver to its subsidiaries.

4. Ownership of properties.—Authority shall furnish all facilities for delivering electric power to the point or points of delivery of customer, including transformers, metering and switching equipment and the necessary housing and fencing, and such facilities shall be and remain the property of and be maintained by Authority.

Customer shall exercise reasonable care to protect the property of Authority or customer's premises, and in the [fol. 2353] event of loss or damage to Authority's property on customer's premises arising from failure of customer to exercise reasonable care for same, the cost of necessary repairs or replacements shall be paid by customer. Authority's properly accredited employees shall have access to Authority's substation on customer's premises at all reasonable times for the purpose of reading meters and for testing, repairing, replacing, or removing any and all equipment belonging to Authority. Authority shall remove at its expense its meters and other property from customer's premises upon the termination of this contract.

5. Liability.—Authority shall hold customer harmless against any loss or damage to the public or its employees arising out of the operation of Authority's transmission lines or equipment and the transmission of electric power delivered hereunder up to the point or points of delivery

herein specified, unless it be proven that such loss or damage was caused by the sole negligence of customer or its subsidiaries, its or their agents, servants, or employees. Conversely, customer shall hold Authority harmless against any loss or damage to the public or its employees arising on the customer's side of point of delivery in connection with the utilization of electric power delivered hereunder, unless it be proven that such loss or damage was caused by the sole negligence of Authority or its agents, servants, or employees.

6. Service.—Authority shall furnish electric power continuously as agreed upon, but Authority, its officers, agents, or employees shall not be liable for damages or breach of contract when service is interrupted or suspended by reason of injunction, strike, riot, invasion, fire, accident, breakdown, act of God, or from any other causes beyond Authority's control, or caused by the making of necessary repairs on Authority's system or by connecting or disconnecting customer's services, but Authority shall make appropriate adjustment of the demand and energy charges in the event of such interruption or suspension of service. Authority shall give as much notice as possible before interrupting service to make repairs. Authority shall as far as possible avoid discontinuance of service hereunder for routine operating purposes, and when such discontinuance is necessary, Authority shall restore service as speedily as possible. During such interruption or suspension of service, customer shall have the right to purchase such other power as may be available.

Customer shall notify Authority immediately should the service be unsatisfactory for any reason or should there be any difficulties, troubles, or accidents affecting the supply of electricity. Such notices, if verbal, shall be confirmed in writing.

In the event of customer's operations being interrupted or suspended by reason of injunction, strike, riot, invasion, fire, accident, breakdown, act of God, or from any other causes beyond customer's control, customer will not be obligated to take or buy any electric power as herein provided for nor to pay demand or minimum charges during the period of such interruption, and the demand and minimum

charges for the month in which such interruption occurs shall be adjusted accordingly.

Should Authority fail for any reason to supply either firm or secondary power in the amounts herein provided for or to maintain voltage and frequency within the prescribed limits, or to avoid undue interruptions or irregularities [fol. 2354] of service, or to fulfill the requirements of any arbitration proceedings thereunder, or otherwise fail to meet any of the obligations imposed by this contract, customer may, after 60 day's written notice of such defaults with specifications thereof, and subject to the arbitration provisions hereof relating to any issues of fact involved, itself generate any part of its electric-power requirements or purchase such requirements from any other source during all or any part of the unexpired period of this contract. Such electric power as customer continues to receive from Authority, supplementary to other sources of power in accordance with the foregoing, shall be paid for in accordance with the provisions hereof. Such substitution of other sources of power shall not relieve Authority of any of the obligations hereof.

Should customer fail to fulfill the requirements of this contract or of any arbitration proceedings hereunder, or to take and pay for electric power under the terms hereof, Authority may, after 60 days' written notice of such default with specifications thereof, if the customer does not correct such default within 60 days after receiving such notice, refuse to continue to deliver power hereunder to customer and may dispose of the power contracted for hereunder to others. Such disposition of power to others shall not relieve customer of any of the obligations hereof.

Either party shall have the right to maintain suit at any time for any loss that may previously have occurred without waiting until expiration of the contract period and without losing or waiving any right to maintain suit for subsequent losses occurring during the period of the contract, and recovery in any such suit shall not be deemed a splitting of the cause of action.

7. Addition of load.—The service connection, transformers, meters, and equipment supplied by Authority for cus-

tomer have definite capacity and no addition to customers' equipment or load connected thereto, in excess of such capacity, shall be made except after reasonable notice to Authority. Failure to give such notice of additions or changes in load shall render customer liable for any damage to Authority's lines or equipment caused by the additional or charged installation.

8. Customer's lines and equipment.—All lines and equipment of customer must conform to accepted modern practice. Authority shall have the right but shall not be obligated to require a certificate from the chief engineer of customer as to the quality and condition of customer's installation before electricity is introduced, or at any later time, and reserves the right to reject any wiring or equipment so certified which is not in accordance with Authority's reasonable standards. The requirement of such a certificate, or the failure to require such a certificate or to reject any installation so certified, shall not render Authority liable or responsible for any loss or damage resulting from the defects in the installation of any electrical equipment, or from violation of the contract, or from accidents which may occur upon customer's premises.

9. Voltage fluctuations caused by customer.—Electric service must not be used in such manner as to cause fluctuations or disturbances, unusual to normal electric furnace op- [fol. 2335] erations, to Authority's system, and Authority may require customer at its own expense to install suitable apparatus to reasonably limit such fluctuations.

10. Phase balancing.—Customer shall at all times take and use energy in such manner that the load will be balanced between phases to with 10 per cent of normal. In the event of polyphase loads unbalanced in excess of 10 per cent, Authority reserves the right to require customer on 60 days' written notice at its own expense to make the necessary changes to correct such unbalancing, and if such unbalancing is not then corrected, to compute the demand on the assumption that the load of each phase is equal to that on the greatest phase.

COMPLAINANTS' EXHIBIT No. 118

Schedule A

Contract Between Tennessee Valley Authority and Monsanto Chemical Co.

Demand charge.—For firm nontransmitted power delivered at the switchboard of the Authority's hydroelectric generating plants, $0.81 per kilowatt of demand per month.

For secondary nontransmitted power delivered at the switchboard of the Authority's hydroelectric generating plants available to customers 300 days, to be selected by the Authority, out of each successive 12-month period, no demand charge.

Energy charge.—First 100,000 kilowatt-hours consumed per month at 3.6 mills per kilowatt-hour; next 200,000 kilowatt hour consumed per month at 2.7 mills per kilowatt-hour; next 700,000 kilowatt-hours consumed per month at 2.25 mills per kilowatt-hour; excess over 1,000,000 kilowatt-hours consumed per month at 1.8 mills per kilowatt-hour. Charge for energy in excess of 360 times the total measured demand shall be subject to a reduction of 0.45 mill per kilowatt-hour from the otherwise applicable rate.

The above rates are subject to contract provisions and rules and regulations of the Authority.

[fol. 2356] Power Contract Between TVA and Monsanto Chemical Company, Dated May 16, 1936

This contract, omitting the formal parts thereof, is as follows:

Whereas it is expected that customer will require electric power for such plant and equipment for a temporary period prior to November 15, 1936 and the parties desire to enter into a separate agreement for such earlier service, or terms and conditions similar to those contained in said contract of May 15, 1936;

We, therefore, in consideration of the mutual covenants and agreements hereinafter set forth, and subject to the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. Authority shall make available to customer 250 kilowatts of firm electric power at any time between August

15 and September 15, 1936, upon 7 days' advance written notice from customer. Customer shall be obligated to pay, as a minimum, the demand charges on such 250 kilowatts on and after September 15, 1936, unless customer has obligated itself by written notice to Authority to take such power at an earlier date. Authority shall make available to customer a total of 1,000 kilowatts of firm electric power (which includes the foregoing 250 kilowatts) at any time between September 1 and October 1, 1936, upon 15 days' advance written notice from customer. Customer shall be obligated to pay, as a minimum, the demand charges on such 1,000 kilowatts on and after October 1, 1936, unless customer has obligated itself to take such additional power at an earlier date; Provided, however, That if difficulties beyond the control of Authority shall delay completion of construction beyond August 15, 1936, the obligation of Authority to deliver and customer to purchase power on August 15, 1936, shall be postponed to the extent of the delay beyond August 15, 1936. Delivery shall in no event commence later than September 15, 1936.

2. All the terms, conditions, and provisions of said contract of May 15, 1936, between the parties hereto, not inconsistent herewith, including service specifications, rates, delivery, determination of demand, adjustments, metering, billing, et cetera, shall apply to and are hereby made a part of this contract. This contract, however, is a separate undertaking and does not in any way alter, modify, or supplement the said contract of May 15, 1936.

3. The service covered by this contract is in addition to that covered by the contract of May 15, 1936, and the service and obligations of the parties under this contract shall cease and terminate upon the commencement of service to customer under said contract of May 15, 1936.

[fol. 2357] Amendatory Contract to Contract of May 15, 1936, Between TVA and Monsanto Chemical Company, Dated June 2, 1936

This contract, omitting the formal parts thereof, is as follows:

1. The last paragraph of section 4 of said contract shall read as follows:

COMPLAINANTS' EXHIBIT No. 118

"The electric power supplied hereunder shall be in the form of 3-phase, 60-cycle, 44,000-volt alternating current. Said frequency, generation, transmission, service, and voltage shall be maintained in accordance with the best commercial standard for hydroelectric systems. Voltage variation at primary bus shall not exceed 2½ per cent up or down from normal, except in case of temporary interruption to service."

2. The first sentence of the first paragraph of section 5 of said contract shall read as follows:

"5. Point of delivery.—Point of delivery shall be on customer's side of the Authority's substation to be located on customer's property at Estes Bend on the Duck River near Columbia, Tenn."

3. The last paragraph of section 5 of said contract shall read as follows:

"Authority agrees to install and maintain an oil circuit breaker on the incoming side of the above-described substation."

4. The first paragraph of section 1 (titled "Metering") of the terms and conditions attached to and made a part of said contract shall read as follows:

"1. Metering.—Authority shall at its expense install and maintain the necessary meters of generally approved make and type for measuring electricity supplied to customer. Customer shall have the right to install and maintain at its expense, meters for similar purposes, adjacent to Authority's meters, as a check on Authority's meters, and Authority agrees to provide suitable space and facilities for the installation of customer's meters within Authority's substation and to give customer access thereto. All such measurements shall be on customer's side of Authority's substation."

[fol. 2358] COMPLAINANTS' EXHIBIT No. 119

Power Contract Between Tennessee Valley Authority and City of Amory, Mississippi

This Agreement, made and entered into this 15th day of October, 1936, between the Tennessee Valley Authority,

hereinafter called "Authority," a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and City of Amory, Mississippi, a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Mississippi, hereinafter called "Municipality," its successors and assigns,

Witnesseth:

Whereas, Authority, by Section 10 of said Act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, Counties, Municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas, by Section 11 of said Act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, Municipality by legislative authority owns and operates a municipal electric distribution system; and

[fol. 2359] Whereas, Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefor; and

Whereas, after investigation by Authority, it appears that quantities of power generated at Wilson Dam, Alabama, sufficient to meet the requirements of Municipality, under the terms of this contract, will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas, all parties to this contract have duly authorized its execution;

Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto mutually covenant and agree as follows:

1. Term of Contract.—This contract shall become effective upon the execution hereof, and shall continue in effect for twenty years; Provided, that all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin upon the date of execution hereof.

All service and payment periods hereinafter referred to shall be computed from the date first above written.

2. Power Supply.—Authority will, from the date of initial delivery to the expiration hereof, supply electricity to Municipality for municipal purposes and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of Municipality. Should Municipality during the period of this contract desire to increase its purchases in excess of 6000 kw. Authority shall deliver such excess upon written de- [fol. 2360] mand and after reasonable notice; Provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as nine (9) months after date of demand if the additional requirements are 5000 kw. or less, twelve (12) months after date of demand if the additional requirements are over 5000 kw. but not over 10,000 kw. and two (2) years after date of demand if the additional requirements are in excess of 10,000 kw. Said energy shall be delivered in the form of three phase, alternating current, at approximately 60 cycles per second and approximately 2,300 volts, or at such other voltage as the parties may from time to time agree.

3. Point of Delivery.—Authority will deliver the electricity purchased hereunder at the low tension side of the transformer bank or banks owned by Authority and located adjacent to Municipality's water and light plant in the City of Amory, Mississippi. The energy to be supplied Municipality hereunder shall be metered at the metering equipment owned by Authority and located in said substation yard. The Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks, and/or the transmission line or lines, supplying energy to such substation.

4. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges." Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate." All payments shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

COMPLAINANTS' EXHIBIT No. 119

[fol. 2361] 5. Resale Rates.—In order to insure a wide and ample distribution of electricity in the area served by Municipality, Authority and Municipality agree as follows:

(a) Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

(b) Municipality shall charge consumers, including all municipal and governmental customers and departments, the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the Schedule of Rates and Charges, and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties.

(c) If it should appear that the rates provided for in said resale schedules, with the surcharge provided for therein, do not produce revenues sufficient to operate and maintain Municipality's electric system on a self-supporting and financially-sound basis, including requirements for interest and amortization on indebtedness applicable to Municipality's electric system, Authority and Municipality shall agree upon, and Municipality shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such self-supporting and financially-sound basis.

(d) Municipality shall dispose of its gross revenues from electric operations in the following manner:

[fol. 2362] (1) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale and insurance.

(2) From remaining revenues Municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to Municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(3) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction and for contingencies, and to provide a reasonable amount of cash working capital.

(4) From remaining revenues Municipality shall thereafter pay into its General Fund a return on its investment and a tax equivalent as provided in the Financial and Accounting Policy in the Schedule of Terms and Conditions of Contract attached hereto.

(5) All remaining revenues shall be considered surplus revenues and may be devoted by Municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates. Surplus revenues shall be computed as of December 31, and June 30, of each year.

6. Municipality's Investment in Electric System.—For the purpose of this agreement the investment of Municipality in its electric system, including standby value of generating plant, as of the date of initial delivery of electricity to Municipality by Authority (September 2, 1934) is agreed [fol. 2363] to be the sum of $39,663.00 as determined as follows:

Replacement Cost New of Distribution System	$86,532.00	
Less Accrued Depreciation	21,009.00	
Present Value of Distribution System		$65,523.00
Present Standby Value of Generating Plant		22,140.00
Total		$87,663.00
Bonds Applicable to Electric System plus Accrued Interest	$48,000.00	
Other Indebtedness Applicable to Electric System	None.	
Total Indebtedness Applicable to Electric System		$48,000.00
Net Investment		$39,663.00

7. Payment for Municipality's Energy Requirements.—Municipality agrees to pay into its electric funds from appropriate general or special funds for all electric service required by Municipality for street lighting, water pumping and other operations and uses, at the resale rates as set forth in the Schedule of Rates and Charges, with such modifications and additions as may from time to time be agreed upon by the parties.

8. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled, "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Municipality and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

[fol. 2364] 9. Rules and Regulations.—Attached hereto and hereby made a part hereof is a "Schedule of Rules and Regulations." Municipality hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented or repealed by Municipality at any time upon ten (10) days written notice to Authority setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality.

10. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

11. Contract not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Municipality to any other party without the consent of Authority.

COMPLAINANTS' EXHIBIT No. 119

12. Re-cission of Prior Contracts.—The power contract dated March 9, 1934, and the investment contract dated March 15, 1935, between the parties hereto, are hereby cancelled, annulled and rescinded.

In Witness Whereof, the parties hereto have caused this [fol. 2365] instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, (Sgd.) by Arthur E. Morgan, Chairman, Board of Directors. C. G. D., Legal Division. (Seal.)

Attest: (Sgd.) Charles E. Hoffman, Assistant Secretary.

City of Amory, Mississippi, by J. R. Buchanan, Mayor. (Seal.)

Attest: (Sgd.) O. H. Owens, City Clerk.

JLF:CGD:LJ.

[fol. 2366] The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee. (Complainants' Exhibit No. 118.)

[fol. 2367] COMPLAINANTS' EXHIBIT No. 120

Power Contract Between TVA and the City of New Albany, Mississippi, Dated March 1, 1937

(Here omitted as such contract appears in full at pages 251 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2368] COMPLAINANTS' EXHIBIT No. 121

Supplemental Contract Between TVA and the City of Okolona, Mississippi, Dated March 24, 1937

This contract, omitting the formal parts thereof, is as follows:

Whereas, the parties hereto have heretofore entered into a certain contract entitled "Power Contract Between Tennessee Valley Authority and City of Okolona, Mississippi," dated May 1, 1935, under which Municipality purchases power at wholesale from Authority, and

Whereas, the amortization collections which are being made under Article 6 of said Power Contract are to terminate upon the satisfaction of certain indebtedness which Municipality had incurred on its generating plant, and said indebtedness will have been satisfied sometime during the month of April, 1937, and

Whereas, a judgment of $5,000.00 was entered on October 17, 1935, against Municipality in a Federal District Court in Mississippi, in a case entitled Gillespie v. City of Okolona, which judgment arose out of the operation of Municipality's electric system, but prior to the execution of the Power Contract referred to above, and the parties hereto have agreed that half of said judgment, or $2,500.00, shall be paid by the electric system, and the other half shall be paid out of general funds of Municipality, and

Whereas, pursuant to the terms of Article 7 of said Power Contract Municipality is indebted to Authority in the sum of $7,831.00, and

Whereas, Municipality contemplates making further additions and replacements that will cost approximately $8,000.00, and

Whereas, Municipality desires to continue these amortization collections and the Authority is willing that said indebtedness should be paid in part from such amortization collections, any provisions of the Power Contract to the contrary notwithstanding, and

Whereas, all the necessary acts have been done to authorize the making of this contract,

Now, Therefore, in Consideration of the premises and the mutual covenants herein contained, the parties do hereby agree as follows:

COMPLAINANTS' EXHIBIT No. 121

1. Article 6 of the Power Contract referred to above is hereby amended so that Municipality may continue to add to its resale rates the temporary amortization charge, applicable to all customers, of one cent (1¢) per kwh. for the first one hundred (100) kwh. used per month, such charge to be not less than twenty-five cents (25¢) or more than one dollar ($1.00) per customer per month, until the following indebtedness is paid:

A. $2,500.00 and accrued interest and one half the costs on the judgment entered on October 17, 1935, against Municipality in the Federal District Court, Northern Division of Mississippi, in the case entitled Gillespie v. City of Okolona.

[fol. 2369] B. $7,831.00, with interest at 3½% per annum, payable semi-monthly on the unpaid balance, which represents the indebtedness of Municipality to Authority, under the provisions of Article 7 of said Power Contract. The rate of interest provided in said Article 7 is hereby reduced from 4% to 3½% per annum, payable semi-annually on the unpaid balance, including interest on any unpaid interest, such change to become effective as of the effective date of this contract.

C. $8,000.00, which sum is to be used by Municipality for the rehabilitation of its electric distribution system.

Municipality shall keep all such amortization collections separate from other funds and shall treat them as trust funds to be applied exclusively to the payment of the items mentioned in subsections A, B, and C above. To the amount collected each month as amortization charges there shall be added an amount from gross revenues which shall make available for the above described indebtedness a total sum of $300.00 every month. Said $300 payments shall be devoted, first, to the amortization of the indebtedness set out in subsection A, second, to the indebtedness set out in subsection B, and lastly, to the indebtedness set out in subsection C. In the event amortization collections exceed the sum of $300 monthly all such collections shall be used for the amortization of the above indebtedness.

2. In no event shall Municipality continue to make these amortization collections after January 1, 1942.

COMPLAINANTS' EXHIBIT No. 121

3. Nothing herein contained shall be construed to affect Municipality's obligation to the United States of America acting through the Federal Emergency Administration of Public Works for the repayment of the loan used by Municipality in constructing rural lines in the vicinity of the City of Okolona.

4. Nothing herein contained shall be construed to rescind or annul any clauses in said Power Contract that are not plainly inconsistent herewith. Nor shall the manner of payment herein set forth be regarded as a waiver by Authority of its right to surplus revenues as defined in Article 6 of said Power Contract.

5. This contract shall become effective the first day of April, 1937.

In Witness Whereof, the parties hereto have caused this instrument to be executed the day and year first above written.

Tennessee Valley Authority (S.) by Arthur E. Morgan, Chairman, Board of Directors.

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

City of Okolona, Mississippi, (S.) by J. C. Lieper, Mayor.

Attest: (S.) E. D. Elias, City Clerk.

[fol. 2370] COMPLAINANTS' EXHIBIT No. 122

Supplemental contract between TVA and the City of Holly Springs, Mississippi, dated February 2, 1937.

This contract, omitting the formal parts thereof, is as follows:

Now, Therefore, for and in consideration of the mutual covenants herein contained, the parties hereto mutually covenant and agree as follows:

1. Paragraph 8 of that agreement entitled "Power Contract Between Tennessee Valley Authority and City of

Holly Springs" executed on November 12, 1935, is hereby amended to read as follows:

8. Municipality's Investment in Electric System.—For the purpose of this agreement the investment of Municipality in its electric system as of the date hereof is agreed to be the sum of $28,812.00 determined as follows:

Replacement Cost New	$53,530.00	
Less Accrued Depreciation	19,033.00	
Present Value		$34,497.00
Standby Value of Generating Plant		19,315.00
Total		$53,812.00
Bonds Applicable to Electric System Plus Accrued Interest	$25,000.00	
Other Indebtedness Applicable to Electric System	None.	
Total Indebtedness Applicable to Electric System		$25,000.00
Net Investment		$28,812.00

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority (Sgd.) by Arthur E. Morgan, Chairman of the Board. W. T. M., Legal Div. (Seal.)

Attest: (Sgd.) Charles E. Hoffman, Assistant Secretary.

City of Holly Springs, (Sgd.) by Geo. M. Buchanan, Mayor. (Seal.)

Attest: (Sgd.) C. B. Smith, City Clerk.

JLF:WTM:MLC.

[fol. 2371] COMPLAINANTS' EXHIBIT No. 123

Power Contract Between TVA and the City of Florence, Alabama, Dated July 6, 1936

(Here omitted as such contract appears in full at pages 135 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 124

Power contract between TVA and the City of Tuscumbia, Alabama, dated March 8, 1937.

(Here omitted as such contract appears in full at pages 264 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2372] COMPLAINANTS' EXHIBIT No. 125

Power Contract Between TVA and the City of Knoxville, Tennessee, Dated March 1, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of power TVA shall be obligated to deliver during the first two year period is 3500 kw.

2. The point of delivery shall be at the outgoing side on the low tension side of the main step-down transformer of the substation or substations to be constructed, owned and operated by TVA, to be located at a point or points to be selected by TVA within the corporate limits of the City of Knoxville, Tennessee.

3. The City of Knoxville is to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system and TVA agrees, upon request of said City, to render without compensation such accounting, legal and engineering assistance looking to the acquisition of such a system as TVA may deem helpful or advisable.

[fol. 2373] COMPLAINANTS' EXHIBIT No. 126

Power Contract Between TVA and the City of Russellville, Alabama, Dated March 13, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 2,000 kw.

COMPLAINANTS' EXHIBIT No. 126

2. The point of delivery shall be at or within the corporate limits of the City of Russellville at a point to be selected by TVA.

3. The City of Russellville is to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system and TVA agrees, upon request of said City, to render without compensation such accounting, legal and engineering assistance looking to the acquisition of such a system as TVA may deem helpful or advisable.

[fol. 2374] COMPLAINANTS' EXHIBIT No. 127

Power Contract Between TVA and the City of Decatur, Alabama, Dated March 14, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Athens, Alabama, except:

1. The maximum amount of electricity which TVA agrees to supply within the first two year period is 7500 kw.

2. The point of delivery shall be at or within the corporate limits of the City of Decatur at a point to be selected by TVA.

3. The City of Decatur is to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system and TVA agrees, upon request of said City, to render without compensation such accounting, legal and engineering assistance looking to the acquisition of such a system as TVA may deem helpful or advisable.

[fol. 2375] COMPLAINANTS' EXHIBIT No. 128

Power Contract Between TVA and the City of Guntersville, Alabama, Dated May 21, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Sheffield, Alabama, except:

1. The initial amount of electricity which TVA shall be obligated to deliver shall not be in excess of 3000 kw.

COMPLAINANTS' EXHIBIT No. 128

2. The point of delivery shall be at a point within or near the corporate limits of the City of Guntersville and at a point to be mutually agreed upon between TVA and the City of Guntersville, Alabama.

3. It contains the following provisions in lieu of paragraph 8 of the contract between TVA and the City of Sheffield, Alabama (Complainants' Exhibit 118):

"8. Terms and Conditions.—Attached hereto, and hereby made part hereof, is a schedule entitled "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Municipality and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

9. Rules and Regulations.—Attached hereto and hereby made a part hereof is a "Schedule of Rules and Regulations." Municipality hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented, or repealed by Municipality at any time upon ten (10) days' written notice to Authority setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality."

[fol. 2376] COMPLAINANTS' EXHIBIT No. 129

Power Contract Between TVA and the City of Chattanooga, Tennessee, Dated June 17, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and the City of Sheffield, Alabama, except:

1. The maximum amount of power agreed to be furnished by TVA shall not be in excess of 30,000 kw. except upon

notice as provided for in the contract between TVA and the City of Sheffield, Alabama.

2. The point of delivery shall be at the Chickamauga Dam site on the south side of the Tennessee River.

3. It contains the following provisions in lieu of paragraph 8 of the contract between TVA and the City of Sheffield, Alabama (Complainants' Exhibit 118):

"7. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled 'Schedule of Terms and Conditions.' The provisions of this schedule may from time to time be changed or supplemented by agreement of Board and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

8. Rules and Regulations.—Attached hereto and hereby made a part hereof is a 'Schedule of Rules and Regulations.' Board hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented, or repealed by Board at any time upon ten (10) days' written notice to Authority setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term 'Distributor' shall be construed to mean Board."

[fol. 2377] COMPLAINANTS' EXHIBIT No. 130

Power Contract Between Tennessee Valley Authority and City of Middlesborough, Kentucky

This Agreement, made and entered into this 29th day of July, 1937, between the Tennessee Valley Authority, hereinafter called "Authority," a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the City of Middlesborough, Kentucky, a mu-

nicipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Kentucky, hereinafter called "Municipality," its successors and assigns:

Witnesseth

Whereas, Authority, by Section 10 of said act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, Counties, Municipalities, and co-operative organizations of citizens or farmers not organized or doing business for profit; and,

Whereas, by section 11 of said act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and,

Whereas, the electorate of Municipality have by referendum authorized Municipality to acquire by construction or purchase a municipal electric distribution system, and Municipality intends to acquire and operate such a system;

Whereas, Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefore; and

Whereas, after investigation by Authority, it appears that quantities of power generated at Authority's dams, sufficient to meet the requirements of Municipality under the terms of this contract, will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and,

Whereas, all parties to this contract have duly authorized its execution; Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to all the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto mutually covenant and agree as follows:

1. Term of Contract.—This contract shall become effective upon the execution thereof, and shall continue in effect for twenty years; Provided, that all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Authority shall have

completed acquisition or construction of the transmission and transformation facilities necessary to serve Municipality, and Municipality shall have acquired its distribution system, or any part thereof, and shall be in physical position to take such service for its said system or part thereof. All service and payment periods hereinafter referred to shall be computed from the date of initial delivery.

2. Acquisition of System.—Municipality agrees to use all reasonable diligence in acquiring, by construction or purchase, a municipal distribution system. Upon six month's notice in writing that Municipality has completed arrangements and executed firm contracts for the purchase or construction of said system and the financing thereof, including customer commitments giving Municipality an assured load of at least 1000 kw., Authority agrees to arrange to construct or acquire such transmission facilities as are reasonably necessary to supply Municipality's [fol. 2378] wholesale power requirements, giving due regard to the magnitude thereof. In the event Municipality determines to construct its distribution system it shall also notify Authority of the date on which actual construction is begun, in order that Authority may coordinate its construction or acquisition plans with those of the Municipality. In no event shall Authority be obligated to commence delivery of power to Municipality hereunder prior to December 30, 1938.

3. Power Supply.—Authority will, from the date of the initial delivery to the expiration hereof, supply electricity to Municipality for municipal uses and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire electrical requirements of Municipality. Should Municipality during the period of this contract, desire to increase its purchase in excess of 3000 kw., Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as nine months after date of demand if the additional requirements are 5000 kw. or less, twelve (12) months after date of demand if the additional requirements are over 5000 kw. but not over 10,000 kw., and two (2) years after

date of demand if the additional requirements are in excess of 10,000 kw. Said energy shall be delivered in the form of three phase, alternating current, at approximately 60 cycles per second and approximately 11,000 volts, or at such other voltage as the parties may from time to time agree.

4. Point of Delivery.—Authority shall deliver the power purchased hereunder at such point within or near the corporate limits of the Municipality as shall hereafter be agreed upon between Authority and Municipality, and Municipality shall furnish Authority gratis a sub-station site for the period of this contract. The energy to be supplied Municipality hereunder shall be metered at the low tension side of the step-down transformer bank or banks of the sub-station or sub-stations to be constructed, owned, and operated by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks and/or the transmission line or lines supplying energy to such sub-stations.

5. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges." Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate." Municipality shall pay Authority the following amounts annually: as a minimum:

First year after date of initial delivery	$15,000 per year.
Second year after date of initial delivery	$40,000 per year.
Third year after date of initial delivery	$60,000 per year.

In the event that this contract terminates on a date other than an anniversary of the date of initial delivery, the minimum bill for the partial year shall be prorated on a calendar basis. Any sums due under the minimum bill provisions of this section shall be paid within thirty (30) days after the end of the year or partial year for which such sums are due. All payments shall be made to Authority at its office at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

6. Resale Rates.—In order to insure a wide and ample distribution of electricity in the area served by Municipality, Authority and Municipality agree as follows:

(a) Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the [fol. 2379] same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

(b) Municipality agrees to charge consumers, including all municipal and governmental customers and departments, the rates, set forth for the several classes thereof in Schedule B-1, B-2, B-3, and B-5 of the Schedule of Rates and Charges, and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties.

(c) If it should appear that the rates provided for in said resale schedules, with the surcharge provided for therein, do not produce revenue sufficient to operate and maintain Municipality's electric system on a self-supporting and financially-sound basis, including requirements for interest and amortization on indebtedness applicable to Municipality's electric system, Authority and Municipality shall agree upon, and Municipality shall put into effect such changes in rates as will provide for the increased revenues necessary to place the system upon such self-supporting and financially-sound basis.

(d) Municipality agrees to dispose of its gross revenues from electric operations in the following manner:

(1) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of material and supplies, power at wholesale and insurance.

(2) From remaining revenues Municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to Municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(3) Thereafter revenues shall be used currently to set up reserves for replacements, new construction and for con-

tingencies, and to provide a reasonable amount of cash working capital.

(4) From remaining revenues Municipality shall thereafter pay into its General Fund a return on its investment and a tax equivalent as provided in the Financial and Accounting Policy in the Schedule of Terms and Conditions of Contract attached hereto.

(5) All remaining revenues shall be considered surplus revenues and may be devoted by Municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter the reduction of rates. Surplus revenues shall be computed as of December 31 and June 30 of each year.

6. Payment for Municipality's Energy Requirements.—Municipality agrees to pay into its electric funds from appropriate general or special fund for all electric service required by Municipality for street lighting, water pumping, and other operations and uses, at the resale rates as set forth in the Schedule of Rates and Charges, with such modifications and additions as may from time to time be agreed upon by the parties.

7. Terms and Conditions: Attached hereto, and hereby made a part hereof, is a schedule entitled "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Municipality and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and the Schedule of Rates and Charges, are of the [fol. 2380] essence of this contract.

8. Rules and Regulations.—Attached hereto and hereby made a part hereof is a "Schedule of Rules and Regulations." Municipality hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented or repealed by Municipality at any time upon ten (10) days written notice to Authority set-

ting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with, or in violation of, and of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality.

9. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

10. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Municipality to any other party without the consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in duplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, By Harcourt A. Morgan, Vice-Chairman Board of Directors.

Attest: Charles E. Hoffman, Assistant Secretary.

City of Middlesborough, Kentucky, By Ike Ginsburg, Mayor.

Attest: Edw. L. Johnson, City Clerk.

[fol. 2381] The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee. (Complainants' Exhibit No. 118.)

[fol. 2382] COMPLAINANTS' EXHIBIT No. 131

Amendatory Agreement Between TVA and the City of Middlesboro, Kentucky, Dated October 20, 1937

(Omitted)

[fol. 2383] COMPLAINANTS' EXHIBIT No. 132

Power Contract Between Tennessee Valley Authority and City of Trenton, Tennessee

This agreement, made and entered into this 23rd day of August, 1937, between the Tennessee Valley Authority, hereinafter called "Authority," a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the city of Trenton, hereinafter called "Municipality," a municipal corporation duly organized, created and existing under and by virtue of the laws of the State of Tennessee, its successors and assigns,

Witnesseth:

Whereas, Authority, by section 10 of said act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas, Municipality, by legislative authority owns and operates a municipal electric distribution system; and

Whereas, Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefor; and

Whereas, after investigation by Authority, it appears that quantities of power sufficient to meet the requirements [fol. 2384] of Municipality, under the terms of this contract, will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas, all parties to this contract have duly authorized its execution;

Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto mutually covenant and agree as follows:

1. Term of Contract.—This contract shall become effective upon the execution thereof, and shall continue in effect for twenty (20) years; Provided, however, That all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Authority

shall have constructed and installed the transmission and transformation facilities necessary in the opinion of Authority for such service. All service and payment periods hereinafter referred to shall be computed from the date of initial delivery.

2. Construction of Transmission Facilities.—Authority agrees, with all reasonable diligence, to construct and install the transmission and transformation facilities reasonably necessary in the opinion of Authority for continuous and dependable service, giving due consideration to the actual magnitude of Municipality's load requirements.

3. Power Supply.—Authority will, from the date of initial delivery to the expiration hereof, supply electricity to Municipality for municipal purposes and for resale. Munici- [fol. 2385] pality agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of Municipality. Should Municipality during the period of this contract desire to increase its purchases in excess of 1500 kw., Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as nine (9) months after date of demand if the additional requirements are 5000 kw. or less, twelve (12) months after date of demand if the additional requirements are over 5000 kw. but not over 10,000 kw., and two (2) years after date of demand if the additional requirements are in excess of 10,000 kw. Said energy shall be delivered in the form of three phase, alternating current, at approximately 60 cycles per second and approximately 2300 volts, or at such other voltage as the parties may from time to time agree.

4. Point of Delivery.—Authority will deliver the electricity purchased hereunder at the present City Light Plant, Municipality to furnish Authority gratis a substation site adjacent thereto for the period of this contract. The energy to be supplied Municipality hereunder shall be metered at the low tension side of the stepdown transformer bank or banks of the substation or substations to be constructed, owned, and operated by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks

and/or the transmission line or transmission lines supplying energy to such substations. Authority shall have free access to such substation site and substation for purposes of operation, maintenance, repair, improvement, replacements and removal.

[fol. 2386] 5. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges," in which the term "Contractor" shall be construed to mean Municipality. Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate." All payments shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

6. Resale Rates.—In order to insure a wide and ample distribution of electricity in the area served by Municipality, Authority and Municipality agree as follows:

(a) Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

(b) Municipality shall charge consumers, including all municipal and governmental customers and departments, the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the Schedule of Rates and Charges, and not depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties; Provided, however, that Municipality may, for a period not to exceed two (2) years from the date of this agreement, add to its resale rates a temporary amortization charge, applicable to all customers, of one cent (1c) per kwh. for the first one hundred (100) kwh. used per month, such charge to be not [fol. 2387] less than $0.25 nor more than $1.00 per customer per month, but such amortization charge shall be temporary only and shall be considered only as a means of amortizing Municipality's indebtedness, if any, for loans of money or materials for the rehabilitation of or extension to its elec-

tric system. The proceeds of such amortization charge, if any, shall be deposited in a special fund to be used only for amortization of any such indebtedness.

(c) If it should appear that the rates provided for in said resale schedules, with the surcharge provided for therein, do not produce revenues sufficient to operate and maintain Municipality's electric system on a self-supporting and financially-sound basis, including requirements for interest and amortization on indebtedness applicable to Municipality's electric system, Authority and Municipality shall agree upon, and Municipality shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such self-supporting and financially-sound basis.

(d) Municipality shall dispose of its gross revenues from electric operations in the following manner:

(1) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale and insurance.

(2) From remaining revenues Municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to Municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(3) Thereafter revenues shall be used currently to [fol. 2388] set up reasonable reserves for replacements, new construction and for contingencies, and to provide a reasonable amount of cash working capital.

(4) From remaining revenues Municipality shall thereafter pay into its General Fund a return on its investment and a tax equivalent as provided in the Financial and Accounting Policy in the Schedule of Terms and Conditions of Contract attached hereto.

(5) All remaining revenues shall be considered surplus revenues and may be devoted by Municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so

devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates; Provided, however, that Municipality need not reduce its rates nor reduce or eliminate surcharges unless net earnings, defined as the amount remaining after deducting from the total income of the electric system all operating expenses as defined in subsection (d) (1) of this section, exceed Sixteen Thousand Dollars ($16,000.00) annually, and then only to the extent of such excess. Surplus revenues shall be computed as of December 31 and June 30 of each year.

7. Present Value of Municipality's Electric System.—For the purpose of this agreement the present value of Municipality's electric system, including generating plant, as of the date of execution of this agreement, is agreed to be the sum of Fifty Thousand Seven Hundred Thirty-one and 52/100 Dollars ($50,731.52) determined as follows:

[fol. 2389] Replacement Cost New of Distribution System	$37,978.08	
Less Accrued Depreciation	11,054.40	
Present Value of Electric Distribution System		$26,923.68
Present Standby Value of Generating Plant		23,807.84
Total		$50,731.52

The net investment of Municipality in its electric system, for the purpose of this agreement as of the date of execution, is agreed to be zero determined as follows:

Present Value of System		
Less Bonds Applicable to System	$50,731.52	
And Other Indebtedness Applicable to System	None	
Total Indebtedness Applicable to System		50,731.52
Net Investment		Zero.

8. Payment for Municipality's Energy Requirements.—Municipality agrees to pay into its electric funds from appropriate general or special funds for all electric service required by Municipality for street lighting, water pumping, and other operations and uses, at the resale rates as set forth in the Schedule of Rates and Charges, with such modifications and additions as may from time to time be agreed upon by the parties.

9. Terms and Conditions.—Attached hereto, and hereby made a part hereof, but subject to the express provisions of this contract which in case of conflict shall control, is a schedule entitled "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Municipality and [fol. 2390] Authority. It is understood and agreed that the several provisions of the said schedule with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

10. Rules and Regulations.—Attached hereto and hereby made a part hereof is a schedule of Rules and Regulations. Municipality hereby adopts said schedule as the Rules and Regulations of Municipality, subject to the express provisions of this contract, which in case of conflict shall control. The provisions of said schedule may be amended, supplemented, or repealed by Municipality at any time upon ten (10) days' written notice to Authority, setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality.

11. Reports to Authority.—Municipality agrees that not later than the first day of September each year, it will render Authority a complete report of the condition of its property and the results of its operations for the preceding year ending June 30. Municipality agrees promptly to supply Authority with such additional information with regard to its property and operations as Authority may from time to time reasonably request.

COMPLAINANTS' EXHIBIT No. 132

12. Waiver of Default.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

[fol. 2391] 13. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by either party, without the consent of the other party.

14. Previous Agreements.—This agreement constitutes the entire contract between the parties, and there are no understandings or representations of any kind not expressly set forth herein.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in triplicate by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, (S.) by Arthur E. Morgan, Chairman, Board of Directors. R. G. S., Legal Div. (Seal.)

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

City of Trenton, Tennessee, (S.) by W. E. Seat, Mayor. (Seal.)

Attest: (S.) P. B. Freeman, Recorder.

JLF:RGS:EW:MJ.

[fol. 2392] The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee. (Complainants' Exhibit No. 118.)

[fol. 2393] COMPLAINANTS' EXHIBIT No. 133

Power Contract Between Tennessee Valley Authority and the City of Jackson, Tennessee

This Agreement, made and entered into as of the 1st day of September, 1937, between the Tennessee Valley Author-

ity, hereinafter called "Authority," a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and The City of Jackson, Tennessee, hereinafter called "Municipality," a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Tennessee, its successors and assigns,

Witnesseth:

Whereas, Authority, by Section 10 of said Act, is authorized to sell the surplus power generated by it and not used in its operations, and is directed to give preference to States, Counties, Municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and,

Whereas, by Section 11 of said Act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and,

[fol. 2394] Whereas, Municipality owns and operates an electric street lighting system and water pumping plant, and the electors of Municipality have by referendum authorized Municipality to acquire by construction or purchase a municipal electric distribution system, and Municipality intends to acquire and operate such a system; and,

Whereas, Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefor; and,

Whereas, after investigation by Authority, it appears that Authority will have sufficient quantities of power available to meet the requirements of Municipality under the terms of this contract after all requirements of Authority and of the United States have been fulfilled; and,

Whereas, all parties to this contract have duly authorized its execution;

Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto mutually covenant and agree as follows:

COMPLAINANTS' EXHIBIT No. 133

1. Term of Contract.—This contract shall become effective upon the execution hereof, and shall continue in effect for twenty years.

2. Acquisition of Plant.—Municipality agrees with all reasonable diligence to acquire by purchase or construction a municipal electric distribution system for The City of Jackson, and to do all acts and things which it may legally do, which may be necessary or helpful in effectuating such purpose.

[fol. 2395] 3. Construction of Transmission Facilities.—Authority agrees, with all reasonable diligence to construct and install the transmission and transformation facilities reasonably necessary in the opinion of Authority for continuous and dependable service, giving due consideration to the actual magnitude of Municipality's load requirements.

4. Power Supply.—Authority will, from the date of execution of this contract to the expiration hereof, supply electricity to Municipality for municipal purposes and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of Municipality. Should Municipality during the period of this contract desire to increase its purchases in excess of 600 KVA, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as six (6) months after date of demand if the additional requirements are 3,000 kw. or less, twelve (12) months after date of demand if the additional requirements are over 3,000 kw. but not over 5,000 kw., and two (2) years after date of demand if the additional requirements are in excess of 5,000 kw. Said energy shall be delivered in the form of three phase, alternating current, at approximately 60 cycles per second and approximately 2,300 volts, or at such other voltage as the parties may from time to time agree.

5. Point of Delivery.—Authority will deliver and meter the electricity purchased hereunder at the low tension side

of Authority's substation located adjacent to Municipal-
[fol. 2396] ity's present water and light plant on South Royal Street in the city of Jackson, Tennessee, or at such other point as the parties may from time to time agree upon. Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its transformer bank or banks and/or the transmission line or lines supplying energy to such substation.

6. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges." Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate." All payments shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

7. Resale Rates.—In order to insure a wide and ample distribution of electricity in the area served by Municipality, Authority and Municipality agree as follows:

(a) The surplus power purchased by Municipality hereunder shall be sold and distributed by Municipality to the ultimate consumer without discrimination between consumers of the same class, and no discriminatory rate, rebate, or other special concession will be made or given by Municipality to any customer.

(b) Municipality shall charge consumers, including all municipal and governmental customers and departments, the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the Schedule of Rates and Charges, and shall not depart therefrom except by agreement of the parties. Additional resale schedules for special [fol. 2397] classes of consumers or special uses of electricity may be added from time to time by agreement of the parties.

(c) If it should appear that the rates provided for in said resale schedules, with the surcharge provided for therein, do not produce revenues sufficient to operate and maintain Municipality's electric system on a self-supporting and financially-sound basis, including requirements for

interest and amortization on indebtedness applicable to Municipality's electric system, Authority and Municipality shall agree upon, and Municipality shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such self-supporting and financially-sound basis.

(d) Municipality shall dispose of its gross revenues from electric operations in the following manner:

(1) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale and insurance.

(2) From remaining revenues Municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to Municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(3) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction and for contingencies, and to provide a reasonable amount of cash working capital.

[fol. 2398] (4) From remaining revenues Municipality shall thereafter pay into its General Fund a return on its investment and a tax equivalent as provided in the Financial and Accounting Policy in the Schedule of Terms and Conditions of Contract attached hereto.

(5) All remaining revenues shall be considered surplus revenues and may be devoted by Municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity, and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates. Surplus revenues shall be computed as of December 31, and June 30, of each year.

8. Payment for Municipality's Energy Requirements.—Municipality agrees to pay into its electric funds from appropriate general or special funds for all electric service

required by Municipality for street lighting, water pumping, and other operations and uses, at the resale rates as set forth in the Schedule of Rates and Charges, with such modifications and additions as may from time to time be agreed upon by the parties.

9. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled, "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Municipality and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

[fol. 2399] 10. Rules and Regulations.—Attached hereto and hereby made a part hereof is a "Schedule of Rules and Regulations." Municipality hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented or repealed by Municipality at any time upon ten (10) days written notice to Authority setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality.

11. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

12. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Municipality to any other party without the consent of Authority.

13. Termination of Prior Contract.—The term of the power contract dated October 16, 1935, between the parties

COMPLAINANTS' EXHIBIT No. 133

hereto, shall be deemed to expire and terminate as of the date of this contract, and said contract of October 16, 1935, shall be superseded by this contract.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly author- [fol. 2400] ized officers, the day and year first above written.

Tennessee Valley Authority, (S.) by Arthur E. Morgan, Chairman, Board of Directors. W. T. M. Legal Div. (Seal.)

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

The City of Jackson, Tennessee, (S.) by A. B. Foust, Mayor and Chairman of Board of Public Utilities. (Seal.)

Attest: (S.) D. W. Luckey, City Recorder.

WTM:EW

[fol. 2401] The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee. (Complainants' Exhibit No. 118.)

[fol. 2402] COMPLAINANTS' EXHIBIT No. 134

Power Contract Between Tennessee Valley Authority and City of Paris, Tennessee

This Agreement, made and entered into this 2nd day of November, 1937, between the Tennessee Valley Authority, hereinafter called "Authority," a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and City of Paris, Tennessee, a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Tennessee, hereinafter called "Municipality," its successors and assigns:

Witnesseth:

Whereas, Authority, by Section 10 of said Act, is authorized to sell the surplus power generated by it and not used

in its operations, and is directed to give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas, by section 11 of said Act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

[fol. 2403] Whereas, the electors of Municipality have by referendum authorized Municipality to acquire by construction or purchase a municipal electric distribution system, and Municipality intends to acquire and operate such a system; and

Whereas, Municipality desires to purchase power from Authority for municipal purposes and for resale and proposes to pay therefor; and

Whereas, after investigation by Authority, it appears that quantities of power generated at Authority's dams, sufficient to meet the requirements of Municipality under the terms of this contract, will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas, all parties to this contract have duly authorized its execution;

Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to all of the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto mutually covenant and agree as follows:

1. Term of Contract.—This contract shall become effective upon the execution hereof, and shall continue in effect for twenty (20) years; Provided, that all obligations of the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Authority shall have completed acquisition or construction of the transmission and transformation facilities necessary to serve [fol. 2404] Municipality, and Municipality shall have acquired its distribution system, or any part thereof, and shall be in physical position to take such service for its said system or part thereof. All service and payment periods

hereinafter referred to shall be computed from the date of initial delivery.

2. Acquisition of Systems.—Municipality agrees to use all reasonable diligence in acquiring, by construction, purchase, or otherwise, a distribution system, operation of which is permitted by Municipality. Upon six months' notice in writing that Municipality has completed arrangements and executed firm contracts for the purchase, construction, or acquisition of said system and the financing thereof, including customer commitments giving Municipality an assured load of at least 750 kw., Authority agrees to arrange to construct or acquire such transmission and transformation facilities as are reasonably necessary to supply Municipality's wholesale power requirements, giving due regard to the magnitude thereof. In the event Municipality determines to construct its distribution system, it shall also notify Authority of the date on which actual construction is begun, in order that Authority may coordinate its construction or acquisition plans with those of Municipality. In no event shall Authority be obligated to commence delivery of power to Municipality hereunder prior to December 30, 1938.

3. Power Supply.—Authority will, from the date of initial delivery to the expiration hereof, supply electricity to Municipality for municipal purposes and for resale. Municipality agrees to purchase from Authority, and Authority agrees to supply, the entire electricity requirements of Municipality. Should Municipality during the period of [fol. 2405] this contract desire to increase its purchases in excess of 1500 kw., Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as nine (9) months after date of demand if the additional requirements are 5,000 kw. or less, twelve (12) months after the date of demand if the additional requirements are over 5,000 kw. but not over 10,000 kw., and two (2) years after date of demand if the additional requirements are in excess of 10,000 kw. Said energy shall be delivered in the form of three phase, alternating current, at approximately 60 cycles per second and approximately

2300 volts, or at such other voltage as the parties may from time to time agree.

4. Point of Delivery.—Authority shall deliver the power purchased hereunder at such point within or near the corporate limits of Municipality as shall hereafter be agreed upon between Authority and Municipality, and Municipality shall furnish Authority gratis a substation site for the period of this contract. The energy to be supplied Municipality hereunder shall be metered at the low tension side of the step-down transformer bank or banks of the substation or substations to be constructed, owned, and operated by Authority, and Authority will install only such oil circuit breakers as in its opinion are necessary for the protection of its tranformer bank or banks and/or the transmission line or lines supplying energy to such substations.

5. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges." [fol. 2406] Municipality agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate." Municipality shall pay Authority the following amounts annually as a minimum:

First year after date of initial delivery	$15,000 per year.
Second year after date of initial delivery	18,000 per year.
Third and succeeding years after date of initial delivery	25,000 per year.

In the event that this contract terminates on a date other than an anniversary of the date of initial delivery, the minimum bill for the partial year shall be prorated on a calendar basis. Any sums due under the minimum bill provisions of this section shall be paid within thirty (30) days after the end of the year or partial year for which such sums are due. All payments shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate.

6. Resale Rates.—In order to insure a wide and ample distribution of electricity in the area served by Municipality, Authority and Municipality agree as follows:

(a) Municipality agrees that the surplus power purchased hereby shall be sold and distributed to the ultimate con-

sumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

(b) Municipality agrees to charge consumers, including all municipal and governmental customers and departments, the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the Schedule of Rates and Charges, and not to depart therefrom except by agreement [fol. 2407] of the parties. Additional resale schedules for special classes of consumers or special uses of electricity may be added from time to time by agreement of the parties.

(c) If it should appear that the rates provided for in said resale schedules, with the surcharge provided for therein, do not produce revenues sufficient to operate and maintain Municipality's electric system on a self-supporting and financially-sound basis, including requirements for interest and amortization on indebtedness applicable to Municipality's electric system, Authority and Municipality shall agree upon, and Municipality shall put into effect such changes in rates as will provide for the increased revenues necessary to place the system upon such self-supporting and financially-sound basis.

(d) Municipality agrees to dispose of its gross revenues from electric operations in the following manner:

(1) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials and supplies, power at wholesale, and insurance.

(2) From remaining revenues Municipality shall next currently provide for the payment at maturity of interest accrued on all bonds or other indebtedness applicable to Municipality's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon.

(3) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction, and for contingencies, and to provide a reasonable amount of cash working capital.

[fol. 2408] (4) From remaining revenues Municipality shall thereafter pay into its General Fund a return on its

investment and a tax equivalent as provided in the Financial and Accounting Policy in the Schedule of Terms and Conditions of Contract attached hereto.

(5) All remaining revenues shall be considered surplus revenues and may be devoted by Municipality to the purchase or retirement of bonds or other indebtedness applicable to the electric system before maturity and if not so devoted shall serve as the basis for the reduction or elimination of surcharges to consumers, and thereafter for the reduction of rates. Surplus revenues shall be computed as of December 31 and June 30 of each year.

7. Payment for Municipality's Energy Requirements.—Municipality agrees to pay into its electric funds from appropriate general or special funds for all electric service required by Municipality for street lighting, water pumping, and other operations and uses, at the resale rates as set forth in the Schedule of Rates and Charges, with such modifications and additions as may from time to time be agreed upon by the parties.

8. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled "Schedule of Terms and Conditions." The provisions of this schedule may from time to time be charged or supplemented by agreement of Municipality and Authority. It is understood and agreed that the several provisions of the said schedule, with such changes as may from time to time be adopted pursuant hereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

[fol. 2409] 9. Rules and Regulations.—Attached hereto and hereby made a part hereof is a "Schedule of Rules and Regulations." Municipality hereby adopts said Schedule of Rules and Regulations. The provisions of said schedule may be amended, supplemented, or repealed by Municipality at any time upon ten (10) days' written notice to Authority setting forth the nature of and reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Municipality.

COMPLAINANTS' EXHIBIT No. 134

10. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

11. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Municipality to any other party without the consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in quadruplicate, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, (Sgd.) By John B. Blandford, Jr., General Manager. J. C. S., Leg. Div. (Seal.)

Attest: (Sgd.) Charles E. Hoffman, Assistant Secretary.

City of Paris, Tennessee, (Sgd.) By Yancey Caldwell, Mayor. (Seal.)

Attest: (Sgd.) Fred R. Balch, City Clerk.

JLF:RGS:FE.

[fol. 2410] The Schedule of Rates and Charges, the Schedules of Terms and Conditions and Rules and Regulations attached to this contract are substantially the same as those attached to and made a part of the contract between TVA and the City of Dickson, Tennessee. (Complainants' Exhibit No. 118.)

[fol. 2411] COMPLAINANTS' EXHIBIT No. 135

Power Contract Between TVA and Prentiss County (Mississippi) Electric Power Association, Dated December 1, 1936

(Here omitted as such contract appears in full at pages 225 et seq., of the Annual Report of TVA for, the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 136

Power Contract Between TVA and Cullman County (Alabama) Electric Membership Corporation, Dated August 4, 1936

(Here omitted as such contract appears in full at pages 153 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2412] COMPLAINANTS' EXHIBIT No. 137

Power Contract Between TVA and Gibson County (Tennessee) Electric Membership Corporation, Dated August 13, 1936

(Here omitted as such contract appears in full at pages 167 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 138

Power Contract Between TVA and Middle Tennessee Electric Membership Corporation, Dated August 13, 1936

(Here omitted as such contract appears in full at pages 180 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2413] COMPLAINANTS' EXHIBIT No. 139

Power Contract Between TVA and Pickwick Electric Membership Corporation, Dated August 26, 1936

(Here omitted as such contract appears in full at pages 197 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 140

Power Contract Between TVA and Duck River (Tennessee) Electric Membership Corporation, Dated October 31, 1936

(Here omitted as such contract appears in full at pages 211 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2414] COMPLAINANTS' EXHIBIT No. 141

Power Contract Between TVA and Southwest Tennessee Electric Membership Corporation, Dated December 9, 1936

(Here omitted as such contract appears in full at pages 239 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2415] COMPLAINANTS' EXHIBIT No. 142

Power Contract Between TVA and Joe Wheeler Electric Membership Corporation, Dated September 24, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and North Georgia Electric Membership Corporation, except:

1. The maximum amount of electricity which TVA shall be obligated to deliver shall not be in excess of 1000 kw. except on demand and notice as provided for in the contract between TVA and the City of Sheffield, Alabama.

2. The point of delivery shall be on the low tension side of TVA's substations located near Courtland, Alabama, and in Hartselle, Alabama.

[fol. 2416] COMPLAINANTS' EXHIBIT No. 143

Power Contract Between TVA and Cherokee County (Alabama) Electric Membership Corporation, Dated November 2, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and North Georgia Electric Membership Corporation, except:

1. The maximum amount of electricity which TVA agrees to supply before January 1, 1939, is 1000 kw.

2. The point of delivery shall be at TVA's metering equipment located in the vicinity of Crossville, Alabama.

[fol. 2417] COMPLAINANTS' EXHIBIT No. 144

Power Contract Between TVA and Northeast Mississippi Electric Power Association, Dated March 26, 1937

(Here omitted as such contract appears in full at pages 277 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2418] COMPLAINANTS' EXHIBIT No. 145

Supplement to Power Contract Between TVA and North East Mississippi Electric Power Association, Dated July 27, 1937

This contract, omitting the formal parts thereof is as follows:

"Whereas, said agreement dated March 26, 1937, provided in Paragraph 2 thereof that such electricity supplied by the Authority to the Association should be used or resold in the counties of Pontotoc and Union exclusively, which territorial restriction it is now desired to abandon;

Now, Therefore, in consideration of the premises and the mutual covenants herein contained, said agreement dated March 26, 1937, is hereby supplemented and amended as follows:

1. Authority will, from and after the "Date of initial delivery" as defined in Paragraph 1 of said original agreement, supply electricity to the Association for corporate purposes and for resale, to be used or resold in any counties to which the Association's distribution lines now or hereafter constructed may extend, including, but not limited to, the counties of LaFayette and Marshall, in addition to those counties, being Pontotoc and Union, originally provided for.

Association agrees to purchase from Authority the entire electricity requirements of Association, whether for use or resale in any territory into which its lines may now or hereafter extend.

[fol. 2419] COMPLAINANTS' EXHIBIT NO. 146

Power Contract Between TVA and Alabama Asphaltic Limestone Company, Dated May 1, 1936

(Here omitted as such contract appears in full at pages 325 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 147

Power Contract Between TVA and Goodyear Decatur Mills, Dated May 1, 1936

(Here omitted as such contract appears in full at pages 324 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2420] COMPLAINANTS' EXHIBIT No. 148

Power Contract Between TVA and L. & N. Railroad Company, Dated June 22, 1936

(Here omitted as such contract appears in full at pages 326 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 149

Power Contract Between TVA and Rockwood Alabama Stone Company, Dated August 25, 1936

(Here omitted as such contract appears in full at pages 196 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2421] COMPLAINANTS' EXHIBIT No. 150.

Power Contract Between TVA and Robbins Tire & Rubber Company, Dated November 1, 1936.

(Here omitted as such contract appears in full at pages 224 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 151

Power Contract Between TVA and Aluminum Company of America, Dated July 20, 1937.

(Here omitted as such contract appears in full at pages 309 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2422] COMPLAINANTS' EXHIBIT No. 152.

Amendatory Agreement Between TVA and Aluminum Company of America, Dated July 20, 1937.

(Here omitted as such contract appears in full at pages 313 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

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Vol. V

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

SUPREME COURT OF THE UNITED STATES

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., MAY 9, 1938.

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213—Letter of Earl Wall of TVA distributed in West Tennessee Power & Light Company territory	2566	3021
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224—Power contract dated November 5, 1937 between TVA and Tippah County Electric Power Association	2572	3026
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265—Franchise from Town of Fayetteville to TVA	2594	3037
266—Map of Tennessee showing counties granting franchises to TVA (original exhibit) [omitted]	2597	3040
267-274, incl.—Charters of Alabama Co-operative Associations	2598	3040
275-319, incl.—Franchises granted by Tennessee counties to co-operative associations	2607	3049
320—Map of Tennessee showing counties granting franchises to co-operative associations (original exhibit) [omitted]	2631	3066
321—Map of Tennessee showing counties which have granted electric franchises to TVA counties which have granted electric franchises to electric membership corporations and counties which have granted electric franchises to both TVA and electric membership corporations (original exhibit) [omitted]	2632	3066

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323—Certificate of Secretary of State of Georgia showing TVA has not qualified to do business in Georgia..... 2635 3067
324—Certificate of Secretary of State showing TVA has not qualified to do business in Mississippi 2635 3067
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327—Map entitled "Transmission and Distribution systems of the complainant companies and transmission lines of others situated within 250 miles of any TVA dam whether constructed or authorized or recommended for construction" (original exhibit) [omitted] 2637 3068
328—Report to Congress by TVA on "The Unified Development of the Tennessee River System" (original exhibit) [omitted]... 2638 3068
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331—Tabulation showing the number of customers and the total kwh. sales within each of the three zones shown on map, Exhibit 330 ..... 2641 3070
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332-a—Map entitled "Transmission and rural distribution lines completed, under construction and proposed in the area penetrated by TVA as of November 1, 1937" (original exhibit [omitted]..... 2642 3071

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333—Map showing the relation of the TVA transmission lines to the load centers in the area (omitted) 2642 3071
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336—Maps showing the lines of the Tennessee Electric Power Company by five-year intervals from 1917 to date (original exhibit) [omitted] 2645 3072
337—Letter May 14, 1937 of notice sent by the Tennessee Railroad and Public Utilities Commission in connection with the proposed Nashville steam plant (omitted). 2645 3072
338—Contract between the Yates Bleachery Company and The Tennessee Electric Power Company dated April 13, 1937 (omitted in printing) 2646 3072
339—Pencil memorandum in the hand writing of Mr. Ayres, containing a comparison of TVA, TEP Co., and the Georgia Power Company rates 2650 3073
340—Note left by Mr. Ayres with A. E. Yates, giving T. R. Hunnicutt's Chattanooga address (omitted) 2651 3073
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344—Chart showing water traffic on the Tennessee River, 1927 to 1934, relation of sand and gravel movement (original exhibit) [omitted]	2666	3083
345—Chart showing the approximate distribution of average freight movements on the Tennessee River, 1927 to 1934, inclusive (original exhibit) [omitted]...	2666	3083
346—Chart showing a comparison of the alternative methods of developing the Tennessee River (original exhibit) [omitted]	2666	3083
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349—Table showing the flood damages to cities and towns, railways and highways in the entire Tennessee River Basin.....	2669	3084
350—Chart showing variation in flow day by day during the maximum flood to be expected on the Tennessee River at and above Chattanooga (Knoxville, Loudon and Chattanooga) (original exhibit) [omitted]	2670	3085
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352—Map of the Tennessee River Basin showing the location of the system of flood control reservoirs designed by Ford Kurtz and the existing power reservoirs in May, 1933 (original exhibit) [omitted]	2670	3085
353—Table showing certain engineering data on system of flood control to achieve maximum practicable protection	2671	3086

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357—Chart showing reductions in flow day by day which would be brought about by flood control system recommended by Kurtz and by the TVA Unified Plan during the maximum flood to be expected on the Tennessee River at and above Chattanooga (Knoxville, Loudon and Chattanooga) (original exhibit) [omitted] 2675 3089
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366 (Excerpts from)—Hearings before the Committee on Military Affairs, House of Representatives, Seventy-Fourth Congress, First Session, Volume 2 (original exhibit) 2706 3121
367—Table showing combined one-hour peaks by months for the Appalachian Electric Power Company, the Kentucky and West Virginia Power Company and Kingsport Utilities, Inc. for the years 1928 to 1937 2711 3126
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382—Order of Whitfield County Superior Court granting the charter to the North Georgia Electric Membership Corporation [omitted] 2748 3156
383—Assignment of the promoters' agreement by the promoters to the North Georgia Electric Membership Corporation 2749 3156
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386—Mortgage deed of trust between North Georgia Electric Membership Corporation and the First National Bank of Dalton [omitted]	2753	3158
387—By-laws of the North Georgia Electric Membership Corporation	2754	3158
388—Article entitled "Here are the Answers"	2771	3169
389—Letter dated March 31, 1937, from R. Carter Pittman to T. R. Hunnicutt, Division Manager of TVA at Chattanooga	2775	3171
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392—TVA form 231-DE [omitted]	2794	3184
393—Rural electrification survey neighborhood plan, information sheet [omitted]	2794	3184
394—TVA form 211-DE for discount on wiring for electric ranges and water heaters	2795	3185
395—Check dated July 21, 1937, from TVA to T. L. Bonner for wiring house	2797	3186
396—Remittance advice from TVA to T. L. Bonner	2798	3187
397—Envelope in which matter was sent by TVA to T. L. Bonner	2799	3188
398—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of June 24, 1936	2800	3189
399—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of November 4, 1936	2818	3201
400—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation on November 13, 1936	2821	3204
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406—Minutes of meeting of Directors of Middle Tennessee Electric Membership Corporation of July 6, 1937	2864	3233
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408—TVA Proposed Rural Electrical Development, Rutherford-Wilson project	2872	3238
409—Map entitled "Mississippi River System, drainage areas of main tributaries" (original exhibit) [omitted]	2882	3244
410—Map showing Mississippi River flood control plan (original exhibit) [omitted]	2883	3244
411—Diagram showing relation between valley storage without dam, valley storage eliminated by reservoir, and controllable storage available	2884	3244
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413—Letter dated February 12, 1935, from F. F. Beauchamp of TVA to the City of Cullman, Alabama [omitted]	2886	3245
414—Letter dated April 13, 1936, to F. F. Beauchamp of TVA from Mayor Dunlap of Cullman [omitted]	2886	3245
415—Letter dated May 27, 1936, to F. F. Beauchamp of TVA from Mayor Dunlap of Cullman [omitted]	2886	3245
416—Letter dated July 9, 1936, to Mayor Dunlap from F. F. Beauchamp [omitted]	2886	3245
417—Letter dated August 4, 1936, to F. F. Beauchamp from Mayor Dunlap [omitted]	2886	3246
418—Report of Electric Power Board of Review re City of Decatur, Alabama	2887	3246
419—Application for loan and grant by Sheffield, Alabama. (Original and revised applications)	2893	3249
420—Loan and grant contract between Sheffield, Alabama and PWA dated December 28, 1934	2895	3251
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428—Letter from David Lilienthal to Captain R. H. Elliott, Director of PWA, dated April 6, 1934, re Decatur application..... 2924 3276
429—Letter dated April 10, 1934, to David E. Lilienthal from R. H. Elliott in reply to preceding Exhibit..... 2926 3278
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445—Hackett. PWA loan and grant contract with Bessemer, Alabama..... 2943 3294
446—Memorandum from O. M. Rau of the Electrical Power Board of Review of PWA to Henry T. Hunt, PWA Deputy Administrator, dated August 29, 1934..... 2944 3295
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448—Letter dated September 11, 1934, from V. D. L. Robinson, of TVA, to Henry T. Hunt 2950 3299
449—Letter dated September 22, 1934, from David E. Lilienthal to Henry T. Hunt.. 2951 3300
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481—Letter from K. S. Wingfield, of PWA, to Joseph Swidler, TVA attorney, dated December 22, 1933..... 2980 3320
482—Letter dated October 24, 1934 from Henry T. Hunt, of PWA, to V. D. L. Robinson, of TVA 2981 3320

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486—Table showing kwhr. generated including both firm and secondary power in the seven States of the Tennessee Valley.... 2991 3329
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488—Comparison of the yield of Alabama Power Company 4½% bonds due 1967 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted].... 2992 3329
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490—Comparison of the yield of Birmingham Electric Company 4½% bonds due 1968 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted] 2992 3330
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492—Comparison of the yield of Memphis Power & Light Company 5% bonds due 1948 with Standard Statistics Company's average yields of public utility bonds by quality group (original exhibit) [omitted] 2993 3330

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505—Table showing out-of-pocket costs of TVA power, Unified Plan—ultimate development, excluding initial stage of Wilson Dam 3008 3344
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510—Table showing estimated annual sales to ultimate consumers 1937-1943 if served by existing utility systems under the present sales policies within 100, 150, and 250 miles from any TVA generating plant 3013 3351
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518—TVA Board of Directors resolution dated August 29, 1935, and allotment release attached concerning rural lines in Prentiss County, Mississippi..... 3019 3357
519—TVA Board of Directors resolution dated October 10, 1935, and allotment release attached concerning the Tupelo-New Albany 44 kv. line..... 3020 3357
520—TVA Board of Directors resolution dated November 18, 1935, and allotment release attached concerning transformer installation at Corinth Steam Plant .. 3020 3358
521—TVA Board of Directors resolution dated January 11, 1936, and allotment release attached concerning Pulaski-Columbia-Dickson transmission line and substation [omitted] 3020 3358
522—TVA Board of Directors resolution dated January 11, 1936, and allotment release attached concerning Wheeler Dam-Columbia transmission line and Columbia substation [omitted] 3021 3358
523—TVA Board of Directors resolution dated January 11, 1936, and allotment release attached concerning construction of rural lines in Rhea County for the City of Dayton 3021 3358
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529—TVA Board of Directors resolution dated January 18, 1936, and allotment release attached concerning extension of rural line in Monroe County, Mississippi.....	3023	3360
530—TVA Board of Directors resolution dated January 18, 1936, and allotment release attached concerning rural lines in Hardin and McNairy Counties, Tennessee.....	3023	3360
531—TVA Board of Directors resolution dated January 18, 1936, and allotment release attached concerning rural electrification project in Bedford County, Tennessee..	3024	3361
532—TVA Board of Directors resolution dated March 17, 1936, and allotment release attached concerning Milan-Bolivar-Somerville transmission line	3025	3361
533—TVA Board of Directors resolution dated March 17, 1936, and allotment release attached concerning rural electrification project in Gibson County, Tennessee...	3025	3362
534—TVA Board of Directors resolution dated April 14, 1936, and allotment release attached concerning rural line extensions for Prentiss County Electric Power Association	3026	3363
535—TVA Board of Directors resolution dated April 14, 1936, and allotment release attached concerning rural line construction in Catoosa County, Georgia.....	3027	3364
536—TVA Board of Directors resolution dated June 19, 1936, and allotment release attached thereto concerning transformer station at Ooltewah	3027	3364
537—TVA Board of Directors resolution dated June 29, 1936, and allotment release attached concerning rural lines for the North Georgia Electric Membership Corporation in Tennessee and Georgia.....	3028	3365
538—TVA Board of Directors resolution dated July 1, 1936, and allotment release attached concerning rural electrification project in Cullman County, Alabama....	3028	3366
539—TVA Board of Directors resolution dated July 6, 1936, and allotment release attattached concerning the construction of the Pickwick-Memphis transmission line	3029	3366

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540—TVA Board of Directors resolution dated July 14, 1936, and allotment release attached concerning the rural line construction for Meigs County Electric Membership Corporation 3080 3367
541—TVA Board of Directors resolution dated August 21, 1936, and allotment release attached concerning construction of south side of Memphis substation..... 3080 3367
542—TVA Board of Directors resolution dated September 5, 1936, and allotment release attached concerning additional rural lines in Lincoln County, Tennessee..... 3081 3368
543—TVA Board of Directors resolution dated September 21, 1936, and allotment release attached concerning rural and transmission lines for the Middle Tennessee Electric Membership Corporation..... 3081 3368
544—TVA Board of Directors resolution dated September 28, 1936, and allotment release attached concerning rural line construction for City of Athens in Limestone County, Alabama 3082 3369
545—TVA Board of Directors resolution dated September 25, 1936, and allotment release attached concerning Jackson-Trenton 44 kv. line and substation..... 3082 3369
546—TVA Board of Directors resolution dated October 8, 1936, and allotment release attached concerning rural line construction in Cullman County, Alabama..... 3083 3370
547—TVA Board of Directors resolution dated October 22, 1936, and allotment release attached concerning Mimosa rural line extension in Lincoln County, Tennessee [omitted] 3084 3371
548—TVA Board of Directors resolution dated October 26, 1936, and allotment release attached concerning New Albany, Mississippi, rural line..... 3084 3371
549—TVA Board of Directors resolution dated December 7, 1936, and allotment release attached concerning rural lines for Gibson County Electric Membership Corporation 3085 3372
550—TVA Board of Directors resolution dated December 7, 1936, and allotment release attached concerning rural lines for Southwest Tennessee Electric Membership Corporation 3085 3372

Record from D. C. U. S., Eastern District of Tennessee—Continued.
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Complainants' Exhibits Nos.—Continued. Original Print
551—TVA Board of Directors resolution dated February 5, 1937, and allotment release attached concerning rural lines for Duck River Electric Membership Corporation, Tennessee 3036 3373
552—TVA Board of Directors resolution dated February 16, 1937, and allotment release attached concerning rural lines from Tom bigbee Electric Power Association, Mississippi 3036 3374
553—TVA Board of Directors resolution dated April 9, 1937, and allotment release attached concerning rural lines in Franklin County, Alabama 3037 3374
554—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning additions to Tupelo and Pontotoc substations and having reference to the Sardis Dam line..... 3038 3375
555—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning rural lines in Lawrence and Morgan Counties, Alabama.. 3038 3376
556—TVA Board of Directors resolution dated May 15, 1937, and allotment release attached concerning rural line to New Harmony for the city of New Albany, Mississippi [omitted] 3039 3376
557—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the Pontotoc-Sardis transmission line and Sardis substation [omitted] 3039 3377
558—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the changes in the Hartselle substation [omitted]..... 3039 3377
559—TVA Board of Directors resolution dated June 3, 1937, and allotment release attached concerning the rural line extension and substation changes for Tishomingo County Electric Power Association [omitted] 3040 3377
560—TVA Board of Directors resolution dated July 2, 1937, and allotment release attached concerning Northside Memphis substation [omitted] 3040 3377

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561—TVA Board of Directors resolution dated July 2, 1937, and allotment release attached concerning additions to south Memphis substation [omitted]..... 3040 3377
562—TVA Board of Directors resolution dated July 2, 1937, and allotment release attached concerning 110 kv. Arkansas tie line from Memphis [omitted]..... 3040 3378
563—TVA Board of Directors resolution dated July 2, 1937, and allotment release attached concerning south Memphis-north Memphis 110 kv. tie line [omitted].... 3041 3378
564—TVA Board of Directors resolution dated July 23, 1937, and allotment release attached concerning service to the Volunteer Portland Cement Company..... 3041 3378
565—TVA Board of Directors resolution dated August 13, 1937, and allotment release attached concerning rural lines for the Duck River Electric Membership Corporation, Tennessee 3041 3378
566—TVA Board of Directors resolution dated August 13, 1937, and allotment release attached concerning rural lines for South west Tennessee Electric Membership Corporation 3042 3379
567—TVA Board of Directors resolution dated September 14, 1937, and allotment release attached concerning transmission system reinforcement in middle Tennessee..... 3042 3379
568—TVA Board of Directors resolution dated October 16, 1933, authorizing contracts with Florence, Tuscumbia, Sheffield, Muscle Shoals and other municipalities on the Tupelo transmission line..... 3043 3379
569—TVA Board of Directors resolution dated December 15, 1933 authorizing Mr. Lilienthal to create a corporation to discount commercial paper to be obtained from manufacturers of electrical appliances licensed by TVA (EHFA) 3043 3380
570—TVA Board of Directors resolution dated December 16, 1933, approving the construction of rural lines in the five Mississippi counties of Lee, Pontotoc, Monroe, Alcorn, Tishomingo, and Lauderdale county in Alabama..... 3043 3380

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571—TVA Board of Directors resolution dated April 13, 1934, concerning the employment of Young and Rubicam..... 3046 3384
572—TVA Board of Directors resolution dated June 3, 1937, authorizing Dr. Morgan to write a letter to the War Department with reference to Sardis Dam and the line thereto 3048 3386
573—TVA Board of Directors resolution dated October 5, 1937, and the exhibit attached thereto concerning the construction of power houses at Chickamauga and Guntersville dams 3050 3388
574—TVA Board of Directors resolution dated July 30, 1933, authorizing the construction of a transmission line from Wilson Dam to Cove Creek..... 3051 3389
575—TVA Board of Directors resolution dated October 16, 1933, authorizing certain basic provisions to be placed in the contracts between TVA and municipalities, a copy of which provisions is attached to the resolution 3051 3389
576—TVA Board of Directors resolution dated October 16, 1933, approving the wholesale rate schedule for Tupelo, a copy of which is attached 3055 3393
577—TVA Board of Directors resolution dated May 31, 1934, authorizing a contract which is attached between TVA and the Alcorn County E. P. A..... 3056 3395
578—A series of resolutions of the Board of Directors dated July 27, 1934, and the contract between TVA and the Carolina Power and Light Company attached thereto 3061 3401
579—TVA Board of Directors resolution concerning Young and Rubicam contract.. 3064 3406
580—TVA Board of Directors resolution dated October 9, 1934, with the attached resolution of the city council of Knoxville.. 3065 3408
581—TVA Board of Directors resolution dated March 18, 1935, authorizing a contract attached thereto with EHFA..... 3069 3412
582—TVA Board of Directors resolution dated May 7, 1935, approving an agreement between TVA and the city of Athens dated April 23, 1935, attached thereto..... 3076 3421

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583—TVA Board of Directors resolution dated July 25, 1935, approving a contract between TVA and Tishomingo County Electric Power Association dated July 19, 1935, a copy of which is attached thereto [omitted] 3079 3426
584—TVA Board of Directors resolution dated November 16, 1935, approving a contract between TVA and Tombigbee Electric Power Association dated October 19, 1935, a copy of which is atached thereto [omitted] 3080 3427
585—TVA Board of Directors resolution dated November 16, 1935, approving a contract with the City of Dayton entitled "Agreement for Cooperation in Construction of Rural Lines," November 2, 1935..... 3081 3427
586—TVA Board of Directors resolution dated November 16, 1935, approving a supplementary contract between TVA and Alcorn County Electric Power Association, August 26, 1936, a copy of which is attached thereto [omitted]..... 3083 3430
587—TVA Board of Directors resolution dated December 20, 1935, approving a contract between TVA and New Albany, Mississippi, a copy of which is attached thereto [omitted] 3083 3430
588—TVA Board of Directors resolution dated December 23, 1935, approving the contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services dated October 1, 1935, a copy of which is attached thereto [omitted]..... 3083 3430
589—TVA Board of Directors resolution dated December 31, 1935, approving a supplementary contract between TVA and Alcorn County Electric Power Association dated December 31, 1935, a copy of which is attached thereto..... 3084 3430
590—TVA Board of Directors resolution dated January 10, 1936, authorizing construction of a dam in the Hiwassee River on the Fowler Bend site..... 3085 3432
591—TVA Board of Directors resolution dated December 31, 1935, authorizing construction of Chickamauga Dam..... 3086 3433

Record from D. C. U. S., Eastern District of Tennessee—Continued.
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592—TVA Board of Directors resolution dated January 18, 1936, approving a sale and loan contract between TVA and Monroe County Electric Power Association, dated January 15, 1936, a copy of which is attached thereto..... 3086 3433
593—TVA Board of Directors resolution dated February 1, 1936, approving a contract between TVA and Dayton, Tennessee, for the sale of rural lines, dated January 24, 1936, a copy of which is attached thereto 3090 3439
594—TVA Board of Directors resolution dated February 10, 1936, approving a contract between TVA and the city of Amory dated February 14, 1936, a copy of which is attached thereto [omitted]..... 3093 3441
595—TVA Board of Directors resolution dated February 11, 1936, approving a sale and loan contract between TVA and Pontotoc County Electric Power Association dated February 12, 1936, a copy of which is attached thereto..... 3093 3441
596—TVA Board of Directors resolution dated February 11, 1936, approving a contract between TVA and Monroe County Electric Power Association concerning the operation of rural lines and the collection of bills dated February 1, 1936, a copy of which is attached thereto [omitted] 3100 3451
597—TVA Board of Directors resolution dated April 27, 1936, approving a contract between Alcorn County Electric Power Association, Pickwick Electric Membership Corporation and TVA dated April 21, 1936, a copy of which is attached thereto 3101 3451
598—TVA Board of Directors resolution dated April 27, 1936, approving the execution of a quitclaim deed from the TVA to the Alcorn County Electric Power Association [omitted]..... 3105 3457
599—TVA Board of Directors resolution dated April 27, 1936, approving a contract between Pickwick Electric Membership Corporation and TVA dated April 21, 1936, a copy of which is attached thereto 3105 3457

Record from D. C. U. S., Eastern District of Tennessee—Continued.
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Complainants' Exhibits Nos.—Continued. Original Print
600—TVA Board of Directors resolution dated April 27, 1936, approving a contract between TVA and Alcorn County Electric Power Association dated April 21, 1936, a copy of which is attached thereto [omitted] 3105 3457
601—TVA Board of Directors resolution dated May 28, 1936, approving an operation contract between Bedford County Electric Membership Corporation and TVA dated May 18, 1936, a copy of which is attached thereto..... 3105 3457
602—TVA Board of Directors resolution dated July 31, 1936, approving an amendment to an agreement between the Meigs County Electric Membership Corporation and TVA, a copy of which is attached to the exhibit [omitted]..... 3106 3458
603—TVA Board of Directors resolution dated August 11, 1936, approving a contract between TVA and Cullman County Electric Membership Corporation dated August 4, 1936, a copy of which is attached thereto 3106 3458
604—TVA Board of Directors resolution dated August 21, 1936, approving a sale and loan agreement between TVA and Gibson County Electric Membership Corporation dated August 13, 1936, a copy of which is attached thereto..... 3106 3458
605—TVA Board of Directors resolution dated September 5, 1936, approving an agreement for sale between TVA and Pickwick Electric Membership Corporation dated August 26, 1936, a copy of which is attached thereto [omitted]..... 3106 3458
606—TVA Board of Directors resolution dated September 5, 1936, approving a supplementary contract between TVA and Milan, Tenn., dated May 25, 1936, a copy of which is attached thereto [omitted]. 3107 3459
607—TVA Board of Directors resolution dated September 5, 1936, approving a contract for the sale of properties between TVA and the city of Athens, Alabama, dated October 9, 1936, a copy of which is attached thereto [omitted]..... 3107 3459

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Statement of evidence—Continued.		
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608—TVA Board of Directors resolution dated December 23, 1936, approving a contract between TVA and Southwest Tennessee Electric Membership Corporation dated December 9, 1936, a copy of which is attached thereto [omitted]	3107	3459
609—TVA Board of Directors resolution dated December 23, 1936, approving a contract between TVA and Duck River Electric Membership Corporation dated October 31, 1936, a copy of which is attached thereto [omitted]	3107	3459
610—TVA Board of Directors resolution dated January 8, 1937, approving a contract between TVA and Lincoln County Electric Membership Corporation, a copy of which is attached thereto [omitted]	3108	3459
611—TVA Board of Directors resolution dated February 11, 1937, approving a so-called emergency operation contract between TVA and Tishomingo County Electric Power Association dated January 26, 1937, a copy of which is attached thereto [omitted]	3108	3460
612—TVA Board of Directors resolution dated February 11, 1937, approving a supplementary contract between TVA and Holly Springs, Mississippi, dated February 2, 1937, a copy of which is attached thereto	3108	3460
613—TVA Board of Directors resolution dated March 10, 1937, approving a contract between TVA and Dayton, Tennessee, dated March 17, 1937, a copy of which is attached thereto [omitted]	3108	3460
614—TVA Board of Directors resolution dated March 31, 1937, approving a contract entitled "Emergency Operation Contract between TVA and Alcorn County Electric Power Association," dated April 1, 1937, a copy of which is attached thereto [omitted]	3108	3460
615—TVA Board of Directors resolution dated April 9, 1937, approving the transfer of certain franchises from TVA to the Southwest Tennessee Electric Membership Corporation [omitted]	3108	3460

Record from D. C. U. S., Eastern District of Tennessee—Continued.
Statement of evidence—Continued.
Complainants' Exhibits Nos.—Continued. Original Print
616—TVA Board of Directors resolution dated April 9, 1937, approving a supplementary contract between TVA and Okolona, Miss., dated March 24, 1937, a copy of which is attached thereto 3109 3461
617—TVA Board of Directors resolution dated June 3, 1937, authorizing the construction of 110 kv. transmission line between Norris Dam and Volunteer Portland Cement Company [omitted] 3109 3461
618—TVA Board of Directors resolution dated June 3, 1937, approving a contract between TVA and Bolivar, Tenn., dated March 20, 1937, a copy of which is attached thereto 3109 3461
619—TVA Board of Directors resolution dated June 9, 1937, approving a contract with the Electric Power Board of Chattanooga, Tenn. [omitted] 3114 3466
620—TVA Board of Directors resolution dated June 23, 1937, approving an "Emergency Operation Contract between TVA and Dickson, Tennessee", dated June 11, 1937, a copy of which is attached thereto [omitted] 3114 3467
621—TVA Board of Directors resolution dated July 12, 1937, granting an extension of time to the Monroe County Electric Power Association for the first payment of principal on its indebtedness to the TVA 3114 3467
622—TVA Board of Directors resolution dated July 20, 1937, approving a supplementary contract between TVA and Athens, Alabama, dated July 23, 1937, a copy of which is attached thereto..... 3115 3468
623—TVA Board of Directors resolution dated July 29, 1937, approving a contract entitled "Emergency Operation Contract between TVA and Pickwick Electric Membership Corporation" dated July 14, 1937, a copy of which is attached thereto [omitted] 3117 3471
624—TVA Board of Directors resolution dated July 29, 1937, approving a contract between TVA and Joe Wheeler Electric Membership Corporation for the sale and construction of rural lines dated May 14, 1937, a copy of which is attached thereto 3118 3471

Record from D. C. U. S., Eastern District of Tennessee—Continued.
Statement of evidence—Continued.
Complainants' Exhibits Nos.—Continued. Original Print
625—TVA Board of Directors resolution dated August 13, 1937, approving the sending of a letter by Mr. Lilienthal to Mr. Dempster, city manager, of Knoxville, Tenn., a copy of which letter is attached thereto 3118 3472
626—TVA Board of Directors resolution dated August 13, 1937, approving a supplementary contract between TVA and Lincoln County Electric Membership Corporation for the collection of bills and other services dated June 29, 1937, a copy of which is attached thereto [omitted].... 3122 3476
627—TVA Board of Directors resolution dated September 24, 1937, unanimously approving a schedule of generating installations at the various dam projects..... 3122 3476
628—Telegram dated May 18, 1936, from Edgar M. Queeny of the Monsanto Chemical Company to Wendell Willkie..... 3123 3477
629—A chart of the soundings made in the upper regions of the pool above Mitchell Dam and a study of the approach channel and locks at the head of that reservoir 3124 3478
630—A table showing the cost to the Alabama Power Company of the facilities devoted solely to navigation on the Alabama, Coosa and Tallapoosa river systems.... 3125 3479
631—Excerpts from the application of the Alabama Power Company for a license for Jordon Dam 3126 3479

[fol. 2423] COMPLAINANTS' EXHIBIT No. 153.

Power Contract Between TVA and American Aggregates Corporation, Dated March 29, 1937.

(Omitted)

COMPLAINANTS' EXHIBIT No. 154

Power Contract Between TVA and the Falkville Milling Company of Decatur, Alabama, Dated April 1, 1937.

(Omitted)

[fol. 2424] COMPLAINANTS' EXHIBIT No. 155.

Power Contract Between TVA and Wade & Richey, Dated May 1, 1937.

(Here omitted as such contract appears in full at pages 289 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 156.

Power Contract Between TVA and Lacey Asphaltic Limestone Company, Inc., Dated May 13, 1937.

(Here omitted as such contract appears in full at pages 290 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2425] COMPLAINANTS' EXHIBIT No. 157.

Power Contract Between TVA and Volunteer Portland Cement Company, Dated August 14, 1936.

(Here omitted as such contract appears in full at pages 192 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2426] COMPLAINANTS' EXHIBIT No. 158

Assignment to City of Knoxville of Power Contract Between Volunteer Portland Cement Company and Tennessee Valley Authority.

This Agreement, made and entered into this 14th day of September, 1937, between Tennessee Valley Authority, a corporation created by and acting under the Tennessee Valley Authority Act of 1933, hereinafter called "Authority," and City of Knoxville, a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Tennessee, hereinafter called "Municipality,"

Witnesseth:

Whereas, by agreement dated August 14, 1936, between Authority and Volunteer Portland Cement Company, a Delaware corporation, hereinafter called "Customer," Authority agreed to supply, and Customer agreed to take and pay for, the electric power required for the operation of Customer's cement plant near Knoxville, Tennessee, for a period of ten years, on terms and at rates set out in said agreement, and

Whereas, Municipality, by referendum of its citizens dated November 25, 1933, authorized the acquisition of a municipal electric distribution system by purchase or construction, and

Whereas, by agreement dated February 19, 1936, as amended by agreement dated May 18, 1936, Authority agreed to supply, and Municipality to take and pay for, the [fol. 2427] electric power required for the operation of Municipality's electric distribution system, for a period of twenty years, on terms and at rates set out in said agreement, and

Whereas, Customer's cement plant is within a few miles of the corporate limits of Municipality, and the power contract between Authority and Customer was entered into with a view to eventual assumption of the obligations of Authority by the City of Knoxville when Municipality's plans for the acquisition of an electric system were sufficiently advanced, and

Whereas, the said power contract between Authority and Municipality makes provision for such service by Munici-

pality to Customer and the billing arrangements consequent thereto, and

Whereas, Municipality, by action of its Council on June 23, 1936, duly authorized the letting of bids for the construction of the first unit of its municipal distribution system known as the "North Knoxville" unit, and said proposed unit is within convenient service distance of the plant of Customer, and

Whereas, Municipality now desires to supply the electricity requirements of its trade area, including the requirements of Customer, and

Whereas, Authority is now constructing a transmission line to the premises of Customer and installing a substation at said premises, and said transmission line and substation constitute a convenient point of delivery to Municipality of the power required by Customer and by such other customers as Municipality may desire to serve in this vicinity.

[fol. 2428] Now, therefore, in consideration of the premises and of the agreements hereinafter set forth, the parties hereto mutually agree as follows:

1. For value received, Authority hereby transfers and assigns to Municipality all its right, title, and interest in and to that certain power contract between Authority and Customer dated August 14, 1936.

2. In consideration of said assignment, Municipality hereby assumes all of the obligations of Authority under and pursuant to said agreement, and agrees to save Authority harmless from any claim or demand under or pursuant to said agreement.

3. Authority agrees to supply power to Municipality over the transmission line now under construction from Norris Dam to the premises of Customer, such power to be in the form of three-phase alternating current, at approximately sixty cycles, and at approximately 2,300 volts, and to be delivered to Municipality at the low-tension side of the substation now under construction by Authority at the premises of Customer. Such power shall be delivered, taken, and paid for under the provisions of the power contract between Authority and Municipality dated February 19, 1936, as amended by agreement dated May 18, 1936, and shall con-

COMPLAINANTS' EXHIBIT No. 158.

stitute a second source of supply as provided for by section 20 of the Terms and Conditions attached to and made a part of said power contract of February 19, 1936, as amended.

4. Authority agrees to continue construction of the transmission line between Norris Dam and the premises of Customer, and the substation at said premises, with all reason-[fol. 2429] able diligence, and to complete the same (unless prevented by causes beyond its control) not later than December 15, 1937. Municipality shall establish, operate, and maintain the connection between the low-tension side of the said substation of the Authority and the substation of Customer. Authority will provide suitable space in its substation structure for the measuring equipment of Municipality, and Municipality shall have free access to said substation for the purpose of meter reading, checking, repair, removal, and replacement.

In Witness Whereof, the parties hereto have caused this agreement to be executed in six counterparts, each of which shall be considered an original, by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, (S) by Arthur E. Morgan, Chairman, J. L. F. (Seal.)

City of Knoxville, (S) by Geo. R. Dempster, City Manager. (Seal.)

Attest: (S) Charles E. Hoffman, Assistant Secretary.

Attest: (S) W. H. Stapleton, City Recorder.

[fol. 2430] COMPLAINANTS' EXHIBIT No. 159.

Power Contract Between TVA and United States of America, Dated March 14, 1937.

(Here omitted as such contract appears in full at pages 291 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

COMPLAINANTS' EXHIBIT No. 160.

Power Contract Between TVA and Victor Chemical Works, Dated July 2, 1937.

(Here omitted as such contract appears in full at pages 302 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2431] COMPLAINANTS' EXHIBIT No. 161.

Power Contract Between TVA and Electro Metallurgical Company, Dated August 17, 1937.

(Here omitted as such contract appears in full at pages 315 et seq., of the Annual Report of TVA, for the fiscal year ended June 30, 1937, received in evidence as Defendants' Exhibit No. 154 and which is an original exhibit.)

[fol. 2432] COMPLAINANTS' EXHIBIT No. 162

Construction Contract Between Tennessee Valley Authority and Meigs County Electric Membership Corporation

This Agreement, made and entered into the 29 day of June, 1936, between Tennessee Valley Authority, hereinafter called "Contractor," a corporation created by Act of Congress May 18, 1933, and the Meigs County Electric Membership Corporation, a corporation organized and existing by virtue of the laws of the State of Tennessee, hereinafter called, "Owner," is made pursuant to a Loan Contract dated April 1, 1936, between the United States of America, hereinafter called "Government," by the Administrator of the Rural Electrification Administration, hereinafter called "Administrator," and the Meigs County Electric Membership Corporation,

Witnesseth:

Whereas, Owner has executed a Loan Contract with Government acting through Administrator, in the amount of $212,200, by which Owner is to deliver funds to be used in

the construction of rural electric lines in Meigs, McMinn, Hamilton, Rhea, and Cumberland Counties and vicinity; and

Whereas, Contractor, by Section 10 of the Tennessee Valley Authority Act of 1933 is authorized to construct transmission lines to farms and small villages that are not otherwise supplied with electricity, at reasonable rates; and

Whereas, Owner has contracted with the Harrison-Wright Company for the construction of rural transmission and distribution lines in Meigs and Hamilton Counties, and [fol. 2433] vicinity, the cost of which construction will not exceed $92,200; and

Whereas, Owner desires that Contractor construct the remainder of the project, or, more specifically, the lines shown on the maps attached hereto or that portion of the project or lines which shall not exceed the cost of $120,000; and

Whereas, all parties to this contract have duly authorized its execution,

Now, therefore, for and in consideration of the mutual covenants herein contained, and subject to all the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. The Contractor shall make or cause to be made such engineering surveys, maps, plans, drawings and specifications which shall be necessary for the construction of the rural electric transmission and distribution lines and systems and necessary appurtenances which were agreed to be constructed by the Owner under the terms of a certain Loan Contract dated April 1, 1936, between Owner and Government, acting by Administrator, and which are not covered by a certain Construction Contract heretofore entered into by and between the Owner and Harrison-Wright Company, which said Construction Contract is dated the 6th day of May, 1936. Engineering services for the construction of said last mentioned lines and systems are being performed by Contractor under its separate Engineering Contract with Owner dated the first day of May, 1936.

2. Contractor will furnish material, labor, tools, and equipment necessary for the construction and shall construct those rural electric transmission and distribution lines and [fol. 2434] systems and necessary appurtenances which are shown on maps numbers C-C-813 and C-C-1057, attached

hereto, and hereby incorporated herein, in accordance with Contractor's standard specifications attached hereto and hereby incorporated herein.

3. Owner shall pay to Contractor, Contractor's total cost as billed by Contractor, including incidental charges, and including a twelve and one-half per cent overhead charge, of furnishing the services described in Sections 1 and 2 above or in any of the subsequent provisions of this contract, it being the intention of the parties hereto that the Contractor shall furnish such services to Owner for actual cost, including overhead, without any profit whatsoever, but that the Contractor shall be fully reimbursed for all of its costs plus overhead incurred pursuant to this agreement. Contractor shall not be required to perform any part or portion of the services defined herein in the event the rendition of such services shall exceed the cost of $120,000.

4. Contractor shall render monthly bills to Owner for the services rendered pursuant to this contract, which bills shall be submitted by Owner to the Administrator for approval. Owner shall not be obligated to pay Contractor any sum or sums whatsoever on account of services rendered to it under Sections 1 and 2 above by Contractor, until the bills therefor have first been approved by the Administrator. Upon the approval by the Administrator of any such bill so rendered, the Owner shall pay the approved amount thereof to Contractor. Upon the payment in full by the Owner to Contractor for the services rendered pursuant to this contract, Contractor will deliver the rural electric transmission and distribution lines and systems and necessary appurtenances so constructed to the Owner and shall release its liens thereon: Provided, however, that Contractor agrees [fol. 2435] to deliver to Owner and release its liens upon that portion of said lines the cost of which has been paid by Owner to Contractor pursuant to the bills rendered.

5. The work to be done under this contract is to be begun within 30 days after the receipt by the Contractor from the Owner of notice to begin work, and is to proceed with all due dispatch to the satisfaction of the Owner and the Administrator, and shall be fully completed on or before the 1st day of January, 1937.

6. The Contractor shall comply with all laws, municipal rules, ordinances, and regulations in the construction of this work or in the handling of materials incident thereto.

7. Any permits necessary for the handling or use of dynamite or other explosives shall be obtained by Contractor.

8. The owner and duly authorized Supervisor appointed by the Administrator shall have the right to direct the Contractor to execute any part or parts of the work before any other part or parts thereof, and the Contractor agrees to comply with such reasonable direction.

9. The Contractor shall give the work his constant supervision or employ a competent person to superintend it. Either the Contractor or such superintendent shall be on the site of the work at all times during working hours. The Contractor must also have capable, experienced, and reliable foremen and such skilled workmen as may be required for the various classes of work in the system. Directions and instructions given to the superintendent shall be binding upon the Contractor. The Owner reserves the right to require the removal of any employee of the Contractor, if in the judgment of its Engineer, it shall be for the best interests of the work.

[fol. 2436] 10. All materials shall be subject to the inspection, tests and approval of the Engineer and the Administrator and the Contractor shall furnish all information required concerning the nature or source of any material or appliances and provide every facility for testing and inspecting the same.

11. In the event that the Administrator appoints a supervisor, as provided by the said Loan Contract, the Contractor shall comply with all the reasonable instructions given by such supervisor.

12. The Contractor shall provide necessary watchmen as determined by the Engineer to properly protect all work and materials under this contract.

13. The Contractor shall take such precautions as are necessary to avoid accidents from any cause to persons and property and to avoid contingencies which may delay com-

pletion of the work. He shall so lay out and conduct the work as to cause the least possible obstruction on the public highways, alleys, and streets.

14. The Contractor shall provide and maintain all guard lights and protection for the public as are required by public authority or by local conditions.

15. The Contractor shall take such steps and do all things necessary or expedient to properly protect any and all parallel lines, joint line poles, highways and any and all property of others from damage and in the event that any such parallel lines, joint line poles, highways or other property is damaged in the course of the construction of this project, the Contractor will place any or all of such damaged [fol. 2437] property in as good a state of repair as the same was before such damage occurred.

16. Where the right of way is across cultivated lands, the Contractor shall refrain from unnecessarily damaging the crops, orchards, or property. All fences, which are necessarily opened or moved during the construction of the line shall be replaced in as good condition as they were found and precautions taken to prevent the escape of livestock.

17. The project, from the commencement to the completion of the work shall be subject to the risk and under the charge and control of the Contractor. During such period the Contractor shall make good and fully repair all injuries and damages to the project by reason of any act of God or other casualty or cause, whether or not the same occurs by reason of the Contractor's negligence. The Contractor agrees to defend all claims for injuries to persons or for damage to property happening by reason of any neglect, default, or misconduct on the part of the Contractor or any of his agents, or of any one in his employ during the execution of the work.

18. Any and all excess earth, rock, debris, underbrush, and other useless material shall be removed by the Contractor from the highways or other properties as rapidly as possible as the work progresses.

19. Simultaneously with the rendition of the bill to Owner for completed construction, Contractor shall deliver unto

the Owner a waiver or release of Contractor's lien. Upon the execution of any subcontract the Contractor shall secure from the subcontractor a waiver or release of subcontractor's lien. The Contractor and any and all subcontractors shall, prior to or upon delivery of materials, appliances, and supplies, secure from any materialmen furnishing [fol. 2438] such materials, appliances and supplies a waiver or release of materialmen's liens.

20. The Engineer, in behalf of the Owner, may, from time to time, during the progress of the work, make such additions to or subtractions from the plans, list of materials, and specifications as conditions may warrant, provided, however, that any material change in the extent of work to be done may require a reasonable extension of time in view of additions, under which conditions such reasonable extension will be granted. The Contractor shall not be entitled to any claim for damages on account of such reasonable additions, subtractions or changes as may be made in the extent of work to be done under this contract or on account of any delay occasioned thereby.

In case of any additions or subtractions to the work covered by the contract, the Contractor shall receive payment for all work completed by him.

21. Upon the completion of work to be performed under and by virtue of the terms and provisions of this contract, the Contractor shall certify to the total amount of work and materials required for the completed project, and the Owner shall thereupon certify the same to the Government, together with a certificate of the total cost of the work performed under this contract. Upon the approval of said certificate by the Government the Owner will make final payment to the Contractor hereunder.

22. The acceptance of any material or equipment by the Engineer shall not prevent its subsequent rejection if found defective after delivery or installation and any such material or equipment found defective before final acceptance of [fol. 2439] the work shall be replaced by the Contractor.

23. Any improper or imperfect work or material shall be removed and replaced or otherwise remedied by the Contractor. Any condemned material shall be immediately

removed from the site of the work by the Contractor. Vouchers for payments will not be approved by the Engineer until defects have been corrected.

24. The Contractor shall pay each subcontractor, if any, within five (5) days after each payment made to the Contractor, the amount allowed the Contractor for and on account of work performed by the subcontractor to the extent of the subcontractor's interest therein.

25. It is the duty of the Owner under its contract with the Government to obtain all franchises, authorizations, permits, and approvals from Federal, State, County, Municipal, and other authorities and all rights of way and easements necessary or advisable to be obtained in connection with the construction and operation of this project, and the Contractor shall be under no duty to procure the same. The Owner shall be responsible for negotiating any necessary joint pole agreements or other agreements with public utility companies.

26. All guarantees of material and workmanship running in favor of the Contractor shall be transferred and assigned to the Owner on completion of all work and at such time as he receives final payment.

27. All royalties or patents that may be involved in the work contracted for, or in the use thereof, shall be satisfied or procured by Contractor and the Contractor shall defend any and all claims, suits, and proceedings for infringement of any patent or patents.

28. Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Adminis-[fol. 2440] trator shall be cumulative and shall be in addition to every right and remedy given hereunder or now or hereafter existing at law or in equity or by statute. The pursuit of any right or remedy shall not be construed as an election.

29. Each and all of the covenants and agreements herein contained shall extend to and be binding upon the successors and assgins of the parties hereto.

30. No lines or parts of lines shall be energized prior to the completion of the entire contract except on specific

arrangements therefor between the Owner and the Contractor, which said arrangements shall have been approved by the Administrator.

31. The Contractor shall erect and maintain during the construction of the project in an appropriate place or places at the site of the project, a sign or signs approved by the Administrator, bearing the legend "Federal Rural Electrification Project," or such similar legend as the Administrator may designate.

32. The Contractor shall not assign this contract or any part hereof without the approval of the Owner and the Administrator.

33. The Contractor shall perform, directly and without subcontracting, not less than twenty-five per cent (25%) of the construction, to be calculated on the basis of the total cost hereof.

34. No part of this contract shall be sublet without the approval of the Owner and the Administrator. If the Contractor shall sublet any part of this contract, the Contractor shall be as fully responsible to the Owner and the Government for the acts and omissions of his subcontractor and of the persons either directly or indirectly employed by his subcontractor, as he is for his own acts and omissions and [fol. 2441] those of persons directly employed by him.

35. The Contractor shall provide all labor, services, materials, and equipment necessary to perform and complete the work under this contract, except as otherwise provided herein.

36. The Contractor shall purchase all materials and supplies outright and not subject to any conditional sales agreement, bailment lease, or other agreement reserving to the seller any right, title, or interest.

37. All materials and supplies shall become the property of the Contractor when delivered at the site of the work; provided, however, that the Owner or the Administrator may condemn any such materials and supplies as do not comply with the Plans and Specifications, either before or

after incorporation of such materials and supplies into the project, and thereafter any such condemned materials and supplies shall be removed and immediately replaced with materials and supplies complying with the Plans and Specifications.

38. All employees other than those in executive, administrative, supervisory or highly skilled positions shall be paid in full, at least semi-monthly within ten (10) days after the close of the semi-monthly period in lawful money of the United States.

39. The Administrator shall have the right to supervise the performance of this contract and shall have the right to inspect all work and materials and shall have access to all payrolls, records of personnel, invoices of material, and all other data and records relevant to the performance of this contract. Reasonable facilities shall be provided for the [fol. 2442] use of agents of the Administrator.

40. In the performance of this contract there shall be used only such manufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, provided, however, that if the Administrator shall find that in respect to some particular articles, materials, or supplies it is impracticable to make such requirement or that it would unreasonably increase the cost, an exception shall be noted in the Specifications as to that particular article, material, or supply.

41. Preference in the employment of workers shall be given to persons from the public relief rolls who are competent for the several classifications of labor necessary for the performance of this contract and who are available at the site of the work. The Contractor agrees to apply to the nearest office of the United States Employment Service in the County where the work is to be performed for such workers from public relief rolls, and agrees to employ persons so furnished, if competent and available.

COMPLAINANTS' EXHIBIT No. 162

42. Wage rates for persons employed, except in executive, administrative, supervisory, and highly skilled positions, shall be as follows:

Trade or Occupation	Hourly Wage Rate
Lineman	1.00
Lineman's apprentice	.75
Lineman's helper	.60
Truck driver (line truck)	.75
Truck driver (light truck)	.60
Powderman and compressor	.75
Labor	.45

[fol. 2443] 43. If after the execution of this contract it becomes necessary to employ any person in a trade or occupation not hereinabove listed, such person shall be paid at an hourly wage rate determined by the Administrator in accordance with local conditions and such wage rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Unless otherwise provided by law, claims or disputes pertaining to the classification of labor under this contract shall be decided by the Administrator whose decision shall be final and binding on all persons concerned.

44. The maximum hours of work for persons employed, except in executive, administrative, supervisory, and highly skilled positions shall not be in excess of 8 hours per day and 40 hours per week, except in special or unusual circumstances when the above limitations are not feasible or practicable.

45. Only one member of a family group may be employed on the project, except as specifically authorized by the Works Progress Administration.

46. All work shall be conducted in accordance with safe working conditions, and every effort shall be made for the prevention of accidents.

47. The Contractor and each subcontractor shall prepare the payrolls upon forms to be prescribed and in accordance with instructions to be furnished by the Works Progress Administration. Not later than the third day following the payment of the wages, a certified legible copy of each

payroll, whether paid by the Contractor or any subcontractor, shall be transmitted by the Contractor to such office as may be designated by the Works Progress Administration. The Contractor and each subcontractor shall sub- [fol. 2444] mit reports at such times and on such forms as may be required by the Works Progress Administration covering purchases of, and requisitions for, materials, together with such other information as may be required to determine the progress and status of the completion of the work on the project.

48. The Contractor and each subcontractor shall report to the United States Department of Labor monthly, within five days after the close of each calendar month, upon forms to be prescribed, and in accordance with instructions to be furnished, by the United States Department of Labor, covering the number of persons on their respective payrolls directly connected with the project, the aggregate amounts of such payrolls and the man-hours worked, and an itemized statement of the total expenditures for materials. The Contractor shall also furnish to the United States Department of Labor the names and addresses of all subcontractors on the work, at the earliest date practicable.

49. The Works Progress Administration, through its authorized agents, shall have the right to inspect all work as it progresses, and shall have access to all payrolls, records of personnel, invoices of materials, and any and all other data relevant to the performance of this contract.

50. No person under the age of sixteen (16) years, and no one whose age or physical condition is such as to make his employment dangerous to his health or safety, or the health and safety of others, may be employed on the project. This paragraph shall not be construed to operate against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned [fol. 2445] to work which they can ably perform.

51. No person currently serving sentence to a penal or correctional institution shall be employed on the project.

52. Wages to be paid, or for which reimbursement is to be made, by the Federal Government may not be pledged

or assigned, and any purported pledge or assignment shall be null and void.

53. The Contractor acknowledges that he has received copies of the Emergency Relief Appropriation Act of 1935, Regulations Nos. 1, 2, 3, and 4 issued thereunder, the so-called "Kick-back" Statute (48 Stat. 948), and all Regulations issued pursuant thereto, and Section 35 of the Criminal Code as amended, and the Contractor and each subcontractor agree to comply with the provisions of all of said Statutes and all regulations issued thereunder which are hereby incorporated into and made a part of this contract.

54. In the event that any of the provisions of this contract are violated by the Contractor or by any of his subcontractors, the Owner or the Administrator may serve written notice upon the Contractor of intention to terminate such contract, such notice to contain the reasons therefor, and, unless within ten days after the serving of such notice upon the Contractor such violation shall cease and arrangements for correction satisfactory to both the Owner and the Administrator be made, the contract shall, upon the expiration of said ten days, cease and terminate. In the event of any such termination, the Owner or the Administrator or the Government may take over the work and prosecute the same to completion by contract or otherwise for the account of the Contractor. In such event the Owner or the Administrator may take possession of and utilize in completing the work, [fol. 2446] such materials, tools, supplies, equipment, appliances, and plant as may be on the site of the work and necessary therefor. In the event of any such termination the Owner and the Government may exercise any rights, claims, or demands that the Contractor may have against third persons in connection with this contract or the work prosecuted or to be prosecuted hereunder, and for such purpose the Contractor does hereby assign, transfer, and set over unto the Owner and the Government any and all such rights, claims and demands.

55. The foregoing provisions numbered 32 to 55 inclusive, shall be incorporated verbatim in all subcontracts for construction of any part of the work to be performed under this contract, except that whenever appropriate the name of the

principal Contractor may be substituted for the word "Owner."

In Witness Whereof, the above-bounden parties have executed this instrument under their several seals this 29th day of June, 1936, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

Meigs County Electric Membership Corporation, (Signed) by J. W. Lillard, President. (Seal.)

Attest: (Signed) W. A. Shadon, Secretary.

Tennessee Valley Authority, (Signed) by Harcourt A. Morgan, Vice Chairman, Board of Directors. (Seal.)

Attest: (Signed) Charles E. Hoffman, Assistant Secretary.

[fol. 2447] Tennessee Valley Authority

Board of Directors: Arthur E. Morgan, Chairman; Harcourt A. Morgan, David E. Lilienthal

August 24, 1936.

Mr. J. W. Lillard, President, Meigs County Electric Membership Corporation, Decatur, Tennessee.

Refer to Tennessee-1-Meigs

DEAR MR. LILLARD:

Under date of June 29, 1936, a "Construction Contract" was entered into between the Meigs County Electric Membership Corporation and Tennessee Valley Authority.

The Tennessee Valley Authority hereby agrees that Section 3 of said Contract shall be amended and shall be considered amended to read as follows:

"Owner shall pay to Contractor, Contractor's total direct cost, as billed by Contractor, of furnishing the services described in Sections 1 and 2 above or in any of the sub-

sequent provisions of this contract, plus twelve and one-half per centum (12½%) of such direct cost to cover overhead charges, it being the intention of the parties hereto that the Contractor shall furnish such services to Owner for actual cost, including overhead as above provided, without any profit whatsoever, but that the Contractor shall be fully reimbursed for all its direct costs plus said overhead incurred pursuant to this agreement. Contractor shall not be required to perform any part or portion of the services defined herein in the event the rendition of such services shall exceed in cost the amount of the loan provided for in said Loan Contract and any amendments thereto."

It is further agreed that Section 19 of said contract be amended and shall be considered amended to read as follows:

[fol. 2448] "Upon the execution of any subcontract the Contractor shall secure from the subcontractor a waiver or release of subcontractor's lien. The Contractor and any and all subcontractors shall, prior to or upon delivery of materials, appliances, and supplies, secure from any material men furnishing such materials, appliances, and supplies, a waiver or release of material men's liens."

Your signature in the space provided for that purpose at the end of this letter will indicate approval of this change on behalf of the Meigs County Electric Membership Corporation by you as President of said Corporation, and pursuant to the authority vested in you by the Board to negotiate a construction contract. Will you please sign three copies of the letter in order that each of the interested parties may have an original? In the event that this change is accepted, the change should, of course, be ratified by the Board of Directors of the Corporation at its next meeting.

Very truly yours, Tennessee Valley Authority,
(Signed) Arthur E. Morgan, Chairman of the Board.

Accepted. (Signed) J. W. Lillard, President, Meigs County Electric Membership Corporation.

[fol. 2449] COMPLAINANTS' EXHIBIT No. 163

Contract Between Tennessee Valley Authority and Cullman County Electric Membership Corporation

This Agreement, made and entered into this 4th day of August, 1936, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the Cullman County Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized, created, and existing under and by virtue of the laws of the State of Alabama.

Witnesseth:

Whereas, Corporation and Authority have entered into a power contract of even date herewith, under the terms of which Corporation agrees to purchase from Authority and Authority agrees to supply the entire electricity requirements of Corporation; and

Whereas, Authority is empowered by Section 10 of the Tennessee Valley Authority Act to promote and encourage the fullest possible use of electric light and power on farms and in small villages by constructing rural transmission lines thereto; and

Whereas, Corporation has requested that Authority construct rural transmission lines in Cullman County, Alabama, and to sell such lines to Corporation; and

[fol. 2450] Whereas, Corporation and Authority desire to set forth and define the terms and conditions upon which Authority shall build such lines and transfer same to Corporation.

Now, Therefore, for and in consideration of the mutual covenants contained herein, the parties hereto mutually agree as follows:

1. Authority shall construct for Corporation in Cullman County, Alabama, such rural transmission lines as Authority may deem feasible from the standpoint of both Authority and Corporation.

2. Corporation shall accept the rural transmission lines heretofore or hereafter constructed by Authority in Cullman County, Alabama, and shall reimburse Authority for the cost to Authority of constructing such lines, including overheads.

3. Corporation agrees to secure at its own expense the easements necessary for the construction of the lines Authority elects to build for Corporation hereunder. Such easements shall be secured in form acceptable to Authority and shall run to and be the property of Corporation and assigns.

4. Corporation agrees to secure all the franchises and consents from the governing bodies of the counties and the governing bodies of incorporated towns which may be necessary for the construction and operation by Authority or Corporation of the rural transmission lines herein provided for.

5. Authority agrees to proceed with due diligence to construct those rural transmission lines in Cullman County which it deems feasible, and further agrees to deliver to Corporation such part or parts of said rural transmission [fol. 2451] lines when the construction has progressed to such a stage that the properties are practicably usable for electric service by Corporation. Corporation agrees to accept such lines as delivered by Authority and to operate them on Corporation's behalf.

6. Authority will notify Corporation upon the completion of the construction of the project and upon the determination of the cost thereof. Authority will execute a conveyance transferring all of its rights to this property to Corporation and will present to Corporation for execution a note or bond to the Tennessee Valley Authority covering the cost of the lines. Corporation agrees to secure the payment of this obligation by a mortgage covering all of the property so conveyed to the Corporation, made in favor of Authority (and to the Rural Electrification Administration in the event that agency finances a portion of the lines constructed in Cullman County).

7. Corporation agrees to save Authority harmless from any liability arising out of Corporation's operation of the lines. Corporation agrees to secure adequate workmen's compensation insurance and to secure public liability insurance in an amount of not less than Twenty-five Thousand Dollars ($25,000) for injuries, including wrongful death to any one person, and subject to the same limit for each per-

son in an amount not less than Fifty Thousand Dollars ($50,000) for injuries including wrongful death to two or more persons on account of one accident, and property damage insurance in an amount of not less than Ten Thousand Dollars ($10,000).

[fol. 2452] In Witness Whereof, the parties hereto have caused this instrument to be executed the day and year first above written.

Tennessee Valley Authority (Signed) by Arthur E. Morgan, Chairman of the Board of Directors. C. G. D., Legal Division.

Attest: (Signed) Charles E. Hoffman, Asst. Secretary.

Cullman County Electric Membership Corporation, (Signed) by W. T. Clemons, President. (Seal.)

Attest: (Signed) Emmett S. Oden, Secretary-Treasurer.

JLF:CGD:MC.

[fol. 2453] COMPLAINANTS' EXHIBIT No. 164

Construction Contract Between TVA and Cullman County (Alabama) Electric Membership Corporation, Dated February 19, 1936.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $105,000.00 to be used in the construction of rural electric lines in the County of Cullman, State of Alabama;

(2) The completion date is on or before the 31st day of May, 1937;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50 and 51 of Complainants' Exhibit No. 162;

(4) It does contain the following provision, which does not appear in Complainants' Exhibit No. 162:

COMPLAINANTS' EXHIBIT No. 164

44. In the event Owner does not, within a reasonable time after the date of the contract, (due to lack of necessary consents or authorizations, or otherwise) deliver its deed of trust and mortgage bond in accordance with said Construction Loan Contract between Government and Owner, then Contractor shall be under no obligation to Owner under this Construction Contract and all of the lines engineered and constructed by Contractor in Cullman County, Alabama, shall be and remain the property of Contractor and in such event Owner agrees to assign to Contractor (or part to Contractor and part to the United States of America pursuant to the Tennessee Valley Authority Act of 1933 if Contractor shall stipulate that form of conveyance) all rights of way, easements, consents and franchises which Owner has obtained covering the lines so engineered and constructed by Contractor and thenceforth Owner shall not be considered as having any further interest in the lines whatsoever. For the purpose of this Contract a "reasonable time" shall be interpreted to mean three months from the date hereof. This remedy shall be in addition to such other remedy or remedies which Contractor may have under the Construction Contract. The pursuit of this or any other remedy by Contractor shall not be deemed to constitute an election.

[fol. 2454] COMPLAINANTS' EXHIBIT No. 165

Supplemental Contract Between TVA and Cullman County Electric Membership Corporation, Dated February 27, 1937

This contract amends provision No. 44 in the contract between TVA and Cullman County Electric Membership Corporation, dated September 19, 1936 (Complainants' Exhibit No. 164) so that it will read as follows:

44. In the event Owner does not, within a reasonable time after the date of the contract, (due to the lack of necessary consents or authorizations, or otherwise) deliver its deed of trust and mortgage bond in accordance with said Construction Loan Contract between Government and

COMPLAINANTS' EXHIBIT No. 165

Owner, then Contractor may at its election terminate its obligations to Owner under this Construction Contract. If Contractor so elects to terminate such obligations, all of the lines engineered and constructed by Contractor in Cullman County, Alabama, shall be and remain the property of Contractor and in such event Owner agrees to assign to Contractor (or partly to Contractor and partly to the United States of America pursuant to the Tennessee Valley Authority Act of 1933, if Contractor shall request that form of conveyance) all rights of way, easements, consents and franchises which Owner has obtained covering the lines so engineered and constructed by Contractor and thenceforth Owner shall not be considered as having any further interest in the lines whatsoever. For the purpose of this contract a "reasonable time" shall be interpreted to mean six (6) months from the date hereof. The election of Contractor to enforce its rights under this section shall not be deemed to be a waiver of any other remedy which Contractor may have under this contract.

[fol. 2455] COMPLAINANTS' EXHIBIT No. 166

Construction Contract Between TVA and North Georgia Electric Membership Corporation, Dated September 4, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $375,000.00 to be used in the construction of rural electric lines in the counties of Catoosa, Chattooga, Whitfield, Floyd, Dade, Murray, Gordon and Walker in the State of Georgia, and Hamilton County, Tennessee;

(2) The completion date is on or before the 1st day of May, 1937.

[fol. 2456] COMPLAINANTS' EXHIBIT No. 167

Construction Contract Between TVA and The Middle Tennessee Electric Membership Corporation, Dated September 15, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $254,000.00 to be used in the construction of rural electric lines in the Counties of Rutherford, Wilson, Davidson, Cannon and Smith in the State of Tennessee;

(2) The completion date is on or before the 31st day of May, 1937;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50 and 51 of Complainants' Exhibit No. 162;

(4) It contains the provision No. 44 which appears in Complainants' Exhibit No. 164.

[fol. 2457] COMPLAINANTS' EXHIBIT No. 168

Construction Contract Between TVA and Southwest Tennessee Electric Membership Corporation, Dated December 9, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $290,000.00 to be used in the construction of rural electric lines in the Counties of Haywood, Madison, Tipton and Lauderdale in the State of Tennessee;

(2) The completion date is on or before the 1st day of June, 1937;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50 and 51 of Complainants' Exhibit No. 162;

COMPLAINANTS' EXHIBIT No. 168

(4) It does contain the following provision, which does not appear in Complainants' Exhibit No. 162:

44. In the event the Construction Loan Contract between Government and Owner hereinbefore referred to is not executed on or before January 15, 1937, then Contractor shall be under no obligation to Owner under this contract and all of the lines engineered and constructed by Contractor in Haywood, Tipton, Madison, and Lauderdale Counties in the State of Tennessee shall be and remain the property of Contractor and in such event Owner agrees to assign to Contractor all rights of way, easements, consents and franchises which Owner has obtained covering the lines so engineered and constructed by Contractor and thenceforth Owner shall not be considered as having any further interest in the lines whatsoever.

[fol. 2458] COMPLAINANTS' EXHIBIT No. 169

Construction Contract Between TVA and Gibson County (Tennessee) Electric Membership Corporation, Dated March 30, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $143,500.00 to be used in the construction of rural electric lines in the Counties of Gibson, Dyer and Obion in the State of Tennessee;

(2) The completion date is on or before the 6th day of January, 1938;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50 and 51 of Complainants' Exhibit No. 162.

[fol. 2459] COMPLAINANTS' EXHIBIT No. 170

Agreement for Sale and Construction of Rural Lines Between Tennessee Valley Authority and Joe Wheeler Electric Membership Corporation

This Agreement, made and entered into the 14th day of May, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, and Joe Wheeler Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized, created, and existing under and by virtue of the laws of the State of Alabama.

Witnesseth:

Whereas, pursuant to sections 10 and 12 of the Tennessee Valley Authority Act of 1933, as amended, Authority has constructed and/or acquired and now owns certain rural electric transmission and distribution lines in Morgan and Lawrence Counties, Alabama; and

Whereas, Corporation has been chartered and duly organized under the laws of the State of Alabama as a nonprofit electric membership corporation for the purpose of acquiring and/or constructing a rural electric distribution system to be used in distributing electricity to its members [fol. 2460] at the lowest cost consistent with sound economy, and without profit; and

Whereas, Corporation desires to purchase from Authority certain of the rural electric distribution lines which Authority now owns in Morgan and Lawrence Counties, Alabama, and to have certain additional rural lines constructed by the Authority for Corporation in and adjacent to said counties, and the parties desire to set forth and agree upon the procedure, terms, and conditions under which said sale shall be effected and said construction done;

Now, Therefore, for and in consideration of the mutual benefits to both parties hereto and of the covenants and agreements herein contained, the parties hereto covenant and agree as follows:

1. Sale of Existing Rural Lines.—Corporation agrees to purchase from Authority such of the rural electric lines now owned by Authority in Morgan and Lawrence Counties, Alabama, as Authority may find unnecessary to be retained as a part of Authority's own distribution system

and Corporation finds necessary or desirable as a part of Corporation's rural distribution system.

2. Construction of Additional Rural Lines.—Corporation hereby requests Authority to construct for Corporation such additional rural electric distribution lines in and adjacent to Morgan and Lawrence Counties, Alabama, as Corporation and Authority may from time to time agree upon and designate.

[fol. 2461] A. Designation of Additional Lines.—Any such rural lines shall be deemed to have been agreed upon by Authority and Corporation for the purposes of this section when (1) Authority's work order covering the proposed lines has been presented to Corporation's Executive Committee and said committee has approved the same, and (2) the President of the Corporation has signed the work order on behalf of the Corporation.

B. Easements for Additional Lines.—Corporation agrees to secure at its own expense all rights of way and easements over privately or publicly owned land which may be necessary for the construction, maintenance, and operation of the additional rural lines to be built by Authority for Corporation under this section. Such easements shall be taken in form acceptable to Authority and shall run to and be the property of Corporation and assigns.

3. Franchises and Consents.—Corporation agrees to secure at its own expense all franchises and consents from the governing bodies of counties and incorporated towns, or other appropriate State bodies, which may be necessary for the construction, maintenance, and operation of the rural electric lines herein provided for, or the acquisition thereof by Corporation.

4. Payment by Corporation for Rural Lines.—Corporation agrees to pay Authority for the rural lines purchased from Authority under section 1, and the rural lines constructed by Authority for Corporation under section 2 of this agreement, an amount equal to the cost to Authority of acquiring or constructing the same, plus overheads.

[fol. 2462] 5. Delivery and Conveyance of Rural Lines to Corporation, and Execution of Power Contract, Note, and Mortgage.—Upon completion of construction of a sufficient number of rural lines by Authority for Corporation to provide a rural electric system which in Authority's judgment may be economically and satisfactorily operated by Corporation, Authority shall convey to Corporation the rural lines prescribed under section 1 hereof, and shall deliver possession to Corporation of the rural lines constructed for Corporation under section 2 hereof. Prior to or simultaneously with the conveyance and delivery of such rural lines to Corporation, Corporation shall execute with Authority a power contract in the standard form in effect between Authority and similar electric membership corporations, providing for the supply by Authority of Corporation's wholesale electric requirements, the resale of such electric energy, and the method of payment of Corporation's long-term obligations to Authority.

Simultaneously with the conveyance and delivery of rural lines by Authority to Corporation, Corporation shall execute its note to Authority in an amount equal to the cost to Authority of constructing or acquiring such rural lines, plus overhead, and Corporation shall further execute its first mortgage, covering all present or after acquired property of the Corporation, as security for the payment of Corporation's note or other obligations to Authority.

In Witness Whereof, the parties hereto have caused this agreement to be signed and sealed by their duly authorized [fol. 2463] officers the day and year first above written.

Tennessee Valley Authority, by (S.) Arthur Morgan, Chairman of the Board.

Attest: (S.) Charles E. Hoffman, Ass't Secretary.

Joe Wheeler Electric Membership Corporation, by (S.) W. F. Price, President.

Attest: (S.) J. W. Smith, First Vice President.

JLF:WTM:EJ.
MC.

[fol. 2464] COMPLAINANTS' EXHIBIT No. 170-A

Supplemental Agreement Between Tennessee Valley Authority and Joe Wheeler Electric Membership Corporation

This agreement, made and entered into the 24 day of September, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, and Joe Wheeler Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized, created and existing under and by virtue of the laws of the State of Alabama,

Witnesseth:

Whereas, on May 14, 1937, Authority and Corporation entered into a certain contract entitled "Agreement for Sale and Construction of Rural Lines between Tennessee Valley Authority and Joe Wheeler Electric Membership Corporation" (hereinafter called the "Agreement") under which Authority agreed to sell, and Corporation to purchase, certain rural lines owned by Authority in Morgan and Lawrence counties, Alabama, and under which Authority further agreed to construct certain additional rural lines for Corporation, Corporation to reimburse Authority therefor at its actual costs plus overheads, and

Whereas, Corporation has requested delivery of the lines purchased from Authority under section 1 of the Agreement, and also of the lines which have been completed by Author-
[fol. 2465] ity for Corporation under section 2 of the Agreement, in order that Corporation may commence operation of its distribution system, and

Whereas, the parties desire to set forth and agree upon the terms and conditions upon which the transfer of such lines shall be effected,

Now, therefore, for and in consideration of the mutual benefits to both parties hereto, and of the covenants and agreements herein contained, the parties hereto covenant and agree as follows:

1. Transfer of Lines—Authority shall deliver to Corporation on October 1, 1937, and Corporation shall accept delivery of, the approximately 78.52 miles of rural transmission and distribution lines which Authority owns in Morgan and Lawrence counties, Alabama, and which Authority agreed

to sell to Corporation under section 1 of the Agreement. Authority shall also deliver to Corporation such of the rural lines which Authority is constructing for Corporation under section 2 of the Agreement as have been completed on October 1 and are suitable for immediate operation by Corporation. As additional rural lines are completed by Authority for Corporation pursuant to said Agreement, they shall be transferred to Corporation for operation as a part of its distribution system. An itemized list of the work orders covering the above lines, property and improvements is attached to this contract as "Exhibit A."

2. Payment for Lines—Corporation agrees to pay Authority One Hundred Twenty Thousand Three Hundred Ninety-eight Dollars and Forty-five Cents ($120,398.45) for the rural lines and properties sold Corporation under section 1 of the Agreement. The estimated cost of the additional [fol. 2466] rural lines which Authority is constructing for Corporation under section 2 of the Agreement is One Hundred Ten Thousand Five Hundred Seventy-one Dollars ($110,571.00). This amount, however, shall be subject to adjustment, plus or minus, when the construction of rural lines for Corporation has been completed and the total cost therof can be definitely determined.

3. Accounts Receivable—Corporation hereby purchases from Authority all accounts receivable which Authority holds on October 1, 1937, against customers receiving service on the lines transferred to Corporation. Such accounts receivable shall be delivered to Corporation and the total amount thereof shall be added to Corporation's long-term obligation to Authority. The amount of such accounts is estimated to be Two Thousand Two Hundred Forty-one Dollars and Thirty-eight Cents ($2,241.38), but this sum shall be subject to adjustment, plus or minus, when the precise amount thereof has been determined. Corporation hereby assumes the rights and obligations of Authority with respect to the collection of those accounts of the Electric Home and Farm Authority, Inc., (which are now being collected by Authority) in the area in which Corporation operates.

4. Meter Deposits and Amortization Charges—Authority will credit Corporation in the amount of all its remaining

active customer deposits plus accrued interest to October 1, 1937, which were made by customers on the lines transferred hereunder before said lines were acquired by Authority, together with all remaining deposits made by customers during the period in which Authority operated such lines. The total amount of such deposits and accrued interest shall be credited upon Corporation's long-term obligation to Authority, and Corporation agrees to assume full responsi- [fol. 2467] bility for the disposition or return of all deposits and accrued interest and to save Authority harmless from any liability or controversy which may arise in respect thereto.

Authority shall also determine the amount of amortization charges collected by Authority from customers on the transferred lines during the period of operation by Authority, and shall credit Corporation's long-term obligation with the amount thereof.

For the purpose of this transfer, the amount of such deposits, accrued interest, and amortization charges is estimated to be Four Thousand Two Hundred Nineteen Dollars and One Cent ($4,219.01), but this sum shall be subject to adjustment, plus or minus, when the precise amount thereof has been determined.

5. Long-Term Obligation—The tentative amount of Corporation's long-term obligation to Authority under this contract and under the Agreement is Two Hundred Twenty-eight Thousand Nine Hundred Ninety-one Dollars and Eighty-two Cents ($228,991.82). Said obligation shall be paid by Corporation in the manner set forth in the Agreement and the Power Contract executed between Authority and Corporation on even date herewith. When the rural lines which Authority is constructing for Corporation shall have been completed and the definite cost thereof determined, Corporation shall issue its note to Authority in the amount of its long-term obligation, secured by a Mortgage of all present and after-acquired property of Corporation, as provided by section 5 of the Agreement. Until the execution of said note and Mortgage, Authority and the United States of America shall retain full title to all lines sold to Corporation under section 1 of the Agreement and Authority shall retain a first lien upon all lines and property con-

[fol. 2468] structed for Corporation under section 2 of the Agreement.

6. Maintenance and Insurance of Property—Corporation agrees that it will at all times make or cause to be made at its own expense such repairs, renewals and replacements as shall be necessary to maintain, preserve and keep in good repair and working order the property delivered hereunder. Corporation shall pay all taxes and assessments on the property and shall save Authority harmless from all suits, liability or claims which may arise from or in connection with the maintenance and operation of the system. Corporation further agrees to preserve and keep in force public, property, and Workmen's Compensation insurance in such amounts as Authority may reasonably deem necessary for security of the payment of Corporation's obligations.

7. Power Contract—Corporation agrees to perform and abide by all the covenants and agreements contained in the Agreement and in the Power Contract, and Corporation recognizes that compliance with the above contract is an essential part of the consideration of this Supplemental Agreement.

8. Contract Not Transferable—Neither this contract nor any interest therein shall be transferable or assignable by Corporation unless the written consent of Authority thereto is first obtained.

In witness whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, (S.) by John B. Blandford, Jr., General Manager. W. T. M. Legal Div. (Seal.)

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

Joe Wheeler Electric Membership Corporation, (S.) by W. T. Price, President.

Attest: (S.) J. Wheeler Smith, Secretary.

JLF:WTM:EW.

Complainants' Exhibit No. 170-A

[fol. 2469] "Exhibit A"

Estimated Costs of New Construction and Purchased Property to be Transferred to Joe Wheeler Electric Membership Corporation

Work Orders		County	Cost
1205	Service to Nelm's Slaughter House	Morgan	$755.61
1206	Extension to Rosenwald School	Lawrence	840.65
1209	Service to W. H. Halloway	Morgan	18.77
1210	" " J. L. Wallace	"	260.32
1213	" " W. E. Gibson	"	91.00
1215	Contribution for Range Installation	"	431.25
1216	" " " "	Lawrence	284.40
1224	Service to R. O. Wyatt	Morgan	422.45
1229	" " E. C. Ragsdale	"	108.59
1234	" " R. M. Richardson	Lawrence	12.34
1247	" " G. C. Mann	Morgan	180.55
1253	Demand Features to Gin Meters	"	50.22
1258	" " " " "	Lawrence	50.22
1265	Service to W. E. Steed	Morgan	453.56
1269	" " J. H. Nail	"	39.41
1275	" " Hartselle Water Pumping Sta	"	306.58
1283	" " T. M. Patton	"	61.10
1291	Extension to Trinity Mountain	"	943.96
1297	Service to R. M. Teague and R. M. McElroy	"	193.91
1299	" " Howard Jones	"	185.64
1300	" " F. E. Alexander	"	66.42
1301	" " Paul Lang and T. H. Cartee	Lawrence	135.56
1304	" " W. O. McCarley	Morgan	97.39
1305	" " H. F. Mitchell Tourist Camp	"	252.60
1310	" " " " " " "	"	46.36
1313	" " Mrs. Cora McEntire	"	70.20
1315	" " Leonard Wallace	"	163.30
1318	Install fuses on Falkville-Eva Line	"	270.00
1325	Service to Fred Morris	"	56.74
1326	" " T. H. Jones	"	126.44
1330	" " Ross and Lee Goodlett	Lawrence	40.81
1331	" " W. H. Gregory and Chas. Dillard	Morgan	8.09
1333	" " " " " " "	"	123.58
1332	" " Geo. Lewis and M. Carpenter	"	137.03
1337	" " J. South	Lawrence	41.93
1343	" " Minor Russell	Morgan	183.66
1347	" " Falkville and Eva Line	"	140.10
1348	" " " " "	"	149.41
1349	" " Bill Cook	"	92.87
1350	" " W. W. Sufferford	"	175.13
1351	" " Hardin and Parker	"	57.69
1352	" " Mrs. Jim Ashworth	"	32.44
1353	" " R. E. Graham	Lawrence	106.82
1356	" " Clyde McEntire	Morgan	81.26
1357	" " H. A. Turner	Lawrence	227.49
1358	" " P. Delenshaw	"	88.09

Complainants' Exhibit No. 170-A

[fol. 2470]

Work Orders		County	Cost
1359	Service to N. Almon	Lawrence	$19.85
1365	" " C. N. Ryan	Morgan	75.24
1366	" " M. McEntire	"	45.82
1369	" " Bill Stephenson	"	59.53
1370	" " A. R. Ratliff	"	143.82
1371	" " S. A. Ryan	"	31.73
1374	" " Lillian Proctor	"	28.05
1375	" " Hillsboro School	Lawrence	143.30
1379	" " J. A. Bates	Morgan	185.24
1395	" " J. Glasscock & C. H. Roan	"	313.21
1400	" " J. B. Sewell	"	204.71
	Job Orders under various Work Orders covering small services and replacements		1,000.00
2188	Services in Morgan County (Blanket)	Morgan	1,453.00
2309	Extension West on Joe Wheeler Highway from Trinity	"	2,355.00
2391	Falkville-Lacon Extension	"	2,701.00
2409	Service to Falkville Milling Co	"	1,731.00
2410	Extension South of Lacon	"	1,368.00
2427	Service in Morgan County (Blanket)	"	1,620.00
2429	" " Lawrence " "	Lawrence	535.00
2453	Tie Line from Falkville to Lacon	Morgan	1,139.00
2679	Const. approximately 95.4 miles of single-phase 6900 V. power line in Morgan and Lawrence Counties		101,234.00*
2687	Const. 4.25 miles of 3-phase, 4-wire 12,000 V. power lines		4,385.00*
2688	Revision of existing primary circuits		4,432.00*
2779	Rehabilitate Rural Line in Morgan County		520.00*
Purchased Property			
	Lawrence County		26,803.21
	Morgan County		69,781.80
	Total Cost (Estimated)		$230,969.45

* Estimates.

[fol. 2471] Morgan and Lawrence Counties

Estimated Balances as of: September 30, 1937

Accounts Receivable—Customers	$2,207.08*
Accounts Receivable—Merchandise	34.30
Consumers—Deposits and Interest	1,676.10
Amortization Collection	3,542.91

*Includes $681.53 for 4 gins—Based on September 1936 billing.

EW.

[fol. 2472] COMPLAINANTS' EXHIBIT No. 171.

Construction Contract Between TVA and Monroe County (Mississippi) Electric Power Association, Dated July 7, 1937.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $95,200.00 to be used in the construction of rural electric lines in the Counties of Monroe and Lowndes in the State of Mississippi;

(2) The completion date is on or before the 15th day of June, 1938;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 51 and 52 of Complainants' Exhibit No. 162.

[fol. 2473] COMPLAINANTS' EXHIBIT No. 172.

Construction Contract Between TVA and Duck River Electric Membership Corporation, Dated June 15, 1937.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of $368,908.00 to be used in the construction of rural electric lines in the Counties of Marshall, Moore, Maury and Franklin in the State of Tennessee;

(2) The completion date is on or before the 15th day of June, 1938;

(3) It does not contain provisions Nos. 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50 and 51 of Complainants' Exhibit No. 162.

[fol. 2474] COMPLAINANTS' EXHIBIT No. 173.

Agreement Between Tennessee Valley Authority and Town of Pulaski, Tennessee

Construction of Rural Lines

This Agreement made and entered into this 23rd day of August, 1935, between the Tennessee Valley Authority, hereinafter called "Authority," a corporation created by and acting under the Tennessee Valley Authority Act of 1933, and the Town of Pulaski, Tennessee, a municipal corporation duly organized, created and existing under and by virtue of the laws of the State of Tennessee, hereinafter called "Municipality."

Witnesseth:

Whereas, on March 8, 1934, a power contract was entered into between Authority and Municipality by virtue of which Authority has been furnishing surplus power generated by it and not used in its operations to Municipality, and

Whereas, Municipality desires to extend its area of service to include suburban and rural customers in and adjacent to Giles County, Tennessee, and

Whereas, Authority is empowered by Section 10 of the [fol. 2475] Tennessee Valley Authority Act to promote the use of electric light and power on farms and small villages by constructing rural transmission lines, and

Whereas, Municipality desires that Authority construct such lines on behalf of Municipality or aid in their construction and Municipality proposes to make the necessary appropriations in payment therefor;

Now, Therefore, for and in consideration of the mutual covenants contained herein, the parties hereto mutually agree as follows:

1. Construction of Rural Lines.—Authority agrees, upon request, of Municipality, to construct such additional rural lines on the Municipality's electric system, within or adjacent to Giles County, State of Tennessee, as the parties may agree, or at its option to assist in such construction in the manner set out below. Should the Authority elect to construct said lines, at its option it may do so (a) by construction for and on behalf of Municipality, as Municipality's agent for such construction; or (b) by construction on its own account and conveying the lines so constructed

to Municipality; or (c) by construction on its own account and leasing the same to Municipality for a period of fifty (50) years. If Authority should elect alternative (b) or (c) of this paragraph, Municipality agrees, at request of the Authority, promptly to secure the necessary easements, franchises and rights-of-way for such lines at its own expense and to transfer and assign such easements, franchises and rights-of-way to Authority without charge.

At the election of Authority, in lieu of constructing the rural lines agreed upon, Authority may assist in such con- [fol. 2476] struction by supplying Municipality with the poles, wire, transformers, hardware, and other materials and equipment necessary in the construction of such lines and with supervisory assistance, whereupon Municipality shall itself construct said lines in accordance with approved engineering standards and subject to Authority's supervision.

Municipality agrees to pay Authority for any lines constructed by Authority pursuant to this paragraph, for all materials, supplies, and equipment furnished pursuant hereto, and for all work of construction and installation, at the actual cost thereof as billed by Authority, plus interest at four per cent (4%) per annum on the unpaid balance. In computing the cost of work performed by Authority, the costs of overhead, as billed by Authority, shall be added to direct costs.

2. Operation, Maintenance and Insurance of Rural Lines. —Municipality agrees to operate the rural lines constructed by Authority, or constructed with supplies furnished by Authority, as a part of its distribution system, and to render rural electric service at the same rates and on the same terms and conditions as its urban electric service subject to the qualifications hereinafter contained. Municipality agrees that it will at all times make, or cause to be made, at its own expense, such repairs, maintenance, renewals, and replacements as shall be necessary to maintain, preserve, and keep the rural lines so constructed and the equipment so installed in good repair, working order, and condition, and to maintain and preserve the efficiency thereof, and to execute such work of maintenance or improvement as Authority may deem necessary for the protection of its

interest in said property, to pay all taxes and assessments thereon of whatever nature or description, to save harmless [fol. 2477] Authority from any liability for taxes on the property sold or leased to or constructed for Municipality, including taxes for the year 1935, and to save Authority harmless from any liability arising out of the operation of said lines. Municipality agrees to keep such property, whether constructed by Authority as agent for Municipality, or constructed, purchased, or leased by Municipality, insured in such manner and amount as Authority may deem prudent and desirable, for the protection of Authority as its interest may appear.

3. Municipality agrees to charge all consumers on the lines constructed pursuant to this agreement the rates prescribed for the several classes of customers in Schedule B, entitled "Tennessee Valley Authority Resale Rates," attached to and made a part of the power contract referred to above between Authority and Municipality, and not to depart therefrom except with the written consent of Authority; Provided, however, that Municipality may add to the resale rates therein prescribed a temporary amortization charge applicable to all customers on the lines constructed pursuant to this agreement of 1c per kwh for the first 100 kwh used per month, such charge to be not less than 25c nor more than $1.00 per customer per month, but such amortization charge shall be temporary only and shall be discontinued as soon as Municipality has paid the full principal and interest of the indebtedness due Authority under this contract. The proceeds of such amortization charge shall be deposited in a special fund to be used only for the amortization of the lines constructed hereunder.

4. Municipality agrees to pay to Authority on account of its indebtedness under this contract and until such indebtedness shall have been totally repaid, (a) all amortization [fol. 2478] charges collected under this agreement, (b) the total surplus or remaining revenue specified in Section 10 (b) of the "Schedule of Rules and Regulations," attached to and made a part of the power contract referred to above between Authority and Municipality. Such surplus revenue shall be paid to Authority by Municipality prior to the amortization of the amount referred to in Article VI of the

agreement between Authority and Municipality as to Municipality's investment in its electric system dated August 22nd, 1935.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority (Signed), by Arthur E. Morgan, Chairman, Board of Directors. I. C. S., Leg. Div.

Attest: Charles E. Hoffman, Assistant Secretary.

Town of Pulaski, Tennessee, by W. R. Rackley, Mayor.

Attest: Lew Jones, City Recorder.

[fol. 2479] COMPLAINANTS' EXHIBIT No. 174

Construction Contract Between Tennessee Valley Authority and City of Dayton, Tennessee

This agreement made and entered into the 24th day of January 1936, between the Tennessee Valley Authority, hereinafter called Contractor, a corporation created by Act of Congress, May 18, 1933, and the City of Dayton, Tennessee, a municipal corporation organized and existing by virtue of the laws of the State of Tennessee, hereinafter called Owner is made pursuant to a loan contract dated November 4, 1935, between the United States of America (hereinafter called "Government") by the Administrator of the Rural Electrification Administration (hereinafter called "Administrator") and the City of Dayton, Tennessee.

Witnesseth:

Whereas, Owner has executed a loan contract with Government acting through Administrator in the amount of $38,058 by which Owner is to receive funds to be used in the construction of rural electric lines in and adjacent to Rhea County, Tennessee, and

Whereas, Contractor by Section 10 of the Tennessee Valley Authority Act of 1933 is authorized to construct trans-

mission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and

Whereas, all parties to this contract have duly authorized its execution,

[fol. 2480] Now Therefore, for and in consideration of the mutual covenants herein contained and subject to all the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. The Contractor and Owner shall jointly and/or severally make or cause to be made such preliminary engineering, surveys, maps, plans, drawings, specifications and estimates and perform such other related services as are necessary or useful in determining the feasibility, and in constructing the proposed project. The total cost of such preliminary engineering, surveys, maps, plans, drawings, specifications, estimates, legal expenses and other services shall not exceed 10% of the total cost of $38,058, as is provided in Section 1 of Article IV of the Loan Contract, between the Government and Owner, dated 4th day of November, 1935. Owner shall pay to Contractor the cost of such preliminary engineering, surveys, maps, plans, drawings, specifications and estimates so prepared and the cost of other related services rendered by Contractor, at Contractor's direct cost plus overhead, but which cost together with the cost of the preliminary engineering, surveys, maps, plans, drawings, specifications and estimates prepared and the cost of legal and other services rendered by Owner shall not exceed the total cost of $3,805.80. Contractor shall furnish the material, labor, tools and equipment necessary for the construction, and shall construct those rural transmission lines (shown on Map No. HC-781 and Drawings LC-782, LC-783, LC-785, LC-786, LC-787, attached hereto and hereby incorporated herein, and in accordance with Contractor's standard specifications attached hereto and hereby incorporated herein) which the [fol. 2481] Owner shall request and which shall not exceed the cost to contractor of $38,058, less the cost of the preliminary engineering, surveys, maps, plans, drawings, specifications, estimates, legal expenses and other services of Contractor and Owner referred to above. Owner shall pay Contractor at Contractor's direct cost plus overhead for all

the lines so constructed. All sums due hereunder shall be paid by Owner to Contractor within thirty (30) days after the presentation of invoice therefor by Contractor.

2. (a) The Contractor shall not assign this Contract or any part hereof without the approval of the Owner and the Administrator.

(b) The Contractor shall perform, directly and without subcontracting, not less than 25 per cent of the construction, to be calculated on the basis of the total contract price.

(c) No part of this Contract shall be sublet without the approval of the Owner and the Administrator. If the Contractor shall sublet any part of this Contract, the Contractor shall be as fully responsible to the Owner and the Government for the acts and omissions of his subcontractor and of the persons either directly or indirectly employed by his subcontractor, as he is for his own acts and omissions and those of persons directly employed by him.

3. (a) The Contractor shall provide all labor, services, materials, and equipment necessary to perform and complete the work under this Contract, except as otherwise provided in the plans and specifications.

(b) The Contractor shall purchase all materials and supplies outright and not subject to any conditional sales [fol. 2482] agreement, bailment lease, or other agreement reserving to the seller any right, title or interest.

(c) All materials and supplies shall become the property of the Owner when the invoice rendered by Contractor to Owner, under Section 1, shall be fully paid; provided, however, that the Owner or the Administrator may condemn any such materials and supplies as do not comply with the plans and specifications, either before or after incorporation of such materials and supplies into the Project, and thereafter any such condemned materials and supplies shall be removed and immediately replaced with materials and supplies complying with the plans and specifications.

4. All employees other than those in executive, administrative, supervisory or highly skilled positions shall be paid in full, at least once every two weeks within ten (10) days after the close of the payroll period.

5. The Administrator shall have the right to supervise the performance of this contract and shall have the right to inspect all work and materials and shall have access to all payrolls, records of personnel, invoices of material, and all other data and records relevant to the performance of this contract. Reasonable facilities shall be provided for the use of agents of the Administrator.

6. In the performance of this contract there shall be used only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials and supplies as [fol. 2483] have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, provided, however, that if the Administrator shall find that in respect to some particular articles, materials, or supplies it is impracticable to make such requirement or that it would unreasonably increase the cost, an exception shall be noted in the specifications as to that particular article, material or supply.

7. Preference in the employment of workers shall be given to persons from the public relief rolls who are competent for the several classifications of labor necessary for the performance of this contract and who are available at the site of the work. The Contractor agrees to apply to the nearest office of the United States Employment Service in the County where the work is to be performed for such workers from public relief rolls, and agrees to employ persons so furnished, if competent and available.

8. (a) Wage Rates for persons employed, except in executive, administrative, supervisory and highly skilled positions, shall be as follows:

Trade or Occupation	Hourly Wage Rate
Lineman	$1.00
Lineman's Apprentice	.75
Lineman's Helper	.60
Truck Driver (Line Truck)	.75
Truck Driver (Light Trucks)	.60
Powderman and Compressor	.75
Labor	.45

[fol. 2484] (b) If after the execution of this Contract it becomes necessary to employ any person in a trade or occupation not hereinabove listed, such person shall be paid at an hourly wage rate which shall be not less than the prevailing rate of wages for work of a similar nature in that vicinity, and such wage rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Unless otherwise provided by law, claims or disputes pertaining to the classification of labor under this Contract shall be decided by the Administrator whose decision shall be final and binding on all persons concerned.

9. The maximum hours of work for persons employed, except in executive, administrative, supervisory and highly skilled positions, shall not be in excess of 8 hours per day and 40 hours per week, except in special or unusual circumstances when the above limitations are not feasible or practicable.

10. Only one member of a family group may be employed on the Project, except as specifically authorized by the Works Progress Administration.

11. All work shall be conducted in accordance with safe working conditions, and every effort shall be made for the prevention of accidents.

12. The Contractor and each subcontractor shall prepare the payrolls upon forms to be prescribed and in accordance with instructions to be furnished by the Works Progress Administration. Not later than the third day following the payment of the wages, a certified legible copy of each payroll, whether paid by the Contractor or any subcontractor, shall be transmitted by the Contractor to such of-[fol. 2485] fice as may be designated by the Works Progress Administration. The Contractor and each subcontractor shall submit reports at such times and on such forms as may be required by the Works Progress Administration covering purchases of, and requisitions for, materials, together with such other information as may be required to determine the progress and status of the completion of the work on the Project.

13. The Contractor and each subcontractor shall report to the United States Department of Labor monthly, within five days after the close of each calendar month, upon forms to be prescribed, and in accordance with instructions to be furnished, by the United States Department of Labor, covering the number of persons on their respective payrolls directly connected with the Project, the aggregate amounts of such payrolls and the man-hours worked, and an itemized statement of the total expenditures for materials. The Contractor shall also furnish to the United States Department of Labor the names and addresses of all subcontractors on the work, at the earliest date practicable.

14. The Works Progress Administration, through its authorized agents, shall have the right to inspect all work as it progresses, and shall have access to all payrolls, records of personnel, invoices of materials, and any and all other data relevant to the performance of this Contract.

15. No person under the age of sixteen (16) years, and no one whose age or physical condition is such as to make his employment dangerous to his health or safety, or the health and safety of others, may be employed on the Project. This paragraph shall not be construed to operate [fol. 2486] against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform.

16. No person currently serving sentence to a penal or correctional institution shall be employed on the Project.

17. Wages to be paid, or for which reimbursement is to be made, by the Federal Government may not be pledged or assigned, and any purported pledge or assignment shall be null and void.

18. The Contractor acknowledges that he has received copies of the Emergency Relief Appropriation Act of 1933, Regulations Nos. 1, 2, 3 and 4 issued thereunder, the so-called "Kick-back" Statute (48 Stat. 948), and all regulations issued pursuant thereto, and Section 35 of the Criminal Code as amended, and the Contractor and such subcontractor agree to comply with the provisions of all of said Statutes and all regulations issued thereunder which are

hereby incorporated into and made a part of this Contract.

19. In the event that any of the provisions of this Contract are violated by the Contractor or by any of his subcontractors, the Owner or the Administrator may serve written notice upon the Contractor of intention to terminate such Contract, such notice to contain the reasons therefor, and, unless within 10 days after the serving of such notice upon the Contractor such violation shall cease and arrangement for correction satisfactory to both the Owner and the Administrator be made, the Contract shall, upon the expiration of said 10 days, cease and terminate. In the event of any such termination, the Owner or the Government may take over the work and prosecute the same to [fol. 2487] completion by contract or otherwise for the account and at the expense of the Contractor, and the Contractor shall be liable to the Owner and the Government for any excess cost occasioned thereby. In such event the Owner or the Administrator may take possession of and utilize in completing the work, such material, tools, supplies, equipment, appliances, and plant as may be on the site of the work and necessary therefor. In the event of any such termination the Owner and the Government may exercise any rights, claims or demands that the Contractor may have against third persons in connection with this Contract or the work prosecuted or to be prosecuted hereunder, and for such purpose the Contractor does hereby assign, transfer and set over unto the Owner and the Government any and all such rights, claims and demands.

20. With the exception of Section 1, all of the foregoing provisions shall be incorporated verbatim in all subcontracts for construction of any part of the work to be performed under this Contract, except that wherever appropriate the name of the principal Contractor may be substituted for the word "Owner."

21. The work to be done under this Contract is to be begun within thirty days after the receipt by the Contractor from the Owner of notice to begin work, and is to proceed with all due dispatch to the satisfaction of the

Owner and the Government, and shall be fully completed on or before the 30th day of June, 1936.

22. In the event that the Administrator appoints a supervisor, as hereinbefore provided, the Contractor shall comply with all the reasonable instructions given it by such supervisor.
[fol. 2488] The Owner and/or the said Supervisor shall be at liberty to direct the Contractor to execute any part or parts of the work before any other part or parts thereof.

23. The Project, from the commencement of the work to the completion of the same, is to be under the Contractor's charge; it is to be held responsible for and to make good all injuries, damages and repairs occasioned or rendered necessary to the same by reason of any fire, cyclone, tornado, windstorm or other casualty or causes over which the Contractor may or may not have control. The Contractor will hold the Owner harmless from any claims for injuries to persons or for damage to property happening by reason of any neglect, default or misconduct on the part of the Contractor or any of its agents, or of any one in its employ during the execution of the work.

24. Simultaneously with the payment of the invoice referred to in Section 1 above, Contractor shall deliver unto the Owner a release of Contractor's lien. Upon the execution of any subcontract the Contractor shall secure from the subcontractor and deliver to the Owner a release of Subcontractor's lien.

25. During the entire period of the construction of the work covered by this Contract the Contractor shall erect and maintain at least one sign, for each one-half mile of line covered by this Contract, which shall have previously been approved by the Administrator, bearing the legend "Federal Rural Electrification Project."

26. All clauses of this Contract shall apply to any changes, omissions or extra work in like manner and to the same effect as to the work contracted for and no changes, omissions or extra work shall annul or invalidate this Contract.

COMPLAINANTS' EXHIBIT No. 174

[fol. 2489] 27. Every right or remedy herein conferred upon or reserved to the Owner or the Government or the Administrator shall be cumulative and shall be in addition to every right and remedy given hereunder or now or hereafter existing at law or in equity or by statute. The pursuit of any right or remedy shall not be construed as an election.

28. The contract entered into between the Tennessee Valley Authority and City of Dayton, Tennessee, as an Agreement for Cooperation in Construction of Rural Lines, dated 2nd day of November, 1935, is hereby annulled, cancelled and is to be of no further force and effect.

In Witness Whereof, the parties hereto have caused this instrument to be executed by their duly authorized officers the day and year first above written.

City of Dayton, Tennessee, (Signed) by G. W. Taylor, Chairman, Board of Commissioners. (Seal.)

Attest: (Signed) C. D. Sanborn, City Recorder.

Tennessee Valley Authority, (Signed) by Arthur E. Morgan, Chairman, Board of Directors. C. G. I., Leg. Div. (Seal.)

Attest: (Signed) Charles E. Hoffman, Assistant Secretary.

Approved: Rural Electrification Administration, (Signed) by Morris L. Coose (?), Administrator.

[fol. 2490] COMPLAINANTS' EXHIBIT No. 175

Construction Contract Between TVA and Town of Bolivar, Tennessee, Dated September 7, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 162 except:

(1) The construction loan contract with Rural Electrification Administration is stated to be in the amount of

$13,200.00 to be used in the construction of rural electric lines in the County of Hardeman, State of Tennessee;

(2) The completion date is on or before the 15th day of July, 1938;

(3) It does not contain provisions Nos. 24, 33, 34, 35, 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52 and 55 of Complainants' Exhibit No. 162;

(4) It contains the following provision which does not appear in Complainants' Exhibit No. 162:

38. In the event the Construction Loan Contract between Government and Owner hereinabove referred to is not executed on or before January 1, 1938, or in the event the Contractor substantially performs its obligations hereunder but Owner does not receive the full amount of funds from Government for reimbursement of Contractor, then Owner shall execute and deliver its bonds to Contractor in the amount of its outstanding obligation to Contractor hereunder, such bonds to be secured by a pledge of the revenues of the lines and facilities constructed hereunder but not paid for, and by a first mortgage lien upon said lines and facilities.

[fol. 2491] Complainants' Exhibit No. 176

Contract Between Tennessee Valley Authority and Lincoln County Electric Membership Corporation

Collection of Bills and Other Services

This Agreement, made and entered into the 1st day of October, 1935, between Tennessee Valley Authority, a corporation created by Act of Congress of May 18, 1933, hereinafter called Authority, and the Lincoln County Electric Membership Corporation, a corporation created and existing under and by virtue of the laws of the State of Tennessee, hereinafter called Corporation,

Witnesseth:

Whereas, Authority has constructed and is now engaged in the construction of rural electric transmission lines in

and adjacent to Lincoln County, Tennessee, which lines are to be energized as soon as feasible and used in the transmission and sale of electric energy, and

Whereas, Corporation, by a resolution of its Board of Directors, has requested that Authority complete the construction of said rural lines and operate same until January 1, 1936, or until such time thereafter as Corporation requests that the lines be sold and delivered to Corpora- [fol. 2492] tion, and

Whereas, Authority deems it advisable to complete the construction of these rural lines in Lincoln County, contained in Authority's Work Orders numbered 1155 and 1156, as revised, and to energize same before transferring said lines to Corporation, and

Whereas, Corporation proposes to cooperate with Authority during the construction and interim operation of said rural lines by aiding in the collection of bills and by furnishing other services to Authority.

Now, Therefore, for and in Consideration of the mutual covenants contained herein, the parties hereto mutually covenant and agree as follows:

1. Authority will proceed with due diligence in the construction of the rural lines in Lincoln County, the construction of which has been authorized by and is contained in Authority's Work Orders numbered 1155 and 1156, as revised, and which construction is hereby authorized and requested by Corporation. Corporation shall purchase and accept and Authority shall sell and deliver to Corporation prior to June 30, 1936, at Authority's cost plus overheads all of the property constructed hereunder. Authority will energize those lines or portions of same as soon as construction has proceeded to such an extent as to make it feasible in the opinion of Authority to do so.

2. Corporation agrees to collect the sum of Ten ($10.00) Dollars from each prospective customer agreeing to take [fol. 2493] electric service from the rural lines constructed by Authority under Section 1 hereof prior to Authority's connecting such prospective customer for service, said payment to constitute the prospective customer's membership

fee in Corporation. Corporation shall give to each natural or artificial person from whom such fee is collected a membership certificate in Corporation in accordance with Corporation's by-laws. If it is not feasible for Corporation to give the membership certificate at the time the payment is made, a receipt for such payment shall be given the prospective customer, in return for which he may obtain, at some later date, a membership certificate in Corporation.

Corporation further agrees to guarantee the payment of each and every account for electric service as billed by Authority of each customer taking service from Authority on the lines constructed under Section 1 hereof to the extent of Ten Dollars ($10.00) for each customer. When any bill remains unpaid after the gross rate applies under Authority's rate schedule in effect in Lincoln County, Corporation shall pay to Authority on demand the amount of such unpaid bill to the extent of Ten Dollars ($10.00) per unpaid bill. Upon receipt of such payment Authority shall assign to Corporation the unpaid bill to the extent of the amount paid by Corporation to Authority.

3. Authority agrees to collect an amortization charge as provided in Authority's rate schedule in effect in Lincoln County of one (1) cent per kwh. for the first one hundred (100) kwh. used per month, such charge not to be less than twenty-five cents (25c) nor more than One Dollar ($1.00) [fol. 2494] per customer per month. These amortization collections shall be entered on the books of Authority in such manner as to make the amount of same paid by each customer readily discernible. The total amount of these amortization collections shall be credited to Corporation and deducted from Corporation's indebtedness to Authority when Corporation purchases the property referred to herein.

4. Corporation agrees to furnish Authority part time clerical and stenographic services to aid in the construction, operation, and maintenance of the lines referred to herein during the interim period of Authority's operation of the rural lines.

5. Authority will pay Corporation the sum of Fifty Dollars ($50.00) per month during the interim period in which

COMPLAINANTS' EXHIBIT No. 176

Authority operates the rural lines and until the Corporation purchases and begins operating same in its own behalf.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers as of the day and year first above written.

Tennessee Valley Authority by Arthur E. Morgan, Chairman, Board of Directors. C. G. D., Leg. Div.

Attest: Charles E. Hoffman, Assistant Secretary.

Lincoln County Electric Membership Corporation, by D. L. Conger, President.

Attest: R. D. (?), Secretary.

[fol. 2495] COMPLAINANTS' EXHIBIT No. 177

Supplemental Contract Between TVA and Lincoln County Electric Membership Corporation, Dated June 19, 1936

This contract extends the contract dated October 1, 1935 (Complainants' Exhibit No. 176) until June 30, 1937, or until the rural electric lines which TVA is constructing for Lincoln County Electric Membership Corporation are completed as a unit and suitable for operation, whichever is the earlier.

[fol. 2496] COMPLAINANTS' EXHIBIT No. 178

Contract Between Tennessee Valley Authority and Monroe County Electric Power Association

Operation of Rural Transmission Line and Collection of Bills

This Agreement, made and entered into this first day of February, 1936, between Tennessee Valley Authority, a corporation created by Act of Congress May 18, 1933, hereinafter called Authority, and the Monroe County Electric Power Association, a corporation created and existing under and by virtue of the laws of the State of Mississippi, hereinafter called Association,

COMPLAINANTS' EXHIBIT No. 178

Witnesseth:

Whereas, Authority has constructed a certain rural transmission line in Monroe County, Mississippi, under the terms of a construction contract between the Authority and the Association, dated January 14, 1936; and

Whereas, Association has requested that Authority operate and maintain said rural transmission line until Association is in a position to take over the operation of same, which shall be not later than June 1, 1936, and

Whereas, Association has agreed to pay Authority for the operation of said rural transmission line by letter dated January 31, 1936, signed on behalf of the Association by R. G. Christian, President, and A. H. Ritter, Secretary, and [fol. 2497] Whereas, both parties hereto deem it advisable to set out more fully the terms upon which Authority will operate said rural transmission line,

Now, Therefore, for and in Consideration of the mutual covenants contained herein, the parties hereto mutually covenant and agree as follows:

1. Authority agrees to operate and maintain that rural transmission line, together with all taps therefrom, known as the gravel pit-Bigbee line and located in Monroe County, Mississippi, until such time as the Association is in a position to take over the operation and maintenance of same, which Association agrees shall not be later than June 1, 1936. In consideration of the Authority's operating and maintaining said line Authority shall retain the gross revenues, with the exception of amortization charges which shall be handled as hereinafter set out, paid by the customers on said line for electric service.

2. This provision is the same as provision No. 2 in Complainants' Exhibit No. 176.

3. This provision is the same as provision No. 3 in Complainants' Exhibit No. 176.

4. Association agrees to reimburse Authority at its direct cost plus overhead for any additional capital expenditures made by Authority in extending service to new customers along the line, or otherwise.

COMPLAINANTS' EXHIBIT No. 178

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly author-
[fol. 2498] ized officers as of the day and year first above written.

Tennessee Valley Authority, (Signed) by Arthur E. Morgan, Chairman, Board of Directors. C. G. D., Legal Div. (Seal.)

Attest: (Signed) Charles E. Hoffman, Assistant Secretary.

Monroe County Electric Power Association, (Signed) by R. G. Christian, President. (Seal.)

Attest: (Signed) A. H. Ritter, Secretary.

[fol. 2499] COMPLAINANTS' EXHIBIT No. 179

Operation Contract Between Pickwick Electric Membership Corporation and Tennessee Valley Authority

This Agreement, entered into as of the 21st day of April, 1936, between the Pickwick Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized and existing under the laws of the State of Tennessee, and Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933.

Witnesseth:

Whereas, at its meeting on January 15, 1936, the Board of Directors of Corporation requested Authority to construct rural transmission lines in Hardin, McNairy and Chester Counties, Tennessee, and agreed that Corporation would purchase said lines from Authority at cost plus overhead; and

Whereas, pursuant to that request Authority is constructing certain rural lines in the above counties for Corporation (said lines being hereinafter referred to as "new lines"); and

Whereas, under an agreement entitled, "Sale and Assignment Contract between Alcorn County Electric Power Association, Pickwick Electric Membership Corporation and

Tennessee Valley Authority," executed on even date herewith, Authority has loaned to Corporation the funds neces-
[fol. 2500] sary to enable Corporation to purchase, and Corporation has purchased, certain rural lines in Hardin and McNairy Counties, Tennessee, from the Alcorn County Electric Power Association (said lines being hereinafter referred to as "ACE lines"); and

Whereas, it is not feasible for Corporation to begin the operation of the ACE lines or of the new lines being constructed by Authority for Corporation until such new lines are completed as a unit and Corporation shall have acquired a superintendent and completed the organization necessary for operating all such lines as a unit; and

Whereas, it is necessary for Authority to operate for Corporation the ACE lines and the new lines as and when completed during the interim period above described, and Corporation and Authority desire to define and set forth the terms and conditions upon which the same will be operated.

Now, Therefore, for and in consideration of the mutual covenants contained herein the parties hereto mutually covenant and agree as follows:

1. Construction of New Lines and Payment Therefor.— Authority shall proceed with the construction for Corporation of such new lines in Hardin, McNairy and Chester Counties, Tennessee, as Authority may deem feasible from the standpoint of both Authority and Corporation.

2. Operation of ACE Lines and New Lines.— Authority shall operate the ACE lines for Corporation from the effective date of this contract, together with such new lines constructed for Corporation as Authority may deem suitable for energizing at said date. As and when additional new lines, if any, are constructed by Authority for Cor-
[fol. 2501] poration, Authority will energize and operate such lines for Corporation when Authority considers such lines ready for operation.

3. Application For Service.—Any person desiring service from the ACE lines (other than members transferred from the Alcorn County Electric Power Association whose status shall be as provided in the Sale and Assignment Contract above referred to) and any person desiring service from the

new lines, during the period of interim operation, shall apply to Corporation for membership in Corporation, and if the Authority deems it feasible to serve such applicant and such applicant shall agree to comply with the provisions of Corporation's charter and by-laws, Corporation shall collect the sum of Ten Dollars ($10.00) from said applicant and shall issue him a certificate of membership in Corporation, or a receipt entitling the holder to a certificate of membership when said certificates have been prepared. Authority will then connect and serve said customer.

4. Rates, Charges and Revenues.—Authority will supply electricity over all said lines at the retail rates prescribed in the schedules of the standard power contracts now in use by Authority with cooperative associations, including the amortization charge of One Cent (1¢) per kwh. of energy consumed, such amortization charge not to exceed One Dollar ($1.00) nor to be less than Twenty-five Cents (25¢) for each customer per month. All such amortization charges collected by Authority shall be entered on Authority's books so as to make the total amount paid by each customer during the interim period readily discernible. The total amount of these amortization collections shall be credited to Corporation on its obligation to Authority under [fol. 2502] the Sale and Assignment Contract referred to above and its obligations to Authority for the construction of the new lines. Authority will retain all revenues accruing from all lines during this interim period, other than the amortization charges above provided for, as compensation for Authority's services in operating such lines.

5. Collection of Bills.—All bills for energy furnished over such lines during the interim period of operation shall be submitted and collected by Authority. However, Corporation guarantees the payment of each and every such account as billed by Authority to the extent of Ten Dollars ($10.00) per customer per month. If any bill remains unpaid after the gross rate applies under Authority's rate schedule Corporation agrees to pay to Authority the amount of such unpaid bill to the extent of Ten Dollars ($10.00) per unpaid bill. The bill will then be assigned to Corporation to the extent of the amount paid thereon by Corporation to Au-

thority and Corporation shall collect such amount from the delinquent customer.

6. Payments for Range and Water Heater Installations.—Authority shall make payments for range and water heater installations only to customers receiving service on the new lines constructed by Authority. Any range or water heater payments to customers receiving service on the ACE lines must be made by Corporation. All payments made by Authority on these items shall be collected in a work order and charged to Corporation when the operation of all the lines is turned over to Corporation.

7. Bookkeepers Services.—Corporation agrees to furnish Authority part-time clerical and stenographic services to aid in the construction, operation and maintenance of the [fol. 2503] ACE lines and the new lines during the interim period, and Authority will pay Corporation the sum of Fifty Dollars ($50.00) per month for such part-time services during the said interim period. This paragraph shall be effective as of April 1, 1936.

8. Term of Contract.—When Authority shall notify Corporation that the new lines constructed for Corporation have been completed and that it is feasible for Corporation to take over the control and operation of all lines as a unit, which shall be not later than September 1, 1936, the above arrangement for interim operation by Authority shall terminate. Corporation agrees to accept at that time the conveyance of all new lines constructed by Authority for Corporation, and to take over control and operation of all such new lines and the ACE lines. Corporation agrees to execute at that time Authority's standard Power Contract and Sale and Security Contract providing for the purchase of power by Corporation from Authority for operating such lines, evidencing Corporation's obligation to Authority for the construction of the new lines and the loan by Authority to Corporation used in purchasing the ACE lines, and providing for the method of payment of such obligations, and Corporation further agrees to execute to Authority a good and valid first mortgage covering all property now owned or hereafter acquired by Corporation as security for the payment of Corporation's obligations to Authority.

COMPLAINANTS' EXHIBIT No. 179

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers as of the day and year first above written.

[fol. 2504] Pickwick Electric Membership Corporation (Signed) by Glenn Hassell, President. (Seal.)

Attest: E. A. Churchwell, Secretary.

Tennessee Valley Authority, (Signed) by Arthur E. Morgan, Chairman, Board of Directors. W. G. M., Legal Div.

Attest: Charles E. Hoffman, Assistant Secretary.

[fol. 2505] COMPLAINANTS' EXHIBIT No. 180

Operation Contract Between Bedford County Electric Membership Corporation and Tennessee Valley Authority

This agreement entered into this 18th day of May, 1936, between Bedford County Electric Membership Corporation (hereinafter called Corporation), a corporation duly organized and existing under the laws of the State of Tennessee, and Tennessee Valley Authority (hereinafter called Authority), a corporation created by the Tennessee Valley Authority Act of 1933.

Witnesseth:

Whereas, Corporation has requested Authority to construct for it rural transmission and distribution lines in and adjacent to Bedford County, Tennessee, and has agreed that Corporation will reimburse Authority therefor at cost plus overhead, and

Whereas, pursuant to that request Authority is constructing and has constructed certain rural lines in and adjacent to Bedford County, Tennessee, for Corporation, and

Whereas, it is not practicable for Corporation to begin the maintenance and operation of said lines until the same have been completed as a unit and the load sufficiently built up, and

Whereas, the parties hereto desire to enter into an agreement whereby Authority will energize and operate such lines or parts thereof as soon as it is practicable for Authority

[fol. 2506] to do so and until the lines have been completed as a unit and it is feasible for Corporation to take over the maintenance and operation of the complete unit.

Now, therefore, for and in consideration of the mutual covenants contained herein, the parties hereto mutually covenant and agree as follows:

1. Construction of lines and payment therefor—Authority will proceed with due diligence in the construction of such rural lines in and adjacent to Bedford County as may be requested by Corporation and considered feasible by Authority from the standpoint of both Authority and Corporation. Corporation agrees to pay Authority therefor the cost to Authority of constructing such lines plus overheads.

2. Preliminary operation of lines—Authority will energize those lines or portions thereof as soon as construction has proceeded to such an extent as to make it feasible in the opinion of Authority to do so. Such lines will be operated directly by Authority under the terms and provisions of this contract. Provided, however, that on or before January 1, 1937, Authority shall turn over to Corporation and Corporation shall accept the maintenance and operation of all lines which Authority has completed for Corporation prior to that date.

3. Terms and conditions of preliminary operation:

(a) Application for services—Any person desiring service during the period of preliminary operation of the lines constructed hereunder shall apply to Corporation for membership therein, and if Authority deems it feasible to serve [fol. 2507] such applicant and such applicant agrees to comply with the provisions of Corporation's charter and by-laws, Corporation shall collect the sum of Ten Dollars ($10) from said applicant and shall issue to him a certificate of membership in Corporation, or a receipt entitling the holder to a certificate of membership when such certificates have been prepared. Authority will then connect and serve said customer.

(b) Rates, charges and revenues—Authority will supply electricity over all such lines at the retail rates prescribed in the schedules of the standard power contracts now in use

by Authority with cooperative associations, including the amortization charge of 1¢ per kwh. of energy consumed, such amortization charge not to exceed One Dollar ($1.00) nor to be less than 25¢ for each customer per month. All such amortization charges collected by Authority shall be entered on Authority's books so as to make the total amount paid by each customer during the interim period readily discernible. The total amount of these amortization collections shall be credited to Corporation on its obligation to Authority for the construction of rural lines. Authority will retain all revenues accruing from all lines during this interim period, other than the amortization charges above provided for, as compensation for Authority's services in operating such lines.

(c) Collection of bills—All bills for energy furnished over such lines during the interim period of operation shall be submitted and collected by Authority. However, Corporation guarantees the payment of each and every such account as billed by Authority to the extent of Ten Dollars ($10) [fol. 2508] per customer per month. If any bill remains unpaid after the gross rate applies under the Authority's rate schedule, Corporation agrees to pay to Authority the amount of such unpaid bill to the extent of Ten Dollars ($10) per unpaid bill. The bill will then be assigned to Corporation to the extent of the amount paid thereon by Corporation to Authority and Corporation shall collect such amount from the delinquent customer.

(d) Bookkeeper's services—Corporation agrees to furnish Authority part-time clerical and stenographic services to aid Authority in constructing, operating and maintaining rural lines herein provided for, and Authority will pay Corporation the sum of Fifty Dollars ($50) per month for such part-time services during said interim period.

4. Term of preliminary operation—When Authority shall notify Corporation that the lines constructed for Corporation have been completed as a unit and that it is feasible for Corporation to take over the control and operation of such lines, which shall be not later than January 1, 1937, the above arrangement for interim operation by Authority shall terminate. Corporation agrees to accept at that time the

COMPLAINANTS' EXHIBIT No. 180

delivery of such lines as have been completed by Authority for Corporation, and to take over the control and operation of such lines. Corporation agrees to execute Authority's standard power contract providing for the purchase of power by Corporation from Authority for operating such lines, and Authority's standard sale and security contract evidencing Corporation's obligation to Authority for the construction of rural lines and providing for the method of payment of such obligation. Corporation further agrees to execute to Authority a good and valid first mortgage cov- [fol. 2509] ering all property now owned or hereafter acquired by Corporation as security for the payment of Corporation's obligations to Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers as of the day and year first above written.

Bedford County Electric Membership Corporation, (Signed) by E. I. McLean, President. Seal.

Attest: (Signed) Dan Parker, Sec.

Tennessee Valley Authority, (Signed) by Harcourt A. Morgan. W. S. M., Legal Div. Seal.

Attest: (Signed) Charles E. Hoffman, Ass't. Secretary

JLF:WTM:MC.

[fol. 2510] COMPLAINANTS' EXHIBIT No. 181.

Contract TV-6057

Agreement for Sale and Loan Between Tennessee Valley Authority and Gibson County Electric Membership Corporation

This Agreement, made and entered into this thirteenth day of August, 1936, by and between the Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the Gibson County Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized, created, and existing under and by virtue of the laws of the State of Tennessee,

COMPLAINANTS' EXHIBIT No. 181.

Witnesseth:

Whereas, Corporation and Authority have entered into a power contract of even date herewith under the terms of which Corporation agrees to purchase from Authority, and Authority agrees to supply, the entire electric requirements of Corporation; and

Whereas, Authority, by virtue of Section 10 of the Tennessee Valley Authority Act, has constructed and is engaged in constructing rural transmission lines to farms and small villages in Gibson County, Tennessee, in order to promote and encourage the fullest possible use of electric light and power on such farms and in such small villages; and

[fol. 2511] Whereas, Corporation desires to purchase the lines so constructed by Authority in Gibson County, Tennessee, and to maintain and operate them so as to promote the fullest possible use of electricity among the members of said Corporation; and

Whereas, Corporation desires to acquire the urban distribution system in the town of Gibson, Gibson County, Tennessee, from the present owners, and has reason to believe that Corporation can purchase said urban distribution system for the sum of three thousand six hundred and eighteen dollars ($3,618.00); and

Whereas, Corporation has requested that Authority advance to Corporation three thousand six hundred and eighteen dollars ($3,618.00) for the acquisition of said distribution system, and further to extend additional credit up to the sum of five thousand five hundred dollars ($5,500.00) in order that Corporation might rehabilitate said distribution system;

Now, Therefore, in consideration of the mutual benefits to all parties hereto and of the covenants and agreements herein contained and those also contained in said Power Contract, and subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto covenant and agree, as follows:

1. Incorporation of Power Contract.—This instrument is executed in connection with and is to be considered a part of the contract styled, "Power Contract Between Tennessee Valley Authority and Gibson County Electric Membership

SERVICE CLASSIFICATION "E-1"

SUBURBAN ELECTRIC SERVICE
110-220 Volts

Single Phase

AVAILABILITY

Available to any consumer served from a single-phase suburban distribution line of the Company for electric lighting, cooking, heating, refrigeration or power service having a demand of less than 50 kilowatts, or any combination of these, where the total consumption can be measured at one delivery point.

RATE

$1.25 net ($1.375 gross) for the first 5 KWH or less consumed per month; plus
5 cents net (5.5c gross) per KWH for the next 45 KWH consumed per month; plus
3 cents net (3.3c gross) per KWH for the next 950 KWH consumed per month; plus
2 cents net (2.2c gross) per KWH for the next 4000 KWH consumed per month; plus
1 cent net (1.1c gross) per KWH for all over 5000 KWH consumed per month.

The above monthy charge for the first 5 KWH or less is applicable for service with contracted capacity requirements of 1.5 kilowatts, as hereinafter determined, and will be increased 15 cents net (16.5c gross) for each 100 watts of capacity requirements contracted for in excess of 1.5 kilowatts.

DETERMINATION OF CONSUMERS PER MILE

The Consumers per mile shall be the total number of Consumers served from the line divided by the total mileage of distribution pole line serving such Consumers, exclusive of service connections and exclusive of customer-owned distribution lines over and across private right-of-way.

DETERMINATION OF CONSUMERS' CONTRACTED CAPACITY REQUIREMENTS.

LIGHTING LOAD:
The lighting load within one residence and/or 200 watts of commercial or any other lighting load will not be counted but will be allowed each Consumer on account of the above 1.5 kilowatts contracted capacity requirements. All other lighting load will be in addition to the above allowance of 1.5 kilowatts of contracted capacity requirements and will be counted at 100% of the lamp wattage or volt-ampere rating. The Lighting Load of each church, lodge, and day-school will be counted at 200 watts.

MOTOR LOAD:
Motors with manufacturer's rating of less than one (1) horsepower will not be counted in determining the contracted capacity requirements:

a. GENERAL POWER:
The kilowatts of motor load, other than Seasonal Power, and other than motors less than one-horse-power each, shall be as follows:
70% of the first ten (10) horsepower of connected motor load; plus
40% of all over ten (10) horsepower of connected motor load.

Effective for bills dated January 1, 1937 and thereafter.

Corporation" dated thirteenth day of August, 1936 (hereinafter called "Power Contract").

2. Construction of Project.—Authority agrees to construct and to convey to Corporation, subject to the provi- [fol. 2512] sions hereinafter contained, the rural transmission lines and the other properties represented by Work Orders 2132, 2133, 2142, 2272, 2273, and 2185, explanations of which are attached hereto and hereby made a part hereof as "Exhibit A." The estimated cost of the construction to be done pursuant to the above Work Orders is one hundred ten thousand sixty and 75/100 dollars ($110,060.75), but this sum shall be subject to adjustment plus or minus when the Work Orders have been closed and the costs thereof determined.

3. Acceptance of Project by Corporation.—Corporation shall accept the properties heretofore or hereafter constructed by Authority, pursuant to the Work Orders referred to in Section 2 above, in Gibson County, Tennessee, and shall reimburse Authority for all of Authority's costs under said Work Orders, including overheads.

4. Rights of Way and Easements.—Corporation agrees to secure at its own expense the rights of way and easements necessary for the construction of the lines Authority elects to build for Corporation under said Work Orders. Such easements shall be secured in form acceptable to Authority and shall run to and be the property of Corporation and assigns.

5. Franchises and Consents.—Corporation agrees to secure all the franchises and consents from the governing bodies of the counties and the governing bodies of incorporated towns which may be necessary for the construction and operation by Authority or Corporation of the rural transmission lines and properties herein provided for.

6. Building of Project.—Authority will proceed with due diligence in the construction of the project covered by said Work Orders and will deliver to Corporation a part or parts of the properties when construction has progressed to such a stage that such part is practicably usable for electric service by Corporation. Corporation agrees to accept such

[fol. 2513] lines as delivered by Authority and to operate and maintain them on Corporation's behalf.

7. Determination of Costs.—As soon as possible after the completion of the Work Orders designated in Section 2 above, the completion of which is hereby authorized and requested by Corporation, Authority shall determine the precise total amount of the cost to Authority of the project constructed pursuant to said Work Orders, as shown by the records of Authority, which cost shall include overhead charges.

8. (a) Loan to Association.—Authority agrees to advance three thousand six hundred eighteen dollars ($3,618.00) to Corporation to be used by Corporation in purchasing the urban distribution system serving the town of Gibson, Tennessee, which properties were purchased by E. H. Wright at a Trustee's sale on June 9, 1936. Upon the presentation by Corporation to Authority of (1) proof that Corporation has an option to purchase said Gibson distribution system for a sum not to exceed three thousand six hundred eighteen dollars ($3,618.00), conveyance to be made by warranty deed, and free of all liens and encumbrances, except liens for ad valorem taxes of 1936, which shall be prorated, and the present owner to operate the system until the Corporation shall have connected said system to a transmission line of Corporation to be used for serving said Gibson distribution system with electricity, and (2) proof that Corporation has all necessary or advisable franchises, permits, licenses, and other government approvals, and all rights of way and easements necessary or advisable for the operation of said distribution system, and (3) a certified copy of the resolution of the Board of Directors of Corporation requesting that the advance be made, and (4) an opinion of counsel (who shall be satisfactory to Authority), that E. H. [fol. 2514] Wright is the owner of said system and is capable of giving the Corporation valid title thereto, and that all the acts and proceedings of the Corporation necessary for borrowing said money from Authority and purchasing said system from said E. H. Wright have been duly taken and are within the powers of the Corporation, and (5) a receipt acknowledging the payment of said three thousand six hundred eighteen dollars ($3,618.00) by Authority

to Corporation, Authority will issue a check payable to Corporation in the sum of three thousand six hundred eighteen dollars ($3,618.00).

(b) Authority agrees to loan to Corporation that amount required by Corporation to improve and rehabilitate the Gibson distribution system, said amount not to exceed the sum of fifty-five hundred dollars ($5500.00). Upon the presentation by Corporation to Authority of (1) proof that Corporation has all necessary or advisable franchises, permits, licenses, and other governmental approvals, and all rights of way and easements necessary or advisable for the improvement and rehabilitation of said system, and (2) a certified copy of a resolution of the Board of Directors of the Corporation requesting such advance, and (3) an opinion of counsel that Corporation has power and has taken necessary steps to borrow such money and rehabilitate and improve such system, and (4) a receipt acknowledging the advance of such money, Authority will issue a check payable to Corporation in the sum of fifteen hundred dollars ($1500.00). Authority will make further advances to Corporation up to said fifty-five hundred dollars ($5500.00) as needed from time to time in the course of the improvement and rehabilitation of the distribution system, upon presentation of similar requests and receipts for such advances accompanied by a certificate stating in detail the use to which prior advances have been put and the use to which the sum applied for is to be put.

[fol. 2515] Corporation agrees that it will improve and rehabilitate, or cause the Gibson electric distribution system to be improved and rehabilitated, according to and in compliance with Authority's "Specifications for Rural Electric Distribution Lines." In the event such specifications do not cover the type work which is necessary or advisable for Corporation to perform in the rehabilitation and improvement of the distribution system, Corporation agrees to perform such work in compliance with the National Electric Safety Code, as from time to time amended by the proper authorities. If the terms of the Authority's Specification for Rural Electric Distribution Line" and the terms of the National Electric Safety Code shall conflict, the former shall control.

Corporation further agrees that Authority shall have the right to demand that the specifications for such improvement and rehabilitation be presented to Authority, and to inspect the project at any time during the improvement thereof, in order that Authority may ascertain whether Corporation is complying with this section.

Corporation agrees to reimburse Authority for the actual cost of making such inspections and reviewing Corporation's specifications, such sum, however, not to exceed five per centum (5%) of the total cost of rehabilitation and improvement of the system. If Authority finds that Corporation's specifications, or its construction, is not in compliance with the specifications with which Corporation has agreed to conform, and Corporation refuses to alter the same, Authority shall not be obligated to advance any further sums to Corporation under this section.

(c) Corporation hereby expressly agrees that it will not use any funds advanced by Authority to Corporation under paragraphs (a) and (b) hereof, except for the purposes [fol. 2516] therein stated, and Corporation further agrees that all advances so made shall become a part of the obligation of Corporation to Authority and the payment thereof shall be secured to Authority in the manner set out hereinafter.

9. Construction of Rural Lines.—Authority agrees to construct at its own expense on rights of way and/or easements to be secured by Corporation, such additional electric transmission lines in or adjacent to Gibson County, Tennessee, as the parties may from time to time agree. Said lines will be constructed by Authority for and on behalf of Corporation as Corporation's agent for such construction.

Corporation agrees to pay to Authority, in addition to all other outstanding indebtedness to Authority, the actual cost to Authority as billed by Authority, of any line so constructed pursuant to this agreement, and said additional indebtedness shall be added to the obligation of Corporation under this contract and shall become a part thereof.

10. Execution of Note, Mortgage—Payment of Indebtedness.—Authority will notify Corporation upon the comple-

tion of the construction of the Work Orders described in Section 2 above, and upon the determination of the costs thereof. Authority will also notify Corporation of the amount borrowed by Corporation for the acquisition, improvement and rehabilitation of the Gibson electric distribution system.

Authority will execute a conveyance to Corporation transferring all of its rights to the project constructed under the Work Orders described in Section 2 hereof, and will present to Corporation for execution a note or bond to the Tennessee Valley Authority covering the cost of the project constructed by Authority and in addition the amount advanced by Authority to Corporation with which Corporation acquired, rehabilitated, and improved the Gibson distribution system. [fol. 2517] Corporation agrees to execute said note or bond to the Tennessee Valley Authority and further agrees to secure the payment of said obligation by a mortgage in favor of Authority and the United States of America covering all of the property of Corporation then owned and thereafter acquired. Corporation agrees to pay said obligation to Authority with interest on the unpaid balance at the rate of three and one-half per centum (3½%) per annum, payable semi-annually and at the times and in the manner provided for in said Power Contract between Corporation and Authority. Interest shall not begin to run, however, on any money loaned by Authority to Corporation hereunder until such money has actually been advanced and turned over to Corporation. Interest on the properties constructed under Section 2 hereof shall run from the date of the delivery of any part of said project to Corporation, but only upon the sum representing the cost of such delivered portion.

11. Insurance and Maintenance of Property.—Corporation agrees to save Authority harmless from any liability arising out of Corporation's operation of the lines, properties and systems referred to herein. Corporation agrees to secure adequate workmen's compensation insurance and to secure public liability insurance in an amount of not less than twenty-five thousand dollars ($25,000.00) for injuries, including wrongful death, to any one person, and subject to the same limit for each person in an amount of not less

than fifty thousand dollars ($50,000.00) for injuries, including wrongful death, to two or more persons on account of one accident, and property damage insurance in an amount of not less than ten thousand dollars ($10,000.00). Corporation shall at all times make or cause to be made, at its own expense, such repairs, maintenance, renewals, and replacements as shall be necessary to maintain, preserve, and keep the property described herein in good repair, working order, and condition.

[fol. 2518] 12. Corporation agrees to construct, cause to be constructed, or acquire and to operate all of the rural lines in Gibson County, Tennessee, described as additions to properties now under construction pursuant to the work order set out in Section 2 hereof, which additional lines are more fully described and set out on the map attached hereto and hereby incorporated herein as Exhibit B. Corporation further agrees to construct, cause to be constructed, or to acquire and to operate all or such portion of the rural lines in Madison, Haywood, Dyer, and Obion Counties, Tennessee, which are more fully described and set out in the table and maps attached hereto and hereby incorporated herein as Exhibit C, as Authority may request; Provided, however, that Corporation shall not be obligated under this Section 12 unless Corporation is successful in securing the financing of said additional lines from the Tennessee Valley Authority or the Rural Electrification Administration; and Provided, further, that in no event shall Corporation be required hereunder to construct, cause to be constructed, or acquire lines which shall exceed in cost to Corporation the sum of $335,000.00.

13. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Corporation to any other party without first securing the written consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers the day and year first above written.

COMPLAINANTS' EXHIBIT No. 181.

[fol. 2519] Tennessee Valley Authority, (Signed) by Arthur E. Morgan, Chairman, Board of Directors. J. L. F. (Seal.)

Attest: (Signed) Charles E. Hoffman.

Gibson County Electric Membership Corporation, (Signed) by C. E. Garner, President. (Seal.)

Attest: (Signed) M. O. Zorecor, Secretary.

[fol. 2520] Exhibit A

1. Work Order 2132—Construct in Gibson and northern part of Madison Counties 79 miles of single phase two-wire No. 2 and No. 4 ACSR, 6900 volts, grounded neutral rural lines with transformers, secondaries and services to serve customers along the routes.

2. Work Order 2133—Construct in Gibson and northern part of Madison Counties 25 miles of three phase four-wire No. 2 ACSR, 11,950 Y volt grounded neutral rural lines from Baker's Chapel to Trenton and from New Enterprise to Milan, including transformers, secondaries and services to serve customers along the routes.

3. Work Order 2142—Install three 37½ kva. 6900 volt step type voltage boosters in the Baker's Chapel-Milan 12 kv. line at Gibson, Tennessee, complete with pole platform, switches, and accessories.

4. Work Order 2272—Service extension including necessary transformers and metering equipment to serve Trenton Cotton Oil Company.

5. Work Order 2273—Service extension including necessary transformers and metering equipment to serve the Banks-Hammond Cotton Gin in Trenton.

6. Work Order 2185—This work order is issued to collect the payments to be made by the Authority toward wiring cost on installation of ranges and hot water heaters to Gibson County, Tennessee.

CGD:EJH.

[fol. 2521]

Complainants' Exhibit No. 181

Exhibit C, Sheet 1

West Tennessee Electric Membership Corporation

General Summary

County	No. Miles of Line 1-phase	No. Miles of Line 3-phase	Total Miles	Estimated Total Cost	Total No. Customers	Total kwh. per Month	Avg. kwh. Per Month Per Mile	Avg. No. Customers Per Mile	Estimated kw. demand Per Month
Madison	82.0	31.0	113.0	$124,358*	473	80,938	715	4.1	470 (a)
Haywood	44.0	14.0	58.0	58,528	207	35,739	616	3.6	100
Dyer	30.0	7.0	37.0	36,735	126	22,040	597	3.4	75
Obion	70.0	20.0	90.0	90,160	373	50,290	558	4.1	150
Gibson (Additions)	9.0	4.0	13.0	25,062**	52	9,415	725	4.0	20
Total—Average	235.0	76.0	311.0	$334,843	1,231	198,422	638	3.9	815 (b)

* Includes $5,400 for 2-voltage regulators, locations undetermined.
** Includes $11,282 as cost of converting 27 miles of existing single phase line to three phase.
(a) Includes 4 cotton gins, 175 kw.; 1 brick plant, 80 kw.; and 22 small power customers totaling 40 kw.
(b) Undiversified total—Maximum.

[fol. 2522] COMPLAINANTS' EXHIBIT No. 182

Map of the State of Alabama Showing the Location of New Industries in Said State Since 1925

(Original Exhibit)

[fol. 2523] COMPLAINANTS' EXHIBIT No. 183

Chart Entitled "Alabama Power Company—Ten Year Record—Gross Appliance Sales Volume"

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 184

Chart Entitled "Alabama Power Company Development of Rural Lines"

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 185

Rules of Alabama Public Service Commission concerning rural lines.

SERVICE CLASSIFICATION "E-1"

SUBURBAN ELECTRIC SERVICE
110-220 Volts

Single Phase

AVAILABILITY

Available to any consumer served from a single-phase suburban distribution line of the Company for electric lighting, cooking, heating, refrigeration or power service having a demand of less than 50 kilowatts, or any combination of these, where the total consumption can be measured at one delivery point.

RATE

$1.25 net ($1.375 gross) for the first 5 KWH or less consumed per month; plus
5 cents net (5.5c gross) per KWH for the next 45 KWH consumed per month; plus
3 cents net (3.3c gross) per KWH for the next 950 KWH consumed per month; plus
2 cents net (2.2c gross) per KWH for the next 4000 KWH consumed per month; plus
1 cent net (1.1c gross) per KWH for all over 5000 KWH consumed per month.

The above monthy charge for the first 5 KWH or less is applicable for service with contracted capacity requirements of 1.5 kilowatts, as hereinafter determined, and will be increased 15 cents net (16.5c gross) for each 100 watts of capacity requirements contracted for in excess of 1.5 kilowatts.

DETERMINATION OF CONSUMERS PER MILE

The Consumers per mile shall be the total number of Consumers served from the line divided by the total mileage of distribution pole line serving such Consumers, exclusive of service connections and exclusive of customer-owned distribution lines over and across private right-of-way.

DETERMINATION OF CONSUMERS' CONTRACTED CAPACITY REQUIREMENTS.

LIGHTING LOAD:
The lighting load within one residence and/or 200 watts of commercial or any other lighting load will not be counted but will be allowed each Consumer on account of the above 1.5 kilowatts contracted capacity requirements. All other lighting load will be in addition to the above allowance of 1.5 kilowatts of contracted capacity requirements [illegible] of the [illegible] watts or volt ampere rating. The Light-

9. The following conditions shall govern credits when applicable to suburban lines:
   (a) Consumers served from any suburban line which is used to extend service to a community at urban rates shall not be charged for any capacity requirements in excess of that determined by their actual connected loads.
   (b) Should the Company elect to construct a suburban line on existing poles supporting a transmission line of the Company, the suburban line shall be credited with two and one-half (2½) KW per mile of such joint pole line.
   (c) A suburban line shall not receive any credits for temporary service.

10. The Company shall not be required to construct a suburban line more than two-tenths (2/10) of a mile of line per Consumer without the right to require the Consumer or Consumers to make a guarantee to secure the permanency of the Company's investment by special deposit, or other manner acceptable to the Company.

MINIMUM BILL

In consideration of the readiness of the Company to furnish such service, each consumer shall pay a monthly minimum charge equal to the monthly charge for the first 5 KWH, plus $1.00 net ($1.10 gross) per KW for all over 10 KW of residential cooking and heating loads and or all over 10 KW of other loads except lighting and motors.

PROMPT PAYMENT DISCOUNT

The prompt payment discount is the difference between the net and gross rates and will be allowed on all bills paid within ten days from the due date.

TERM OF CONTRACT

Service under this classification shall be for an initial period of five (5) years, and thereafter from year to year until terminated by thirty days' written notice by either the Consumer or the Company of intention to terminate the contract, for the original Consumers who sign applications for service prior to the construction of the suburban line.

The term of contract for Consumers who sign applications for service subsequent to the completion of the suburban line shall be for a period then equal to the unexpired part of the five years for which the original Consumers signed applications for service, and thereafter from year to year until terminated by thirty days' written notice by either the Consumer or the Company of intention to terminate the contract.

Upon and after the expiration of the initial period of five years for which the original Consumers sign applications for service, the term of contract for all Consumers on the suburban line shall be for one year and thereafter from year to year until terminated by thirty days' written notice by either the Consumer or the Company of intention to terminate the contract.

Experimental rate customers who were receiving service on September 2, 1933, under Service Classification "D" and properly classified thereunder, may continue to be served on the same schedule of rates.

Rules of Alabama Public Service Commission concerning rural lines.

By Order of Alabama Public Service Commission
Non Docket 982, September 5, 1935, July 17, 1936, December 17, 1936.

Alabama Power Company No. 1
Fourth Revised Sheet No. 12a

SERVICE CLASSIFICATION "E-1"

(Continued)

b. SEASONAL POWER:
The kilowatts of all motors of 7½ horsepower rating or over used exclusively for seasonal operations of an individual farm shall be as follows:
7½ h.p. motors—fifty per cent (50%).
10 h.p. motors or larger—forty per cent (40%).

COOKING AND HEATING LOAD:

Cooking and heating applicances with manufacturer's rating of 880 watts or less will not be counted.

The connected load for cooking and baking equipment ordinarily used in the preparation of food, air heaters, water heaters, melting pots on linotype machines, X-rays, hair dryers, and or ten kilowatts of connected load for sterilizers, vulcanizers, permanent wave machines, hotbed heating elements and heating elements in incubators and brooders shall be counted only in determining the minimum charge.

ALL OTHER LOAD:

All other load will be counted at the manufacturer's rating in watts or volt-amperes of such equipment, or by test.
Where double throw switches are used, the maximum sum total of consumer's loads, as determined herein which can be operated at one time, will be counted.

MINIMUM CONTRACTED CAPACITY:

The Minimum Contracted Capacity Requirements per consumer shall be 1½ kilowatts. Before beginning construction of any suburban line, the Company may require the consumer or consumers to be served therefrom to contract for a total Minimum Capacity Requirements at the rate of 7½ kilowatts per mile of line. At the expiration of the first five years of service from a suburban line the Minimum Capacity Requirements shall be reduced to 5 kilowatts per mile of line, without otherwise affecting the rate.

OPTIONAL DEPOSIT IN LIEU OF MONTHLY CHARGE FOR FIRST 5 KWH:

Any consumer receiving service from a suburban line may, at his option and in lieu of the monthly charge for the first 5 KWH, deposit with the Company an amount equal to $150.00 for each $1.00 of monthly charge as determined above. Such deposit will be returned to the Consumer in full without interest at the time of the termination of his contract, but in no instance less than one year from the beginning of service.

SPECIAL RULES GOVERNING THE APPLICATION OF SERVICE CLASSIFICATION "E-1"

suburban distribution line of the Company for electric lighting, cooking, heating, refrigeration or power service having a demand of less than 50 kilowatts, or any combination of these, where the total consumption can be measured at one delivery point.

"OBJECTIVE" RATE

$1.25 net ($1.375 gross) for the first 15 KWH or less per month; plus
4.5c net (4.95c gross) per KWH for the next 15 KWH per 100 watts per month; plus
2.0c net (2.20c gross) per KWH for the next 10 KWH per 100 watts per month, but not less than 150 KWH per month; plus
1.25c net (1.375c gross) per KWH for the next 500 KWH per month; plus
1.0c net (1.10c) gross per KWH for all KWH per month in excess of above amounts.

DETERMINATION OF CAPACITY REQUIREMENTS

The capacity requirements of each Consumer, as determined below to the nearest 100 watts, shall be based on the connected load but shall not be considered as less than 400 watts for residences nor less than 1,000 watts for commercial or other farm uses.

(a) RESIDENTIAL
The connected load of each residence and 200 watts of yard, barn, garage or other lighting, will be considered as 400 watts in determination of the capacity requirements.
The initial monthly charge of $1.25 net ($1.375 gross) shall be increased $1.00 net ($1.10 gross) per KW for electric range and heating load in excess of 10 KW, and 75c net (82.5c gross) per HP for all connected motor loads in excess of 3 HP.
The maximum size of any single motor shall not exceed 3 HP.

(b) OTHER THAN RESIDENTIAL

LIGHTING—
100% of the first 1,000 watts of connected lamp wattage or volt ampere rating; plus
80% of the next 9,000 watts of connected lamp wattage or volt ampere rating; plus
50% of all over 10,000 watts of connected lamp wattage or volt ampere rating.

MOTORS—
40% of the first 10 HP of connected motor load; plus
30% of all over 10 HP of connected motor load.
Motors with manufacturer's rating of 1/6 HP or less will not be counted.
One (1) HP of motor load as determined above shall be the equivalent of 750 Watts.

ALL OTHER LOADS—
Appliances with manufacturer's rating of 880 watts or less and 10 KW of cooking and heating loads will not be counted. All other connected loads will be counted at 50% of manufacturer's rating in the determination of the capacity requirements.

Effective for bills dated September 1, 1935 and thereafter.

for seasonal operations of an individual farm shall be as follows:

7½ h.p. motors—fifty per cent (50%).
10 h.p. motors or larger—forty per cent (40%).

COOKING AND HEATING LOAD:

Cooking and heating applicances with manufacturer's rating of 880 watts or less will not be counted.

The connected load for cooking and baking equipment ordinarily used in the preparation of food, air heaters, water heaters, melting pots on linotype machines, X-rays, hair dryers, and or ten kilowatts of connected load for sterilizers, vulcanizers, permanent wave machines, hotbed heating elements and heating elements in incubators and brooders shall be counted only in determining the minimum charge.

ALL OTHER LOAD:

All other load will be counted at the manufacturer's rating in watts or volt-amperes of such equipment, or by test.
Where double throw switches are used, the maximum sum total of consumer's loads, as determined herein which can be operated at one time, will be counted.

MINIMUM CONTRACTED CAPACITY:

The Minimum Contracted Capacity Requirements per consumer shall be 1½ kilowatts. Before beginning construction of any suburban line, the Company may require the consumer or consumers to be served therefrom to contract for a total Minimum Capacity Requirements at the rate of 7½ kilowatts per mile of line. At the expiration of the first five years of service from a suburban line the Minimum Capacity Requirements shall be reduced to 5 kilowatts per mile of line, without otherwise affecting the rate.

OPTIONAL DEPOSIT IN LIEU OF MONTHLY CHARGE FOR FIRST 5 KWH:

Any consumer receiving service from a suburban line may, at his option and in lieu of the monthly charge for the first 5 KWH, deposit with the Company an amount equal to $150.00 for each $1.00 of monthly charge as determined above. Such deposit will be returned to the Consumer in full without interest at the time of the termination of his contract, but in no instance less than one year from the beginning of service.

SPECIAL RULES GOVERNING THE APPLICATION OF SERVICE CLASSIFICATION "E-1"

1. A suburban line is defined to be:
   (a) Any electrical distribution line of 11,000 volts or less, not within the corporate limits of a municipality, which serves less than twenty Consumers per mile of pole line, and/or

Effective for bills dated January 1, 1937 and thereafter.

COMPLAINANTS' EXHIBIT No. 185

Rules of Alabama Public Service Commission concerning rural lines.

SERVICE CLASSIFICATION "E-1"

(Continued)

(b) Any electrical distribution line of 11,000 volts or less, within the corporate limits of a municipality, upon approval of the Alabama Public Service Commission.

2. Each suburban line as originally constructed shall be considered a unit in applying the monthly charge for the first 5 KWH or less, unless there is such a wide difference in Consumer-density between sections or branches of such line as to constitute marked discrimination against the higher density group, and in this event such sections or branches may be considered separate suburban lines.

3. New Consumers added to a suburban line will be served at the same base monthly charge for the first 5 KWH or less as existing Consumers on such line, unless such addition constitutes an extension which would reduce the average number of Consumers per mile of line, in which event the extension shall be considered a new suburban line.

4. (a) Any section of a suburban line, which is immediately adjacent to an urban distribution system and is served by an extension to such urban distribution system, serving 20 Consumers or more per mile shall become an urban line and service shall be rendered to such section at such urban rates as may be applicable, provided the remainder of such suburban line can be served without increase in the monthly minimum charge for the first 5 KWH to the consumers served therefrom.

(b) The Consumers of any section of a suburban line having a total of 75 Consumers or more and a density of 20 Consumers or more per mile, not including any Consumer located at a distance of one-half mile or more from the nearest other Consumer, shall be served at urban rates provided the remainder of such suburban line can be served without increase in the monthly minimum charge for the first 5 KWH to the Consumers served therefrom.

5. The monthly charge for the first 5 KWH or the equivalent Optional Deposit of each Consumer shall be subject to adjustment as of January 1 of each year.

6. The Company shall furnish and install, free of expense to the Consumer, service wires from its pole line to the first approved point of permanent support, or to the first pole of service on Consumer's premises. Special service or distribution lines required to be constructed on private property shall be constructed by the Company at cost and will be subject to a special agreement between the Company and the Consumer, or Consumers, to be served.

7. Where facilities are available at the premises of any Consumer for three-phase service, such service may be established under this classification for motor loads of 5 H.P. and over. The Company shall not, however, be required to construct any additional facilities for the purpose of supplying three-phase service unless the revenue to be derived immediately therefrom shall be sufficient to yield the Company a fair return on the value of such additional facilities.

In consideration of the readiness of the Company to furnish such service, each Consumer shall pay a monthly minimum charge of $1.25 net ($1.375 gross); plus 75c net (82.5c gross) per HP for all connected motor load other than motors of 3 HP rating or less, not exceeding a total of 3 HP used exclusively for residential purposes; plus $1.00 net ($1.10 gross) per KW for all over 10 KW of residential cooking and heating loads and/or all over 10 KW of other non-lighting load.

PROMPT PAYMENT DISCOUNT

The prompt payment discount is the difference between the net and gross rates and will be allowed on all bills paid within ten days from due date of bill.

APPLICATION OF RATE PLAN

(1) For present suburban Consumers who have taken service for at least 12 months and whose monthly bills figured at "Objective" Service Classification "E-4" equal or exceed the amount paid to the Company for service the same month during the service year ending May, 1934, "Objective" Service Classification "E-4" shall be applied by the Company for that month unless the application of Service Classification "E-1" results in a lower bill.

(2) Whenever during any month Service Classification "E-1" would result in a bill less than the amount paid to the Company for service the same month during the service year ending May, 1934, Service Classification "E-1" shall be applied by the Company for that month.

(3) Whenever the Consumer's bill for any month, computed under "Objective" Service Classification "E-4," would be less than the amount paid to the Company for service the same month during the service year ending May, 1934, but would be greater at Service Classification "E-1", then the bill rendered shall be equal to the amount paid to the Company for service the same month during the year ending May, 1934.

(4) For Consumers connected for less than twelve months preceding June, 1934, and for new Consumers, Service Classification "E-1" will apply for such Consumers until the first twelve months of service shall have elapsed, and thereafter "Objective" Service Classification "E-4" will be applicable on the basis provided for in Paragraphs 1, 2 and 3 hereof.

(5) Any residential suburban consumer using electric service for any combination of cooking, refrigeration and water heating shall have a maximum *base* bill of $8.00 per month for the first two (2) KW or less of contracted capacity, plus 40c per 100 watts of contracted capacity in excess of two (2) KW, such contracted capacity to be determined on the basis of Service Classification "E-1."

No such suburban residential consumer shall be billed in any month for an amount in excess of the maximum base bill determined as above, unless such consumer's uses of electric service figured at Service Classification "E-4" exceed the amount of such base bill for that month.

Special Rules Governing the Application of Service Classification "E-1" shall apply to and govern the application of this Service Classification.

(b) Any electrical distribution line of 11,000 volts or less, within the corporate limits of a municipality, upon approval of the Alabama Public Service Commission.

2. Each suburban line as originally constructed shall be considered a unit in applying the monthly charge for the first 5 KWH or less, unless there is such a wide difference in Consumer-density between sections or branches of such line as to constitute marked discrimination against the higher density group, and in this event such sections or branches may be considered separate suburban lines.

3. New Consumers added to a suburban line will be served at the same base monthly charge for the first 5 KWH or less as existing Consumers on such line, unless such addition constitutes an extension which would reduce the average number of Consumers per mile of line, in which event the extension shall be considered a new suburban line.

4. (a) Any section of a suburban line, which is immediately adjacent to an urban distribution system and is served by an extension to such urban distribution system, serving 20 Consumers or more per mile shall become an urban line and service shall be rendered to such section at such urban rates as may be applicable, provided the remainder of such suburban line can be served without increase in the monthly minimum charge for the first 5 KWH to the consumers served therefrom.

(b) The Consumers of any section of a suburban line having a total of 75 Consumers or more and a density of 20 Consumers or more per mile, not including any Consumer located at a distance of one-half mile or more from the nearest other Consumer, shall be served at urban rates provided the remainder of such suburban line can be served without increase in the monthly minimum charge for the first 5 KWH to the Consumers served therefrom.

5. The monthly charge for the first 5 KWH or the equivalent Optional Deposit of each Consumer shall be subject to adjustment as of January 1 of each year.

6. The Company shall furnish and install, free of expense to the Consumer, service wires from its pole line to the first approved point of permanent support, or to the first pole of service on Consumer's premises. Special service or distribution lines required to be constructed on private property shall be constructed by the Company at cost and will be subject to a special agreement between the Company and the Consumer, or Consumers, to be served.

7. Where facilities are available at the premises of any Consumer for three-phase service, such service may be established under this classification for motor loads of 5 H.P. and over. The Company shall not, however, be required to construct any additional facilities for the purpose of supplying three-phase service unless the revenue to be derived immediately therefrom shall be sufficient to yield the Company a fair return on the value of such additional facilities.

8. Industrial power consumers served from the suburban lines as herein defined shall be billed at the rates and charges prescribed by the standard power service classification applicable to such service.

COMPLAINANTS' EXHIBIT No. 185

Rules of Alabama Public Service Commission concerning rural lines.

SERVICE CLASSIFICATION "E-1"

(Continued)

9. The following conditions shall govern credits when applicable to suburban lines:

   (a) Consumers served from any suburban line which is used to extend service to a community at urban rates shall not be charged for any capacity requirements in excess of that determined by their actual connected loads.

   (b) Should the Company elect to construct a suburban line on existing poles supporting a transmission line of the Company, the suburban line shall be credited with two and one-half (2½) KW per mile of such joint pole line.

   (c) A suburban line shall not receive any credits for temporary service.

10. The Company shall not be required to construct a suburban line more than two-tenths (2/10) of a mile of line per Consumer without the right to require the Consumer or Consumers to make a guarantee to secure the permanency of the Company's investment by special deposit, or other manner acceptable to the Company.

MINIMUM BILL

In consideration of the readiness of the Company to furnish such service, each consumer shall pay a monthly minimum charge equal to the monthly charge for the first 5 KWH, plus $1.00 net ($1.10 gross) per KW for all over 10 KW of residential cooking and heating loads and or all over 10 KW of other loads except lighting and motors.

PROMPT PAYMENT DISCOUNT

The prompt payment discount is the difference between the net and gross rates and will be allowed on all bills paid within ten days from the due date.

TERM OF CONTRACT

Service under this classification shall be for an initial period of five (5) years, and thereafter from year to year until terminated by thirty days' written notice by either the Consumer or the Company of intention to terminate the contract, for the original Consumers who sign applications for service prior to the construction of the suburban line.

The term of contract for Consumers who sign applications for service subsequent to the completion of the suburban line shall be for a period then equal to the unexpired part of the five years for which the original Consumers signed applications for service, and thereafter from year to year until terminated by thirty days' written notice by either the Consumer or the Company of intention to terminate the contract

COMPLAINANTS' EXHIBIT No. 185

Rules of Alabama Public Service Commission concerning rural lines.

"OBJECTIVE" SERVICE CLASSIFICATION "E-4"
SUBURBAN ELECTRIC SERVICE
110-220 VOLTS
SINGLE PHASE

AVAILABILITY

Available on the basis provided herein to any Consumer served from a single phase suburban distribution line of the Company for electric lighting, cooking, heating, refrigeration or power service having a demand of less than 50 kilowatts, or any combination of these, where the total consumption can be measured at one delivery point.

"OBJECTIVE" RATE

$1.25 net ($1.375 gross) for the first 15 KWH or less per month; plus
4.5c net (4.95c gross) per KWH for the next 15 KWH per 100 watts per month; plus
2.0c net (2.20c gross) per KWH for the next 10 KWH per 100 watts per month, but not less than 150 KWH per month; plus
1.25c net (1.375c gross) per KWH for the next 500 KWH per month; plus
1.0c net (1.10c) gross per KWH for all KWH per month in excess of above amounts.

DETERMINATION OF CAPACITY REQUIREMENTS

The capacity requirements of each Consumer, as determined below to the nearest 100 watts, shall be based on the connected load but shall not be considered as less than 400 watts for residences nor less than 1,000 watts for commercial or other farm uses.

(a) RESIDENTIAL

The connected load of each residence and 200 watts of yard, barn, garage or other lighting, will be considered as 400 watts in determination of the capacity requirements.

The initial monthly charge of $1.25 net ($1.375 gross) shall be increased $1.00 net ($1.10 gross) per KW for electric range and heating load in excess of 10 KW, and 75c net (82.5c gross) per HP for all connected motor loads in excess of 3 HP.

The maximum size of any single motor shall not exceed 3 HP.

(b) OTHER THAN RESIDENTIAL

LIGHTING—

100% of the first 1,000 watts of connected lamp wattage or volt ampere rating; plus
80% of the next 9,000 watts of connected lamp wattage or volt ampere rating; plus
50% of all over 10,000 watts of connected lamp wattage or volt ampere rating.

MOTORS—

40% of the first 10 HP of connected motor load; plus
30% of all over 10 HP of connected motor load.
Motors with manufacturer's rating of 1/6 HP or less will not be counted.
One (1) HP of motor load as determined above shall be the equivalent of 750

COMPLAINANTS' EXHIBIT No. 185

Rules of Alabama Public Service Commission concerning rural lines.

"OBJECTIVE" SERVICE CLASSIFICATION "E-4"

(Continued)

MINIMUM BILL

In consideration of the readiness of the Company to furnish such service, each Consumer shall pay a monthly minimum charge of $1.25 net ($1.375 gross); plus 75c net (82.5c gross) per HP for all connected motor load other than motors of 3 HP rating or less, not exceeding a total of 3 HP used exclusively for residential purposes; plus $1.00 net ($1.10 gross) per KW for all over 10 KW of residential cooking and heating loads and/or all over 10 KW of other non-lighting load.

PROMPT PAYMENT DISCOUNT

The prompt payment discount is the difference between the net and gross rates and will be allowed on all bills paid within ten days from due date of bill.

APPLICATION OF RATE PLAN

(1) For present suburban Consumers who have taken service for at least 12 months and whose monthly bills figured at "Objective" Service Classification "E-4" equal or exceed the amount paid to the Company for service the same month during the service year ending May, 1934, "Objective" Service Classification "E-4" shall be applied by the Company for that month unless the application of Service Classification "E-1" results in a lower bill.

(2) Whenever during any month Service Classification "E-1" would result in a bill less than the amount paid to the Company for service the same month during the service year ending May, 1934, Service Classification "E-1" shall be applied by the Company for that month.

(3) Whenever the Consumer's bill for any month, computed under "Objective" Service Classification "E-4," would be less than the amount paid to the Company for service the same month during the service year ending May, 1934, but would be greater at Service Classification "E-1", then the bill rendered shall be equal to the amount paid to the Company for service the same month during the year ending May, 1934.

(4) For Consumers connected for less than twelve months preceding June, 1934, and for new Consumers, Service Classification "E-1" will apply for such Consumers until the first twelve months of service shall have elapsed, and thereafter "Objective" Service Classification "E-4" will be applicable on the basis provided for in Paragraphs 1, 2 and 3 hereof.

(5) Any residential suburban consumer using electric service for any combination of cooking, refrigeration and water heating shall have a maximum *base* bill of $8.00 per month for the first two (2) KW or less of contracted capacity, plus 40c per 100 watts of contracted capacity in excess of two (2) KW, such contracted capacity to be determined on the basis of Service Classification "E-1."

No such suburban residential consumer shall be billed in any month for an amount in excess of the maximum base bill determined as above, unless such consumer's uses of electric service figured at Service Classification "E-4" exceed the amount of such base bill for that month.

[fol. 2530] COMPLAINANTS' EXHIBIT No. 185

Alabama Power Company

Paragraph 5 of First Revised Sheet No. 12-e of "Objective" Service Classification "E-4"

(5) Any suburban consumer using electric service for any combination of residential cooking, refrigeration and water heating shall have a maximum base bill of $8.00 per month for the first two (2) kw. or less of contracted capacity requirements; plus forty cents (40c) per one hundred (100) watts of contracted capacity requirements in excess of two (2) kw., such contracted capacity requirements to be determined on the basis of Service Classification "E-1".

Approved by Alabama Public Service Commission in its Non-Docket 982, May 18, 1936. To be effective on bills dated June 1, 1936, and thereafter.

[fol. 2531] COMPLAINANTS' EXHIBIT No. 186

Alabama Power Company

Alabama Towns Voting to Sell Their Electric Systems 1916 to 1930

Town or City	Population	Date System Acquired
Ashland	1,655	May 1, 1916
Camp Hill	952	Feb. 1, 1917
Roanoke	3,841	Jan. 1, 1918
Dadeville	1,146	Jan. 1, 1923
Union Springs	4,125	Sept. 1, "
Wetumpka	1,520	Sept. 1, "
Russellville	2,269	Nov. 1, "
Boaz	1,369	Dec. 1, "
Albertville	1,666	Mar. 1, 1924
Midland City	755	Apr. 9, 1925
Newville	528	Apr. 9, "
Faunsdale	264	Nov. 28, "
Uniontown	1,424	Dec. 1, "
Goodwater	996	Mar. 11, 1926
Columbia	1,180	Mar. 16, "

COMPLAINANTS' EXHIBIT No. 186

Town or City	Population	Date System Acquired
Slocomb	964	Apr. 1, 1926
York	1,796	Apr. 3, "
Haleyville	2,115	May 19, "
Livingston	1,072	July 7, "
Ozark	3,103	July 15, "
Pinckard	633	Aug. 1, "
Gordo	811	Jan. 18, 1927
Hurtsboro	884	Jan. 22, "
Clayton	1,717	Mar. 15, "
Jackson	1,828	Apr. 1, "
Carbon Hill	2,519	June 14, "
Eutaw	1,721	Sept. 6, "
Geneva	1,593	Nov. –, "
Bay Minette	1,545	Apr. 27, 1928
Brewton	2,818	Oct. 28, "
Newton	661	Mar. 26, 1929
Auburn (State Owned)	2,713	June 19, 1930
Headland	1,811	June 30, "

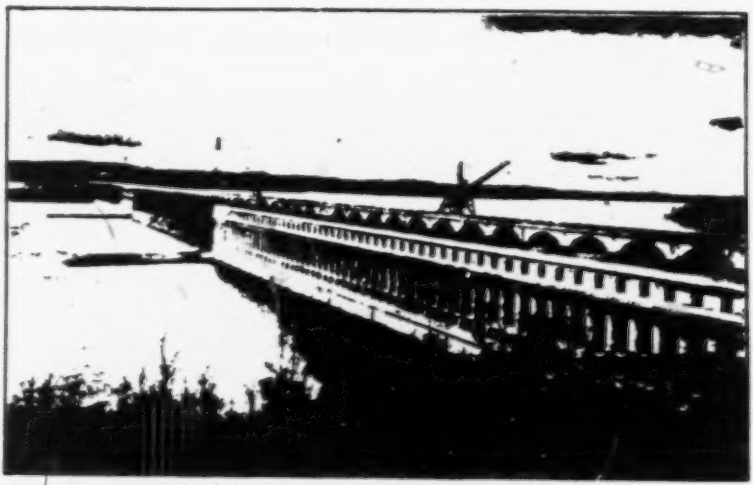
[fol. 2532] COMPLAINANTS' EXHIBIT No. 187 (Excluded)

Rotogravure Pamphlet Issued by Electric Home and Farm Authority, Inc.

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 188
Booklet entitled "The Tennessee Valley Authority".
(Original Exhibit)

THE TENNESSEE VALLEY AUTHORITY



WILSON DAM AND POWER HOUSE AT MUSCLE SHOALS

"The continued idleness of a great national investment in the Tennessee Valley leads me to ask the Congress for legislation necessary to enlist this project in the service of the people."

President Roosevelt said this in his message to Congress proposing creation of the Tennessee Valley Authority. The great national investment to which he referred is the Government's war-time developments at Muscle Shoals designed to produce nitrates for use in making explosives. These are represented by Wilson Dam and power house, nitrate plants nos. 1 and 2, together with quarries, railroads, transmission lines, and other accessories needed for their operation.

But the President had more in mind than merely enlisting this Muscle Shoals investment in the service of the people. He said further in his message to Congress:

"It is clear that the Muscle Shoals development is but a small part of the potential public usefulness of the entire Tennessee River. Such use, if envisioned in its entirety, transcends mere power development: it enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short, this power development of war days leads logically to national planning for a complete river watershed involving many States and the future lives and welfare of millions. It touches and gives life to all forms of human concerns."

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It is upon such a program that the Tennessee Valley Authority now is launched. The following are some of the fields in which work is being done:

Land classification, improvement of agriculture, and proper utilization of marginal lands.

Coordination of agriculture and industry along practical lines.

Development of domestic industries to supplement agriculture in providing local employment. An effort to achieve a balance between mass-production industry based on raw materials and cheap power, small "quality" industries based on the large supply of intelligent labor, and industries for home consumption.

Development of the power resources of the Tennessee Valley watershed as an integrated system.

Utilization of the power resources of the Tennessee Valley as a yardstick in determining the relative costs of public and private power operation; distribution of this power to the greatest number of people at the least possible cost, and conservation of its national defense assets.

Experiments leading to the production of more and better fertilizer and fertilizer materials for the United States.

Opening the Tennessee River to an economic maximum of navigation.

Maximum flood control.

Promotion of reforestation and methods of retarding soil erosion.

Conservation and utilization of the basin's mineral and other natural resources.

☆ ☆ ☆

Administration of this program as authorized by act of Congress on May 18, 1933, is placed in the care of a board of three directors appointed by the President with the approval of the Senate. The members of the board are: Arthur E. Morgan, chairman; Harcourt A. Morgan, and David E. Lilienthal.

The development embraces more than 40,000 square miles and encompasses the drainage area of the Tennessee River and its tributaries in Tennessee and portions of six other States—Virginia, North Carolina, Georgia, Alabama, Mississippi, and Kentucky. More than 2,000,000 people live within this area, with about 6,000,000 in the immediate sphere of influence.

MUSCLE SHOALS PROPERTIES [1]

When the T.V.A. was created, the Government properties at Muscle Shoals were turned over to its care. These properties, erected during the

[1] The rapids in the Tennessee River, extending from Browns Island to Florence, Ala., a distance of 37 miles with a total fall of 134 feet, long constituted a handicap to navigation, especially during low water. There is a popular story that the Indians named these rapids "Muscle Shoals" because it required "heap big muscle" to get their canoes around the place. Another tale is that the Shoals were originally named "Mussel" because of the fresh-water mussels once said to abound there. However, "muscle" and "mussel" are synonymous in old dictionaries. Atlases and maps of the late 1700's refer to the Alabama shoals as "Muscle Shoals." It so appears in the Cherokee Treaty signed at Washington in 1806 and in numerous acts of Congress and Government reports since 1828. In 1892 the United States Geographic Board decided that the correct spelling is "Muscle Shoals", and so it is today.

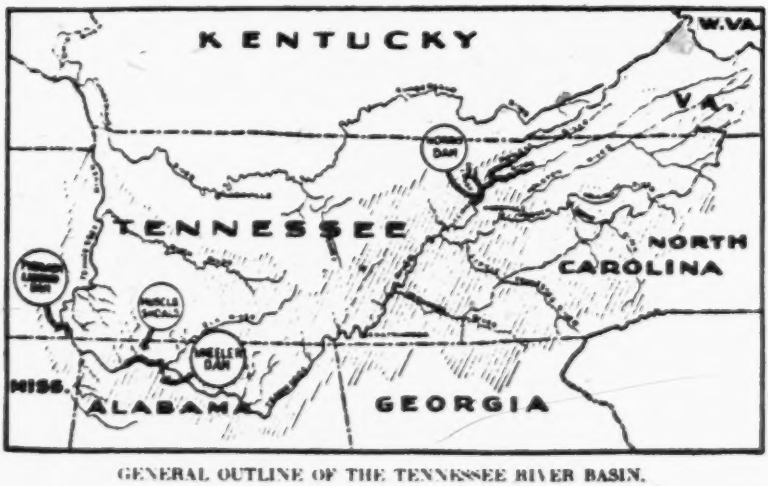
COMPLAINANTS' EXHIBIT No. 188

World War, include Wilson Dam, Nitrate Plant No. 1, Nitrate Plant No. 2, and Waco Quarry.

The Tennessee River is formed at the confluence of the French Broad and Holston Rivers 1½ miles above Knoxville, Tenn. Wilson Dam is 393 miles below that point. It is 259 miles above Paducah, Ky., where the Tennessee joins the Ohio. By road it is 115 miles from Nashville, 135 miles from Birmingham, and 155 miles from Memphis. The dam was formerly known as Dam No. 2 until named in honor of President Wilson. It is a gravity-type concrete structure approximately nine tenths of a mile long, 107 feet high from base to level of lake, 101 feet wide at base, has fifty-eight 38-foot-wide spillways, each permitting the flow of 10,000 cubic feet of water per second at normal lake level. A 20-foot concrete roadway crosses the river along the crest of the dam.

The construction of the dam and the buildings necessary for its operation required the pouring of 1,331,501 cubic yards of concrete. Extending from the spillway section and paralleling the left front of the dam is the power house—1,197 feet long by 115 feet wide—housing the generating machinery. The building contains 9 turbines (243 tons of moving parts)—4 of 35,000 horsepower, 4 of 30,000 horsepower, and 1 auxiliary of 1,000 horsepower—a total of 261,000 installed horsepower. There is room for additional turbines, or a total ultimate installation of 14 of 35,000 horsepower, 4 of 30,000 horsepower, and 2 auxiliaries of 1,000 horsepower—making 612,000 horsepower.

Tandem locks are provided for navigation around the north end of Wilson Dam. Each lock is 300 feet long by 60 feet wide and provides a depth of 9½ feet. Together they can lift a barge 89 feet in less than an hour. The locks are spanned by a single-leaf 148-foot lift bridge which



GENERAL OUTLINE OF THE TENNESSEE RIVER BASIN.

2533-B

nnks the highway on the dam to the shore. The canal and locks remain under War Department navigation jurisdiction.

The water impounded by Wilson Dam stretches upstream for 17 miles, covers 23 square miles, and is 97 feet deep at the dam. The normal pool elevation is 505 feet above mean sea level.

NITRATE PLANT NO. 1

Nitrate Plant No. 1 is on a 1,900-acre Government reservation on the south bank of the Tennessee River about 7 miles below Wilson Dam. This plant was constructed during 1917–18 at a war-time cost of approximately $12,000,000 to manufacture ammonium nitrate by the synthetic or modified Haber process. The plant was intended to produce 22,000 tons of grained ammonium nitrate per year. The construction of this plant by the Federal Government was a national defense measure during the World War. The plant is now obsolete.

NITRATE PLANT NO. 2

Nitrate Plant No. 2 is on a 2,306-acre Government reservation on the south bank of the Tennessee River about 1 mile below Wilson Dam. It is the largest plant in the world for the fixation of atmospheric nitrogen by the cyanamid process. The equipment includes a steam-electric generating plant with a capacity of 76,000 horsepower. The plant was built during the war period at a cost of about $75,000,000 and is capable of producing 110,000 tons of ammonium nitrate per year.

The T.V.A. is empowered to use the nitrate plants in the production of new and better forms of fertilizers "by modernizing existing plants or by any other process or processes that shall appear wise in lowering the cost of production, distribution, and application of the major elements of plant food." Experiments are now being conducted along such lines by means of a new demonstration plant which T.V.A. has constructed at Nitrate Plant No. 2.

WHEELER DAM

Wheeler Dam is located near the head of Wilson Lake, about 15½ miles above Wilson Dam, on the Tennessee River. It is named for Gen. Joseph Wheeler, a Confederate general and a commander of United States forces in the Spanish-American War. It has previously been referred to as Dam No. 3. President Roosevelt requested in October 1933 that the Tennessee Valley Authority begin construction of Wheeler Dam. The dam will be 50 feet high, approximately 6,000 feet long, and will provide a reservoir of about 100 square miles in area. This lake will extend up the river about 80 miles to Buck Island, some 5 miles above Guntersville, Ala. Wheeler Dam will provide navigable waters nearly to Guntersville. Between 600,000 and 700,000 cubic yards of concrete will be needed to complete the dam and power house. Cement to the amount of 750,000 to 900,000 barrels will be used. Construction work

started on the navigation locks for Wheeler Dam in January 1933 by the United States Corps of Engineers. Construction of the dam proper by the Tennessee Valley Authority began in November 1933. The estimated cost of the dam, exclusive of the power house, is $20,000,000. The power house eventually will have 10 generators of 43,000 horsepower each. The immediate installation will be one of these generators.

NORRIS DAM

Norris Dam, formerly called the Cove Creek Dam, is located about 25 miles northwest of Knoxville, Tenn., on the Clinch River nearly 80 miles above the point where that tributary joins the Tennessee. It is named for United States Senator George W. Norris, of Nebraska. Norris Dam will be 253 feet high from foundation to roadway, 210 feet thick at the

NORRIS DAM AS IT WILL APPEAR WHEN COMPLETED.

base, and 1,800 feet long at the crest. The elevation of roadway on the crest will be 1,060 feet above mean sea level. The waters impounded by Norris Dam will form an artificial lake of 3,600,000 acre-feet covering some 80 square miles with a shore line of more than 800 miles. The cost of the dam is estimated at about $31,000,000. Two 60,000-horsepower generating units will be installed in the Norris Dam power house.

One million cubic yards of concrete are needed for the dam and power house. The same number of barrels of cement will be used.

Norris Dam is primarily a storage dam. Wilson and Wheeler Dams are what are called run-of-the-river plants. When the river is high much power can be produced at Wilson and Wheeler. When the river is low little power is available. On the other hand, Norris Dam, with its

enormous reservoir, can store a year's rainfall from several thousand square miles. So these and future dams will be connected with transmission lines.

During the wet season, when there is an abundance of power at the run-of-the-river plants, such as Wilson and Wheeler, the Norris plant will be shut down and the water stored. During the dry season that water will be let out. It will develop power at the Norris Dam, and then, as it passes down the river, it will develop power at Wheeler Dam and at Wilson Dam. So, instead of doing its work once, it will do it as many times as there are run-of-the-river plants below. For this reason, an integrated power system embracing the entire watershed may be worth twice as much for a given investment; or, to put it another way, power would cost only half as much in the integrated system as it would in an unorganized group of plants operated individually and without regard for the other plants.

PICKWICK LANDING DAM

Pickwick Landing Dam is located on the Tennessee River about 8 miles upstream from Shiloh battlefield and about 10 miles north of the State line juncture of Mississippi, Alabama, and Tennessee. This dam will have an overall length of 7,710 feet, nearly 1½ miles. This includes 2 earth dam sections, 1 on the north bank 1,035 feet long and 1 on the south bank 4,650 feet long. The remaining middle section will be of concrete. The height of the concrete section from foundation to top will be 103 feet.

The navigation lock, 600 feet long by 110 feet wide, will have the highest single lift in the world, namely 61 feet. The dam will form a lake 76 square miles in area, backing up to the foot of Wilson Dam, approximately 53 miles upstream. With Norris and Wheeler Dams in operation and the completion of Pickwick Landing Dam, a 7-foot navigation channel will be made available from the mouth of the Tennessee at Paducah, Ky., to Guntersville, Ala., a distance of 358 miles.

While this dam is not now needed for power production, it will be so constructed that power installation can be made when needed. The ultimate power development, under an average operating head of 54 feet, will consist of 6 units of 45,000 horsepower capacity each.

The dam without power house is estimated to cost $22,000,000 and probably will be completed within 3 years.

THE POWER PROGRAM

Rates to encourage people to use more electricity and by so doing realize the leisure and comfort envisioned in President Roosevelt's

planned future for the Nation is the basis of the power policy formulated by the Authority. The T.V.A. rate schedule, worked out after a careful study of costs and market factors, constitutes the desired yardstick for fair comparison with private utilities. In fixing the rates every item of cost to which private utilities have been subjected is included.

Under the act creating it, the Authority in allocating its power must give priority to municipalities, cooperatives, and other nonprofit agencies. In turn the Authority retains control over the resale rates to householders and its contracts provide strict T.V.A. supervision over accounting methods and operation of the distributing agency.

In January 1934 the T.V.A entered into an agreement [2] with the Alabama Power Co., Tennessee Electric Power Co., Mississippi Power Co., and the Georgia Power Co., under which the T.V.A. acquired electric facilities in a substantial territory in three States. In addition to providing an immediate market for all Muscle Shoals power, the contract greatly facilitated the extensive rural electrification program of the Authority. It also serves as a demonstration of the Authority's often expressed policy to carry out the mandate of the President and Congress and yet avoid the destruction of prudent investment in privately owned public utilities. By the purchase of private utility property which was found to be useful, at prices which were fair but not more than the properties were reasonably worth, the Authority has avoided the necessity of building duplicating competing facilities with consequent injury to the public investors in existing utility property.

TOWN OF NORRIS

The community of Norris, Tenn., is located about 4 miles from the site of Norris Dam. Norris is a permanent community of economical but attractive small houses, electrically equipped, constructed by the Authority to house the workers on Norris Dam.

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[2] The contract, which will terminate as soon as power is available from Norris Dam, contains the following major provisions:

1. Purchase by the Authority of approximately $3,000,000 of property from the Alabama Power Co., Mississippi Power Co., and Tennessee Electric Power Co., by which the Authority obtains immediate urban and rural markets in Mississippi, Tennessee, and Alabama.

2. Sale of distributing systems in the Mississippi counties affected to the Authority.

3. Sale of distributing systems in the Alabama counties affected to the municipalities by the Alabama Power Co.

4. Option is granted the Authority to purchase distributing systems in Tennessee counties affected.

5. An agreement to reduce electric rates by the Tennessee Electric Power Co. to the level recently established by the Georgia Power Co.

In addition to these provisions, the contract stipulates further agreement as to power market areas, power interchange points and rates between the Authority and the power companies, and arrangements for sale of electric appliances through Electric Home & Farm Authority, Inc., appliance subsidiary of the Authority.

COMPLAINANTS' EXHIBIT No. 188

ONE OF THE SMALL HOMES AT NORRIS, TENN.

The bunkhouses for single workers are on the edge of the town. These are permanent structures and may be used in the development of small industries to provide employment for residents of Norris after the dam is completed.

BADLY ERODED LAND NEAR NORRIS DAM.

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For further information concerning the program of the Tennessee Valley Authority write: Department of Information, Tennessee Valley Authority, New Sprankle Building, Knoxville, Tenn.

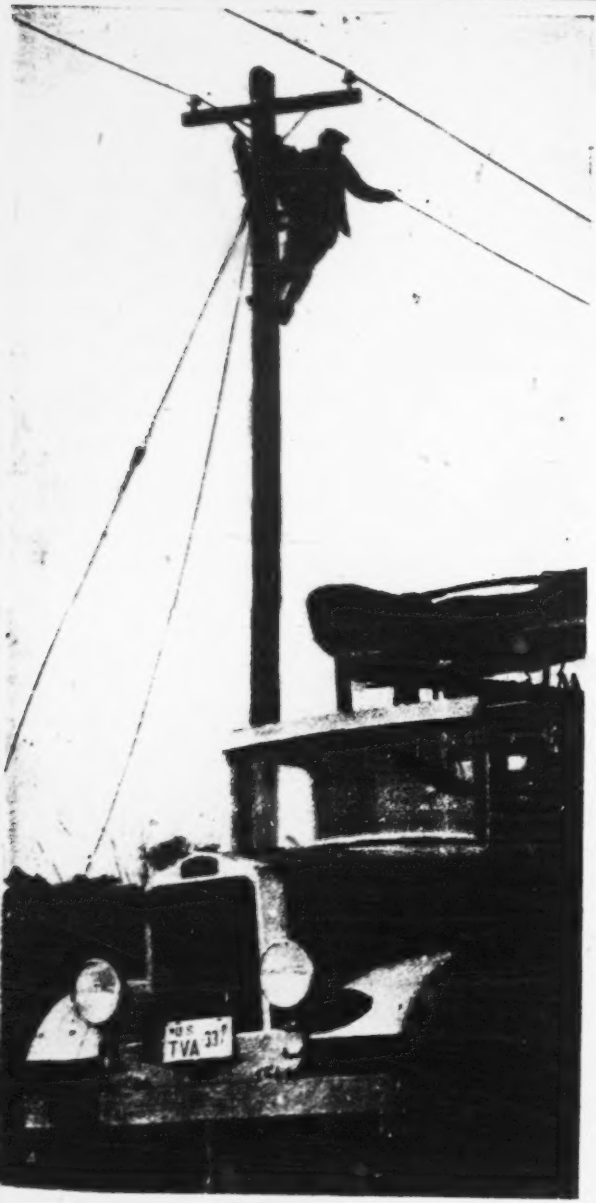
2533-G

U. S. GOVERNMENT PRINTING OFFICE: 1938

COMPLAINANTS' EXHIBIT No. 189 (Excluded)
Booklet entitled "TVA Electricity Rates—A Statement of Facts".

(Original Exhibit)

TVA ELECTRICITY RATES



A STATEMENT OF FACTS

COMPLAINANTS' EXHIBIT 189

RURAL LINE CONSTRUCTION

2533-H

COMPLAINANTS' EXHIBIT No. 189 (Excluded)

WHAT TVA RATES MEAN IN HOME USE

While electric rate schedules are often complicated and confusing to the average user of electricity, the bill received at the end of each month's service is a simple and understandable statement of the cost of this service. Here are some typical examples of what average households pay for electricity in municipalities which purchase TVA power at wholesale:

1. In a home where electricity is used for lighting and a few small appliances only, the consumption would be from 30 to 50 kilowatt-hours. Under basic TVA rates this is 90 cents to $1.50 for the month.

2. If, in addition to lighting and a few small appliances, is added an electric refrigerator, the consumption would be about 90 kilowatt-hours. This is $2.30 for the month.

3. If an electric range is added to the refrigerator, lighting and small appliances, the consumption would be about 255 kilowatt-hours. This is $5.05.

4. With the addition of continuous hot-water service by an automatic electric water heater, the consumption would be about 555 kilowatt-hours. Under TVA rates this would be $7.12 for the month.

The Basic Rates for Residential and Farm Use in TVA Contracts

3 cents per kilowatt-hour for the first 50 kilowatt-hours per month.

2 cents per kilowatt-hour for the next 150 kilowatt-hours per month.

1 cent per kilowatt-hour for the next 200 kilowatt-hours per month.

4 mills per kilowatt-hour for the next 1,000 kilowatt-hours per month.

7½ mills per kilowatt-hour for all over 1,400 kilowatt-hours per month.

COMPLAINANTS' EXHIBIT No. 189 (Excluded)

A STATEMENT OF FACTS CONCERNING THE TVA ELECTRICITY RATES

[Reprinted from the Congressional Record]

The Tennessee Valley Authority announced the wholesale and retail rates at which it would dispose of surplus power from Wilson Dam, in September 1933. These rates were set up on the principle that consumers of electricity must pay all the costs of furnishing that electricity without any contribution from taxpayers. It is these rates which have been described as a "yardstick" with which to measure and compare the rates charged by private utilities.

THE COST OF GENERATING ELECTRICITY IS SMALL

The cost of furnishing electricity to citizens may be divided, for the purpose of such comparisons, into two parts—namely, (1) the cost of generating and transmitting the power to the city-gate, (2) the cost of distributing the electricity within the city to the consumer. With the first item of cost there appears to be only small differences between the rates charged by private utilities and by the TVA.

The Mississippi Power Company has contracted to furnish the municipal plant at West Point, Miss., wholesale power at a flat rate of 7 mills per kilowatt-hour.

The Alabama Power Company sells power at wholesale to Birmingham Electric Company at the city-gate for as low as 5.8 mills per kilowatt-hour.

TVA rates for similar service average approximately 6 mills per kilowatt-hour.

THE LEGITIMATE COST OF ELECTRICITY IN THE HOME

From this it would appear that the differences in cost of generation and transmission of electricity is not very great, even with the further reduction in generating costs which TVA will be able to make when an integrated development of the river has been accomplished. But this portion of the yardstick is only a small fraction of the cost of electricity to citizens. The average rate paid by residential consumers in the United States is 5.2 *cents* per kilowatt-hour. On the basis of delivering power at a city's gate at six-tenths of a cent per kilowatt-hour and distributing it to the consumer at an average of 5.2 cents per kilowatt-hour, it is evident that the cost of generation and transmissions of electricity by private utilities accounts for less than one-eighth of the cost to the consumer. More than seven-eighths of the yardstick involves the distribution of the power from the city's gates to the residential consumer. The cost of the generation and transmission of electricity is by far the smallest factor of cost—the yardstick has its chief importance in disclosing the legitimate cost of bringing the electricity from the city-gate into the consumer's home. And here the figures are startling.

COMPLAINANTS' EXHIBIT No. 189 (Excluded)

TVA CITIES SERVE CONSUMERS AT ONE-HALF—MAKE LARGE PROFITS

Residential consumers being served by municipalities distributing TVA electricity pay an average of approximately 2.2 *cents* a kilowatt-hour—less than one-half the national average charged by private utilities. How have these municipalities fared in buying TVA power at about 6 mills and reselling it at yardstick rates which reduce the cost of electricity to their citizens from 40 to 60 percent? They have been able to meet all the costs of operation, taxes, amortization, depreciation, interest on investment, in fact every legitimate charge faced by a private utility and still return from 20 to 25 percent of all gross revenue to surplus. This has been true of all municipalities distributing TVA power. As an example we may take Tupelo, Miss. At the end of the first year of operation this city* had met all charges including a large tax payment and still was able to show a profit of $24,875, or almost 20 percent net profit on the investment in property and plant. In Alcorn County, Miss., including the city of Corinth, where TVA power is retailed by a nonprofit county-wide cooperative association, a surplus, after all charges, is accumulating at a rate that will permit this association to retire the entire cost of its original distributing facilities within a period of less than 4 years.

NO "WATER" IN VALUATION OF TVA PLANTS

Municipalities and associations distributing TVA power must agree by contract to set aside, among other items, a sum to cover local, State, and county taxes; and carry their plants on their books at *actual* values. The significance of this latter provision in the yardstick becomes apparent when it is recalled the Federal Trade Commission reported to the United States Senate on February 5, 1935, that as a result of its 6-year investigation in the public utilities field it had found write-ups amounting to *one billion four hundred million dollars in top-holding, subholding, and operating companies.*

So, by comparison with wholesale rates of private utilities it appears that the TVA wholesale rate is not too low, and by *actual experience* in cities reselling this power at TVA retail rates the yardstick is found to be a full 36 inches in length.

In the face of these results special interests which seek to thwart TVA's program and prevent the American public from learning the true cost of furnishing electric service have sought to becloud the issue with arguments concerning the generation of power at Wilson Dam. The cost of generating electricity, as is well known, accounts for a very small fraction of the total price charged residential consumers. The allegation is made that private utilities could sell electricity to consumers as cheaply, if not cheaper, than TVA if they were granted the same "subsidies" and "privileges" that TVA enjoys. Let us examine some of these charges.

THE ACTUAL VALUE OF WILSON DAM

Spokesmen for utility interests have said that the cost of Wilson Dam (TVA's present source of electricity) was $60,000,000 and that TVA has written this down to $19,000,000.

Wilson Dam at Muscle Shoals was begun during the World War as a

* Statement of income and expense of Tupelo electricity department on page 7.

war measure. Twelve separate appropriations were made before the work was finished, which was not until 1925. Several major interruptions of construction with attendant disbanding of personnel occurred. Engineers have estimated that at least $10,000,000 could have been saved had the construction been carried out as a single operation.

The historical cost of Wilson Dam is a little under $47,000,000, not $60,000,000. Eliminating the waste which occurred in construction and allowing a fair amount for depreciation since date of completion, the present worth of the dam is $33,000,000.

To apportion the value of Wilson Dam among navigation, national defense, and power, the Authority first set aside those parts of the structure which are of exclusive use to one or another purpose: the locks to navigation, the power house to power, certain buildings and roads (not otherwise useful) to national defense. The remainder (chiefly the long spillway section in the middle) was divided between navigation and power.

The result was to allocate approximately $10,000,000 to navigation, $22,000,000 to power, and $1,500,000 to national defense. These figures are tentative as the study of costs ordered by Congress is not yet completed. All private bids for the plant have been far below this valuation.

Allocation of cost of dams on the Tennessee River to navigation, flood control, national defense, and power, provided for by law, is not an advantage claimed by TVA, but is a definite national policy which has been made available to private utilities. The Congress in 1930, under a previous administration, authorized that $75,000,000, estimated as the cost of low dams for providing a 9-foot navigation channel on the Tennessee River to Knoxville, should be contributed to States, municipalities, or private corporations if they constructed high dams (such as the TVA is doing). In another Rivers and Harbors Act of Congress a very large contribution—some $12,000,000 of Government funds—was provided to be paid to a private utility planning a high dam at Aurora Landing on the Tennessee River. This was a national appropriation to a private agency made because the power dam it proposed to construct would aid navigation to the extent of this sum.

The simple fact, then, is that, as required by law, the Tennessee Valley Authority has placed the value of Wilson Dam for power purposes at its actual "present value."

TVA SETS ASIDE FUNDS COVERING TAXES

The TVA act requires that 5 percent of gross sales of power be paid to the State where TVA power is generated as a compensation for loss of tax revenue. This figure was set up by Congress, subject to change should it prove, in practice, either too high or too low.

To keep the "yardstick" absolutely fair, however, the TVA sets aside an additional 7½ percent of its gross revenue making a total of 12½ percent from the generation and transmission of power in lieu of taxes. For utility operations in the United States as a whole, the taxes amounted to 12.7 percent of gross revenue in 1933, when the TVA rates were established. The taxes paid by the four utilities operating in the Tennessee Valley region

averaged 11.8 percent of gross revenue at that time.

This 12.5 percent which TVA carries is on generation and transmission. The taxes on properties used for distribution of TVA power are borne, as stated previously, by municipal distribution systems.

TVA figures its tax equivalent upon the basis of percent of gross revenue in order to establish comparison with the various tax systems in use throughout the country. No matter whether taxes are levied against income, property valuation, or volume of business, they can all be reduced to the common denominator of a percentage of gross revenue. The percentage of income TVA set up as an equivalent of taxes paid conformed to the national average for utilities when the rates were fixed and was higher than the average at that time of the four companies operating in the TVA region.

TVA INTEREST RATES IN LINE WITH THOSE OF PRIVATE UTILITIES

In computing electric rates, TVA figures an interest rate of 3½ percent on its investment. This is higher than the actual cost of money to the Government, including fiscal expense of the Treasury, and it is not out of line with the rates at which some private utilities are now carrying out refunding operations. Whatever slight advantage accrues to TVA on interest rates is more than offset by the costs of services of a public character which TVA is glad to assume and which are not assumed by private corporations.

Among these may be considered wage rates for both skilled and unskilled labor. These average from 50 to 75 percent higher than those paid by public utilities on similar construction in this area. Likewise, in areas where TVA has purchased electric systems from private utilities, the employees were found to be receiving wages from 10 to 30 percent below those which TVA pays for similar work.

Some of the other advantages ascribed to TVA by special interests are pure fiction. The TVA does not use its franking privilege in sending out electricity bills; TVA does not purchase materials unless the seller agrees to comply with the NRA code; it pays all other governmental departments for services rendered and foots the bill of defending litigation brought by public utilities and others, which has held up the sale of surplus power from Wilson Dam and delayed the time when TVA can begin paying back to the Government the costs of Wilson Dam and thus salvage a war-time investment.

ONE ADVANTAGE SAVES A DIME IN A LIFETIME

Seeking to obscure the real issues, special interests have made much ado over the fact that the Tennessee Valley Authority receives a reduction in freight rates on some of its hauling. Land-grant railroads in consideration of the land originally given them, grant a 33⅓ percent reduction on all Government hauling. The TVA receives this reduction on that part of the equipment and materials used in dam construction, which travels over land-grant railroads.

Of the total cost of a dam, however, the freight charges play so small a part that a one-third reduction amounts to three ten-thousandths of a cent per kilowatt-hour of power generated. This means a saving of 1 cent for every 3,300 kilowatt-hours used, or, turning this around, the average residential consumer saves 1 cent every 5½ years as a result of reduced freight rates granted TVA.

COMPLAINANTS' EXHIBIT No. 189 (Excluded)

He would have to pay power bills for more than 50 years to net himself a dime.

WHY TVA ELECTRIC RATES ARE LOW

The TVA in its electric operations submits to all legitimate charges to which a private utility would be subjected. Its success in making available cheap electricity lies in the cost assumed by some private utilities which TVA does not pay. A few of these may be mentioned: The attempt to pay dividends on the $1,400,000,000 of write-ups exposed by the Federal Trade Commission; expensive campaigns to influence legislation; excessive fees to affiliated engineering and management companies, as well as the tremendous salaries paid to officers of both the holding companies and the operating companies.

CITY OF TUPELO, MISSISSIPPI

ELECTRICITY DEPARTMENT

Statement of Income and Expense

(For 12 months ending January 31, 1935)

(First Year of Operation With TVA Power)

	Amount	Percent of Gross Operating Revenue	Per Kw.-hr. Sold
			Cents
Gross operating revenue	$88,295.04	100.00	1.55
Operating expenses:			
Cost of power purchased	36,449.01	41.28	0.64
Distribution—Operation	3,796.16	4.30	0.07
Maintenance	980.53	1.11	0.02
Commercial and new business	1,114.37	1.25	0.02
Utilization	569.77	.65	0.01
General	2,052.64	2.33	0.03
Total operating expenses	44,962.48	50.92	0.79
Taxes	6,657.32	7.54	0.12
Depreciation	5,227.21	5.92	0.09
Uncollectible accounts	69.89	08	------
Total	56,916.90	64.46	1.00
Net operating revenue	31,378.14	35.54	0.55
Nonoperating revenue:			
Miscellaneous	647.80	.73	0.01
Gross income	32,025.94	36.27	0.56
Deductions from gross income:			
Interest	2,580.56	2.92	0.04
Return on city's investment	4,570.54	5.18	0.08
Net income	24,874.84	28.17	0.44
Appropriations to long term debt:			
Retirement reserve	3,173.96	3.59	0.06
Balance to surplus	$21,700.88	24.58	0.38

COMPLAINANTS' EXHIBIT No. 189 (Excluded)

RURAL ELECTRIFICATION

One of the most important phases of the TVA electricity program is in the field of rural electrification. As an example of what is being done, the history of the Alcorn County Electric Power Association is briefly related.

Alcorn County, in northeastern Mississippi, set up a county-wide cooperative power distribution system in June 1934. The step followed the purchase by TVA of the distribution facilities of the Mississippi Power Company in nine counties in the northeastern corner of the State.

The significant contribution of Alcorn County's cooperative is its policy of supplying power to farmers at rates identical with those charged the urban residents of the county. Standard TVA retail rates are charged: 3 cents per kilowatt-hour for the first 50 kilowatt-hours, 2 cents for the next 150 kilowatt-hours, 1 cent for the next 200 kilowatt-hours, 4 mills for the next 1,000 kilowatt-hours, and 7½ mills for excess over 1,400 kilowatt-hours used per month. Commercial rates work out at proportionately the same percentage of reduction from the former charge.

In addition to these rates, members of the cooperative pay a surcharge which is intended to amortize the cost of the system in from 8 to 10 years. The surcharge takes the form of a membership fee of $100 which may be paid either as $80 in cash or as $10 down and 1 cent per kilowatt-hour consumed, up to a maximum of $1 per customer per month. These membership payments are turned over to the Tennessee Valley Authority until the system is paid for.

Under the present rates a surplus fund will be built up. After the system has been paid for the surplus can be used to reduce rates still further and to pay back the original membership fees. Present indications are that Alcorn will have its present system paid for in 4 years. The Association pays all city, county, and State taxes which a private corporation would have to pay.

With rates down approximately 50 percent, residential consumption in Alcorn County climbed from an average of 49.4 kilowatt-hours per month to 83.3 kilowatt-hours in the first 6 months. The consumption is still climbing.

Alcorn County's Power Association is blazing a trail in the movement for rural electrification through its recognition of the townman's interest in the promotion of power consumption throughout the trading area. By sharing the cost of electrification with the farmer, the city dweller makes it possible for his country neighbor (and customer) to use electricity in quantities sufficient to raise his standard of living. The philosophy behind this is, of course, exactly parallel to that behind the apportionment of the cost of county roads, or, on a still larger scale, to the philosophy behind rural free delivery.

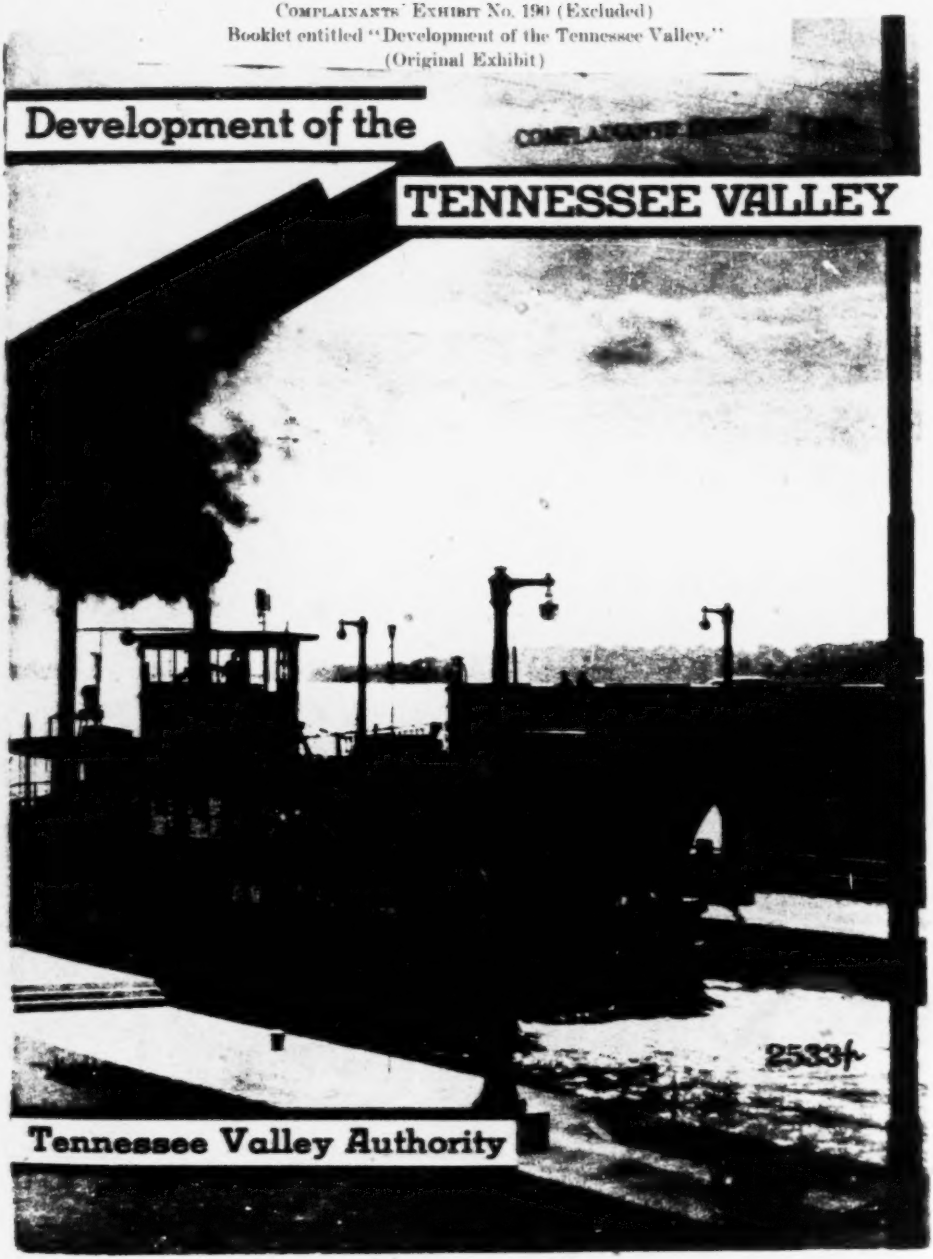
If you desire information concerning any of the phases of the TVA program write to

Information Division
Tennessee Valley Authority
Knoxville, Tenn.

U. S. GOVERNMENT PRINTING OFFICE

COMPLAINANTS' EXHIBIT No. 190 (Excluded)
Booklet entitled "Development of the Tennessee Valley."
(Original Exhibit)

Development of the TENNESSEE VALLEY



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Tennessee Valley Authority

COMPLAINANTS' EXHIBIT No. 190 (Excluded)

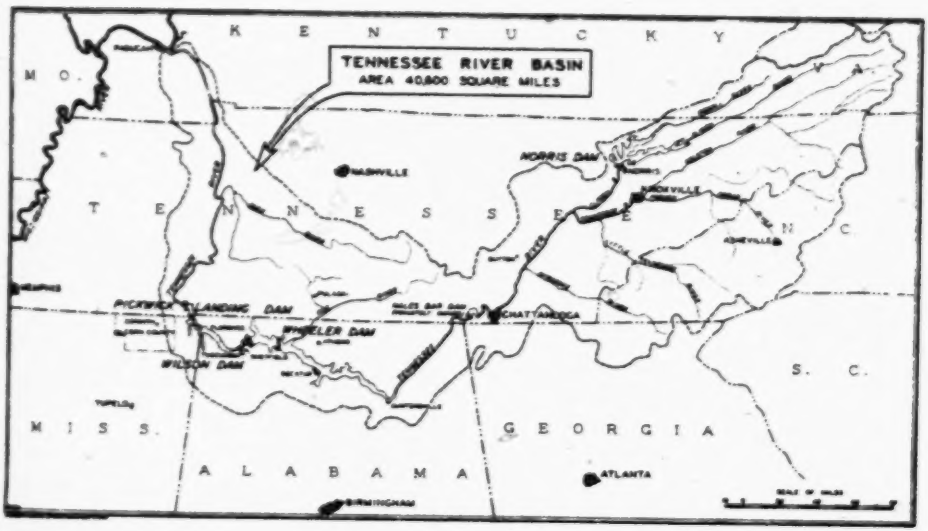
Transmission line cross-over tower on the Tennessee River—at Wilson Dam

COMPLAINANTS' EXHIBIT No. 190 (Excluded)

Development of the TENNESSEE VALLEY

● Uncontrolled, running water means floods, destruction of the soil, loss of human life. Controlled, running water means security, comfort, convenience.

Congress set up the Tennessee Valley Authority as a part of the national conservation program, for the purpose of encouraging the full and well de-



Within the dotted line: The drainage area of the Tennessee River; all tributary streams included

When the flow of a river is disciplined by human ingenuity to conform to human needs, running water is a friend of Man and not a foe. Men have studied and worked with running water until they know how to apply the controls.

signed development of the physical and human resources of the Tennessee River region, and as a major part of that purpose, to apply these controls to the water of the region—to eliminate floods, to aid navigation, to turn the energy contained in running water into light and work through turbines,

electric generators and motors, and to further all those things which are part of such a plan of development.

The Tennessee Valley includes parts of seven states: Virginia, North Carolina, Tennessee, Georgia, Alabama, Mississippi, and Kentucky. It has an area of 40,600 square miles. More than 2,000,000 people live in the Valley. There is a wide diversity of soils, minerals, and climate. Large scale industry is relatively scarce. The Valley already holds an important national investment; Wilson Dam and power house at Muscle Shoals and the two nitrate plants, built as war-time emergency measures but left virtually idle until the creation of the TVA.

. . . . . .

Topsoil leaves the land

● Through this Valley flows the Tennessee, a broad stream marked by sudden floods as rains fall upon the Appalachians where it takes its rise. The river can be of great use to inland water transportation. Properly controlled, the Tennessee will constitute one of the greatest inland waterway systems of the world. The water of this river usually is brown in color because it carries away millions upon millions of tons of fertile topsoil, washed off the steep, plowed hillsides from the rolling lands through which the river flows. This soil washing robs the land of fertility and fills river channels, obstructing navigation. Every foot of the more than 500 feet the river drops between Knoxville, Tennessee, the beginning of the Tennessee proper, and Paducah, Kentucky, where it flows into the Ohio, represents energy flowing to waste.

Problems presented by the Tennessee River region, the diversity which makes the area in many respects representative of the whole country, and the existence of an idle national investment at Muscle Shoals, were among the considerations which led President Roosevelt to ask Congress to create the Tennessee Valley Authority, — in May, 1933. The President wanted a number of test demonstrations which would be of service to the nation.

To the Board of Directors he named Arthur E. Morgan, engineer and educa-

tor, as chairman, and Dr. Harcourt A. Morgan, agriculturist and former President of the University of Tennessee, and David E. Lilienthal, lawyer and Public Service Commissioner of Wisconsin, as directors. At the present time more than 15,000 men and women are employed by the TVA in carrying out the instructions of Congress. In the following pages the outstanding phases of the work will be described briefly.

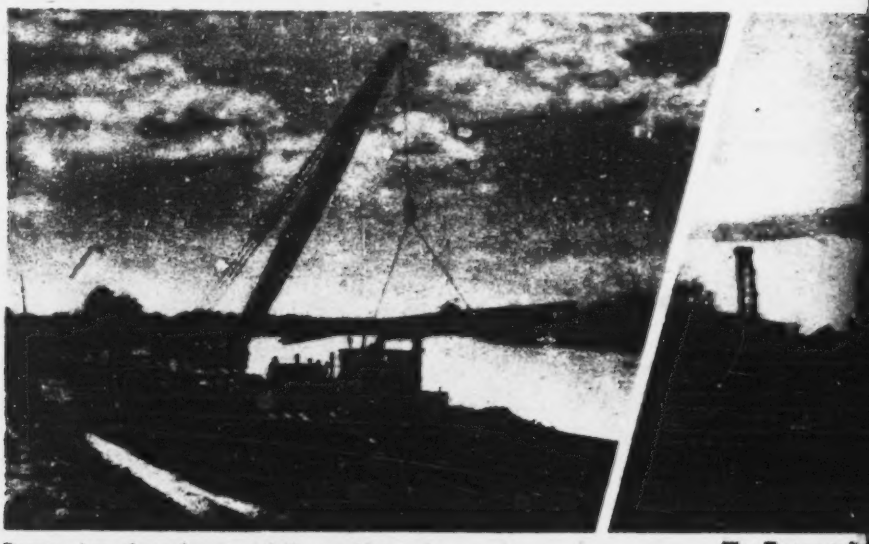
Eroded soil is valueless in agriculture

Erosion blocks river channels—fills reservoirs

First is the effort to develop a clear picture of the resources and needs of the region, and the development of plans and methods by which the region may be guided to an orderly and effective growth. Adequate deposits of minerals and coal may be found. Potentially valuable timber and farmland are here. The task now is to translate these resources into well-being for all the people.

Next is the control of the water resources. A system of storage dams can be built across the major tributaries of the Tennessee to arrest the sudden run-off following heavy rains and to diminish floods. Norris Dam on the Clinch River 26 miles northwest of Knoxville, Tennessee, will be completed in 1936. Similar dams are planned to check the downward rush of destructive rain water on other important arms of the Tennessee. Huge reservoirs will hold and regulate the excess water, preventing those sudden rises in the level of the main river and the resulting loss of life and property.

Terracing and pastures prevent erosion



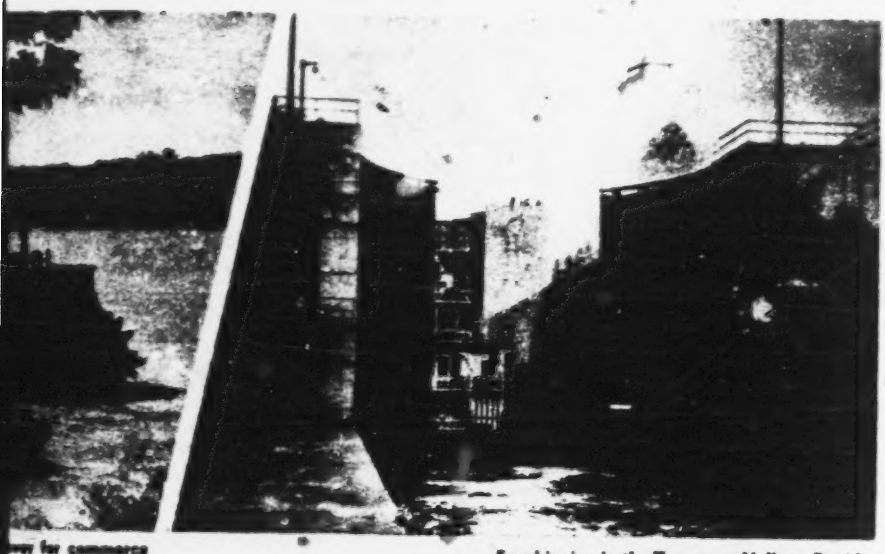
Deeper river channels—one of the services of TVA dams

The Tennessee R

Aid to navigation

● During the dry months the stored water will be released. It will serve a double purpose. Let down gradually, it will aid in retaining the water at a constant depth along the Tennessee, thus aiding navigation, and it will raise the amount of dependable power generated at run-of-river plants. Dams such as Wilson at Muscle Shoals, Wheeler now under construction at the head of Wilson Lake, 15½ miles above the Shoals, and Pickwick Landing Dam near Shiloh Battlefield have very little storage capacity. They are virtually steps over which the river pours on its way to the Ohio. Only by comprehensive upstream regulation can river flow (for navigation) and the power capacity of the downstream dams be kept approximately uniform.

Thus an integrated system of dams converts destructive running water into a willing servant. Controls applied at key points serve a triple purpose: Flood control, navigation, and the capture of



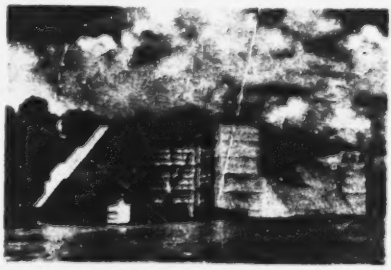
...way for commerce

For shipping in the Tennessee Valley: Double-lift locks at Wilson Dam

otherwise wasted energy.

But the subduing of running water extends far beyond the erection of massive concrete barriers. Rain upon denuded hillsides carries away millions of tons of fertile topsoil. The silt will not settle until the flow of the river ceases. For instance, behind a dam. Then it falls to the bottom. Eventually the reservoir basin would fill with silt, becoming virtually useless as a storage basin.

To prevent this, the fight against destructive running water must be carried back another step. Eroded hillsides are the result of stripping the hills of their natural forest cover and ploughing the slopes for corn or similar crop. They must be restored to their original stability. A new forest cover or grasses



New navigation lock at Wheeler Dam

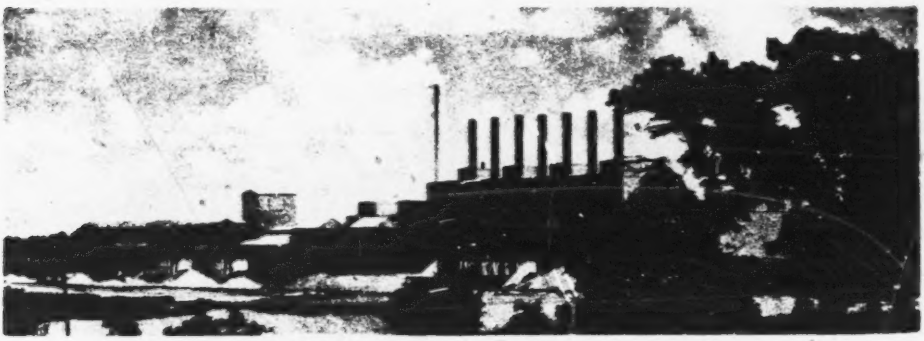
with a tangle of roots to hold the soil causes the rain to sink in, bringing strength to the vegetation and insuring that the rain will finally reach the streams almost clear and free from silt.

The Tennessee Valley Authority, in cooperation with the several states, is engaged in a broad program of erosion control and reforestation. Here, too, activity serves more than one end. Erosion control not only saves reservoirs and does its part in checking flood damage; it aids farmers in escaping from the one-crop system by creating hillside pastures where corn grew before. Livestock can be grazed on the pastures. An increase in southern herds means a better agricultural practice, a better diet and less pellagra and tuberculosis. Milk and green vegetables are the enemies of such diseases.

When new forests are set out to combat erosion, tree crops come into being. These call for care and for harvesting and that means steady employment for some of those who have found it hard to scratch a living from the steep mountain slopes. Tree crops, of course, include not only nuts and fruits but the trees themselves as lumber. Up-to-date lumbering methods improve a stand of timber and insure a continually renewed supply. TVA foresters already have planted over 3,000,000 young trees

Plant food essential

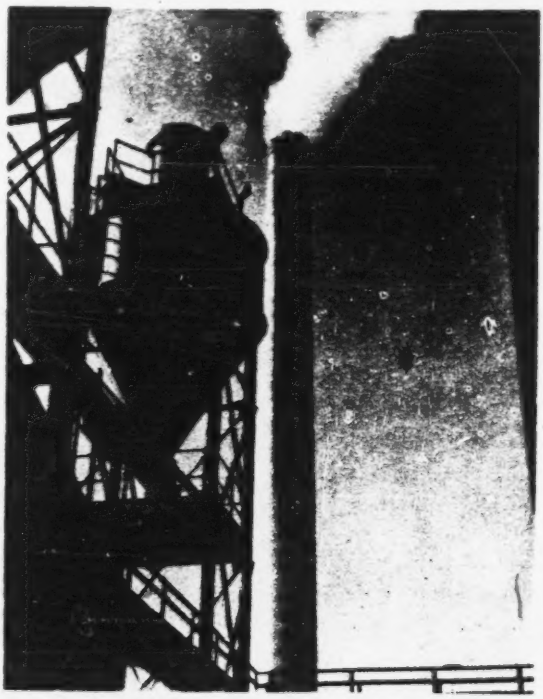
● Much of the steepest land should be reforested. However, there are large areas, now being destroyed by erosion, which if planted to grass crops, can be



TVA demonstration plant for phosphate fertilizers at Wilson Dam

saved for agriculture, especially for dairy products to be used at home.

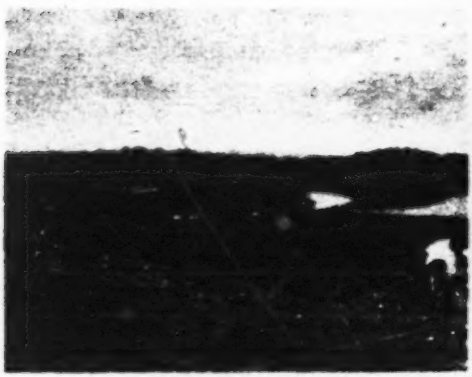
But if vegetation is to grow again on the stripped hillsides, plant food must be supplied. Much of the soil is too far gone to support grass crops without plant food. Commercial plant food has been too expensive for many farmers. Therefore the Tennessee Valley Authority has undertaken experiments and demonstrations looking toward more economical methods of production and distribution of fertilizers, particularly that all-important element—phosphate.



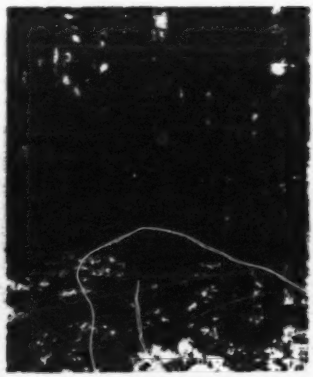
Making richer pastures: TVA phosphate plant

At Nitrate Plant No. 2 at Muscle Shoals a demonstration unit has been built to produce triple super-phosphate from the raw phosphate rock found in central Tennessee. The Tennessee Valley Authority Act states that the national defense aspects of the Muscle Shoals plants must be kept in stand-by condition. This is being done. But wherever possible the equipment is being used to further the peace-time needs of the lands of the nation. Electric power is used extensively in the new process for producing super - phosphate, thus completing a circle of cause and effect. For electric power means dams and dams mean reservoirs, and reservoirs, if they are to remain deep and effective, mean erosion control and erosion control means plant foods, particularly phosphates which are produced with electric power. A higher level of living for everyone concerned can result from this process. The aim is to show the way to newer and more economical methods in the expectation that the savings made will be passed on to farmers.

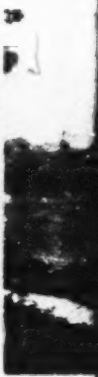
COMPLAINANTS' EXHIBIT No. 190 (Excluded)



Pastures prevent erosion—support diversified farming



Forests save the steeper slopes



The foreground

Extensive land utilization studies

● Introduction of erosion control with its pastures and forests has an immediate effect upon the farming practice of the area. A farmer's failure to conserve his land for future generations is not always due to ignorance. He has not been able to finance the swing from one standard, land-destroying crop to improved methods of rotation and balance.

To make it possible for farmers to help themselves the Authority has undertaken extensive studies of land utilization and is investigating plans to bring agriculture and industry into harmony. The studies have shown that much land of a marginal and submarginal nature is in cultivation, but they have revealed more than that. These studies have made it clear that large numbers of small farmers, struggling along on an annual cash income per family of $100 or less, are not kept busy on their land more than six months of the year. It also has been discovered that large numbers of industrial workers are faced with an annual lay-off during slack seasons. The lay-offs often amount to half a year.

Coordination of industry and agriculture seeks to combine farming and industrial work in such a way that idle industrial workers may use their spare

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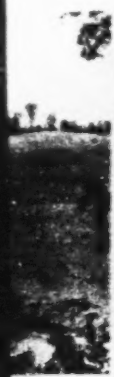
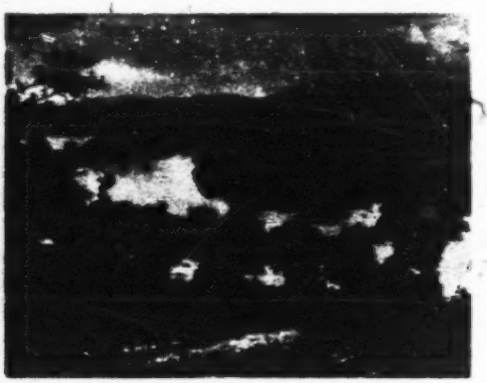


-terraces on hillside

Electric power for industry



The Tennessee River controls prosperity in the Tennessee Valley

time to raise food while the surplus time of farmers may be used to earn some extra cash either in factories or by making some simple articles easily sold. This is no theoretical program. The remarkably thriving city of Kingsport, Tennessee, is largely built on such cooperation. A large part of the inhabitants for twenty miles around spend part of their time in the industries of Kingsport. Other communities are developing in the same way. Rural electrification is an important factor in this program. The effect of such a balancing up of two hard-pressed groups is to raise the income of both to levels where the total purchasing power of this region is increased. An increased purchasing power in the South means not only a higher standard of living for many but a wider market for northern and eastern industries. It also enables farmers effectively to cooperate with each other, with the TVA, and with the States in restoring the land to its original fruitfulness. Restored land means control of running water that it in turn may aid man instead of hindering him in his struggle toward a more abundant life. The above are among the major activities of the Tennessee Valley Authority. While they do not cover all fields in which the Authority is at work they do suggest the scope of the program.

COMPLAINANTS' EXHIBIT No. 190 (Excluded)

Norris Dam

● Located on the Clinch River, 26 miles northwest of Knoxville, Tennessee, and 80 miles above the junction of the Clinch with the Tennessee, Norris Dam will be 1,800 feet long and 265 feet high from the base to the crest of the roadway across the top. The base will be 210 feet thick. One million cubic yards of concrete will be required The reservoir created by Norris Dam will have a surface area of 83 square miles and a shore line of over 800 miles. It will hold 3,600,000 acre feet of water. Approximately 2,000 men are employed on the job, divided into four 5½ hour shifts, with the remaining two hours of the day devoted to maintenance and repair work. A further 1,000 men are engaged in clearing the reservoir area of trees and other obstructions.

The dam was formerly known as Cove Creek Dam but was renamed in honor of Senator George W. Norris. Work started in November 1933. It will be finished in 1936. The cost is estimated at $36,000,000, including two 66,000 horsepower electric generator units.

Wheeler Dam

● Named after General Joe Wheeler, a Confederate hero and a commander of U. S. troops during the Spanish-American War, Wheeler Dam is on the Tennessee River at the head of Wilson Lake 15½ miles above Muscle Shoals, Alabama. It will be more than a mile long, 70 feet from base to crest, and 50 feet thick at the base. Over 600,000 cubic yards of concrete will go into the structure. Locks have been constructed by the U. S. Army Engineers on the north bank of the river, giving access to the future Wheeler Lake which will extend navigation 88 miles upstream to near Guntersville, Alabama. Approximately 1,700 men are employed at Wheeler on the same 5½ hour shifts used at Norris. An additional 3,500 men are engaged in reservoir clearance. Wheeler Dam was authorized in November 1933. It will be finished in 1936. The initial power installation will be a single 47,000 horsepower generator with space available for seven more.

Above: Norris Dam as it looks today, two-thirds complete. Norris Dam is primarily a storage dam—to hold back floods and feed downstream dams in times of low water. On the right: The beginnings of Pickwick Dam, on the lower Tennessee.

COMPLAINANTS' EXHIBIT No. 190 (Excluded)

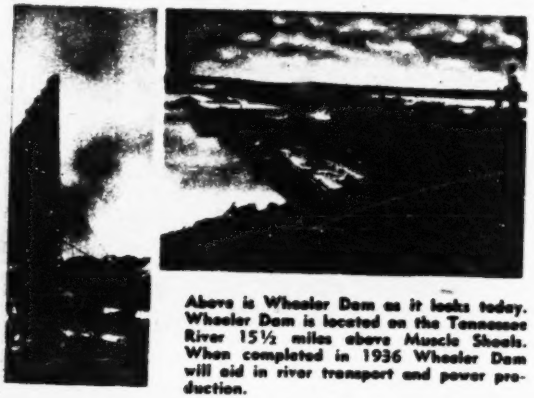
Wilson Dam

● Begun during the World War and left virtually idle until the establishment of the TVA, Wilson Dam is nearly a mile long, 107 feet high and 101 feet thick at the base. It has fifty-eight 38-foot spillways each capable of passing 10,000 cubic feet of water per second. The power plant consists of nine generators with a total capacity of 261,500 horsepower and space available for additional equipment to bring the total up to 613,000 horsepower. It is the source of TVA electricity today.

Pickwick Dam

● Eight miles upstream from Shiloh Battlefield, Tennessee, and 53 miles below Wilson Dam, is the site of Pickwick Landing Dam. Its construction was authorized on November 21, 1934, as the next link in the chain. It will be almost a mile and a half long (7,710 feet) and 103 feet high and will have a navigation lock 600 feet long by 110 feet wide with a lift of 61 feet, greatest single lift in the world. The waters above the dam will back up to the foot of Wilson Dam which means that when Norris, Wheeler, and Pickwick are in operation there will be a 7-foot navigation channel from the mouth of the Tennessee at Paducah, Kentucky, to Pickwick Landing and a 9-foot channel from there to Guntersville, Alabama, a total distance of 358 miles. The dam will also aid in reducing the crest of flood waters.

While no power facilities will be installed at first, the dam will be constructed with intake pipes permitting the addition of a power house later. The dam, without power house, will cost $24,000,000 and will consist of two earth fill sections and a central concrete section 2,025 feet long, equipped with a 1,301 foot spillway section and 26 roller type gates, 40 feet wide by 34 feet high. It is expected to be completed in 1937.



Above is Wheeler Dam as it looks today. Wheeler Dam is located on the Tennessee River 15½ miles above Muscle Shoals. When completed in 1936 Wheeler Dam will aid in river transport and power production.

Town of Norris

● Four miles from Norris Dam the Authority built the permanent town of Norris. The town serves as a construction camp and incidentally as a contribution to America's housing problems. Three hundred individual homes renting from $14.50 to $45.00 per month, 10 duplex dwellings and six 5-family

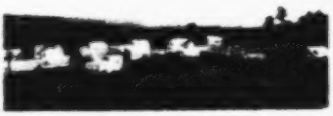
apartment houses at $12 per month comprise the town. The houses are of brick, stone, cinder concrete blocks, and wood. There is one of steel. About half the houses are fully electrified even to heating, and all have current. There is a school building, a general store, a cafeteria, a community house, a 3000-acre park and forest, a belt of farm land where residents may maintain gardens, and utilities such as water supply and sewer system. In the well-equipped shops the workers may secure vocational training. About three-quarters of the force has signed up for one or more courses.

Nitrate Plants

● At Muscle Shoals the two huge nitrate plants, built as war-time emergency measures, have been turned over to the Authority. Plant No. 1 is now obsolete but No. 2, employing the cyanamide process, is kept in stand-by condition for national defense and extended, in accordance with a provision of the TVA Act, for experiments and demonstrations in the development of better and cheaper fertilizers. At present the work is chiefly concerned with phosphates, but experiments are also carried on with combinations of the other plant foods, nitrogen, potash and lime.

Power policy

● In accordance with the provisions of the Act, the TVA is making available the surplus electricity, in excess of the government's needs. The power serves as a "yardstick" to determine the relative cost of publicly and privately generated power, and as a measure of the reasonableness of existing rates. TVA rates include every item of direct and overhead cost such as taxes, interest, depreciation and retirement of investment. In the sale of TVA power the law gives priority to states, counties, municipalities, cooperatives and other non-profit organizations. Corporations, partnerships, and individuals may be served after the needs of these public agencies have been met. Power may also be sold directly to private agencies.



Homes for workers on Norris Dam

Nitrate plants aid national defense

TVA base rates for residential and farm use are:

3 Cents per kilowatt hour for the first 50 kilowatt hours per month.

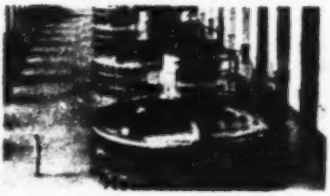
2 Cents per kilowatt hour for the next 150 kilowatt hours per month.

1 Cent per kilowatt hour for the next 200 kilowatt hours per month.

4 Mills per kilowatt hour for the next 1000 kilowatt hours per month.

7½ Mills per kilowatt hour for all over 1400 kilowatt hours per month.

Translated into monthly bills, the average home with lights and one or two small appliances such as a radio or a toaster uses 50 kilowatt hours or less per month which would mean $1.50 under TVA rates. A home using electric refrigeration would find its consumption running over into the second category—the 2¢ block (for refrigerators the average use is about 50 kilowatt hours per month) while the use of an electric range (90 to 125 kilowatt hours per month) puts most meter readings into the third group. With a water heater (200-300 kilowatt hours per month) in addition to those other items a householder usually finds himself in the fourth group with his bill running around $7.00.



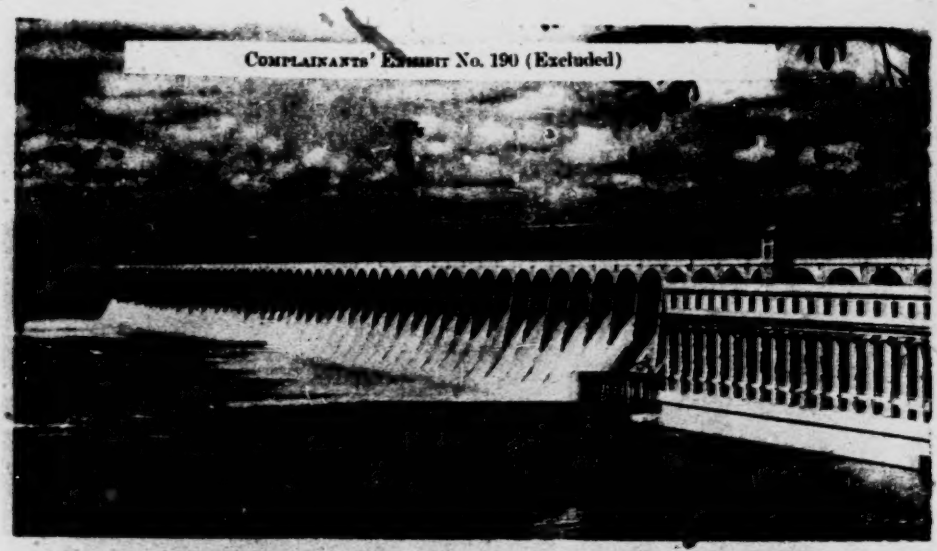
Power house—Wilson Dam

Electricity for farm families

It has already been demonstrated that such low rates stimulate consumption. For example, in Tupelo, Mississippi, the use of power increased 132 per cent in less than a year after TVA rates were introduced. Before TVA power was available the average residential rate was 7½ cents, now it is 2.1 cents. Another significant result of TVA rates is shown in Athens, Alabama, where use at low rates has increased so greatly that even at these low rates the revenue from the sale of power regained its former volume in 7 months. The residential rate had dropped from 5½ cents to 2.1 cents while the commercial rate decreased from 5.1 cents to 2.6 cents.

Rural electrification

● Electrification of farms in the United States has not yet really begun. Five million farm homes are without electricity. After years and years of effort less than 10 farms out of every 100 have current, and only half of these can be regarded as typical farms. In Mississippi, Alabama, Georgia, and Tennessee less than three per cent were electrified according to the 1930 census. The TVA is cooperating with towns and farmer groups interested in furthering rural electrification by using some of the Authority's surplus power



Wilson Dam at Muscle Shoals, Alabama — A Unit in the TVA Program

This pamphlet is necessarily brief. It is intended as an introduction to T V A. For further information on the plans and activities of the Authority write to: Division of Information, Tennessee Valley Authority, New Sprankle Building, Knoxville, Tennessee.

2533-EE

Lithographed in U.S.A.

[fol. 2534] COMPLAINANTS' EXHIBIT No. 191

Alabama Power Company

Alabama Towns Voting to Acquire Electric Systems
1933 to 1937

Town or City	1930 Population	Date of Election
Muscle Shoals City*	719	May 29, 1933
Sheffield	6,221	June 5, 1933
Florence	11,729	June 30, 1933
Tuscumbia	4,533	July 10, 1933
Guntersville	2,826	Sept. 4, 1933
Andalusia*	5,154	Sept. 25, 1933
Tarrant City*	7,341	Sept. 12, 1933
Hartselle	2,204	Oct. 10, 1933
Courtland	359	Oct. 17, 1933
Bessemer*	20,721	Oct. 20, 1933
Oneonta	1,387	Oct. 31, 1933
Decatur	15,593	Oct. 31, 1933
Town Creek	427	Dec. 7, 1933
Russellville	3,146	Dec. 11, 1933
Enterprise	3,702	Apr. 10, 1934
Fairfield*	11,059	Sept. 21, 1936
Scottsboro	2,304	July 27, 1937
Albertville	2,716	Sept. 20, 1937

* These 5 Towns not served directly by Alabama Power Company.

[fol. 2535]

Complainants' Exhibit No. 192 (Excluded)

Alabama Power Company

Typical Monthly Bills for Electric Service

T. V. A. Vs. A. P. Co. Rates

Class of Service	Billing Demand Kw.	Monthly Kwh.	A. P. Co. Bills	T. V. A. Bills	Reduction by T. V. A. Rates	
					Amount	%
Residential*	.....	Minimum	$1.00	$0.75	$0.25	25.0
Lts. & Small Appl	.....	15	1.00	.75	.25	25.0
" " "	.....	25	1.20	.75	.45	37.5
" " "	.....	40	1.80	1.20	.60	33.3
" Appl. & Refrig	.....	100	3.50	2.50	1.00	28.6
" Refr. & Range	.....	250	6.13	5.00	1.13	18.4
" Ref. Rng. & W. Htr	.....	500	8.50	6.90	1.60	18.8
Commercial	.75	50	$2.58	$1.50	$1.08	41.9
	.75	150	6.33	4.50	1.83	28.9
	1.5	150	7.08	4.50	2.58	36.4
	1.5	350	13.33	9.50	3.83	28.7
	3.0	375	17.20	10.00	7.20	41.9
	3.0	750	26.95	17.50	9.45	35.1
	6.0	750	34.08	17.50	16.58	48.6
	6.0	1,500	53.20	27.50	25.70	48.4
	12.0	1,500	67.83	27.50	40.33	59.6
	12.0	3,000	105.70	40.50	65.20	61.8
Rural**						
(Res.) Lts. & Small Appl	.....	15	$1.25	$0.75	$0.50	40.0
" " " "	.....	40	2.38	1.20	1.18	49.6
" Lts. Appl. & Refr	.....	100	4.45	2.50	1.95	43.8
" Lts. Ref. & Range	.....	250	7.26	5.00	2.26	31.1
" Lts. Ref. Rng. & W. Htr	.....	500	10.39	6.90	3.49	33.6
(Comc'l) 2000 W. Lts. & 2½ H. P. Motors	.....	1,000	27.62	22.50	5.12	18.5
" 2000 W. Lts. & 2½ H. P. Motors	.....	2,000	37.97	32.50	5.47	14.4
Industrial	150	30,000	$530.50	$370.00	$160.50	29.9
	150	60,000	762.50	497.00	265.50	34.8
	300	60,000	985.00	650.00	335.00	34.0
	300	120,000	1,377.50	864.00	513.50	37.3
	500	100,000	1,555.00	1,010.00	545.00	35.0
	500	200,000	2,142.50	1,300.00	842.50	39.3
	1,000	200,000	2,880.00	1,810.00	1,070.00	37.2
	1,000	400,000	3,805.00	2,390.00	1,415.00	37.2

[fol. 2536] COMPLAINANTS' EXHIBIT No. 193 (Excluded)

"Contingent Power Contract for Residential Consumers —City of Albertsville"

This exhibit is the same as Complainants' Exhibit No. 197 except that it is unsigned.

(Omitted)

[fol. 2537] COMPLAINANTS' EXHIBIT No. 194 (Excluded)

(Letterhead of Rockwood Alabama Stone Co., Rockwood Alabama)

July 10, 1937.

Alabama Power Company, Birmingham, Alabama.

GENTLEMEN:

We hereby give you notice in accordance with the first paragraph of our contract with you dated November 1st 1934, that we wish to terminate this contract six months from the date of this letter. We shall consider the date of expiration as January 10th, 1938.

We have made application to Tennessee Valley Authority for power at our Aday Quarry, our reason being purely economic.

We wish to take this opportunity to express our appreciation for the service rendered by you, especially the personal attention and efforts of Mr. Woltersdorf who has been most cooperative at all times.

Yours very truly, (Sgd.) J. F. Manning, Jr., President..

[fol. 2538] COMPLAINANTS' EXHIBIT No. 195 (Excluded)

(Letterhead of Decatur Iron & Steel Co., Decatur, Ala.)

May 3rd, 1937.

Alabama Power Company, Birmingham, Ala.

Mark Reply for Attention of H. R. Davis, Pres.

Subject: In Response Please Quote This Subject: Electric Service Contract

GENTLEMEN:

In accordance with the provisions of the first agreement contained in our contract with you, dated May 1st, 1933, we desire you to accept this as formal notice of our intention to terminate this agreement at the expiration of six months from date. In taking this action we feel that you should know that we are prompted by economical reasons solely.

Our relations with your company, extending over a great number of years, have been entirely satisfactory and pleasant. At times you have gone to extremes to serve us and we have had nothing but the best of cooperation from both your Decatur and Huntsville Offices.

We especially want to commend Mr. Pride and Mr. Woltersdorff. They have been helpful to us many many times. In the event that our present plans for any reason do not materialize we shall no doubt withdraw this notice of termination.

Yours very truly, Decatur Iron & Steel Company,
(Sgd.) H. R. Davis, President.

HRD:ES.
CC—Decatur & Huntsville Offices.

[fol. 2539] COMPLAINANTS' EXHIBIT No. 196

Power Contract Between TVA and Alcorn County (Mississippi) Electric Power Association, Dated June 30, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the power contract between TVA and Pontotoc County Electric Power Association (Complainants' Exhibit No. 118) except:

1. The maximum amount of power which TVA shall be obligated to deliver is 5,000 kw. unless notice of increase is given as provided for therein.

COMPLAINANTS' EXHIBIT No. 196

2. The point of delivery is at the outgoing side of the main switch on the low tension side of the step-down transformers of TVA located at in the City of Corinth, Mississippi, or at such other points as may be mutually agreed upon.

3. It contains the following provisions:

"7. Repayment of Indebtedness.—Association acknowledges its long term obligation to Authority as of the date of this contract to be Ninety-eight Thousand, Seven Hundred Dollars and Eighty-nine Cents ($98,700.89) with interest thereon at the rate of three and one-half per cent (3½%) per annum payable semi-annually. Association agrees to pay to Authority on account of such long term obligation and any other indebtedness now owing to Authority or hereafter incurred, until such indebtedness shall have been totally repaid,

(a) All membership fees collected by Association, as provided in section 8 of this contract.

(b) The total surplus revenues as defined in section 9 of this contract.

[fol. 2540] All payments due under this agreement shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate. The amount so paid shall be credited to any outstanding accounts of Association in Authority's discretion. Failure to make such payments shall constitute a default under the aforesaid mortgage, and Authority may forthwith at its option declare this contract terminated, and/or exercise all rights and powers granted Authority on the failure of Association to perform its obligations and promises to Authority.

* * * * * * *

"14. Construction of Additional Facilities.—Authority will construct for Association such additional rural transmission and distribution lines in and adjacent to Alcorn County, Mississippi, as Authority and Association may from time to time agree upon and designate. Said lines will be constructed by Authority for and on behalf of Association as Association's agent. Association agrees to pay Au-

thority therefor the actual cost to Authority of constructing such lines, including overheads, with interest on unpaid balances at the rate of three and one-half per cent (3½%) per annum, payable semi-annually. Such obligations shall be considered as a part of the total long term obligation of Association to Authority, and payment shall be secured by the mortgage executed to Authority on even date herewith.

• • • • • • •

"19. Rescission of Power Contract.—The power contract and the Sale, Lease, Trust, and Security Contract between Authority, Association, and United States of America, then and now acting through its legal agent, Authority, both executed and dated June 1, 1934, are hereby cancelled, annulled, and rescinded, without prejudice, however, to any rights or obligations of the parties hereto or of the United States of America which may have accrued thereunder by reason of any breach thereof by the parties thereto prior to the date hereof. Neither this agreement nor the Quitclaim Deed nor Mortgage mentioned hereinbefore and executed simultaneously herewith shall be deemed to effect in any way certain other agreements between the parties, being a so-called Sale and Assignment Contract among the parties hereto and the Pickwick Electric Membership Corporation, dated April 21, 1936, a so-called Interchange Agreement between the parties, dated April 21, 1936, together with a supplement thereto dated August 26, 1936, and a so-called Emergency Operation Contract between the parties, dated April 1, 1937; but the same shall continue in full force and effect."

(Here follows 1 photolithograph, side folio 2541)

COMPLAINANTS EXHIBIT NO. 197 (EXCLUDED)

COMPLAINANT'S EXHIBIT 197

THE STATE OF ALABAMA,)
MASHALL COUNTY.)

CITY OF ALBERTVILLE

CONTINGENT POWER CONTRACT

for

Residential, Commercial, Industrial, Consumers.

For, and in consideration of, One ($1.00) Dollar in hand paid by A. B. Hooper, Jr., Mayor of Albertville, Alabama, on behalf of the said City, the receipt whereof is hereby acknowledged, and in further consideration of the opportunity to secure lower electric rates for myself, and for the benefits that will accrue to me as a citizen of said City by reason of the net revenue which will be earned by the City from the municipal operation of its own electrical distribution system, it is hereby agreed as follows:

1. That when, and if, the City of Albertville, Alabama, has electrical energy of the required voltage for sale at the premises of the undersigned, so long as he is a purchaser of electrical energy in the territory served by the City's municipal distribution system, will purchase his entire requirements of electrical energy from the City, for a period of ten (10) years, beginning as soon as the service is available. The said City on its part also agrees to make every reasonable effort to provide the necessary facilities for the sale of electrical energy at the premises of the undersigned purchaser prior to December 1, 1938.

2. It is further agreed that the rates to be charged by the City and paid by the undersigned, shall be the published municipal re-sale rates proposed by the Tennessee Valley Authority for residential, commercial, industrial, consumers.

3. In order that the operation of the municipal electric distribution system may be completely divorced from political control after its construction, the City agrees that upon petition signed by five percent of the total number of qualified electors in said City that an election will be called submitting to a vote of the qualified electors in said City the following questions: "Shall the citizens of said City of Albertville be incorporated by the name of 'The Improvement Authority of Albertville' for the purpose of engaging in the enterprise of furnishing to such City and its inhabitants for public and private uses the following service: electric heat, light or power service, commodities or facilities", and that if at such election a majority of the electors vote in favor of such incorporation a Board of Trustees consisting of three members will then be appointed by the City Council to govern such authority, as provided in House Bill 128 passed by the Legislature

[illegible] February 7, 1935

for

Residential, Commercial, Industrial, Consumers.

For, and in consideration of, One ($1.00) Dollar in hand paid by A. B. Hooper, Jr., Mayor of Albertville, Alabama, on behalf of the said City, the receipt whereof is hereby acknowledged, and in further consideration of the opportunity to secure lower electric rates for myself, and for the benefits that will accrue to me as a citizen of said City by reason of the net revenue which will be earned by the City from the municipal operation of its own electrical distribution system, it is hereby agreed as follows:

1. That when, and if, the City of Albertville, Alabama, has electrical energy of the required voltage for sale at the premises of the undersigned, so long as he is a purchaser of electrical energy in the territory served by the City's municipal distribution system, will purchase his entire requirements of electrical energy from the City, for a period of ten (10) years, beginning as soon as the service is available. The said City on its part also agrees to make every reasonable effort to provide the necessary facilities for the sale of electrical energy at the premises of the undersigned purchaser prior to December 1, 1938.

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3. In order that the operation of the municipal electric distribution system may be completely divorced from political control after its construction, the City agrees that upon petition signed by five percent of the total number of qualified electors in said City that an election will be called submitting to a vote of the qualified electors in said City the following questions: "Shall the citizens of said City of Albertville be incorporated by the name of 'The Improvement Authority of Albertville' for the purpose of engaging in the enterprise of furnishing to such City and its inhabitants for public and private uses the following service: electric heat, light or power service, commodities or facilities", and that if at such election a majority of the electors vote in favor of such incorporation a Board of Trustees consisting of three members will then be appointed by the City Council to govern such authority, as provided in House Bill 128 passed by the Legislature of Alabama and approved February 7, 1935.

Purchaser Harmon Green

Witness A B Hooper Address 113 Miller St

Date 8-13-37

City of

By

Mayor.

2541

[fol. 2542] COMPLAINANTS' EXHIBIT No. 198 (Excluded)

Comparison of Tennessee Electric Power Company and Tennessee Valley Authority Rates Based on Amount of Customers Usage as Selected by Federal Power Commission in Reports Entitled "Domestic and Residential Rates in Effect January 1, 1936" Dated March 1, 1937, and "Rates for Electric Service to Commercial and Industrial Customers" Dated June 5, 1936.

Residential

	TEP Rate	TVA Rate	Amount Lower	% Lower
Kilowatt-hour Use				
15 Lighting & small appliances	$1.00	$0.75	$0.25	25.0
40 Lighting & small appliances	1.80	1.20	0.60	33.3
100 Lighting, small appliances & refrigeration	3.50	2.50	1.00	28.6
250 Lighting, refrigeration, cooking, etc.	6.00	5.00	1.00	16.7
500 Lighting, refrigeration, cooking, water heating, etc	8.50	6.90	1.60	18.8

Commercial

Kilowatt-hour Use	TEP	TVA		
1 Kw. billing demand				
25	$1.45	1.00	0.45	31.0
50	2.58	1.50	1.08	41.9
75	3.70	2.25	1.45	39.2
150	7.08	4.50	2.58	36.4
3 Kw. billing demand				
150	7.08	4.50	2.58	36.4
375	17.20	10.00	7.20	41.9
6 Kw. billing demand				
375	17.20	10.00	7.20	41.9
750	34.08	17.50	16.58	48.7

Industrial

Kilowatt-hour Use	TEP	TVA		
30 Kw. billing demand				
3,000	104.50	60.00	44.50	42.6
6,000	143.69	90.00	53.69	37.4
75 Kw. billing demand				
7,500	225.63	150.00	75.63	33.5
15,000	298.06	205.00	93.06	31.2
30,000	431.06	293.50	137.56	31.9
500 Kw. billing demand				
100,000	1,521.19	1,010.00	511.19	33.6
200,000	2,186.19	1,300.00	886.19	40.5

[fol. 2543] COMPLAINANTS' EXHIBIT No. 199

Map of Northeast Mississippi showing thereon lines of Mississippi Power Company completed and under construction, lines owned and operated by TVA, completed and under construction, lines of cooperatives and municipalities

COMPLAINANTS' EXHIBIT No. 199

completed or under construction by TVA and distributing TVA power, and lines of cooperatives and municipalities acquired by TVA and Sold to such cooperatives and municipalities and now distributing TVA power.

(Original Exhibit)

[fol. 2544] COMPLAINANTS' EXHIBIT No. 200 (Excluded)

(Letterhead of City of Columbus, Columbus, Miss.)

November 24, 1933.

The Mississippi Power Company, Columbus, Mississippi,

Attention Mr. Joe Street, Columbus, Mr. L. P. Sweatt, Gulfport

GENTLEMEN:

The Mayor and City Council, in regular adjourned session last night, directed me to write you as follows in regard to your rate structure:

That the one object of this letter is to obtain lower power and light rates for this city and territory.

The Mayor and City Council have three propositions before it, one of which, it is determined, must be realized:

First. Will the Mississippi Power Company put into effect in this city and territory the same rates which are to be inaugurated through the TVA at Tupelo, Mississippi, at the expiration of our present contract—February 1, 1934?

Second. Will the Mississippi Power Company sell its distribution system in the city to the City of Columbus—at an appraised and agreed price—to be arrived at fairly and legally, in comparison to what a new distribution system would cost?

Third. If neither of the two proposals is accepted by the Mississippi Power Company, the City will construct its own distribution system and purchase power from the TVA.

The Mayor and City Council prefers not to go into the power business, hence the First and Second propositions.

COMPLAINANTS' EXHIBIT No. 200 (Excluded)

But a decision on these points is imperative, and at once. The Mayor and City Council will not prolong negotiations indefinitely on these questions, as an immediate decision on your part to these matters is necessary.

Very truly yours, (Sgd.) T. W. Lewis, Jr., City Attorney.

[fol. 2545] (Letterhead of City of Columbus, Columbus, Miss.)

July 31, 1937.

Mr. Barney Eaton, President, Mississippi Power Company, Gulfport, Mississippi,

DEAR MR. EATON:

I am authorized by the City Council to write you with reference to the purchase by the City of your distribution system here, including the adjacent suburbs, but not including the substation or transmission lines from here to West Point.

The people of this city expressed themselves in 1934 overwhelmingly for the municipal ownership of the distribution system on the TVA rate basis. As you know, we had a valuation made of this system, in 1936.

The Council would like to know, now, if you will sell your distribution system, on what terms and at what price.

The Council realizes that there are many features involved in the sale of the system which, no doubt, will be taken up in the course of time, but we would appreciate a reply at the earliest possible date.

Very truly yours, (Sgd.) T. W. Harris, Mayor.

TWH:twl.

[fol. 2546] (Letterhead of City of Columbus, Columbus, Miss.)

November 17, 1937.

Mr. Barney Eaton, Chattanooga, Tenn.,

DEAR MR. EATON:

The City Council has thought, for some time, that it would be possible, before the end of this month, to have a heart to heart talk with you over the proposal of purchasing the Power Company's distribution system here. With your

presence required in Chattanooga for probably several weeks, we are very much discouraged on the question of such a conference. If you can give us a definite appointment within the next ten days, we shall greatly appreciate it.

The Council is determined to go ahead with the preliminary steps toward securing a system in order to receive TVA power. I might say that the Council is waxing impatient in that it has been two months since an election was held here and which resulted so overwhelmingly for the issuance of the bonds. With a majority of the users here under contract to take power from the city, it is most desirable that some decision be reached without undue delay. A purchase of the Power Company's system is preferable to the Council, and it is not clear to these gentlemen why an offer and acceptance or refusal has not taken place.

We are without any information from your source, except from the local manager, and we could not, of course proceed for consideration thereof unless it came officially and from your office. We are without authority to do anything except deal with you for the purchase of the distribution system in this city and the adjacent suburbs. If, as we are unofficially informed, no trade will be considered unless it involves the sale of other systems in this district, we are still powerless to move except as an intermediary between your company and the other towns involved.

We are without authority from you to approach the Tennessee Valley Authority with a view of the purchase by it of transmission and/or distribution systems in this district. We have not broached the subject with the TVA and cannot, until and if your company authorizes and requests this city or some other agency to do so.

Permit me to repeat,—an early conference with you is imperative, under the present temper of the Council and interested citizens. We prefer to reach an agreement with you for the sale of the Columbus distribution system than to enter in a competitive field; however, we are prepared to do this if you are not interested in the disposal of your system in this district.

May I have the honor of your prompt and frank reply to these items?

Very truly yours, (Sgd.) T. W. Harris, Mayor.

TWH:l.

[fol. 2547] COMPLAINANTS' EXHIBIT No. 201 (Excluded)

(Letterhead of D. W. Houston, Sr. & Jr., Aberdeen, Mississippi)

29 November, 1933.

Re Negotiations—City of Aberdeen—Mississippi Power Co.

Mr. L. P. Sweatt, Jr., V. P. and General Manager, Mississippi Power Co., Gulfport, Miss.

DEAR MR. SWEATT:

We have your favor of the 28th re above subject.

We are sure it will be perfectly agreeable with our Committee that you be given a reasonable time for the investigations and studies you desire to make before we have a conference; but when you have finished with these investigations and studies within that time, we are sure that you would not hestitate to give us the benefit of your conclusions and the results of these investigations and studies, with a listing of your properties, so that the Committee may in turn take these matters up with an engineer of its own selection to determine the sound valuation of the physical properties owned by you, and which would be considered as passing to the City in the event it was decided to take over these properties rather than establishing its own new distributing system.

We want to assure you that it is not the purpose of the City to do other than to enter into an amicable adjustment of this matter with you, as there appears to have been a splendid co-operation between your Company and the City in the past, and we want this relationship to continue. The City's only desire is to invoke the first law of nature—"Self Preservation" to it and its citizens.

Taking the wide spread in the wholesale rates and the retail rates offered through the TVA, speaking generally, we are wondering if there is some way that your company and the City could get together and the City and its citizens get the benefit of the retail rates and let your company get the spread, and still continue the very pleasant relations existing between the two. This is merely a tentative suggestion, without any authority from the Committee to bind them.

[fol. 2548] If some such basis of settlement or adjustment could be arrived at, this would probably obviate the

necessity of the incident expenses both to your company and the city in making the investigations and studies you suggest.

We would be pleased to hear from you further on this subject, and if you think some such result could be reached, let's try to have an early meeting.

Thanking you for your prompt handling, and with every good wish, we remain,

Very sincerely, D. W. Houston, Sr. & Jr., City Attorneys, (Sgd.) by D. W. Houston, Jr.

DWHJr-w.

[fol. 2549] (Letterhead of D. W. Houston, Sr. & Jr., Aberdeen, Mississippi)

7 March, 1934.

Re Negotiations—Distribution System Mississippi Power Co.—Aberdeen

Mr. L. P. Sweatt, Jr., V. P. and General Manager, Mississippi Co., Gulfport, Miss.

DEAR MR. SWEATT:

The Board of Alderman feel that you have had ample time to give the necessary study to the matters referred to in recent communication regarding above subject, since December 4th the date of your last letter and in which you promised to let us head from you within a reasonable time.

Our Board has never given up the idea of securing cheaper electrical energy in line with the TVA rates, and if there is going to be anything done towards the City purchasing your distribution system if you can not give the TVA rates, our people would like to know it, so that they may govern their actions accordingly, as to be perfectly frank with you it is the purpose of the City to go right along with plans to secure cheaper current and energy, although all of us feel that we should get together if possible in view of the past mutual friendly relations.

Awaiting a very prompt reply, and with every good wish, we remain,

Very truly yours, D. W. Houston, Sr. & Jr., City Attorneys, (Sgd.) by D. W. Houston, Jr.

DHWJr.-w.

COMPLAINANTS' EXHIBIT No. 201 (Excluded)

[fol. 2550] (Letterhead of D. W. Houston, Sr. & Jr., Aberdeen, Mississippi)

4 April, 1934.

Re Negotiations—Distribution System, Mississippi Power Co.—Aberdeen

Mr. L. P. Sweatt, Jr., V. P. and General Manager, Mississippi Power Co., Gulfport, Miss.

DEAR MR. SWEATT:

Your letter 9th. ultimo., submitted by us to our Board to-day.

We regret that we can not strike a deal with you on a fair valuation of your physical properties here for the purpose of the City purchasing your Distribution System, and that you have seen fit by your letter to decline consideration of the city's overtures to this end.

In view of this fact, the Board to-day passed a resolution requesting that the TVA make an estimate of the costs of a new distribution system for Aberdeen, which will be followed up by a bond issue when the estimate is made to construct the same.

A further meeting of the Board will be held on April 16th. at 3 p. m.

As a courtesy to you and your company, we are sending you copy of a letter this day directed to Hon. Guy W. Thaxton, District Engineer, TVA, Tupelo, Miss., asking for a survey of the City and an estimate of the costs of this project, which letter is self explanatory and conveys to you the purpose of the City in this regard.

We regret that we have come to a parting of the ways; but our people feel that they are entitled to every benefit that other cities in the TVA area will enjoy and are going to do everything possible to secure these benefits.

Very truly yours, D. W. Houston, Sr. & Jr., City Attorneys, (Sgd.) by D. W. Houston, Jr.

DWHJr-w.

COMPLAINANTS' EXHIBIT No. 201 (Excluded)

[fol. 2551] 4 April, 1934.

Hon. Guy W. Thaxton, District Engineer, TVA, Tupelo, Miss.

DEAR MR. THAXTON:

The Mayor and Board of Aldermen of the City of Aberdeen at their Regular April Meeting here to-day passed a resolution making request of your Department to make an immediate survey of said City for the purpose of furnishing an estimate of the costs of the construction of a new electric distribution system in and for said City for the purpose of serving those desiring electrical current and energy in Aberdeen and contiguous thereto with such electrical current and energy; and in addition thereto a further estimate of the costs of the construction of a high power transmission line to connect with the nearest point of the TVA high lines to Aberdeen over and through which said electrical current and energy can be transmitted into the newly constructed distribution system.

You, of course, know that there is now a distribution system in Aberdeen, which is owned by the Mississippi Power Co. and is serving the people of Aberdeen; and it is contemplated that the new construction will not in anywise impede, impair, retard, obstruct or interfere with the Mississippi Power Co. in the free use and enjoyment of its property or franchise in said City, or create any hazards to it or the public generally as a result of the duplication of an electrical distribution system in said city, and the estimate of the costs of this new construction should take into consideration these factors.

It is highly desired that this survey be made at the earliest possible moment and that a report be made to the Board of your findings, if possible, not later than April 16th. at 3 p. m.

Thanking you for your cooperation in this matter, and with every good wish, we remain,

Very truly yours, D. W. Houston, Sr. & Jr., City Attorneys, (Sgd.) by D. W. Houston, Jr.

DWHJr-w.

[fol. 2552] COMPLAINANTS' EXHIBIT No. 202 (Excluded)

(Letterhead—Mayor's Office—City of Starkville, Starkville, Miss.)

January 24, 1934.

Mr. B. Eaton, President, Miss. Power Company, Gulfport, Miss.

DEAR SIR:

Since you state that you do not desire to sell the distribution system of the Mississippi Power Company in the City of Starkville, I desire to inform you that the City authorities will make you an offer for your distribution system and for a flat rate for power similar to that Tupelo is at present getting, until we can get power from the T. V. A. direct.

If we cannot agree, we declare our intention to put in our own distribution system at such time, and as soon as possible, to be in readiness for power from the T. V. A.; or to acquire our own method of generating electricity for our own use.

Yours very truly, (Sgd.) Joseph S. Rice.

(Here follow four photolithographs, side folios 2553-2556)

COMPLAINANTS' EXHIBIT NO. 203 (EXCLUDED)

BINDER CONTRACT

To Take Light and Power From The City of Columbus, Mississippi

STATE OF MISSISSIPPI
Lowndes County
City of Columbus

THIS CONTRACT, made and entered into this ..... day of 1937,

by and between the City of Columbus, Mississippi, party of the first part and .....

..... part..... of the second part,

WITNESSETH, THAT WHEREAS, the party of the first part has been authorized, by an election held on the 14th day of September, 1937, to issue bonds of said city in the maximum sum of $281,000.00 with which to acquire the present electric power and light distribution system or to construct its own distribution system for electric power and light; and

WHEREAS, the party of the first part, proceeding under the authority of said election, must either acquire the existing electric power and light distribution system or construct a distribution system of its own, in order to place itself in a position to receive cheap electrical energy from the Tennessee Valley Authority. The party of the first part therefore contracts, on its part, to employ all lawful means to acquire or construct a distribution system and to deliver to the party of the second part Tennessee Valley Authority electrical energy at Tennessee Valley Authority rates, and

WHEREAS, the acquisition of said electric light and power distribution system or the construction of its own system involves the expenditure of a large sum of money, which expenditure can result in direct unlimited ad valorem taxation to liquidate the same in the event the revenues collected from said system are not sufficient, and in further consideration of the benefits to be derived from the use of power and light at the low rates fixed by the Tennessee Valley Authority, I, we, expressly bind myself, (ourselves) to receive light and power from no other source than through the distribution system of the party of the first part. It is also understood and agreed that the procedure necessary and incidental to the acquisition of a distribution system may involve an indeterminate period of time, but that this contract shall be subject to a reasonable and liberal interpretation as to time.

by and between the City of Columbus, Mississippi, party of the first part and .....

..... part..... of the second part,

WITNESSETH, THAT WHEREAS, the party of the first part has been authorized, by an election held on the 14th day of September, 1937, to issue bonds of said city in the maximum sum of $281,000.00 with which to acquire the present electric power and light distribution system or to construct its own distribution system for electric power and light; and

WHEREAS, the party of the first part, proceeding under the authority of said election, must either acquire the existing electric power and light distribution system or construct a distribution system of its own, in order to place itself in a position to receive cheap electrical energy from the Tennessee Valley Authority. The party of the first part therefore contracts, on its part, to employ all lawful means to acquire or construct a distribution system and to deliver to the party of the second part Tennessee Valley Authority electrical energy at Tennessee Valley Authority rates, and

WHEREAS, the acquisition of said electric light and power distribution system or the construction of its own system involves the expenditure of a large sum of money, which expenditure can result in direct unlimited ad valorem taxation to liquidate the same in the event the revenues collected from said system are not sufficient, and in further consideration of the benefits to be derived from the use of power and light at the low rates fixed by the Tennessee Valley Authority, I, we, expressly bind myself, (ourselves) to receive light and power from no other source than through the distribution system of the party of the first part. It is also understood and agreed that the procedure necessary and incidental to the acquisition of a distribution system may involve an indeterminate period of time, but that this contract shall be subject to a reasonable and liberal interpretation as to time.

In witness whereof the parties have hereunto set their hands on the date first above written.

WITNESSES TO SIGNATURE OF PARTY OF FIRST PART:

.....

.....

WITNESSES TO SIGNATURE OF PARTY OR PARTIES OF SECOND PART:

.....

.....

THE CITY OF COLUMBUS, MISSISSIPPI

By ..... Mayor
Party of the First Part.

.....

.....
Party or parties of second part.

3046A

COMPLAINANTS' EXHIBIT No. 204 (Excluded)

CITY OF COLUMBUS

Columbus, Miss.

Information needed to complete application to the TVA for a transmission line.

Number of resident consumers and load.

Number of commercial consumers & load.

Number of Industrial consumers and load.

How many different types of service.

The City's consumption.

Furnish rate schedule of present Power Co.
Population (white and black)
Population out side but within 3 mile radius
Property valuation, assessed valuation and tax rates
Financial set up.
Water work situation
City Map
County map

City of Columbus

Columbus, Miss.

Information needed to complete application to the TVA for a transmission line.

Number of resident consumers and load.

Number of commercial consumers & load.

Number of Industrial consumers and load.

How many different types of service.

The City's consumption.

Furnish rate schedule of present Power Co.
Population (white and black)
Population out side but within 3 mile radius
Property valuation, assessed valuation and tax rates
Financial set up.
Water work situation
City Map
County map
Show on map sub station and power lines as they come in.
Amount of MSC's bill and amount of bill other large consumers

30161

COMPLAINANTS' EXHIBIT No. 204 (Excluded)

INFORMATION SUBMITTED BY THE CITY OF_____, MISSISSIPPI, TO THE BOARD OF TENNESSEE VALLEY AUTHORITY, IN CONNECTION WITH THE CITY'S APPLICATION TO BE SERVED WITH HYDRO-ELECTRIC POWER FROM MUSCLE SHOALS.

Does the City now have a contract with a power company to furnish electricity? _____. If so, when does the contract expire?_____
Can this contract be cancelled on notice?_____? If so, how long must notice be given?_____.
Does the city own its power plant?_____
Does the city own its distribution system?_____
Does the city purchase power from a power company and distribute it to its citizens?_____.
What is the prospect for increasing the consumption?

_____

_____

_____

If your power is received from a power company, where is it generated?

_____

Do the lines of the power company that come from Muscle Shoals touch the city?

_____

How far is it from the city to Muscle Shoals?_____

What is the annual industrial consumption of power in the city?

_____

What is the domestic consumption of power in the city?_____

What are the industries of the city that are large consumers of power?

_____

_____

_____

Number of farm homes within a reasonable distribution radius of the city, which are potential users of power._____

Are there any distribution systems from the city or elsewhere that now serve the farming section around the city? If so, how many miles and how many farm homes

gens?_____.

What is the prospect for increasing the consumption?

_____

_____

_____

If your power is received from a power company, where is it generated?

_____

Do the lines of the power company that come from Muscle Shoals touch the city?

_____

How far is it from the city to Muscle Shoals?_____

What is the annual industrial consumption of power in the city?

_____

What is the domestic consumption of power in the city?_____

What are the industries of the city that are large consumers of power?

_____

_____

_____

Number of farm homes within a reasonable distribution radius of the city, which are potential users of power._____

Are there any distribution systems from the city or elsewhere that now serve the farming section around the city? If so, how many miles and how many farm homes served?_____

Remarks:

_____

_____

_____

_____

30160

COMPLAINANTS' EXHIBIT No. 204 (Excluded)

QUESTIONNAIRE

Under the law, what is the maximum amount of bonds your city can issue?

_____

_____

What is the amount of the outstanding bonds of your city at this time?

_____

Is it probable that a part or all of any bonds issued by your City for the purpose of purchasing or installing a distribution system can be sold to your local citizens?_____

If any, how much? _____

What is the value of the present distribution system in your City? (Do not guess - if you do not know, get some-one qualified to place a value)

_____

_____

What is the cost or production at your municipal plant and on what basis is it figured?_____

_____

_____

Additional remarks:

_____

_____

_____

[fols. 2557-2558] COMPLAINANTS' EXHIBIT No. 205

Map of West Tennessee and Paris districts of Kentucky-Tennessee Light & Power Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities, constructed or under construction by TVA and distributing TVA power, lines of Kentucky-Tennessee Light & Power Company and lines of others.

(Original Exhibit)

[fol. 2559] COMPLAINANTS' EXHIBIT No. 206

Map of the North Tennessee division of The Tennessee Electric Power Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities, constructed or under construction by TVA and distributing TVA power, lines of The Tennessee Electric Power Company and lines of others.

(Original Exhibit)

[fol. 2560] COMPLAINANTS' EXHIBIT No. 207

Map of East Tennessee division of the Tennessee Electric Power Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities, constructed or under construction by TVA and distributing TVA power, lines of cooperatives and municipalities not constructed by TVA but distributing TVA power, lines of Tennessee Electric Power Company and lines of others.

(Original Exhibit)

[fol. 2561] COMPLAINANTS' EXHIBIT No. 208

Map of the Middle Tennessee Division of the Tennessee Electric Power Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities, constructed or under construction by TVA and distributing TVA power, lines of Tennessee Electric Power Company and lines of others.

(Original Exhibit)

[fol. 2562] COMPLAINANTS' EXHIBIT No. 209

Map of the Cumberland Division of the Tennessee Electric Power Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities, constructed or under construction by TVA and distributing TVA power, lines of Tennessee Electric Power Company and lines of others.

(Original Exhibit)

[fol. 2563] COMPLAINANTS' EXHIBIT No. 210

Map of West Tennessee Power and Light Company showing thereon lines of TVA, completed and under construction, lines of cooperatives and municipalities constructed or under construction by TVA and distributing TVA power, lines of West Tennessee Power and Light Company constructed or under construction, and lines of others.

(Original Exhibit)

[fol. 2564]

Complainants' Exhibit No. 211 (Excluded)

West Tennessee Power & Light Company

List of Customers Lost to City of Jackson—T. V. A.

Municipal Distribution System

Acct. No.	Name	Address	Date Lost	Net Amount of Bill for 12 Months Ended September 30, 1937
1—286	Brett's Cafe	215 E. Main	Oct. 8, 1937	$324.96
1—258	Jitney Jungle	111 N. Church	" 15, 1937	672.15
1—304	Cleveland Ray Inc	209 E. Main	" 26, 1937	349.84
1—324	Fox Cafe	203 E. Main	" 25, 1937	819.16
1—52	W. R. Fenner	Main & Church	" 30, 1937	136.57
5—206	Thompson Baking Company	South Royal	" 30, 1937	1,498.76
39—102	T. S. Edgell	204 Woodrow	Nov. 5, 1937	88.35
7—92	H. A. Luttrell	395 S. Royal	" 16, 1937	32.17
7—91	J. H. Rowlett	395 S. Royal	" 16, 1937	9.62
39—166	Victor Woerner	212 Woodrow	" 18, 1937	39.89
1—294	Pearle Brown	213½ E. Main	" 23, 1937	439.94
39—98	E. R. Dubose	140 Woodrow	" 23, 1937	58.71
5—114	Nance's Drug Company	108 S. Liberty	" 24, 1937	974.00
5—194	Dixie Castle #1	111 S. Church	" 24, 1937	515.14
			Total	$5,954.26

[fol. 2565] COMPLAINANTS' EXHIBIT No. 212 (Excluded)

(Copy)

Thompson Baking Company,

Jackson, Tenn.

Nov. 2, 1937.

Mr. John Wisdom, West Tennessee Power & Light Co., Jackson, Tenn.

DEAR MR. WISDOM:

Your kind letter of the 1st received and I wish to thank you very much for same. In regard to your service on electricity, I would like to say that we have never had a minutes trouble with your service except when we knew that it could not be avoided. We would also like to say that we were treated with every consideration by your employees.

In regard to our discontinuance of your electric service, I would like to explain to you that we could not afford to pass up the saving that we will make by using T V A power. Last month we paid you $127.09 for power and light and the same amount of electricity from T. V. A. would have cost us about $48.00 or a saving of about $80.00.

I would like to say that it was not my wish to take this business away from you but I also want you to understand my position in the matter and that the saving was so great that I could do nothing else.

We are still doing business with your company in that we are paying you approximately $40.00 per month for gas for our oven and up until now the service has been entirely satisfactory.

Again wishing to express to you my appreciation for all kindnesses rendered by your company, I am,

Respectfully yours, Thompson Baking Co., (Sg.) Charles A. Thompson.

CAT/Enc.

[fol. 2566] COMPLAINANTS' EXHIBIT No. 213

Tennessee Valley Authority,

Department of Electricity.

Jackson, Tennessee.

To All Applicants for TVA Electricity in Madison County, Tennessee:

Engineering surveys and the work of obtaining right-of-way easements have progressed to a point where we can definitely advise you to proceed with having your house wired and complete contracts for your electrical appliances. It is expected that we will be ready to start construction on your line within the very near future and, in order that you may receive electricity at the very earliest date possible, we now advise you to proceed with your wiring.

Our construction crews will run the wire from the pole to your house and install the meter in the meter receptacle. It will be necessary for your wiring contractor to install proper-sized switch, meter receptacle, and entrance cable. The meter receptacles may be obtained at the following address by your electrical contractor:

Division Headquarters,
Tennessee Valley Authority,
215 Holland Building,
Jackson, Tennessee.

Before electricity is turned on, your wiring must be inspected. Therefore, it will be necessary for you to have the electrician who wires your house notify us that he has completed the wiring and that it is ready for inspection. Inspection of house wiring will be made by a representative from this office and, again, we wish to caution you of the importance of having your wiring installed in accordance with requirements of the National Board of Fire Underwriters.

If you have complied with the above requirements at the time your lines are constructed, the construction crews will extend the wire from the pole to the house, install the meter, and complete all necessary arrangements for supplying the service when the lines are energized. If you are not ready for service at the time construction crews reach your premises, it will be necessary to wait until a future date when the construction crews can come back and run the service wires

COMPLAINANTS' EXHIBIT No. 213

and install the meters. This may delay you in securing electric service.

Yours very truly, Tennessee Valley Authority,
(Signed) Earle R. Wall, Division Manager.

[fol. 2567] COMPLAINANTS' EXHIBIT No. 214

Electric Franchise Granted by the Court of County Commissioners of Colbert County, Alabama, to TVA.

Be it Resolved by the Court of County Commissioners of Colbert County, Alabama:

That, whereas, Tennessee Valley Authority, a corporation created and existing under the "Tennessee Valley Authority Act of 1933" has acquired certain transmission and other lines, substations and other appliances, facilities and property for the transmission and distribution of electrical energy in certain parts of Colbert County, Alabama, some of which lines and appliances are located along and across the public highways in said county; and

Whereas said Tennessee Valley Authority may desire hereafter to extend said lines or construct new ones in, along or across such highways, and this Court deems it in the public interest that said Tennessee Valley Authority be given the right and franchise to use the public places and highways of this County in connection with the transmission and distribution of electrical energy in said County;

Now, therefore, be it Resolved That said Tennessee Valley Authority, its successors and assigns, be and they are hereby given and granted the right and franchise to construct, repair, maintain, operate and conduct in said County a system of poles, towers, conduits, cables, conductors, transforming stations, fittings and all appliances or appurtenances in, over, under, along, upon and across all public highways, roads, alleys, lanes, bridges, viaducts and other public ways and places in said county as they now exist or may hereafter be laid out or extended, to the extent the said Tennessee Valley Authority may deem necessary or desirable to the transmission within, into, through, over and beyond the county and furnishing, supplying, and distributing to the county and to the inhabitants and corporations, both within and beyond the limits thereof, electric energy for lighting, heating, power and all other purposes for

which electric energy may be used now or hereafter and for the purpose of extending its lines and furnishing electric current beyond the limits of the county.

This right and franchise is made upon the following conditions:

1. The poles, towers, conduits, cables, conductors, transforming stations, fittings, appliances, and appurtenances shall be so constructed as not unreasonably to interfere with [fol. 2568] the proper use of the public highways, roads, alleys, bridges, viaducts, and other public ways and places in the county and shall be maintained in a reasonably good condition and repair.

2. Whenever the Tennessee Valley Authority shall cause any opening or alteration to be made in any of the public highways, roads, alleys, lanes, bridges, viaducts and other public ways and places in the county for the purpose of installing, maintaining, operating, or repairing any poles, towers, conduits, cables, and other appliances, the work shall be completed within a reasonable time and the Tennessee Valley Authority shall upon the completion of such work restore such portion of the public highways, roads, alleys, lanes, bridges, viaducts and other public ways and places to as good condition as it was before the opening or alteration was so made.

3. The Tennessee Valley Authority shall hold the county harmless from any and all liability or damages resulting from the negligence of the Tennessee Valley Authority in the construction, maintenance or operation of its poles, towers, conduits, wires, cables and other appliances.

4. The invalidity of any sentence, clause, or provision hereof shall not affect the validity of any of the remaining provisions hereof.

5. The consideration hereof is the expenditure by said Tennessee Valley Authority of the funds necessary for the construction of said transmission and/or distribution lines and the proper maintenance thereof.

Adopted August 10th, 1936.

R. E. Sherrill, S. E. Kimbrough, Rad Thompson, Commissioners.

(For brevity other portions of this exhibit are omitted.)

[fol. 2569] COMPLAINANTS' EXHIBIT No. 215

Electric Franchise Granted by the Court of County Commissioners of Colbert County, Alabama, to TVA, on September 22, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214 except that the electric franchise is limited for a period of 99 years from its date.

COMPLAINANTS' EXHIBIT No. 216

Electric Franchise Granted by the Court of County Commissioners of Franklin County, Alabama, to TVA, on September 14, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214.

COMPLAINANTS' EXHIBIT No. 217

Electric Franchise Granted by the Court of County Commissioners of Lauderdale County, Alabama, to TVA, on October 12, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214.

[fol. 2570] COMPLAINANTS' EXHIBIT No. 218

Electric Franchise Granted by the Court of County Commissioners of Lauderdale County, Alabama, to TVA, on October 12, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214 except that the electric franchise is limited for a period of 99 years from its date.

COMPLAINANTS' EXHIBIT No. 219

Electric Franchise Granted by the County Board of Revenue of Limestone County, Alabama, to TVA, on August 17, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214.

COMPLAINANTS' EXHIBIT No. 220

Electric Franchise Granted by the Court of County Commissioners of Madison County, Alabama, to TVA, on September 21, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214 except that the electric franchise is limited for a period of 99 years from its date.

[fol. 2571] COMPLAINANTS' EXHIBIT No. 221

Electric Franchise Granted by the Court of County Commissioners of Marshall County, Alabama, to TVA, on September 21, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214 except that the electric franchise is limited for a period of 99 years from its date.

COMPLAINANTS' EXHIBIT No. 222

Electric Franchise Granted by the Board of Revenue of Morgan County, Alabama, to TVA, on July 27, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214.

COMPLAINANTS' EXHIBIT No. 223

Electric Franchise Granted by the Board of Revenue of Morgan County, Alabama, to TVA, on December 14, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 214 except that the electric franchise is limited for a period of 99 years from its date.

[fol. 2572] COMPLAINANTS' EXHIBIT No. 224

Power Contract Between TVA and the Tippah County Electric Power Association, dated November 5, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and North Georgia Electric Membership Corporation, except:

1. The maximum amount of electricity which TVA agrees to supply before January 1, 1939, shall not exceed 750 kw.

2. The point of delivery shall be at the low tension side of the step-down transformers to be constructed by TVA at a site to be mutually agreed upon.

[fol. 2573] COMPLAINANTS' EXHIBIT No. 225

Electric Franchise Granted by the County Court of Anderson County, Tennessee, to TVA

Monday, January 6th, 1936.

Resolution in re-TVA Poles and Wires

The following Resolution was read to the Court, by W. A. Brown, County Judge:

Resolution:

Whereas, an application has been duly made to the County Court of Anderson County Tennessee by the Tennessee Valley Authority for permission to erect and maintain poles, lines, wires, insulators, transformers, irons and braces to suspend wires over, across, above, through and upon public

highways, lanes, bridges, viaducts and other public ways and places in said County (but outside the corporate limits of any Incorporated city or town) for the purpose of conducting electricity over said wires and

Whereas, said County Court having duly convened and heard such application, a Quorum being present, and concluded that the Grant thereof would be advantageous to the County and its inhabitants,

Now, Therefore, on motion duly made and carried,

Resolved, that said Tennessee Valley Authority (hereinafter called the "Authority") is hereby given and vested with the permission, right, authority, easement, privilege and franchise to construct, erect, suspend, install, renew, repair, maintain, operate and conduct in the County of Anderson a system of poles, towers, conduits, cables, conductors, transforming stations, fittings and all appliances or appurtenances necessary or desirable to the transmission, distribution, or sale of electric current for all purposes whatsoever in, over, under, along, upon, across and above all public highways, lanes, bridges, viaducts and other public ways and places in said County (but outside the corporate limits of any incorporated city or town) as they now exist or may hereafter be laid out or extended together with the further right, privilege and franchise to construct, erect, suspend, install, renew, repair, maintain and operate such poles, towers, conduits, cables, wires, conductors, transforming stations, fittings and all appliances and appurtenances necessary or desirable to the transmission within, into, through, over, across and beyond the County and furnishing, supplying and distributing to the County and to the [fol. 2574] inhabitants and corporations, both within and beyond the limits thereof (but outside the corporate limits of any incorporated city or town), electric energy for lighting, heating power and all other purposes for which electric energy may be used now or hereafter and for the purpose of extending its lines and furnishing electric current beyond the limits of the County.

This permission, grant, and privilege is made upon the following terms:

1. The poles, towers, conduits, cables, conductors, transforming stations, fittings, appliances, and appurtenances shall be so constructed as not unreasonably to interfere with

the proper use of the public highways, lanes, bridges, viaducts, and other public ways and places in the County, and shall be maintained in a reasonably good condition and repair.

2. Whenever the Authority shall cause any opening or alteration to be made in any of the public highways, lanes, bridges, viaducts and other public ways and places in the County for the purpose of installing, maintaining, operating, or repairing any poles, towers, conduits, cables and other appliances, the work shall be completed within a reasonable time and the Authority shall upon the completion of such work restore such portion of the public highways, lanes, bridges, viaducts and other public ways and places to as good condition as it was before the opening or alteration so made.

3. The Authority may, with the consent of any landowner having any interest therein, trim any trees which may come into contact with said wires, poles, or appurtenances.

4. The Authority shall hold the County harmless from any and all liability or damages resulting from the negligence of the Authority in the construction, maintenance or operation of its poles, towers, conduits, wires, cables and other appliances, and the Authority shall so place their poles, towers, and other appliances in such a manner as not to interfere with the public roads and ditches, and if it should become necessary to widen or change the location of any of said roads the Authority upon notice from the County Highway Superintendent or the person having charge of the said road to remove the same out of the way, so as not to obstruct the free usage and passage of said roads and ditches.

5. The rights hereby granted shall become effective upon the passage of this resolution and shall continue for a period of ninety-nine (99) years thereafter.

6. The invalidity of any sentence, clause, or provision hereof shall not affect the validity of any of the remaining provisions hereof.

[fol. 2575] 7. The consideration hereof is the expenditure by said Authority of the funds necessary for the construc-

COMPLAINANTS' EXHIBIT No. 225

tion of said transmission and/or distribution lines and the proper maintenance thereof.

In Witness Whereof, said County Court of said County of Anderson, has caused this instrument to be subscribed to by its members this 6th day of January, 1936.

A motion was made by Esq. Wm. Tuttle, and seconded by Esq. L. W. Stark, that said Resolution be adopted. The vote was taken which resulted in a unanimous vote.

Whereupon W. A. Brown, County Judge, declared said Resolution duly and legally adopted.

(For brevity other portions of this exhibit are omitted.)

[fol. 2576] COMPLAINANTS' EXHIBIT No. 226

Electric Franchise Granted by the County Court of Bedford County, Tennessee, to TVA, on July 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 227

Electric Franchise Granted by the County Court of Bledsoe County, Tennessee, to TVA, at its July term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 228

Electric Franchise Granted by the County Court of Campbell County, Tennessee, to TVA, on February 24, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2577] COMPLAINANTS' EXHIBIT No. 229

Electric Franchise Granted by the County Court of Claiborne County, Tennessee, to TVA, at its January Term, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 230

Electric Franchise Granted by the County Court of Chester County, Tennessee, to TVA, at its October Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 231

Electric Franchise Granted by the County Court of Cocke County, Tennessee, to TVA, at its January term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2578] COMPLAINANTS' EXHIBIT No. 232

Electric Franchise Granted by the County Court of Dickson County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 233

Electric Franchise Granted by the County Court of Fayette County, Tennessee, to TVA, on October 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 234

Electric Franchise Granted by the County Court of Franklin County, Tennessee, to TVA, at its October Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2579] COMPLAINANTS' EXHIBIT No. 235

Electric Franchise Granted by the County Court of Giles County, Tennessee, to TVA, at its Adjourned Term, October, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2580] COMPLAINANTS' EXHIBIT No. 236

Electric Franchise Granted by the County Court of Giles County, Tennessee, to TVA, on December 9, 1935

(Omitted)

[fol. 2581] COMPLAINANTS' EXHIBIT No. 237

Electric Franchise Granted by the County Court of Grainger County, Tennessee, to TVA, at its January Term, 1936

(Omitted)

[fol. 2582] COMPLAINANTS' EXHIBIT No. 238

Electric Franchise Granted by the County Court of Greene County, Tennessee, to TVA, at its January Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2583] COMPLAINANTS' EXHIBIT No. 239

Electric Franchise Granted by the County Court of Grundy County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 240

Electric Franchise Granted by the County Court of Hamblen County, Tennessee, to TVA, at its January Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 241

Electric Franchise Granted by the County Court of Hamilton County, Tennessee, to TVA, on September 7, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2584] COMPLAINANTS' EXHIBIT No. 242

Electric Franchise Granted by the County Court of Hancock County, Tennessee, to TVA, on Jaunary 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 243

Electric Franchise Granted by the County Court of Hardeman County, Tennessee, to TVA, on October 5, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 244

Electric Franchise Granted by the County Court of Hardin County, Tennessee, to TVA, at its August Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2585] COMPLAINANTS' EXHIBIT No. 245

Electric Franchise Granted by the County Court of Hawkins County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 246

Electric Franchise Granted by the County Court of Hickman County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 247

Electric Franchise Granted by the County Court of Jefferson County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2586] COMPLAINANTS' EXHIBIT No. 248

Electric Franchise Granted by the County Court of Knox County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 249

Electric Franchise Granted by the County Court of Lawrence County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 250

Electric Franchise Granted by the County Court of Lincoln County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2587] COMPLAINANTS' EXHIBIT No. 251

Electric Franchise Granted by the County Court of Loudon County, Tennessee, to TVA, at its January Term, 1936

(Omitted)

[fol. 2588] COMPLAINANTS' EXHIBIT No. 252

Electric Franchise Granted by the County Court of Madison County, Tennessee, to TVA, on October 5, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2589] COMPLAINANTS' EXHIBIT No. 253

"Resolution Granting the TVA the Right to Set Poles on the Rights of Way of Marshall County"

"Whereas, it appearing to the Court that the TVA authorities are planning to build transmission lines in Marshall County. Now therefore be it resolved by the County Court of Marshall County that they be given the right to set poles on any or all of the Rights of Way of Marshall

COMPLAINANTS' EXHIBIT No. 253

County. Upon motion it was moved that the foregoing resolution be adopted, and upon roll call said resolution was adopted by a unanimous vote.

"Thereupon the resolution was declared duly adopted and ordered spread upon the minutes of the Court.

(Seal of the County Court of Marshall County, Tennessee.)"

(For brevity other portions of this exhibit are omitted.)

[fol. 2590] COMPLAINANTS' EXHIBIT No. 254

Electric Franchise Granted by the County Court of Maury County, Tennessee, to TVA, at its July Term, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 255

Electric Franchise Granted by the County Court of McMinn County, Tennessee, to TVA, on August 17, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 256

Electric Franchise Granted by the County Court of McNairy County, Tennessee, to TVA, on October 5, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2591] COMPLAINANTS' EXHIBIT No. 257

Electric Franchise Granted by the County Court of Morgan County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 258

Electric Franchise Granted by the County Court of Roane County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 259

Electric Franchise Granted by the County Court of Scott County, Tennessee, to TVA, on July 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2592] COMPLAINANTS' EXHIBIT No. 260

Electric Franchise Granted by the County Court of Sequatchie County, Tennessee, to TVA, on July 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 261

Electric Franchise Granted by the County Court of Shelby County, Tennessee, to TVA, on April 19, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 262

Electric Franchise Granted by the County Court of Sullivan County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2593] COMPLAINANTS' EXHIBIT No. 263

Electric Franchise Granted by the County Court of Union County, Tennessee, to TVA, on December 3, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

COMPLAINANTS' EXHIBIT No. 264

Electric Franchise Granted by the County Court of Washington County, Tennessee, to TVA, on January 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 225.

[fol. 2594] COMPLAINANTS' EXHIBIT No. 265

Electric Franchise Granted by the City of Fayetteville, Tennessee, to TVA, on June 9, 1937

Ordinance

Whereas, the Tennessee Valley Authority (hereinafter called Authority) is constructing a certain rural electric distribution system in Lincoln County, Tennessee, for the Lincoln County Electric Membership Corporation (hereinafter called Corporation) and Corporation is to own and operate said system for the retail distribution of electricity to its members at cost and without profit; and

Whereas, pursuant to an agreement between Authority and Corporation, Authority is operating such rural lines as have been completed for Corporation until the distribution system has been completed as a unit and may be transferred to Corporation for maintenance and operation; and

Whereas, the L. N. Gross Company proposes to construct a plant within the limits of the Town of Fayetteville and Corporation desires to admit said company to membership in Corporation and supply its electricity requirements; and

Whereas, Corporation has requested the Town of Fayetteville to grant to Authority a franchise to construct an electric distribution line within the limits of said town and

to serve the L. N. Gross Company with electricity and to place, the poles, lines, wires, insulators, transformers, irons, and braces, and to suspend the wires of said lines over, through, and upon the public streets, alleys, lanes, bridges, and other public ways and places in said town; and

Whereas, the Board of Mayor and Aldermen of the Town of Fayetteville, having duly convened and heard such application, a quorum being present, has concluded that the grant of such franchise would be advantageous to the Town of Fayetteville and to its inhabitants;

Now, Therefore, on motion duly made and carried,

Be It Ordained, that Authority, its successors and assigns, is hereby given and vested with the permission, right, authority, easement, privilege, and franchise to construct, erect, suspend, install, renew, repair, maintain, operate, and conduct in the Town of Fayetteville a line of poles, towers, conduits, cables, conductors, transforming stations, fittings and all appliances or appurtenances necessary or de- [fol. 2595] sirable for transmitting, distributing, and selling electric current to the L. N. Gross Company, and said facilities may be constructed, maintained, and operated in, over, under, along, upon and across the public streets, alleys, lanes, bridges, viaducts, and other public ways and places in said town as they now exist or may hereafter be laid out or extended.

This permission, grant, and privilege is made upon the following terms:

1. The poles, towers, conduits, cables, conductors, transforming stations, fittings, appliances, and appurtenances shall be so constructed as not unreasonably to interfere with the proper use of the public streets, alleys, bridges, viaducts, and other public ways and places in the town and shall be maintained in a reasonably good condition and repair.

2. Whenever Authority or assigns shall cause any opening or alteration to be made in any of the public streets, alleys, lanes, bridges, viaducts, and other public ways and places in the town for the purpose of installing, maintaining, operating, or repairing any poles, towers, conduits, cables, and other appliances, the work shall be completed within a reasonable time Authority or assigns shall upon the completion of such work restore such portion of the

public streets, alleys, lanes, bridges, viaducts, and other public ways, and places to as good condition as it was before the opening or alteration was so made.

3. Authority or assigns may, with the consent of any landowner having any interest therein, trim any trees which may come into contact with said wires, poles, or appurtenances.

4. Authority or assigns shall hold the town harmless from any and all liability or damages resulting from the negligence of Authority or assigns in the construction, maintenance, or operation of its poles, towers, conduits, wires, cables, and other appliances.

5. Upon the transfer from Authority to Corporation of the rural electric distribution system which Authority has constructed and is constructing for Corporation, this franchise shall be assigned by Authority to Corporation. Thereafter, the rights herein granted shall be exercised solely by Corporation, and Corporation, rather than Authority, shall be subject to the obligations herein imposed, as fully as if this franchise has been revoked at that time and a new franchise granted directly to Corporation.

6. If at any time subsequent to the construction of said distribution line within the limits of the Town of Fayetteville for service to the L. N. Gross Company, the Town of Fayetteville shall acquire an electric distribution system and shall desire to acquire the distribution line constructed pursuant to this franchise, said town may purchase the same from the then owner thereof at a price corresponding to its value at the time such option is exercised. In deter- [fol. 2596] mining the price to be paid by the town for said line its value shall be deemed to be the cost of constructing the same, less depreciation from the date of construction to the date on which the option is exercised. If the town elects to exercise such option, it shall purchase the entire portion of the line erected to serve the L. N. Gross Company from the present distribution lines, both within and without the City limits, and the town shall thereafter have the privilege of serving the L. N. Gross Company, if that company shall consent thereto.

COMPLAINANTS' EXHIBIT No. 265

7. The rights hereby granted shall become effective upon the passage of this Ordinance and shall continue for a period of ninety-nine (99) years thereafter.

8. The invalidity of any sentence, clause, or provision hereof shall not affect the validity of any of the remaining provisions hereof.

9. The consideration hereof is the expenditure by Authority and/or Corporation of the funds necessary for the construction of said transmission and/or distribution lines and the proper maintenance thereof.

10. In Witness Whereof, said Board of Mayor and Aldermen of said Town of Fayetteville has caused this instrument to be subscribed by its Mayor, this 9th day of June, 1937.

Frank D. Rambo, Acting Mayor. H. W. Moyers, City Clerk.

[fol. 2597] COMPLAINANTS' EXHIBIT No. 266

Map of the State of Tennessee, Showing the Counties which have granted electric franchises to TVA.

(Original Exhibit)

[fol. 2598] COMPLAINANTS' EXHIBIT No. 267

In the Name and by the Authority of the State of Alabama

Office of Secretary of State

Whereas, E. V. Ellis, J. D. Lindsey, T. A. Young, M. H. Copeland, G. H. Jordan, Eric Moseley, and J. F. Hannah, resident citizens of Cherokee County, Alabama, desiring to form themselves into an electric membership corporation, under Act No. 45, H. 133, approved February 7, 1935, and Act No. 168, H. 469, approved July 8, 1935, and

Whereas, the said members have filed in the office of Secretary of State for the State of Alabama, a certificate of incorporation, in accordance with Section 5 of said Act No. 45 under the name of Cherokee County Electric Mem-

bership Corporation which certificate of incorporation has been filed and recorded as of this date.

Now, Therefore, I, Howell Turner, Secretary of State for the State of Alabama, do hereby certify that the above named members are duly organized as an electric membership corporation, under the name of Cherokee County Electric Membership Corporation, for the purposes set forth in said certificate of incorporation and Act No. 45, approved February 7, 1935, also Act No. 168, approved July 8, 1935, and are fully authorized as a body corporate, having the capacity and powers conferred by law, in such cases made and provided.

I further certify that I have forwarded to Hon. T. R. Snead, Judge of Probate of the County of Cherokee, a certified copy of the certificate of incorporation.

In Testimony Whereof, I have hereunto set my hand and affixed the Great Seal of State, at the Capitol, in the City of Montgomery, this 11th day of February, 1937.

Howell Turner, Secretary of State. (Seal.)

[fol. 2599] Certificate of Incorporation of Cherokee County Electric Membership Corporation

We, the undersigned, E. V. Ellis, J. D. Lindsey, T. A. Young, M. H. Copeland, G. H. Jordan, Eric Moseley, and J. F. Hannah, being natural persons and resident citizens of Cherokee County, Alabama, the territory in which the operations of the Corporation are principally to be conducted, and being desirous of using electric energy to be furnished by the Corporation, and being desirous to promote and encourage the fullest possible use of electric energy, hereby execute this Certificate of Incorporation, as the incorporators of Cherokee County Electric Membership Corporation, as is provided by House Bill 133, Legislature of 1935, and approved on February 7, 1935, General Acts of Alabama, Regular Session, 1935, Page 100, and as amended by House Bill 469, Legislature of 1935, and approved on July 8, 1935, General Acts of Alabama, Regular Session, 1935, Page 229.

First

Name: The Name of the Corporation shall be Cherokee County Electric Membership Corporation.

COMPLAINANTS' EXHIBIT No. 267

Second

Territory: The operations of the Corporation shall be principally conducted in Cherokee County, Alabama.

Third

Principal Office: The Location of the principal office and the post office address thereof shall be Centre, Cherokee County.

Fourth

Number of Directors: The number of directors shall be determined as provided in the by-laws. This number shall not exceed twenty (20) and shall not be less than three (3).

Fifth

Directors for First Year: The names and addresses of the Directors who are to manage the affairs of the Corporation for the first year, or until their successors are chosen in the manner provided in the by-laws, are:

E. V. Ellis, Centre, Alabama, Route 1,
J. D. Lindsey, Centre, Alabama, Route 2,
T. A. Young, Centre, Alabama, Route 2,
G. H. Jordan, Centre, Alabama, Route 1,
[fol. 2600] Eric Moseley, Lyerly, Georgia, Route 2,
M. H. Copeland, Round Mountain, Alabama, Route 1,
J. F. Hannah, Leesburg, Alabama, Route 1.

Sixth

Duration: The duration of the corporation shall be perpetual.

Seventh

Membership: The terms and conditions upon which future members of the corporation shall be admitted to membership herein are as follows:

A person desiring to become a member of this corporation shall make application to the Board of Directors in writing for membership, and upon approval by the Board of Directors, or by any officer or officers of the corporation as may be designated by the Board of Directors, shall become a member of the corporation, provided, such person

resides in the territory in which the operations of such corporation are to be conducted, and are desirous of using electric energy to be furnished by the corporation and provided such person shall agree to abide by the By-Laws and the provisions of the Certificate of Incorporation, of the corporation, and shall agree to take and pay for such electric energy as may be furnished by said corporation to said person, as such person may have need of, or may consume for residential or other purposes. No person shall become or remain a member of the corporation, unless such person shall use electric energy supplied by the corporation and shall have complied with the provisions of this Certificate of Incorporation and the By-Laws and shall have agreed to abide thereby, and by any amendment thereto, and unless such person shall have paid a membership fee, to be fixed by the By-Laws of the corporation, but not to exceed Ten Dollars ($10.00).

Any person who shall agree to use energy supplied by the corporation from an existing line, or from a line, the construction of which has been authorized or commenced by the corporation, may be admitted to membership in the corporation upon complying with the other terms and conditions with respect to membership contained in this Certificate of Incorporation or in the By-Laws.

The Board of Directors shall have power to determine in what circumstances and under what conditions more than one membership may, or must, be held by one person. However, the interest of each member shall be equal to that of every other member, and no member of this corporation shall have any greater voice, vote, or privilege in this corporation than any other member, irrespective of the inequality of the numbers of memberships held by the different members of this corporation.

[fol. 2601] Eighth

Purposes: The purposes of the corporation shall be to render service to its members, and by so doing, promote and encourage the fullest possible use of electric energy in the State of Alabama, by making electric energy available to the members hereof at the lowest cost consistent with sound economy and prudent management of this business

of the corporation, and shall include all purposes required and authorized by the Electric Membership Corporation Act of the State of Alabama, and subsequent amendments thereto.

Without in any manner restricting or limiting the foregoing the corporation shall have the following purposes, viz:

To generate, manufacture, purchase, acquire and accumulate electric energy for its members and to transmit, distribute, furnish, sell and dispose of such electric energy to its members, and to such other customers as may validly be served by the corporation pursuant to the said Electric Membership Corporation Act, and subsequent amendments thereto, and by which is provided the conditions and obligations to serve other customers. This service to such other customers being to the class as is provided in this Certificate of Incorporation under the Ninth item, hereof, headed "Powers" and in order to carry out and accomplish any or all of such purposes, to construct, erect, purchase, lease, and in any manner acquire, own, hold, maintain, operate, sell, dispose of, lease, exchange and mortgage plants, buildings, works, machinery, equipment, and supplies and electrical transmission and distribution lines or systems, and to generally do and perform any and all things necessary and convenient in connection with, and in the conduction of, the business of a corporation, including, but not limited to the general powers, hereinafter set out, to the end that the purposes may be carried out by the corporation to the mutual benefit of the members.

Ninth

Powers: The Board of Directors shall constitute the governing Board, or Body, of the corporation, and shall be elected at such time as is provided in the By-Laws and shall be elected annually by the members entitled to vote therefor. All Directors, other than those named in this Certificate of Incorporation, shall be members of the corporation, and shall not be entitled to compensation, but shall be entitled to reimbursement for expenses incurred by them in the performance of their duties, as shall be provided in the By-Laws of this corporation. The Board of

Directors shall have power to do all things necessary or convenient in conducting the business of said corporation, including, but not limited to: (a) The power to adopt and amend By-Laws for the management and regulation of the affairs of the corporation. (b) To appoint, hire, or employ agents and employees, and to fix their compensation, (c) To appoint, select, hire, or employ officers of the corporation and to fix their compensation. (d) To execute [fol. 2602] instruments, (e) To delegate to one, or more, of the agents, employees or the officers of the corporation such powers and duties as they may deem proper, (f) To make its own rules and regulations as to procedure. The corporation shall possess powers to do all things necessary or convenient in conducting the business of the corporation to carry out the purposes for which it was organized. It shall be possessed of, and be authorized to, the exercise and enjoyment of all of the powers, rights, and privileges granted to or conferred upon corporations by the laws of the State of Alabama, now, or hereinafter in force, including, but not limited to the powers granted the corporation under the Electric Membership Corporation Act of Alabama, of 1935, and the subsequent amendments thereto, including, but not limited to the following, viz:

To acquire, own, hold, exercise, and, to the extent permitted by law, to mortgage, pledge, hypothecate and in any manner dispose of franchises, rights, privileges, licenses and easements necessary, useful, or convenient for carrying out and accomplishing of any of the purposes of the corporation;

To purchase, lease, and in any manner acquire, own, hold, maintain, sell, lease, exchange, mortgage, pledge, and in any manner dispose of any and all real and personal property which may be necessary, useful or convenient for the carrying out and accomplishing of any of the purposes of the corporation;

To assist its members to wire their premises and install therein electrical and plumbing appliances, fixtures, machinery, supplies, apparatus, and equipment of any and all kinds and character, and in connection therewith, and for such purposes, to purchase, acquire, lease, sell, distribute, install and repair electrical and plumbing appliances, fixtures, machinery, supplies, apparatus and equipment of

any and all kind and character and to receive, acquire, endorse, pledge, hypothecate and dispose of notes, and any other evidences of indebtedness;

To, in the same manner, furnish electrical energy and such supplies to certain non-member customers, provided the corporation should acquire any electric facilities already dedicated to, or devoted to, the public use, the corporation may, for the purpose of continuing existing service and avoiding hardship, continue to serve the persons directly served from such facilities at the time of such acquisition without requiring that such persons become members in the corporation. However, in no event shall the number of such non-members served exceed forty-nine Percentum (49%) of the total number of persons served by the corporation. Such non-members shall have the right to become members of the corporation upon non-discriminatory terms. The rate for service to such non-members shall be on a cost basis and may exceed the rates to members, but by only such amounts as may be necessary to meet the full actual cost of service to such non-members.

To borrow money, to make and issue notes, bills of exchange, bonds, debentures and other evidences of indebtedness secured or unsecured for moneys borrowed, or in payment for property acquired or for any of the other purposes of the corporation, to secure the payment of such bonds, debentures, notes, or any other evidences of indebtedness by mortgage or mortgages, or deed or deeds of trust, upon, or by the pledge or of any other lien upon any or [fol. 2603] all of the property, rights, privileges or franchises of the corporation, whatsoever, and wheresoever situated, acquired, or to be acquired;

To make available electrical generating manufacturings and transmission facilities to other corporations organized for similar purposes under the Statutes of the State of Alabama, or of any other state in the United States;

And to generally do, and perform all such acts, and things as may be useful, necessary, or convenient for the accomplishment of the purposes for which this corporation is organized, not to be limited to the powers above expressed, as the only limitation on the power of this corporation is that all of the operations of the corporation shall

COMPLAINANTS' EXHIBIT No. 267

ever be on a cooperative basis, not for profit, and for the mutual benefit of, and service to, its members, as such, and such limitation of power as is placed on corporations by the Statutes of the State of Alabama.

In witness whereof, we have hereunto set our hands and seals, as such incorporators aforesaid, on this the 2nd day of February, A. D. 1937.

(Signed) E. V. Ellis. (L. S.) (Signed) J. D. Lindsey. (L. S.) (Signed) T. A. Young. (L. S.) (Signed) Hoyt G. Jordan. (L. S.) (Signed) Eric Moseley. (L. S.) (Signed) M. H. Copeland. (L. S.) (Signed) J. F. Hannah. (L. S.)

STATE OF ALABAMA,
Cherokee County:

I, Hugh Reed, Jr., a Notary Public, in and for Cherokee County, State of Alabama, hereby certify that E. V. Ellis, J. D. Lindsey, T. A. Young, G. H. Jordan, Eric Moseley, M. H. Copeland, and J. F. Hannah, whose names are signed to the foregoing Certificate of Incorporation, and who are known to me, acknowledged before me on this day that, being informed of the contents of the said Certificate of Incorporation, each executed the same voluntarily on the day the same bears date.

Given under my hand and seal of office, this the 2nd day of February, A. D. 1937.

(Signed) Hugh Reed, Jr., Notary Public.

[fol. 2604] COMPLAINANTS' EXHIBIT No. 268

Certificate of Incorporation of Cullman County Electric Membership Corporation Issued by the State of Alabama on May 27, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

COMPLAINANTS' EXHIBIT No. 269

Certificate of Incorporation of DeKalb County Electric Membership Corporation Issued by the State of Alabama on October 28, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

COMPLAINANTS' EXHIBIT No. 270

Certificate of Incorporation of Franklin County Electric Membership Corporation Issued by the State of Alabama on June 19, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

[fol. 2605] COMPLAINANTS' EXHIBIT No. 271

Certificate of Incorporation of Guntersville Electric Membership Corporation Issued by the State of Alabama on April 24, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

COMPLAINANTS' EXHIBIT No. 272

Certificate of Incorporation of Marshall County Electric Membership Corporation Issued by the State of Alabama on October 2, 1935

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

COMPLAINANTS' EXHIBIT No. 273

Certificate of Incorporation of Joe Wheeler Electric Membership Corporation Issued by the State of Alabama on March 25, 1937

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

[fol. 2606] COMPLAINANTS' EXHIBIT No. 274

Certificate of Incorporation of Madison County Electric Membership Corporation Issued by the State of Alabama on March 2, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 267 with the exception of the names of the directors for the first year.

[fol. 2607] COMPLAINANTS' EXHIBIT No. 275

Electric Franchise Granted by the County Court of Bedford County, Tennessee, on January 6, 1936, to Bedford County Electric Membership Corporation

"Whereas, the United States Gov. through the agency of the Tennessee Valley Authority has made available certain funds for the purpose of bringing to the citizens, rural and urban, residing in the Tennessee Valley, electric power when their conditions have been complied with; and

"Whereas, to comply with said conditions certain citizens of Bedford County have bargained themselves into a body corporate under the name of Bedford County Electric Membership Corporation, and it is their purpose to furnish electric lights and power to rural citizens of this County, who have heretofore been unable to obtain such service and others, and to furnish it at such a cheap rate that any citizen of the county may avail himself of this service; and in order to furnish said service to the citizens of this county it is necessary that said Bedford County Electric Member-

COMPLAINANTS' EXHIBIT No. 275

ship Corporation be granted a franchise or easement with authority to erect its poles and lines over the roads of the county to reach the citizens who have contracted for said lights and power.

Therefore, on motion of Jno. B. Hall, seconded by John Coop, be it resolved by the County Court of Bedford County that said Bedford County Electric Membership Corporation be granted a franchise or easement over the roads and highways of Bedford County to erect its poles and construct its electric lines and maintain the same; and in consideration of the low cost of said service to the citizens of this County, no charge will be made for said easement."

(For brevity other portions of this exhibit are omitted.)

[fol. 2608] COMPLAINANTS' EXHIBIT No. 276

(Omitted)

[fol. 2609] COMPLAINANTS' EXHIBIT No. 277

Electric Franchise Granted by the County Court of Bradley County, Tennessee, on August 30, 1937, to Meigs County Electric Membership Corporation

* * * * * * *

"Be It Further Resolved, That the said Meigs County Electric Membership Corporation, its successors and assigns, be and it is hereby given, granted and conveyed the right, privilege and authority, forever, to erect, construct, maintain and operate electric transmission and distribution line or lines, including poles, towers, wires, insulators, transformers, arms, braces and other necessary or usual attachments and appliances along, across over and under the public roads and highways of this County, for the purpose of transmitting and distributing electricity of light, power, heat or any other purpose whatever.

"Be It Further Resolved, that the said Meigs County Electric Membership Corporation, its successors and as-

signs, is hereby granted and extended the right and privilege of selling electricity for light, heat, power or any other purpose whatever to any person or persons, firm or corporation within said County; Provided only, that nothing herein shall be construed to relieve or excuse said Corporation, its successors or assigns for the payment of any license or tax on the business engaged in, lawfully assessed, now in effect or hereafter to be enacted.

"Be It Further Resolved, that the above and foregoing right, authority and privileges are given and granted with the express stipulation and provisions that whenever State or County authorities change the width, grade or location of any road or highway that said Corporation will, at its own expense, whenever necessary, remove and re-set its poles, towers, guide wires, braces and attachments to conform to such new grade, width or location of said road or highway; and the County reserves the right to have all or any part of the work incident to the erection and construction of said transmision line or lines carried on under the reasonable direction and supervision of such person or persons to whom the County Court may delegate such authority.

"Be It Further Resolved, that said rights and privileges are granted and given with the express conditions and stipulations that none of said poles, towers, guide wires, braces or other apparatus or appliances are to be erected, used or maintained in such manner as to block, obstruct, interfere or impede travel on any of the roads or highways of Bradley County.

"Be It Further Resolved, that nothing herein shall be construed to grant or give to said Corporation, its successors or assigns any exclusive rights, privileges or franchises."

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2610] COMPLAINANTS' EXHIBIT No. 278

Electric Franchise Granted by the County Court of Bradley County, Tennessee, on August 30, 1937, to North Georgia Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 279

Electric Franchise Granted by the County Court of Bradley County, Tennessee, on August 30, 1937, to Bradley County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2611] COMPLAINANTS' EXHIBIT No. 280

Electric Franchise Granted by the County Court of Carroll County, Tennessee, on October 5, 1936, to Gibson County Electric Membership Corporation

* * * * * * * *

"Therefore, Be It Resolved by this County Court of Carroll County that Gibson County Electric Membership Corporation, its successor and assigns, is hereby granted the right and privilege to construct, erect, maintain and operate electric transmission lines, including poles, lines, wires, insulators, transformers, arms, braces and all other necessary or usual attachments and appurtenances along, across, over, under and on the streets, lanes, highways, public roads and other public places in said County, and to construct, erect, maintain and operate electric transmission and distribution lines, wires, insulators, transformers, arms, braces and all other necessary or usual attachments and appurtenances anywhere in said County.

After hearing said resolution R. McNatt made a motion which was duly seconded that the matter be referred to a committee and that they report at 1 o'clock P. M.

COMPLAINANTS' EXHIBIT No. 280

Thereupon, Judge Enochs named W. G. Bullock, A. H. Jones and L. E. Smith to investigate and report their findings.

Said Committee reported favorable and recommended its adoption. Thereupon the said Resolution was unanimously adopted, a lawful Court present and voting for same."

(For brevity other portions of this exhibit are omitted.)

[fol. 2612] COMPLAINANTS' EXHIBIT No. 281

Electric Franchise Granted by the County Court of Chester County, Tennessee, to the Madison County Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 282

Electric Franchise Granted by the County Court of Chester County, Tennessee, to the Pickwick Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 283

Electric Franchise Granted by the County Court of Chester County, Tennessee, to West Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2613] COMPLAINANTS' EXHIBIT No. 284

Electric Franchise Granted by the County Court of Chester County, Tennessee, to the Southwestern Tennessee Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 285

Electric Franchise Granted by the County Court of Coffee County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 286

Electric Franchise Granted by the County Court of Crockett County, Tennessee, to Southwest Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2614] COMPLAINANTS' EXHIBIT No. 287

Electric Franchise Granted by the County Court of Crockett County, Tennessee, to West Tennessee Electric Membership Corporation for a Period of 50 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 288

Electric Franchise Granted by the County Court of Crockett County, Tennessee, to the Gibson County Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 289

Electric Franchise Granted by the County Court of Cumberland County, Tennessee, to Meigs County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2615] COMPLAINANTS' EXHIBIT No. 290

Electric Franchise Granted by the County Court of Dyer County, Tennessee, to Gibson County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 291

Electric Franchise Granted by the County Court of Franklin County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 292

Electric Franchise Granted by the County Court of Gibson County, Tennessee, on April 6, 1936, to Gibson County Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2616] COMPLAINANTS' EXHIBIT No. 293

Electric Franchise Granted by the County Court of Gibson County, Tennessee, on July 6, 1936, to West Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 294

Electric Franchise Granted by the County Court of Gibson County, Tennessee, to West Tennessee Electric Membership Corporation

(Omitted)

COMPLAINANTS' EXHIBIT No. 295

Electric Franchise Granted by the County Court of Giles County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2617] COMPLAINANTS' EXHIBIT No. 296

Electric Franchise Granted by the County Court of Hamilton County, Tennessee, on April 6, 1936, to Meigs County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 297

Electric Franchise Granted by the County Court of Hamilton County, Tennessee, on July 6, 1936, to North Georgia Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2618] COMPLAINANTS' EXHIBIT No. 298

Resolution by the County Court of Haywood County, Tennessee

(Omitted)

[fol. 2619] COMPLAINANTS' EXHIBIT No. 299

Electric Franchise Granted by the County Court of Hickman County, Tennessee, on April 5, 1937, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 300

Electric Franchise Granted by the County Court of Lauderdale County, Tennessee, to Southwest Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 301

Electric Franchise Granted by the County Court of Madison County, Tennessee, to Gibson County Electric Membership Corporation for a period of 99 years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2620] COMPLAINANTS' EXHIBIT No. 301-A

Electric Franchise Granted by the County Court of Madison County, Tennessee, to Madison County Electric Membership Corporation for a period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 301-B

Electric Franchise Granted by the County Court of Madison County, Tennessee, to West Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2621] COMPLAINANTS' EXHIBIT No. 301-C

Electric Franchise Granted by the County Court of Madison County, Tennessee, to Southwest Tennessee Electric Membership Corporation for a Period of 99 Years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277 except the amendment thereto, which is as follows:

A Resolution amending resolution granting franchise to TVA in Madison County was presented to the Court as follows:

"Whereas, the Quarterly County Court of Madison County, Tennessee, at its October Term 1936, by resolution,

COMPLAINANTS' EXHIBIT No. 301-C

granted the Southwest Tennessee Electric Membership Corporation the right and privilege to construct, erect, maintain and operate electric transmission and distribution lines along, across, over, under, and on the streets, lanes, highways, public roads and other public places in said County, but said right and privileges so granted did not extend to or run in favor of the successors and assigns of Southwest Tennessee Electric Membership Corporation.

Whereas, it is essential to the United States Government and to the Southwest Tennessee Electric Membership Corporation that said right and privilege run in favor of the successors and assigns of Southwest Tennessee Electric Membership Corporation.

Now, therefore, be it resolved that this Quarterly County Court of Madison County, Tenn., at its April Term, 1937, that the Resolution heretofore adopted granting the aforesaid right and privilege to Southwest Tennessee Electric Membership Corporation be and the same hereby is amended so as to make the right and privilege heretofore granted to Southwest Tennessee Electric Membership Corporation extend to and run in favor of said Southwest Tennessee Electric Membership Corporation, its successors and assigns.

Motion made by Esquire R. L. Ozier, seconded by J. S. Matthews, that the same be accepted.

Motion carried by a vote of 26 to nothing.

[fol. 2622] COMPLAINANTS' EXHIBIT No. 302

Electric Franchise Granted by the County Court of Marshall County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 303

Electric Franchise Granted by the County Court of Maury County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 304

Electric Franchise Granted by the County Court of McMinn County, Tennessee, to Meigs County Electric Membership Corporation, on April 6, 1936

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2623] COMPLAINANTS' EXHIBIT No. 305

Electric Franchise Granted by the County Court of Meigs County, Tennessee, on April 6, 1936, to Meigs County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 306

Electric Franchise Granted by the County Court of Moore County, Tennessee, on July 6, 1936, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 307

Electric Franchise Granted by the County Court of Obion County, Tennessee, April 6, 1936, to Gibson County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2624] COMPLAINANTS' EXHIBIT No. 308

Electric Franchise Granted by the County Court of Obion County, Tennessee, on July 6, 1936, to West Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2625] COMPLAINANTS' EXHIBIT No. 309

Electric Franchise Granted by the County Court of Rhea County, Tennessee

"TVA Transmission Lines to be Erected on Rights-of-Way

Motion was made by Esq. Boles, duly seconded by Sanborn that the County Court permit the TVA to erect transmission lines on the Rights of way of Rhea County to the extent that they do not interfere with traffic.

Resolution as follows:

Resolution

For the support of the rural electrification program in Rhea County.

Whereas, the rural people of Rhea County are anxious to obtain electric power distributed by the Tennessee Valley Authority and are interested in formulating a set-up whereby said electricity may be distributed cooperatively and,

Whereas, the Rhea County Quarterly Court desires to cooperate with the TVA and the proposed Electrification program,

Therefore, Be It Resolved, that an association that may be set up to distribute this power is authorized to use the County Rights-of-way for the erection of its transmission lines whenever such Rights of way can be used to advantage, such authorization to be used with discretion so as not to interfere with maintenance and public use of such Rights of way.

Passed, This the 1st day of April, 1935.

Attest: Floyd Knight, County Judge. Ralph Porter, County Clerk.

COMPLAINANTS' EXHIBIT No. 309

Upon roll call the following Justices voted "Aye" for the motion. Baber, Boles, Bower, Caldwell, Chattin, Kemmer, Odom, Sanborn, Smith, Spence, Taylor, Washburn.

Absent: Barton, Conner, Morgan, Vaughn.

Motion carried and so ordered."

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2626] COMPLAINANTS' EXHIBIT No. 309-A

Resolution by County Court of Rhea County, Tennessee

Rural Electrification Resolution Amendment

"Be it resolved by the Quarterly County Court of Rhea County, that the resolution adopted by the Court on Monday, October 7, 1935, recorded in current Minute Book, pages 272 and 273, granting to City of Dayton a franchise for use of public roads of Rhea County for erection of electric transmission lines be and same is hereby amended by adding name of Meigs County Electric Membership Corporation and granting same rights to said Meigs County Electric Membership Corporation as are granted therein to City of Dayton to use public roads in the first and second districts of Rhea County with same rights and privileges and under same conditions as granted in said original resolution to City of Dayton. This amended resolution does not grant an exclusive franchise on any road covered by it.

Motion was made by esquire Sanborn duly seconded by esquire Chattin to pass the foregoing resolution.

Upon roll call the following justices voted "aye" for the motion:

Baber, Boles, Chattin, Kemmer, Morgan, Odom, Sanborn, Smith, Spence, Taylor, Vaughn and Washburn.

Those absent: Barton, Caldwell and Conner.

The Judge declared the motion carried and so ordered."

• • • • • • •

For brevity other portions of this exhibit are omitted.

[fol. 2627] COMPLAINANTS' EXHIBIT No. 310

Electric Franchise Granted by the County Court of Roane County, Tennessee, on April 6, 1936, to Meigs County Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 311

Electric Franchise Granted by the County Court of Rutherford County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 312

Electric Franchise Granted by the County Court of Rutherford County, Tennessee, to Middle Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2628] COMPLAINANTS' EXHIBIT No. 313

Electric Franchise Granted by the County Court of Rutherford County to Bedford County Electric Membership Corporation

"In re Bedford County Electric Membership Corporation

"Esq. A. A. Gobelet offered the following resolution and moved its adoption:

"Whereas, the United States Government, through the agency of the Tennessee Valley Authority, has made available certain funds for the purpose of bringing to the citizens rural and urban, residing in the Tennessee Valley,

COMPLAINANTS' EXHIBIT No. 313

electric power when their conditions have been complied with; and

"Whereas, to comply with said conditions certain citizens of Bedford County have organized themselves into a body corporate under the name of Bedford County Electric Membership Corporation, and it is further their purpose to furnish electric lights and power to rural citizens of this county, who have heretofore been unable to obtain such service and others, and to furnish it at such a cheap rate that any citizen of the County may avail himself of this service; and in order to furnish said service to the citizens of this County it is necessary that said Bedford County Electric Membership Corporation be granted a franchise or easement with authority to erect its poles and lines over the roads of the county to reach the citizens who have contracted for said lights and power:

"Therefore on motion of J. C. Couch, seconded by C. E. Robinson, be it resolved by the County Court of Rutherford County that said Bedford County Electric Membership Corporation be granted a franchise or easement over the roads and highways of Rutherford County to erect its poles and construct its electric lines and maintain the same, and in consideration of the low cost of said services to the citizens of this county, no charge will be made for said easement."

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2629] COMPLAINANTS' EXHIBIT No. 314

Electric Franchise Granted by the County Court of Shelby County, Tennessee, on October 19, 1936, to Southwest Tennessee Electric Membership Corporation for a Period of 99 years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

COMPLAINANTS' EXHIBIT No. 315

Electric Franchise Granted by the County Court of Smith County, Tennessee, on July 6, 1936, to the Middle Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 316

Electric Franchise Granted by the County Court of Tipton County, Tennessee, to Southwest Tennessee Electric Membership Corporation, for a period of 99 years

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 277.

[fol. 2630] COMPLAINANTS' EXHIBIT No. 317

Electric Franchise Granted by the County Court of Truesdale County, Tennessee, to the Middle Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 318

Electric Franchise Granted by the County Court of Williamson County, Tennessee, to Duck River Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

COMPLAINANTS' EXHIBIT No. 319

Electric Franchise Granted by the County Court of Wilson County, Tennessee, to Middle Tennessee Electric Membership Corporation

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 280.

[fol. 2631] COMPLAINANTS' EXHIBIT No. 320

A map of the State of Tennessee showing the counties which have granted electric franchises to cooperative associations or membership corporations.

(Original Exhibit)

[fol. 2632] COMPLAINANTS' EXHIBIT No. 321

A map of Tennessee showing counties which have granted electric franchises to TVA, counties which have granted electric franchises to electric membership corporations and counties which have granted electric franchises to both TVA and electric membership corporations.

(Original Exhibit)

[fol. 2633] COMPLAINANTS' EXHIBIT No. 322

Copy

Certificate of the Secretary of State of Tennessee That TVA Has Not Qualified to do Business in Tennessee

State of Tennessee

Office of the Chief Executive

I, Gordon Browning, Governor of the State of Tennessee, hereby certify that A. B. Broadbent, whose signature appears to the instrument of writing hereto annexed, was at the time of affixing the same thereto and continuously since then has been Secretary of State of the State of Tennessee, and as such had and has custody of the Official Records of the State of Tennessee in relation and respect to the Qualification of Corporations of other States or Countries and their Admission into this State to engage in business herein, and that as such Secretary of State he has charge and custody of The Great Seal of the State of Tennessee and the right and power to attach it to Certificates of the kind hereto annexed; and I certify that the said Attestation hereto attached and The Great Seal of the State annexed

COMPLAINANTS' EXHIBIT No. 322

thereto are in due form and made and attached by the proper officer.

In Witness Whereof I have executed this Certificate at Office in the Capitol Building in Nashville, Tennessee, on this the 8th day of October, A. D. 1937.

(Signed) Gordon Browning, Governor.

[fol. 2634] Copy

(Seal)

State of Tennessee

I, A. B. Broadbent, Secretary of State of the State of Tennessee, hereby certify that Tennessee Valley Authority understood to be a Corporation created by Act of Congress in 1933, has not filed in the office of the Secretary of State of Tennessee a copy of its Charter, or of any Amendments to its Charter, and has not designated in said Office an Agent for Service of Process and has not taken in said Office any of the steps prescribed in Sections 4118, 4119 and 4120 of the Code of Tennessee for the admission of Corporations of other States or Countries into this State to engage in business.

In Witness Whereof I have executed this Certificate at Office in the Capitol Building, and have affixed hereunto the Great Seal of the State of Tennessee, all at Nashville, Tennessee, on this the 15th day of September, A. D. 1937.

(Signed) A. B. Broadbent, Secretary of State.

[fol. 2635] COMPLAINANTS' EXHIBIT No. 323

Certificate of the Secretary of State of Georgia That TVA Has Not Qualified to do Business in Georgia

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 322.

COMPLAINANTS' EXHIBIT No. 324

Certificate of the Secretary of State of Mississippi That TVA Has Not Qualified to do Business in Mississippi

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 322.

COMPLAINANTS' EXHIBIT No. 325

Certificate of the Secretary of State of Alabama That TVA Has Not Qualified to do Business in Alabama

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 322.

[fol. 2636] COMPLAINANTS' EXHIBIT No. 326

A map of the Northern Division of the Alabama Power Company showing thereon lines owned and operated by TVA, lines of cooperatives and municipalities constructed or under construction by TVA distributing TVA power, lines of cooperatives and municipalities acquired by TVA and sold to such cooperatives and municipalities and distributing TVA power and lines of the Alabama Power Company.

(Original Exhibit)

[fol. 2637] COMPLAINANTS' EXHIBIT No. 327

A map entitled "Transmission and Distribution Systems of the Complainant Companies and Transmission Lines of Others Situated within 250 miles of any TVA Dam, whether Constructed or Authorized or Recommended for Construction."

(Original Exhibit)

[fol. 2638] COMPLAINANTS' EXHIBIT No. 328

Report to the Congress "On The Unified Development of the Tennessee River System" submitted by the Board of Directors of the Tennessee Valley Authority, March 1936.

(Original Exhibit)

[fol. 2639] COMPLAINANTS' EXHIBIT No. 329 (Excluded)

A map of a portion of the State of Georgia showing the transmission and distribution lines of Georgia Power Company, distribution lines of North Georgia Electric Membership Corporation and lines of others.

(Original Exhibit)

[fol. 2640] COMPLAINANTS' EXHIBIT No. 330 (Excluded)

A map entitled "Transmission system and connections of the Georgia Power Company".

(Original Exhibit)

[fol. 2641]

COMPLAINANTS' EXHIBIT No. 331 (Excluded)

Georgia Power Company Sales and Customers
Within 100, 150 and 250 Miles of T. V. A. Dams**

	Year 1933		Year 1936	
Within 100 miles	Custs.	Kwh.	Custs.	Kwh.
Residential	69,391*	59,948,705*	85,650	96,958,382
Commercial	14,909	86,952,653	16,744	129,349,964
Street Lighting	97	8,796,153	107	11,854,811
Industrial	192	304,906,450	203	370,207,487
Wholesale Municipal	17	20,031,740	15	27,673,018
Total Zone 1	84,606	480,635,701	102,719	638,043,662
Within 150 Miles				
Residential	73,884*	64,172,061*	91,222	105,928,132
Commercial	15,835	91,752,653	17,794	136,449,964
Street Lighting	125	9,286,153	138	12,464,811
Industrial	262	435,544,130	273	540,624,947
Wholesale Municipal	33	37,640,450	31	55,467,218
Total Zone 2	90,139	638,395,447	109,458	850,935,072
Within 250 Miles				
Residential	111,382*	86,218,200*	138,907	155,240,116
Commercial	27,504	124,769,931	32,551	187,346,125
Street Lighting	274	13,929,378	276	17,192,955
Industrial	416	641,416,675	439	822,014,817
Wholesale Municipal	38	47,559,515	36	70,292,724
Total Zone 3	139,614	913,893,699	172,209	1,252,086,737

* Includes the Rural Service, both residential and commercial.
** Chickamauga, Guntersville and Hiwassee Dams.

[fol. 2642] COMPLAINANTS' EXHIBIT No. 332 (Excluded)

Map entitled "Transmission and Distribution Lines in the Area Penetrated by TVA as of November 1, 1937".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 332-A

Map entitled "Transmission and Rural Distribution Lines, Completed, Under Construction and Proposed in the Area Penetrated by TVA as of November 1, 1937".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 333 (Excluded)

Map entitled "Transmission Lines and Principal Load Centers of TVA and Complainant Companies Situated Within *100 Miles of any* TVA Dam Constructed or Authorized or Recommended for Construction".

(Omitted)

[fol. 2643] COMPLAINANTS' EXHIBIT No. 333-A

Map entitled "TVA Transmission Lines Completed, Under Construction and Proposed and Principal Load Centers of TVA and Complainant Companies Situated Within 100 Miles of Any TVA Dam Constructed or Authorized or Recommended For Construction".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 334

Chart entitled "Design Of A System To Serve Existing TVA Loads".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 335 (Excluded)

Map entitled "Transmission Lines of Complainant Companies and Principal Load Centers of TVA and Complainant Companies Situated Within 100 Miles of Any TVA Dam Constructed or Authorized or Recommended For Construction".

(Omitted)

[fol. 2644] COMPLAINANTS' EXHIBIT No. 335-A

Map entitled "Transmission Lines Of Complainant Companies Completed And Under Construction, And Principal Load Centers Of TVA And Complainant Companies Situated Within 100 Miles Of Any TVA Dam Constructed Or Authorized Or Recommended For Construction."

(Original Exhibit)

[fols. 2645-2649] COMPLAINANTS' EXHIBIT No. 336

A map entitled "Progress Of Construction Of Lines Of The Tennessee Electric Power Company and Predecessor Companies."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 337 (Excluded)

Letter of the Railroad and Public Utilities Commission of the State of Tennessee dated May 14, 1937.

(Omitted)

COMPLAINANTS' EXHIBIT No. 339 (Excluded)

[fol. 2650] Yates Bleachery Co.

Max. Demand ..... 160 kw.
Energy per Month ..... 21600 kwh.

Tenn. Elect. Power Rate

Demand—160 kw.	@ $1.50		$240.00
1st 500 kwh.	@ 4¢		20.00
Next 1,500 "	@ 2¢		30.00
" 2,500 "	@ 1.5¢		37.50
" 3,500 "	@ 1.25¢		43.75
" 13,600 "	@ 1¢		136.00
21,600			$507.25
Less 5% 10 days			25.36
			$481.89

Minimum $1.58 per kw. of Max. demand—Net Bill correction if Power factor is less than 80%.

Tenn. Valley Authority

Demand 160 kw.	@ $1.00	$160.00
10,000 kwh.	@ 1¢	100.00
11,600 "	@ .6¢	69.60
21,600		$329.60
Plus 10% surcharge		32.96
Net Bill		$362.56
Minimum 160 x $6		$960 per year.

Yates Bleachery Co.

Ga. Power Co.

Demand 160 kw.	@ $1.11	$177.50
20,000 kwh.	@ 1.44¢	288.00
1,600 "	@ 1.11¢	17.78
		$483.28
Less 10% 10 days		48.32
Net Bill		$434.96

[fol. 2651] COMPLAINANTS' EXHIBIT No. 340

Memorandum showing business address of T. R. Hunnicutt, Division Manager of TVA.

(Omitted)

[fol. 2652] COMPLAINANTS' EXHIBIT No. 341

Industrial Power Contract

This Contract, made this 5 day of April, 1937 by and between Name: Yates Bleachery Company; Address: Flintstone, Georgia, Hereinafter called the "Customer", and the North Ga. Elect. Membership Corporation hereinafter called the "Distributor": with office at Dalton, Georgia.

Witnesseth:

Whereas, Customer has applied to Distributor for electricity for the operation of a bleachery, at Flintstone, Georgia.

Now, Therefore, in consideration of the mutual covenants and agreements hereinafter set forth, the parties mutually agree as follows:

1. The Distributor will supply and the Customer will take and pay for all the electricity required for the operation of a bleachery at Flintstone, Georgia up to a maximum demand of 175 kw., in accordance with the terms hereof and the schedule of Rules and Regulations attached hereto and made a part hereof.

2. The minimum quantity of electricity contracted for hereunder and to be paid for by the Customer shall be a minimum demand of — kw.

3. Attached hereto and hereby made a part hereof is a [fol. 2653] rate schedule designated Rate Schedule B-3, and the electricity sold hereunder shall be purchased and paid for by the Customer according to the provisions of said Rate Schedule B-3, except as modified by this agreement, including a surcharge of 10% and an amortization charge of 1¢ per kwh. for the first 100 kwh. per month, the minimum amortization charge to be $0.25 and the maximum $1.00 per month.

4. The electricity furnished hereunder shall be in the form of 3-phase, alternating current, at approximately 60 cycles and 2300 volts.

5. The Point of Delivery for the electricity supplied hereunder shall be at the bleachery and maintenance by Distributor of approximately the above stated voltage and frequency at said Point of Delivery shall constitute delivery of electricity for the purposes of this contract. The electricity

to be supplied Customer hereunder shall be metered at the low tension side of the step-down transformer bank or banks of a substation to be constructed, owned, and operated by Distributor, and Distributor will install only such protective devices as in its opinion are necessary for the protection of its transformer bank or banks and/or the transmission line or transmission lines supplying power to such sub-station. Customer shall furnish Distributor gratis with a suitable substation site for the period hereof, the transformer banks and other equipment installed thereon to [fol. 2654] be considered the personal property of Distributor. Distributor shall have free right of ingress and egress on said site, and Customer shall supply a right-of-way over Customer's property to such site.

6. The term of this contract shall be 5 years. This contract shall begin on the date of the delivery of electricity hereunder is actually begun, which it is estimated will be approximately on or about May 15, 1937, and shall be considered renewed for a year from the expiration of said term, and from year to year thereafter, unless a written notice to the contrary is given by either party to the other at least three months prior to the expiration of the term of the contract or any then existing renewal thereof.

7. This contract shall inure to the benefit of and be binding upon the respective heirs, legal representatoves, successors and assigns of the parties hereto, but it is not assignable by Customer without written consent of Distributor.

In Witness Whereof the parties hereto have caused this contract to be duly executed in duplicate the day and year first above written.

—— ——, Distributor, by —— ——.

—— ——, Customer, By —— ——, ——, Official Capacity.

[fol. 2655] Schedule of Terms and Conditions

1. Measurement of Demand, Energy and Power Factor.—Demand energy measurements shall be made by suitable instruments at the point or points of delivery or may, at the option of Authority, be made at some other point or points

where housing facilities are available or may be made available and/or operation simplified; Provided, however, that in the event the metering is effected at some other location than at the point of delivery, suitable correction shall be made by Authority of the amounts determined at such location so that the adjusted amounts will so far as possible reflect the exact quantities delivered at the actual point or points of delivery.

Authority will, at its own expense, install and maintain the necessary meters for measuring the maximum demand and the amount of energy furnished Customer, Provided, that should these meters fail or be found inaccurate the maximum demand and amount of energy delivered will be estimated by Authority from the best information available. Authority may also, at its option, from time to time measure power factor. Customer shall permit the use of its housing facilities, ducts and supports for Authority's metering equipment.

2. Meter Tests.—Authority will, at its own expense, and in the presence of representatives of Customer, make periodical tests and inspections of its meters in order to maintain a high standard of accuracy. Authority will make [fol. 2656] additional tests or inspection of its meters at the request of Customer, and in the presence of representatives of Customer. If such additional tests show that the meter is accurate within 2%, slow or fast, no adjustment will be made in Customer's bill and the cost of making test will be paid by Customer. In case the tests show the meter to be in excess of 2%, fast or slow, an adjustment shall be made in Customer's bill over a period of not over thirty (30) days prior to date of such test, and cost of making test shall be borne by Authority.

3. Customer's Lines and Equipment—Ownership.—All lines and substations from Point of Delivery (as defined in the contract of which these terms and conditions are a part,) and all electrical equipment, except the metering equipment of Authority, located on Customer's side of such Point of Delivery, shall be furnished and maintained by Customer.

4. Inspections.—Authority shall have the right, but shall not be obligated, to inspect any installation before elec-

tricity is introduced or at any later time, and reserves the right to reject any wiring or equipment not in accordance with Authority's reasonable standards; but such inspection, or failure to inspect, or to reject, shall not render Authority liable or responsible for any loss, damage, or accident resulting from defects in the installation of any electrical equipment, or from violation of the contract of which these [fol. 2657] terms and conditions are a part.

5. Customer's Responsibility for Authority's Property.—All meters, service conditions, and other equipment furnished by Authority shall be, and remain, the property of Authority. Customer shall exercise proper care to protect the property of Authority on Customer's premises, and in the event of loss or damage to Authority's property, arising from neglect of Customer to care for same, the cost of necessary repairs or replacement shall be paid by Customer.

6. Rights of Access.—Authority's identified employees shall have access to Customer's premises at all reasonable times, for the purpose of reading meters, and for testing, repairing, renewing or exchanging any or all equipment belonging to Authority.

7. Additional Load.—The service connection, transformers, meters, and equipment supplied by Authority for Customer have definite capacity and no addition to Customer's equipment or load connected thereto, in excess of such capacity, shall be made except after reasonable notice to Authority. Failure to give such notice of additions or changes in load shall render Customer liable for any damage to Authority's lines or equipment caused by the additional or changed installation.

8. Customer's Lines and Equipment—Standards.—All lines and equipment of Customer must conform to accepted modern practice, as exemplified by the requirements of the [fol. 2658] National Electrical Safety Code and the National Electric Code.

9. Billing.—Bills will be rendered monthly and shall be paid within ten (10) days from date of bill at the office of Authority. Failure to receive bill will not release Customer from payment obligation. Should bills not be paid as above,

Authority may at any time thereafter, upon five (5) days' written notice to Customer, discontinue service. Discontinuance of supply under this section shall not relieve Customer of its liability for the agreed minimum monthly payment during the time the supply of energy is so discontinued. Bills paid on or before the final date of payment shall be payable at the net rates, but thereafter the gross rates shall apply. Should the final date for payment of the bill at the net rates fall on a Sunday or holiday, the business day next following the final date will be held as a day of grace for delivery of payment. Net rate remittance received by mail after the time limit for payment of said net rates will be accepted by Authority, if the incoming envelope bears United States Post Office date stamp of the final date for payment of the net amount, or any date prior thereto.

10. Interruption of Service.—Authority will furnish energy as agreed upon continuously so far as reasonable diligence will permit; but Authority, its officers, agents or employees shall not be liable for damages when, for any reason, suspensions of the operation of the generation and [fol. 2659] transmission system serving Customer, or any part thereof, interfere with the delivery of electric energy to Customer nor shall such an interruption constitute a breach of this contract on the part of Authority, but Authority shall make appropriate adjustment of the demand charge in the event of an interruption.

11. Voltage Fluctuations Caused by Customer.—Electric service must not be used in such a manner as to cause unusual fluctuations or disturbances to Authority's system. Authority may require Customer at its own expense to install suitable apparatus to reasonably limit such fluctuations.

12. Balancing of Loads.—Customer shall at all times rake and use energy in such manner that the load will be balanced between phases to within 10%. In the event of unbalanced polyphase loads, Authority reserves the right to require Customer at its own expense to make the necessary changes to correct this condition, or to compute the balancing demand on the assumption that the load of each phase is equal to that on the greatest phase.

COMPLAINANTS' EXHIBIT No. 341

13. Notice of Trouble.—Customer shall notify Authority immediately should the service be unsatisfactory for any reason, or should there be any defects, trouble, or accidents affecting the supply of electricity. Such notices, if verbal, should be confirmed in writing.

[fol. 2660] 14. Single Point Delivery.—Unless otherwise specifically provided in this contract, if service is rendered from more than one substation, or through more than one transformation at the same substation, Authority will bill Customer for energy (but not demand) at each substation or additional transformation separately.

15. Submetering or resale.—Except as otherwise specifically provided, the energy supplied hereunder is for the use of Customer only, and shall not be submetered or resold, except at reasonable rates, for domestic and commercial uses to the extent incident to Customer's industrial operations.

16. Conflict.—In case of conflict between any express contractural provision or any provision of the Rate Schedule and these Terms and Conditions, the Contract or Rate Schedule shall apply.

[fol. 2661] Tennessee Valley Authority

Department of Electricity

Basic Industrial Rate

Schedule B-3

Availability

Available to all industrial and all large non-residential light, heat, and power customers having demands greater than 20 kw. and/or customers whose average monthly usage exceeds 4,000 kwh. Customers with demands not greater than 20 kw. and using on the average not in excess of 4,000 kwh. per month will be billed according to the Basic Commercial Rate, Schedule B-2.

Character of Service.

Alternating current, three-phase, sixty cycles. Voltage supplied will be at the discretion of Contractor and will be

determined by the voltage available from distribution lines in the vicinity and/or other conditions.

Rate

Demand Charge:

First 1,000 kw. of demand per month @ $1.00 per kw.
Excess over 1,000 kw. of demand per month @ $0.90 per kw.

Energy Charge:

First	10,000 kwh.	consumed	per	month	@	10	mills	per	kwh.
Next	25,000 kwh.	"	"	"	@	6	"	"	"
Next	65,000 kwh.	"	"	"	@	4	"	"	"
Next	400,000 kwh.	"	"	"	@	3	"	"	"
Next	1,500,000 kwh.	"	"	"	@	2.5	"	"	"
Excess over	2,000,000 kwh.	"	"	"	@	2	"	"	"

Charge for energy in excess of 360 times the demand shall be subject to a reduction of 0.5 mills per kwh. from the otherwise applicable rate.

[fol. 2662] Determination of Demand.

Demand measurement shall be made by suitable instruments at the point of delivery, except, at the option of the Contractor, demand may be determined by inspection or test. Demand for any month shall be defined as the highest integrated load during any thirty (30) minute period during the month for which determination is made.

Adjustment of Demand Charge for Power Factor

Demand charge may be adjusted, if and when Contractor deems necessary, to correct for power factors lower than eighty-five per cent (85%). Such adjustments will be made in such manner as to bring the demand charge to the equivalent of eighty-five per cent (85%) power factor.

Minimum Annual Charge

Customers taking service under this schedule shall pay a minimum annual charge, including demand and energy, of six dollars ($6.00) per kilowatt of the highest measured demand occurring during any month of each year of service.

For annual customers, the excess, if any, of the minimum annual charge over the total amount billed to and paid by customer shall be determined and collected at the end of each year of service.

For seasonal customers taking service for less than one full year, the minimum charge will be collected in equal in-
[fol. 2663] stallments during the first four consecutive months of service, and will be adjusted at the end of the service period, at which time customer shall pay the excess, if any, of the minimum charge over the total amount previously billed to and paid by customer. Seasonal customers shall pay in addition the actual costs of cut-ins and cut-outs in excess of one *of one* of each per year.

Surcharge

Rate and minimum charge are subject to a surcharge as provided for in Schedule of Terms and Conditions.

Payment

Above rates including surcharge are not, the gross rates being ten per cent (10%) higher. In the event the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

Single Point Delivery

The above rates are based upon the supply of service to the entire premises through a single delivery and metering point, and at a single voltage. Separate supply for the same customer at other points of consumption, or at different voltage, shall be separately metered and billed.

Service under this classification is subject to Rules and Regulations of Contractor.

[fol. 2664] Tennessee Valley Authority

Department of Electricity

Standard Residential Rate

Schedule B-1

Availability

Available for domestic use to all residential customers served from local alternating current distribution systems. Service under the Standard Residential Rate shall apply only to electric service in a single private dwelling and its appurtenances, the major use of which is for lighting and

household appliances, for the personal comfort and convenience of those residing therein. Private dwellings in which space is occasionally used for the conduct of business by a person residing therein will be served under the Standard Residential Rate. Where premises have mixed use the classification shall be determined by predominating use of floor space. The Residential Rate shall not apply to service to institutions such as clubs, fraternities, orphanages or homes; recognized rooming or boarding houses; the space in an apartment or other residential building primarily devoted to use as an office or studio for professional or other gainful purposes.

Character of Service

A. C. service at approximately 60 cycles, 110 or 220 volts, either single-phase, two-wire or three-wire; or, three-phase, three-wire or four-wire, as may be required by Contractor.

[fol. 2665]

Rate

									(In (pencil
First	50	kwh.	consumed	per	month	@ 3¢	per	kwh.	(1.50
Next	150	"	"	"	"	@ 2¢	"	"	(3.00
Next	200	"	"	"	"	@ 1¢	"	"	(2.00
Next	1,000	"	"	"	"	@ 0.4¢	"	"	(4.00
Excess over	1,400	"	"	"	"	@ 0.75¢	"	"	(10.50
									(1.00
						(1,400			11.50)

Minimum Monthly Bill

$0.75 per Meter.

Payment

Above rates are net, the gross rates being ten per cent (10%) higher. In the event that the current monthly bill is not paid within ten (10) days from date of bill, the gross rates shall apply.

Single Point Delivery

The above rates are based upon the supply of service to the entire premises through a single delivery and metering point, and at a single voltage. Separate supply for the same customer at other points of consumption, or at a different voltage, shall be separately metered and billed.

COMPLAINANTS' EXHIBIT No. 341

Service under this classification is subject to Rules and Regulations of Contractor.

[fol. 2666] COMPLAINANTS' EXHIBIT No. 342

"Map and Profile, Low Dam Plan, Tennessee River."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 343

"Map and Profile, TVA Plan, Tennessee River."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 344

Chart entitled "Water Traffic on Tennessee River—1927 to 1934, Relation of Sand and Gravel Movement."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 345

Chart entitled "Approximate Distribution of Average Freight Movement on Tennessee River—1927 to 1934 incl."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 346

Chart entitled "Comparison Of Alternative Methods Of Developing The Tennessee River."

(Original Exhibit)

[fol. 2667] COMPLAINANTS' EXHIBIT No. 347 (Excluded)

Page from "The Waterways Journal" of Sept. 18, 1937.

(Omitted)

(Here follow two photolithographs, side folios 2668 and 2669)

POPULATION IN 1930 OF CITIES AND TOWNS ON THE TENNESSEE RIVER AND TRIBUTARIES WHICH SUFFER DAMAGES DURING FLOODS

City or Town	Population In 1930
Main Tennessee River	
Chattanooga	119,798
Knoxville	105,802
Florence, Ala.	11,729
Loudon	2,578
Dayton	2,006
Soddy	1,196
Stevenson	733
Johnsonville	357
Rhea Springs	306
Riverton, Ala.	285
Harrison	204
Hamburg	179
Danville	153
Fackler	153
Perryville	112
Denzons Landing	102
Washington	*
Sub-Total	245,673
Duck River	
Columbia	7,882
Kettle Mills	*
Sub-Total	7,882
Buffalo River	
Sub-Total	-
Bear Creek	
Sub-Total	-

City or Town	Population In 1930
Elk River	
Fayetteville	3,822
Prospect	204
Harms	121
Wheelerton	*
Sub-Total	4,147
Hiwassee & Ocoee Rivers	
Charleston	408
Austral	*
Murphy, N. C.	1,612
Sub-Total	2,020
Little River	
Townsend	402
Kinzel Springs	*
Walland	*
Sub-total	402
French Broad River	
Asheville, N. C.	50,193
Marshall, N. C.	1,132
Del Rio	102
Catlettsburg	*
Woodfin, N. C.	*
Rankin	*
Sub-Total	51,427
Big Pigeon River	
Newport	2,989
Canton	*
Clyde	*
Edwina	*
Hartford	*
Sub-Total	2,989

*Towns of less than 100

COMPLAINANTS' EXHIBIT NO. 548

TENNESSEE RIVER
ING FLOODS

tion 30	City or Town	Population In 1930
	Nolichucky, N. Toe, S. Toe, & Cane Rivers	
22	Erwin	3,623
04	Embreeville	306
21	Huntdale	*
*	Pensacola	*
47	Sprucepine	*
	Unaka Springs	*
	Sub-Total	3,929
08	Holston, Watauga, No. & So. Forks of	
*	Holston Rivers	
12		
20	Kingsport	11,914
	Mascot	2,550
	Strawberry Plains	153
	Galbraith Springs	*
02	Mendota	*
*	Sub-Total	14,617
*		
02	Clinch-Emory River	
	Harriman	4,588
	Clinton	1,927
93	Oakdale	1,123
32	Clinchport, Va.	338
02	Cleveland, Va.	204
*	Deermont	153
*	Ft. Blackmore, Va.	103
*	Sub-Total	8,436
27		
	Powell Rivers	
	Sub-Total	-
89	*****	
*		
*	Main River Totals	245,673
*	Tributary Totals	95,849
*	Grand Totals	341,522
89		

FLOOD DAMAGES TO CITIES AND TOWNS, RAILWAYS AND HIGHWAYS

Stream	Cities and Towns: Number	Cities and Towns: Damage by 500 Yr. Flood	Cities and Towns: Est. Average Annual Damage All Floods	Rai: Damage by 500 Yr. Flood
Main Tennessee River:				
Paducah to Florence	7	$ 44,000	$ 3,265	$ 31,500
Florence to Hales Bar	2	40,000	2,000	72,500
Chattanooga and above	8	3,217,800	723,285	237,000
Tributaries Below Chattanooga				
Duck River	2	12,600	320	25,000
Buffalo River	0	0	0	0
Bear Creek	0	0	0	25,000
Elk River	4	13,200	3,715	0
Tributaries Above Chattanooga				
Hiwassee and Ocoee Rivers	3	13,200	185	145,000
Little Tennessee, Tellico, Tuskasegee, and Nantahala Rivers	0	0	0	387,800
Little River	3	33,000	3,300	125,000
French Broad River	6	139,600	5,681	1,406,000
Big Pigeon River	5	146,800	16,510	182,800
Nolichucky, Cane, South Toe, and North Toe Rivers	6	18,000	1,589	167,500
Holston and Watauga Rivers and North and South Forks of Holston Rivers	5	38,000	5,035	0
Clinch River	4	34,800	14,400	0
Emory River	3	1,857,000	155,700	1,923,000
Powell River	0	0	0	0
Totals For Entire Basin		$5,287,600	$932,985	$4,725,600
GRAND TOTALS	58			

SUMMARY

Main Tennessee River				
Below Chattanooga	9	84,000	5,265	104,000
Chattanooga	1	3,090,000	697,700	237,000
Above Chattanooga	7	127,600	25,585	
Totals for Main River	17	3,301,600	728,550	341,000
Tributaries				
Below Chattanooga	6	25,800	4,035	50,000
Above Chattanooga	35	1,960,200	200,400	4,335,500
Totals for Tributaries	41	1,986,000	204,435	4,385,500
Totals Below Chattanooga	15	109,800	9,300	154,000
Totals Chattanooga	1	3,090,000	697,700	4,572,500

Stream	Cities and Towns: Number	Cities and Towns: Damage by 500 Yr. Flood	Cities and Towns: Est. Average Annual Damage All Floods	Rai: Damage by 500 Yr. Flood
Main Tennessee River:				
Paducah to Florence	7	$ 44,000	$ 3,265	$ 31,500
Florence to Hales Bar	2	40,000	2,000	72,500
Chattanooga and above	8	3,217,600	723,285	237,000
Tributaries Below Chattanooga				
Duck River	2	12,600	320	25,000
Buffalo River	0	0	0	0
Bear Creek	0	0	0	25,000
Elk River	4	13,200	3,715	0
Tributaries Above Chattanooga				
Hiwassee and Ocoee Rivers	3	13,200	185	145,000
Little Tennessee, Tellico, Tuskasegee, and Nantahala Rivers	0	0	0	387,500
Little River	3	33,000	3,300	125,000
French Broad River	6	139,600	5,681	1,405,000
Big Pigeon River	5	146,600	16,510	182,500
Nolichucky, Cane, South Toe, and North Toe Rivers	6	18,000	1,589	167,500
Holston and Watauga Rivers and North and South Forks of Holston Rivers	5	38,000	5,035	0
Clinch River	4	34,800	14,400	0
Emory River	3	1,537,000	153,700	1,923,000
Powell River	0	0	0	0
Totals For Entire Basin		$5,287,600	$932,985	$4,726,500
GRAND TOTALS	58			

SUMMARY

Main Tennessee River				
Below Chattanooga	9	84,000	5,265	104,000
Chattanooga	1	3,090,000	697,700	237,000
Above Chattanooga	7	127,600	25,585	
Totals for Main River	17	3,301,600	728,550	341,000
Tributaries				
Below Chattanooga	6	25,800	4,035	50,000
Above Chattanooga	35	1,960,200	200,400	4,335,500
Totals for Tributaries	41	1,986,000	204,435	4,385,500
Totals Below Chattanooga	15	109,800	9,300	154,000
Totals Chattanooga	1	3,090,000	697,700	4,572,500
Totals Above Chattanooga	42	2,087,800	225,985	
Totals for Entire Basin		$ 5,287,600	$ 932,985	$4,726,500
GRAND TOTALS	58			

COMPLAINANTS' EXHIBIT NO. 549

WAYS IN ENTIRE TENNESSEE RIVER BASIN

Railways		Highways		Totals	
Flood	Est. Average Annual Damage All Floods	Damage by 500 Yr. Flood	Est. Average Annual Damage All Floods	Damage by 500 Yr. Flood	Est. Average Annual Damage All Floods
00	$ 1,725	$ 8,000	$ 1,335	$ 83,500	$ 6,335
00	3,625	5,750	720	118,250	6,345
00	3,318	9,250	1,020	3,463,850	727,623
00	250	150,800	25,340	186,100	26,910
0	0	90,000	6,300	90,000	6,300
00	1,250	75,000	7,500	100,000	8,750
0	0	268,000	26,800	281,200	30,515
00	9,715	125,000	4,500	283,200	14,400
00	38,750	25,000	1,775	412,500	40,525
00	9,375	58,000	5,800	216,000	18,475
00	70,250	352,000	17,600	1,896,600	93,531
00	13,690	82,500	8,250	411,800	38,480
00	5,860	280,250	9,810	465,750	17,259
0	0	155,000	11,625	193,000	16,660
0	0	153,500	19,190	189,300	33,590
00	192,300	76,000	9,500	3,536,000	355,500
0	0	4,000	40	4,000	40
00	$350,113	$1,817,750	$158,105		
				$11,951,850	$1,441,208
00	5,360	13,750	2,055	801,750	12,680
00	3,318	9,250	1,020	3,463,850	727,623
00	8,678	23,000	3,075	3,685,800	740,303
00	1,500	583,500-	66,960	659,300	72,475
00	339,940	1,311,250	88,090	7,606,950	628,430
					701.905

00	$ 1,735	$ 8,000	$ 1,335	$ 83,500	$ 6,335
00	3,625	5,750	720	118,250	6,345
00	3,318	9,250	1,020	3,463,850	727,623
00	250	180,800	26,340	188,100	26,910
0	0	90,000	6,300	90,000	6,300
00	1,250	75,000	7,500	100,000	8,750
0	0	288,000	26,800	281,200	30,515
00	9,715	125,000	4,500	283,200	14,400
00	38,750	25,000	1,775	412,500	40,525
00	9,375	58,000	5,800	216,000	18,475
00	70,250	352,000	17,600	1,896,600	93,531
00	13,690	82,800	8,250	411,600	38,450
00	5,860	280,250	9,810	465,750	17,259
0	0	155,000	11,625	193,000	16,680
0	0	153,500	19,190	188,300	33,590
00	192,300	76,000	9,500	3,536,000	355,500
0	0	4,000	40	4,000	40
00	$350,118	$1,917,750	$158,105		
				$11,931,850	$1,441,208

00	5,360	15,750	2,055	201,750	12,680
00	3,318	9,250	1,020	3,463,850	727,623
00	8,678	25,000	3,075	3,665,600	740,303
00	1,500	585,800-	66,940	659,300	72,475
00	339,940	1,311,250	88,090	7,606,950	628,430
00	341,440	1,896,750	155,030	8,266,250	701,905
00	6,860	597,250	68,965	861,050	85,155
00	343,258	1,320,500	89,110	11,070,800	1,356,053
00	$350,118	$1,917,750	$158,105		
				$11,931,850	$1,441,208

[fol. 2670] COMPLAINANTS' EXHIBIT No. 350

Chart entitled "Variation In Flow During Maximum Flood To Be Expected On Tennessee River At And Above Chattanooga".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 351

Chart entitled "Flood Profile of Tennessee River—Knoxville to Chattanooga."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 352

Map of Tennessee River Basin entitled "Location Of System Of Flood Control Reservoirs To Achieve Maximum Practical Protection And Existing Power Reservoirs In May 1933."

(Original Exhibit)

(Here follows one photolithograph, side folio 2671)

COMPLAINANTS' EXHIBIT NO. 353

ENGINEERING DATA ON SYSTEM OF FLOOD CONTROL
TO ACHIEVE MAXIMUM PRACTICABLE PROTECTION

(a) Name of Reservoir	(b) Stream on Which Located	(c) Tributary Drainage Area. Square Miles	(d) Gross Storage Volume. Acre Feet	(e) Net Storage Volume Acre Feet	(f) Estimated Construction Cost	(g) Lands Flooded When Water is at Spillway Level. Acres
Painter Creek	Nolichucky River	855	247,000	237,000	$ 5,303,100	4,920-
Solomon Ferry	Nolichucky River	1,760	331,700	306,000	3,235,650	7,960
Dandridge	French Broad River	4,450	904,000	867,000	6,185,300	16,140
Kikers Ferry	French Broad River	4,655	235,000	210,000	2,500,600	5,620
Island Mills	S. Fork Holston River	779	415,000	415,000	4,747,800	6,430
Bachman Ford	S. Fork Holston River	1,859	288,000	284,000	3,641,850	5,260
Surgoinsville	Holston River	2,896	382,000	364,000	4,370,000	10,010
Three Springs	Holston River	3,216	198,000	186,000	4,33[illegible],850	9,050
Strawberry Plains	Holston River	3,650	223,000	200,000	2,698,600	6,510
Fontana	Little Tenn. River	1,590	380,000	364,000	11,000,000	4,000
Davis Ferry	Little Tenn. River	2,635	425,000	400,000	3,642,100	12,310
Cove Creek	Clinch River	2,950	1,312,000	1,300,000	8,136,000	21,250
Frankfort	Clear Creek	146	77,000	76,000	1,908,600	1,350
Milliken Branch	Obed River	510	105,000	104,000	4,764,350	1,270
Wartburg	Emory River	83	50,000	50,000	1,175,900	1,350
Coleman	Hiwassee River	928	246,000	242,000	4,048,500	3,920
Apalachia	Hiwassee River	1,042	120,000	119,000	3,513,100	1,430
Austral	Hiwassee River	1,224	140,000	136,000	3,731,200	2,025
Charleston	Hiwassee River	2,230	185,000	164,000	2,199,100	11,480
Totals		16,713	6,263,700	6,024,000	$ 81,133,600	132,285

[fol. 2672] COMPLAINANTS' EXHIBIT No. 354

Map of Tennessee River Basin entitled "TVA Unified Plan Recommended To Congress, And Existing Power Reservoirs In May 1933."

(Original Exhibit)

(Here follow two photolithographs, side folios 2673 and 2674)

COMPLAINANTS' EXHIBIT NO. 555

ENGINEERING DATA ON ELEMENTS OF TVA UNIFIED PLAN WHICH WOULD IN ANY WAY AFFECT FLOODS AT AND ABOVE CHATTANOOGA

(a) Name of Reservoir	(b) Stream on Which Located	(c) Tributary Drainage Area. Square Miles	(d) Dependable Flood Storage Volume in Greatest Flood to be Expected. Acre Feet	(e) Flood Storage Volume Used in Determination of Non-Dependable Modification, Which Might be Effected by TVA Unified Plan, During Greatest Flood to be Expected. Acre Feet	(f) Lands Flooded When Water is at Normal Pool Level. Acres
*Fontana	Little Tenn. River	1,590	110,000	800,000	8,225
Norris	Clinch River	2,950	497,000	1,260,000	30,500
Fowler Bend	Hiwassee River	977	13,000	203,000	5,395
		5,517			
Coulter Shoals			0	0	8,550
Watts Bar			0	0	34,000
Chickamauga			0	0	24,200
			620,000	2,263,000	110,870

*Funds for construction not yet appropriated.

COMPLAINANTS' EXHIBIT NO. 356

COMPARISON OF REDUCTIONS IN MAXIMUM FLOOD STAGE ABOVE CHATTANOOGA WHICH WOULD BE BROUGHT ABOUT BY RECOMMENDED SYSTEM OF FLOOD CONTROL AND NON-DEPENDABLE REDUCTIONS WHICH MIGHT BE BROUGHT ABOUT BY THE TVA UNIFIED PLAN

City or Town	(a) Max. Recorded Stage	Maximum Stage Attained During Greatest Flood to be Expected (b) Without Any Flood Control	(c) With Recommended System of Flood Control in Operation	(d) With Unified Plan In Operation (Not Dependable)	(e) State at Which Submergence Begins
Knoxville	44.4	68.3	27.1	68.3	23
Harriman	61.1	63.7	39.8	63.7	40
Loudon	47.0	71.5	33.9	66.2	31
Dayton	46.0	63.5	40.0	56.0	32
Soddy	48.0	64.0	43.0	56.5	30
Chattanooga	57.9	73.0	53.9	67.7	30

[fol. 2675] COMPLAINANTS' EXHIBIT No. 357

Chart entitled "Reductions In Flow Day By Day Which Would Be Brought About By Recommended Flood Control System And By TVA Unified Plan During Maximum Flood To Be Expected On Tennessee River At and Above Chattanooga".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 358

Chart entitled "Reductions In Flow Day By Day Which Would Be Brought About At Harriman By Recommended Flood Control System During Maximum Flood To Be Expected On Emory River".

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 359

Chart entitled "Flood Profile Of Tennessee River, Knoxville To Chattanooga".

(Original Exhibit)

(Here follows one photolithograph, side folio 2676)

COMPLAINANTS' EXHIBIT NO. 360

COMPARISON OF LANDS WHICH WOULD BE FLOODED BY RECOMMENDED FLOOD CONTROL SYSTEM AND BY TVA UNIFIED PLAN

Recommended Flood Control System			TVA Unified Plan			
Name of Reservoir	Lands Permanently Flooded. Acres	Greatest Amount of Lands Temporarily Flooded. Acres	Name of Project	Area of River Bed. Acres	Normal Area of Reservoir. Acres	Lands Flooded at Normal Pool. Acres
Painter Creek	0	4,920	Gilbertsville	22,080	148,000	125,920
Solomon Ferry	0	7,960	Pickwick	8,700	41,600	32,900
Dandridge	0	16,140	Wilson	9,750	16,100	6,350
Kikers Ferry	0	5,620	Wheeler	16,600	64,300	47,700
Island Mills	0	6,430	Guntersville	12,200	63,300	51,100
Bachman Ford	0	5,260	Chickamauga	7,800	32,000	24,200
Surgoinsville	0	10,010	Watts Bar	8,600	42,600	34,000
Three Springs	0	9,050	Coulter Shoals	3,350	11,900	8,550
Strawberry Plains	0	6,510	Norris	3,700	34,200	30,500
Fontana	0	4,000	*Fontana	975	9,200	8,225
Davis Ferry	0	12,310	Fowler Bend	845	6,240	5,395
Cove Creek	0	21,250				
Frankfort	0	1,350				
Milliken Branch	0	1,270				
Wartburg	0	1,350				
Coleman	0	3,920				
Apalachia	0	1,430				
Austral	0	2,025				
Charleston	0	11,480				
Main River Total	0	0		89,080	419,800	330,720
Tributary Total	0	132,285		5,520	49,640	44,120
GRAND TOTAL	0	132,285		94,600	469,440	374,840

*Funds for construction not yet appropriated.

[fol. 2677] COMPLAINANTS' EXHIBIT No. 361

Chart entitled "Comparison Of Recommended Flood Control System And TVA Unified Plan."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 362

Chart entitled "Comparison Of The Power And Flood Control Functions Of The Norris Dam And Reservoir As Constructed In TVA Unified Plan With Proposed Dam And Reservoir On Clinch River In Recommended Flood Control System."

(Original Exhibit)

[fol. 2678] COMPLAINANTS' EXHIBIT No. 363

Rufus W. Putnam,
20 North Wacker Drive,
Chicago, Illinois

Chattanooga, Tenn.,
Dec. 2, 1937.

Memorandum:

By reference to my working papers the following summarizes the situation as to my estimates of cost of transportation by land and by water of Tennessee River traffic:

Existing Traffic

Estimated transportation cost by land—1,750,000 tons @ $1,532	$2,682,169
Estimated transportation cost by water—1,750,000 tons @ $0.364	637,288
Estimated savings—1,750,000 tons @ $1.168	$2,044,881

Future Traffic

Estimated transportation cost by land—5,023,238 tons @ $1.813	$9,107,010
Estimated transportation cost by water—5,023,238 tons @ $1.180	5,927,401
Estimated savings—5,023,238 tons @ $0.633	$3,179,609

[fol. 2679] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION, BEING "HEARINGS BEFORE THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE, HOUSE OF REPRESENTATIVES, 74TH CONGRESS, 1ST SESSION, (Excluded)

Page 1947

Mr. Lilienthal: Mr. Chairman and gentlemen of the committee, my name is David E. Lilienthal. I am a member of the board of directors of the Tennessee Valley Authority. I am appearing before your committee in response to the request of the committee directed to the board of the Authority.

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Mr. Cooper (interposing): I believe you made the statement——

Mr. Lilienthal (interposing): The question I have directed my attention to in these items——

Mr. Cooper (interposing): You just stated that the Tennessee Valley Authority was going to pay taxes just the same as any private utility company would have to pay.

Mr. Lilienthal: The matter has been met in this way: Congress has said that 5 per cent of the gross proceeds received by the Board shall be paid to the State, but in order to remove any question about the fairness of it; in addition to that, 7½ per cent of the gross revenue has been set up, or a total of 7½; and the 5 per cent, which is 12½ per cent, which is the national average of gross revenue paid by private utility companies as taxes.

Just let me complete this, if I may. These rates were fixed, the present rates were fixed for the year 1932, and the figure at that time was 12½ per cent of the gross revenue as a national average.

Mr. Cooper: The tax paid by private utilities is 13 per cent of their earnings. It seems to me, according to the figures that I have here, that the private companies would have to pay nine times more taxes than your set-up.

Mr. Lilienthal: No.

Mr. Cooper: The statement you made a moment ago, if I understood you correctly, was that the T. V. A. would be expected to pay the same taxes as those now assessed against private utility industry.

Mr. Lilienthal: The average national tax, and the average at the time this was made up—and, of course, it may

have varied some, and naturally the national average would vary from year to year—but this was 12½ per cent of the gross revenue at the time this figure was made up.

Pages 1953-4

Mr. Cooper: Now private utilities have to pay a great many taxes, do they not?

Mr. Lilienthal: Yes.

Mr. Cooper: Which amounts to about 15 per cent of their gross business so I am told.

[fol. 2680] Mr. Lilienthal: Well, it varies; but I gave you the national average.

Mr. Cooper: Well, I have been told that it ranged from 13 per cent, varied up to as high as 15 per cent. Now, do you mean to tell this committee that the Tennessee Valley Authority is going to pay that much?

Mr. Lilienthal: That much will be paid by users of T. V. A. power. The Federal Government, in addition to the 5 per cent which is paid to the State, will get another sum for distribution in whatever manner Congress may decide, another 7½ per cent from the Tennessee Valley Authority, which is the difference between the amount set in the act and the national average, or 7½ per cent of the gross revenue, payable by private utilities.

Mr. Cooper: Do you pay any real estate taxes?

Mr. Lilienthal: No.

Mr. Cooper: Any income taxes?

Mr. Lilienthal: Yes; the gross-revenue tax referred to.

Mr. Cooper: Neither Federal nor State?

Mr. Lilienthal: The amount I spoke of, the 12½ per cent——

Mr. Cooper (interposing): And no municipal taxes?

Mr. Lilienthal: If the Tennessee Valley Authority were to own a distributing system in a municipality, it would pay the equivalent of the local taxes to the municipality that the private utility paid.

Mr. Cooper: Does the Tennessee Valley Authority pay any insurance charges?

Mr. Lilienthal: No; the Federal Government does not deem it necessary to carry insurance.

EXCERPTS FROM COMPLAINANTS' EXHIBIT [redacted] 364 FOR IDENTIFICATION (Excluded)

Mr. Cooper: And you say you pay no real-estate taxes?
Mr. Lilienthal: No.
Mr. Cooper: No automobile taxes?
Mr. Lilienthal: No.
Mr. Cooper: No gasoline taxes?
Mr. Lilienthal: No.
Mr. Cooper: No 3 per cent special Federal tax?
Mr. Lilienthal: No.
Mr. Cooper: And you get a rebate, do you not, for everything that is hauled over the railroad, both passenger and freight service?
Mr. Lilienthal: A rebate?
Mr. Cooper: Yes.
Mr. Lilienthal: Under the railroad Land Grant Act, you mean? Yes.

Page 1954

Mr. Cooper: You have no workmen's compensation tax to pay to the States in which you operate?
Mr. Lilienthal: There is the Federal Workmen's Compensation Act.
Mr. Cooper: Yes; but does the Tennessee Valley Authority pay any tax to workmen's compensation?
Mr. Lilienthal: I am not familiar with how that is worked out; I assume that the contribution must come out of an appropriation to the Tennessee Valley Authority for that [fol. 2681] purpose, but I am not familiar with that.
Mr. Cooper: And you have services which are contributed to you by the governmental departments, do you not, such as legal services, for which you do not pay?
Mr. Lilienthal: We have our own legal staff which furnishes that service.
Mr. Cooper: Do you not have the franking privilege?
Mr. Lilienthal: Yes.

Page 1955

Mr. Cooper: But you have the franking privilege in sending out bills, and you also have the free use of Government buildings for offices for your clerical force.
Mr. Lilienthal: We use stamps on bills. We have free use of Government buildings, but we pay rent on many private buildings we occupy.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Cooper: And you also are furnished free legal advice, and you also have advice on accounting, and for other purposes?

Mr. Lilienthal: We have our own legal staff, paid for out of T. V. A. funds. In regard to accounting, we have our accounts audited by the Comptroller General's Office, and it is not free by any means; the expense was something around $35,000.

Mr. Cooper: The reason I am mentioning these things to you, Mr. Lilienthal, is because you said that the Tennessee Valley Authority was going to pay the same taxes and assessments that private industry does.

Mr. Lilienthal: Yes; I am coming to that.

Mr. Cooper: And I understood you to say that you were going to pay the same kind of taxes the private utility pays.

Mr. Lilienthal: Here is what I said, if you will give me an opportunity.

Mr. Cooper: Just one other question. You stated the Tennessee Valley Authority would bring revenue to the Federal Government. Did you not operate at a loss last year of $442,000?

Mr. Lilienthal: What is the figure?

Mr. Cooper: Your revenue earned was $308,000 and your cost amounted to $750,000.

Mr. Lilienthal: If that is the figure——

Mr. Cooper (interposing): Showing an operating loss of around $442,000 in 1934.

Mr. Lilienthal: Those figures may well be accurate; I am unable to carry them in mind.

. . . . . .

Mr. Wadsworth: Referring again to the tax matter. I understood you to say that 7 per cent of the total of 12 per cent would go to the Federal Government?

Mr. Lilienthal: Yes; the difference between 12½ per cent and 5 per cent which the act provides.

Mr. Wadsworth: But you are the Government, are you not?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

[fol. 2682] Mr. Lilienthal: The Authority is a special agency of the Government. It is a part of the Government, if you look at it in that way.

Mr. Wadsworth: This development was financed by the United States Treasury?

Mr. Lilienthal: Yes. The point I am making, Mr. Wadsworth, is simply this: That under the provisions of the act this additional reserve for taxes may go back into the Treasury if it is not used for other purposes. It is not clear that Congress has taken express action on how that reserve should be treated.

Pages 1956-7

Mr. Lilienthal: There is no suggestion, Mr. Cooper, that any form of comparison shall be rigid. There seems to have been a notion, with regard to comparisons, that there shall be no allowance made for different circumstances. There is no such suggestion, as far as I know—certainly nothing official—that the Tennessee Valley Authority, in the rate that it may charge, shall attempt to set up a rate which, without change, by reason of difference in certain circumstances throughout the country, by reason of geographical differences, and many other differences which exist in the country, shall be applied inflexibly everywhere. It is the same process that an industry uses when it goes about determining whether it shall take power from a private utility or whether it shall set up its own plant. The manager of such an industry sits down with his engineers, takes all of the facts into consideration, and determines whether it will be cheaper to develop its own electricity in its own independent plant or to secure it from a public utility. The manager in this way sets up a kind of "yardstick."

Now, the figures will vary, of course, in different localities, due to different costs of production.

Pages 1962-3

Mr. Lilienthal: It is obvious that unless we can dispose of the power, there is not going to be any income from that power, whereas the expenses continue, and losses are inevitable as long as we are not permitted to collect revenues.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

It is obvious that the plant capable of producing power, and without a market, will continue to run at a loss as long as it is prevented from selling that power, and as long as that continues the Government cannot make anything out of it.

Mr. Bulwinkle: Where do you obtain that market?

Mr. Lilienthal: Where would it be obtained if T. V. A. were permitted to sell this power?

Mr. Bulwinkle: Yes; where would it be obtained?

Mr. Lilienthal: The only possible outlet would be——

Mr. Bulwinkle (interposing): North Carolina, South Carolina, Georgia, Alabama, and Mississippi?

[fol. 2683] Mr. Lilienthal: It would be mostly in Alabama, Tennessee, and Mississippi.

Mr. Bulwinkle: All of those communities are served now by private utilities, are they not?

Mr. Lilienthal: A large part of them; some of them have their own municipal plants, generating power by coal, steam.

Mr. Bulwinkle (interposing): The greater part of them are served by companies, by private utilities now?

Mr. Lilienthal: Yes.

Mr. Bulwinkle: And so if you attempt to sell this electric energy, produced by this plant, it would come in competition with those companies, would it not?

Mr. Lilienthal: Yes; in the sense you use the term "competition." If the municipalities changed from buying from the private companies and bought their supply of energy from the Tennessee Valley Authority, then in that sense and to that extent there would be competition, for it would take that much of the market which the private companies now supply.

Mr. Bulwinkle: Have you estimated how much it would take away from private utilities?

Mr. Lilienthal: How much of what it would take away?

Mr. Bulwinkle: How much money, value, kilowatt-hours, or however you want to put it.

Mr. Lilienthal: I am sure that those figures could be worked out. I do not happen to have them in mind.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Bulwinkle: It would be a considerable amount, would it not?

Mr. Lilienthal: It would be a substantial amount.

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Mr. Wolverton: Let us see just how much difference there is between us. This is a very vital question, not only to Mr. Cooper but to many others. I understood you to say there were communities being served. Am I right in that statement?

Mr. Lilienthal: Yes.

Mr. Wolverton: Then, the Government came into those districts already being served; is that right?

Mr. Lilienthal: Yes.

Mr. Wolverton: And you have the business now and they do not have it?

Mr. Lilienthal: Yes.

Mr. Wolverton: Is that the situation?

Mr. Lilienthal: They purchased the power from us.

Mr. Wolverton: Well, the Tennessee Valley Authority is now furnishing the power to communities that were formerly served by other companies.

Mr. Lilienthal: Yes; and they have got the money for their facilities.

Mr. Wolverton: And there is no competition there now?

Mr. Lilienthal: No.

Mr. Wolverton: Then you eliminated competition by taking over the field?

[fol. 2684] Mr. Lilienthal: Yes; if you want to interpret competition to mean purchase. These utility companies have sold their facilities and received the money for them.

Mr. Wolverton: Is that not a reasonable interpretation of competition?

Mr. Lilienthal: I am perfectly willing to say that is.

Page 1976

Mr. Bulwinkle: In getting the benefit back into the Treasury, have you gentlemen considered this board of the Tennessee Valley Authority—is it your idea to sell to your limit eventually?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: We do not intend to let any public property go to waste.

Mr. Bulwinkle: It is either a "yes" or "no" question.

Mr. Lilienthal: Yes.

Page 1980

Mr. Lilienthal: We think it is a very important part of our public duties to furnish information about this project to the public generally, especially in view of the fact that there is such a tremendous interest in the program.

Pages 1981-2

Mr. Cooper: Well, I want to ask you this question. I hold here in my hand a reprint from the Journal of the National Education Association, and there is an article in here of 15 pages by Mr. W. E. Myers. Now, we have heard a lot about propaganda, and I have said all along that there are always two sides to that. Here is a 15-page article dealing with the TVA. Was Mr. Myers paid by the TVA for writing that propaganda?

Mr. Lilienthal: Mr. Myers was an employee of the Authority when he wrote the article; yes.

Mr. Cooper: Did the Tennessee Valley Authority buy 50,000 copies at public expense of this article for distribution?

Mr. Lilienthal: Yes.

Mr. Cooper: And it met with the approval of the TVA?

Mr. Lilienthal: Yes.

Mr. Cooper: All right, let me refer you to the last page——

Mr. Lilienthal (interposing): That last page is not a part of the article; that is an editorial note; that is a note that was furnished, written, not by Mr. Myers, but by the editor of the National Educational Association, Dr. J. E. Morgan. [fol. 2685] Mr. Cooper: It is in the same issue that was sent out, the 50,000 copies.

Mr. Lilienthal: Yes.

Mr. Cooper: By the TVA. The article does not show it was written by a paid employee of the TVA.

Mr. Lilienthal: I should like, Mr. Chairman, to make a brief explanation in regard to this pamphlet.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 364 FOR IDENTIFICATION (Excluded)

We have received a flood of requests from school teachers and from students asking for information, just as every other Government department in Washington receives requests for information concerning its activities—the Department of Commerce, Bureau of Fisheries, and so forth.

A great many of these requests for information have come to TVA from teachers or students who say that they have had the subject of TVA assigned as a topic for debate, or some of them had to write a thesis and wanted to secure more information about the Tennessee Valley Authority project. So it seemed almost imperative, because it was impossible to cover these requests by letter, to have some definite information given out in the form of a pamphlet that could be used in sending out our replies to these requests for information.

We asked one of the editors of this magazine if he could tell us someone who could write such an article, one which would be useful in answering these requests, and Dr. J. E. Morgan suggested that Mr. Myers write it, and he was employed for that purpose. The article is very clear; it deals with several topics, and shows the source of the information. Now, we think it is a perfectly legitimate and necessary part of our governmental activities to give out this information.

Page 1982

Mr. Cooper: You have made speeches, have you not, in behalf of it?

Mr. Lilienthal: I have made some; yes.

Mr. Cooper: And you have spoken in behalf of the TVA?

Mr. Lilienthal: Yes.

Mr. Cooper: Now, what is the difference between propaganda of that character and the propaganda of the utilities?

Mr. Lilienthal: The difference between the propaganda that you referred to, which I think is very properly criticized, and the activities of the TVA is the difference between a public activity and a private activity. We are doing a public job, just as many of the other agencies of the Government are, just as the Department of Commerce, which has sent men abroad, through the Foreign and Domestic Commerce Division, to furnish information, and just as the Department of Agriculture does in answering many requests

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

that come in for information about agricultural projects. [fol. 2686] It is the duty of those agencies to furnish that information, just as it has been our duty in this case to supply the public with information about TVA activities.

The public asks about the Tennessee Valley Authority project, and it is our business to furnish information.

Page 1990

Mr. Merritt: But you did have a tremendous leverage on the Alabama Power Co., or any other power company that had transmission lines in existence, did you not?

Mr. Lilienthal: Well, the Congress did not leave us in an impossible position in which we would have no way of negotiating a contract that would be fair to the Government.

Mr. Merritt: You did not propose to pay, as you would if you were condemning land, a price awarded as fair by a legally appointed commission, did you?

Mr. Lilienthal: No.

Page 1992

Mr. Huddleston: Under the system you now have, what is your cost of production?

Mr. Lilienthal: You mean per kilowatt-hour?

Mr. Huddleston: Yes.

Mr. Lilienthal: It is very hard to put it on a kilowatt-hour basis because of the effect upon unit cost of changes in volume. At full load the cost is under 3 mills. The rate ranges from 1.5 mills to 4 mills, with certain demand charges in addition.

Mr. Huddleston: Is your rate based upon the cost of production?

Mr. Lilienthal: Yes.

Mr. Huddleston: And you do not know what your cost of production is?

Mr. Lilienthal: Yes; I can give it to you in the total.

Mr. Huddleston: I thought as you had your kilowatt-hour prices based on cost, you would know what it cost you to produce it.

Mr. Lilienthal: I can give you the total and then the calculations can be made.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Huddleston: Would it be as low as 2 mills?

Mr. Lilienthal: I think the cost for firm power is approximately 3 mills.

Pages 2018-19

Mr. Lilienthal: No. The citizens of two counties in northeast Mississippi have themselves organized associations under the laws of the State of Mississippi, private [fol. 2687] corporations, but which are not organized for profit. They are not real cooperative associations, but corporations of a similar character. Those associations are set up by the people themselves and purchase power at wholesale from the Tennessee Valley Authority which they themselves distribute to their members.

One of the rules of the corporations is that those people who have become members of the association, and have thereby taken on the burden of paying membership fees which go to the reduction of the debts of the association, or corporation, shall receive an electricity rate which is different from the rates of people who have not made that contribution. It takes care of the differential between the responsibilities of member and nonmember consumers. I think that is probably what you have in mind.

Mr. Cooper: They are served by the Tennessee Valley Authority with power?

Mr. Lilienthal: The association has a wholesale contract with the Tennessee Valley Authority to supply it with power; yes.

Mr. Cooper: And does the TVA have anything at all to do with that?

Mr. Lilienthal: We have a contract with the association.

Mr. Cooper: Well, is it true that if the users of electric energy do not go into this corporation or organization, or whatever it might be, that they have to pay the rate that was formerly charged by the Mississippi Valley Power Co., or some other power company down there?

Mr. Lilienthal: Yes.

Mr. Cooper: In other words, that is a club to get the people to use Tennessee Valley Authority power?

Mr. Lilienthal: No; they all use the same power. Any person may become a member of the association by paying

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

$80. If a consumer does not, then because he has not made such a contribution he will pay a higher rate for his electricity than that paid by the man who has made such a contribution. It is, I suppose, a very appropriate method of providing an incentive for complete membership. As a matter of fact, most of the people in those counties who use electricity have taken out membership.

Page 2022

Mr. Pettengill: On this matter of publicity, Mr. Lilienthal, would you be good enough to tell the committee the function of Mr. Henle, who draws a salary of $4,000; what does he do?

Mr. Lilienthal: Mr. Henle is in the department of information as far as I recall. I know the general setup of the department, but I do not know how the employees are allocated within the department.

Mr. Pettengill: The official register of the United States for the year 1934, has a chapter dealing with the Tennessee [fol. 2688] Valley Authority. One of the positions listed is that of press representative.

Am I correct in assuming that the press representative means what it ordinarily means in everyday language?

Mr. Lilienthal: May I tell you what the department does?

The department of information has several functions. It prepares information in form desired by the press, and it may well be that is his particular function. And in addition to that, that department is responsible for the replies to the thousands of letters of general inquiry about the activities of the Authority that come from all parts of the country.

It is also responsible for making arrangements for the nearly half a million visitors who come down to see the project—that many came last year. It is the responsibility of that division to see that the thousands of people who are interested, those who make official visits, and others will find someone on hand who can answer the questions which occur to them. Those are the three principal functions.

Mr. Pettengill: In other words, as I understand you, he prepares the newspaper releases covering the publicity for the Tennessee Valley Authority?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 364 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: One of the things the department with which he is connected is responsible for is the preparation of information in the form of press releases.

Page 2023

Mr. Pettengill: Are you familiar with the statute of October 22, 1913, of the United States Statutes at Large, providing that "no money appropriated by any act shall be used to pay for publicity experts unless specifically appropriated for the purpose?"

That has been the law of the United States since October 22, 1913. I was wondering how, in the face of the wording of that statute, you found authority for hiring a press representative.

Mr. Lilienthal: My recollection is that that statute has been construed by the Comptroller General so as not to exclude the kind of activity you have just referred to as being carried on by the Authority, and by virtually every other agency of the Government for many years.

The Chairman: That is true; practically every department of the Government has a division or a publicity bureau.

Mr. Lilienthal: Yes; and I think it is their duty to have.

[fol. 2689] Pages 2027-29

Mr. Lilienthal: Furthermore, while it is not required by law, we have set up in addition to the 5 per cent, the difference between that 5 per cent and the average of the gross revenue paid in taxes by the private utilities of the country. At the time it was determined that that average was 12½ per cent according to Edison Electric Institute data. In addition to the 5 per cent paid, therefore, a reserve of 7½ per cent was set up in computing the cost of generated power.

Mr. Pettengill (interposing): It will be set up?

Mr. Lilienthal: The policy has been adopted.

Mr. Pettengill: And will be set up?

Mr. Lilienthal: The policy has been adopted and an additional 7½ per cent of the total gross will be set aside so that there is a total of 12½ per cent of the gross revenue for taxes, or the equivalent of taxes. That is the method.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Pettengill: As to the 5 per cent, does the State of Alabama have a 5 per cent gross income tax?

Mr. Lilienthal: I believe not.

Mr. Pettengill: Does Tennessee?

Mr. Lilienthal: No; I believe not.

Mr. Pettengill: In other words, the provision of the statute is not the equivalent of the tax levied by the State, is it?

Mr. Lilienthal: The 5 per cent?

Mr. Pettengill: Yes.

Mr. Lilienthal: I beg your pardon, the equivalent?

Mr. Pettengill: In other words, the 5-per cent clause has no reference to the State tax?

Mr. Lilienthal: Well, I do not believe there is a tax of that kind in the State.

Mr. Reece: If I may interject there, Mr. Pettengill.

Mr. Pettengill: Yes; Mr. Reece.

Mr. Reece: I recall, when that statute was enacted that provision was put in more or less as a contribution to the States for the purpose of compensating those States for the losses in tax values, particularly for property taken by the Federal Government and thereby exempted from taxation.

Mr. Pettengill: In other words, there is no direction in the statute, is there—we will all agree on that—directing the Tennessee Valley Authority to pay State taxes.

Mr. Lilienthal: In addition to 5 per cent?

Mr. Pettengill: No. You have said there is no 5 per cent tax. This is something intended to be the equivalent of a tax. I am saying there is not anything in the statute that requires the Tennessee Valley Authority to pay a State tax.

Mr. Lilienthal: To conform to the State tax, is that your meaning?

Mr. Pettengill: In other words, if there were an ad valorem tax, you are not required to pay it, are you?

Mr. Lilienthal: No.

Mr. Pettengill: Or to pay to the State or the county or the municipality?

[fol. 2690] Mr. Lilienthal: That is right.

Mr. Pettengill: You are not required to pay it?

Mr. Lilienthal: No.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Pettengill: All that you have been paying, thus far, is 5 per cent under a gross revenue?

Mr. Lilienthal: That is substantially true. There is one exception to that, but it is not important.

Mr. Pettengill: Do you think that is a fair basis of comparison with the taxes paid by private utilities operating in the same field?

Mr. Lilienthal: The 5 per cent does not equal the total taxes paid by the utilities; no, sir.

Mr. Pettengill: It does not?

Mr. Lilienthal: No, sir.

Mr. Pettengill: It does not anywhere near approach it, does it?

Mr. Lilienthal: The 12½ per cent would more nearly approximate private utility tax ratios.

Now, of course, that varies from year to year and from one section of the country to another, but that is near the national average.

Mr. Pettengill: Has this additional 7½ per cent been set up as a deferred expense against your operations since you have been engaged in the business of selling electric energy?

Mr. Lilienthal: The policy has been made clear in the contracts——

Mr. Pettengill: Has been set up as an expense; has that been laid down as a policy to follow in the future; has it been done?

Mr. Lilienthal: Yes.

Mr. Pettengill: Has it been done?

Mr. Lilienthal: I am confident that it has.

Mr. Pettengill: Was it done for the fiscal year ended June 30, 1934?

Mr. Lilienthal: I do not know what the accounting technique is, but there is a segregation of that amount of money.

Mr. Pettengill: Well, assuming that there is, nevertheless, that 7½ per cent is not paid out of your treasury, is it?

Mr. Lilienthal: No, but it is available. That is the idea I was trying to make the other day. It is available for distribution by act of the Congress, or otherwise, as a surplus, as a part of the surplus.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Pettengill: It does not make any contribution to the tax revenues of the municipalities, counties, or States in which your projects are located, does it?

Mr. Lilienthal: No.

Mr. Pettengill: Well, do you not think Mr. Lilienthal, to make the Tennessee Valley a fair yardstick of the cost of producing electric energy and also to be fair to the communities down there, which are deprived of taxation at the present time, that you should pay State, county, and municipal taxes to the same extent on all of your properties dedicated to the production of electrical energy for sale to the public?

Mr. Lilienthal: The question is pretty inclusive, but my general answer would be that I think that the consumers [fol. 2691] of electricity purchased from a Government plant should make a contribution to the cost of government which will bear their full share of the cost of government. Yes; I think that is a sound principle.

Mr. Pettengill: Because at the present time, even if you set up an item of 7½ per cent as an operating expense, but it is not actually paid into the county, or the city, or the State treasury, then the burden of tax upon the other people living there necessarily has to be that much higher, does it not?

Mr. Lilienthal: Someone has to pay the taxes.

Mr. Pettengill: Somebody has to make it up, do they not?

Mr. Lilienthal: Oh, yes.

Mr. Pettengill: And again, is it not unfair to your consumer, to charge him a rate that will earn a return upon the 7½ per cent, if the 7½ per cent does not actually go to support the schools and roads and bridges of the community in which that consumer lives?

Mr. Lilienthal: The principle you have laid down, I agree with, entirely.

Page 2030

Mr. Pettengill: My idea is that the Tennessee Valley Act should be amended to require the Tennessee Valley Authority to pay all State, county and municipal taxes based upon ad valorem or gross income, or whatever other taxes that a private utility would be compelled to pay if located

in the same community insofar as your property is dedicated or allocated to the production of electric energy and fertilizer for sale to the public; not for the operation of locks on navigable streams, and so forth. Would you have any objection to that as an individual?

Mr. Lilienthal: Well, yes; in that form, I would.

Page 2037

Mr. Pettengill: There is just one more observation I want to make with reference to Mr. Monaghan's statement that if you set up the 7½ per cent, even though you do not pay it, it makes a fair yardstick. My criticism of that is that if you set up an item of 7½ per cent of your revenues, and do not pay it, you have it to use for new construction and the money does not cost you anything, whereas a private utility if it pays the 7½ per cent into State and municipal treasuries does not have it in its own treasury and has to go out and borrow new money at 5 or 6 per cent.

[fol. 2692] Pages 2062-63

Mr. Cooper: Were State regulations supplemented when Congress passed the Tennessee Valley Authority Act?

Do you believe that when Congress passed the Tennessee Valley Authority Act that it was intended that State commissions should be supplemented by Federal regulation?

Mr. Lilienthal: Well, answering your first question, I am sure it was not intended that the passing of the act would supplant the State commissions, but I expressed the personal opinion then, and I still think it is true, one of the considerations in the mind of many of the Members of Congress was that the disposition of power under these circumstances would furnish an alternative method of inducing the best possible rates under all of the circumstances. To that extent, it would assist the State commissions. I think it has. The data even at this early stage has been helpful to many commissions, and some of them have called on us and have found that they could use some of the information in State regulation.

Mr. Cooper: Are you ready to say that the State commissions have fallen down in the regulation of the State utilities?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 364 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: Some of them have.

Mr. Cooper: Did your commission fall down in Wisconsin?

Mr. Lilienthal: I do not think we did a 100 per cent job by any means. We tried hard. We had many advantages other States do not have. We had funds available for an adequate staff. Many States with all of the best intentions in the world, have been unable to carry on because of inadequate funds for the job.

Mr. Cooper: Don't you believe it is casting quite a reflection on the State and its utility commission, when you say that the public utilities have come in and regulated the commission instead of the commission regulating them?

Mr. Lilienthal: I intended it as a reflection; yes sir.

Mr. Cooper: Well, the State commissioners were here a few days ago, and I think if you had been here and listened to them why, probably you would not have thought they were such a bad lot.

Mr. Lilienthal: I know a number of those men and I have high regard for them. I was referring, however, to certain instances which I am sure are fresh in your mind, and not to all State commissions, and I so stated.

Mr. Cooper: Well, it is quite an indictment to make.

Mr. Lilienthal: I said "some" States.

Mr. Cooper: Continuing against the commissions.

Mr. Lilienthal: I did not make a general indictment.

Mr. Cooper: You said you intended to say it.

Mr. Lilienthal: I intended to state that in some States that had occurred, and it has, as everyone knows.

[fol. 2693] COMPLAINANTS' EXHIBIT No. 364 (Excluded)

Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, 74th Congress, 1st Session.

(Original Exhibit)

[fol. 2694] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 365 FOR IDENTIFICATION, BEING "HEARINGS BEFORE THE COMMITTEE ON MILITARY AFFAIRS, HOUSE OF REPRESENTATIVES, 74TH CONGRESS, 1ST SESSION" (Excluded)

P. 7

The Chairman Mr. Lilienthal, will you proceed to a discussion of H. R. 6793, in any way you see fit?

Mr. Lilienthal: The Tennessee Valley Authority is appearing here through members of its board in support of H. R. 6793.

P. 24

Mr. Lilienthal: • • •

In the first place, the law under which we operate puts upon us a duty to market this power; not only to generate it but to dispose of it. This waste is not to continue.

Mr. Hill: It is so declared to be the policy, in the basic act.

Mr. Lilienthal: It is; and the promotion of a wider and more economical use of power is another policy. That is the tenor of the entire act so far as it relates to electricity.

P. 25

Mr. Lilienthal: • • •

The Congress has written into this law, as Representative Hill has pointed out, a policy which the Authority is bound by, to promote wider and more economical distribution of electricity, particularly in rural areas. And in this law is a second policy which is mandatory and clearly within the power of Congress by which, in the disposition of this power, we are required to give preference, to give priority, to public, nonprofit agencies, whether they be municipalities or associations of farmers or other comparable public agencies.

With those duties and those policies written into the act, the Tennessee Valley Authority has worked out a method of attempting to carry these policies into effect. And we have been able to carry them into effect—in a relatively small area, it is true.

Pp. 26 & 27

Mr. Lilienthal: Instead of accepting payment in cash, which would be impossible, or taking bonds, which would be cumbersome, it was agreed in this transfer to the local asso-

ciation that the Federal Government would be repaid its investment through surplus revenues.

[fol. 2695] Following the transfer of properties the Tennessee Valley Authority sells power to these local associations at wholesale, and this is what the McSwain amendment, in section 12 (a), beginning on page 7, provides in considerable detail.

We thoroughly believe, and have been so advised, that the statute already permits that kind of operation, and the policies in the act require it, but since that has been challenged, and since more detailed directions would be useful, we heartily commend and urge the adoption of section 12 (a), which sets out the policy under which the amendment is made, and the plan which I have just described.

P. 28

Mr. Thomason: What was the reduction in cost to the urban user, to the man who had electricity at first?

Mr. Lilienthal: About 50 per cent.

Mr. Maverick: It has been much more than 50 per cent in some of those places.

Mr. Lilienthal: In this particular county, the urban user was paying about twice the present rate, but that rate, however, did not include any item for the retirement of investment which the present rate does.

Mr. Thomason: In the country, did the farmer have to pay to build the line from the main transmission line to his own house?

Mr. Lilienthal: My recollection is that there was a line extension—a rule to that effect.

P. 29

Mr. Wilcox: What is the rate per kilowatt-hour charged to the rural user?

Mr. Lilienthal: The basic Tennessee Valley Authority rate which is charged in the situation that I have described is 3 cents for the first 50 kilowatt-hours, 2 cents for the next 150 kilowatt-hours, 1 cent for the next 200 kilowatt-hours, and 4 mills in excess of 400 kilowatt-hours.

Mr. Wilcox: The basic rate is 3 cents?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 365 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: It is a simple block rate, the maximum per kilowatt rate is 3 cents.

Mr. Wilcox: The maximum rate is 3 cents?

Mr. Lilienthal: Yes, sir.

Mr. Wilcox: You deliver the power to the house, having provided the lines to bring it to his house, and your maxi- [fol. 2696] mum rate is 3 cents for the first block of kilowatt-hours, which includes amortization and the cost of the extension line, and depreciation on equipment?

Mr. Lilienthal: No; the amortization is set up separately in this Alcorn County arrangement.

Mr. Wilcox: Where do you get the money to amortize the cost of that?

Mr. Lilienthal: Every member of the association, every consumer, in addition to this basic rate, which provides for the cost of electricity, pays 1 cent per kilowatt-hour for not to exceed 100 kilowatt-hours, a maximum of $1 a month, as a means of quickly amortizing the investment.

In comprising these rates with those previously charged, I can furnish typical bills to certain kinds of users.

That 1 cent has been included, which is really not a payment for current, but a partial payment for property.

Mr. Wilcox: In other words, you simply finance the extension and he pays it back on the basis of the power that he uses?

Mr. Lilienthal: That would be one way to explain it.

P. 32

Mr. Lilienthal: We believe that this plan in Alcorn County carries out the policies that Congress has laid down. It provides for the disposal of power to nonprofit agencies. It provides for cheap rates, and for extensive rural electrification under local control and local initiative. It is based upon what the President called when he was down there, "Community of rugged individualism", and at the same time it provides for the fair treatment of investors.

Mr. Lilienthal: * * *

Furthermore, the legislatures of the States, particularly Tennessee and Alabama, and the Governors of those States have cooperated with these applicant communities, desiring to take advantage of this public power, by the passage of

laws permitting municipalities or power districts to engage in the distribution of TVA electricity, and have appointed special commissions to work with the Authority in this and other problems with which we are concerned.

Now, there should be no mistake made about this. These individual communities, like Knoxville, Memphis, Chatta- [fol. 2697] nooga, and hundreds of smaller communities, are going to go ahead. They have the legal authority. They have bonding power. Many of them have voted bonds. They are going to go ahead and take advantage of this public property in the purchase of which the Congress has, it seems to me, properly given them a preference.

Pp. 33-34

Mr. May: You just stated that one-third of the gross revenues of the entire system of the Tennessee Electric Power Co. were in Knoxville.

Mr. Lilienthal: Chattanooga.

Mr. May: And you are planning to take that over?

Mr. Lilienthal: We are not planning a thing; no, sir. We are under a mandate by Congress to supply that community with power, if it desires to insist on its right to purchase it.

Mr. May: If you take over that city, and take over one-third of the entire gross receipts of the Tennessee Electric Power Co., will that not seriously injure that company?

Mr. Lilienthal: Let me say first, that we have no idea of "taking over that city" in the sense of your question. If Chattanooga builds its plant, as its voters have determined, it would injure the company. And that is the situation that I think Representative McSwain's proposed amendment would meet.

Mr. May: Your idea is that the TVA will produce the electricity and sell it wholesale to the Tennessee Electric Power Co., to furnish to the city?

Mr. Lilienthal: No; that is not the proposal.

Mr. May: What is the proposal?

Mr. Lilienthal: The proposal, as set out in this amend- ment, is that the Tennessee Valley Authority be authorized

to buy, where a company is willing to sell, at a price that is satisfactory——

Mr. May: If you buy principally in that city, do you not mean that you are taking it over?

Mr. Lilienthal: May I finish the sentence that will answer your question?

The proposal is that the Tennessee Valley Authority buy distribution facilities and interconnecting transmission lines, and properties incident to those transmission lines, and distribution facilities, in a unit or area. That would [fol. 2698] take care of every problem that the Tennessee Electric Power Co. presents in Chattanooga, to which you refer. If I understand your position it is that it would be unfair and destructive of the Tennessee Electric Power Co. for the city of Chattanooga, having the statutory authority to do it, after a vote of 2½ to 1 requiring it, to purchase or construct a separate plant in Chattanooga. It seems to be your point that the effect of that would be to take away from the Tennessee Electric Power Co. a very large portion of its revenues and cause disaster to the rest of the company. In addition to that, it would physically dismember a system —I believe that that is the Representative's point.

Mr. May: That is what I was asking about. How will you take it over without doing that?

Mr. Lilienthal: The proposal in this amendment is that an entire unit, a unit large enough so that compensation for that unit will not cause the financial havoc that such a dismemberment of an individual community would have——

Mr. May: But if Chattanooga affords one-third of the gross revenues to the Tennessee Electric Power Co., and its capitalization would be $100,000,000, and you paid them for the Chattanooga plant $33,333,333, your idea is that it would be made good to the extent that you took away from them; is that correct?

Mr. Lilienthal: The proportion of total revenues to capitalization has no necessary relation to the value of the property in Chattanooga.

P. 35

Mr. Lilienthal: * * *

* * * In view of the policies of Congress, and in the light of these circumstances, it is appropriate for the Congress to

say that the Tennessee Valley Authority shall have power to buy not merely a piece, but the whole, and then to resell it under the plan that was utilized in northeast Mississippi, sell it back to these individual communities that have expressed their desire to own their own distribution systems, they to pay it back out of the surplus of revenues over expenses.

That, if it please the Representative, is the proposal, and with that is a proposal that $100,000,000 in bonds of the United States be available with which to buy these properties.

P. 36

Mr. May: In other words, instead of following the cus-
[fol. 2699] tomary processes of law, condemnation of private property and the fixing of the value of it in court, you propose by this amendment to vest that authority in the Federal Power Commission?

Mr. Lilienthal: That is not quite an accurate statement.

Mr. May: Is not that what it is?

Mr. Lilienthal: No. The Tennessee Valley Authority does not desire to take the companies' facilities if the companies do not wish to sell, and, of course, when you condemn you take property against the will of the owner. Nothing is further from our intention. We are supporting this procedure because we believe it will be a way of aiding the companies to avoid property losses and safeguard actual investment in useful property. Otherwise these losses are sure to happen.

Mr. May: Why will it happen?

Mr. Lilienthal: Because these communities are communities in which the majority of the electorate control the public policies of the cities. The cities have statutory authority to go ahead, and they are apparently determined to go ahead to build their own plants, if they cannot buy.

Pp. 36-37

Mr. May: How much was paid?

Mr. Lilienthal: My recollection is $850,000.

Mr. May: How did you arrive at the price?

Mr. Lilienthal: The company presented its inventory, a

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 365 FOR IDENTIFICATION (Excluded)

customary practice in such negotiations, and the engineers went over the property and estimates were made as to the replacement value. We took the company's replacement value and depreciated it.

Mr. May: To what extent?

Mr. Lilienthal: To the extent of 50 per cent of the cost of reproduction.

P. 37

Mr. Lilienthal: That is part of the duties that are imposed upon us in this act. One of our duties is to supply power to applicant public agencies.

[fol. 2700] Mr. May: You stated that you regarded it as your duty to sell and distribute power.

Mr. Lilienthal: Exactly.

Mr. May: And that was the purpose that you had in acquiring these plants?

Mr. Lilienthal: Yes, sir; that is one of them.

P. 38

Mr. Lilienthal: The Knoxville purchase by T. V. A. has not been consummated. And yesterday a chancel-or, in one of the lower courts in the Knoxville district, temporarily enjoined the city from proceeding further with the construction of its plant.

P. 39

Mr. May: Your company is not interested today, and has not been, as I understand you, in any way, in soliciting the people of these various communities to become interested?

Mr. Lilienthal: It is a fundamental purpose of the T. V. A. not to solicit what you might describe as power business. It is purely an independent enterprise for the benefit of the people themselves, and the people take the initiative.

Mr. May: Have not you gentlemen who are members of the board, and other persons connected with it, been visiting various towns in Tennessee, delivering addresses and pointing out the benefits to be acquired by T. V. A. power?

Mr. Lilienthal: In the first place, those speeches are only made on invitation, and, I may say, many invitations. In

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 365 FOR IDENTIFICATION (Excluded)

the second place, it is certainly our duty, and we believe it is a part of our qualification, to believe in the wisdom and feasibility of this act, and the three directors are firm in that position, and therefore are not hiding their lights under a bushel in that respect.

Mr. May: In other words, you do have a plan now for a meeting in Johnson City for the next month?

Mr. Lilienthal: I have no such plans.

Mr. May: Do you know about that?

Mr. Lilienthal: No; but I do know of a meeting in west Tennessee, to which the T. V. A. has been requested, for some 4½ months, to send a representative. The interest in west Tennessee has been increasing for over a year, on the initiative of the people themselves. If one of our rep- [fol. 2701] resentatives goes down there, he will find that it is not necessary for any spokesmen of the T. V. A. to make speeches. The people of the United States are stirred up about electricity, all over the United States, but especially on the Tennessee Valley.

Mr. May: And the Tennessee Valley Authority has not stirred up the people in this matter?

Mr. Lilienthal: I do not doubt that the Tennessee Valley Authority has increased the conviction of people that electricity should be widely available.

P. 40

Mr. Lilienthal: We believe that the law as it now stands adequately gives us the authority that we have exercised, but we believe that these amendments would remove any question of doubt or ambiguity on the matter of authority.

Of course, the question of the authority under the Constitution is not a matter that can be cleared up by this legislation.

Pp. 47-48

Mr. May: But you are willing to tell this committee that the Tennessee Valley is not overproduced at the present time?

Mr. Lilienthal: There is a surplus at the present time.

Mr. May: What percentage?

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 365 FOR IDENTIFICATION (Excluded)

Mr. Lilienthal: About 18 per cent. That is not too much to have on the shelf under all the circumstances, especially since we have obligations with respect to national defense which may overnight change the picture.

Pp. 48-49

Mr. May: You were organized at what time—the T. V. A.?

Mr. Lilienthal: The incorporation meeting was on the 16th of June in 1933.

Mr. May: And you gave out your first rate schedule in September 1933?

Mr. Lilienthal: Yes, sir.

Mr. May: How did you arrive at that rate schedule without any developed capacity, or without the Norris or Wheeler Dams, or anything except the Muscle Shoals Dam, the Wilson Dam?

[fol. 2702] Mr. Lilienthal: You mean, how was the estimated rate computed? The way almost any agency would. We based it upon estimates, including all the elements that go into making up a price—estimates of market and estimates of what we had available to dispose of; estimate of firm power, estimate of operating expenses, estimate of depreciation, actual figures of taxes plus an additional computation as to interest, and all the other elements that go into making up an operation of that kind.

Pp. 49-50

Mr. May: You make these rates and schedules; in making them, at what price or what valuation did you take into consideration Wilson Dam?

Mr. Lilienthal: The value of the Wilson Dam was computed at what a prudent business man would pay if he were determining upon a question of building or buying a new power plant at Wilson Dam. That figure was about $20,000,000.

Mr. May: As a matter of fact, it cost the Government about sixty millions, did it not?

Mr. Lilienthal: No.

Mr. May: $47,000,000?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 365 FOR IDENTIFICATION (Excluded)

P. 50

Mr. May: And that has been written down to $21,000,000?

Mr. Lilienthal: No. Those figures are not comparable. The Authority has not adopted a final figure, as required by one of the sections of this act for recommendation to the President. The study is continuing, but the final computations will show a substantial loss which must be charged to the defense of the country at the time this project was initiated.

P. 55

Mr. Maverick: I want to ask just one more question. Has there not been a general decrease in rates charged by public utilities since the establishment of the TVA?

Mr. Lilienthal: In the Tennessee Valley area there have been decreases in rates resulting in annual savings of about $7,000,000 for the States affected.

Mr. Merritt: Those are all privately owned companies?

Mr. Lilienthal: Yes.

[fol. 2703]

P. 60

Mr. Montet: Before we enter on that, Mr. Lilienthal, I want to ask you a question about one provision in the McSwain bill. When the TVA sells power, say to Tupelo, does it not in its contract control the resale price of that power?

Mr. Lilienthal: Yes. The resale price is agreed upon.

P. 61

Mr. Montet: Do you consider the TVA an experiment for the benefit of the various States, or a yardstick, which it has been called here for 15 years?

Mr. Lilienthal: It has been described in those terms.

Mr. Montet: As an experiment or yardstick of measurement for the balance of the country, to ascertain what would be a fair rate for electricity?

Mr. Lilienthal: It has very useful purposes in that connection.

* * * * * * *

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 365 FOR IDENTIFICATION (Excluded)

Mr. Montet: Mr. Lilienthal, if you came down in Alabama and established a distributive system down there and controlled resale rates in all of these towns, and they could get power from you, of what avail would the Alabama Public Service Commission be if you wanted to control the rates? What good would all of this information be to the Public Service Commission of that State, if you are going to control the rates?

Mr. Lilienthal: We do not control the rates, except as they are fixed in contracts with particular communities. There is only one community in the whole State of Alabama at the moment that has its rates fixed in a contract with the TVA.

Mr. Montet: But you have your eyes on the balance of the State?

Mr. Lilienthal: The companies serving the balance of the State are regulated by the Alabama Public Service Commission, and suggestions from many other regulatory bodies have indicated that, for the purpose of determining what is a fair rate, this is information of a useful character.

P. 77

Mr. May: Are there any instances where you aided the community in taking over the privately owned distributing system in a town?

[fol. 2704] Mr. Lilienthal: Yes.

* * * * * * *

Mr. May: Now, I am conceding all that you say about the lack of value and all that, but you have frequently told those fellows, have you not, that public funds were available through the Public Works Administration and the Tennessee Valley Authority to aid the city in putting up a plant in competition with them?

Mr. Lilienthal: It was not necessary to tell them. The availability of PWA funds for power projects was known to the utility representatives.

[fol. 2705] COMPLAINANTS' EXHIBIT No. 365

Hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, 1st Session.

(Original Exhibit)

[fol. 2706] EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 366 FOR IDENTIFICATION, BEING "HEARINGS BEFORE THE COMMITTEE ON MILITARY AFFAIRS, HOUSE OF REPRESENTATIVES, 74TH CONGRESS, 1ST SESSION, VOL. 2" (Excluded)

Page 591

Mr. McLean: Is it not proper to say that the activities of the Electric Home and Farm Authority are incidentally part of and connected with the Tennessee Valley Authority?

Dr. Morgan: They are, and they are more than that.

Mr. McLean: I say that they are, and that is all.

Dr. Morgan: They are, but they are more than that.

Page 594

Mr. McLean: Let us assume that that is all perfectly all right, and everything you have done is justified, and that you are going to get an appropriation from Congress to finish up your work. Then what are you going to do next? That is what I want to know.

Dr. Morgan: We plan on working out with other departments of the Government plans for rural electrification.

Mr. McLean: Let us get back into the Tennessee River.

Dr. Morgan: You mean by pro ,ram——

Mr. McLean: Money expend d; $30,000,000; $20,000,000; $50,000,000. What is the next $20,000,000 going to be spent for, and where are you going to get it?

Dr. Morgan: I am trying to answer your question.

Mr. McLean: I know all about the rural electrification.

Dr. Morgan: That is part of the program.

Mr. McLean: I want to know how many millions more the American people have got to put into your hands to be spilled down the Tennessee River. What is the next thing you are going to do, after you s-end this $101,000,000?

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 366 FOR IDENTIFICATION (Excluded)

Dr. Morgan: I am trying to tell you. We expect to proceed with that program of rural electrification, of promoting that as far as we can.

Page 595

Mr. McLean: Who is going to promote rural electrification, Doctor?

Dr. Morgan: The Tennessee Valley Authority and the States cooperating, and local organizations.

Page 833

Mr. Wilcox: There is one other question, Mr. Chairman. Have there been any reductions in rates charged by private utilities in this same territory as the result of the competition afforded by the TVA?

Mr. Lilienthal: What the reasons were I am not certain. But the fact is that in the States in that area, of which there are 8, that would be directly affected, there were 30 companies that during this period reduced electric rates, totaling $7,067,000.

[fol. 2707] Mr. Wilcox: In this territory since the TVA began its operations?

Mr. Lilienthal: Yes.

Page 834

Mr. Wilcox: Have there been rate reductions by private utilities in the Tennessee Valley area since TVA was organized?

Mr. Lilienthal: Yes.

Mr. Wilcox: How much have these savings amounted to in dollars?

Mr. Lilienthal: More than $7,000,000 for Valley States from June 1933, to date.

Mr. Wilcox: Suppose TVA rates were put into effect throughout the United States. What would be the savings in rates to consumers?

Mr. Lilienthal: About $791,000,000 yearly as compared with 1932 utility rates. Since then there have been many reductions.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 366 FOR IDENTIFICATION (Excluded)

Pages 834-36

Mr. May: Mr. Chairman, I just have a question or two. Mr. Lilienthal, under the provisions of the McSwain bill, the bond authority that you have provides that the bonds shall not be sold at an interest rate in excess of 3½ per cent.

It has been very clearly established in this record that the average cost of money to private utilities is 5½ per cent. So that you have there a difference of 2 per cent in the cost of money for operation purposes.

Would that be taken into account by you in fixing your schedule of rates, or was it?

Mr. Lilienthal: Yes; that was taken into account. There is no occasion for taking the highest cost of money to utilities. Five and a half per cent is high. Of course, a badly capitalized utility, with some unfortunate financial practices to live with, for example, would probably have to pay 5½ or perhaps more than that. But it did not seem fair to assume that kind of a case.

As a matter of fact, at the present time, refunding operations are going on at less than 4 per cent.

Mr. May: But that is in territory where they do not have this Government competition that you are giving to the Commonwealth & Southern and the Alabama Power Co. They cannot even finance the 5½ per cent, can they?

Mr. Lilienthal: I do not know about that. They have no refinancing presently necessary, that I know of.

Mr. May: What interest rate does their preferred stock carry?

Mr. Lilienthal: I imagine 6, 6½, and 7 per cent. That is customary.

Mr. May: You do not pay any insurance, do you?

Mr. Lilienthal: We provide for insurance. I suppose we [fol. 2708] do not buy it. I do not imagine any Federal agency buys insurance.

Mr. May: You do not, in fact, pay any insurance premium, and you do not put any charge for insurance in your operating expenses?

Mr. Lilienthal: It must be taken into account in some fashion. But it would not be by the payment of insurance premium, I am confident of that.

EXCERPTS FROM COMPLAINANTS' EXHIBIT NO. 366 FOR IDENTIFICATION (Excluded)

Mr. May: You have not included that in your rate base, have you?

Mr. Lilienthal: The cost is included in operations, but not as insurance premiums. It would be a very small item, relatively. I do not know just how it is handled. There will be some provision for insurance against destruction of property.

Mr. May: Do you have anything on workmen's compensation insurance?

Mr. Lilienthal: I am confident that no Federal agency takes insurance of that kind.

Mr. May: That is not taken into consideration. Do you take into consideration the fact that you do not have any cost of financing?

Mr. Lilienthal: Yes; in determining the interest rate, something between one-fourth and one-eighth of 1 per cent was estimated as the fiscal expense of the Treasury in the raising of Federal funds. This 3½ per cent at the present time is high, of course, for a Federal investment.

Mr. May: How much does it cost the Treasury?

Mr. Lilienthal. One-fourth to one-eighth of 1 per cent for fiscal expense.

Mr. May: One-fourth to one-eighth of 1 per cent?

Mr. Lilienthal: Yes, sir.

Mr. May: You have a preference also on freight rates in shipping to and from the territory, do you not?

Mr. Lilienthal: Yes.

Mr. May: Have you allowed for that?

Mr. Lilienthal: The Federal Government receives a reduction of one-third on shipments made over land-grant railroads. That is an infinitesimal advantage. The total advantage that that would be has been computed. A good deal has been made of this so-called "advantage." Of the total cost of a dam, the freight charges play so small a part that one-third reduction amounts to three ten-thousandths of a cent per kilowatt-hour. It would save 1 cent for every 1,000 kilowatt-hours used. The average residential consumer would save 1 cent every 5½ years as a result of these savings, or about 10 cents in lifetime. It is trivial.

EXCERPTS FROM COMPLAINANTS' EXHIBIT No. 366 FOR IDENTIFICATION (Excluded)

Mr. May: Of course, the Tennessee Valley Authority has no dividends to pay, or interest to stockholders. Have you allowed for that?

Mr. Lilienthal: We have no stock, so, of course, there are no dividends. There is interest, as I suggested to Mr. Wilcox.

Mr. May: You do not figure that in your rate base as between a Government concern that does not pay dividends, and a private concern that must pay dividends.

Mr. Lilienthal: That is the surplus and that is available as a dividend to the United States Treasury, and in that way a dividend to the people of the country.

Mr. May: You did not figure in your rate base the amounts of money that you receive from other Federal agencies, nor the work that was performed by C.W.A. workmen and C.C.C. workmen.

[fol. 2709] Mr. Lilienthal: We have not had any of that work that was related to revenue-producing properties, that I know of, with the possible exception of some C.W.A. pole lines in Alabama, which have been accounted for. The C.C.C. work is not related to power operation.

[fol. 2710] COMPLAINANTS' EXHIBIT No. 366

Hearings before the Committee on Military Affairs, House of Representatives, 74th Congress, 1st Session.

(Original Exhibit)

(Here follow four photolithographs, side folios 2711-2714)

Exhibit _____

COMBINED NET PEAKS

(60-MINUTE INTEGRATED DEMANDS)

FOR

APPALACHIAN ELECTRIC POWER COMPANY

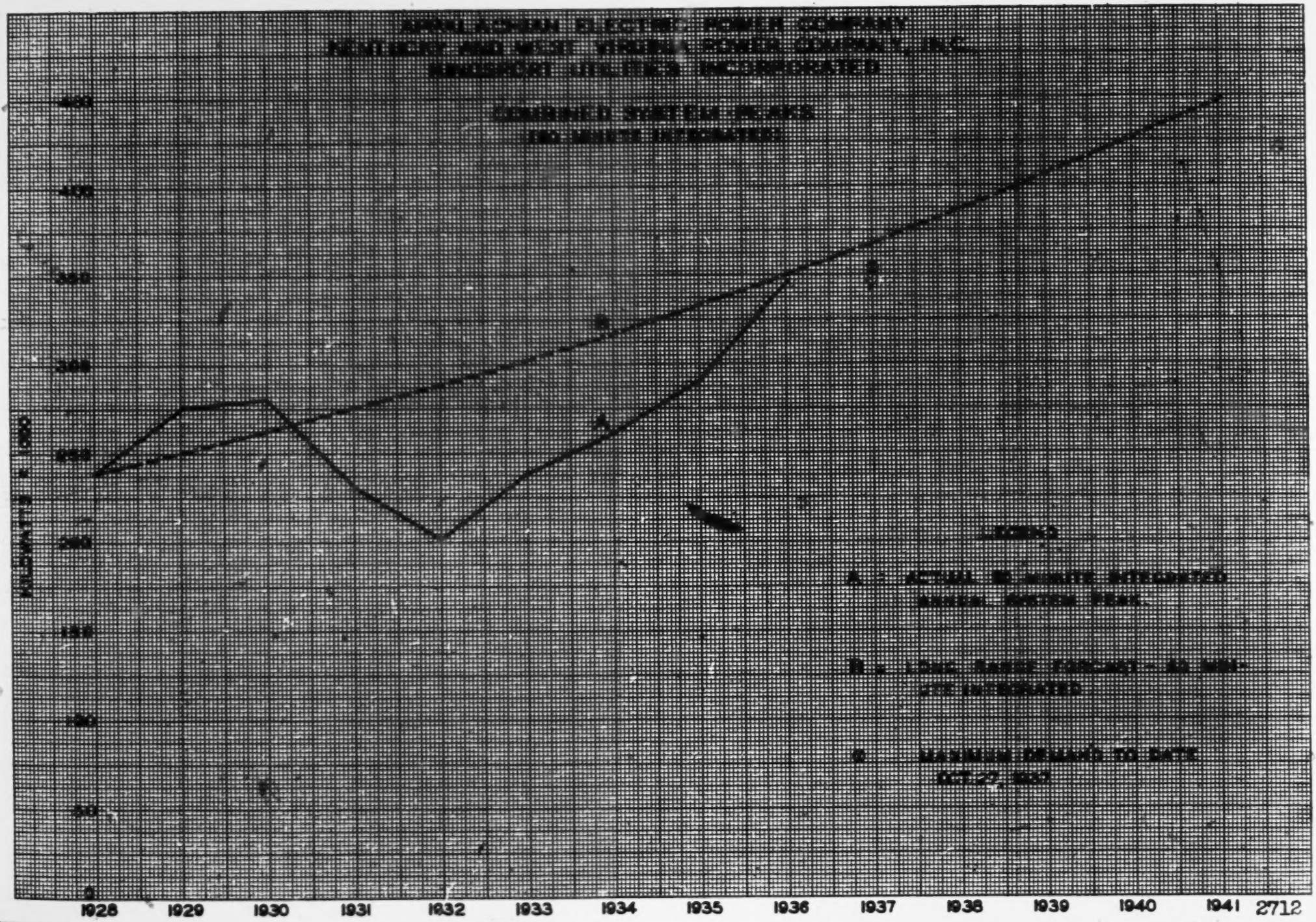
KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED

KINGSPORT UTILITIES, INCORPORATED

	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
January	220,700	244,000	280,600	230,786	204,420	185,935	227,220	263,535	301,110	337,770
February	218,400	250,000	277,600	221,130	203,680	194,060	242,295	273,045	292,245	325,730
March	212,300	250,100	252,800	231,730	199,410	170,880	253,120	273,860	286,145	335,725
April	212,700	236,800	247,300	219,430	192,270	172,830	253,860	262,535	291,155	322,400
May	226,300	244,100	247,100	211,560	179,685	183,725	252,690	258,730	276,930	320,800
June	214,200	245,000	245,000	214,920	163,930	202,370	251,245	262,870	290,710	326,725
July	214,900	253,800	244,400	225,260	169,210	226,985	257,300	256,835	301,080	328,870
August	219,400	248,400	255,400	223,860	175,105	234,745	236,765	264,620	317,870	346,885
September	231,500	251,300	248,200	217,845	184,485	239,270	248,225	274,045	325,865	341,820
October	235,800	263,900	259,300	220,085	195,810	237,985	250,960	291,855	344,400	352,925 *
November	238,100	272,500	256,300	207,010	195,745	220,865	254,645	290,395	346,410	--
December	237,600	275,300	251,400	200,100	194,550	223,240	261,510	283,110	338,110	--

* Peak to date - 1937. (October 27, 1937)

2711


APPALACHIAN ELECTRIC POWER COMPANY
KENTUCKY AND WEST VIRGINIA POWER COMPANY, INC.
KINGSPORT UTILITIES INCORPORATED
COMBINED SYSTEM PEAKS
(60-MINUTE INTEGRATED)
KILOWATTS (000)
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
A = ACTUAL 60-MINUTE INTEGRATED ANNUAL SYSTEM PEAK
B = 10-YR. INDEX FORECAST—60-MIN. INTEGRATED
C = MAXIMUM DEMAND TO DATE OCT. 22, 1937

2712

COMPLAINANTS' EXHIBIT NO. 369

Docket No. _____

APPALACHIAN ELECTRIC POWER COMPANY
KENTUCKY AND WEST VIRGINIA POWER COMPANY, INCORPORATED
KINGSPORT UTILITIES, INCORPORATED
COMBINED LOADS AND GENERATING CAPACITIES - 1928 - 1941, INCLUSIVE

Year	(1) Installed Capacity Nameplate Rating Kw	(2) Firm Capacity Dry Year Kw	(3) Firm Capacity Full Hydro Kw	(4) Capacity Available from Interconnections Kw	(5) Actual Simultaneous Peaks (60 Minute Integrated) Kw	(6) Long Range Forecast (60 Minute Integrated Peak) Kw
1928	362,370	317,100	327,570	50,000	238,000	238,000
1929	370,540	317,100	329,100	50,000	275,000	250,000
1930	372,340	317,100	330,900	65,000	281,000	262,000
1931	372,840	318,700	331,400	65,000	232,000	276,000
1932	385,340	322,100	343,900	65,000	204,000	289,000
1933	380,590	317,100	338,900	65,000	239,000	304,000
1934	380,590	342,100	363,900	65,000	262,000	319,000
1935	404,390	352,900	390,400	65,000	292,000	335,000
1936	411,390	361,900	399,400	65,000	346,000	351,000
1937	455,790	416,300	453,800	67,000	353,000	369,000
1938	541,390	499,300	538,800	67,000	--	387,000
1939	541,390	499,300	538,800	67,000	--	406,000

Year	(1) Installed Capacity Nameplate Rating Kw	(2) Firm Capacity Dry Year Kw	(3) Firm Capacity Full Hydro Kw	(4) Capacity Available from Interconnections Kw	(5) Actual Simultaneous Peaks (60 Minute Integrated) Kw	(6) Long Range Forecast (60 Minute Integrated Peak) Kw
1928	362,370	317,100	327,570	50,000	238,000	238,000
1929	370,540	317,100	329,100	50,000	275,000	250,000
1930	372,340	317,100	330,900	65,000	281,000	262,000
1931	372,840	318,700	331,400	65,000	232,000	276,000
1932	385,340	322,100	343,900	65,000	204,000	289,000
1933	380,590	317,100	338,900	65,000	239,000	304,000
1934	380,590	342,100	363,900	65,000	262,000	319,000
1935	404,390	352,900	390,400	65,000	292,000	335,000
1936	411,390	361,900	399,400	65,000	346,000	351,000
1937	455,790	416,300	453,800	67,000	353,000 •	369,000
1938	541,390	499,300	538,800	67,000	--	387,000
1939	541,390	499,300	538,800	67,000	--	406,000
1940	541,390	499,300	538,800	67,000	--	427,000
1941	541,390	499,300	538,800	67,000	--	448,000

• 1937 Peak to date (October 27, 1937)

Note: No allowance made for outage of major equipment for maintenance. Maintenance programs are coordinated with the affiliated and non-affiliated interconnected system and carried out at times when maximum help is available from these interconnections. In so far as possible it is further coordinated so as to be carried out at times when the system hydro capacity is at a maximum.

2713

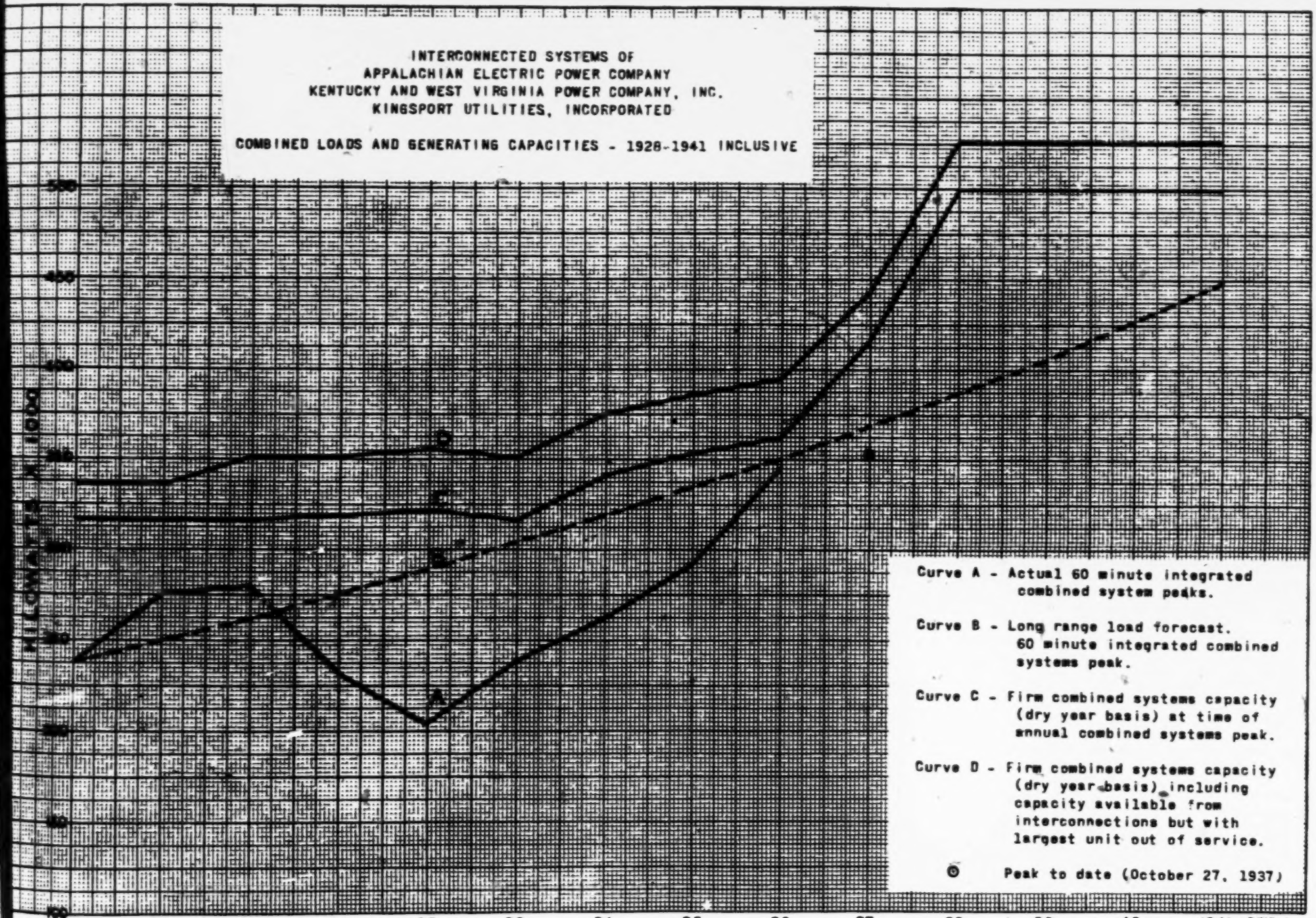
31961

COMPLAINANTS' EXHIBIT NO. 370

[redacted]

INTERCONNECTED SYSTEMS OF
APPALACHIAN ELECTRIC POWER COMPANY
KENTUCKY AND WEST VIRGINIA POWER COMPANY, INC.
KINGSPORT UTILITIES, INCORPORATED

COMBINED LOADS AND GENERATING CAPACITIES - 1928-1941 INCLUSIVE



2714

COMPLAINANTS' EXHIBIT No. 371

[fol. 2715]

Summary of Capacities Available to Commonwealth & Southern System—1937
(Southern System)

Interconnected System	Number of Sources	Alabama	Georgia	Tennessee	South Carolina	Mississippi	Gulf	Total
		Installed Capacities and Other Sources—Kilowatts						
Owned & Leased Generating Equipment—kw.:								
Hydro Plants	43	414,500	289,875	139,742	23,600	.....	.....	867,717
Primary Steam	8	140,000	60,000	101,000	6,500*	.....	.....	307,500
Secondary Plants:								
Owned	41	17,140	29,855	1,030	1,022	17,874	2,602	69,523
Leased	5	8,000	750	.....	.....	.....	.....	8,750
Available to system from:								
Customers' Plants	20	9,850	16,015	5,080	1,500	1,375	.....	33,820
Purchased Power	4	17,500	.....	.....	.....	1,000	.....	18,500
Total Secondary	70	52,490	46,620	6,110	2,522	20,249	2,602	130,593
Total Interconnected System	121	606,990	396,495	246,852	32,622	20,249	2,602	1,305,810
Isolated Districts:								
Owned & Leased—Available to System	17	104	4,144	1,587	20,610	828	2,000	29,273
Total Installed Capacities	138	607,094	400,639	248,439	53,232	21,077	4,602	1,335,083
Interconnected System		Maximum Capabilities Less Station Use Only—Kilowatts						
Owned & Leased Generating Equipment—kw.:								
Hydro Plants		457,000	311,700	139,116	21,000	.....	.....	928,816
Primary Steam		150,750	63,700	100,500	6,500*	.....	.....	321,450
Secondary Plants:								
Owned		15,537	26,945	980	755	15,075	2,702	61,994
Leased		8,600	665	.....	.....	.....	.....	9,265
Available to System from:								
Customers' Plants		9,850	16,015	5,080	1,500	1,375	.....	33,820
Purchased Power		17,500	.....	.....	.....	1,000	.....	18,500
Total Secondary Sources		51,487	43,625	6,060	2,255	17,450	2,702	123,579
Total Interconnected System		659,237	419,025	245,676	29,755	17,450	2,702	1,373,845
Isolated Districts:								
Owned & Leased—Available to System		80	3,790	1,225	16,325	675	2,000	24,095
Total maximum capabilities less station use only		659,317	422,815	246,901	46,080	18,125	4,702	1,397,940

* Including 4,000 kw. of firm purchased power.

[fol. 2716] COMPLAINANTS' EXHIBIT No. 372

Graph entitled "Commonwealth & Southern Corporation (Southern properties) Capacities and Loads 1929-39".

(Original Exhibit)

[fol. 2717] COMPLAINANTS' EXHIBIT No. 373

Resolution adopted by the Council of the City of Knoxville, Tennessee, on February 21, 1933.

Resolution No. 709

Whereas, there are now prospects of development of water power in the vicinity of Knoxville including the proposed Cove Creek and Muscle Shoals developments, and

Whereas, it is believed that plans for future ownership of a power plant should be considered, so as to serve the public in an effort to obtain more reasonable rates for its people.

Now, Therefore, be it Resolved by the Council of the City of Knoxville:

That the Mayor be and he is hereby authorized to appoint a committee for the purpose of studying the questions involved in connection with providing a power plant and distribution system to serve the people of Knoxville, and to determine the advisability and cost of such service.

Be it Further Resolved, That this resolution shall take effect from and after its passage.

(Signed) John T. O'Connor, Presiding Officer of the Council. (Signed) W. H. Stapleton, Recorder.

(Here follows one paster, side folio 2718)

COMPLAINANTS' EXHIBIT No. 374

[fol. 2718]

SUMMARY

Adequacy of Power Supply Facilities
(1929–1936 Actual; 1937–1940 Estimated)

Carolina Power & Light Company

Tennessee Public Service Company

Holston River Electric Company

All in Kilowatts

	Actual					Forecast						
	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Name Plate Rating of Generators:												
Carolina Power & Light Company	144,800	252,800	252,800	252,800	252,800	252,800	249,050	249,050	249,050	249,050	249,050	249,050
Tennessee Public Service Company	6,275	6,275	6,275	6,275	6,275	6,275	6,275	3,275	3,275	3,275	3,275	3,275
Holston River Electric Company	0	0	0	0	0	0	0	0	0	0	0	0
Total Name Plate Rating	151,075	259,075	259,075	259,075	259,075	259,075	255,325	252,325	252,325	252,325	252,325	252,352
Power Purchased and Interchange	47,000	24,000	79,000	79,000	79,000	81,500	81,500	81,500	81,500	81,500	81,500	81,500
Customers Plants	5,800	2,600	3,100	4,800	6,300	6,800	10,000	11,000	11,000	11,000	11,000	11,000
Peak Capacity of Facilities:												
Carolina Power & Light Company	168,150	259,950	315,450	317,150	318,650	321,650	321,850	322,850	322,850	322,850	322,850	322,850
Tennessee Public Service Company	26,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150
Holston River Electric Company	0	0	0	0	0	0	0	0	0	0	0	0
Total Peak Capacity Available	194,300	263,100	318,600	320,300	321,800	324,800	325,000	326,000	326,000	326,000	326,000	326,000
Machine Capacity not Useful at System Load Factor	0	0	0	0	0	0	21,737	14,628	25,200	25,200	25,200	25,200
Total Peak Capacity at System Load Factor (x)	194,300	263,100	318,600	320,300	321,800	324,800	303,263	311,372	300,800	300,800	300,800	300,800
Territorial Peak Load	132,580	137,431	141,245	129,560	149,430	146,278	154,463	187,772	216,300	219,000	231,500	236,500
Total Surplus Capacity at System Load Factor	61,720	125,669	177,355	190,740	172,370	178,522	148,800	123,600	84,500	81,800	69,300	64,300
Less Reserve Capacity	22,800	48,800	48,800	48,800	48,800	48,800	48,800	48,800	48,800	48,800	48,800	48,800
Firm Capacity Surplus	38,920	76,869	128,555	141,940	123,570	129,722	100,000	74,800	35,700	33,000	20,500	15,500
System Load Factor for Period—% (x)	54.6	44.5	48.3	50.0	48.7	51.6	56.5	55.2	57.5	57.5	57.5	57.5

(x) For the dry period of a year of minimum water supply.

Complainants' Exhibit No. 374

[fol. 2719]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1929

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	0	0	0	0	0
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	151,075	149,400	95,500	141,500	68,500
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		0	0	0	0
High Rock "		10,000	0	10,000	0
Appalachian "		0	15,000	0	15,000
Tennessee El. Pr. Contract		23,000	13,200	3,000	13,200
Total Purchase and Interchange		47,000	35,200	47,000	35,200
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	0	0
Resale Customers with Plants		0	0	600	300
Other Secondary Customers		0	0	5,200	1,900
Total Resale & Secondary Customers		0	0	5,800	2,200
Total Capacity Available		196,400	130,700	194,300	105,900
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Elk Mountain Steam	6,000	6,000	3,000	6,000	3,000
Total Reserves	21,000	22,800	11,400	22,800	8,900
Total Capacity Less Reserves		173,600	119,300	171,500	97,000
Territorial System Load for Peak Season		132,580	72,413	132,580	72,418
Firm Surplus Capacity		41,020	46,887	38,920	24,587
Firm Surplus Capacity at System Load Factor—54.6%		41,000	22,400	38,920	20,800

COMPLAINANTS' EXHIBIT No. 374

[fol. 2720]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1930

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	3,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	259,075	254,400	133,500	236,500	83,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		0	0	0	0
High Rock "		10,000	0	10,000	0
Appalachian "		0	18,000	0	18,000
Total Purchase and Interchange		24,000	25,000	24,000	25 000
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	0	0
Resale Customers with Plants		0	0	600	300
Other Secondary Customers		0	0	2,000	1,200
Total Resale & Secondary Customers		0	0	2,600	1,500
Total Capacity Available		278,400	158,500	263,100	109,700
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	.....	32,000	.....
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		226,600	150,100	214,300	103,800
Territorial System Load for Peak Season		137,431	61,110	137,431	61,110
Firm Surplus Capacity		89,169	88,990	76,869	42,690
Firm Surplus Capacity at System Load Factor—44.5%		89,169	39,680	76,869	34,200

COMPLAINANTS' EXHIBIT No. 374

[fol. 2721]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1931

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	259,075	254,400	133,500	236,500	83,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Total Purchase and Interchange		79,000	47,900	79,000	59,300
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	0	0
Resale Customers with Plants		0	0	600	300
Other Secondary Customers		0	0	2,500	1,400
Total Resale & Secondary Customers		0	0	3,100	1,700
Total Capacity Available		333,400	181,400	318,600	144,200
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	0	32,000	0
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		281,600	173,000	269,800	138,300
Territorial System Load for Peak Season		141,245	68,185	141,245	68,185
Firm Surplus Capacity		140,355	104,815	128,555	70,115
Firm Surplus Capacity at System Load Factor—48.3%		140,355	67,790	128,555	62,090

COMPLAINANTS' EXHIBIT No. 374

[fol. 2722]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1932

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	259,075	254,400	133,500	236,500	83,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Total Purchase and Interchange		79,000	47,900	79,000	59,300
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	1,000	800
Resale Customers with Plants		0	0	800	400
Other Secondary Customers		0	0	3,000	1,700
Total Resale & Secondary Customers		0	0	4,800	2,900
Total Capacity Available		336,400	181,400	320,300	145,400
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	.....	32,000	.....
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		281,600	173,000	271,500	139,500
Territorial System Load for Peak Season		129,560	64,793	129,560	64,793
Firm Surplus Capacity		152,040	108,207	141,940	74,707
Firm Surplus Capacity at System Load Factor—50.0%		152,040	71,020	141,940	70,970

COMPLAINANTS' EXHIBIT No. 374

[fol. 2723]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1933

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	259,075	254,400	133,500	236,500	83,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Total Purchase and Interchange		79,000	47,900	79,000	59,300
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	2,500	2,000
Resale Customers with Plants		0	0	800	400
Other Secondary Customers		0	0	3,000	2,200
Total Resale & Secondary Customers		0	0	6,300	4,600
Total Capacity Available		333,400	181,400	321,800	147,100
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	.....	32,000	.....
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		281,600	173,000	273,000	141,200
Territorial System Load for Peak Season		149,430	72,728	149,430	72,728
Firm Surplus Capacity		132,170	100,272	123,570	68,472
Firm Surplus Capacity at System Load Factor—48.7%		132,200	64,380	123,570	60,179

COMPLAINANTS' EXHIBIT No. 374

[fol. 2724]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1934

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	3,750	3,000	3,000	3,000	3,000
Total Generating Capacity	259,075	254,400	133,500	236,500	83,200
Power Purchased & Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Tidewater Power Company		0	0	2,500	3,700
Total Purchase and Interchange		79,000	47,900	81,500	63,000
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	3,500	2,900
Resale Customers with Plants		0	0	800	400
Other Secondary Customers		0	0	2,500	1,900
Total Resale & Secondary Customers		0	0	6,800	5,200
Total Capacity Available		333,400	181,400	324,800	151,400
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	0	32,000	0
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		281,600	173,000	276,000	145,500
Territorial System Load for Peak Season		146,278	75,551	146,278	75,551
Firm Surplus Capacity		135,322	97,449	129,722	69,949
Firm Surplus Capacity at System Load Factor—51.6%		135,322	69,800	129,722	66,900

Complainants' Exhibit No. 374

[fol. 2725]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1935

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000			
Weaver — "	2,500	2,500	5,000	3,000	1,000
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	6,125	3,000	3,000	3,000	3,000
Other — "	0	0	0	0	0
Total Generating Capacity	255,325	251,400	130,500	333,500	80,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Tidewater Power Company		0	0	2,500	3,700
Total Purchase and Interchange		79,000	47,900	81,500	63,000
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	4,500	3,700
Resale Customers with Plants		0	0	1,000	500
Other Secondary Customers		0	0	4,500	2,200
Total Resale & Secondary Customers		0	0	10,000	6,400
Total Capacity Available		330,400	178,400	325,000	149,600
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	0	32,000	0
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		278,600	170,000	276,200	143,700
Territorial System Load for Peak Season		154,463	87,230	154,463	87,230
Firm Surplus Capacity		124,137	82,770	121,737	56,470
Firm Surplus Capacity at System Load Factor—56.5%		124,137	70,000	100,000	56,470
Excess Machine Capacity at System Load Factor		.....	.....	21,737	.....

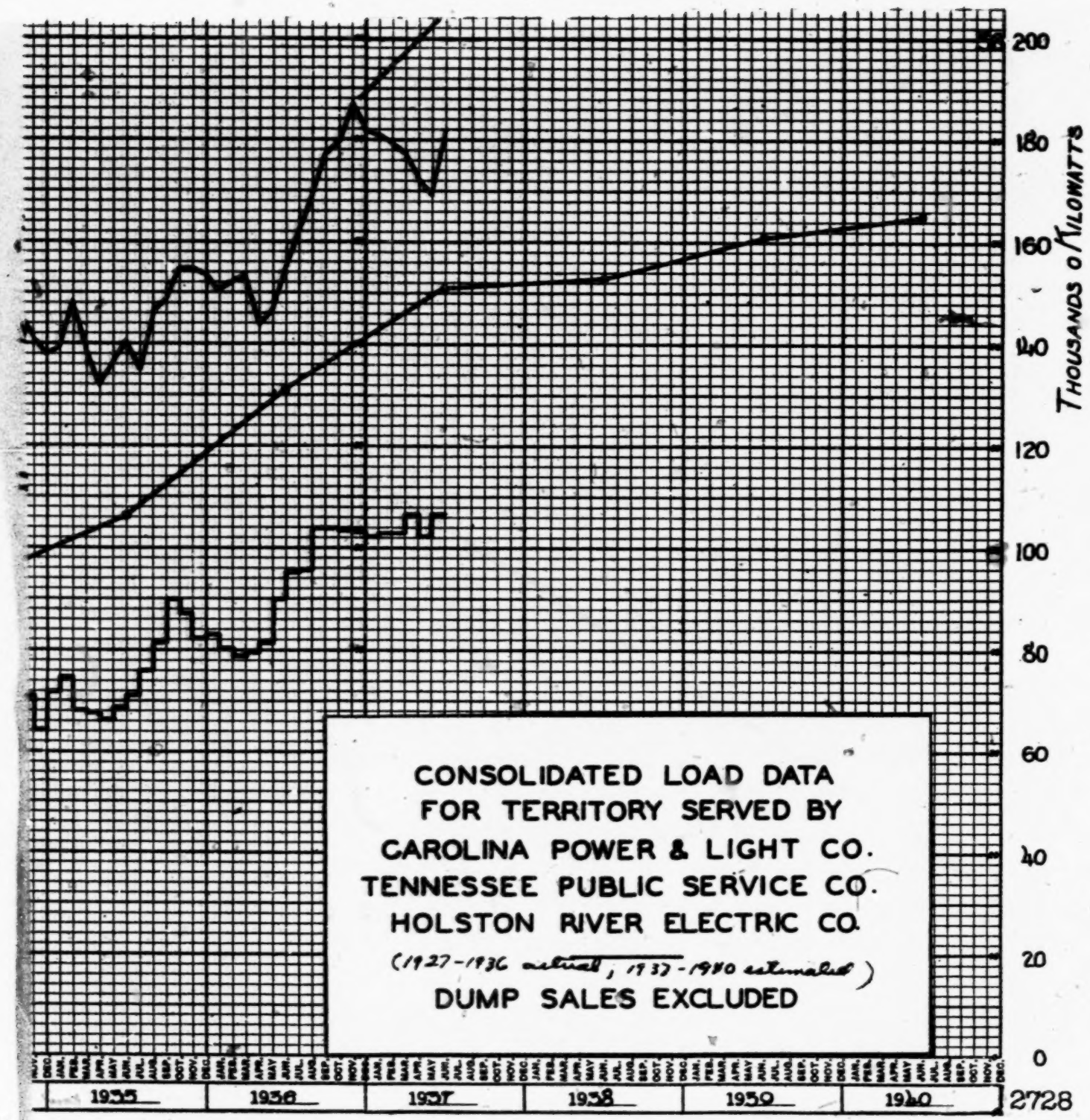
COMPLAINANTS' EXHIBIT No. 374

[fol. 2726]

Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

Power Supply Facilities
For the Year 1936

	Name Plate Rating of Generators Kilowatts	Dependable Capacity			
		Favorable Water Supply		Critical Water Supply	
		Peak kw.	Average kw.	Peak kw.	Average kw.
Generating Station:					
Tillery —Hydro	62,000	62,000	39,000	62,000	16,000
Blewett — "	24,600	24,000		24,000	
Waterville — "	108,000	105,000	38,000	95,000	14,700
Marshall — "	3,000	3,000	5,000	3,000	1,000
Weaver — "	2,500	2,500			
Buckhorn — "	2,900	2,900			
Other — "	3,200	2,500			
Elk Mountain—Steam	13,000	13,000	12,000	13,000	12,000
Cape Fear — "	30,000	33,500	33,500	33,500	33,500
Knoxville — "	3,125	3,000	3,000	3,000	3,000
Other — "	0	0	0	0	0
Total Generating Capacity	252,325	251,400	130,500	233,500	80,200
Power Purchased and Interchange:					
Wateree Contract		14,000	7,000	14,000	7,000
Saluda "		55,000	17,100	55,000	28,500
High Rock "		10,000	0	10,000	0
Appalachian "		0	23,800	0	23,800
Tidewater Power Company		0	0	2,500	3,700
Total Purchase and Interchange		79,000	47,900	81,500	63,000
Plants of Resale & Secondary Customers:					
Champion Fibre Company		0	0	5,500	4,500
Resale Customers with Plants		0	0	1,000	500
Other Secondary Customers		0	0	4,500	2,600
Total Resale & Secondary Customers		0	0	11,000	7,600
Total Capacity Available		330,400	178,400	326,000	150,800
Reserves:					
Cape Fear Steam	15,000	16,800	8,400	16,800	5,900
Waterville Hydro	36,000	35,000	0	32,000	0
Total Reserves	51,000	51,800	8,400	48,800	5,900
Total Capacity Less Reserves		278,600	170,000	277,200	144,900
Territorial System Load for Peak Season		187,772	103,589	187,772	103,589
Firm Surplus Capacity		90,828	66,411	89,428	41,311
Firm Surplus Capacity at System Load Factor—55.2%		90,800	50,100	74,800	41,300
Excess Machine Capacity at System Load Factor		.....	.....	14,628	.....


CONSOLIDATED LOAD DATA
FOR TERRITORY SERVED BY
CAROLINA POWER & LIGHT CO.
TENNESSEE PUBLIC SERVICE CO.
HOLSTON RIVER ELECTRIC CO.
(1927-1936 actual; 1937-1940 estimated)
DUMP SALES EXCLUDED
THOUSANDS OF KILOWATTS
200
180
160
140
120
100
80
60
40
20
0
1935
1936
1937
1938
1939
1940
2728

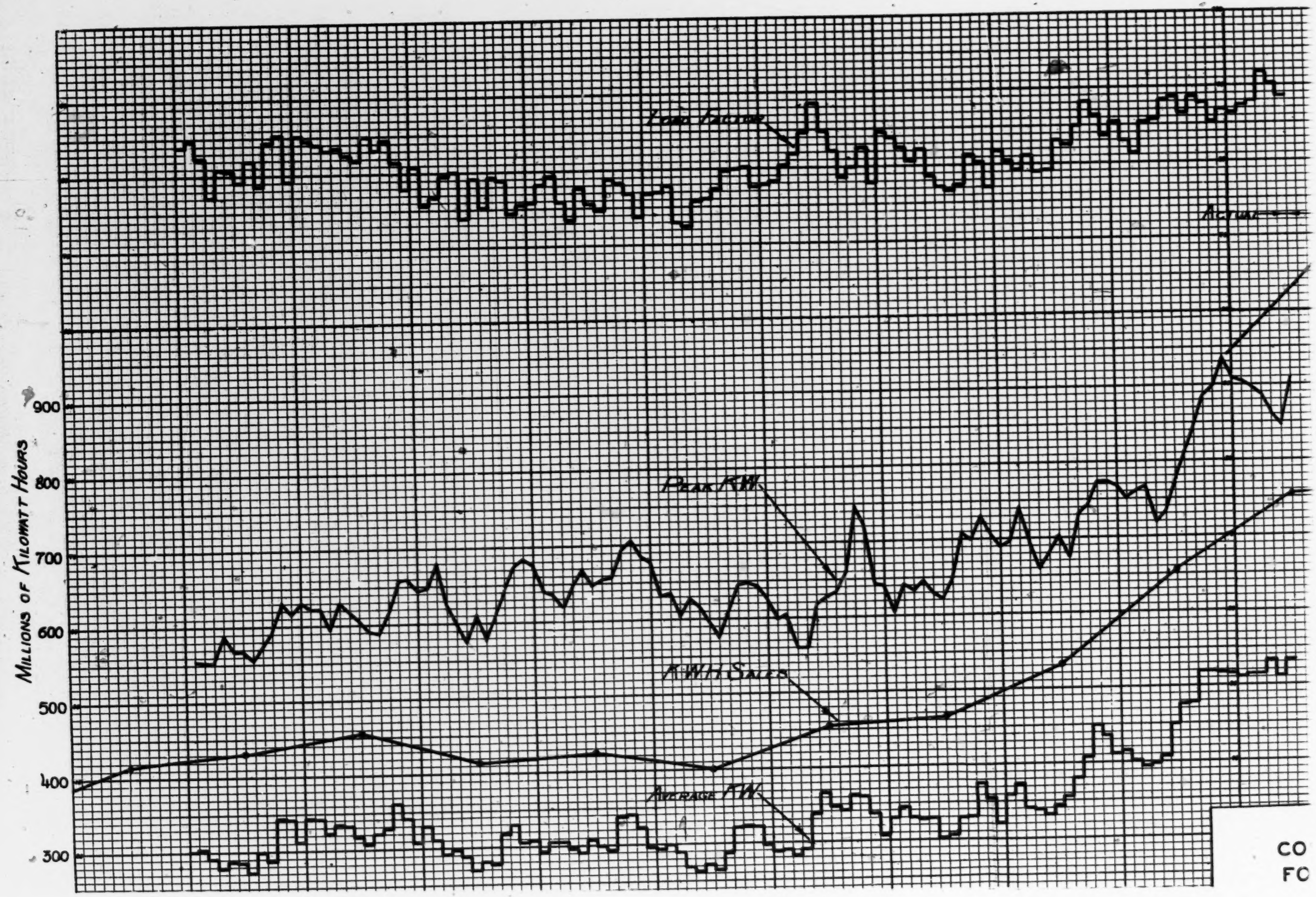
3137

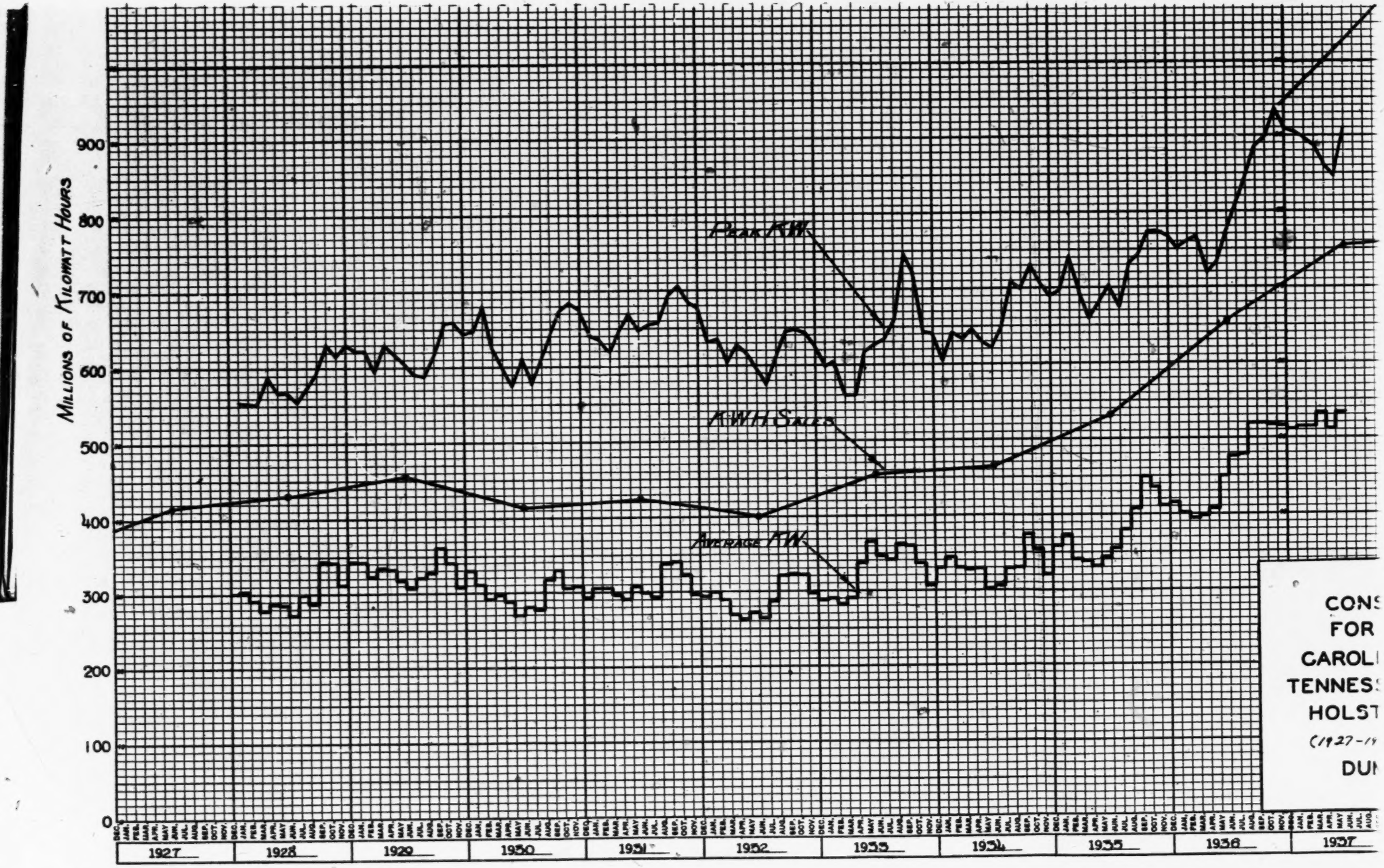
Complainants' Exhibit No. 374

[fol. 2727]

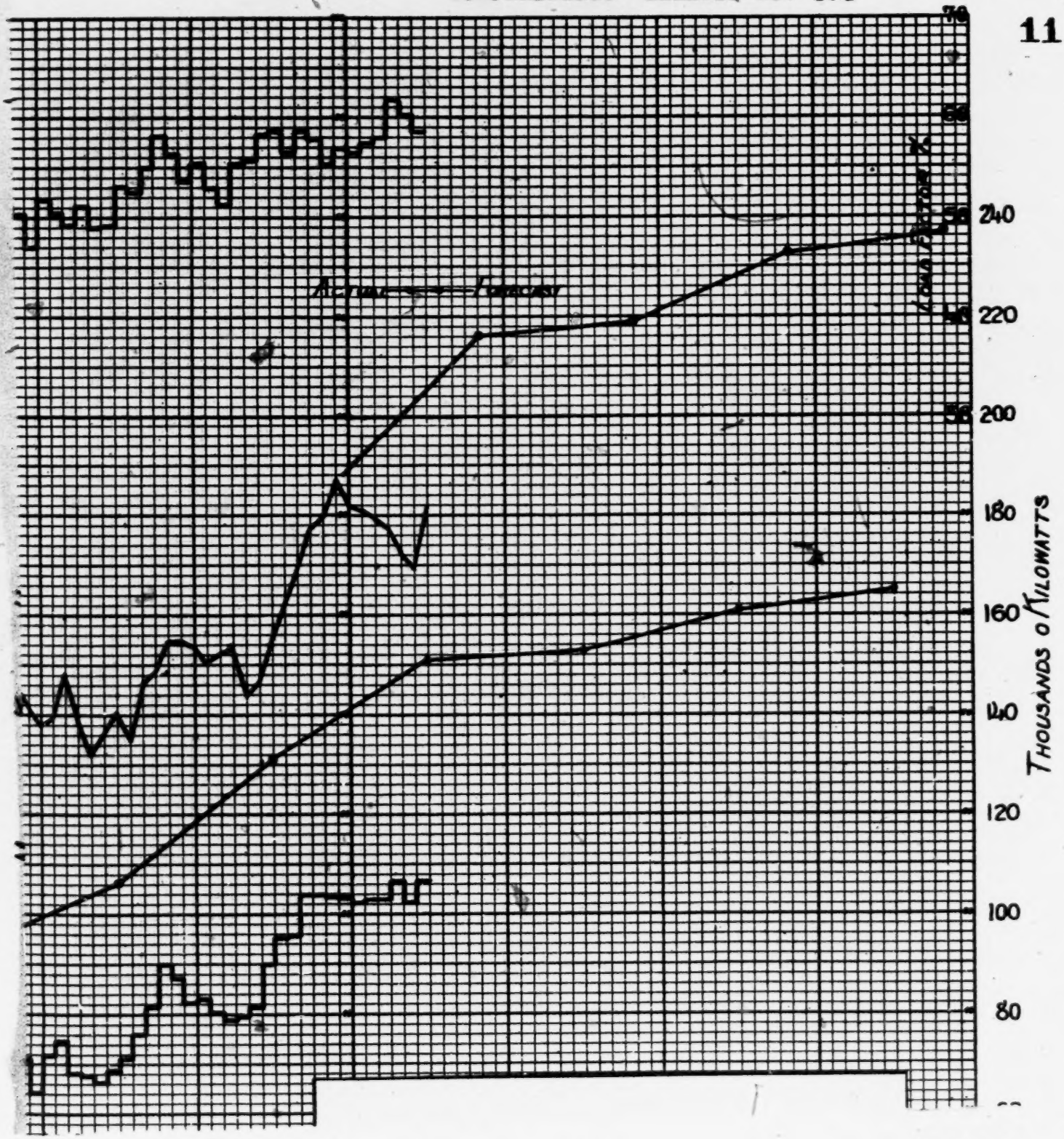
Summary of Power Requirements for Territory Served by
(1928-36 Actual; 1937-1940 Estimated)
Carolina Power & Light Company
Tennessee Public Service Company
Holston River Electric Company

	Actual						Forecast						
	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Total Energy Sales—M kwh.													
Carolina Power & Light Co.	350,243	367,440	442,384	594,692	673,477	807,763	930,921	882,450	867,040	882,500	882,500	882,500	882,500
Tennessee Pub. Serv. Co.	83,906	105,738	101,794	100,546	82,181	79,148	85,315	99,457	119,732	144,391	156,349	162,434	165,545
Holston River Elec. Co.	280	355	545	774	950	1,030	1,223	1,262	1,414	1,644	1,800	1,890	1,961
Total Sales—M kwh.	434,429	473,533	544,723	696,012	756,608	887,941	1,017,459	983,169	988,186	1,028,535	1,040,649	1,046,824	1,050,006
Inter-company & Dump Sales Included Above—M kwh.													
Carolina Power & Light Co. Dump Sales.	3,563	15,921	76,294	158,166	261,682	342,433	453,709	338,151	193,798	107,325	95,178	51,252	33,268
Carolina Power & Light Co. Sales to T. P. S. Co.	0	0	53,878	112,545	93,305	89,840	97,757	113,497	186,720	165,200	179,000	186,000	189,600
Tenn. Pub. Serv. Sales to Holston River Elec. Co.	157	448	695	958	1,161	1,223	1,424	1,530	1,731	1,980	2,130	2,225	2,300
Total Inter-company & Dump Sales—M kwh.	3,720	16,369	130,867	271,669	356,148	433,496	552,890	453,178	332,249	274,505	276,308	239,477	225,168
Total Territorial Sales—M kwh.	430,709	457,164	413,856	424,343	400,460	454,445	464,569	529,991	655,937	754,030	764,341	807,347	824,838
Unaccounted for Losses—M kwh.	97,857	122,267	113,245	115,668	113,282	118,267	118,554	133,391	150,065	174,070	175,459	185,653	189,662
Unaccounted for Losses—%.	18.5	21.1	21.5	21.4	22.1	20.6	20.3	20.1	18.6	18.7	18.7	18.7	18.7
Total Territorial Energy Requirements—M kwh.	528,566	579,431	527,801	540,011	513,692	572,712	583,123	663,382	806,002	928,100	939,800	993,000	1,014,500
Annual Load Factor of Territorial Load—%.	47.6	49.9	43.8	43.6	45.1	43.7	45.5	49.0	48.9	49.0	49.0	49.0	49.0
Territorial Peak Load—kw.	126,490	132,580	137,431	141,245	129,560	149,430	146,278	154,463	187,772	216,300	219,000	231,500	236,500
Kwh. Territorial Sales per kw. of Territorial Peak	3,405	3,449	3,011	3,004	3,091	3,041	3,176	3,431	3,490	3,490	3,490	3,490	3,490


Millions of Kilowatt Hours
900
800
700
600
500
400
300
Peak KW
KWH Sales
Average KW
Actual
CO
FO


Millions of Kilowatt Hours
900
800
700
600
500
400
300
200
100
0
Peak KW
A.W.H. Sales
Average KW
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937

COMPLAINANTS' EXHIBIT NO. 574



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Complainants' Exhibit No. 375

[fol. 2729]

Summary

Adequacy of Power Supply Facilities

Dependable Capacity and Firm Territorial Peak Loads
(1929–1936 Actual; 1937–1940 Estimated)

All in Kilowatts

	Actual								Forecast			
	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Name Plate Rating of Generators:												
Arkansas Power & Light Company	50,934	50,934	50,934	106,934	103,162	102,902	99,940	99,904	106,895	106,895	106,895	106,895
Louisiana Power & Light Company	90,518	90,518	90,518	90,518	90,218	89,988	86,874	86,874	86,762	86,762	86,762	36,762
Mississippi Power & Light Company	20,488	20,488	20,488	20,588	19,874	19,874	19,478	19,146	17,174	16,874	16,674	16,674
Memphis Power & Light Company	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000
West Tennessee Power & Light Company	5,228	5,228	5,228	5,228	5,228	5,228	5,228	5,228	5,228	5,228	5,228	5,228
Total Name Plate Rating	221,168	221,168	221,168	277,268	272,482	271,986	265,520	265,152	270,059	269,759	269,559	269,559
Peak Capacity of Facilities:												
Arkansas Power & Light Company	40,000	41,100	41,100	77,100	77,100	77,100	76,350	76,100	86,850	114,850	124,850	124,850
Louisiana Power & Light Company	131,550	131,550	131,550	131,550	131,550	129,300	129,050	129,050	125,550	129,050	129,050	129,050
Mississippi Power & Light Company	16,000	16,000	16,000	16,000	15,450	15,450	15,000	14,700	14,750	14,500	14,600	14,600
Memphis Power & Light Company	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	54,000	54,000	54,000	54,000
West Tennessee Power & Light Company	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100
Total	243,650	244,750	244,750	280,750	280,200	277,950	276,500	275,950	285,250	316,500	326,600	326,600
Territorial Peak Load (a)	156,351	163,204	169,260	162,410	164,082	168,234	181,681	218,961	245,000	263,900	278,800	290,700
Total Surplus Capacity	87,299	81,546	75,490	118,340	116,118	109,716	94,819	56,989	40,250	52,600	47,800	35,900
Less Reserves	39,500	40,000	40,000	40,000	40,000	40,000	40,500	41,500	42,500	43,500	44,000	44,500
Capacity Surplus	47,799	41,546	35,940	78,340	76,118	69,716	54,319	15,489	2,250	9,100	3,800	8,600†

(a) Exclusive of Load for territory served as distribution voltage by power generated at New Orleans.
†Red in copy.

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COMPLAINANTS' EXHIBIT No. 375

[fol. 2730]

Arkansas Power & Light Company

Power Supply Facilities Available
1929 to 1939 Inclusive
(1929–1936 Actual; 1937–1939 Estimated)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Name Plate Rating of Generators—kw.:											
Remmel —Hydro	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Carpenter — "	.....	.....	.....	56,000	56,000	56,000	56,000	56,000	56,000	56,000	56,000
Russellville — "	666	666	666	666	666	666	666	666	666	666	666
Russellville —Steam	990	990	990	990	990	990	990	990	0	0	0
Eldorado — "	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Pine Bluff — "	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450
Little Rock — "	18,050	18,050	18,050	18,050	17,150	17,150	15,650	15,650	24,650	24,650	24,650
Other — "	4,844	4,844	4,844	4,844	1,972	1,972	510	510	0	0	0
Brinkley —Diesel	192	192	192	192	192	192	192	192	192	192	192
Batesville — "	602	602	602	602	602	602	602	602	602	602	602
Berryville — "	200	200	200	200	200	200	200	200	200	200	200
Cotter — "	282	282	282	282	282	282	282	282	282	282	282
Earle — "	234	234	234	234	234	234	234	234	234	234	234
Harrison — "	440	440	440	440	440	440	440	440	440	440	440
Lepanto — "	348	348	348	348	348	348	348	348	348	348	348
McGehee — "	440	440	440	440	440	440	440	440	440	440	440
Magnolia — "	336	336	336	336	336	336	336	336	0	0	0
Dermott — "	270	270	270	270	270	270	270	270	270	270	270
Monticello — "	120	120	120	120	120	120	120	120	120	120	120
Other — "	570	570	570	570	570	310	310	274	101	101	101
Total Name Plate Rating—kw.	50,934	50,934	50,934	106,934	103,162	102,902	99,940	99,904	106,895	106,895	106,895
Dependable Peak Generating Capacity—kw.:											
Remmel —Hydro	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Carpenter — " (a)	.....	.....	.....	36,000	36,000	36,000	36,000	36,000	36,000	39,000	39,000
Russellville — "	0	0	0	0	0	0	0	0	0	0	0
Eldorado —Steam	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Pine Bluff — "	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Little Rock — "	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	25,000	25,000	25,000
Other — "	1,000	1,000	1,000	1,000	1,000	1,000	250	0	0	0	0
All Diesel Plants	1,750	1,750	1,750	1,750	1,750	1,750	1,570	1,750	1,500	1,500	1,500
Total Peak Generating Capacity—kw.	37,000	37,000	37,000	73,000	73,000	73,000	72,250	72,000	82,750	85,750	85,750
Purchase and Interchange—kw.:											
Citizens Electric Co.	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Caddo River Lumber Co.	.....	100	100	100	100	100	100	100	100	100	100
Southwestern G. & E. Co. at Barryville	.....	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Tennessee Valley Authority	.....	.....	.....	.....	.....	.....	.....	.....	0	25,000	35,000
Total Purchase and Interchange—kw.	3,000	4,100	4,100	4,100	4,100	4,100	4,100	4,100	4,100	29,100	39,100
Total Dependable Peak Capacity—kw.	40,000	41,100	41,100	77,100	77,100	77,100	76,350	76,100	86,850	114,850	124,850

(a) Peak Capacity during low water periods as limited by Water Supply, System Load Factor, etc.

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COMPLAINANTS' EXHIBIT No. 375

[fol. 2731]

Louisiana Power & Light Company

Power Supply Facilities Available
1929 to 1939 Inclusive
(1929–1936 Actual; 1937–1939 Estimated)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Name Plate Rating of Generators—kw.:											
Sterlington —Steam	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000
Amite — "	2,500	2,500	2,500	2,500	2,500	2,500	0	0	0	0	0
Donaldsonville —Diesel	776	776	776	776	776	776	776	776	776	776	776
Hammond — "	300	300	300	300	300	0	0	0	0	0	0
Tallulah — "	240	240	240	240	240	240	240	240	240	240	240
Haynesville — "	220	220	220	220	220	220	220	220	220	220	220
Bernice — "	184	184	184	184	184	184	0	0	0	0	0
Winsboro — "	144	144	144	144	144	144	0	0	0	0	0
Luling — "	140	140	140	140	140	140	0	0	0	0	0
Ferriday — "	132	132	132	132	132	0	0	0	0	0	0
Kenner — "	104	104	104	104	104	0	0	0	0	0	0
Columbia — "	100	100	100	100	100	100	56	56	56	56	56
Church Point — "	104	104	104	104	104	104	104	104	104	104	104
Marksville — "	180	180	180	180	180	180	180	180	180	180	180
Napoleonville — "	96	96	96	96	96	96	96	96	96	96	96
Other — "	298	298	298	298	298	298	202	202	90	90	90
Total Name Plate Rating—kw.	90,518	90,518	90,518	90,518	90,218	89,982	86,874	86,874	86,762	86,762	86,762
Dependable Peak Generating Capacity—kw.:											
Sterlington —Steam	96,000	96,000	96,000	96,000	96,000	96,000	96,000	96,000	96,000	96,000	96,000
Amite — "	2,000	2,000	2,000	2,000	2,000	0	0	0	0	0	0
Donaldsonville —Diesel	750	750	750	750	750	750	750	750	750	750	750
All Other — "	1,000	1,000	1,000	1,000	1,000	750	500	500	500	500	500
Total Peak Generating Capacity—kw.	99,750	99,750	99,750	99,750	99,750	97,500	97,250	97,250	97,250	97,250	97,250
Purchase and Interchange Peak—kw.:											
New Orleans Public Service Inc. and Baton Rouge Electric Co.	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	24,000	30,000	30,000
Purchase and Interchange Peak—kw.:											
Celotex Company	.....	.....	.....	.....	.....	.....	.....	.....	2,500	.....	.....
So Kraft Corporation—Bastrop	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Gulf Public Service Co.—Winfield	400	400	400	400	400	400	400	400	400	400	400
Union Oil Mill—Monroe	400	400	400	400	400	400	400	400	400	400	400
Total	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	4,300	1,800	1,800
Total Peak Capacity Available—kw.	131,550	131,550	131,550	131,550	131,550	129,300	129,050	129,050	125,550	129,050	129,050

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Complainants' Exhibit No. 375

[fol. 2732]

Mississippi Power & Light Company

Power Supply Facilities Available
1929 to 1939 Inclusive
(1929–1936 Actual; 1937–1939 Estimated)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Name Plate Rating of Generators—kw.:											
Jackson —Steam	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	4,500	4,500	4,500
Vicksburg — "	2,350	2,350	2,350	2,350	2,350	2,350	2,350	2,350	2,350	2,350	2,350
Fernwood — "	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Greenville — "	1,776	1,776	1,776	1,776	1,776	1,776	1,776	1,776	1,776	1,776	1,776
Brookhaven — "	660	660	660	660	660	660	660	540	540	540	540
Grenada — "	200	200	200	200	200	200	200	200	0	0	0
Cleveland — "	430	430	430	430	430	430	266	266	0	0	0
Winona — "	270	270	270	270	270	270	270	270	0	0	0
Other — "	354	354	354	354	354	354	72	72	0	0	0
Grenada —Diesel	336	336	336	336	336	336	336	336	336	336	336
Merit — "	378	378	378	378	378	378	340	340	340	340	340
Sardis — "	240	240	240	240	240	240	240	240	240	240	240
Rolling Fork — "	215	215	215	215	215	215	215	215	215	215	215
Lexington — "	.....	.....	.....	.....	.....	.....	136	136	136	136	136
Charleston — "	196	196	196	196	196	196	196	136	136	136	136
Senatobia — "	220	220	220	220	160	160	160	160	160	160	160
Tunica — "	136	136	136	136	136	136	136	136	136	136	136
Carthage — "	232	232	232	232	232	232	184	184	184	184	184
Mt. Olive — "	88	88	88	88	213	213	213	213	213	213	213
Tylerton — "	122	122	122	222	222	222	222	222	222	222	222
Liberty — "	80	80	80	80	80	80	80	80	80	80	80
Natchez — "	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Crystal Springs— "	.....	.....	.....	.....	.....	.....	.....	360	360	360	360
All Other — "	1,955	1,955	1,955	1,955	1,176	1,176	1,176	664	500	200	0
Total Name Plate Rating—kw	20,488	20,488	20,488	20,588	19,874	19,874	19,478	19,146	17,174	16,874	16,674
Dependable Peak Generating Capacity—kw.:											
Jackson —Steam	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
Vicksburg — "	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Fernwood — "	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Greenville — "	1,250	1,250	1,250	1,250	900	900	900	900	900	900	900
Brookhaven — "	600	600	600	600	600	600	600	500	500	500	500
Other Steam — "	500	500	500	500	500	500	0	0	0	0	0
Natchez —Diesel	2,150	2,150	2,150	2,150	2,150	2,150	2,150	2,150	2,150	2,150	2,150
All Other — "	2,000	2,000	2,000	2,000	1,750	1,750	1,750	1,500	1,500	1,200	1,200
Total Peak Generating Capacity—kw	14,000	14,000	14,000	14,000	13,450	13,450	12,900	12,550	12,550	12,250	12,250
Purchase and Wholesale Customer—kw.:											
Yazoo City	300	300	300	300	300	300	400	450	500	550	600
McComb Cotton Mills	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Anderson Tully Lumber Co	200	200	200	200	200	200	200	200	200	200	200
Total	2,000	2,000	2,000	2,000	2,000	2,000	2,100	2,150	2,200	2,250	2,350
Total Peak Capacity Available—kw	16,000	16,000	16,000	16,000	15,450	15,450	15,000	14,700	14,750	14,500	14,600

Complainants' Exhibit No. 375

[fol. 2733]

Memphis Power & Light Company
and
West Tennessee Power & Light Company

Power Supply Facilities Available
1929 to 1939 Inclusive
(1929–1936 Actual; 1937–1939 Estimated)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Name Plate Rating of Generators—kw.:											
Memphis—Unit #1	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
" — " #2	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
" — " #3	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
" — " #4	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
" —D. C. Units	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,000
Total Memphis —Steam	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000
Jackson — "	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650	3,650
Brownsville— "	310	310	310	310	310	310	310	310	310	310	310
Ripley — "	500	500	500	500	500	500	500	500	500	500	500
Humboldt — " (a)	570	570	570	570	570	570	570	570	570	570	570
Halls — "	60	60	60	60	60	60	60	60	60	60	60
Henderson —Diesel	78	78	78	78	78	78	78	78	78	78	78
Halls — "	60	60	60	60	60	60	60	60	60	60	68
Total Name Plate Rating—kw	59,228	59,228	59,228	59,228	59,228	59,228	59,228	59,228	59,228	59,228	59,228
Total Peak Generating Capacity—kw.: (Summer conditions)											
Memphis—Unit #1	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
" — " #2	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	17,000	17,000	17,000
" — " #3	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	9,000	9,000	9,000
" — " #4	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
" —D. C. Units	0	0	0	0	0	0	0	0	0	0	0
Total Memphis —Steam	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	54,000	54,000	54,000
Jackson — "	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Ripley — "	450	450	450	450	450	450	450	450	450	450	450
Humboldt — "	400	400	400	400	400	400	400	400	400	400	400
All Other Plants	250	250	250	250	250	250	250	250	250	250	250
Total Peak Generating Capacity—kw	56,100	56,100	56,100	56,100	56,100	56,100	56,100	56,100	58,100	58,100	58,100
Total Peak Capacity Available—kw	56,100	56,100	56,100	56,100	56,100	56,100	56,100	56,100	58,100	58,100	58,100

(a) Leased Plant.

Complainants' Exhibit No. 375

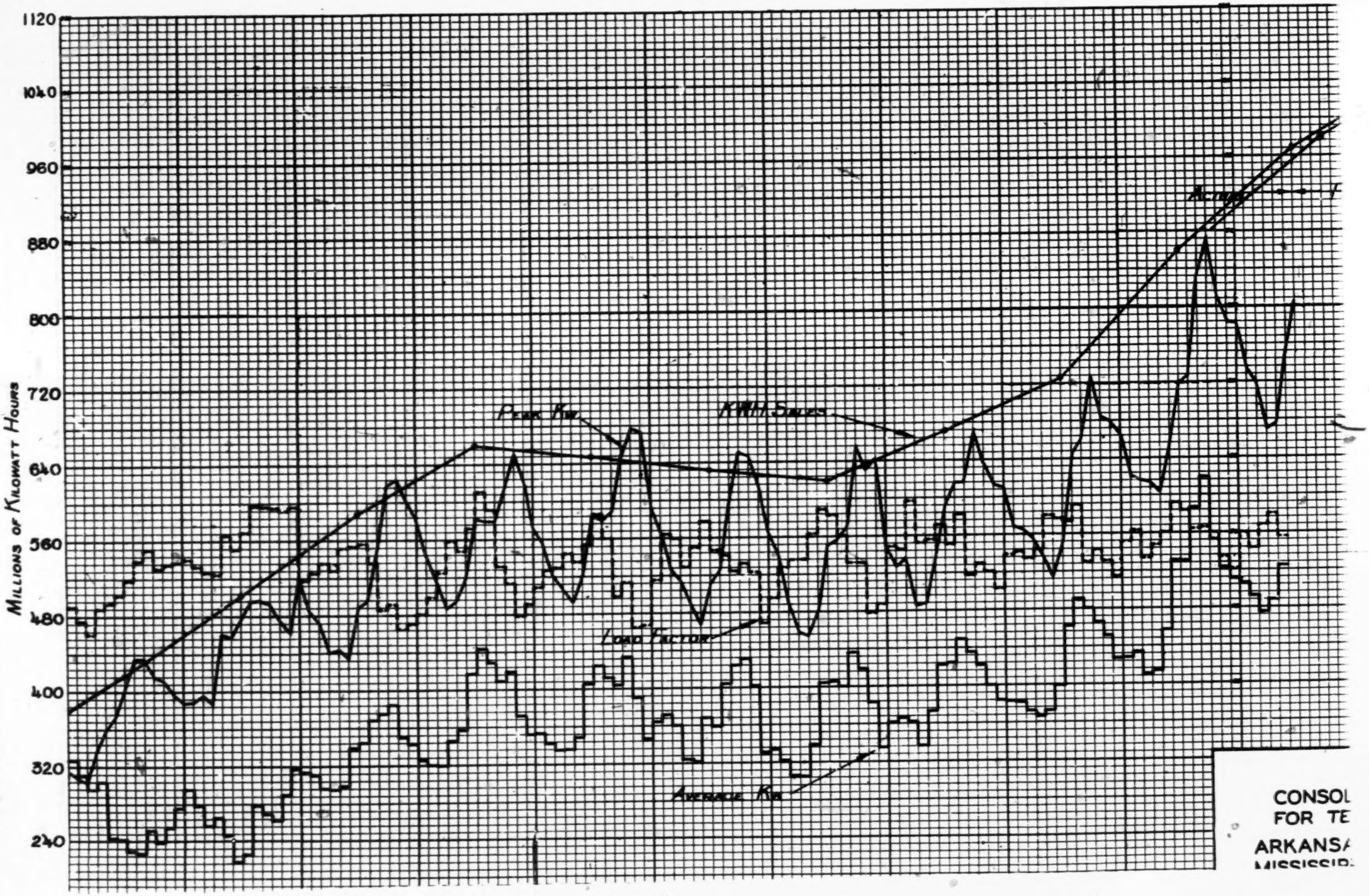
[fol. 2734]

Summary of Power Requirements for Territory Served By

Arkansas Power & Light Company
Louisiana Power & Light Company
Mississippi Power & Light Company
Memphis Power & Light Company
West Tennessee Power & Light Company
(1927–1936 Actual; 1937–1940 Estimated)

	Actual										Forecast			
	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Total Energy Sales—M kwh.:														
Arkansas Power & Light Co.	139,218	214,193	264,058	268,017	240,369	238,959	235,889	255,716	279,239	311,797	358,116	378,105	402,644	422,885
Louisiana Power & Light Co. (x)	194,476	325,762	421,645	514,184	522,781	465,763	447,441	498,101	469,469	662,125	665,769	594,066	509,474	525,120
Mississippi Power & Light Co.	48,205	63,295	81,546	102,984	111,499	102,155	101,678	115,439	131,702	157,608	182,352	199,358	212,791	223,175
Memphis Power & Light Co.	145,645	153,070	160,766	170,850	166,532	149,653	141,860	162,506	169,823	193,767	223,540	255,971	272,282	285,220
West Tennessee Power & Light Co.	10,047	11,882	13,682	14,374	13,664	13,433	12,802	13,584	15,108	18,860	23,369	26,367	28,397	29,740
Total Sales—M kwh.	537,591	768,202	941,697	1,070,409	1,054,845	969,963	939,670	1,045,346	1,065,341	1,344,157	1,448,146	1,453,867	1,425,588	1,486,140
Inter-company Sales Included Above—M kwh.:														
Arkansas Power & Light Co.	665	12,911	6,560	3,899	5,321	13,731	19,034	4,772	22,531	1,336	1,500	1,500	1,500	1,500
Louisiana Power & Light Co.	104,509	235,704	336,247	392,304	385,448	312,470	290,790	357,544	304,228	465,278	460,000	387,000	299,700	313,200
Mississippi Power & Light Co.	0	0	0	0	0	0	0	0	0	0	700	5,000	5,000	5,000
Memphis Power & Light Co.	15,958	16,366	10,941	13,783	14,966	11,470	9,761	11,181	12,276	18,071	18,000	18,000	18,000	18,000
West Tennessee Power & Light Co.	0	110	11	31	35	1	0	1	1	0	0	0	0	0
Total Inter-company Sales—M kwh.	121,132	265,091	353,759	410,017	405,770	337,672	319,585	373,498	339,036	484,685	480,200	411,500	324,200	337,700
Total Territorial Sales—M kwh.	416,459	503,111	587,938	660,392	649,075	632,291	620,085	671,848	726,305	859,472	967,946	1,042,367	1,101,388	1,148,440
Unaccounted for Losses—M kwh.	88,838	126,538	145,470	164,241	178,733	183,761	181,955	203,152	196,764	239,213	272,254	292,433	308,612	321,460
Unaccounted-for Losses—%	17.3	19.9	19.8	19.9	21.6	22.5	22.7	23.2	21.3	21.8	22.0	21.9	21.9	21.9
Total Territorial Energy Requirements—M kwh.	514,777	636,704	733,408	824,633	827,808	816,052	802,040	875,000	923,069	1,098,685	1,240,200	1,334,800	1,410,000	1,469,900
Annual Load Factor—%	56.6	54.0	53.5	57.7	55.8	57.2	55.8	59.4	58.0	57.2	57.8	57.8	57.7	57.7
Territorial Peak Load—kw.	103,803	134,358	156,351	163,204	169,260	162,410	164,082	168,234	181,681	218,961	245,000	263,900	278,000	290,700
Kwh. Territorial Sales per kw. of Territorial Peak	4,010	3,750	3,760	4,046	3,833	3,894	3,777	3,990	3,997	3,922	3,950	3,950	3,950	3,950

(x) Exclusive of area served at distribution voltage by power generated at New Orleans.


1120
1040
960
880
800
720
640
560
480
400
320
240
Millions of Kilowatt Hours
Peak Kw
K Wh. Sales
Load Factor
Average Kw
CONSOL
FOR TE
ARKANSA

MILLIONS OF KILOWATT HOURS

880
800
720
640
560
480
400
320
240
160
80
0

PEAK KW.

KWH. SALES

LOAD FACTOR

AVERAGE KW.

DEC. JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV.

1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937

CONS
FOR
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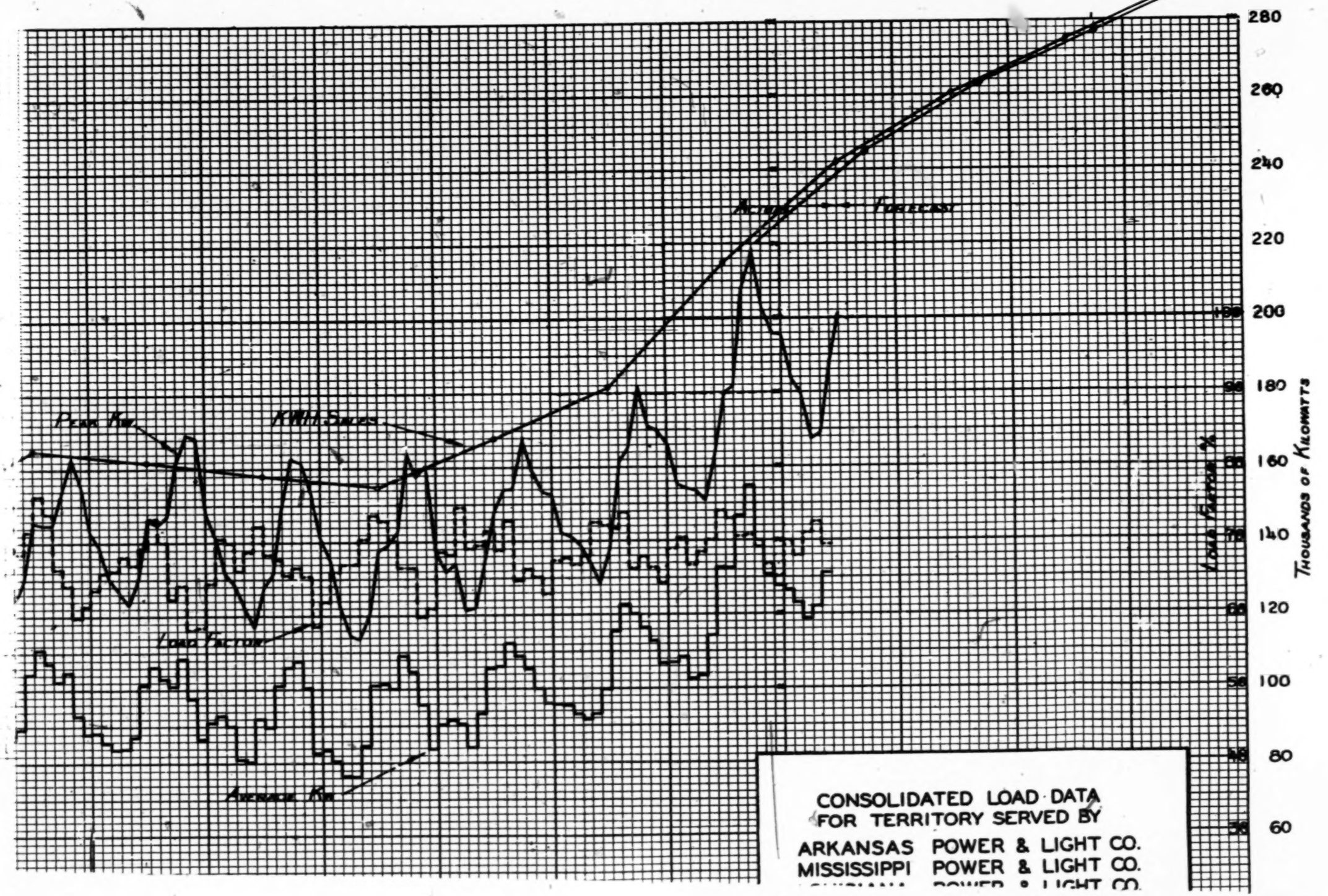
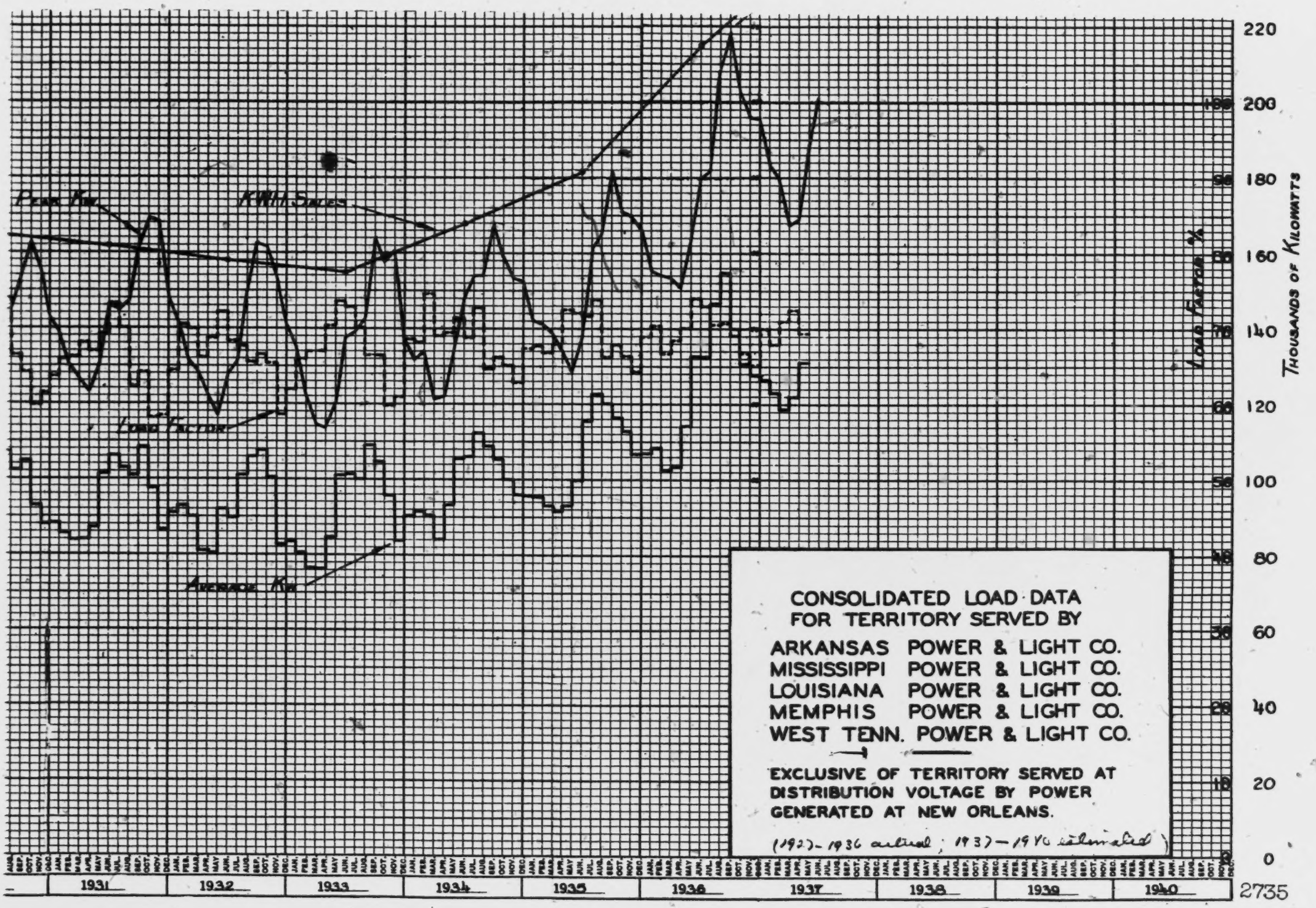
(192)-19

COMPLAINANTS' EXHIBIT NO. 375




PEAK KW
KWH SALES
LOAD FACTOR
AVERAGE KW
CONSOLIDATED LOAD DATA
FOR TERRITORY SERVED BY
ARKANSAS POWER & LIGHT CO.
MISSISSIPPI POWER & LIGHT CO.
LOUISIANA POWER & LIGHT CO.
MEMPHIS POWER & LIGHT CO.
WEST TENN. POWER & LIGHT CO.
EXCLUSIVE OF TERRITORY SERVED AT DISTRIBUTION VOLTAGE BY POWER GENERATED AT NEW ORLEANS.
(1932-1936 actual; 1937-1940 estimated)
THOUSANDS OF KILOWATTS
LOAD FACTOR %
220
200
180
160
140
120
100
80
60
40
20
0
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940

2735

3146

Complainants' Exhibit No. 376

[folio 2736]

Summary of Power Requirements for Territory Served by Birmingham Electric Company
(1927–1936 Actual; 1937–1940 Estimated)

	Actual										Forecast			
	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Total Energy Sales—M kwh	251,214	262,729	257,882	247,836	224,044	171,715	167,708	188,218	199.453	243,759	273,074	293,970	312,515	325,248
Total Territorial Sales—M kwh	251,214	262,729	257,882	247,836	224,044	171,715	167,708	188,218	199,453	243,759	273,074	293,970	312,515	325,248
Unaccounted for Losses—M kwh	37,859	36,106	35,275	29,602	28,179	26,567	28,304	26,942	31,371	35,798	39,026	42,030	44,685	46,552
Unaccounted for Losses—%	13.1	12.1	12.0	10.7	11.2	13.4	14.4	12.5	13.6	12.8	12.5	12.5	12.5	12.5
Total Territorial Energy Requirements—M kwh	289,073	298,835	293,157	277,438	252,223	198,282	196,012	215,160	230,824	279,557	312,100	336,000	357,200	371,800
Annual Load Factor—%	63.3	63.5	61.0	60.8	61.0	55.0	59.6	58.1	57.7	60.6	61.0	61.0	61.0	61.0
Territorial Peak Load—kw	52,128	53,720	54,820	52,120	47,200	41,200	37,600	42,310	45,712	52,588	58,400	62,900	66,800	69,600
Kwh. Territorial Sales per kilowatt of Territorial Peak	4,819	4,891	4,704	4,755	4,747	4,168	4,460	4,449	4,363	4,635	4,675	4,675	4,675	4,675

COMPLAINANTS' EXHIBIT No. 376

[fol. 2737]

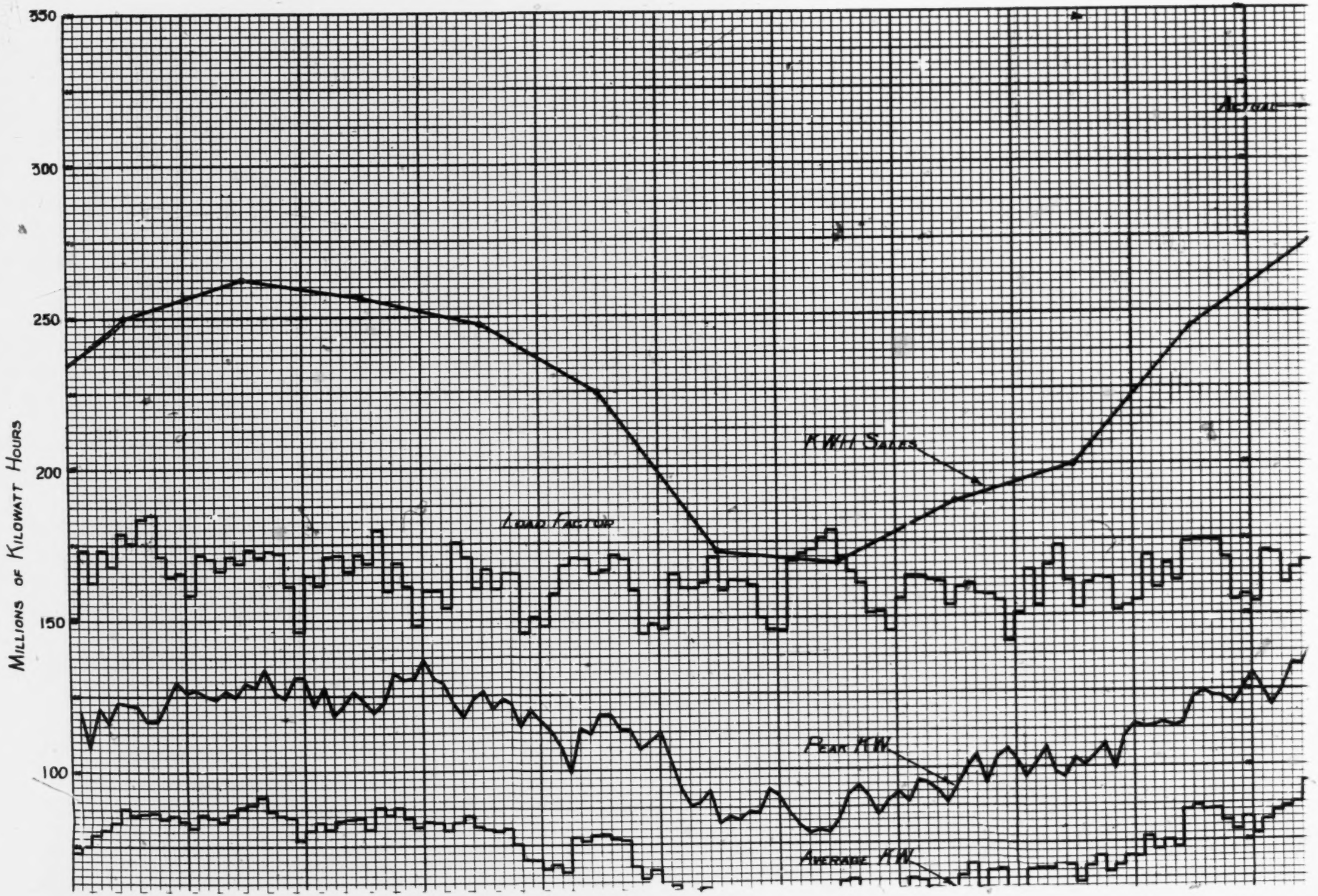
Birmingham Electric Company

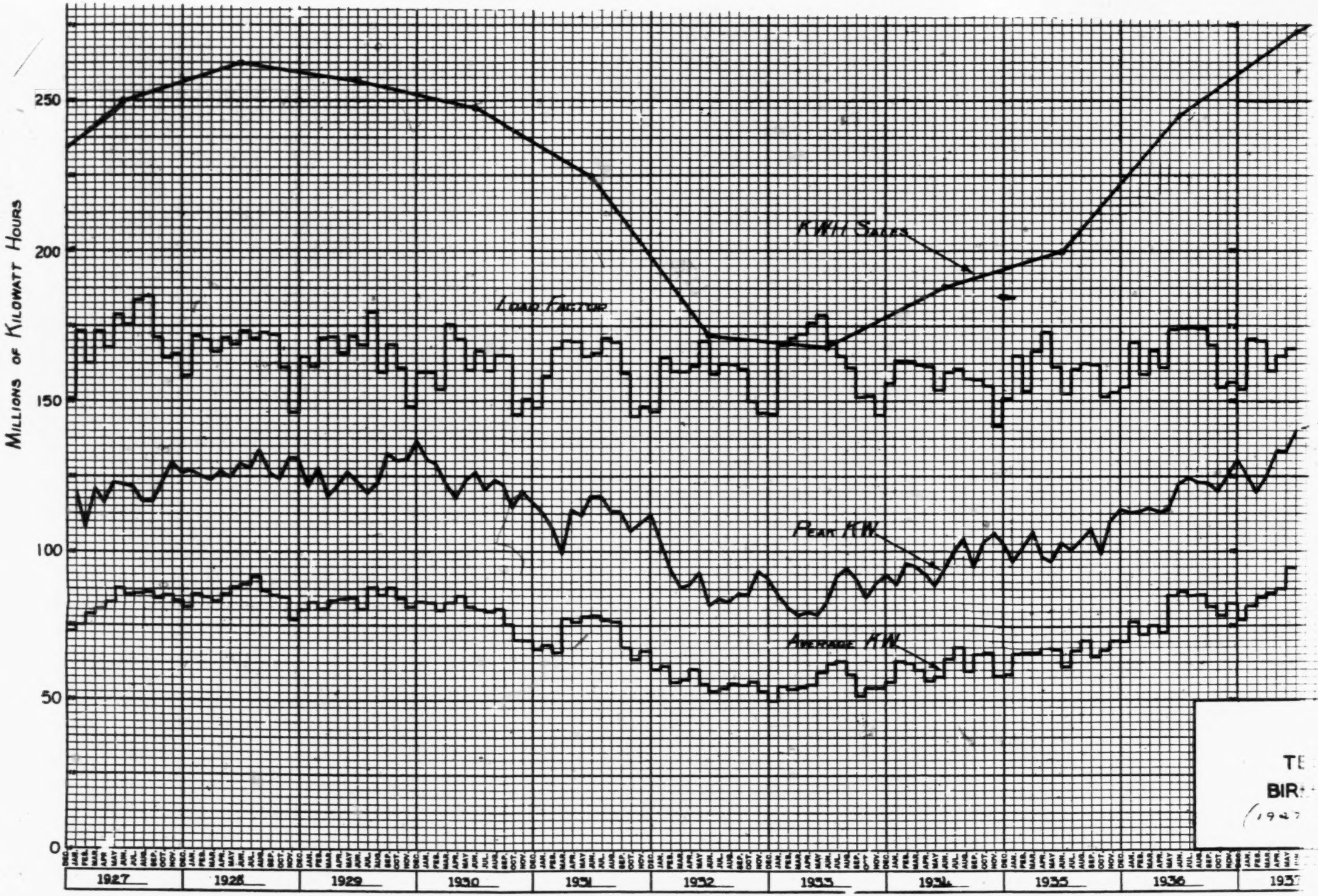
Data from Monthly Financial and Operating Report

Month	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
					Maximum Hour—KW						
January	48,328	51,040	48,480	52,120	45,120	41,200	34,240	35,725	38,752	45,201	50,077
February	43,088	50,120	51,360	51,640	43,080	37,360	32,480	38,425	40,369	45,158	47,820
March	48,488	49,720	47,240	48,800	39,200	34,960	31,360	38,074	42,747	45,727	50,037
April	46,512	50,800	48,880	46,960	45,360	35,600	31,760	37,057	39,567	45,197	53,663
May	49,360	49,960	50,800	49,800	44,880	37,520	31,400	35,163	38,886	45,764	53,263
June	49,064	51,899	49,360	50,600	47,200	32,800	33,200	37,445	41,388	49,235	56,198
July	48,792	51,240	47,880	48,000	47,200	33,480	36,840	39,847	40,164	49,879	
August	46,779	53,720	49,040	49,520	45,080	33,120	37,600	41,985	41,414	49,275	
September	46,800	50,400	53,320	48,720	45,080	34,320	36,331	37,751	43,349	49,215	
October	49,280	49,720	52,040	45,520	42,720	34,160	33,794	41,653	39,731	48,146	
November	52,128	52,480	52,200	48,160	43,800	37,400	35,693	42,310	44,076	50,565	
December	50,592	52,680	54,820	46,480	44,840	36,440	37,105	40,942	45,712	52,588	
12 Months	52,128	53,720	54,820	52,120	47,200	41,200	37,600	42,310	45,712	52,588	
					Total Purchased—M-KWH						
January	21,690	24,075	23,809	24,784	19,863	18,000	14,875	16,649	17,398	20,883	22,932
February	20,126	23,140	22,343	22,187	18,391	16,557	14,747	16,930	17,622	20,650	21,966
March	23,422	25,207	24,026	23,830	19,621	16,724	15,978	18,592	19,595	21,704	25,239
April	23,206	24,053	24,066	23,757	22,295	16,418	15,537	17,332	19,020	21,766	24,799
May	24,683	25,456	25,065	25,294	22,682	18,091	16,479	16,891	20,074	28,051	26,020
June	25,277	25,318	24,390	23,427	22,466	16,042	17,133	16,672	19,283	24,700	27,278
July	25,482	26,497	24,038	23,830	23,356	15,878	18,560	18,981	18,250	25,899	
August	25,616	27,386	26,242	23,639	22,968	16,059	18,751	20,150	19,866	25,659	
September	24,902	24,957	24,519	23,240	22,086	16,064	16,946	17,178	20,347	24,755	
October	25,144	25,457	26,181	22,432	20,303	16,397	15,262	19,508	19,233	24,303	
November	24,630	24,338	24,242	20,175	18,329	16,196	15,631	18,951	19,318	22,650	
December	24,929	22,951	24,235	20,842	19,862	15,856	16,112	17,327	20,818	24,539	
12 Months	289,073	298,835	293,157	277,438	252,223	198,282	196,012	215,160	230,824	279,557	

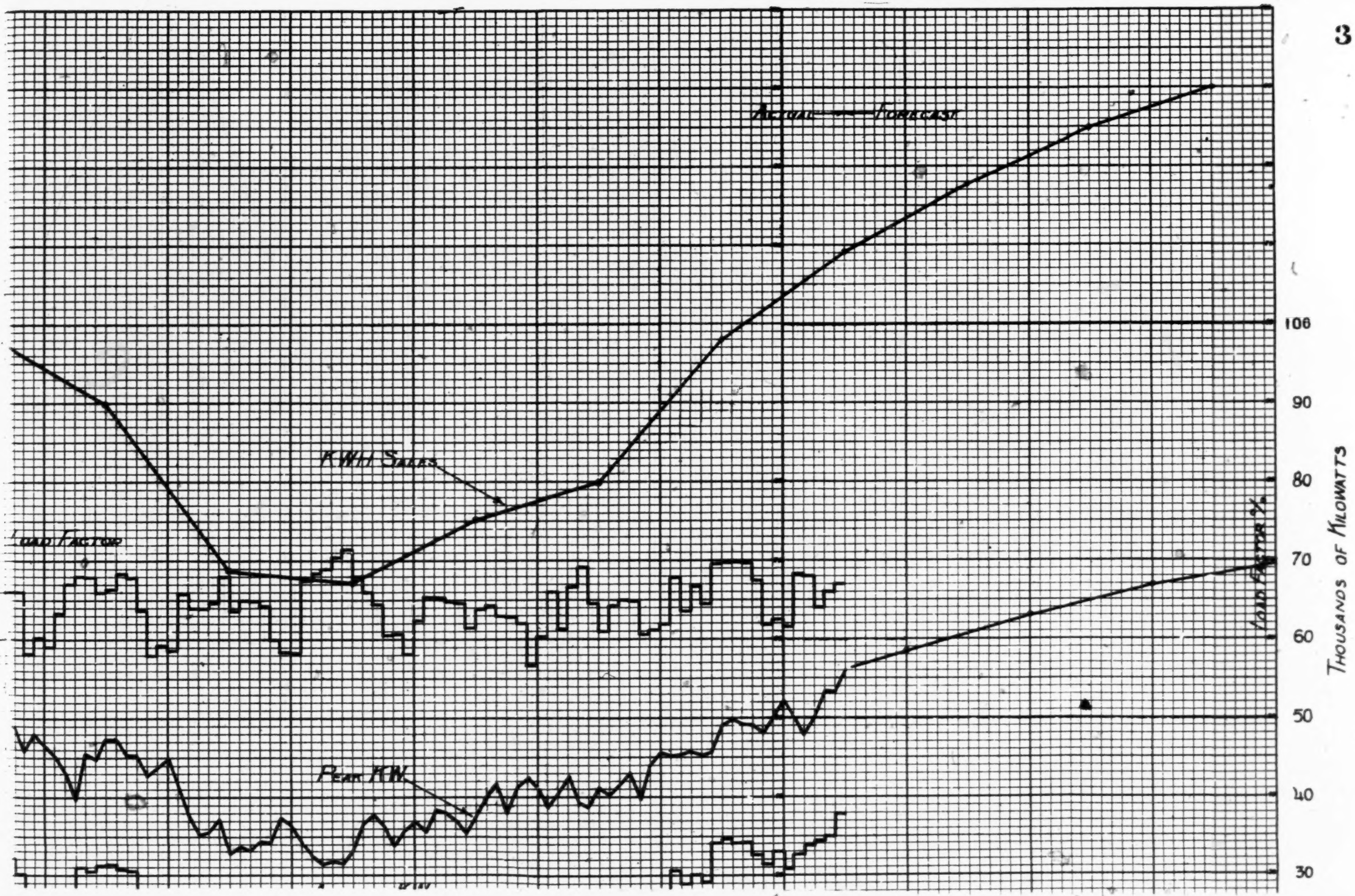
Average Hourly Purchased—KW

		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.		% L.F.
January	29,153	60.3	32,359	63.5	32,001	66.1	33,312	63.9	26,698	59.2	24,194	58.7	19,993	58.4	22,378	62.6	23,384	60.3	28,069	62.1	30,823	61.6
February	29,949	69.5	33,247	66.4	33,248	64.6	33,016	64.0	27,368	63.5	23,789	63.7	21,945	67.6	25,194	65.6	26,223	65.0	29,670	65.7	32,688	68.4
March	31,481	65.0	33,880	68.2	32,293	68.4	32,030	65.6	26,372	67.3	22,479	64.3	21,476	68.5	24,989	65.6	26,337	61.6	29,172	63.8	33,923	67.8
April	32,231	69.5	34,796	68.5	33,425	68.5	32,996	70.3	30,965	68.3	22,803	64.1	21,579	67.9	24,072	65.0	26,417	67.8	30,231	66.9	34,430	64.2
May	33,149	67.0	34,215	68.4	33,690	68.3	33,997	68.3	30,487	67.9	24,316	64.8	22,149	70.6	22,703	64.6	26,981	69.4	29,639	64.8	34,973	65.7
June	35,068	71.5	35,164	67.7	33,875	68.6	32,538	64.3	31,202	66.1	22,281	67.9	23,796	71.7	23,156	61.8	26,782	64.8	34,306	69.7	37,886	67.4
July	34,250	70.3	35,614	69.5	32,309	67.4	32,030	66.7	31,393	66.5	21,341	63.7	24,946	67.7	25,512	64.0	24,530	61.1	34,811	69.8		
August	34,430	73.5	36,809	68.4	35,272	69.4	31,772	64.2	30,871	68.5	21,585	65.2	25,203	67.9	27,083	64.5	26,702	64.5	34,488	70.0		
September	34,586	70.0	34,663	68.8	34,053	71.8	32,278	66.3	30,675	68.0	22,231	64.8	23,536	64.8	23,858	63.2	28,260	65.2	34,382	69.9		
October	33,796	68.6	34,216	68.8	35,190	66.0	30,151	66.2	27,289	63.9	22,039	64.5	20,514	60.7	26,221	63.0	25,851	65.1	32,665	67.8		
November	34,208	65.8	33,803	64.4	33,669	64.5	28,021	58.2	25,457	58.1	22,494	60.1	21,710	60.8	26,321	62.2	26,831	60.9	31,458	62.2		
December	33,507	66.2	30,848	58.5	32,577	62.2	28,015	60.3	26,698	60.6	21,311	58.5	21,657	58.4	23,288	56.9	27,981	61.2	32,980	62.7		
12 Months	32,999	63.4	34,114	63.4	33,465	62.4	31,671	60.8	28,793	61.0	22,635	54.0	22,376	59.5	24,562	58.1	26,350	57.6	31,913	60.7		


350
300
250
200
150
100
Millions of Kilowatt Hours
KWH Sales
Load Factor
Peak KW
Average KW


MILLIONS OF KILOWATT HOURS
250
200
150
100
50
0
KWH SALES
LOAD FACTOR
PEAK KW
AVERAGE KW
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936

COMPLAINANTS' EXHIBIT NO. 576



COMPLAINANTS' EXHIBIT NO. 577 (EXCLUDED)

STATE OF ALABAMA,

CITY OF SCOTTSBORO.

JACKSON COUNTY.

CONTINGENT POWER CONTRACT FOR

RESIDENTIAL CONSUMERS

FOR AND IN CONSIDERATION of One ($1.00) Dollar, in hand paid by J. W. Woodall, Mayor of the City of Scottsboro, Alabama, on behalf of the said city, the receipt whereof is hereby acknowledged, and in further consideration of the opportunity to secure lower electric rates for myself, and of the benefits that will accrue to me as a citizen of said city by reason of the net revenue which will be earned by the city from the municipal operation of its own electrical distribution system, it is hereby agreed as follows:

1. That when and if the City of Scottsboro, Alabama, has electrical energy of the required voltage for sale at the premises of the undersigned, and the city stands ready, and will sell to the undersigned such electrical current, so long as he is a purchaser of electrical current or energy in the territory served by the city's municipal system, the undersigned will purchase his entire requirements of electrical energy from the city, for a period of ten (10) years, beginning as soon as the service is available, but not later than December 31, 1938, it being understood that the said city will make every effort to provide the necessary facilities for the sale of electrical energy at the premises of the undersigned purchaser, prior to Dec. 31, 1938.

2. It is further agreed that the rates to be charged by the city and paid by the undersigned shall be the published municipal resale rates proposed by the Tennessee Valley Authority for residential consumers.

3. It is further agreed that in consideration of the foregoing, the City of Scottsboro will, when petitioned by a majority of the consumers of electrical energy, place the management and operation

[illegible] In Consideration of the [illegible], [illegible]
paid by J. W. Woodall, Mayor of the City of Scottsboro, Alabama, on behalf of the said city, the receipt whereof is hereby acknowledged, and in further consideration of the opportunity to secure lower electric rates for myself, and of the benefits that will accrue to me as a citizen of said city by reason of the net revenue which will be earned by the city from the municipal operation of its own electrical distribution system, it is hereby agreed as follows:

1. That when and if the City of Scottsboro, Alabama, has electrical energy of the required voltage for sale at the premises of the undersigned, and the city stands ready, and will sell to the undersigned such electrical current, so long as he is a purchaser of electrical current or energy in the territory served by the city's municipal system, the undersigned will purchase his entire requirements of electrical energy from the city, for a period of ten (10) years, beginning as soon as the service is available, but not later than December 31, 1938, it being understood that the said city will make every effort to provide the necessary facilities for the sale of electrical energy at the premises of the undersigned purchaser, prior to Dec. 31, 1938.

2. It is further agreed that the rates to be charged by the city and paid by the undersigned shall be the published municipal resale rates proposed by the Tennessee Valley Authority for residential consumers.

3. It is further agreed that in consideration of the foregoing, the City of Scottsboro will, when petitioned by a majority of the consumers of electrical energy, place the management and operation of its power distribution system under the direct control and supervision of a non political power commission.

Purchaser _____

Address _____

Witness _____ _____

Date _____ 193__ City of Scottsboro, Alabama.

2739

3149

COMPLAINANTS' EXHIBIT NO. 578

TENNESSEE VALLEY AUTHORITY

Knoxville, Tennessee

February 22, 1936

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

Mr. Ray McCullough
Editor Sand Mountain Banner
Guntersville, Alabama

My dear Mr. McCullough:

Judge Grubb's injunction, as you will recall, halted the TVA's cooperation with rural electrification activities in Alabama. That injunction will soon be dissolved as a result of the recent decision of the Supreme Court of the United States, upholding the constitutionality of TVA. This means that plans for making TVA electricity available in your area can proceed.

The Authority, as you know, is constructing a high-voltage transmission line from Wheeler Dam to the site near Guntersville. Engineering field surveys have been completed on this line and it is now entering the construction stage. Completion of this line by the end of the summer will supply an adequate source of power from Wilson Dam for rural electrification in this area.

During the past few months, many requests for cooperation in farm electrification programs have come to our field representatives. I can assure you that we are now ready to work with you in your efforts to bring electricity to the farms of your section of Alabama.

I should be glad to hear from you regarding any problems or questions which you and your neighbors have in this connection.

Mr. Ray McCullough
Editor Sand Mountain Banner
Guntersville, Alabama

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I should be glad to hear from you regarding any problems or questions which you and your neighbors have in this connection.

Sincerely yours,

David E. Lilienthal

David E. Lilienthal
Director

2740

3150

TENNESSEE VALLEY AUTHORITY
KNOXVILLE, TENNESSEE

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVC
PAYMENT OF POSTAGE, $300

KNOXVILLE FEB 22 8 PM 1936 TENN.

BUY U.S. SA' BONDS
ASK YOUR POST'

Mr. Ray McCullough
Editor Sand Mountain Banner
Guntersville, Alabama

COMPLAINANTS' EXHIBIT NO. 578

[fol. 2742] COMPLAINANTS' EXHIBIT No. 379

(No exhibit bearing this number.)

[fol. 2743] COMPLAINANTS' EXHIBIT No. 380

Agreement Between Tennessee Valley Authority and Promoters of the North Georgia Electric Membership Corporation

This Agreement, entered into this 6th day of April, 1936, between D. S. Middleton, R. H. Bandy, R. P. Brison, T. W. Colvard, J. C. Johnston, R. C. Fuller, E. P. Hall and R. C. Pittman, being all of the promoters of the North Georgia Electric Membership Corporation (hereinafter called "Promoters"), and the Tennessee Valley Authority, a corporation created by the Tennessee Valley Authority Act of 1933 (hereinafter called "Authority"):

Witnesseth:

Whereas, Authority is empowered by Section 10 of the Tennessee Valley Authority Act to promote and encourage the fullest possible use of electric light and power on farms and in small villages by constructing rural transmission lines thereto; and

Whereas, Promoters, representing numerous farmers and farm organizations in Catoosa, Chattooga, Whitfield, Murray, Walker, Gordon and Dade Counties, State of Georgia, have requested Authority to construct rural trans- [fol. 2744] mission and distribution lines in said Counties and to sell the same to a corporation to be organized by Promoters for purchasing and operating such lines; and

Whereas, Promoters and Authority desire to set forth and define, during the period preceding the completion of the organization of said Corporation, the terms and conditions upon which Authority shall build such lines:

Now, Therefore, for and in consideration of the mutual covenants contained herein, the parties hereto mutually agree as follows:

1. Authority agrees to construct in the above listed Counties for the Corporation to be organized by Promoters such rural transmission and distribution lines as Authority may deem feasible from the standpoint of both Authority and Corporation.

2. Promoters agree to take the necessary steps to procure and complete as early as possible the incorporation under the Laws of the State of Georgia of a Corporation to be known as the North Georgia Electric Membership Corporation, the purpose of which shall be the acquisition and operation of electric transmission and distribution facilities for supplying electric light and power primarily to its own members at the lowest possible cost consistent with sound economy and good business practice, and without profit. Promoters shall be the incorporators of such Corporation and the Directors thereof for the first year after its incorporation or until their successors are elected.

[fol. 2745] 3. Promoters agree that when the organization of such Corporation is complete, Promoters will—

(a) Assign to the Corporation all their rights and obligations under this contract, and, as incorporators, members and directors of the Corporation, accept such assignment on behalf of the Corporation:

(b) Execute, as Incorporators, members and directors of the Corporation, a contract between the Corporation and Authority under which contract the Corporation agrees to accept a transfer from Authority of such rural transmission and distribution lines as Authority shall have constructed or may construct for the Corporation, and agrees to reimburse Authority for the cost to Authority of constructing such lines, including overheads, Corporation to pay such obligation to Authority out of the revenues accruing to Corporation from the operation of such facilities;

(c) Execute, as incorporators, members and directors of the Corporation, a standard power contract with Authority, under which the Corporation agrees to purchase power from Authority at wholesale and distribute the same to its members.

4. Promoters agree to secure at their own expense the easements necessary for the construction of the lines which Authority elects to build for the Corporation hereunder. [fol. 2746] Such easements shall be secured in form acceptable to Authority, shall run to and be the property of Promoters and assigns (or Corporation and assigns, if secured

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after the Corporation is organized), and shall be assigned by Promoters to Corporation without charge as soon as Corporation is organized. Provided, however, that in Catoosa County easements shall be secured by Promoters in the name of Authority and assigns, and shall be assigned by Authority to the Corporation, without charge, at the time the lines are transferred to Corporation.

5. Promoters agree to procure, in the name of Promoters of Corporation (except in Catoosa County, where franchises shall be secured in the name of Authority,) all the franchises and consents from the governing bodies of counties and the governing bodies of incorporated towns which may be necessary for the construction and operation by Authority or Corporation of the rural lines herein provided for. If possible, these franchises and consents shall be secured in such form as will permit their assignment by Promoters to Corporation without the necessity for approval of such assignment by said Courts and governing bodies.

[fol. 2747] In Witness Whereof, the parties hereto have set their hands the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors.

Attest: Charles E. Hoffman, Assistant Secretary.

(Signed) R. P. Brison, E. P. Hall, Jr., D. S. Middleton, T. W. Colvard, Jr., R. H. Bandy, J. C. Johnston, R. C. Fuller, R. C. Pittman, Promoters of the North Georgia Electric Membership Corporation.

Identified as form of agreement submitted to the meeting of the Board of Directors and of the Stockholders of North Georgia Electric Membership Corporation held at Bank of Dalton Bldg., Dalton, Georgia, on June 15, 1936.

(S.) J. C. Johnston, Secretary. (Seal North Georgia Electric Membership Corporation.)

[fol. 2748] COMPLAINANTS' EXHIBIT No. 381

Petition for Charter of Incorporation of the North Georgia Electric Membership Corporation.

(Omitted)

COMPLAINANTS' EXHIBIT No. 382

Order of Whitfield County (Georgia) Superior Court granting charter to North Georgia Electric Membership Corporation.

(Omitted)

[fol. 2749] COMPLAINANTS' EXHIBIT No. 383

Assignment Contract between North Georgia Electric Membership Corporation and Promoters of North Georgia Electric Membership Corporation

Whereas, D. S. Middleton, R. H. Bandy, R. P. Brison, T. W. Colvard, J. C. Johnston, R. C. Fuller, E. P. Hall, and R. C. Pittman, Promoters of the North Georgia Electric Membership Corporation, executed an agreement with the Tennessee Valley Authority on April 6, 1936, whereby Authority agreed to construct certain rural electric lines for the North Georgia Electric Membership Corporation, and to sell and convey such lines to said Corporation when the organization of the Corporation should have been perfected and the rural electric lines completed, and

Whereas, Promoters agreed that as incorporators and directors of said Corporation they would accept the conveyance of such lines on behalf of the Corporation, and agree on behalf of the Corporation to pay Authority therefor the actual cost to Authority of constructing the same, and

Whereas, said contract of April 6, 1936, contained various other agreements and provided that the rights and obliga-[fol. 2750] tions of the Promoters thereunder should be assigned to and accepted by Corporation when the organization of the Corporation should have been perfected, and

Whereas, the North Georgia Electric Membership Corporation has been duly incorporated and organized under the laws of the State of Georgia and the parties hereto desire to effect the assignment provided for in said contract of April 6, 1936:

Now, Therefore, in consideration of the mutual covenants contained herein, the parties hereto do mutually agree as follows:

1. D. S. Middleton, R. H. Bandy, R. P. Brison, T. W. Colvard, J. C. Johnston, R. C. Fuller, E. P. Hall, and R. C.

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Pittman, Promoters of the North Georgia Electric Membership Corporation, do hereby assign, transfer and release all their rights and obligations under that contract entitled "Agreement between Tennessee Valley Authority and Promoters of the North Georgia Electric Membership Corporation", executed on April 6, 1936, to the North Georgia Electric Membership Corporation.

2. The North Georgia Electric Membership Corporation hereby accepts the assignment and transfer of all the rights and privileges contained in said contract of April 6, 1936, and assumes and undertakes to fully discharge all the obligations incurred by the Promoters of the Corporation in said contract.

[fol. 2751] In Witness Whereof, the parties hereto set their hands this 16 day of June, 1936.

North Georgia Electric Membership Corporation, by R. H. Bandy, President.

Attest: J. C. Johnston, Secretary.

D. S. Middleton, R. H. Bandy, R. P. Brison, T. W. Colvard, J. C. Johnston, R. C. Fuller, E. P. Hall, R. C. Pittman, Promoters of the North Georgia Electric Membership Corporation. (Seal North Georgia Electric Membership Corporation.)

Attest: —— ——.

JLF: WTM: LDN.

Identified as form of assignment contract submitted to the meeting of the stockholders and of the directors of North Georgia Electric Membership Corporation held at Bank of Dalton Bldg., Dalton, Georgia, on June 15, 1936.

[fol. 2752] COMPLAINANTS' EXHIBIT No. 384

Map of the lines of the North Georgia Electric Membership Corporation.

(Omitted)

[fol. 2753] COMPLAINANTS' EXHIBIT No. 385 (Excluded)

Construction loan contract between United States of America (Rural Electrification Administration) and North Georgia Electric Membership Corporation, dated September 2, 1936, in the amount of $375,000.00.

(Omitted)

COMPLAINANTS' EXHIBIT No. 386 (Excluded)

Mortgage and Deed of Trust of North Georgia Electric Membership Corporation to The First National Bank of Dalton, Georgia, to secure the loan from Rural Electrification Administration.

(Omitted)

[fol. 2754] COMPLAINANTS' EXHIBIT No. 387

By-Laws of North Georgia Electric Membership Corporation

Article 1

Certificate of Incorporation

Section 1. The name, duration, location of principal office, place of business and purposes of the Corporation shall be as set forth in the Certificate of Incorporation.

Article II

Capital Stock

Section 1. The Board of Directors of the Corporation (hereinafter called "Board") shall have the power to issue or authorize the issuance of the common stock of the Corporation in an amount not to exceed Forty Thousand Dollars ($40,000.00), consisting of shares with a par value of Ten Dollars ($10.00) per share.

Section 2. The Secretary of the Corporation shall keep a book showing the number of shares of stock which have

been issued by the Corporation, the purchasers thereof, and any assignments, repurchases or cancellations made thereof.

Section 3. Shares of stock may be issued upon the pay-
[fol. 2755] ment of Ten Dollars ($10.00) in cash for each share, or upon the payment of Five Dollars ($5.00) in cash for each share, together with five (5) promissory notes for One Dollar ($1.00) each payable on the first day of each of the five (5) months succeeding the day on which the share was issued.

Section 4. After July 30, 1936, no person other than the Corporation itself shall be permitted to purchase, own, or hold more than five per cent (5%) in value of the shares of stock of the Corporation, outstanding at any one time. Any shares of stock held by any person in excess of five per cent (5%) shall be canceled by the Board unless those shares of stock in excess of five per cent (5%) shall be properly disposed of within ten (10) days after notice is given by the Board.

Section 5. No person shall be permitted to purchase, receive or hold a share of stock in the Corporation unless he has signed the Corporation's application for membership, agreeing to abide by the Charter and By-Laws of the Corporation, and agreeing to take service from the Corporation at premises owned or occupied by him.

Section 6. In order to receive service from the Corporation, it shall be necessary to purchase a share of stock of the Corporation. One share of stock must be purchased and held in connection with each separate or non-contiguous property for which service is taken, and for each different
[fol. 2756] class of service desired. However, commercial and residential service may be secured upon one share of stock if the commercial activity is carried on in the residence of the owner.

Section 7. The shareholders of the Corporation shall be the members thereof, as that term is used and intended hereinafter.

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Article III

Rights and Obligations of Members

Section 1. Every member of the Corporation taking service therefrom shall have one vote at the general or special meetings of the members, but no person shall have more than one vote at such meetings regardless of the number of shares of stock owned by him.

Section 2. If it is called to the attention of the Corporation that there are defects in the wiring of the premises of an applicant for or user of power the Board may refuse to render service or discontinue the same until the owner of the premises presents a certificate of a reputable electrician to the effect that the wiring of his premises is safe and satisfactory. However, neither failure to inspect, nor the requirement or waiver of inspection by an independent electrician, shall subject the Corporation to liability to any member or other person for any damages or injuries sus- [fol. 2757] tained by reason of defects actually existing in the wiring of such premises.

Section 3. Before any member shall use power for any purposes other than those stated in his application for membership, or supply any other persons or premises with power, he shall first secure the approval of the Superintendent of the Corporation.

Section 4. If any member shall move his residence or place of business from one place to another within the service area of the Corporation, he shall be entitled to receive service at the new residence or place of business if (a) he notifies the Board of his change of location, and (b) the Board considers it feasible from the standpoint of the Corporation to serve the new location. The Board, however, may impose a reasonable connection charge.

Section 5. When any member shall move his residence or place of business from the territory served by the Corporation, the Corporation shall not be obligated to repurchase any share or shares of stock held by him, but the Board may repurchase such share or shares of stock if it considers such to be warranted by the financial condition of the Corporation. Such shares shall be considered Treasury shares

and shall not be voted unless resold to a member. The Board may provide for the disposition of Treasury shares upon non-discriminatory terms.

Section 6. When any member shall dispose of any prem- [fol. 2758] ises within the service area of the Corporation for the service of which he has purchased and holds a share or shares of stock, or when any member of the Corporation for other reasons desires to sell or transfer his share or shares of stock to any other person owning or occupying real property within the service area of the Corporation, the owner of such share or shares may assign the same according to the following procedure:

(a) the assignor and assignee shall fill out the assignment blank which the Secretary shall make available, showing the location of the premises which have been served in connection with the share of stock, the character and approximate amount of service which has been taken, the location of the premises for which the assignee desires service, and the type of service and approximate amount thereof which is desired: (b) the assignor and assignee shall make satisfactory arrangements with the Board for the payment to the Corporation of any obligations of the assignor to the Corporation, and for the making of any repairs or replacements which are required on the meter boxes or other facilities owned by the Corporation and used in service to the premises in question; (c) the sum of fifty cents (50¢) shall be paid to the Treasurer of the Corporation to cover the expenses of each assignment; (d) the Board shall determine whether or not it is feasible for the Corporation to extend service to the proposed assignee. Upon the assignment of [fol. 2759] any share of stock the assignor shall endorse such certificate on the back of the same and the assignment shall be recorded by the Secretary on the books of the Corporation.

Section 7. When the payment for a share or shares of stock does not in the judgment of the Board constitute sufficient security for the payment of the bills of the holder thereof, the Board shall require such member to post a deposit with the Corporation in an amount sufficient to secure such payment.

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Section 8. Members of the Corporation shall without charge to the Corporation grant easements over rural land owned by them for the construction and maintenance of the transmission and distribution lines of the Corporation, and the Board may require any applicant for a share of stock in the Corporation to repay to the Corporation any sums previously secured from the Corporation for the granting of such easements.

Section 9. If any member shall neglect or refuse to discharge any obligation to the Corporation arising from the purchase of stock, electricity, equipment, accessories, or otherwise, or shall violate any other provision of the Charter, By-Laws, or Rules and Regulations of the Corporation, the Secretary shall send a written notice to his address as given on the books of the Corporation, demanding that such obligation be met or such violation be ceased or re-
[fol. 2760] paired. If such demand is not complied with within ten (10) days after such notice is mailed, the Board shall have power to discontinue service to such member, disconnect his service extension from the lines of the Corporation, and/or expel him from membership and cancel any share or shares of stock held by him. In such event the Corporation shall retain any payments made by such member on his share or shares of stock as liquidated damages for the breach of his obligations to the Corporation.

Section 11. The Board shall have power to reinstate any member who has been expelled from the Corporation for non-payment of his obligations to the Corporation or violation of its Charter, By-laws, or Rules and Regulations, upon the payment of his obligations to the Corporation plus interest thereon at not to exceed six per cent (6%) per annum, or upon the cessation of his violations of such Charter, By-Laws or Rules and Regulations.

Article IV

Disposition of Revenues

Section 1. The purpose of the Corporation shall be to supply its members with electricity and incidental services and equipment at the lowest cost consistent with the sound management of the Corporation's business and without

profit. No dividends shall be paid upon any share of stock [fol. 2761] in the Corporation, and no earnings of the Corporation shall be distributed to its members except upon dissolution of the Corporation.

Section 2. The gross receipts of the Corporation shall be devoted to the following purposes in the order named: (a) operating expenses and payment of interest and principal currently due upon obligations of the Corporation; (b) the setting up of such reserves for depreciation, new construction, and contingencies as may be reasonably prescribed by the Board; (c) the anticipation of the obligations of the Corporation not then due; (d) the reduction and elimination of surcharges and amortization fees; and (e) the reduction of rates.

Article V

Meetings of Members

Section 1. The annual meeting of the members of the Corporation shall be held on the first Tuesday in May of each year for the purpose of electing a Board of Directors and for general corporate action. Such meetings shall be held in the City of Dalton, in Whitfield County, Georgia, at such place as may be designated by the Board.

Section 2. Special meetings of the members may be called by the order of the President of the Corporation and shall be called whenever forty per cent (40%) of the directors so request in writing, but the business transacted at such spe- [fol. 2762] cial meeting shall be confined to the general objects set forth in the call.

Section 3. Notice of the time and place of each annual or special meeting of members (unless such notice shall be waived in writing) shall be mailed to each member at least three (3) days before the date set for such meeting, addressed to him at his place of residence or business as that appears on the books of the Corporation.

Section 4. At every meeting of the members each member present shall be entitled to only one vote, regardless of the number of shares of stock held. Delinquent and inactive members shall not be entitled to vote at any corporate

meeting. Each member shall vote in person. Proxies will not be recognized. A duly authorized officer or any firm, corporation, partnership, association, municipal corporation, political body or subdivision may, upon satisfactory proof of his authority, vote the membership of such organization or subdivision.

Section 5. Five per cent (5%) of the members shall constitute a quorum for the transaction of business at membership meetings. If less than five per cent (5%) of the members are present at a meeting, it may be adjourned by those present to a future date, provided that notice of such adjournment be mailed by the Secretary to each member [fol. 2763] at least three (3) days before the date to which the meeting is adjourned, addressed to his place of business or residence as the same appears on the books of the Corporation.

Article VI

Board of Directors

Section 1. The general management of the affairs of the Corporation shall be vested in a Board of Directors (hereinafter called Board), each of whom must be a member of the Corporation, taking service therefrom.

Section 2. During the first year of the Corporation's existence the Board shall be composed of one director from each of the following counties of the State of Georgia: Catoosa, Dade, Walker, Chattooga, Gordon, Murray Whitfield and Floyd. Thereafter the Board shall be composed of one director from each county in which at least two hundred (200) members of the Corporation reside.

Section 3. The members of the Corporation shall elect the directors at the regular annual meeting of the members, beginning with the annual meeting held on the first Tuesday of May, 1937. The directors shall have terms of one year and shall hold office until their successors are elected. Voting shall be by secret ballot on forms furnished by the Secretary of the Corporation. In the event of a tie between any nominees, the Board of the preceding year shall cast the deciding vote.

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[fol. 2764] Section 4. Within seven (7) days after the annual meeting of the members of the Corporation, the new Board shall hold its annual meeting at the offices of the Corporation for the purpose of electing officers of the Corporation, adopting by-laws and transacting such other business as may be advisable.

Section 5. The Board shall hold regular meetings on the first Tuesday of each month.

Section 6. Special meetings of the Board may be called at the office of the Corporation or at a place designated by the Board or by the President and set forth in the notice of such meeting. Special meetings may be called at any time by the President of the Corporation, and shall be called whenever forty per cent (40%) of the directors file a written notice with the President, requesting such meeting.

Section 7. Written notice of the time, place, and general objects of any annual or special meeting of the Board shall be mailed to the address of each director at least twenty-four (24) hours before the time set for such meeting, but such notice for any particular meeting may be waived by the directors.

Section 8. Fifty per cent (50%) of the members of the Board shall constitute a quorum. Business shall be transacted at any meeting by a majority vote of those present.

Section 9. The Board shall have the general management [fol. 2765] and control of all the property, business, and affairs of the Corporation, including, but without limitation, the power to adopt, rescind, and amend by-laws; define and limit the powers and duties of all commitees, officers, agents, and employees of the Corporation not otherwise provided for by these by-laws; employ and dismiss the officers and employees of the Corporation and fix their salaries and wages, and require such bonds as may be deemed proper. The Board shall fix the price at which electric power shall be sold to members of the Corporation, or may contract in the name and on behalf of the Corporation with respect to such rates. The Board shall fix the price at which any equipment or material offered for sale by the Corporation shall be sold.

Section 10. The Board shall have power to sell or otherwise dispose of any of the property of the Corporation provided such property is, in the judgment of the Board, no longer necessary or needed in operating and maintaining the Corporation's system, and does not in any one year exceed ten per cent (10%) in value of all the property of the Corporation. The limitations, imposed by this Section shall not be construed to apply to the sale of merchandise or power.

In case the Corporation disposes of facilities which are necessary for the service of any of the members of the Corporation, such members shall be notified of such disposition [fol. 2766] two (2) months in advance thereof and shall be entitled to have their shares of stock repurchased by the Corporation at the price at which it was issued.

Section 11. The Board shall file a complete report with the members at the annual meeting of the members covering the business of the Corporation during their term of office, and including a list of the employees of the Corporation, their salaries and wages, and a statement of the financial condition of the Corporation.

Section 12. Any member of the Board may be removed therefrom by a majority of the members present at any special meeting of the members of the Corporation called for that purpose. Vacancies in the Board caused by resignation, removal, or otherwise shall be filled by the Board at its next meeting after such vacancy occurs. The new director shall be a resident of the county which the preceding director represented and shall be appointed for only the unexpired term of his predecessor.

Section 13. The Board shall keep a permanent record of its proceedings.

Article VII

Officers

Section 1. The officers of the Corporation shall be a [fol. 2767] president, a vice-president, a secretary and treasurer, or a secretary and a treasurer. The Board shall determine whether or not the offices of secretary and treas-

urer shall be combined. The Board may create such other offices of the Corporation as it deems advisable and fix the qualifications thereof.

Section 2. The officers of the Corporation shall, in so far as practicable, be elected at the annual meeting of the Board.

Section 3. The President and the Vice-President of the Corporation must be members of the Corporation, taking service therefrom.

Section 4. The President shall sign all certificates of stock, countersign all checks, and sign or countersign all bonds, notes, or other evidences of indebtedness issued by the Corporation. He shall, on behalf of the Corporation, sign all contracts. However, the Board may authorize some other officer to sign evidences of indebtedness and contracts on behalf of the Corporation where the amount involved is Three Hundred Dollars ($300.00) or less.

Section 5. In case of the absence or disability of the President, the Vice-President shall perform his duties. The Vice-President shall also perform such additional duties as may be prescribed by the Board.

Section 6. The Secretary shall be ex officio secretary [fol. 2768] of all members' meetings, meetings of the Board, and shall keep all records of the Corporation and be custodian of the same. He shall give all notices of meetings and perform such duties as may be assigned to him by the Board. In case of his absence or disability the Board may appoint a secretary pro tem to perform his duties. The Secretary shall have charge of the books of the Corporation and the corporate seal. He shall, in the course of the business of the Corporation, affix said seal to all b[illegible]s and certificates of stock issued; and when authorized by the Board, shall also affix said seal to contracts and other instruments. The Secretary shall also perform such other duties as are commonly exercised by secretaries of corporations.

Section 7. The Treasurer shall have the custody of all moneys belonging to the Corporation and shall keep the same deposited to the credit and in the name of the Corporation in such place or places as the Board may from time to time designate, and shall disburse the funds of the Cor-

poration under the direction of the Board. He shall keep accurate books of account, showing all receipts and disbursements of the Corporation, which shall at all times be open to the inspection of the Board. He shall sign or countersign all checks, drafts, orders for money, notes, and other evidences of indebtedness of the Corporation. He shall, whenever called upon, render to the Board a report in [fol. 2769] writing of the financial condition of the Corporation and perform such other duties and have such other powers as from time to time may be prescribed by the Board.

Section 8. The Board shall appoint a superintendent to have general oversight, care, and management of the property and business of the Corporation. The superintendent shall have the power to employ and dismiss all his assistants and technical workers, subject always to the direction and approval of the Board. The Board shall require a written report from the superintendent to the members at each annual meeting, showing the general business condition of the Corporation. Such report shall first be submitted to the Board for its approval.

Section 9. All personnel selected by the Board shall be chosen on a merit basis and shall conform to such personnel standards as the Board may prescribe.

Article VIII

Accounts

The accounts of the Corporation shall be kept in such form as the Board may prescribe.

Article IX

Seal

[fol. 2770] The Corporate Seal of the Corporation shall, subject to alteration by the Board of Directors, consist of a flat-faced circular die with the words "Seal" together with the name of the Corporation thereon.

Article X

Amendment of By-laws

The By-Laws of the Corporation may be amended by a two-thirds (2/3) vote of the members of the Board of

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Directors present at a meeting and voting affirmatively thereon. Provided, however, that it shall be necessary that such proposed amendment be read at a regular or special meeting of the Board held at least three days (Sunday and holidays excluded) before the meeting at which the amendment is adopted.

JLF:WTM:ml.

[fol. 2771] COMPLAINANTS' EXHIBIT No. 388

Here are the Answers

1. What is the North Georgia Electric Membership Corporation? It is a corporation organized for the purpose of obtaining electric power from T. V. A. at wholesale and retailing it to stockholders without gain or profit.

2. Who furnishes the money to build the distribution system? The Rural Electrification Administration of Washington, D. C., furnishes the money at 3% interest over above one-fourth of a century and takes a mortgage on the lines to secure the loan.

3. What must a person do to get cheap electricity from the corporation? Buy one $10 share of stock, which may be resold by the holder if he no longer desires power. The $10. insures payment of the electric bill to the corporation the same as a "deposit".

4. Is there any contingent liability, assessment, or "catch" in it? Certainly not. All lawyers know that a stockholder in a corporation, other than a bank, can lose nothing more than the value of his stock.

5. Who will pay for that "Dead mule" that worries some people? The insurance company carrying liability insur-
[fol. 2772] ance on the "N. G. E. M. C."

6. What are the rates to be charged by the N. G. E. M. C.? The rates are to be the standard T. V. A. rates which cannot be increased under the contract with T. V. A. They are:

3	cents	per	kwh	for	first	50	kwh.
2	"	"	"	"	next	150	"
1	cent	"	"	"	"	200	"
4	"	"	"	"	"	1000	"

Minimum bill $1 per month for which 25 kwh is given. There is an amortization charge of 1 cent per kwh for the first 100 kwh, but none above first 100 kwh. This charge cannot exceed $1 and is to pay R. E. A. the money borrowed, and ends when the loan is repaid.

7. How do these rates compare with power company rates? As follows:

Monthly Kwh.	N.G.E.M.C. Cost	Rates Amor.Chg.	Net Bill	Power Co. Rates Net Bills	Saving
25	75	.25	1.00	1.63	38%
80	2.10	.80	2.90	3.98	27%
230	4.80	1.00	5.80	8.03	28%
480	6.83	1.00	7.82	11.78	31%
1,400	10.50	1.00	11.50	21.33	46%

(Over)

8. Can money be borrowed from Federal Housing Administration to finance wiring houses? Yes.

[fol. 2773] 9. May customers purchase electric appliances on installment plan and pay with light bill? Yes.

10. Will TVA furnish trained men and women for advice and demonstration work in your home? Yes. Gladly.

11. What will electricity cost the N.G.E.M.C.? From 4 mills per kwh. down to 2 mills per kwh., plus a "demand charge" that varies.

12. What becomes of the money earned above wholesale rates? It pays for overhead expenses, maintaining and servicing lines, collecting bills and other necessary expenses. Surplus may be applied to R. E. A. debt.

13. Who operates the corporation and utility? Officers and board of directors that you elect to serve without pay, and a general manager with expert technical knowledge on salary.

14. Is it necessary to have rich, high-salaried executives to operate utilities? No. The cities of Dalton, Cartersville, LaFayette and others have successfully bought wholesale and sold at retail at a profit for years, and ordinary citizens elect the officials.

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15. Do you have to "sign up for 20 years" in order to get service from the corporation? No. You do not have to sign up any length of time. You can reject service at any time without liability except for your unpaid bill.

[fol. 2774] 16. Do you have to maintain any part of the line? Certainly not.

17. After R. E. A. debt is paid, will rates be reduced? Yes, amortization charge will be discounted and rates reduced.

18. Where may one get reliable information about TVA power and North Georgia Electric Membership Corporation matters? From officers of the Company and from the Company at Dalton.

R. H. Bandy, Pres. N. G. E. M. C. / J. C. Johnston, Sec.-Treas., N. G. E. M. C.

[fol. 2775] COMPLAINANTS' EXHIBIT No. 389

March 31, 1937.

Mr. T. R. Hunnicutt, Division Manager, TVA, Chattanooga, Tenn.

DEAR MR. HUNNICUTT:

The North Georgia Electric Membership Corporation has had many requests for information leading to negotiations for furnishing power to industrial customers throughout northwest Georgia. We do not have the facilities to serve all of the industrial customers who have indicated that they are now or will soon desire our service.

Some of the prospective customers have based their approach thus far upon a desire to get comparative cost estimates between our facilities and the facilities now serving them. Due to our organization being new and still in its formative stage we are not in position to discuss with clarity some of the problems that some of the prospective customers present. For that reason we desire that you contact them at our request and discuss with them the possibility of service through the North Georgia Electric Membership Corporation to the particular industries.

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We have had an inquiry from the Jewel textile interest of Chickamauga who, we are informed, are about to take [fol. 2776] over the old consolidated textile properties in LaFayette. If they do take over the LaFayette properties they will at that point be a new and unserved customer.

We would also like for you to contact the following prospective customers for the purposes above stated:

(1) The Water, Light & Sinking Fund Commission of the City of Dalton for power to operate the city's pumping station.

(2) The Real Silk Hosiery Mills of Indianapolis, Ind., who are operating a large hosiery mill in the City of Dalton.

(3) The American Thread Mill with a plant in Dalton.

(4) The Echota Mills owned by northern capital but under the supervision and management of Mr. H. F. Jones of Calhoun.

(5) The Yates Bleachery at Flintstone, Georgia. (The Flintstone mill is an isolated plant now manufacturing its own energy.)

(6) The Trion Cotton Mills, Trion, Georgia.

Some representative of the North Georgia Electric Membership Corporation will be glad to accompany any of your representatives to any discussions with these various prospective customers.

Yours very truly, R. Carter Pittman, Attorney for North Georgia Electric Membership Corporation.

RCP:H.

Copies to: Mr. H. W. Derry TVA, Chattanooga, Tenn.; North Georgia Elec. Membership Corp., Dalton, Georgia.

[fol. 2777] COMPLAINANTS' EXHIBIT No. 390 (Excluded)

Cullman County Cooperative Association and Tennessee Valley Authority Meeting, Held in Cullman, County Seat of Cullman County, Alabama, Wednesday Night, May 6, 1936

This was a meeting of the recently organized Cullman County Cooperative Association, which has for its purpose the rural electrification of Cullman County. The meeting was presided over by Mr. Clement and was held in the Court House and was attended by approximately 350 people. Mr. Clement's opening address contained the following remarks:

Mr. Clement: This is a rural electrification company. We want it understood from the outset that we are not antagonistic towards any interest whatever. We ask that all of our friends that wish come in with us—we will be glad to have you—we do not want to antagonize any interest, anybody at all. We hope to work in unity throughout the whole county. At this time, we are going to present Mr. Beauchamp, an engineer from Wilson Dam. He is a home man. He will be with us. He can tell you the intricate parts—he will bring a message we can all get.

Mr. Beauchamp: Ladies and gentlemen, it is with great regret that Mr. Lilienthal could not be here this evening. Mr. Lilienthal had accepted the invitation but at the last minute he was called to Washington by our President for a conference. He is there now, but before leaving, he expressed regret he could not be with you this evening.

This is the second time I have addressed the majority of [fol. 2778] you folks. About the middle of last December, I addressed a meeting in this room of the Farm Bureau organization. TVA in carrying out its rural electrification program has been constantly impeded and restricted by court orders and injunctions brought about by its enemies, but that has now all been settled and we can go ahead. It is only in the last few weeks that we have eliminated these legal obstructio' s and we can now go ahead with our rural electrification program—a program that will help the farmers of Alabama and the Tennessee Valley. Within the last few days, the contract has been made with Alabama Power Company for certain transmission lines. This contract has been negotiated over two years and has just been consum-

mated in the last few days. We now own transmission lines in Cullman County. The nearest line at this time is at Fairview, about eight miles northeast of Cullman, so we are really making progress now after long delay. Those who follow me will explain in detail some of the plan and some of the further details of the electrification program. I hope it will be my privilege to carry my plans through to completion and be present from time to time to assist you in working out the various details and problems that may arise, and I hope to be present when power is made available to farmers all over Cullman County. It will require an immense amount of work on our part and your part too. The proposition I refer to advances our program one step nearer to our plan to electrify farms in this area. The TVA program is one of cooperation—we do not seek to impose it on anybody unless they want it. It is your plan—the TVA [fol. 2779] is a part of the U. S. Government. Its aim is to be helpful. That is our only purpose. The Cullman County project, if it is carried out, will involve several hundred miles of rural lines. I hope that it will be possible to build those lines, for we want to extend lines any place in the county where it will be economically feasible. Those that follow me will elaborate on the details of the plan.

Mr. Clement: As Mr. Beauchamp says, he is a home man, and his purpose is to work with us. We will now hear from Mr. Nichol from the Electrical Department at Chattanooga. He will discuss other features in connection with what Mr. Beauchamp has told you.

Mr. Nichol: I know that it is a disappointment to you not to hear Mr. Lilienthal and I can tell you for him that is a disappointment to him not to be here. You can console yourselves with this—when he found that he had to go to Washington—he wasn't planning on just coming here to make a speech—he said to me: "I want you to go down to Cullman, find out what they want and find out what they want us to do to help them." I'm glad he said that for that is the way I feel too. Rural electrification has been talked about but nothing has been done about it. In North Alabama people have that feeling more than anyone else, but the lines aren't there. I think the most helpful thing I can tell you is what has been going on elsewhere where those restrictions do not prevail. While perhaps it is un-

fortunate that you have had this long delay, perhaps you can profit by the experience of those in Georgia, Tennessee, [fol. 2780] and Mississippi. We can begin to catch up a little bit now that we have the benefit of the experience in other places. There is a very real relationship between the town and country. It is not an easy problem—if it had been, it would have been solved long ago. There is an answer. Perhaps the best way would be to tell you about some of the places where current has been brought out to the farmers. Start first with Dayton, Tennessee, where they had the famous monkey trial. We are bringing electricity to every farmer in that section. The town owned its own municipal plant. It wasn't very long before other people came in and said we want some of that power too. The town knew that its merchants would profit, that their plants would handle products of the farmers, so they worked up a project serving 250 customers at the outset. They submitted their program and obtained funds from the R.E.A. Now move over into Middle Tennessee—to the City of Pulaski. They also have municipal power. Again, the farmers came in, so they turned to TVA, and the TVA constructed lines for the city. In West Tennessee, the town of Somerville with a municipal plant signed up for TVA power. In Mississippi, we were able to work out an agreement with the private power company for serving farmers and city. The TVA constructed additional lines. Electric Cooperative Associations were formed and additional funds borrowed for the extension of rural lines. There is still another way—in areas where it is still possible to work out rural distribution systems operated independently of the municipality. They are doing this in Lincoln County, Ten- [fol. 2781] nessee. Lines are now under construction in Bedford, Tennessee. Since the power company was either unable or unwilling to serve rural area and since a number of the farmers were in real need of power, we were able to work out projects there. Funds can be obtained from the TVA or the Rural Electrification Authority. I submit that your County and your Cooperative should consider local circumstances and decide which pattern best fits this area. The next step is to find out how many lines you are justified in building. This is a very real and important part of it. As you know, TVA was set up by Congress to help liquidate

the cost of dams on a business basis. It means two things—that many rural projects must be self-supporting and self-liquidating. It will pay operating expense but must pay off its debt. Before we ask for rural lines for Cullman County, or anywhere else, we must be able to say that so many people in Cullman on so many miles of line want electric power and that revenue from these people will amount to such and such. It must be enough to pay salaries and interest on the debt. It is pretty hard to know where to begin. We know from previous experience that one of the chief hindrances has been knowledge as to how to proceed. We have a very simple plan—it indicates where to begin—it is called the Neighborhood Plan, whereby country people by themselves and for themselves can survey their own requirements at a minimum amount of time and expense—they can find out just what their requirements are. With those facts before us [fol. 2782] we can put them altogether and see what we can do. This plan is summarized in the yellow sheets given you. I understand that your committee is ready to act now. I believe the stage is set—we can begin to go places. You have your Cooperative—it has a charter—your officers have been elected. The second step is the source of supply. We have completed the transaction whereby TVA has lines leading right to the border of your county. Third, what you need is money. Mr. L. A. Sears will explain to you more about this phase. The yellow sheet tells in general what the plan is. You have an Association. Through the Association it will be possible to appoint a Canvassing Committee. That committee can be as large or as small as you think best. We think it should be large, particularly at this time of the year, so you can break it down into small groups and not make it a burden on any one group. I understand your Association is making plans to select such a committee. Mr. Beauchamp is planning to meet with that committee and stay with that committee until the survey is completed. This committee should be ready in about a week—probably next Thursday or Friday. You can be thinking and talking about this amongst yourselves so you can answer their questions easily. What they want to know is in general how much electricity you intend to use, and we feel that is the proper way to put it. We feel that it is not worth all the time and money to get electricity on the farm unless the

people are going to use it. Electricity doesn't begin to become a profitable investment on the farm until you put it to [fol. 2783] work. In this county, I understand there are many interested in the poultry business. Electricity can make this business more profitable. So rather than talk of electricity in terms of dollars, we talk of it in kilowatt hours. We are not asking you to guarantee a certain amount of money every month, but we want to ask you to give a gentleman's agreement that you on your part will install enough equipment—and we do not insist that you use it—we have enough confidence to know that you will use it. We simply want to be able to assure our board and REA that farmers of Cullman County want electricity enough to use it. To determine this, no one should put down more that you can afford to use. Your committee then brings this information back and turns it over to our checkers. We get all the information about what you will use and divide this by the number of miles covered. The general guide we follow is 662 kwh. per mile of line. This is based on previous experience, for we feel that if farmers will use that much it will justify our constructing the line. There will be a lot of questions. The best thing for you is to look through this yellow folder which covers most of these points you will probably ask. I see no reason why Cullman county should not lead Alabama in this Rural Electrification movement. All of us will be very much disappointed if out of this meeting and the meeting next week we can't work out something. I hope that the next time I come back it will be for a celebration. Six months ago there were twenty counties re- [fol. 2784] ceiving power. Right now, upon completion of programs, thirty-two counties will have power. Thank you very much.

Mr. Clement: We will now hear from Mr. Sears, representing the Rural Electrification Authority. He will bring us the plan by which this project may be financed.

Mr. Sears: You all have heard a great deal of TVA and in this area I know you are well acquainted with it. I doubt if you are as well acquainted with REA so I will give you a brief resume of it. It has been just nearly a year ago—May 11th—when this particular branch was organized for the purpose of bringing electric service to unserved rural areas all over the country. This was done because less

than 10% of the farms were receiving electric service. Recognizing again that the rural areas are the fundamental backbone of the national wealth and resources, it was felt that this was not a representative service. On May 11th last year, our organization, known as REA, was established. We were established for the purpose of making loans to cooperatives, not to individuals, for the purpose of building generating, distribution and transmission systems to bring electric energy into unserved rural areas. We were given a good sized allocation of funds. We are a temporary organization at the moment, although there has been a bill passed through Congress which will give us a ten-year organization at least. We have been rather slow in getting started, due primarily to the fact that as a lending agency there are many matters of policy which have to be settled. We have definitely determined that our whole policy is from the standpoint of the consumer. We are empowered to make loans to five different types of corpo- [fol. 2785] rate entities: cooperatives, municipalities, private utilities, public utilities, and state authorities. Of those five, the majority of loans have gone to cooperatives such as you have organized here in Cullman County. To those we have loaned several million dollars, and incidentally, we have no fear of any delinquency of any one of those loans. Second, we are interested primarily in rural electrification not merely from the standpoint of service—that is not what the term means—if rural electrification is going to mean anything, it must mean that they must have service at a reasonable cost and that is the fundamental basis of our organization. Towards that end, we are empowered to make loans to the full amount of the construction cost, such funds being at 3% interest and on a twenty-year repayment plan. We again require that those loans be made to corporate entities—we make no loans to individuals—there is no individual liability. In the construction of these lines, there are various types of securities. The Security which we are accepting in practically 100% of the cases are first mortgages on lines we finance. We have the utmost confidence in these lines. The second thing, we are not here to make any sales. As a matter of fact, we look on the whole matter of electrification in the sense that you are here to sell us. We are acting as the banker

from whom you are requesting a loan. The only thing we ask is that we have reasonable assurance that the use to which you are going to put this money and this electric service will liquidate that loan. We have attempted to [fol. 2786] make our methods as simple and direct as possible. In the first instance, after you have formed an organization, most of our dealings will be directly with your Board as a corporate entity according to your State laws. There is a certain amount of field work which Mr. Nichol has covered. After that has been prepared, it will be analyzed. We have established an office in this territory in order that we may work more directly with you. We will make that examination in this area and forward that information to Washington. In Washington, it is scanned by our legal staff and engineering department and approved for allocation of funds. Then the contract is entered into—it is a simple document—nothing complicated about it at all. At the same time, the security for the lines that are to be constructed will be arranged. We are ready then to get plans for construction. What we are attempting to do is to cut off as many days as possible from now on. You are particularly fortunate here in that one of your major difficulties is already established; that is, in the getting of electric service to your home there are two things involved—first, the source of supply, and second, distribution facilities to bring it to you. We are going on the theory that we would rather, if possible, take advantage of existing generating facilities. Your wholesale situation is established. You have wholesale energy available at a reasonable figure. We are in a position and anxious to be of service in furnishing funds for you to construct and put in [fol. 2787] service this distribution facility so that you may bring it to your door and have the use of it. TVA and REA are forming a liaison in order that we may both be of all possible assistance to you—in your organization and the preparation of the documents you may require and anything at all we may be of service to you. It is up to you people to come to us for service—we are not trying to serve you.

Mr. Clement: Introduced Dr. Edward Falk, Rate Engineer at Chattanooga.

COMPLAINANTS' EXHIBIT No. 390 (Excluded)

Dr. Falk: I have been wondering tonight what you think of TVA—what it is—what is the *R*VA idea, and I wonder sometimes myself. TVA is not something people are paid to work for. TVA employees aren't so smart and brilliant, but they are doing one thing that is of mutual good—they have been working across the table with you people here. We have the Mayor of Athens with us tonight. I worked at Wilson Dam in 1933, and Mr. Richardson kept coming over and wanting TVA power. We did not have a contract, but we sat down and worked one out. It wasn't very long until we worked this contract out and we both signed it and TVA power was in Athens in 1934. This was due equally to the spirit of the people in Athens and to the hard work of city officials and city leaders there. The same thing is happening all over the countryside. You can call TVA something that extends throughout all these states and is part of all these people. This meeting is gratifying. These people are in a sense part of the TVA—they are making TVA a better kind of proposition. I hope that goes [fol. 2788] on. I know you want to know something about rates—these are given on the yellow sheet you have:

3 cents for the first 50 kwh.
2 cents for the next 150 kwh.
1 cent for the next 200 kwh. used by a customer during the month.

On top of that there would be added 1¢ per kwh. for the first kwh. a month, this charge to be not less than 25¢ nor more than $1.00 a month. Suppose you are building a system for $100,000—the Association will owe $100,000. That does not mean that members of the Association will have any liability—it means that the Association will go ahead and collect 1¢ per kwh. until the REA is paid out. After that, the 1¢ comes off and you own the property. The members of the Association will own the property—there will not be any more interest or principal to pay on it. While they are paying such debt, they will get electricity for maybe $1.00 to $5.00 per month cheaper than almost anywhere else in the United States—that is a wonderful scheme and people are eating it up. TVA is not the only one that is doing the same thing—other utilities are doing the same thing. The consumption in Alabama is leading

the nation. Why is that? Because we have sat down with people and made these rates and it became clear that the only way people would completely electrify was when it would become cheap. It is not a money losing proposition—it is a money making proposition. When you say extend lines down the highway—some folks say that it is making [fol. 2789] electricity available, except for one thing, and that is the rate. It does some good to put lines down the highway but before the people can really use it in the house, the rate has to be right. TVA is a business-like proposition and in that sense right. We all hope that rate and that plan of service will be made available here for locally operated and locally owned County Power Association. Everything I say about TVA is all to the good. I want you to hear what Mr. Richardson will tell you about power service in Athens.

Mayor Richardson: Mr. Falk has taken a little undue advantage of me. I did not expect to be on the program. I am vitally interested in what you men are interested in. We in Limestone County are interested in rural electrification—we are not only interested—we are working to electrify Limestone County. We expect to handle this through the City. I know one of the perplexing questions you have here is financing. That is one of the most perplexing problems I had. It has gone far beyond our expectations. On the first of June, we will have operated on TVA power two years. Furthermore, I would like to say that the people have enjoyed this power. Last year, 1935, averaged about $55,000 worth of electrical appliances sold in that town. The people are enjoying cheap electricity—just what you people in Cullman County are going to do. I feel that you out in the country are entitled to these benefits just as we are in town, and we are going to have them up our way. The operation from the financial side of it has gone far beyond our expectation. I do not feel that this cooperative [fol. 2790] association should have any fear whatever to go into the financing of this rural line. I have no fear for Limestone County. We have taken in more money today from our electric light system than we did from our water and electric systems combined two years ago. We expect to go into this and hope to have it before the summer is

over. You had better hurry or we are going to beat you—we are going to light it up.

Mr. Clement: The meeting will not be turned over to the audience. Are there any questions?

Question. How many more users of electricity in Athens since you took on TVA power?

Mr. Richardson: 275. Practically every home in Athens has electricity. That number, 275, would apply to new users.

Question. What is the difference in receipts?

Mr. Richardson: Our receipts are more.

Question. What is the difference in ordinary bill of the home in Athens now and before you got TVA power?

Mr. Richardson: 45% lower.

Question. Are the electrical appliances sold at cost?

Mr. Nichol: The prices which are given in the yellow sheet are regular retail prices. The Associations usually work through electrical dealers. In some places, the cooperatives have joined together and got appliances at cost. They are normally sold at retail through established dealers. This is up to the Association to handle as they want to. The sale of appliances is handled independently of TVA. We [fol. 2791] do not sell appliances—these are to be handled by dealers or the association.

Mr. Clement: We want to discuss proceedings of the organization. These committees—the men who are to be selected to make these surveys—will be ready to go to work possibly next week.

Question. Take Table B on this yellow sheet—about how much does one have to have installed to use that?

Answer. Minimum bill is normally 30 kwh. This is enough to operate lights, radio, fan, flat iron, few more very small appliances. 30 kwh. would cost $1.20.

Question. Does the wiring and appliances have to be bought before construction is begun?

Answer. We want your agreement to do it—we appreciate that it is sometimes impossible to make all the investment at once. Therefore, in making this survey, and this is something the forms do provide for purposely, put down what you agree to take. Naturally, your house would have to be wired before you can take service. Then over and above that, indicate those you are prepared to buy now—the additional appliances you can put them down with the

statement that they will be bought within the next year. Then we can say, well, it will be so much, but we have definite assurance that by the end of twelve months it will be so much more.

Question. That is purely a gentlemen's agreement?

Answer. The agreement says that you will execute a valid contract. We will build the line if the survey warrants it. The REA has agreed to finance if you execute a contract for [fol. 2792] the equipment you have agreed to buy. If the agreements are fulfilled, the lines are constructed. At no point are you bound and at no point are we bound—you can retract or we can retract. You start and we start. The EFHA helps you buy appliances. The payment on appliances will be rendered on your bills. You may be able to get a cooperative payment plan. In other states the credit association plan has worked very nicely.

Question. Will you explain the number of subscribers per mile that is required for service?

Answer. The average is four per mile, but it does not have to be that. It may be more or less, but as a general rule, I would say four per mile. That is the beauty of the 662 business, for even if there are just two on a mile of line, they will put the line there if these two use enough power to justify it. As a general rule, to justify the association, you ought to have the minimum number of customers—say 400 or 500 customers on 100 miles of line. You should not be discouraged, for there are a lot of combinations. A line may go through a swamp where there are no customers, but at the end of that line there are four or five customers. Then again, frequently going down the road, the road will have lots of turns and take in a lot of mileage, but the line does not have to follow the road—our engineers can cut across country with a smaller amount of mileage. Mr. Beauchamp's men are going to help you out on this.

Question. You have refrigeration listed at 50 kwh. Speaking from experience, last month my consumption for every- [fol. 2793] thing was 54 kwh. Maybe mine was low.

Answer. We purposely set thers- figures high. We have not gotton into the summer season yet. Then we had rather set the consumption high and have you come under that than to set it too low and have you come back at us. I want to advertise one thing that will go a long way. A small

COMPLAINANTS' EXHIBIT No. 390 (Excluded)

refrigerator isn't big enough for all uses, and a big refrigerator will cost $250.00. If you want to spend $250.00, in the laboratory at the University of Tennessee they have designed a box that will hold six hogs and is large enough for any use, so I say if you want to spend $250.00 for a box, I would have one of those made to order.

Question. How expensive is the operation of a 15 h. p. motor on a grist mill or saw mill?

Answer. It will cost approximately 3¢ per h. p. hour operated at full capacity.

At this point, a discussion arose, when a customer, who said his bill last month, based on a consumption of 54 kwh., and including a water bill of $1.57, was $6.44, leaving $4.87 for the electric bill. He was told that a bill for 54 kwh. on the TVA rates would be $1.58, plus 54¢ surcharge. The customer was then told by Mr. Kramer, City Clerk of Cullman, that a bill for 54 kwh. should be $3.28. There was some discussion between the customer and Mr. Kramer about this.

[fol. 2794] COMPLAINANTS' EXHIBIT No. 391 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 392 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 393 (Excluded)

(Omitted)

[fol. 2795] COMPLAINANTS' EXHIBIT No. 394

TVA 211 DE. Serial No. —

Tennessee Valley Authority, Chattanooga, Tennessee.

GENTLEMEN:

I wish to take advantage of the new cooperative house wiring plan offered by the Tennessee Valley Authority. Under this plan the Tennessee Valley Authority will pay $15.00 towards the cost of house wiring for each electric range installed or electric hot water heater installed, or $30.00 in case two of these appliances are installed.

I wish to advise that I have purchased and will install — with the understanding that the TVA will pay $— to the wiring contractor which I have selected, after installment of equipment is made and thoroughly checked by representatives of the TVA to verify the installation and valid purchase of same, this sum of $— to be credited to my total bill for house wiring by the contractor, who is —— ——,
(Name)

_____
(Address)

(Signed) —— ——.

_____ _____ _____
(Community) (County) (State)

Accepted by Tennessee Valley Authority:
—— ——, TVA Authorized Agent.

—— —, ——.
(Date)

[fol. 2796] Information to Be Filled Out by TVA

Date: —— —, ——.

1. Inside wiring installed and approved —— —, ——.
2. Wiring contractor: —— ——, _____
(Name) (Address)
3. Equipment installed —— —, ——.
4. Purchased from —— ——, _____.
(Name) (Address)
5. How purchased: Contract —. Cash —.

(Signed) —— ——.

(To be filled out in quadruplicate—one copy retained by customer and three copies by TVA.)

199—975

(Here follows one photolithograph, side folio 2797)

COMPLAINANTS' EXHIBIT NO. 395

TENNESSEE VALLEY AUTHORITY

Complts No 32-a - Bonner
taxident

KNOXVILLE, TENN. JUL 21 1937 861, 381

6 Treasurer of the United States

Fo. 15-31

38-4453 PAY $**15 DOLLARS AND .00 CENTS $**15.00

TO THE ORDER OF TERRELL L. BONNER
FAYETTEVILLE, TENN.

OBJECT FOR WHICH DRAWN:

TENNESSEE VALLEY AUTHORITY

BY [signature] TREASURER 95-211

FORM APPROVED BY COMPTROLLER OF THE TREASURY JANUARY 27, 1913.

This check must be indorsed in ink or indelible pencil on the line below by the person in whose favor it is drawn, and the name must be spelled exactly the same as it is on the face of the check.

If indorsement is made by mark (X) it must be witnessed by two persons who can write, giving their place of residence in full.

Terrell L. Bonner
(Sign on this line.)

[fol. 2798] COMPLAINANTS' EXHIBIT No. 396

TVA 1034 C.
(7-1-37)

D. O. Vou. 38 4453.

No. 3471

Jul. 19, '37.

Remittance Advice

Voucher prepared Knoxville, Tenn., 7-16-37.
U. S. Tennessee Valley Authority.
Appropriation: 680110 Tennessee Valley Authority Fund 1938.

The United States, Dr., To Terrell L. Bonner.
Address: Fayetteville, Tenn.

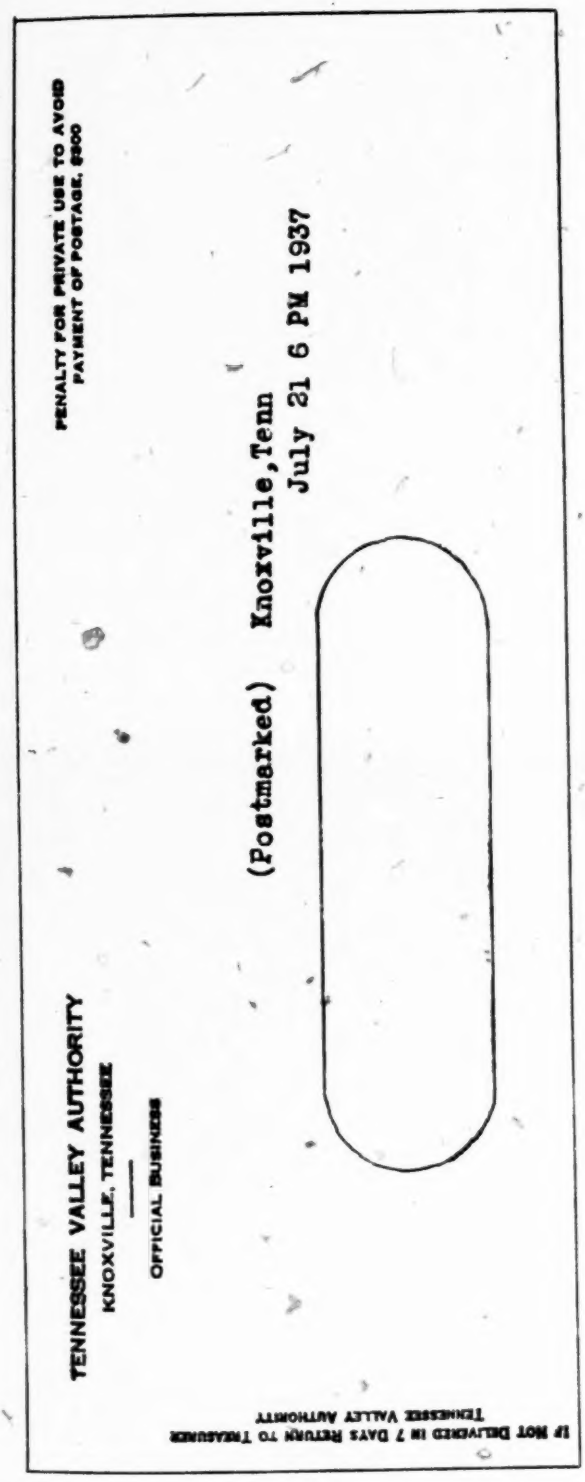
Terms—net %

Check Is Enclosed Herewith in Settlement of the Following Items as Covered by the Order or Contract as Indicated.

TVA Order No.	Date of Delivery of Service	Description & your Invoice Date	
1-37-11251	6-5-37	Supplies as per invoice ED-7-386 Vendor's 6-5-37	$15.00
Total			$15.00
Differences			— —
Amount of check herewith			$15.00

(Here follows one photolithograph, side folio 2799)

COMPLAINANTS' EXHIBIT NO. 397



[fol. 2800] COMPLAINANTS' EXHIBIT No. 398

Minutes of the Middle Tennessee Electric Membership Corporation, June 24, 1936, at 8 O'Clock P. M. at the James K. Polk Hotel

At a specially called meeting all members of the Board of Directors and incorporators were present, with one exception. Mr. C. F. Holt being unable to attend on account of illness sent in his resignation as secretary of the corporation and as a member of the Board of Directors. Motion was made by Mr. J. C. Couch and seconded by Dr. S. B. Smith to accept Mr. Holt's resignation. The motion was carried.

Mrs. Frank Travis was duly elected temporary secretary of the meeting.

Mr. Ramsey Snell was duly elected a member of the Board of Directors to replace Mr. Holt.

Motion was made by Mr. Couch and seconded by Dr. Smith that seven Wilson County men be accepted as members of the Board of Directors of the Middle Tennessee Electric Membership Corporation. The motion was carried, and,

Homer Hancock, Lebanon, Tennessee,
Noel B. Nokes, Mt. Juliet, Tennessee,
J. C. Bradshaw, R. #1, Lebanon, Tennessee,
J. J. McFarland, R. #4, Lebanon, Tennessee,
J. G. Harris, R. #2, Lebanon, Tennessee,
E. W. Weatherly, Norene, Tennessee,
Lon P. MacFarland, Lebanon, Tennessee,

[fol. 2801] were welcomed into the organization, by the President, as members of the Board of Directors.

Election of officers followed in which the following officers were duly elected:

Mr. K. T. Hutchinson, President,
Mr. Homer Hancock, Vice President,
Mr. E. W. Carmack, temporary secretary.

It was the decision of the Board of Directors to elect a temporary secretary because at a later date they expected to elect a person who could devote their entire time to the position of Secretary-Treasurer.

A draft of by-laws was presented to the meeting by Mr. K. Wilde Blackburn of REA. After full consideration the

following resolutions were unanimously adopted, having first been regularly moved and seconded.

Resolved, that the proposed by-laws of the Corporation as presented to this meeting be and the same hereby are approved and adopted as the permanent by-laws of the Corporation, and be it further

Resolved, that the Secretary of this meeting be directed to affix the by-laws as adopted at this meeting to the minutes of the meeting and to identify said by-laws as by-laws presented and approved at this meeting.

Mr. Lon P. MacFarland made motion that the Corporation present the names of two banks in Lebanon and two banks in Murfreesboro to REA for approval to deposit funds for use during the construction work in the counties. The [fol. 2802] Lebanon Bank & Trust Company and the Commerce Union Bank of Murfreesboro and the Murfreesboro Bank and Trust Company are the banks to be submitted.

Mr. Blackburn suggested that the corporation retain counsel, and upon motion duly made and seconded Mr. Lon P. MacFarland was elected general counsel for the Corporation. In a general discussion Mr. MacFarland stated that it would be satisfactory with him for his fee as counsel to be presented and passed on by the Board.

It was moved and seconded that a letter be sent Mr. Holt thanking him for his spendid corporation and expressing the regret of the Corporation in his resignation.

There being no further business, upon motion duly made and seconded, the meeting adjourned.

Mrs. Frank Travis, Acting Secretary of the Middle Tennessee Electric Membership Corporation.

Waiver of Notice

The undersigned, being all of the Incorporators and members of the Board of Directors of the Middle Tennessee Electric Membership Corporation, hereby assent and agree that a special meeting of the Board of Directors of said Corporation shall be held on June 24, 1936, at 8 o'clock P. M., at the James K. Polk Hotel, Murfreesboro, Tennessee, for the purpose of transacting any and all business which may be brought before said meeting and any and all adjourn- [fol. 2803] ments thereof, including, but without limiting the generality of the foregoing, the following purposes:

COMPLAINANTS' EXHIBIT No. 398

1. To consider and approve, adopt, ratify, and confirm the minutes of the meeting of incorporators and members of the Board of Directors of the Middle Tennessee Electric Membership Corporation held May 11, 1936, including each and every step taken and act performed at said meeting.

2. To adopt permanent by-laws for the Corporation.

3. To elect officers for the Corporation.

By signing this Waiver of Notice, we and each of us do hereby expressly waive the giving to us and to each of us notice of this meeting, and we do agree that all business transacted at the said meeting shall be as valid and effective as though said meeting had been held upon notice duly given.

J. C. Couch. S. B. Smith. S. E. McElroy. K. T. Hutchinson. E. W. Carmack. M. H. Jones. C. F. Holt.

Lascassas, Tennessee, June 24, 1936.

The Board of Directors of The Middle Tennessee Electric Membership Corporation, Murfreesboro, Tennessee.

[fol. 2804] Attention Dr. K. T. Hutchinson, President

GENTLEMEN:

I, C. F. Holt, hereby tender my resignation as a member of the Board of Directors in the Middle Tennessee Electric Membership Corporation, and also as a member of said Corporation.

I request that this tender of resignation be accepted for the reason that I am unable to serve in the said capacity.

Yours truly, C. F. Holt, Secretary.

Witness to Signature, Mrs. Frank Travis.

CFH:MET.

By-Laws of Middle Tennessee Electric Membership Corporation

Article I

Certificate of Incorporation

The name, duration, location of principal office and purpose of the Corporation shall be as set forth in the Certificate of Incorporation as from time to time amended.

COMPLAINANTS' EXHIBIT No. 398

Article II

Membership

[fol. 2805] Section 1. The members of this Corporation shall be the incorporators thereof and all persons subsequently admitted to membership therein. "Person" as used in these By-laws shall mean and include natural persons, firms, associations, corporations, business trusts, partnerships, and bodies politic.

Section 2. Each member shall pay a membership fee of Ten Dollars ($10).

Section 3. A membership certificate shall be issued to each member of the Corporation for each membership held by him. One (1) membership must be held in connection with each separate or non-contiguous property for which service is taken and for each different class of service desired. Commercial and residential service may, however, be secured upon one (1) membership if the commercial activity is carried on in the residence property of the owner.

Section 4. Service to any member may, in the discretion of the Board of directors, be conditioned upon such members furnishing to the Corporation a certificate of a reputable electrician stating that the wiring on the premises served or to be served complies with all local regulations and is in accordance with the latest rules and regulations of the National Board of Fire Underwriters, for the installing of electric wiring, apparatus and appliances. The requirement or waiver of such certificate, or the supplying of service on the bases thereof, shall not subject the Corporation to liability to any member or other person, or any damages or injuries sustained by reason of defects existing in the wiring of such premises.

[fol. 2806] Section 5. No member shall use energy supplied by the Corporation except for the purposes stated in his application for membership, nor shall he supply any other premises or families without first obtaining a permit from the Board of Directors or from an officer designated by the Board of Directors.

Section 6. A Membership in the Corporation may be transferred by any member to any successor in occupancy

or ownership of premises occupied or owned by him and served by the Corporation, but no transfer shall be effective until the transferee shall have complied with all the conditions in respect to membership contained in the Certificate of Incorporation and these by-laws and shall have assumed the payment of all debts owed to the Corporation by the transferee in connection with such premises.

Section 7. If any member shall neglect or refuse to pay any bill or debt owed by him to the Corporation, the Secretary shall mail a written demand therefor to him at his address as shown on the books of the Corporation, and if the entire amount due and payable to the Corporation by such member is not paid in ten (10) days, the Board of Directors may declare all his rights and privileges to be forfeited and expel him from the Corporation, or it may discontinue service to him. The Board of Directors may expel any member for failure to comply with the Certificate of Incorporation or the By-laws. If a member is expelled, all sums previously paid by him to the Corporation shall be considered to be liquidated damages to cover the expense of making electric service available to him up to that time and such sums may be retained by the Corporation.

[fol. 2807] Section 8. The Board of Directors may reinstate expelled members upon payment in full of all amounts due to the Corporation and, if the Board of Directors shall so determine, of interest at not to exceed six per centum (6%) per annum, or if arrangements satisfactory to it are made for the payment thereof.

Section 9. Any person who ceases to be a member because of failure to use energy supplied by the Corporation shall, if he is subsequently readmitted to membership, and if he has not transferred his membership, be obligated to pay only that portion, if any, of his membership fee which was unpaid at the time he ceased to be a member.

Section 10. Members shall, without charge to the Corporation, grant easements over land owned by them for the transmission and distribution lines of the Corporation, and the Board of Directors may require from applicants for membership the repayment of sums previously paid to them for such easements.

Section 11. If any member shall move his residence or place of business from one place to another within the service area of the Corporation, he shall be entitled to receive service at the new residence or place of business if (a) he notifies the Board of Directors of his change of location, and (b) the Board of Directors considers it feasible from the standpoint of the Corporation to serve the new location. The Board of Directors however, may impose a reasonable connection charge.

Section 12. When any member shall cease to take service by reason of removal from the premises served by the Cor- [fol. 2808] poration, the Corporation shall not be obligated to repurchase any membership held by him but the Board of Directors may repurchase such membership or memberships, if it considers such repurchase to be warranted by the financial condition of the Corporation.

Section 13. When any member shall dispose of any premises within the service area of the Corporation for the service of which he has purchased and holds a membership, or when any member of the Corporation for other reasons desire to sell or transfer his membership to any other person owning or occupying real property within the service area of the Corporation, the owner of such membership may assign the same according to the following procedure; (a) the assignor and assignee shall fill out an assignment blank, which the Secretary shall make available, showing the location of the premises which have been served in connection with the membership, the character and approximate amount of service which has been taken, the location of the premises for which the assignee desires service and the type of and approximate amount thereof which is desired: (b) The assignor and assignee shall make satisfactory arrangements with the Board of Directors for the payment to the Corporation of any obligations of the assignor to the Corporation and for the making of any repairs or replacements which are required on the meter boxes or other facilities owned by the Corporation and used in service to the premises in question; (c) the sum of Fifty Cents (50¢) shall be paid to the Treasurer of the Corporation to cover the expenses of each assignment; and (d) the Board of Directors shall determine whether or not it is feasible for the Corpo-

[fol. 2809] ration to extend service to the proposed assignee. Upon the assignment of any membership the assignor shall endorse such certificate on the back of the same and the assignment shall be recorded by the Secretary in the records of the Corporation.

Section 14. When the payment for a membership or memberships does not in the judgment of the Board of Directors constitute sufficient security for the payment of the bills of the holder thereof, the Board of Directors shall require such member to post a deposit with the Corporation in an amount sufficient to secure such payment.

Article III

Meetings

Section 1. The annual meeting of the members shall be held at the principal office of the Corporation at Murfreesboro, Tennessee, on the second Thursday of August, beginning with the second Thursday of August, 1937, purposes for which an annual meeting is to be held in addition to those prescribed by law, by the Certificate of Incorporation and by these by-laws may be specified by the Board of Directors, or by a writing signed by the President, or by a majority of the Directors, or by ten per centum (10%) or more of the members. If such annual meeting is omitted on the date herein provided therefor, a special meeting may be held in place thereof, and any business transacted or elections held at such meeting shall have the same effect as if transacted or held at the annual meeting.

Section 2. Special meetings of the members may be called by the President or by a majority of the Directors, and shall be called by the Secretary, or, in case of the death, ab-[fol. 2810] sence, incapacity or refusal of the Secretary, by any other officer, upon written application of ten per centum (10%) or more of the members. Such call shall state the time, place and purpose of the meeting.

Section 3. A written notice of each meeting of the members stating the place, day and hour thereof and the purpose for which the meeting is called, shall be given by the Secretary at least seven (7) days before the meeting to each mem-

ber, by leaving such notice with him or at his residence or usual place of business or by mailing it, postage prepaid and addressed to such member at his address as it appears upon the books of the Corporation. In case of the death, absence, incapacity or refusal of the Secretary, such notice may be given by any other officer or by a person designated either by the Secretary or by the Board of Directors. Any member may waive notice of any meeting. The attendance of a member at any meeting shall constitute a waiver of notice of such meeting, unless he shall attend such meeting for the express purpose of objecting to the transaction of any business because the meeting shall not have been properly called or convened.

Section 4. At any meeting, twenty per centum (20%) of the members shall constitute a quorum for the transaction of business, but a less number may adjourn any meeting from time to time, and the meeting may be held as adjourned without further notice. When a quorum is present at any meeting a majority of the members present thereat and entitled to vote shall, except where a larger vote is required by law, by the Certificate of Incorporation or by these By-[fol. 2811] laws decide any question brought before such meeting.

Section 5. Each member shall be entitled to one (1) vote regardless of the number of memberships held by him. A duly authorized officer of any firm, association, corporation, business trust, partnership or body politic may, upon satisfactory approval of his authority, vote the membership of such firm, association, corporation, business trust, partnership or body politic.

Article IV

Board of Directors

Section 1. Until the next annual meeting of the members of the Corporation to be held on the second Thursday in August, 1937, and until new directors are elected and qualified, the Board of Directors of the Corporation shall consist of fourteen (14) directors, seven (7) of whom shall be the present seven (7) directors of the Corporation, and the remaining seven (7) who shall be residents of Wilson County,

elected by the present Board of Directors at the same meeting at which these by-laws are adopted, or at any subsequent meeting, from among persons agreeing to use electric energy to be supplied by the Corporation.

Section 2. At the expiration of the terms of the directors elected for the first year, the Board of Directors shall be composed of a number of persons from each of the counties in the service area of the Corporation allocated to the various counties on the basis of one (1) director for each 100 members (as distinguished from memberships) or fraction of such 100 members served by the Corporation in said county on the day before the date of such election. Said [fol. 2812] Directors shall be chosen by ballot at the annual meeting of the members or at the special meeting held in place thereof by such members as have the right to vote. Each Director must be a member of the Corporation. Subject to law, the Certificate of Incorporation and to the other provisions of these by-laws, each Director shall hold office until the next annual meeting and until his successor is chosen and qualified.

Section 3. Regular meetings of the Board of Directors may be held without call or formal notice at such places and at such times as the Board of Directors may by vote from time to time determine. A regular meeting of the Board of Directors may be held without call or formal notice immediately after and at the same place as the annual meeting of the members, or the special meeting of the members held in place of such annual meeting.

Section 4. Special meetings of the Board of Directors may be held at any time and at any place when called by the President or two or more Directors, notice thereof being given to each Director by the Secretary, as hereinafter provided, or, in case of the death, absence, incapacity or refusal of the Secretary, by the officer or Directors calling the meeting. In any case it shall be deemed sufficient notice to a Director to send notice by mail at least forty-eight (48) hours, or by telegram at least twenty-four (24) hours, before the meeting, addressed to him at his address as it appears on the books of the Corporation. Any Director may waive notice of any meeting. The attendance of a Director

at any meeting shall constitute a waiver of notice of such [fol. 2813] meeting, unless he shall attend such meeting for the express purpose of objecting to the transaction of any business because the meeting shall not have been properly called or convened.

Section 5. A majority of the Board of Directors shall constitute a quorum for the transaction of business, but a less number may adjourn any meeting from time to time and the meeting may be held as adjourned without further notice. When a quorum is present at any meeting a majority of the directors in attendance thereat shall, except where a larger vote is required by law, by the Certificate of Incorporation or by these By-laws, decide any question brought before such meeting.

Section 6. The Board of Directors shall have the general management and control of all the property, business, and affairs of the Corporation, including, but without limitation, the power to adopt, rescind, and amend by-laws; define and limit the powers and duties of all committees, officers, agents, and employees of the Corporation not otherwise provided for by these By-laws; employ and dismiss the officers and employees of the Corporation and fix their salaries and wages, and require such bonds as may be deemed proper. The Board of Directors shall fix the price at which electric power shall be sold to members of the Corporation, or may contract in the name and on behalf of the Corporation with respect to such rates. The Board of Directors shall fix the price at which any equipment or material offered for sale by the Corporation shall be sold.

Article V

Officers

[fol. 2814] Section 1. The officers shall be a President, a Vice-President, a Secretary, a Treasurer, and such other officers as the Board of Directors may in their discretion appoint. The President, Vice-President, Secretary and Treasurer shall be elected annually by the Board of Directors. The President, and Vice-President must be Directors. So far as is permitted by law, any two or more offices may be filled by the same person. Subject to law, to the Certificate of Incorporation and to the other provisions of these By-

laws, each officer shall hold office for one (1) year and until his successor is chosen and qualified. Each officer shall, subject to these By-laws and in addition to the duties and powers herein set forth, perform such duties and powers as are commonly incident to his office, and such duties and powers as the Board of Directors shall from time to time designate.

Section 2. The President shall be the chief executive officer of the Corporation. Except as otherwise voted by the Board of Directors, he shall preside at all meetings of the members and of the Board of Directors. The President shall have custody of the Treasurer's bond.

Section 3. The Secretary shall keep a true record of all meetings of members and the Board of Directors. In the absence of the Secretary at any meeting, a temporary Secretary shall be chosen who shall record the proceedings of such meeting. The Secretary shall also keep or cause to be kept a membership book containing a complete list of all members and their addresses.

Section 4. The Treasurer shall, subject to the direction [fol. 2815] and under the supervision of the Board of Directors, have general charge of the financial concerns of the Corporation, except his own bond, and he shall have power to endorse for deposit or collection all notes, checks, drafts and other obligations for the payment of money, payable to the Corporation or its order, and to accept drafts on behalf of the Corporation. He shall keep or cause to be kept accurate books of accounts which shall be the property of the Corporation. If required by the Board of Directors, he shall, give bond for the faithful performance of his duties in such form, in such sum, and with such sureties as the Board of Directors shall require.

Section 5. The Board of Directors shall appoint a superintendent to have general oversight, care, and management of the property and business of the Corporation. The superintendent shall have the power to employ and dismiss all his assistants and technical workers, subject always to the direction and approval of the Board of Directors. The Board of Directors shall require a written report from the superintendent to the members at each annual meeting, showing the general business condition of the Corporation.

Such report shall first be submitted to the Board of Directors for its approval.

Section 6. All personnel selected by the Board of Directors or by the Superintendent shall be chosen on a merit basis and shall conform to such personnel standards as the Board of Directors may prescribe.

Article VI

Accounts

[fol. 2816] The accounts of the Corporation shall be kept in such form as the Board of Directors may prescribe.

Article VII

Removals

A majority of the members present at any meeting called for the purpose may remove from office the President, the Vice-President, the Treasurer, Secretary or any Director. The Board of Directors may likewise, by vote of a majority of their entire number, remove from office any officer or agent of the Corporation.

Article VIII

Vacancies

If the office of any director or of any officer or agent, becomes vacant by reason of death, resignation, removal, disqualification or otherwise, a majority of the remaining directors, though less than a quorum, may unless such vacancy, if in the office of director, shall have been filled by the members, choose by a majority vote of their entire number a successor or successors who shall hold office for the unexpired term, subject to the provisions of Article VII.

Article IX

Seal

The seal of the Corporation shall, subject to alteration by the Board of Directors, consist of a flat faced circular die with the words "CORPORATE SEAL", together with the name of the Corporation, cut or engraved thereon.

COMPLAINANTS' EXHIBIT No. 398

Article X

Execution of Papers

Except as the Board of Directors may generally or in particular cases authorize the execution thereof in some [fol. 2817] other manner, all deeds, leases, transfers, contracts, bonds, notes, checks, drafts, and other instruments made, accepted or endorsed by the Corporation shall be signed by the President.

Article XI

Fiscal Year

Except as from time to time otherwise provided by the Board of Directors, the fiscal year of the Corporation shall end June thirtieth.

Article XII

Amendments

These By-laws may be altered, amended or repealed at any regular meeting of the Board of Directors, or at any special meeting called for the purpose. Before any amendment may be declared adopted, it must receive a two-thirds vote of all the Directors present at the meeting.

KWB:MC.

Identified as the form of proposed permanent by-laws submitted to and offered by the meeting of incorporators and Board of Directors of the Middle Tennessee Electric Membership Corporation held at the James K. Polk Hotel, Murfreesboro, Tennessee, June 24, 1936.

Mrs. Frank Travis, Acting Secretary of the Middle Tennessee Electric Membership Corporation.

[fol. 2818] COMPLAINANTS' EXHIBIT No. 399

Minutes of a Special Meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation of Wednesday, November 4th, 1936, at 6:30 P. M.

The meeting was held pursuant to a call by the President and waiver of notice signed by all members of the Board of

COMPLAINANTS' EXHIBIT No. 399

Directors, and pursuant to the certificate of incorporation, and the by-laws of the corporation, and pursuant to the laws of the State of Tennessee.

The meeting was called to order by the President, K. T. Hutchinson, who presided, and E. W. Carmack, Secretary of the Corporation acting as secretary of the meeting. The secretary thereupon called the roll and reported the following present in person:

Lon P. MacFarland, J. C. Couch,
R. E. Snell, E. W. Carmack,
S. B. Smith, S. E. McElroy,
J. C. Bradshaw, Homer Hancock,
K. T. Hutchinson,

being a quorum.

The secretary then presented to the meeting the call and waiver of notice to which the meeting was called.

Then the President called on Mr. J. M. Peavey for recommendations in regard to a superintendent and assistant superintendent to be named by the corporation. Mr. Peavey stated that TVA personnel division had made a thorough investigation into the qualifications of a number of appli- [fol. 2819] cants for the positions and that he was prepared to recommend to the Board Mr. T. E. Steele, of Griffin, Georgia, as superintendent and Mr. M. C. Morgan, of Chattanooga, as assistant superintendent and maintenance linesman. Mr. Peavey discussed the qualifications of each of the above men. The members of the Board asked questions in regard to their qualifications.

Whereupon, upon motion duly made and seconded, and unanimously adopted by the affirmative vote of all of the members present it was resolved,

That Mr. T. E. Steele be selected as superintendent at a salary of between $1620 and $1800 per year, and that Mr. M. C. Morgan be selected as assistant superintendent and maintenance linesman at a salary of between $1260 and $1620, and it was further

Resolved that the President and Secretary of the Corporation be authorized to negotiate and enter into a contract with Mr. T. E. Steele and Mr. Morgan for their employment for the above positions.

COMPLAINANTS' EXHIBIT No. 399

The President then called for a discussion in regard to requirements necessary of members before the corporation connected and gave service to them, and in regard to the installation of appliances signed for before the corporation gave service to the members.

Whereupon, upon motion duly made and seconded it was Resolved that the superintendent be directed to connect members only when the members have purchased the equipment signed for on the customer list, or equipment the estimated consumption of which is equal to the amount of [fol. 2820] equipment signed for and have the same on the premises ready for installation, or have a valid contract for the purchase of said equipment, or that part thereof not already purchased. This contract with an authorized dealer to be for the purchase of said equipment within 90 days from the date of connection. Provided that in any case where the member has purchased, or has valid contract for the purchase, of equipment within 90 days, the estimated consumption of which is 480 kilowatt hours per month; That the superintendent be authorized to and instructed to connect such members, but provided that said members are not to be relieved from the installation of equipment signed for the consumption of which is above this amount of 480 kilowatt hours per month, but will be required to install said equipment later or have other members install additional equipment to compensate for the equipment which the member failed to install.

Thereupon, upon motion duly made and seconded, the President was called upon to appoint a committee of three to investigate and report to the Board of Directors on the requirements to be made and the time in which members would be required to install equipment for which they had signed. The President thereupon appointed J. C. Couch and R. E. Snell to assist him in this.

There being no further business, on motion duly made and seconded by all of the directors present the meeting was adjourned.

E. W. Carmack, Secretary.

Approved: K. T. Hutchinson, President.

[fol. 2821] COMPLAINANTS' EXHIBIT No. 400

Minutes of Special Meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation of Friday November 13, 1936

A special meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held in the Chamber of Commerce Building in Lebanon, Tennessee, Friday November 13th, 1936, at 7 o'clock P. M. pursuant to a call by the president and a notice sent to all of the members of the Board of Directors as required by the by-laws.

The meeting was held pursuant to the certificate of incorporation and the by-laws of the corporation and of the laws of the State of Tennessee.

The meeting was called to order by K. T. Hutchinson, President of the corporation, who presided, and the secretary being absent on motion duly made and seconded, which motion was unanimously carried, Mrs. Margarette Travis was elected temporary secretary for this meeting, and authorized to report the minutes. The secretary thereupon called the roll and reported the following directors were present in person:

J. G. Harris,	E. W. Weatherly,
Noel B. Nokes,	M. H. Jones,
J. J. McFarland,	K. T. Hutchinson,
Homer Hancock,	J. C. Bradshaw,
S. B. Smith,	S. E. McElroy,
R. E. Snell,	J. C. Couch,

Lon P. MacFarland

[fol. 2822] Said members being a quorum of the Board of Directors.

The President then introduced to the Board of Directors Mr. T. E. Steele and Mr. M. C. Morgan, superintendent and assistant superintendent.

The President thereupon called on Mr. MacFarland, counsel for the corporation to present and discuss the rental contract for the rental of an office building in Murfreesboro. Mr. MacFarland presented the contract as drawn with Mr. A. B. Smith as lessor and with Beesleys of Murfreesboro, owners of the building and discussed the same. Thereupon, upon motion duly made and seconded and unanimously adopted by all of the members present it was

Resolved that the president and secretary be authorized to enter into and execute contract as prepared by counsel for the rental of the building for a period of two years and three months.

The President then called upon Mr. MacFarland for a discussion in regard to insurance to meet the requirement of the Construction Loan Contract with REA. Mr. MacFarland stated that application for the necessary insurance had been made to cover public liability in the amount of $25,000 for injury to one person and a maximum of $50,000 to more than one person. For property damage in the amount of $10,000, and also to cover the truck to be purchased by the corporation in the amount of $10,000; public liability for the injury to one person and in the maximum amount of $20,000, and property damage in the amount of $5,000. The President then called for a discussion in regard to the insurance. Workman's compensation insurance [fol. 2823] to cover employees of the corporation was also discussed and it was stated that the necessary insurance would cost approximately $450 per year. A discussion was had and thereupon, upon motion duly made and seconded, which motion was unanimously adopted by the affirmative vote of all of the members present, it was

Resolved, That the President and counsel for the corporation be authorized to purchase the necessary insurance for the corporation and to have it become effective as soon as possible.

The President then called for a discussion in regard to the salary of the superintendent. Mr. Steel stated that the salary of $1620 was agreeable to him and requested that a contract be drawn for a six month period. Thereupon, upon motion duly made and seconded and unanimously adopted by the affirmative vote of all the members present it was

Resolved, That the President and Secretary be authorized to execute the contract with Mr. T. E. Steele for his employment as superintendent at the rate of $1620 a year. And that the counsel for the corporation is hereby instructed to prepare the necessary contract for the execution by the President and Secretary on behalf of the corporation and Mr. Steele.

COMPLAINANTS' EXHIBIT No. 400

The President then called for discussion on the salary and contract for Mr. M. C. Morgan as assistant superintendent and linesman. Mr. Morgan stated that he would accept employment for this position at a salary of $1260. The counsel was then instructed by the President to prepare the necessary contract. Thereupon, upon motion duly made [fol. 2824] and seconded and adopted by the affirmative vote of all of the members present it was

Resolved, That the President and Secretary be authorized and directed to enter into a contract for the employment of Mr. M. C. Morgan as assistant superintendent and linesman at a salary at the rate of $1260 per year. This contract to be for a six month period and to be as prepared by counsel,

The President then called for discussion in regard to the salary of Mrs. Travis, on motion duly made and seconded and adopted by the affirmative vote of all members present, the President was authorized to appoint a committee to make recommendation to the next meeting of the Board of Directors in regard to the salary and contract with Mrs. Travis as stenographer and cashier. The President then appointed Mr. Homer Hancock, Mr. S. E. McElroy, and Mr. J. C. Couch, and requested that they go into this and report to the next meeting.

Mr. MacFarland, counsel for the corporation, then suggested that Judge W. R. Chambers of Lebanon be named associate counsel for the corporation to do some work and associate him as counsel in preparing an opinion on the validity of the organization of the corporation as requested by REA Loan Contract. Thereupon, upon motion duly made and seconded and unanimously adopted by all the members present it was

Resolved, That Judge W. R. Chambers of Lebanon be named associate counsel for the corporation, and that his name be submitted by the general counsel to the REA.

The President then stated that it was necessary to have [fol. 2825] a service truck for the superintendent and assistant superintendent and called for discussion in regard to a suitable truck. It was decided that a one-half ton truck was suitable. Thereupon, upon motion duly made and seconded by the affirmative vote of all members present it was

resolved that the president be authorized to appoint a committee, and that this committee be empowered to purchase a one-half ton truck suitable for the needs of the corporation at the lowest figure obtainable and that this committee be directed to purchase the truck on a suitable long term payment plan. The President then directed Mr. Steele, the superintendent, to go with this committee, and named himself, Mr. R. E. Snell and Mr. M. H. Jones as a committee. The committee was then directed to purchase the truck as soon as possible.

The President then called upon Mr. J. M. Peavey to discuss the operating problems of the association. Mr. Peavey discussed various problems and suggested that an executive or advisory committee be named in both Wilson and Rutherford Counties to meet with the superintendent and assistant superintendent at regular intervals to advise with them. Thereupon, upon motion duly made and seconded, which motion was unanimously adopted by all of the members present it was

Resolved, That the President be authorized to name these committees in each county.

The President then named Mr. MacFarland, Mr. J. G. Harris and Mr. Homer Hancock for Wilson County and Mr. S. R. McElroy, Mr. J. C. Couch to work with the President in Rutherford County.

A discussion was then had in regard to the authority and responsibility of the superintendent. It was decided the [fol. 2826] superintendent would be directly responsible to the Board of Directors and all employees would in turn be responsible and under the direction of the superintendent.

A discussion was then had in regard to mail and correspondence of the corporation. Upon motion duly made and seconded, which motion was unanimously adopted by the affirmative vote of all members present it was

Resolved, That all correspondence in regard to the operation of the property of the corporation go out by and over the signature of Mr. T. E. Steele, and that three copies be made of all correspondence; one copy to be sent to Mr. J. M. Peavey, at Shelbyville; and one copy be sent to Mr. T. R. Hunnicutt, TVA, Chattanooga, and one copy be retained for the files of the corporation.

COMPLAINANTS' EXHIBIT No. 400

On motion duly made and seconded and unanimously adopted by the affirmative vote of all members present it was

Resolved, That the superintendent be authorized and directed to have membership certificates, as drawn and approved by the counsel, printed in an amount of 2000 at the earliest possible date.

A discussion was then had in regard to the collection of membership fees. Upon motion duly made and seconded and unanimously adopted by all of the members present it was

Resolved, That the membership fees be collected only at the office of the corporation and not in the field, except in cases of extreme emergencies. And that Mrs. Margarette Travis be elected temporary cashier and Treasurer with authority to collect membership fees.

[fol. 2827] The president then appointed a committee composed of Lon P. MacFarland, E. W. Weatherly and J. G. Harris to have proper bond made for Mrs. Travis.

On motion duly made Mr. Hancock recommended that Mrs. Prentice Majors, of Wilson County be included and connected at the time that the line is energized in her neighborhood, as she had granted easement of a considerable length of line, had signed for considerable equipment and had been inadvertently left off of the customers list. This motion was duly seconded and unanimously adopted and the superintendent was ordered to connect Mrs. Majors.

A discussion was had on the collection of membership fees and an office for Wilson County. The President appointed Mr. MacFarland and Mr. Hancock as a committee to investigate and report at the next meeting of the Board of Directors.

There being no other or further business, upon motion duly made and seconded the meeting was adjourned.

Margarette Travis, Temporary Secretary.

Approved: K. T. Hutchinson, President.

[fol. 2828] COMPLAINANTS' EXHIBIT No. 401

Minutes of Special Meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation

A special meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held in the Chamber of Commerce Building in Lebanon, Tennessee, Thursday, March 4th, 1937, at 7 P. M., pursuant to a call by the President, and pursuant to notice to all of the members and pursuant to the certificate of incorporation and the by-laws of the corporation, and pursuant to the laws of Tennessee.

The meeting was called to order by the President, K. T. Hutchinson, who presided. In the absence of the Secretary Mr. H. C. Morgan was elected acting secretary of the meeting. The roll was called by the acting secretary, who reported the following directors present:

K. T. Hutchinson,	Homer Hancock,
J. C. Couch,	R. E. Snell,
J. C. Bradshaw,	J. G. Harris,
M. H. Jones,	Lon P. MacFarland,
S. E. McElroy,	S. B. Smith,

E. W. Weatherly.

Said members being a quorum of the Board.

On motion, the reading of the minutes of the last meeting was waived. Mr. Ira Vance requested the Board of Directors to exempt him from installing a refrigerator, which he had signed up for on his farm, stating that at the time [fol. 2829] he had planned to live on his farm, but at the present time could not move there. Upon motion it was decided that the matter be referred to Mr. Steele, and that he act on it in the near future.

The President then called upon Mr. Steele, the superintendent, for his regular monthly report. Mr. Steele reported as follows:

"Since the advisory committee has explained that they were very much in favor of the rules and regulations drawn up by Mr. Hunnicutt, I have tried to follow out the outline of these in making a summary of the different points for discussion.

The cash on hand at present is $1,510.96.
Total number of memberships, 407.

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Number of meter orders 349.
Amount of monthly bills we owe this month is $488.92.
Bills due from residential consumers, $445.93.
Bills due from commercial consumers, $72.14.
Amount of current bills, $518.07.
Number of customers billed this month, 268.
Number of minimum bills, 60.
Number of part month bills, 32.

We, Mr. Morgan and I, meet once monthly with the men from Lincoln and Bedford Counties to discuss safety methods in handling hot wires and operation of system in case of outage. If our system goes off, we will have to operate different switches on our system and after each operation, it will be necessary to call in to report the switch open so that a test may be put on the section of line between the [fol. 2830] switch and substation.

To facilitate calling and save time, I have made arrangements whereby I can use the Bell System with a test set. I can buy a used test set for $20.00. The cost of a new one being $34.

I'm working on a list of tools and equipment to be used on our work. I'm cutting this list to as low a figure as to think it would be wise to advocate. At the next executive committee meeting, I shall hope to be able to quote the exact figures.

Routes 6 and 6A were energized on 2-20-27. This line is on the Halls Hill Pike and leads in to and to the right of Poterfield.

On 3-2-37, we energized Route 7. This leads from Poterfield to the Wilson County line, north of Milton.

The construction department is operating 3 air compressors and in about 2 weeks, Routes 10, 10A and 14 will be ready to energize. Holes are dug on 19. Poles are set on Route 18. These lines will be practically finished in 3 weeks. At the last of next week the construction department hope to begin on Routes 12 and 13. The work will be carried on very rapidly because all the forces will be focused on these 2 routes."

Mr. Steel then presented the monthly bills recommended for payment as follows:

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R. T. Groom, Agt.	$100.00
Ed Smith and E. C. Todd	13.50
Lon P. MacFarland	3.00
Southern Bell Tel. & Tel. Co.	11.80
Annie B. Williams, Register	3.00
[fol. 2831] Bell Bros. Co.	32.16
Southern Bell Tel. & Tel.	2.90
General Electric Supply Co.	2.67
Chas. L. Briley	1.95
Beauvais Carbon Co.	3.00
A. B. Smith	45.00
Tennessee Elec. Power Co.	1.00
McCord & Harris	3.60
Mullins-Osborn Co.	8.75
Spence-Smotherman Sign Service	4.00
Paul Harris	13.00
Firestone Service Stores	39.74
Murfreesboro Water Department	1.15
Tennessee Valley Authority	173.27

Upon motion duly made and seconded it was resolved that the Board of Directors authorize the payment of the bills as presented.

It was duly moved and seconded and passed that the purchase of the test set for $20.00 be included in the payment of the monthly bills.

Upon motion duly made and seconded it was resolved that the Board of Directors recommend the cutting off of the following sections of lines: on Route 24 from P. A. Taylor and Westward; on Route 14 from Tuckers Cross Roads to Less McDonalds; on Route 15 from Commerce to Simpson. Upon motion duly made and seconded it was resolved that future action in cutting off sections of line be referred to the executive committee and said executive committee be authorized to act on same.

Mr. Steele suggested that the Board act on Mr. Hunni- [fol. 2832] cutts recommendation of rules and recommendations. This was discussed but it was decided that since all members of the Board of Directors had not received a copy of these that this be delayed until the next meeting of the Board. Mr. Steele was instructed to send a copy of these recommendations of Mr. Hunnicutt to each member.

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Mr. Couch invited the entire Board to be guests at dinner in Murfreesboro at the next board meeting, in April.

A discussion of the Treasurer's bond was had. Upon motion duly made and seconded it was resolved that the treasurer's bond be fixed at $10,000.00. It was further resolved that all checks on the construction loan fund be signed by the Treasurer and countersigned by the Secretary and Vice-President.

Upon motion duly made and seconded it was resolved that the Board of Directors affirm the action of the special committee appointed to set the salary of Mrs. Margarette Travis, cashier. It was further resolved that the President be authorized to pay to Mrs. Travis a salary of $75.00 per month, beginning January 1, 1937.

Upon motion duly made and seconded the meeting was adjourned.

H. C. Morgan, Acting Secretary. E. W. Carmack, Secretary.

Attest: K. T. Hutchinson, President.

[fol. 2833] COMPLAINANTS' EXHIBIT No. 402

March 18, 1937.

DEAR SIR:

You are hereby notified that a special meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation has been called by the President and will be held at the office of the Corporation, at 125 N. Church Street, at 7:00 P. M., on the 19th day of March, 1937.

The purpose of this meeting is (1) to discuss and authorize the building and determining where, 15 miles of lines shall be built.

This 15 miles of the original mil-age that was cut off and is to be applied on some other extension already submitted.

(2) To discuss and act upon any other general business that may properly come before the Board of Directors.

E. W. Carmack, Secretary.

COMPLAINANTS' EXHIBIT No. 402

To E. W. Carmack, Secretary of the Middle Tennessee Electric Membership Corporation:

In accordance with the authority vested in me by the By-laws of this corporation, I hereby call a special meeting of the Board of Directors, to be held in the office of the Corporation at 7:00 o'clock P. M., on the 19th day of March, 1937, for the purpose of acting upon and authorizing the building of 15 miles of line and where it shall be [fol. 2834] built, and

For the transaction of any other business in general that may properly come before the Board of Directors, and you are hereby instructed to send out notices of said meeting.

Witness my hand, this the 17th day of March, 1937.

K. T. Hutchinson, President.

Minutes of Special Meeting of the Middle Tennessee Electric Membership Corporation of March 19th, 1937

A special meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation was held in the office of the Corporation in Murfreesboro, Tennessee, Friday, March 19th, 1937, at 7 P. M., pursuant to a call by the President and pursuant to notice to all of the members, and pursuant to the certificate of incorporation and the by-laws of the corporation, *and pursuant to the certificate of incorporation and the by-laws of the corporation,* and pursuant to the laws of Tennessee.

The meeting was called to order by the President, K. T. Hutchinson, who presided. In the absence of the Secretary Mrs. Margarette Travis was elected acting secretary of the meeting. Upon the roll call by the acting secretary the following were reported present:

[fol. 2835]

J. C. Couch,
J. C. Bradshaw,
M. H. Jones,
Homer Hancock,
K. T. Hutchinson,
J. J. McFarland,
Lon P. MacFarland,
E. W. Weatherly,
S. B. Smith,

All of which members constitute a quorum of the Board of Directors.

Upon motion duly made and seconded, and discussions were had on same, the reading of the minutes of the last meeting was waived.

Mr. J. M. Peavey was present and the president called upon him for a discussion and recommendations of 15 miles of lines to be build by the corporation, taking the place of other lines cut off of the original project, which was not considered feasible.

Mr. Peavey urged the corporation to take the advise of TVA in building their lines and from now on, never to build a line with less than a three to one ratio. Ratio was then discussed and Mr. Peavey then suggested a minimum of $16.00 per mile revenue before the building of lines. It was his suggestion, also, to concentrate on line load rather than building new extensions. He added, however, if any were as good as six to one to pass it.

Mr. MacFarland made motion that all extensions with a ratio over six to one be approved for immediate construction. Mr. Couch moved that the entire 13.01 miles be approved. After general discussions Mr. MacFarland amended his motion as follows:

[fol. 2836] Resolved that immediate construction of R# ME5-1, .26; 1A-1, .7; Me 1D-1, 1 mile; ME10B-1, 2.5; Me14-1, 2; ME 21A-1, .35; R #21-1, 5 miles; Me 23-1, 3 miles, a total of 13.01, be approved, and in addition thereto I move you that if there are other projects to take up the balance of two miles that this mileage be included to make up the 15 miles.

Mr. E. W. Weatherly further moved the approval of construction of any additional project up to eight miles if the ratio figured as much as six. The motions were seconded by Mr. Hancock and were carried by a una-imous vote.

Mr. J. J. McFarland brought before the board the cases of Mr. Moore, and, Mr. Thompson, who wanted to change their appliances or be turned on without them, because of the fact that they did not actually sign for them. Because of the discrepancy motion was made by Mr. Couch to let the gentlemen have service. After discussion it was decided it might not be well understood by other members and they would let the cases float under the direction and discretion of Mr. Steele. Mr. Couch's motion was then amended to

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instruct Mr. Steele to tie them on at a reasonable time, and to float them a reasonable time, but with the assurance that he not lose them as customers. The motion was duly seconded and unanimously carried.

Upon motion being duly made and carried the meeting was adjourned.

Mrs. Frank Travis, Acting Secretary. E. W. Carmack, Secretary.

Attest: K. T. Hutchinson, President.

[fol. 2837] COMPLAINANTS' EXHIBIT No. 403

To E. W. Carmack, Secretary of the Middle Tennessee Electric Membership Corporation:

In accordance with the authority vested in me by the By-laws of this corporation, I hereby call a special meeting of the Board of Directors, to be held in the office of the Corporation at 7:00 o'clock P. M., on the 2nd day of April, 1937, for the purpose of approving the payment of monthly bills, and to transact other routine business, and,

To consider and act on any other matters that may be properly brought before the Board.

Witness my hand, this the 1st day of April, 1937.

K. T. Hutchinson, President.

April 2, 1937.

DEAR SIR:

You are hereby notified that a meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation has been called by the President and will be held at the office of the Corporation, at 125 N. Church Street, at 7 o'clock P. M., on the 6th day of April, 1937.

The purpose of this meeting is (1) to approve the payment of monthly bills, and to transact other routine business.

(2) To consider and act on any other matters that may be properly brought before the board.

[fol. 2838] E. W. Carmack, Secretary.

P. S.—The Board members will go directly from the office to the City Cafe for dinner. After that the Board will be

called to order for the regular monthly meeting. If you should be late come on to the City Cafe and join the group.

Minutes of a Special Meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation

A special meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held in the office of the corporation, 125 N. Church St., April 6th, 1937, at 8 P. M. pursuant to a call by the President and notice to all of the Directors and pursuant to the certificate of incorporation and the by-laws and the laws of the State of Tennessee.

The Rutherford County members entertained the Wilson County members at a dinner at the City Cafe before the regular meeting.

Mr. T. R. Hunnicutt, of TVA, Mr. Burton, TVA, Mr. Peavey of TVA and Mr. C. F. Holt, former member of the Board were guests.

The regular meeting was called to order by the President at the office at 8 o'clock, and on motion duly made and seconded Mrs. Frank Travis was elected temporary secretary of this meeting and directed to report the same. Upon roll call the secretary reported the following directors present:

[fol. 2839]

M. H. Jones,	J. J. McFarland,
E. W. Weatherly,	K. T. Hutchinson,
J. C. Couch,	R. E. Snell,
Homer Hancock,	J. G. Harris,
S. B. Smith,	Lon P. MacFarland,
J. C. Bradshaw,	S. E. McElroy.

The President then called upon the guests each of whom made a short talk.

Mr. Steele was then called on for his report, which follows:

Unpaid vouchers for the month:

Robert Groom	$139.20
Southern Bell Tel. & Tel. Co.	12.95
Wilson Co. Register	10.00

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General Electric	$1.86
Line Material Co.	25.15
Firestone Service Stores	38.86
Water Department	1.15
Modern Ad. Co.	8.50
Ambrose Printing Co.	42.00
Tennessee Electric Power Co.	2.11
McCord & Harris	.70
Mullins-Osborne Co.	2.70
A. B. Smith	45.00
Murfreesboro Printing Co.	22.00
Tennessee Valley Authority	213.76
Social Security Tax	3.15
Petty Cash reimbursement	44.61
	$568.99

[fol. 2840] Metered revenue for the month, $719.77.
Number of meter orders issued, 450.
Number of memberships issued, 498.
Number of bills sent this month, 422.
Number of minimum bills, 125.
Number of bills for part month, 65.
Cash on hand end of month, $1,755.97.

Line report:

Total 3-phase pole line miles	56.86
Total single phase pole line miles	216.13
Total pole line miles as staked	272.99

Total primary line miles, 240.52.
Total number of original customers to be served by lines as staked out, 839.
Pole line miles energized as of 4-1-37, 203.53.
Total customers on lines energized as of 4-1-37, 634.
Total number of customers now being served on energized lines, 440.
69 per cent of customers on energized lines are receiving service.

72 customers now receiving service were not among original signers. (These are among the 440 now being served.)

Mr. Safely of the Baird Safely Hardware Company has agreed for the present to collect our bills at his store in Lebanon. This was done for the convenience of those members living in Wilson County who carry no checking account. Mr. MacFarland, will this be agreeable with REA since Mr. Safely is not bonded?

[fol. 2841] On March 19, 1937, I energized Route 14 and second section of Route 10. This includes a part of 3 phase line and the single phase leading east of Lebanon through Tuckers Cross Roads into Grant.

On March 20, 1937, I energized 10 B which is south and parallel to Routes 10 and 14 and leads out through Bethany.

On April 2, 1937, I energized Routes 15 and 15A, this line branches off of Route 14 and extends south into the Commerce and Saulbury community.

Our next routes to make hot will be 16-17-17A and 17B. It is not official but our plans are to energize these routes next Thursday, the eighth. Then on the next week we will energize 18 and 19.

"Mr. McElroy is possibly more familiar with the details of a condition that exists in his section which has been brought to my attention: that of Mr. Allen. Mr. Allen paid his membership sometime ago and wired his house but didn't buy a refrigerator for which he was signed. Mr. Woodruff, one of our members, who lives near Mr. Allen told me that some of the Power Company men had a form or an affidavit that they wanted Mr. Allen to sign and told Mr. Allen that they would make it worth his while, besides he would get current within a short time without having to buy a refrigerator. And in the meantime to ask for his ten dollars membership back and regardless of whether it was refunded or not, he would receive current. I felt that I should bring this to the attention of the Board."

Upon motion duly made and seconded it was resolved that the bills as set out in Mr. Steele's report be paid. The [fol. 2842] question of turning Mr. Allen, a prospective customer, on was discussed. Mr. Hunnicutt was called on to discuss it. He stated that this question was a serious one; that relieving customers of their original sign-up would create loss through discrimination but that there were some

cases where exceptions had to be made. The question of connecting Mr. Reed; Mr. Lillars and others were also discussed. Upon motion duly made and seconded it was Resolved, that Mr. Steele connect Mr. Allen upon condition that he sign a contract to purchase his equipment within 12 months.

Mr. Harris then discussed the case of Mr. Talley, stating that Mr. Talley has signed for a range instead of a water-heater on his contract. It was stated that it was a mistake of the TVA's solicitor rather than Mr. Talley's mistake. Upon motion duly made and seconded it was Resolved, that Mr. Talley be connected.

Upon motion duly made and seconded it was Resolved, that Kilowatt hours be swapped instead of equipment.

Dr. Smith moved that action on individual cases and changing of contracts be delayed for six months. This motion was lost.

Mr. Weatherly brought up the case of Mr. J. E. Belcher of Wilson County. This case was discussed and upon motion duly made and seconded it was Resolved, that, Mr. Belcher's case be delayed for further investigation.

Mr. Couch brought up the discussion of the payment of installations on ranges and water heaters for the customers. Mr. Steele was instructed to get up information upon the total number of these cases.

[fol. 2843] The President discussed the date of payment of customers bills. After general discussion decision on this matter was postponed for Mr. Steele to work out a better plan with the adjustment of penalties.

Mr. MacFarland requested that each member contract their Representative and Senator to get their support in the passage of the REA bill in the State Legislature.

The President asked for a report on all extensions that were approved at the last meeting. Mr. Peavey stated that a survey crew was working on the extensions at the present time and that there were about 68 more miles of the original project to be built before the substitutes could be begun. He also stated that TVA would have a representative to make a house to house canvass to ascertain whether or not prospective customers of originally signed contracts who were on the existing lines were or were not going to connect on. He stated, also that Mr. Bridges and Mrs.

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Davis would be sent back to this territory for additional work.

The superintendent asked the Board for authority to use $600.00 for buying of maintenance tools. On motion duly made and seconded it was resolved that this $600.00 be allotted for this purpose.

Upon motion duly made and seconded, the meeting was adjourned.

Mrs. Frank Travis, Acting Secretary. E. W. Carmack, Secretary.

Approved: K. T. Hutchinson, President.

[fol. 2844] COMPLAINANTS' EXHIBIT No. 404

To E. W. Carmack, Secretary of the Middle Tennessee Electric Membership Corporation:

In accordance with the authority vested in me by the Bylaws of this Corporation, I hereby call a meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation, to be held in the office of the Corporation, 125 N. Church Street, Murfreesboro, Tennessee, at 7:30 P. M. on the 4th day of June, 1937, for the purpose of considering the undertaking of expansion programs, and to consider and approve current bills and other business that might properly come before the Board.

Witness my hand on this the 31st day of May, 1937.

K. T. Hutchinson, President.

May 31, 1937.

DEAR SIR:

You are hereby notified that a meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation has been called by the President, and will be held at the office of the Corporation, at 125 North Church Street, Murfreesboro, Tennessee, at 7:30 P. M., on the 4th day of June, 1937.

The purpose of this meeting is (1) to consider the undertaking of an expansion program.

(2) To consider and approve current bills.

[fol. 2845] (3) To consider and act upon any other business that may properly come before the Board.

E. W. Carmack, Secretary.

Minutes of Monthly Meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation of June 4, 1937

A meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held at the Corporation office at Murfreesboro, Tennessee, on June 4th, 1937, at 8 o'clock P. M., pursuant to a call by the President and notice to all of the directors and pursuant to the certificate of Incorporation, to the by-laws and to the laws of the State of Tennessee.

The meeting was called to order by the President at 8 o'clock P. M.

Mr. Terry Eatherly, a new director from Wilson County, elected instead of Noel B. Nokes, who had resigned, was introduced to the Board. Mr. Eatherly stated that he was glad to be a member of the Board of Directors and would try to cooperate in every way to the success of the corporation.

The President stated that Mr. Hunnicutt of the TVA was not ready yet to discuss the extensions; that he had been advised by Mr. Hunnicutt that everything possible was being done in Washington to secure the Veteran's Hospitals as a customer, and that he had further been advised that [fol. 2846] there was a 44,000 volt line being planned by the TVA to be built through the territory.

Mr. E. L. Williams and wife, appeared before the Board and asked that they be given service. The Board discussed the problem with Mr. Williams and assured him that effort would be made to serve him, and requested that he try to obtain a right-of-way to his property so that a line could be built. The matter of the present easement held by the corporation was referred to Mr. MacFarland, counsel, to report on.

The President then called on Mr. Steele, superintendent, for his monthly report, which is as follows:

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"Vouchers to be paid for the month:

A. B. Smith	$45.00
Firestone Auto Supply Stores	88.92
Tennessee Valley Authority	346.68
Aluminum Company of America	53.85
Tennessee Electric Power Co.	3.02
Social Security	6.30
Daily-news journal	10.50
Chas. L. Briley	1.30
Murfreesboro Water Dept.	2.22
Sangamo Electric Co.	45.84
Southern Bell Tel. & Tel.	15.55
Line Material Co.	145.33
Tafel Electric Co.	13.83
Petty Cash	43.84
E. H. F. A.	297.36
	$1,119.54

[fol. 2847] Metered Revenue, $1,008.48.
Amortization, 309.21.
Balance Cash on hand, $3,210.44.
Number of Min bills, 222.
Number billed for month, 670.
Number part month bills, 33.
Average bill, 1.96.
Number memberships issued for mo., 43.
Kilowatt hours sold, 35,440.
Kilowatt hours bought, 52,800.
Memberships to date, 706.
Customers to date, 697."

Upon motion duly made and seconded it was resolved: That the bills and report, as presented by Mr. Steele, be approved, and that the bills included in said report be paid. Mr. Steele then asked that he be given permission to buy a second hand filing cabinet and desk for the office. He was granted this permission by the Board.

Mr. Peavey, district manager of TVA, was present and extended an invitation to attend a Barbecue at Shelbyville on June 19th.

Mr. Hancock was called on to discuss problems of electric farms and did discuss the program being promoted by the

extension service. He stated that it would be necessary to purchase metering equipment and that would be the only expense of the corporation.

Upon motion duly made and seconded it was resolved: That the corporation purchase metering equipment for ten [fol. 2848] farms.

Upon motion duly made and seconded the President was instructed to appoint a committee to call on and discuss with the State Public Utilities Commission problems of the corporation, and discuss with them rates in regard to the hospital. The President appointed Mr. Hancock, Mr. Carmack and Mr. MacFarland.

Upon motion duly made and seconded it was resolved: That an application be prepared and submitted to the REA for additional money up to $300,000.00 for the building of new extensions, as soon as the extensions could be worked into feasible projects. The counsel for the corporation was instructed to prepare the application.

Upon motion duly made the meeting was adjourned.

E. W. Carmack, Secretary.

Attest: K. T. Hutchinson, President.

[fol. 2849] COMPLAINANTS' EXHIBIT No. 405

The Middle Tennessee Electric Membership Corporation

Minutes of Special Meeting of Board of Directors

A special meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held at the office of the Corporation, in the City of Murfreesboro, State of Tennessee, at 7:00 o'clock P. M., on the 16th day of June, 1937, pursuant to call and to waiver of notice of all of the directors of the Corporation.

The meeting was called to order by K. T. Hutchinson, President of the Corporation, who presided, and E. W. Carmack, Secretary of the Corporation, acted as Secretary of the meeting and kept the minutes thereof.

Upon calling the roll the Secretary reported that the following were present:

Lon P. MacFarland,	M. H. Jones,
S. E. McElroy,	Homer Hancock,

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J. C. Couch,	T. H. Eatherly,
E. W. Carmack,	E. W. Weatherly,
J. G. Harris,	J. C. Bradshaw,
S. B. Smith,	R. E. Snell,
J. J. MacFarland,	K. T. Hutchinson,

said persons being all of the directors of the Corporation.

The Secretary then presented and read the call signed by the President and the waiver of notice of the meeting signed by all of the directors of the Corporation, said call and said waiver of notice being as follows:

[fol. 2850] We, the undersigned directors of The Middle Tennessee Electric Membership Corporation (hereinafter called the "Corporation"), do hereby waive all notice of the time, place and purpose of a special meeting of the Board of Directors of the Corporation and we do hereby fix The Corporation Office, in the City of Murfreesboro, State of Tennessee, as the place and the 16th day of June, 1937, at 7:00 o'clock, P. M. as the time for the holding of said meeting of the Board of Directors for the following purposes:

1. To authorize the construction, operation and maintenance of electric transmission, distribution and service lines or system in the Counties of Rutherford, Wilson, Smith, Cannon and Davidson, State of Tennessee, by the Corporation;

2. To authorize the execution and delivery of an Amendment to the Construction Loan Contract between the Corporation and the Government, acting through the Rural Electrification Administration, with respect to the terms of the loan by the Government to the Corporation of not to exceed $254,000, and of an additional loan by the Government to the Corporation of not to exceed $6,000, and specifying the requirements incident thereto;

3. To authorize the execution and delivery of an additional Mortgage Bond by the Corporation to the Government in the principal amount of $6,000 providing for interest at the rate of 2.77 per centum per annum, payable monthly and providing for the payment of principal in monthly in-

stallments calculated to pay and discharge the indebtedness [fol. 2851] evidenced by said Mortgage Bond in twenty (20) year ;

4. To authorize the execution and delivery of a Supplemental Mortgage and Deed of Trust of all the property and assets of the Corporation, now owned or hereafter acquired, to secure, with the original Mortgage and Deed of Trust heretofore executed and delivered, equally and ratably, said Mortgage Bond and any any all additional bonds which have been or may be issued in the manner and upon the terms and conditions and for the purposes set forth in such Mortgage and Deed of Trust and Supplemental Mortgage and Deed of Trust, and any and all bonds which may be issued in renewal of or substitution for the Mortgage Bond or any additional bond or bonds so executed and delivered, the aggregate principal amount of which Mortgage Bond, additional bonds and such renewal and substituted bonds shall not at any time exceed $500,000;

5. To authorize and to approve and ratify the execution of various contracts for, relating to, or in connection with, the construction of said proposed lines or system including without limiting the generality of the foregoing, a contract or contracts for the purchase of electric energy for use in connection with the operation of said proposed lines or system;

6. To amend the by-laws of the Corporation;

7. To approve, adopt, ratify and confirm all action taken at all prior meetings or assemblages of the Incorporators [fol. 2852] and of the Directors and of the Members of the Corporation and all steps taken and acts performed in connection therewith or pursuant thereto;

8. To take any and all action and to transact any and all business which may be necessary, convenient or desirable in connection with any of the foregoing at said meeting or at any adjournment or adjournments thereof;

and for the transaction of such other and further business as may come before said meeting or any adjournment or adjournments thereof.

In Witness Whereof, we have hereunto set our hands this 15th day of June, 1937.

S. E. McElroy, J. C. Couch, E. W. Carmack, S. B. Smith, M. H. Jones, R. E. Snell, K. T. Hutchinson, C. F. Holt, Lon P. MacFarland, J. G. Harris, J. J. McFarland, Homer Hancock, T. H. Eeatherly, J. C. Bradshaw, E. W. Weatherly, N. B. Nokes, being all of the directors of the Middle Tennessee Electric Membership Corporation.

The Secretary then presented to the meeting the Minutes of all prior meetings of the Members and of the Board of Directors and of the Incorporators of the Corporation, and such Minutes were lawfully examined by all of the Directors. Therefore, on motion duly made and seconded and unani- [fol. 2853] mously carried by the affirmative vote of all the Directors it was:

Resolved, that the Board of Directors of the Corporation hereby affirms, adopts, ratifies and confirms all action taken at all prior meetings of the Incorporators and of the Members and of the Board of Directors of the Corporation, and all steps taken and acts performed in connection therewith or pursuant thereto, including, though not by way of limitation, the adoption of by-laws; the election of officers, including K. T. Hutchinson as President and E. W. Carmack as Secretary; and the adoption of a corporate seal.

The Chairman then outlined in general terms the program whereby the Corporation has constructed and will construct and operate electric transmission, distribution and service lines or system in rural areas in the Counties of Rutherford, Wilson, Cannon, Smith, and Davidson, State of Tennessee. financed and to be financed by a loan from the United States of America, through the Rural Electrification Administration. He also outlined the necessity and desirability of an additional loan for this purpose and presented to the meeting a form of proposed Amendment to Construction Loan Contract prepared for execution between the Corporation and the United States of America, acting through the Administrator of the Rural Electrification Administration, providing for an additional loan from the United States of America to the Corporation in an amount not to exceed $6,000 and prescribing the terms and conditions for the construc-

tion of the proposed electric transmission, distribution and [fol. 2854] service lines or system by the Corporation and for the administrative expense and overheads involved and relating to such construction.

The Chairman called attention to the form of form of Supplemental Mortgage and deed of trust annexed to the proposed Construction Loan Contract as Exhibit A and stated that, pursuant to the proposed Construction Loan Contract, the Corporation would be required to execute and deliver an additional mortgage Bond in the amount of the loan, bearing interest at the rate of 2.77 per centum per annual payable monthly, and providing for monthly payments on account of principal calculated to pay and discharge the principal indebtedness within twenty (20) years after the date of the additional Mortgage Bond. The Chairman further stated that the Second Bond would be required to be secured by the Mortgage and Deed of Trust heretofore authorized, executed and delivered, as supplemental and amended by a Supplemental Mortgage and Deed of Trust executed by the Corporation and delivered to the Lebanon Bank and Trust Company as Trustee substantially in the form of the Supplemental Mortgage and Deed of Trust set forth in said Exhibit A of the Construction Loan Contract, covering all of the property and assets of the Corporation, now owned or hereafter acquired. The Chairman also called attention to the provisions of the existing Mortgage and Deed of Trust and of the proposed Supplemental Mortgage and Deed of Trust which provide that in addition to the Mortgage Bond heretofore authorized, executed and delivered in the amount of $254,000, and the Second Bond in the amount of $6,000 proposed to be presently issued, addi- [fol. 2855] tional bonds may be executed and delivered by the Corporation to the United States of America in the manner and upon the terms and conditions and for the purposes set forth in the Mortgage and Deed of Trust as supplemented and amended, the aggregate principal amount of which additional bonds, together with the principal amount of the First and Second Bonds and any and all bonds which may be issued in renewal of or substitution for the First and Second Bonds or any such additional notes, shall not at any time exceed $500,000, and that the First and Second Bonds, such additional bonds and renewal and substituted bonds

shall be equally and ratably secured thereby without preference, priority or distinction and irrespective of the dates of execution and delivery of the First and Second Bonds, any such additional bonds and any such renewal or substituted bonds.

The Chairman stated that the proposed Amendment to Construction Loan Contract and the form of proposed Supplemental Mortgage and Deed of Trust had been approved by counsel for the Corporation. The Secretary of the meeting then read the form of proposed Amendment to Construction Loan Contract, including the form Supplemental Mortgage and Deed of Trust, attached thereto as Exhibit A.

After discussion of the proposed Amendment to Construction Loan Contract and the proposed Supplemental Mortgage and Deed of Trust, the form of proposed Amendment to Construction Loan Contract was ordered to be identified by the Secretary and annexed to the minutes of this meeting and thereupon, on motion duly made and seconded, the following resolutions were unanimously adopted:

[fol. 2856] Resolved, That the Board of Directors of the Corporation hereby approves the construction of the rural electrification project pursuant to the Construction Loan Contract dated October 16, 1936, between the United States of America and the Corporation, submitted to this meeting, such project consisting of electric distribution lines in rural areas in the Counties of Rutherford, Wilson, Smith, Cannon and Davidson, in the State of Tennessee, together with substations, secondaries, transformers, meters and all other appurtenances necessary for the efficient operation thereof; and

Resolved, That the Board of Directors of the Corporation hereby approves, ratifies and confirms all acts and things done by or on behalf of the Corporation by its directors, officers or members in connection with the construction of the rural electrification project as hereinabove in the preceding resolution specified and described; and

Resolved, That the Board of Directors of the Corporation hereby approves and authorizes the construction and operation by the Corporation of electric transmission distribution and service lines or system in the Counties of Rutherford, Wilson, Cannon, Smith and Davidson, in the State of Tennessee, approximately — miles in length, together with

substations, secondaries, transformers, meters and all other necessary appurtenances, equipment and apparatus for the efficient operation thereof along such routes as the President and Secretary of the Corporation in their discretion shall determine and as shall be approved by the Adminis-
[fol. 2857] trator of the Rural Electrification Administration; and

Resolved, That the Corporation, for its corporate purposes and in order to finance the construction of the aforesaid lines or system for the transmission and distribution of electric energy, and for administrative expenses and overheads in connection with such construction, borrow an additional sum not to exceed $6000 from the United States of America, through the Administrator of the Rural Electrification Administration; and

Resolved, That the Board of Directors of the Corporation hereby approves the form and substance of the amendment to Construction Loan Contract proposed to be entered into by the Corporation and the United States of America, acting through the Administrator of the Rural Electrification Administration, including the form and substance of the Supplemental Mortgage and Deed of Trust, attached thereto as Exhibit A submitted to this meeting; and

Resolved, That the President and Secretary of the Corporation are hereby authorized, empowered and directed, for and on behalf of the Corporation and in its name, forthwith to sign, execute and deliver as many counterparts as shall seem to them necessary or desirable of an Amendment to Construction Loan Contract between the United States of America and the Corporation substantially in the form of the proposed Amendment to Construction Loan Contract approved at this meeting, under the seal of the Corporation,
[fol. 2858] which the Secretary of the Corporation is hereby directed to affix and attest, with such insertions, changes or variations therein as the President of the Corporation shall in his discretion deem necessary or expedient; and

Resolved, That the President, Secretary and Treasurer of the Corporation, and each of them (with full power to act without the others) to be, and they hereby are, authorized, empowered and directed, for an- on behalf of the Corporation and in its name, to sign, seal execute and deliver any

Complainants' Exhibit No. 408

[fol. 2877] Proposed Rural Electrical Development—Rutherford-Wilson County Project—Revenue Statement—Continued

First Year—Residential—Continued

Class of Customer Monthly kwh. Consumption	Number of Customers	Total Monthly kwh. Consumption	Monthly Bill Per Customer	Total Monthly Revenue	1¢ Per kwh. Collection	Total Annual Revenue
650	1	650	$7.50	$7.50	$1.00	$102.00
660	3	1,980	7.54	22.62	3.00	307.44
680	1	680	7.62	7.62	1.00	103.44
710	1	710	7.74	7.74	1.00	104.88
850	1	850	8.20	8.20	1.00	111.60
1,000	2	2,000	8.90	17.80	2.00	237.60
1,300	1	1,300	10.10	10.10	1.00	133.20
1,400	1	1,400	10.50	10.50	1.00	138.00
1,780	1	1,780	13.35	13.35	1.00	172.20
2,000	1	2,000	15.00	15.00	1.00	192.00
Total....	802	121,090	$2.53	$968.93	$533.40	$33,627.96

[fol. 2878] * Three Phase Construction.

X Additional kwh. guaranteed on customer contracts and included in Total kwh. Estimate although no specific use is indicated.

Route	#1–B–	1000	kwh.
"	" 4–	1000	"
"	" 5–	335	"
"	" 5–A	670	"
"	" 6	500	"
"	" 10–A–	180	"
"	" 11–A–	180	"
"	" 12–C–	720	"
"	" 13–	20	"
"	" 19–	920	"
	Total	5525	

COMPLAINANTS' EXHIBIT No. 408

Proposed Rural Electrical Development—Rutherford-Wilson Project—Continued

Investment Statement

First Year

Section 1—Construction of 3 phase 11 kv. lines from Midland in Rutherford County to a point near Lebanon in Wilson County, Tennessee, 53.5 miles at $950 per mile	$50,825
Section 2—Installation of necessary secondaries, transformers, and service lines along, above 3 phase route to serve 89 customers at $70 per customer	$6,230
Section 3—Construction of 1 phase lines, 6.9 kv. in Rutherford, Cannon, Wilson, Davidson, and Smith Counties in Tennessee, 207.5 miles at $950 per mile	$197,125
Total Investment	$254,180

[fol. 2879]

Second Year Estimate

Class	Investment	Number Customers	Miles Line	Annual Revenue	Annual Amortisation	Total Annual Revenue
Residential	.....	1,107	...	$37,307	$8,515	$45,722
Commercial	.....	143	...	4,853	1,110	5,963
Total	$290,890	1,250	286	$42,060	$9,625	$51,685

Third Year Estimate

Residential	.....	1,335	...	$44,648	$10,217	$54,865
Commercial	.....	165	...	5,824	1,333	7,157
Total	$312,290	1,500	298	$50,472	$11,550	$62,022

[fol. 2880]

REA Project

Tennessee 19 Rutherford

The following specifications will be used on the rural lines in the above project which will be constructed by the Tennessee Valley Authority in Rutherford and Wilson Counties, Tennessee.

Tennessee Valley Authority, Chattanooga, Tennessee, (Signed) A. H. Sullivan.

and all contracts and other instruments, and generally to do and perform any any all acts or things, which they, or any one of them, shall deem necessary or advisable, fully to perform the terms, covenants and conditions required to be performed by the Corporation pursuant to the Construction Loan Contract heretofore executed and pursuant to the Amendment to Construction Loan Contract between the United States of America and the Corporation approved at this meeting when the same shall become effective, and to procure the construction and operation of the lines or system for the transmission and distribution of electric energy contemplated to be constructed pursuant to such Construction Loan Contract and said Amendment to Construction Loan Contract, and

Resolved, That the President and Secretary of the Corporation be, and they hereby are authorized, empowered and directed, for and on behalf of the corporation and in its name, forthwith to make, execute and deliver a Second Bond [fol. 2859] payable to the United States of America in the principal amount of $6,000 with interest thereon at the rate of 2.77 per centum per annum payable monthly and providing for monthly payments on account of the principal calculated to pay and discharge the indebtedness evidenced thereby within twenty (20) years after the date thereof, substantially in the form of the Mortgage Bond provided for in the Mortgage and Deed of Trust heretofore executed and on the proposed Supplemental Mortgage and Deed of Trust, under the seal of the Corporation, which the Secretary of the Corporation is hereby directed to affix and attest, with such insertions, changes and variations therein as the president of the Corporation shall, in his discretion, deem necessary or expedient; and

Resolved, That the President and Secretary of the Corporation be, and they hereby are authorized, empowered and directed, for and on behalf of the Corporation and in its name, forthwith to sign, execute and deliver as many counterparts as shall seem to him necessary or advisable of a Supplemental Mortgage and Deed of Trust of all of the property and assets of the Corporation, now owned or hereafter acquired, to the Lebanon Bank and Trust Company as Trustee, substantially in the form of the Supplemental Mortgage and Deed of Trust approved at this meeting, un-

der the seal of the Corporation, which the Secretary is hereby directed to affix and attest, to secure, equally and ratable, the First Mortgage Bond in the amount of $254,000, heretofore authorized, executed and delivered and the [fol. 2860] Second Bond, heretofore at this meeting authorized to be executed and delivered, and any and all additional bonds which may be executed and delivered in the manner and upon the terms and conditions and for the purposes set forth in said Mortgage and Deed of Trust as Supplemented and amended and any and all bonds which may be issued in renewal of or substitution for the First and Second Bonds or any such additional bond or bonds, the aggregate principal amount of which additional bonds and renewal and substituted bonds, together with the principal amount of First and Second Mortgages Bonds shall not at any time exceed $500,000, with such insertions, changes and variations in said form of Supplemental Mortgage and Deed of Trust as the President of the Corporation shall, in his discretion, deem necessary or expedient; and

Resolved, That the President, Secretary and Treasurer of the Corporation and each of them (with full power to act without the others) be, and they hereby are, authorized, empowered and directed, for and on behalf of the Corporation, to file record, refile and record the Mortgage and Deed of Trust heretofore authorized, executed and delivered and the Supplemental Mortgage and Deed of Trust, heretofore at this meeting authorized to be signed, sealed, executed and delivered by and on behalf of the Corporation, and to sign, seal execute and deliver such supplemental mortgages and deeds of trust and generally to do and perform any and all acts and to execute and deliver any and all instruments which they, or any one of them, shall deem necessary or ad- [fol. 2861] visable fully to perform the terms, covenants and provisions of the Mortgage and Deed of Trust as supplemented and amended, when the same shall be executed and delivered, and to consummate and carry out the purposes and intent of these resolutions; provided, however, that no additional bond or bonds nor any renewal or substituted bond or bonds, shall be made, executed or delivered unless and until the same shall be expressly authorized by a resolution or resolutions adopted by the Board of Directors of the Corporation and except in the manner and upon

the terms and conditions and for the purposes set forth in the Mortgage and Deed of Trust as supplemented and amended.

The form of the Construction Loan Contract with Exhibits A therein referred to attached, was ordered to be identified by the Secretary as having been presented to and acted upon at this meeting of the Board of Directors and to be annexed to the minutes of this meeting.

The President called on Mr. Hunnicutt, Division Manager of the TVA to discuss an expansion program and to discuss problems in connection with connecting customers along the line and increasing service to the customers who desire service. Mr. Hunnicutt and Mr. Peavey discussed it and Mr. Blackburn of the REA discussed the availibility of funds.

The President then requested that Mr. Hunnicutt give the Board the exact sum that had been spent by the TVA on the construction of the lines that have been finished. Mr. Hunnicutt stated the Accounting Department had not finished getting up these figures but that from the date [fol. 2862] available it appeared that the construction cost would run over the original estimate Ten or Twelve Thousand Dollars. Mr. Hunnicutt promised to get the figures for the Board of Directors within the next few days. The question of a membership meeting was discussed, upon motion duly made and seconded it was resolved; that Article IV of Section IV of the by-laws be changed to read as follows:

"That any meeting 20 per cent of the members present either by proxy or in person shall constitute a quorum for the transaction of business."

Upon motion duly made and seconded it was resolved, that Article IV, Section V of the by-laws be changed to read as follows:

"Each member shall be entitled to one (1) vote regardless of the number of memberships held by him. Each member shall be entitled to one vote regardless of memberships voting by proxy is hereby expressly authorized."

The President then discussed the request extension of Service. Upon motion duly made and seconded it was re-

COMPLAINANTS' EXHIBIT No. 405

solved, that a committee be appointed to work out the policies of the Corporation in regard to extension and increasing in existing services; that the Superintendent be made a member of the Committee, and that the committee be authorized to employ if necessary, additional personnel to work on this program. The President then appointed the following committee;

Mr. MacFarland
Mr. Hancock
Mr. Carmack
Mr. Weatherly
Mr. Jones
Mr. T. E. Steele

[fol. 2863] Meeting to be held Friday night at 7:30 o'clock P. M.

There being no further business to come before the meeting, upon motion duly made, seconded and unanimously carried, the meeting adjourned.

E. W. Carmack, Secretary.

Approved: K. T. Hutchinson, President.

We, the undersigned directors of ——, do hereby approve, ratify and confirm in all respects the above and foregoing minutes of the special meeting of the Board of Directors of —— —, 193—, and each and every step taken and act performed thereat.

——— ———.
——— ———.
——— ———.

——— ———.
——— ———.
——— ———.

[fol. 2864] COMPLAINANTS' EXHIBIT No. 406

To E. W. Carmack, Secretary of the Middle Tennessee Electric Membership Corporation:

In accordance with the authority vested in me by the by-laws of this Corporation, I hereby call a meeting of the Board of Directors, to be held in the office of Lon P. MacFarland, Lebanon, Tennessee, at 7:30 P. M. on 6th day of July, 1937, for the purpose of considering the undertaking of expansion programs, and to consider and approve current bills and any other business that might properly come before the Board.

Witness my hand on this the 2nd day of July, 1937.

K. T. Hutchinson, President.

COMPLAINANTS' EXHIBIT No. 406

July 2, 1937.

DEAR SIR:

You are hereby notified that a meeting of the Board of Directors of The Middle Tennessee Electric Membership Corporation has been called by the President and will be held at the office of the Corporation, at Lebanon, Tenn., at 7 o'clock P. M., on the 6th day of July, 1937.

The purpose of this meeting is (1) to approve the payment of monthly bills, and to transact other routine business.

(2) To consider and act on any other matters that may be properly brought before the Board.

E. W. Carmack, Secretary.

[fol. 2865] Minutes of Monthly Meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation of July 6, 1937

A meeting of the Board of Directors of the Middle Tennessee Electric Membership Corporation was held at the office of Mr. Lon P. MacFarland at Lebanon, Tennessee, on July 6, 1937, at 8 o'clock P. M. pursuant to a call by the President and notice to all of the directors and pursuant to the certificate of incorporation, to the by-laws and to the laws of the State of Tennessee.

The meeting was called to order by the President K. T. Hutchinson who presided. In the absence of the Secretary and upon motion duly made and seconded Miss Ann McFerrin was elected temporary secretary and instructed to report the meeting. The roll was called by the temporary secretary who reported the following directors were present:

K. T. Hutchinson,	S. B. Smith,
S. E. McElroy,	Lon P. MacFarland,
Homer Hancock,	Dr. J. J. McFarland,
J. G. Harris,	J. C. Bradshaw,
E. W. Weatherly,	T. H. Eatherly,

said members being a quorum of the Board.

The President then reported that Mrs. Travis, cashier, had tende-d her resignation to be effective July 1, 1937.

Upon motion duly made and seconded this resignation was accepted.

The President then called for a discussion on extensions and a report by the policy committee. Mr. Harris and Mr. Terry of Trousdale County appeared before the board asking the cooperation of the Board in getting lines built into [fol. 2866] Trousdale County. They reported that they had already began work upon getting applications for service from residents of Trousdale County south of the river and that there was according to their estimate sixteen and sevententh- (16.7) miles, where prospective customers did not have electric service and wanted the Corporation to build lines. They requested that Mr. Steele, Superintendent, attend meetings they were holding to get applications for service. It was reported to the Board that a section of Smith County had applied for service. The Board offered full cooperation.

The President then called on Mr. Steele, Superintendent, for his monthly report.

"Vouchers to be paid for the month:

Line Material Co.	$ 155.15
Meyers Mfg. Co.	60.00
Keith-Simmons Co., Inc.	16.97
Sangamo Electric Co.	54.15
Geo. C. Drury Co.	5.60
Andersons Inc.	46.10
Southern Bell Tel. & Tel. Co.	13.15
McNish-Fry Electric Co.	28.00
Bell Bros. & Co.	3.40
Murfreesboro Water Dept.	2.72
Tennessee Valley Authority	417.31
McCord & Harris	46.47
Daily News Journal	7.25
Tennessee Electric Power Co.	7.70
Firestone Service Stores	103.09
Petty Cash	20.89
J. C. Penny Co.	15.00
[fol. 2867] Ambrose Printing Co.	21.00
Commercial Revenue	141.56
Residential Revenue	1098.04
Amortization "	355.48

686 Meters out.
708 Memberships—2 void.
4 Customers with meters set not receiving service.
3 " no meters set.
4 " have membership, no line built.
1 " membership paid, no meter set.
11 " with memberships, houses not wired.

The bad meters on hand will be sent to Wilson Dam to be reworked.

Two meetings have been held recently in Cannon County in an effort to promote the working up of a feasible project in Cannon County and adjoining Counties. Men were selected to work certain sections and as soon as they have finished they will make a report to me at Murfreesboro. I am expected to hear the latter part of the week.

Upon request of Mr. Steele, Mr. Lawson the TVA auditor interviewed all probable applicants to fill the vacancy left by Mrs. Travis. After careful consideration Mr. Steele and Mr. Lawson decided upon Miss Ann McFerrin. Miss McFerrin had previously worked for a gas company which made her familiar with utility bookkeeping, billing, and general routine work. Miss Nell Rion, who works for the Tennessee Matag Corporation has been a great help to the office during her spare time. Mr. Steele recommended that Miss Ann McFerrin be employed at sixty dollars ($60) per month [fol. 2868] and that Miss Nell Rion be paid twenty dollars ($20) per month for the work she does during her spare time.

Upon motion duly made and seconded the report of the Superintendent was accepted.

The case of H. R. Bryan and Dr. J. W. Graves were discussed. These were original signers who had not taken service. After discussion of the cases and upon motion duly made and seconded it was resolved that the Superintendent be instructed to tie on these parties upon their signing a contract to purchase equipment originally signed for by them and not yet installed, within six months.

It was reported to the Board that the County Court of Wilson County had appropriated funds to wire twenty seven school houses on the existing lines. The Superintendent was instructed to make a survey of these and get them connected up as soon as they were wired.

The President reported that the EHFA auditor had interviewed him and stated that he was well pleased with the way the EHFA accounts were being kept and that the accounts were in good shape; Mr. Lawson was at present checking the Corporation books and indicated that they were in good shape and that Mr. Lawson had set up a Special Construction Account in the books.

Upon motion duly made and seconded the Board approved the action of Mr. Steele, Superintendent, in naming Miss Ann McFerrin bookkeeper at a salary of sixty dollars ($60) per month and Miss Nell Rion assistant at a salary of twenty dollars ($20) per month.

[fol. 2869] The extension program was discussed and the Superintendent was instructed to set up a file on extensions in the office.

Upon motion duly made and seconded the Superintendent was authorized to purchase another truck, International one and a half ton (1½), same type as original. The question of improving the service for Wilson County was discussed. Upon motion duly made and seconded it was resolved that the Superintendent be instructed to move Mr. Morgan, linesman, to Lebanon to take care of service calls. The President stated that a truck would be purchased at a wholesale price.

The Superintendent discussed on increase in his and Mr. Morgan's salary. The President appointed the following committee to study the financial condition of the Corporation and to report to the next meeting on this matter:

Mr. Hancock, Mr. McElroy,
Mr. Weatherly, Mr. McFarland,
Dr. Smith.

Upon motion duly made and seconded it was resolved that the Charter be amended to include Trousdale County in the service territory and that the application to the County Court of Trousdale County for a franchise be approved.

Upon motion duly made and seconded the President was authorized to advance to Mr. E. W. Hood one hundred twenty-three dollars and fifty cents ($123.50) and Mr. T. O. Majors seventy-five dollars and no cents ($75.) the balance due them for easement work, this to be advanced out [fol. 2870] of the General Fund and repaid to the General

COMPLAINANTS' EXHIBIT No. 406

Fund out of the Special Construction Account when the next requisition is made and the funds paid over to the Corporation.

There being no further business to come before the meeting upon motion duly made and seconded the meeting was adjourned.

Ann McFerrin, Temporary Secretary. E. W. Carmack, Secretary.

Approved: K. T. Hutchinson, President.

[fol. 2871] COMPLAINANTS' EXHIBIT No. 407

By-laws of Middle Tennessee Electric Membership Corporation.

(Omitted)

[fol. 2872] COMPLAINANTS' EXHIBIT No. 408

Tennessee Valley Authority

Proposed Rural Electrical Development

Rutherford-Wilson Project

Chattanooga, Tennessee, August 1, 1936.

[fol. 2873] Introduction

This report and accompanying data is the result of a commercial survey recently completed in the counties of Rutherford and Wilson in Middle Tennessee, which counties have combined as a unit legally chartered as the Middle Tennessee Electric Membership Corporation to secure rural electric service from the Tennessee Valley Authority. This survey was conducted according to the TVA "Neighborhood Plan."

The proposed project includes the construction of approximately 53½ miles of 3-phase 11,000 volt rural electric lines, and approximately 207½ miles of 6,900 volt single phase lines, together with necessary transformers, meters, services, secondary lines, etc., in accordance approximately

with the routes and locations as shown by the accompanying maps, at an initial estimated cost of $254,180.00.

The project is proposed to be served from a TVA 11 kv. transmission line that is to run from the substation at Columbia, Tennessee, into Bedford County for the immediate purpose of serving Bedford and Lincoln Counties, connecting with an 11 kv. 3-phase line extending from the substation at Ardmore, Tennessee. The 11 kv. transmission line to serve this project will connect with the above mentioned line at or near Midland in Rutherford County and run north through Rutherford to a point in Wilson County east of the City of Lebanon.

This system would serve initially approximately 1,000 domestic and commercial rural customers, using approximately 1,700,000 kwh. annually, with an estimated annual gross revenue of $38,000.00.

The area proposed to be developed under this program comprises approximately 1229 square miles in the blue grass area of Tennessee, which is highly adapted to diversified agriculture due to native fertility of soil and equable climate.

A total of approximately 8,000 farms, averaging 80.3 acres each with a rural population of approximately 38,000, now without electric service in this area can be served by completing such a program. It is conservatively estimated that 1,500 rural customers will be receiving electric service from this system within three years.

The principal revenue producing crops, ranking in the order named, are: corn, cotton, wheat, and tobacco, with potatoes and dairy products closely following.

Lebanon, the county seat of Wilson County, has a population of approximately 5,000. Here is located Cumberland University, with an average enrollment of 600, and also Castle Heights Military Academy with an average enrollment of 250. The Lebanon Woolen Mills has an invested capital of $500,000.00 and has an average of 250 employees. The Gulf Red Cedar Company has an invested capital of $125,000.00 with 100 employees. There are also three mill- [fol. 2874] ing companies with a combined investment of $125,000.00 with 100 employees. In addition, there is a casket manufacturing company and a handle factory. This town has its own electrical distribution system and is pur-

chasing power from the Tennessee Electric Power Company.

Murfreesboro, the county seat of Rutherford County, has a population of approximately 10,000 and here is located the Middle Tennessee Teachers' College with an enrollment of approximately 1,000, also the Tennessee College for Women with an enrollment of approximately 300.

The Rural Resettlement Administration has under option approximately 9,000 acres in the most fertile section of Wilson County, adjacent to one of the present proposed lines, and it is understood that as soon as titles have been acquired it is proposed to divide this acreage into small unit farms. It is planned that each farm is to be complete as to buildings and all modern conveniences similar to the Cumberland Homesteads Project in Eastern Tennessee, which is now in the process of being electrified through TVA. This project would add at least 250 additional customers to the present program.

Proposed Rural Electrical Development

Rutherford-Wilson County Project

General Summary

First Year

1. Total Annual Revenue	$37,968.84
2. Total Investment	$254,180.00
3. Investment Ratio	6.69
4. Total Number Customers (Signed)	918
5. Total Number Potential Customers (Signed and undersigned	1,250
6. Total Miles Pole Line	261
7. Total Annual kwh.—Sold	1,511,880
8. Total Annual kwh.—Purchased	1,778,688
9. Monthly kw. Demand	508
10. Monthly kwh. Per Mile Line	504
11. Monthly kwh. Per Customer—Residential	151
12. Monthly kwh. Per Customer—Total	143
13. Investment Per Customer	$276.88
14. Investment Per Mile Line	973.87
15. Annual Revenue Per Customer	41.36
16. Number Customers Per Mile Line (Signed)	3.52
17. Number Potential Customers Per Mile Line (Signed & Unsigned)	4.79

Complainants' Exhibit No. 408

[fol. 2576] Proposed Rural Electrical Development—Rutherford-Wilson County Project—Continued

Revenue Statement

First Year—Summary

Class of Customer	Number of Customers	Total Monthly kwh. Consumption	Monthly Bill Per Customer	Total Monthly Revenue	1¢ per kwh. Collection	Total Annual Revenue
Residential.	802	121,090	$2.83	$2,268.93	$533.40	$33,627.96
Commercial	116	10,425	*2.64	*305.84	55.90	*4,340.88
Total....	918	131,515**	$2.80	$2,574.77	$589.30	$37,968.84

* Includes 10% development surcharge.
** Includes additional guaranteed kwh. of 5525.

First Year—Commercial

Class of Customer Monthly kwh. Consumption	Number of Customers	Total Monthly kwh. Consumption	Monthly Bill Per Customer*	Total Monthly Revenue*	1¢ Per kwh. Collection	Total Annual Revenue
30	79	2,370	$1.10	$86.90	$23.70	$1,327.20
80	24	1,920	2.64	63.36	19.20	990.72
110	1	110	3.63	3.63	1.00	55.56
130	1	130	4.29	4.29	1.00	63.48
180	1	180	5.94	5.94	1.00	83.28
230	2	460	7.59	15.18	2.00	206.16
280	2	560	8.91	17.82	2.00	237.84
380	1	380	11.11	11.11	1.00	145.32
500	2	1,000	13.75	27.50	2.00	354.00
530	1	530	14.41	14.41	1.00	184.92
780	1	780	19.91	19.91	1.00	250.92
2,005	1	2,005	35.79	35.79	1.00	441.48
Total....	116	10,425	$2.64	$305.84	$55.90	$4,340.88

* Includes 10% development surcharge.

First Year—Residential

30	336	10,080	$ .90	$302.40	$100.80	$4,838.40
80	167	13,360	2.10	350.70	133.60	5,811.60
130	39	5,070	3.10	120,90	39.00	1,918.80
180	27	4,880	4.10	110,70	27.00	1,652.40
230	59	13,570	4.80	283.20	59.00	4,106.40
270	1	270	5.20	5.20	1.00	74.40
280	56	15,680	5.30	296.80	56.00	4,233.60
330	23	7,590	5.80	133.40	23.00	1,876.80
380	7	2,660	6.30	44.10	7.00	613.20
430	24	10,320	6.62	158.88	24.00	2,194.56
480	45	21,600	6.82	306.90	45.00	4,222.80
500	2	1,000	6.90	13.80	2.00	189.60
520	1	520	6.98	6.98	1.00	95.76
530	1	530	7.02	7.02	1.00	96.24
630	1	630	7.42	7.42	1.00	101.04

COMPLAINANTS' EXHIBIT No. 408

[fol. 2881] Tennessee Valley Authority

Department of Electricity

Specifications for Rural Electric Distribution Pole Lines

Chattanooga, Tennessee

(For brevity's sake the specification and other portions of this exhibit are omitted.)

[fol. 2882] COMPLAINANTS' EXHIBIT No. 409

Map entitled "Mississippi River System—Drainage Areas of Main Tributaries".

(Original Exhibit)

[fol. 2883] COMPLAINANTS' EXHIBIT No. 410

Map entitled "Flood Control Plan—Mississippi River".

(Original Exhibit)

[fol. 2884] COMPLAINANTS' EXHIBIT No. 411

Diagram entitled "Relation Between Valley Storage Without Dam, Valley Storage Eliminated By Reservoir, and Controllable Storage Available."

(Original Exhibit)

[fol. 2885] COMPLAINANTS' EXHIBIT No. 412

Tennessee Valley Authority,

Knoxville, Tennessee

September 8, 1937.

Honorable J. F. Burleson, Mayor, City of Haleyville, Haleyville, Alabama.

MY DEAR MAYOR BURLESON:

Thank you for your inquiry of September 4, asking that the Authority send an engineer to make a survey of the

city of Haleyville with a view to determine the feasibility of electric service by the Authority.

You understand that the Authority sells power to municipalities at wholesale only. If and when your community is in position to purchase at wholesale and desires to do so, we shall be glad to consider the question of service, dependent on considerations of the financial feasibility of the construction by the Authority of the necessary transmission and substation facilities.

We assume that you have in mind an engineering survey to determine the feasibility of municipal operations by the town. We regret that the Authority does not have engineers available for this purpose.

Should you decide to employ an independent engineer, we shall be very glad to cooperate with him in the determination of mutual problems.

It is our desire to cooperate with you in any way possible, and to that end we will be glad to meet with you or your engineer at any convenient time in Knoxville, or, if you prefer, Mr. F. F. Beauchamp, Alabama Division Engineer at Wilson Dam, will be glad to talk with you whenever you drop in.

Very truly yours, Tennessee Valley Authority, Dr. Martin G. Glaeser, Chief Power Planning Engineer.

[fol. 2886] COMPLAINANTS' EXHIBIT No. 413 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 414 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 415 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 416 (Excluded)

(Omitted)

COMPLAINANTS' EXHIBIT No. 417 (Excluded)

(Omitted)

[fol. 2887] COMPLAINANTS' EXHIBIT No. 418 (Excluded)

(In pencil B 34 & 35.)
(In ink Pef. 237-A, June 22, 1934.)

Electric Power Board of Review

Subject: Application for loan and grant of the City of Decatur, Alabama (Docket No. 6587) for the purpose of constructing distributing system, including low side of the substation and equipment, in the sum of $371,743.

After review of the Docket, this Board finds:

1. The Engineering Division by its supplemental report made the following conclusion and recommendation:

"It is our opinion that the proposed project is a public necessity and of social desirability; that it will afford needed employment; and that on the above assumptions it is technically and economically sound."

The assumptions referred to are that

(a) "The Municipal plant will receive, in addition to all the municipal load, 60 per cent of all other business in the first year of operation, and 80 per cent at the end of the [fol. 2888] loan interval."

This assumption, in the opinion of this Board, is far below that portion of the total business the municipality will receive, inasmuch as it will offer rates at least 60 per cent less than the present rates being charged by the Alabama Power Company by reason of the contract offered the city by the TVA; and as the Alabama Power Company, the competitor, cannot reduce its rates by anything like 60 per cent of its present rates by reason of its service to the City of Birmingham, and as it would be under the necessity of reducing its rates to other cities served by it in Alabama. If rates required by the TVA contract are charged and the City obtains the same business the Company now has, its income will provide for maintenance and operating costs, interest, amortization and taxes, and a net income over all of $10,525. This appears by the estimate of O. M. Rau attached. This estimate makes no allowance for what may reasonably

be expected in the way of an increase of current sold and of income by reason of the heavy reduction of rates. That a reduction of rates produces larger net income is shown, among other examples, by the experience of the City of Washington under its contract with the Potomac Electric Company covering the years 1925 to 1934. Under this contract the Company is required to apply one-half its surplus to rate reduction. The maximum rate in 1924 was 10¢ per [fol. 2889] kwh. Rates are now, after successive reductions, 3.9¢ for the first 50 kwh., 3.3¢ for the next 50, 2¢ for the next 100 and 1.5¢ for all over 200. In 1924 the Company earned 3.4 times its bonds interest after allowing for depreciation and taxes.

2

In 1932 with rates cut to one-third it earned its interest twelve times. Earnings per share increased from $26.90 in 1924 to $68.08 in 1932. The privately owned electric company in Hartford, Connecticut, has had a like experience. Hence this board finds that the assumption of the Engineering Division on which it bases its conclusion that the project is technically and economically sound is far less favorable to the City than the facts warrant.

The same finding applies to the estimate of Mr. O. M. Rau. This board is of opinion that during the first year after the city begins business it will have at least 75 per cent of the business measured in dollars, and an increase of not less than 10 per cent in each succeeding year. Accordingly it finds that the project is technically, economically and financially sound.

The said finding soundness is supported by the report of the Finance Division dated April 12, 1934. This report was based upon a report of the Engineering Division dated March 6, 1934, a prior report to that referred to above and [fol. 2890] one less favorable to the City. The Finance Division report of April 12 found that on the basis of the division of business estimated by the engineer-examiner "50 per cent of sales the first year and 75 per cent the twentieth year and all municipal business," the project will earn only about 1.05 times the debt service for the first several years with a deficit for the first year. Inasmuch as the estimate of the engineer-examiner referred to has now been modified so that the estimate of division of business is altered to all

the municipal load and 60 per cent instead of 50 the first year, with an increase of 2 per cent each year, it is obvious that the Finance Division would approve the loan on the revised basis. Furthermore, this Board is of opinion as stated above that even the revised estimate upward of the engineer-examiner is too low in view of the heavy reduction of rates proposed. As stated above this board is of opinion that the said reduction will increase the portion of the business obtained by the City and also the net revenue.

2. This Board has further reviewed the conditions attached to the report of the Engineering Division dated March 6, 1934, as follows:

"3a. The applicant shall furnish evidence satisfactory to the Administrator that the Alabama Power Company can be legally required to furnish service on a day to day basis [fol. 2891] until the acquisition by the municipality of the used and usable portions of the existing distribution system."

This condition having been reviewed by this Board is disapproved as impossible of performance; and the following condition substituted:

3

The applicant shall furnish evidence satisfactory to the Administrator that the Alabama Power Company can be legally required to furnish service on a day to day basis until the municipal system is ready for service.

This Board has reviewed the further condition:

"3b. And that thereafter" (the acquisition of the competitive system) "the Power Company will be without authority to sell power within the municipal limits."

This condition is also disapproved for the reason that it prevents any loan being made as such a showing involves a law suit and is probably impossible of performance as the Company has a franchise until October 1, 1949. If the TVA fails to purchase the distribution system of the Company and the municipal system being under the necessity by its contract with TVA of offering rates at least 60 per cent less than existing rates, the Company, being unable to provide an equally low rate, will be unable to continue to compete and [fol. 2892] must withdraw. Hence this condition should be stricken out.

COMPLAINANTS' EXHIBIT No. 418 (Excluded)

This Board has further reviewed condition 4a of the engineer-examiner:

"(a) That no depreciation charges, taxes or any other items of expense, except normal operating expenses and power and lighting extensions shall be charged against the revenues of this project."

It approves this condition.

It has also reviewed condition 4b:

"That all municipally used electric energy shall be paid for at current selling rate schedules annually during the interval of the loan from the general fund into the account of this project."

This Board also approves this condition.

This Board finds also that the Engineering Division omitted to recommend a grant. Its report does not show any reason for this omission.

This Board finds that the applicant is as much entitled to a grant as other applicants to which grants have been allowed.

Resolved, that this Board recommend an allotment to the applicant in the sum of $372,000, of which not to exceed thirty per cent of the cost of the labor and materials employed thereon, estimated at $100,000 shall be a grant.

Henry T. Hunt, Chairman.

[fol. 2893] COMPLAINANTS' EXHIBIT No. 419

Federal Emergency Administration of Public Works, Interior Department Building, Washington, D. C.

Application for Loan. (See instructions on last page of this form.)

Administrator, Federal Emergency.
Administration of Public Works.
Through State Administrator at Montgomery, Ala.
(Note 1.)
Address

Sir:

1. Application is hereby made by the City of Sheffield, Ala., of——, for the approval of the project herein de-

scribed, and for allocation by the United States of the sum of Two Hundred Thousand Dollars ($200,000.00), to provide for its construction, under the provisions of Section 202 and/or 203, 206, 207 and 208; National Industrial Recovery Act, approved June 16, 1933.

2. Legal authority, and identity of the applicant. (See Note 2.)

3. Description of work proposed (attach a general plan, see Note 3).

a. Character of project. (See Note 4.) Municipal Electrical Distribution System.

* * * * * * *

f. Is the project part of a larger plan or program?—Tenn. Valley Authority program.

* * * * * * *

4. a. Estimated total cost: $200,000. (See Note 6.)

(1) Construction work, exclusive of cost of land.

a. Labor, $45,940.19.
b. Material, $142,030.59.
c. Engineering and overhead, $9,400.00.
d. Interest during construction, $1,650.00.

* * * * * * *

6. Brief statement covering—

a. Necessity or convenience of the project—has it been approved locally? Yes.

b. How approved? Voted 660 to 36.

[fol. 2894] c. What general classes of labor or construction personnel will it benefit—common, semi-skilled and skilled? How many man-hours required—65,709.

d. Brief general description of project and any additional pertinent information to be attached.

* * * * * * *

COMPLAINANTS' EXHIBIT No. 419

Revised Application to Federal Administration of Public Works for Loan for the Construction of an Electrical Distribution System for the City of Sheffield, Alabama.

The original application for this loan was filed with the Alabama Advisory Board of Public Works, in Montgomery, Alabama, on August 30th, 1933. No action has been taken by that board except as indicated by their letter of September 29th, 1933; a copy of said letter as well as the reply thereto is

(For brevity other portions of this exhibit are omitted.)

[fol. 2895] COMPLAINANTS' EXHIBIT No. 420.

Loan and Grant Agreement, Dated as of Dec. 28, 1934, Between the City of Sheffield, Alabama (Herein Called the "Borrower") and the United States of America (Herein Called the "Government")

Part One.

1. Purpose of Agreement.—Subject to the terms and conditions of this Loan and Grant Agreement (herein called the "Agreement"), the Government will, by loan and grant not exceeding in the aggregate the sum of $230,000, aid the Borrower in financing a project (herein called the "Project") consisting of the construction of an electric transmission line and distribution system, and other necessary appurtenances thereto, all pursuant to the Borrower's application (herein called the "Application"), P. W. A. Docket No. 3124, Title II of the National Industrial Recovery Act (herein called the "Act"), and the Constitution and Statutes of the State of Alabama, including particularly:

Act. No. 107, General and Local Acts of Alabama, Extra Session 1933, page 100.

2. Description of Bonds.—

(a) Designation: Electric System Bond.
(b) Authorized Principal Amount: $187,000.
(c) Type: Special obligation, serial, coupon bonds.
(d) Registration: Registerable at the option of the holder as to principal only.

(e) Date: June 1, 1934.

(f) Interest: At the rate of 4 per cent per annum, payable December 1, 1934, and semi-annually thereafter on June 1 and December 1 in each year.

(g) Maturities: Payable on June 1, in years and amounts as follows:

[fol. 2896]

Year	Amount	Year	Amount
1937	$10,000	1945	$11,000
1938	10,000	1946	12,000
1939	10,000	1947	12,000
1940	10,000	1948	12,000
1941	10,000	1949	12,000
1942	10,000	1950	12,000
1943	10,000	1951	12,000
1944	10,000	1952	12,000
		1953	12,000

(h) Security: Special obligations of the Borrower, payable solely from and secured only by a first pledge of the revenues derived from the operation of the Project, after provision only for the reasonable cost of operation and maintenance thereof.

(i) Place and Medium of Payment: Payable at the office of the City Treasurer, Sheffield, Alabama, or, at the option of the holder, at a bank or trust company in Borough of Manhattan, City and State of New York, in any coin or currency which, on the respective dates of payment of the principal of and interest on the Bonds, is legal tender for public and private debts.

(j) Denomination: $1,000.

Other provisions may be substituted for the provisions of subparagraphs (a), (b), (c), (d), (e), (f), (g), (i), and (j) of this Paragraph by the Borrower if the consent of the Federal Emergency Administrator of Public Works (herein called the "Administrator") to such substitution is obtained.

3. Amount and Method of Making Grant.—The Government will make and the Borrower will accept, whether or

not any or all of the Bonds be sold to a purchaser or purchasers other than the Government, a Grant in an amount equal to thirty per centum of the cost of the labor and materials employed upon the Project. Wherever the expression "cost of labor and materials" is used in this Agreement, such expression shall mean such cost as determined by the Administrator, and his determination thereof shall be final. The Government will make part of the Grant by payment of money and the remainder of the Grant by cancellation of Bonds and/or interest coupons; provided, however, that if all of the Bonds are sold to purchasers other than the [fol. 2897] Government, the Government will make the entire Grant by payment of money.

4. Conditions Precedent to the Government's Obligations.—The Government shall be under no obligation to pay for any of the Bonds or to make any Grant:

(a) Financial Condition and Budget: If, in the judgment of the Administrator, the financial condition of the Borrower shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government, or the Borrower shall have failed to balance its budget satisfactorily or shall have failed to take action reasonably designed to bring the ordinary current expenditures of the Borrower within the prudently estimated revenues thereof;

(b) Cost of Project: If the Administrator shall not be satisfied that the Borrower will be able to complete the Project for the sum of $230,000, being the cost estimated at the time when the Application was approved by the Government, or that the Borrower will be able to obtain, through additional borrowing or otherwise, in a manner satisfactory to the Administrator, any additional funds which the Administrator shall believe to be necessary to complete the Project;

(c) Compliance: If the Borrower shall not have complied, to the satisfaction of the Administrator, with all the provisions contained in this Agreement or in the proceedings authorizing the issuance of the Bonds, theretofore to be complied with by the Borrower;

(d) Legal Matters: If the Administrator shall not be satisfied as to all legal matters and proceedings affecting the [fol. 2898] Bonds, the security therefor or the Project;

(e) Representations: If any representation made by the Borrower in this Agreement or in the Application or in any supplement thereto or amendment thereof, or in any document submitted to the Government by the Borrower shall be found by the Administrator to be incorrect or incomplete in any material respect;

(f) Tennessee Valley Authority Contract: If the Borrower shall not execute a valid contract, satisfactory to the Administrator, between the Borrower and the Tennessee Valley Authority, under the terms of which the Tennessee Valley Authority will supply electrical energy to the Borrower, and will permit the Borrower to charge such rates, in accord with the provisions of the Act and Ordinance authorizing the issuance of the Bonds, as may be reasonably necessary to pay the cost of operation and maintenance of the Project and the principal of and interest upon the Bonds;

(g) Rate and Bond Ordinances: If the ordinance providing for the fixing and maintenance of rates and collection of charges for the facilities and services afforded by the Project and the ordinance providing for the authorization, issuance and sale of the Bonds, and the use of the revenues derived from the operation of the Project, shall not be satisfactory in form and substance to the Administrator.

5. Bond Counsel and Bond Proceedings.—When this Agreement has been executed the Borrower (unless it has already done so) shall promptly:

(a) Retain municipal bond counsel satisfactory to the Administrator to assist the Borrower in the proceedings [fol. 2899] relative to the authorization, issuance and sale of the Bonds and to give legal opinions on such matters relative thereto as may be requested by the Administrator; and

(b) Take all the proceedings necessary for the authorization and issuance of the Bonds.

6. Bond and Grant Requisitions.—From time to time after the execution of this Agreement, the Borrower shall file a requisition with the Government requesting the Government to take up and pay for Bonds or to make a payment on account of the Grant. Each requisition shall be accompanied by such documents as may be requested by the Administrator (a requisition together with such documents being herein collectively called a "Requisition").

7. Bond Purchases.—If a Requisition requesting the Government to take up and pay for Bonds is satisfactory in form and substance to the Administrator, the Government, within a reasonable time after the receipt of such Requisition, will take up and pay for Bonds, having maturities satisfactory to the Administrator, sufficient funds for the construction of the Project for a reasonable period. Payment for such Bonds shall be made at the Birmingham Branch of the Federal Reserve Bank of Atlanta, Birmingham, Alabama (herein called the "Reserve Bank"), or at such other place or places as the Administrator may designate, against delivery by the Borrower of such Bonds, and all unmatured interest coupons appertaining thereto, together with such documents as may be requested by the Administrator. The Government shall be under no obligation to take up and pay for Bonds beyond the amount which in the judgment of the Administrator is needed by the Borrower to complete the project.

8. Grant by Payment of Money.—If a Requisition requesting the Government to make a payment on account of the Grant is satisfactory in form and substance to the Administrator, the Government will pay to the Borrower at the Reserve Bank or at such place or places as the Administrator may designate against delivery by the Borrower of its receipt therefor, a sum of money equal to the difference between the aggregate amount previously paid on [fol. 2900] account of the Grant, and

(a) Twenty-five per centum of the cost of the labor and materials shown in the Requisition to have been employed upon the Project if the Requisition shows that the Project has not been completed; or

(b) Thirty per centum of the cost of such labor and materials if the Requisition shows that the Project has been

completed and that all costs incurred in connection therewith have been determined.

Provided, however, that the part of the Grant made by payment of money to the Borrower shall not be in excess of the difference between $230,000 and the aggregate principal amount of the Bonds purchased by the Government. The Government reserves the right to make any part of the Grant by cancellation of Bonds and/or interest coupons rather than by payment of money if the Borrower does not need the money to pay costs incurred in connection with the construction of the Project.

9. Grant by Cancellation of Bonds.—If the Borrower, within a reasonable time after the completion of the Project, shall have filed a Requisition, satisfactory in form and substance to the Administrator, then the Government will cancel such Bonds and/or interest coupons as may be selected by the Administrator in an aggregate amount equal (as nearly as may be) to the difference between thirty per centum of the cost of the labor and materials employed upon the Project and the part of the Grant made by payment of money. The Government will hold Bonds or interest coupons for such reasonable time in an amount sufficient to permit compliance with provisions of this Paragraph, unless payment of such difference shall have been otherwise provided for by the Government.

10. Grant Advances.—At any time after the execution of this Agreement the Government may, upon request of the Borrower, if, in the judgment of the Administrator, the circumstances warrant, make advances to the Borrower on account of the Grant, but such advances shall not be in excess of thirty per centum of the cost of the labor and ma- [fol. 2901] terials to be employed upon the Project, as estimated by the Administrator.

11. Deposit of Bond Proceeds and Grant; Bond Fund; Special Accounts.—The Borrower shall deposit all accrued interest which it receives from the sale of the Bonds at the time of the payment therefor and any payment on account of the Grant which may be made under the provisions of Paragraph 9, Part One, hereof, into an interest and bond

retirement fund account (hereinafter called the "Bond Fund") promptly upon the receipt of such accrued interest or such payment on account of the Grant. It will deposit the remaining proceeds from the sale of the Bonds (whether such Bonds are sold to the Government or other purchasers) and the part of the Grant made by payment of money under the provisions of Paragraph 8, Part One, hereof, promptly upon the receipt of such proceeds or payments in a separate account or accounts (each of such separate accounts herein called a "Special Account"), in a bank or banks which are members of the Federal Reserve System and of the Federal Deposit Insurance Corporation and which shall be satisfactory at all times to the Administrator. Provided, however, that interest on said Bonds accruing prior to complete construction of the Project shall be paid from the proceeds of said Bonds to the extent such interest is not available from funds received as accrued interest, and, provision shall be made that, upon the delivery of said Bonds and the receipt of the proceeds, a sufficient sum, including the accrued interest received, shall be withdrawn from the proceeds and placed in said Bond Fund to pay said interest.

12. Disbursement of Monies in Special Accounts and Bond Fund.—The Borrower shall expend the monies in a Special Account only for such purposes as shall have been previously specified in Requisitions filed with the Government and approved by the Administrator. Any monies remaining unexpended in any Special Account after the completion of the Project which are not required to meet unpaid obligations incurred in connection with the construction of the Project shall either be paid into the Bond Fund, or said monies shall be used for the purchase of such of the Bonds as are then outstanding at a price not exceeding the principal amount thereof plus accrued interest. Any Bonds so purchased shall be cancelled and no [fol. 2902] additional Bonds shall be issued in lieu thereof. The monies in the Bond Fund shall be used solely for the purpose of paying interest on and principal of the Bonds.

13. Other Financial Aid from the Government.—If the Borrower shall receive any funds directly or indirectly from the Government or any agency or instrumentality

thereof, other than the Loan or Grant, to aid in financing the construction of the Project, to the extent that such funds are so received the Grant shall be reduced, and to the extent that such funds so received exceed the part of the Grant which would otherwise be made by payment of money, the aggregate principal amount of Bonds to be purchased by the Government shall be reduced.

[fol. 2903] Part Two

In Consideration of the Grant, the Borrower Covenants That:

1. Construction Work.—All work on the Project shall be done subject to the rules and regulations adopted by the Administrator to carry out the purposes and control the administration of the Act. The following rules and regulations as set out in Bulletin No. 2, revised on March 3, 1934, entitled, "P. W. A. Requirements as to Bids, Contractor's Bonds, and Contract, Wage, and Labor Provisions and General Instructions as to Applications and Loans and Grants", shall be incorporated verbatim (except that in all places where the term "Borrower" is used the name of the Borrower shall be inserted) in all construction contracts for work on the Project:

"1. (a) Convict Labor.—No convict labor shall be employed on the Project and no materials manufactured or produced by convict labor shall be used on the Project.

"(b) Thirty-hour Week.—Except in executive, administrative, and supervisory positions, so far as practicable and feasible in the judgment of the Government Engineer, no individual directly employed on the Project shall be permitted to work more than eight hours in any one day nor more than thirty hours in any one week: Provided, that this clause shall be construed to permit working time lost because of inclement weather or unavoidable delays in any one week to be made up in the succeeding twenty days.

"(c) No work shall be permitted on Sundays or legal holidays except in cases of emergency.

"2. Wages.—(a) All employees directly employed on this work shall be paid just and reasonable wages which

shall be compensation sufficient to provide, for the hours of labor as limited, a standard of living in decency and comfort. Such wages shall in no event be less than the minimum hourly wage rates for skilled and unskilled labor prescribed by the Administrator for the zone or zones in which the work is to be done, viz.:

[fol. 2904] Skilled labor $1.00
Unskilled labor ..... .40

"(b) In the event that the prevailing hourly rates prescribed under collective agreements or understandings between organized labor and employers in effect on April 30, 1933, shall be above the minimum rates specified above, such agreed wage rates shall apply: Provided, That such agreed wage rates shall be effective for the period of this contract, but not to exceed twelve months from the date of the contract.

"(c) The above designated minimum rates are not to be used in discriminating against assistants, helpers, apprentices, and serving laborers who work and serve skilled journeymen mechanics and who are not to be termed as "unskilled laborers."

"(d) The provisions of this contract relating to hours and minimum wage rates for labor directly employed on the Project shall for the purposes of this contract, to the extent applicable, supersede the terms of any code adopted under Title I of the Act permitting longer hours or lower minimum wage rates.

"(e) All employees shall be paid in full not less often than once each week and in lawful money of the United States, unless otherwise permitted by the Government Engineer, in the full amount accrued to each individual at the time of closing of the pay roll, which shall be at the latest date practicable prior to the date of payment, and there shall be no deductions or rebates on account of goods purchased, rent, or other obligations, but such obligations shall be subject to collection only by legal process: Provided, however, that this clause shall not be construed to prohibit the making of deductions for premiums for compensation and medical aid insurance, in such amounts as

are authorized by the laws of the State of Alabama to be paid by employees, in those cases in which, after the making of the deductions, the wage rates will not be lower than the minimum wage rates herein established.

[fol. 2905] "(f) A clearly legible statement of all wage rates to be paid the several classes of labor employed on the work, together with a statement of the deductions therefrom for premiums for workmen's compensation and/or medical aid insurance authorized by the laws of the State of Alabama, should such deductions be made, shall be posted in a prominent and easily accessible place at the site of the work, and there shall be kept a true and accurate record of the hours worked by and the wages, exclusive of all authorized deductions, paid to each employee, and the Engineer Inspector shall be furnished with a sworn statement thereof on demand.

"(g) The Board of Labor Review (herein called the 'Board') shall hear all labor issues arising under the operation of this contract and such issues as may result from fundamental changes in economic conditions during the life of this contract.

"(h) The minimum wage rates herein established shall be subject to change by the Administrator on recommendation of the Board. In the event that, as a result of fundamental changes in economic conditions, the Administrator, acting on such recommendation, from time to time establishes different minimum wage rates (referred to in Paragraph 2(a), (b) and (c) hereof) all contracts for work on the Project shall be adjusted accordingly by the parties thereto so that the contract price to the contractor under any contract or to any subcontractor under any subcontract shall be increased by an amount equal to any such increased cost, or decreased by an amount equal to any such decreased cost.

"(i) Engineers, architects, and other professional and sub-professional employees engaged on the Project shall receive the prevailing local rates for the various types of service to be rendered, except that in no case shall they receive less than the hourly rates set for the highest paid

[fol. 2906] class of skilled labor directly employed on the Project.

"3. (a) Labor Preferences.—Preferences shall be given, where they are qualified, to ex-service men with dependents, and then in the following order: (1) to citizens of the United States and aliens who have declared their intention of becoming citizens, who are bona fide residents of the City of Sheffield, and/or Colbert County, Alabama, and (2) to citizens of the United States and aliens who have declared their intention of becoming citizens, who are bona fide residents of the State of Alabama: Provided, That these preferences shall apply only where such labor is available and qualified to perform the work to which the employment relates.

"(b) Employment Services.—To the fullest extent possible, labor required for the Project and appropriate to be secured through employment services shall be chosen from the lists of qualified workers submitted by local employment agencies designated by the United States Employment Service: Provided, however, that union labor, skilled and unskilled, shall not be required to register at such local employment agencies but, if such labor is desired by the employer, shall be secured in the customary ways through recognized union locals. In the event, however, that employers who wish to employ union labor are not furnished with qualified union workers by the union locals which are authorized to furnish such labor residing in the locality within 48 hours (Sundays and holidays excluded) after request is filed by the employer, all labor shall be chosen from lists of qualified workers submitted by local agencies designated by the United States Employment Service. In the selection of workers from lists prepared by such employment agencies and union locals, the labor preferences provided in section (a) of this Paragraph 3 shall be observed, and preference shall be given to those unemployed at the date of registration who, at the date of selection have no other available employment.

[fol. 2907] "(c) Compliance with Title I of the Act.—The following section 7 (a) (1) and 7 (a) (2) of Title I of the Act shall be observed:

"(1) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection: (2) that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing;"

"4. Human Labor.—The maximum of human labor shall be used in lieu of machinery wherever practicable and consistent with sound economic and public advantage; and to the extent that the work may be accomplished at no greater expense by human labor than by the use of machinery, and labor of requisite qualifications is available, such human labor shall be employed.

"5. Compensation Insurance.—Every employer of labor shall provide, if permitted by the laws of the State of Alabama, adequate workmen's compensation insurance for all labor employed by him on the Project who may come within the protection of such laws and shall provide, where practicable, employers' general liability insurance for the benefit of his employees not protected by such compensation laws, and proof of such insurance satisfactory to the Government Engineer shall be given. Where it is not permitted by law that such insurance be provided, some method satisfactory to the Administrator must be provided, by which the employees may, by paying the entire amount of the premium, derive a similar protection.

"6. Persons entitled to benefits of labor provisions.—There shall be extended to every person who performs the work of a laborer or of a mechanic on the Project or on any part thereof the benefits of the labor and wage provisions of this contract, regardless of any contractual relationship between the employer and such laborer or mechanic. There shall be no discrimination in the selection of labor on the ground of race, creed or color.

COMPLAINANTS' EXHIBIT No. 420.

[fol. 2908] "7. Withholding payment.—Under all construction contracts, the Borrower may withhold from the contractor so much of accrued payments as may be necessary to pay to laborers or mechanics employed on the work, the difference between the rate of wages required by this contract to be paid to laborers or mechanics on the work and the rate of wages actually paid to such laborers or mechanics.

"8. Accident prevention.—Reasonable precaution shall at all times be exercised for the safety of employees on the work and applicable provisions of the Federal, State, and municipal safety laws and building and construction codes shall be observed. All machinery and equipment and other physical hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, unless and to the extent that such provisions are incompatible with Federal, State or municipal laws or regulations.

"9. (a) N. R. A. materials.—So far as articles, materials and supplies produced in the United States are concerned, only articles, materials and supplies produced under codes of fair competition under Title I of the Act, or under the President's Reemployment Agreement, shall be used in the performance of this work, except when the Government Engineer certifies that this requirement is not in the public interest or that the consequent cost is unreasonable.

"(b) Local preference.—So far as practicable, and subject to the provisions of section (a) of this Paragraph 9, preference shall also be given to the use of locally produced materials if such does not involve higher cost, inferior quality, or insufficient quantities, subject to the determination of the Government Engineer; but there shall be no requirement providing price differentials for, or restricting the use of materials to, those produced within the Nation or State.

"10. (a) Inspection of records.—The Administrator, through his authorized agents, shall have the right to inspect [fol. 2909] all work as it progresses, and shall have access to all pay rolls, records of personnel, invoices of materials,

and any and all other data relevant to the performance of this contract. There shall be submitted to the Administrator, through his authorized agents, the names and addresses of all personnel, and such schedules of the costs of labor, costs and quantities of materials, and other items, supported as to correctness by such evidence, as, and in such form as, the Administrator, through his authorized agents, may require. The submission and approval of said schedules, if required, shall be a condition precedent to the making of any payment under the contract.

"(b) There shall be provided for the use of the Engineer Inspector such reasonable facilities as he may request. In case of dispute the Government Engineer shall determine the reasonableness of the request.

"11. Reports.—Every employer of labor on the Project shall report within five days after the close of each calendar month, on forms to be furnished by the United States Department of Labor, the number of persons on their respective pay rolls directly connected with the Project, the aggregate amounts of such pay rolls, and the man-hours worked, wage scales paid to the various classes of labor, and the total expenditures for materials. Two copies of each of such monthly reports are to be furnished to the Government Engineer, and one copy of each to the United States Department of Labor. The contractor under any construction contract shall also furnish to the Borrower, to the Government Engineer, and to the United States Department of Labor the names and addresses of all subcontractors on the work at the earliest date practicable.

"12. There shall be provided all necessary services and all materials, tools, implements and appliances required to perform and complete entirely and in a workmanlike manner the work provided for in this contract. Except as otherwise approved in writing by the Government Engineer, such services shall be paid for in full at least once a month and such materials, tools, implements and appliances shall [fol. 2910] be paid for at least once a month to the extent of 90% of the cost thereof to the contractor, and the remaining 10% shall be paid thirty days after the completion of the part of the work in or on which such materials, tools, implements or appliances are incorporated or used.

"13. Signs.—Signs bearing the legend "Public Works Project No. 3124" shall be erected in appropriate places at the site of the Project.

"14. All reasonable rules and regulations which the Administrator may prescribe toward the effectuation of the matters covered by Paragraphs 1 to 13 inclusive, shall be observed in the performance of the work.

"15. Subcontractors.—(a) Appropriate provisions shall be inserted in all subcontracts relating to this work to insure the fulfillment of all provisions of this contract affecting such contractors, particularly Paragraphs 1 to 14 inclusive.

"(b) No bid shall be received from any subcontractor who has not signed U. S. Government Form No. P. W. A. 61, revised March—1934.

"16. Termination for breach.—In the event that any of the provisions of Paragraphs 1 to 15 inclusive of this contract are violated by the contractor under the construction contract or by any subcontractor under any subcontract on the work, the Borrower may, subject to the approval of the Government Engineer, and upon request of the Administrator shall, terminate the contract by serving written notice upon the contractor of its intention to terminate such contract, and, unless within ten days after the serving of such notice, such violation shall cease, the contract shall, upon the expiration of said ten days, cease and terminate. In the event of any such termination the Borrower may take over the work and prosecute the same to completion or otherwise for the account and at the expense of the contractor and/or subcontractor, and the contractor and his sureties shall be liable to the Borrower for any excess cost occasioned the Borrower in the event of any such termination, and the Borrower may take possession of and utilize [fol. 2911] in completing the work, such materials, appliances, and plant as may be on the site of the work, and necessary therefor. This clause shall not be construed to prevent the termination for other causes provided in the construction contract.

"17. Definition.—The term "Administrator" as used herein refers to the Federal Emergency Administrator of Public Works. The term "Act" as used herein refers to

the National Industrial Recovery Act. The term "Government Engineer" as used herein shall mean the State Engineer (P. W. A.) or his duly authorized representative, or any person designated to perform his duties or functions under this Agreement by the Administrator. The term "Engineer Inspector" as used refers to State Engineer Inspector, Resident and Assistant Resident Engineer Inspectors, and Supervising Engineers, appointed by the Administrator. The term "Materials" as used herein includes, in addition to materials incorporated in the Project or used or to be used in the operation thereof, equipment and other materials used and/or consumed in the performance of the work.

2. Restriction as to Contractors.—The Borrower shall receive no bid from any contractor, nor permit any contractor to receive any bid from any subcontractor, who has not signed U. S. Government Form No. P. W. A. 61, revised March, 1934.

3. Bonds and Insurance.—Construction contracts shall be supported by adequate surety or other bonds or security satisfactory to the Administrator for the protection of the Borrower, of Materialmen, and of labor employed on the Project or any part thereof. The contractor under any construction contract shall be required to provide public liability insurance in an amount satisfactory to the Government Engineer.

4. Force Labor.—If prices in the bids are excessive, the Borrower reserves the right, anything in this Agreement notwithstanding, to apply to the Administrator for permission to do all or any part of the Project by day labor, upon such conditions as the Administrator may impose.

[fol. 2912] Part Three

1. Construction of Project.—Not later than upon the receipt by it of the first Bond payment, the Borrower will promptly commence or cause to be commenced the construction of the Project, and the Borrower will thereafter continue such construction or cause it to be continued to completion with all practicable dispatch, in an efficient and economical manner, at a reasonable cost and in accordance

with the provisions of this Agreement, such engineering supervision and inspection as the Administrator or his representatives may require, and plans, drawings, specifications and construction contracts which shall be satisfactory to the Administrator. Except with the prior written consent of the Administrator, no materials or equipment for the Project shall be purchased by the Borrower subject to any chattel mortgage or any conditional sale or title retention agreement.

2. Information.—During the construction of the Project the Borrower will furnish to the Government all such information and data as the Administrator may request as to the construction cost and progress of the work. The Borrower will furnish to the Government and to any purchaser from the Government of 25 per centum of the Bonds, such financial statements and other information and data relating to the Borrower and the project as the Administrator or any such purchaser may at any time reasonably require.

3. Representations and Warranties.—The Borrower represents and warrants as follows:

(a) Litigation.—No litigation or other proceedings are now pending or threatened which might adversely affect the Bonds, the construction and operation of the Project, or the financial condition of the Borrower;

(b) Financial Condition.—The character of the assets and the financial condition of the Borrower are as favorable as at the date of the Borrower's most recent financial statement, furnished to the Government as a part of the Application, and there have been no changes in the character of [fol. 2913] its assets or in its financial condition except such changes as are necessary and incidental to the ordinary and usual conduct of the Borrower's affairs;

(c) Fees and Commissions.—No fee or commission has been or will be paid by the Borrower or any of its officers, employees, agents or representatives, and no agreement to pay a fee or commission has been or will be entered into by or on behalf of the Borrower, or any of its officers, employees, agents or representatives, in order to secure the loan or Grant hereunder;

(d) Affirmation. — Every statement contained in this Agreement, in the Borrower's Application, and in any supplement thereto or amendment thereof, and in any other document submitted to the Government by or on behalf of the Borrower is correct and complete, and no relevant fact materially affecting the Bonds, the Grant or the Project, or the obligations of the Borrower under this Agreement has been or will be omitted therefrom.

4. Sale of Bonds by the Government.—The Borrower will take all such steps as the Government may reasonably request to aid in the sale by the Government of any or all of the Bonds. Upon request, the Borrower will furnish to the Government or to any purchaser from the Government of 25 per centum of the Bonds, information for the preparation of a bond circular in customary form, signed by the proper official of the Borrower, containing such data as the Government or such purchaser may reasonably request concerning the Borrower and the Project.

5. Expenses.—The Government shall be under no obligation to pay any costs, charges and expenses incident to compliance with any of the duties or obligations of the Borrower under this Agreement, including, without limiting the generality of the foregoing, the cost of preparing, executing or delivering the Bonds or obtaining all legal opinions requested by the Administrator.

6. Waiver.—Any provision of this Agreement may be waived or amended with the consent of the Borrower and the written approval of the Administrator, without the execution of a new or supplemental agreement, if, in the opinion of the Administrator, which shall be conclusive, such waiver or amendment does not substantially vary the terms of this Agreement.

[fol. 2914] 7. Interest of Member of Congress.—No member of or Delegate to the Congress of the United States of America shall be admitted to any share or part of this Agreement, or to any benefit to arise therefrom.

8. Validation.—The Borrower hereby covenants that it will institute, prosecute and carry to completion in so far as it may be within the power of the Borrower, any and all

acts and things to be performed or done to secure the enactment of legislation or to accomplish such other proceedings, judicial or otherwise, as may be necessary, appropriate or advisable to empower the Borrower to issue the Bonds and to remedy any defects, illegalities and irregularities in the proceedings of the Borrower relative to the issuance of the Bonds and to validate the same after the issuance thereof to the Government, if in the judgment of the Administrator such action may be deemed necessary, appropriate or advisable. The Borrower further covenants that it will procure and furnish to the Government, as a condition precedent to the Government's obligations hereunder, a letter from the Governor of the State of Alabama stating that if in the judgment of the Administrator it may be advisable to enact legislation to empower the Borrower to issue the Bonds or to remedy any defects, illegalities or irregularities in the proceedings of the Borrower relative to the issuance thereof or to validate the same, said Governor will recommend and cooperate in the enactment of such legislation.

9. Miscellaneous.—Subject to the limitations herein contained, this Agreement shall be binding upon the parties hereto when a copy thereof, duly executed by the Borrower and the Government, shall have been received by the Borrower. This Agreement shall be governed by and construed in accordance with the laws of the State of Alabama.

10. Naming of Project.—The Project shall not be named except with the written consent of the Administrator.

11. Undue Delay by the Borrower.—If in the opinion of the Administrator, which shall be conclusive, the Borrower shall delay for an unreasonable time in carrying out any of the duties of the obligations to be performed by it under the terms of this Agreement, the Administrator may cancel this Agreement.

[fol. 2915] 12. Nature of Liability.—It is expressly understood and agreed that this Agreement does not constitute an indebtedness of the Borrower within the meaning of any provision or limitation of the Constitution of the State of Alabama, and it is hereby made a condition of this Agreement that the covenants, agreements, representations, and

COMPLAINANTS' EXHIBIT No. 420.

warranties herein contained do not and shall never impose a pecuniary liability upon the Borrower or charge against its general credit.

13. Construction of Agreement.—If any provision of this Agreement shall be invalid in whole or in part, to the extent it is not invalid it shall be valid and effective and no such invalidity shall affect, in whole or in part, the validity and effectiveness of any other provision of this Agreement or the right or obligations of the parties hereto, provided, in the opinion of the Administrator, the Agreement does not then violate the terms of the Act.

In Witness Whereof, the City of Sheffield, Alabama, and the United States of America have respectively caused this Agreement to be duly executed as of the day and year first above written.

City of Sheffield, Alabama, by —— ——. United States of America, by —— ——, Federal Emergency Administrator of Public Works. (Seal.)

Attest: —— ——.

[fol. 2916] COMPLAINANTS' EXHIBIT No. 421

Application by the City of Tuscumbia, Alabama, to the Federal Emergency Administration of Public Works for a loan and grant in the amount of $127,244 for the construction of an Electric distribution system.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 419.

COMPLAINANTS' EXHIBIT No. 422

Loan and Grant Agreement in the amount of $130,000 between the City of Tuscumbia, Alabama, and United States of America for the construction of electric transmission lines and distribution system.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 420.

[fol. 2917] COMPLAINANTS' EXHIBIT No. 423

Application of Courtland, Alabama, for Loan of $29,255. to Construct Electric Distribution System

IV. The Project

* * * * * * *

"c. Economic and Social value.—The Town of Courtland has been burdened with high rates on electric current since the installation of the present system. Because of these high rates only a few of the more fortunate citizens have been financially able to enjoy the full benefit of having power for purposes other than for lighting their homes.

With the installation of a municipally owned distribution system and cheap power from the lines of the Tennessee Valley Authority it is reasonable to suppose that a majority of the people not now financially able to avail themselves of the full facilities of power in the home will become users of electric ranges, water heaters, electric refrigeration and better lighting in their homes.

We feel, therefore, that the contemplated project is meritorious and of great economic and social value to the inhabitants of Courtland.

Courtland now has on file with the PWA an application for funds with which to construct a complete waterworks, fire protection and sewage disposal system.

d. Relation to general plan.—The project is a part of a plan for municipal ownership of the major utilities in the Town of Courtland.

* * * * * * *

i. Competition.—The project, when completed, will not compete directly or indirectly with any similar enterprise for, though the Town is now being served by the Alabama Power Company, they, the Power Company, have no franchise and if the project is approved, will have no standing in the community.

* * * * * * *

k. Number of men employed.—It is estimated that an average of twenty men will be employed directly on the work for a period of three months, and that employment

COMPLAINANTS' EXHIBIT No. 423

will be given indirectly to about thirty men, for the same period, for the manufacture of equipment and materials.

* * * * * * *

[fol. 2918] r. Unemployment in district involved.—This information is not available at this time but will be supplied later if desired.

* * * * * * *

V. Revenue and Expense

* * * * * * *

e. Schedule of rates.—Rates will be established by the Town Council upon advice from the Tennessee Valley Authority after the system is installed. Rates used in this application have been assumed from rate table published as applying to the City of Tupelo, Mississippi."

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2919] COMPLAINANTS' EXHIBIT No. 424

Loan and Grant contract in the amount of $16,000 between Federal Emergency Administration of Public Works and the Town of Courtland, Alabama, with which to construct an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 425

PWA Form 210, dated July 1, 1936, and entitled "Terms and Conditions".

(Omitted)

[fol. 2920] COMPLAINANTS' EXHIBIT No. 426

December 15, 1933.

Application of Decatur, Alabama, for Loan of $285,000.00 to Construct a Municipal Electric Light and Power Distribution System

IV. The Project

* * * * * * *

(c) Economic and Social Value.—The present electric light and power distribution system is being operated by public utility. The construction of a municipal system would be of great economic and social value to the inhabitants of the community.

In the first place, the construction would put many unemployed men to work.

In the second place, the distribution of cheap power from the Tennessee Valley Authority will cause a large increase in the use of power in the homes and by industry. The larger use of power in the homes will tend to reduce drudgery, increase conveniences and make for a happier home life.

The larger use of power by industry will tend to increase pay rolls, which in turn will increase the demand for business and professional service.

The successful application of the cheap TVA power will tend to reduce electric light and power rates in other communities.

(d) Relation to General Plan.—The project is in line with the National Plan to promote the happiness and prosperity of the people by making available cheap electric power.

(e) City or Regional Planning Board.—There is no city Planning Board. Decatur is in the Tennessee Valley and is within the area to be served by the Tennessee Valley Authority. The Authority has indicated willingness to supply power if the City can secure the funds with which to construct the distribution system.

* * * * * * *

COMPLAINANTS' EXHIBIT No. 426

[fol. 2921] (i) Competition.—The project will compete with a similar enterprise of Alabama Power Company, unless its distribution system should be taken over.

• • • • • • •

(k) Number of Men Employed.—It is estimated that an average of 100 men will be employed directly on the work for a period of eight (8) months and that employment will be given to about 300 men for the same period, for the manufacture of equipment and material.

• • • • • • •

(n) Regenerative Character.—It is expected that the application of cheap TVA electric power rates will cause the purchase and use of electrical appliances for household use, which will stimulate the manufacture and sale of such articles. The low TVA rates will tend to bring in new industries. This of course will call for the employment of both skilled and unskilled labor in construction of plants and housing for employes.

• • • • • • •

V. Revenue and Expense

• • • • • • •

(d) Discussion of Estimated Revenue and Expense.—The financial table indicates a reasonable margin of surplus during the life of the loan. The increases in the revenue shown are in line with the expected development of the area as the Community gets to using TVA cheap power.

(e) Schedule of Rates.—The following are the rates to be charged. These rates may be changed by the Municipality with the approval of Tennessee Valley Authority, provided no rate shall be higher than the rate for similar service authorized by Alabama Public Service Commission for public utility.

TVA Rates are attached.

• • • • • • •

COMPLAINANTS' EXHIBIT No. 426

Details of Energy Cost

The amount of 38,058 for power at wholesale from Tennessee Valley Authority on the application of Decatur, Alabama, is for energy to be purchased at their regular quoted schedule, as follows:

1,810 kw.	demand at .90	$1,629.00
100,000 kwh.	energy at .004	400.00
200,000 "	" at .033	600.00
217,000 "	" at .0025	542.50
517,000	Total per month	$ 3,171.50
	Total per year	38,058.00

• • • • • • •

We are advised by the Tennessee Valley Authority that transmission lines will be run into the City and the main part of the substation supplied by the TVA, including the step down transformers at no cost to the city. They propose to furnish the current and meter on the low side of [fol. 2922] the main transformers at a distribution voltage of approximately 2300 volts.

• • • • • • •

It seems very desirable that the distribution system be constructed at once for several reasons:

1. To put men to work.

2. To cooperate with Tennessee Valley Authority in making available cheap power rates to the residents of the community.

3. Because loans and grants are available from the Federal Emergency Administration of Public Works on liberal terms.

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2923] COMPLAINANTS' EXHIBIT No. 427

Loan and Grant agreement dated December 6, 1934, in the amount of $350,000 between Federal Emergency Administration of Public Works and the City of Decatur, Alabama, for constructing an electric distribution system.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 420.

[fol. 2924] COMPLAINANTS' EXHIBIT No. 428 (Excluded)

Tennessee Valley Authority,

Knoxville, Tennessee

April 6, 1934.

Captain R. H. Elliot, Director of Public Works Administration, Washington, D. C.

MY DEAR CAPTAIN ELLIOT:

Your inquiry addressed to Miss Marguerite Owen, our Washington representative, pertaining to the application of the town of Decatur, Alabama, for a PWA loan for the construction of an electrical distribution system, has been transmitted to the Electric Division for reply.

On March 14th a contract was entered into between the Tennessee Valley Authority and the town of Decatur, Alabama, to furnish that municipality with TVA power. This contract is dependent upon the ability of Decatur, Alabama, to construct or acquire a distribution system.

By reason of a contract entered into with the Commonwealth & Southern Corporation and its subsidiary, the Alabama Power Company, for the purchase of certain transmission facilities, the Tennessee Valley Authority is in position to furnish electric current for all of the requirements of Decatur, Alabama, just as soon as the town of Decatur has provided its own distribution system.

It is our understanding that the town of Decatur, Alabama, has made every reasonable effort to purchase the electric distribution system now owned and operated in the town of Decatur by the Alabama Power Company, at a fair price commensurate with the cost of construction of a new distribution system.

COMPLAINANTS' EXHIBIT No. 428 (Excluded)

While it is true the serving of Decatur, Alabama, with TVA power does not involve any additional expenditure by the TVA for labor and materials the construction of a distribution system, which now seems to be the only way in which Decatur, Alabama, can give its citizens the benefit of the low TVA rates, would require the expenditure, by the town of Decatur, Alabama, of $285,000.00 for labor and materials.

The citizens of Decatur, Alabama, have clearly manifested their interest in obtaining the benefits of the [fol. 2925] low rates possible under Decatur's contract with the Tennessee Valley Authority. They feel that these low rates will not only enable them to afford a greater use of the service of electric energy, but would contribute materially to the commercial and industrial development of their community.

In view of the probability of other Alabama cities and towns benefiting from the low TVA rates, leading citizens of Decatur have expressed the firm conviction that TVA power is a public necessity to their community if they are to keep pace industrially, commercially and socially with their neighboring cities and towns.

The President, and the creators of the Tennessee Valley Authority Act of 1933 in the Congress, have indicated their desire that the Tennessee Valley Authority set up a "yardstick" in the Tennessee Valley as a measurement of utility operation. In order that this "yardstick" may be a reality, it is necessary that various cities and towns in the Tennessee Valley desiring to do so, may provide their own distribution systems, and thereby have a part in the establishment and operation of this "yardstick" of electric energy values. By reason of the high standing of Decatur among municipalities in the Valley area in point of industrial, commercial and civic development, the Tennessee Valley Authority regards the serving of Decatur, Alabama, as particularly desirable in its development of the electric utility "yardstick."

If there is any additional information we can furnish you, please feel free to call on us.

Yours sincerely, David E. Lilienthal, Director and General Counsel.

[fol. 2926] COMPLAINANTS' EXHIBIT No. 429 (Excluded)

April 10, 1934.

Mr. David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Knoxville, Tennessee.

DEAR MR. LILIENTHAL:

This will acknowledge your letter of April 6, regarding the application of the Town of Decatur, Alabama, Docket No. 6587.

Copies of your letter are being filed with the dockets for the information of our examiners.

Sincerely yours, R. H. Elliott, for the Administrator.

[fol. 2927] COMPLAINANTS' EXHIBIT No. 430

December 20, 1933.

Application of Hartselle, Alabama, for Loan and Grant of $95,500 to Construct an Electrical Distribution System

* * * * * * * *

IV. Project:

a. General Description:

The project under contemplation will consist of a complete and new electric light and power distribution system for a city of about 2500 population. It is proposed that the distribution system be energized from a transformer sub-station located near the center of the city, which sub-station will be furnished by the Tennessee Valley 90020 Feb. 9 '34 and supplied by them with energy from Muscle Shoals and Wheeler Dam.

The distribution system is intended to practically duplicate and supplant a public utility distribution system. The City has secured ten year contracts from practically all the consumers now in the city, which contracts read as follows:

"Contingent Power Contract"

"For and in consideration of One ($1.00) Dollar in hand paid by J. P. Hodges, Mayor of the City of Hartselle, Ala-

bama, on behalf of said City, the receipt whereof is hereby acknowledged, and in further consideration of the opportunity to secure lower electric rates for myself, and of the benefits that will accrue to me as a citizen of or business man of said City by reason of the net revenue which should be earned by the City from the municipal operation of its own electrical distribution system, it is hereby agreed as follows:

1. That when, and if, the City of Hartselle, Ala. has electrical energy of the required voltage and phase available for sale at the premises of the undersigned, the City will supply, and the undersigned, so long as he is a purchaser of electrical energy in the territory served by the City's municipal distribution system, will purchase his entire requirements of electrical energy from the City for a period of ten (10) years beginning as soon as the service is available, but not later than January 1, 1935.

2. It is further agreed that the rates for electricity to be charged by the City and to be paid by the consumer shall be those prescribed by the Tennessee Valley Authority, and that such rates shall be lower than the present public utility rates paid by the undersigned."

The estimates of cost and of earnings are based upon the signed customers. Some of these customers are at present disconnected. Inasmuch, however, as this loan is for a long [fol. 2928] period, these customers will be connected to the system when normal business resumes, and especially when cheap power is offered. It is proposed to construct a new system complete without removing the old system.

It is also proposed to construct a central distributing sub-station near the center of the city, which sub-station will be equipped with transformers furnished by the TVA. Power will be supplied the municipality of 2300 volts, 3 phase, 60 cycle. Power would be supplied by the city to most of the industries at 2300 volts, thus requiring no transformation.

* * * * * * *

The cost estimates are based upon the number of consumers signed up and upon their classification. The loads of the industrial consumers were ascertained by inspectors.

COMPLAINANTS' EXHIBIT No. 430

The consumption of the domestic and commercial consumers is predicated upon a return to normal business conditions and upon the normal stimulation of consumption by the low promotional rates to be put into effect by the TVA.

• • • • • • •

c. The lower rates resulting from this project will stimulate the industrial and commercial development of the city, and with the use of household electrical appliances the drudgery of house-keeping will be greatly relieved, thus improving home life for the residents.

Long Range Development:

d. The project is a part of the program of the Tennessee Valley Authority of establishing better living and social conditions in the regions within transmission distance of the Muscle Shoals power development.

e. The city has no regional planning board.

f. The city is an isolated town about 11 miles South of Decatur, Ala., and is a part of the TVA project.

• • • • • • •

i. The project will not be competitive since practically all of the consumers are signed up for a ten (10) year period.

• • • • • • •

Much of the present industrial load is seasonal, which will have the effect of increasing the kw. demand and decreasing the load factor of the City's purchased power. The TVA power demand rates to municipalities, however, provide for this contingency so that the annual weighted demand will not be greatly increased.

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2929] COMPLAINANTS' EXHIBIT No. 431

(Omitted)

COMPLAINANTS' EXHIBIT No. 432

Loan and Grant contract dated December 4, 1935, in the amount of $60,000, between Federal Emergency Administration of Public Works and the City of Hartselle, Alabama, for constructing an electric distribution system.

(Omitted)

[fol. 2930] COMPLAINANTS' EXHIBIT No. 433

Application of Muscle Shoals, Alabama, for Loan of $150,000.00 to Construct Waterworks and Electrification Systems

I. General

This application has been prepared and the data is presented in accordance with Circular No. 2. of the Federal Emergency Administration of Public Works. If additional data is needed it will be promptly furnished by the correspondent upon request.

• • • • • • •

III.

Loan requested:

For Electric Lights	$ 33,000.00
For Water Works	117,000.00
Total	$150,000.00

a. Amount:

• • • • • • •

IV. The Project

• • • • • • •

c. Economic and Social Value:

Muscle Shoals is without adequate Water and Electrical facilities at this time. The Town being the logical location for the housing of employees of the Nitrate Plants and adjacent to the TVA development is sure to grow rapidly in the next few years. It is absolutely necessary for the community to

COMPLAINANTS' EXHIBIT No. 433

have these conveniences to make living conditions bearable. In addition to providing for the future the work at this time will provide a source of income for many needy native families. We do not believe that the economic and social value can be questioned.

• • • • • • •

i. Competition:

The project will not compete directly or indirectly with any general similar enterprise.

• • • • • • •

k. Number of men employed:

It is estimated that an average of 65 men will be employed directly on the work for a period of 8 months and that employment will be given indirectly to about 140 men, for the same period, for the manufacturing of equipment.

• • • • • • •

V. Revenue and Expense

• • • • • • •

Light and Power Rates

To be agreed upon between TVA authorities and the Town with a minimum of $2.00.

(For brevity other portions of this exhibit are omitted.)

[fol. 2931] COMPLAINANTS' EXHIBIT No. 434

(Omitted)

COMPLAINANTS' EXHIBIT No. 435

Loan and Grant contract dated February 29, 1936, in the amount of $32,727, between Federal Emergency Administration of Public Works and the City of Muscle Shoals, Alabama, for constructing an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 436

Application of Russellville, Alabama, to Federal Emergency Administration of Public Works for a loan and grant

COMPLAINANTS' EXHIBIT No. 436

in the amount of $148,000 to construct an electric distribution system.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 430.

[fol. 2932] COMPLAINANTS' EXHIBIT No. 437

(Omitted)

COMPLAINANTS' EXHIBIT No. 438

Loan and Grant contract dated December 4, 1935, in the amount of $125,454, between Federal Emergency Administration of Public Works and the City of Russellville, Alabama, for constructing an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 439

Application of Guntersville, Alabama, dated December 20, 1933, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $100,000 to construct an electric distribution system.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 430 except that appended thereto are copies of correspondence as follows:

Lide & Adler,
Consulting and Constructing Engineers,
Woodward Building,
Birmingham, Alabama.

February 19th, 1934.

(In blue pencil 2-21-34)

Copy 7341

Mr. George J. Davis, Jr., State Engineer, P. W. A., Montgomery, Alabama.

Re: Guntersville, Elec. Dist. System Eng. Ref. No. 171.

DEAR MR. DAVIS:

With further reference to the above application, you will [fol. 2933] please note that in the tabulation of income and

interest and principal payments set forth in our letter of January 10, 1934, in response to your request of December 29, 1933, for additional information, the Grant applied to the interest and principal payments for three years.

We inclosed herewith copy of letter from Mr. V. D. L. Robinson, Administrative Assistant, Tennessee Valley Authority, Knoxville, Tennessee, to Senator Bankhead, from which you will note it is Mr. Robinson's judgment that within two years Norris Dam will be completed, the contract with the Commonwealth and Southern Corporation to stay out of the Guntersville territory will have expired and that the TVA will therefore be in a position to serve the City of Guntersville. We would therefore ask that you pass on the Guntersville application on the assumption that power will be available from the TVA within less than three years from the date of the approval of the loan, and that meanwhile the interest and principal charges will be taken care of by the grant.

We, therefore, see no reason why this should not reinstate Guntersville's application for favorable consideration, and we respectfully request that you give it this consideration and forward same to Washington.

Yours very truly, Lide & Adler, (Signed) Martin J. Lide.

MJL/T.

cc: Mr. Claud D. Scruggs, Attorney-at-Law, Guntersville, Ala.

Tennessee Valley Authority,

Knoxville, Tennessee,

Feb. 8, 1934.

(In pencil Encl. 2-19-34.) (2-21-34.)

Hon. J. H. Bankhead, Senate Office Building, Washington, D. C.

MY DEAR SENATOR BANKHEAD:

Your letter of January 30 addressed to the Board of Directors of the Tennessee Valley Authority has been referred to this office for attention and reply.

Application for power by the cities of Oneonta, Hartselle, Tarrant City, Bessemer, Russellville, Guntersville, and

Cullman, Alabama, have been under consideration for some time and we are all very anxious to do every thing possible to serve these cities. As you will recall, a contract was made by the Tennessee Valley Authority with the Commonwealth and Southern Corporation and its subsidiaries, the Georgia, Alabama, Mississippi and Tennessee Electric Power Companies, whereby we take over certain sections in your State, Mississippi and Tennessee, including certain transmission [fol. 2934] facilities, and in the case of Mississippi several local distribution systems. This contract was made with the view of providing a market for the electric energy produced at Wilson Dam pending the completion of Norris Dam, when our present contract with the Commonwealth and Southern terminates. At the present rate of progress on the construction of Norris Dam, it is quite possible that the dam will be completed within two years.

From present indications, it appears that we will have the desired market for Wilson Dam power in that part of your State in close proximity to Muscle Shoals and in Northeast Mississippi and adjacent to the transmission line between Norris and Wilson dams in Tennessee. We did not include Bessemer and other points in the immediate Birmingham Territory in the present contract, realizing that we would be in better position to serve communities, if this service is desired, after Norris Dam is completed. We will be in position to serve some of those places you have mentioned, particularly Hartselle and Russellville, at the present time, as Hartselle and Russellville are in the territory to be acquired from the Alabama Power Company. There is nothing in the contract with the Commonwealth and Southern which would preclude full consideration of serving many other cities in Alabama after Norris Dam is in production, or in serving any of those points now, providing a transmission line is constructed by the municipalities to connect with our present lines or any of those which we will take over from the Alabama Power Company.

In order that you may have a copy of our contract with the Commonwealth and Southern immediately available for reference purposes, I am enclosing another copy herewith.

If there is any additional information you or any of your constituents desire, we will endeavor to give you such information promptly. In the meantime. Mr. Llewellyn Evans.

COMPLAINANTS' EXHIBIT No. 439

our Chief Electrical Engineer, and his staff are continuing their study of each situation of Alabama municipalities which have made application for TVA power to ascertain just how, if possible, we may be able to serve them even prior to the completion of Norris Dam.

Yours very truly, Tennessee Valley Authority,
(Signed) by V. D. L. Robinson, Administrative Assistant.

(For brevity other portions of this exhibit are omitted.)

[fol. 2935] COMPLAINANTS' EXHIBIT No. 440

(Omitted)

COMPLAINANTS' EXHIBIT No. 441

Loan and Grant contract dated December 4, 1935, between Federal Emergency Administration of Public Works and the City of Guntersville, Alabama, in the amount of $87,272, for constructing an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 442

Application and revised application of Tarrant City, Alabama, dated December 20, 1933, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $184,400 to construct an electric distribution system.

To avoid repetition, the original application comprising the first part of this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 430:

P. W. A. Docket No. 7512—Revised Application of Tarrant City, Alabama, for a loan from the Federal Emergency Administration of Public Works to construct an electrical distribution system:

COMPLAINANTS' EXHIBIT No. 442

Lide & Adler,

Engineers

Birmingham, Alabama

• • • • • • •

[fol. 2936] Birmingham, Alabama,
August 14, 1935.

Re Docket 7512—Tarrant City, Alabama, Electric Distribution System

Mr. H. S. Geismer, Acting State Director, PWA, Montgomery, Alabama.

DEAR SIR:

On July 13, 1935, Mr. Roy Ingram, Mayor, Tarrant City, received a joint letter from Senators Black and Bankhead dated July 12, 1935, in which they advised the Mayor that the revised application of his city for a loan and grant to construct a steam power plant with which to serve both his city and the City of Bessemer, will not be approved. They advised the Mayor, however, that if he could secure another source of power the application for the loan and grant would probably be approved. The City of Tarrant City therefor desires to amend its application for the second time to provide for a change in the source of power.

Please refer to the following previous correspondence?

a. The original application of the City of Tarrant City, Alabama, filed in December, 1933, original engineering reference No. 173, for a loan and grant of $184,400 for an electrical distribution system.

b. Our letter of January 4, 1934, addressed to Mr. Geo. J. Davis, Jr., State Engineer, O. W. A., Montgomery, Alabama, in response to his letter of January 11, 1934.

It is now desired to amend Docket 7512 for the second time to provide for the purchase of power from the City of Bessemer, Docket 7677, by the City of Tarrant City at TVA wholesale rates, at a sub-station to be located about three miles beyond the city limits of Tarrant City.

COMPLAINANTS' EXHIBIT No. 442

In the revised application of the City of Bessemer it is now proposed that the City of Bessemer shall construct a 22,500 kva. 132/22 kv. sub-station about three miles from Tarrant City, and that it shall also build a double circuit 132 kv. transmission line to the southern border of Morgan County, at which point the transmission line and sub-station will be supplied with power by the TVA.

The applicant also desires to amend Docket 7512 for the construction of a double circuit 22 kv. feeder approximately three miles long from the main sub-station to a city distribution sub-station located in or near the city; to construct a distribution system to supply domestic and commercial consumers within and near the city limits; and to supply industrial consumers both in and without the city limits; power to be sold to customers by the City of Tarrant City at TVA resale rates.

[fol. 2937] Print BA-O-1 incorporated herewith indicates the general plan of transmission and distribution, while print BA-O-2 incorporated herewith shows an enlarged scale plan of the transmission system limited to the Birmingham district.

Section 7 of the contract dated January 5, 1934, between the TVA and the Power Companies provided that during the period prior to the completion of Norris Dam, the Authority will not sell energy Outside of Said Counties (including Morgan County) to municipalities now served by the Power Company. The inclusion of the limitation Outside of Said Counties thus provides that the Authority may sell power to municipalities such as Bessemer at any point within Morgan County. It is therefore proposed in revising the applications of Tarrant City, Docket 7512, and Bessemer, Docket 7677, to provide for the construction of a double circuit, 132 kv., three phase transmission line from the southern border of Morgan County to a step-down transformer sub-station located in the outskirts of Tarrant City, and for the distribution of power at three phase, 22 kv. from this sub-station to Tarrant City and Bessemer. It is proposed that Bessemer shall own and operate both the transmission line and the sub-station, and shall sell three phase, 22 kv. power to Tarrant City at TVA wholesale rates.

COMPLAINANTS' EXHIBIT No. 442

It is also proposed to re-setup both applications on the basis of a 45% grant to the cities.

• • • • • • •

The city of Tarrant City, as stated in previous communications, already has in its possession signed contingent power contracts with approximately 97% of the present small consumers in the city.

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2938] COMPLAINANTS' EXHIBIT No. 443

Loan and Grant contract dated December 11, 1935, in the amount of $329,091, between Federal Emergency Administration of Public Works and Tarrant City, Alabama:

Federal Emergency Administration of Public Works
Washington, D. C.
December 11, 1935.

PWA Docket No. 7512

City of Tarrant City, Jefferson County, Alabama.

1. The United States of America (herein called the "Government") hereby offers to aid in financing the construction of a transmission line from a sub-station to be constructed by the City of Bessemer and a complete distribution system (herein called the "Project") by making a loan and grant to the City of Tarrant City, Alabama (herein called the "Applicant") in an amount not exceeding in the aggregate the sum of $329,091.

2. The Government will purchase, at the principal amount thereof plus accrued interest, from the Applicant, obligations of the description set forth below (or such other description as shall be mutually satisfactory) in the aggregate principal amount of $181,000 less such amount of such

COMPLAINANTS' EXHIBIT No. 443

obligations, if any, as the Applicant may sell to purchasers other than the Government:

(a) Obligor: City of Tarrant City;

• • • • • • •

3. The Government will make the grant in an amount equal to forty-five percent (45%) of the cost of the Project upon completion, but not to exceed, in any event, the sum of $148,091.

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2939] COMPLAINANTS' EXHIBIT No. 444

Application of Bessemer, Ala., for Loan and Grant of $636,000 to Construct an Electrical Distribution System

• • • • • • •

It is proposed to construct a central distributing sub-station near the center of the city, which sub-station will be supplied from transformers furnished by the TVA.

• • • • • • •

Economic and Social Value of the Project:

c. The lower rates resulting from this project will stimulate the industrial and commercial development of the city, and with the use of household electrical appliances the drudgery of house-keeping will be greatly relieved, thus improving home life for the residents.

Long Range Development:

d. The project is a part of the program of the Tennessee Valley Authority of establishing better living and social conditions in the regions within transmission distance of the Muscle Shoals power development.

• • • • • • •

The ratio of residential consumers to population under normal conditions and with the proposed low rates and large industrial population in Bessemer, will conservatively

approximate one-seventh. Since the population of Bessemer for 1930 was 20,721, this will assume 3,000 residential consumers as an average condition over a 30-yr. period, on the assumption that the city will not grow during this period. The present annual consumption per residential consumer in this district, due to the existing rates and the depression, is very low, averaging about 500 kwh. A reasonable expectation over a period of ten years, with return of normal business conditions, and with the low TVA rates, would be 1,000 kwh. per consumer. In Tacoma, Washington, where these rates are in vogue, this figure is 1,500 kwh. at present, and is generally increasing as the use of domestic electrical appliances becomes more general.

Under proposed TVA rates, without any surcharge, the average domestic rate, based on a consumption of 1000 kwh. per year, would approximate 2½¢ per kwh.

• • • • • • •

[fol. 2940] The average rate for an average commercial consumption of 300 kwh. per month on the TVA base rate, without sur-charge, would be approximately 2½¢ per kwh. Under TVA regulations we are required to add the same sur-charge to the commercial consumer as to the industrial consumer. We are therefore increasing the average rate to the commercial consumer to .3125¢ per kwh. as a basis for the proposed financial set-up.

• • • • • • •

P. W. A. Docket No. 7677 Revised Application of Bessemer, Alabama, for a Loan from the Federal Emergency Administration of Public Works to Construct an Electrical Distribution System

Birmingham, Alabama,
August 14, 1935.

Re Docket 7677—Bessemer, Alabama, Electric Distribution System

Mr. H. S. Geismer, Acting State Director, PWA, Montgomery, Alabama.

DEAR SIR:

On July 13, 1935, Mr. Roy Ingram, Mayor, Tarrant City, received a joint letter from Senators Black and

Bankhead dated July 12, 1935, in which they advised the Mayor that the revised application of his city for a loan and grant to construct a steam power plant with which to serve both his city and the City of Bessemer, will not be approved. They advised the Mayor that if he could secure another source of power the application for the loan and grant would probably be approved. A similar letter was received by the City of Bessemer.

Inasmuch as the revised application of the City of Bessemer was made contingent upon the purchase of power from the City of Tarrant City, generated at its proposed steam power plant, the City of Bessemer now desires to amend its application for the second time to provide for the purchase of power from the TVA at the southern border of Morgan County; for the construction of a 132 kv. transmission line therefrom, to a 22,500 kva. sub-station located on the outskirts of Tarrant City; for the construction of a 22,500 kva., 132/22 kv. sub-station on the outskirts of Tarrant City; for the resale of power to the City of Tarrant City at the sub-station at 22 kv.; for the construction of a 22 kv. double circuit line from the sub-station to a distribution sub-station on the outskirts of Bessemer approximately 15 miles in length; and for the construction of a municipal distribution system in the City of Bessemer to supply residential, commercial and industrial consumers.

Please refer to the following correspondence:

[fol. 2941] a. The original application of the City of Bessemer, Alabama, filed in December, 1933, original engineering reference 170, for a loan and grant for an electrical distribution system, $636,000.

b. Our letter of February 22, 1934, addressed to Mr. George J. Davis, Jr., State Engineer, PWA, Montgomery, Alabama, in response to his letter dated January 11, 1934, requesting an early revision of the application to adapt it to a source of power other than the TVA. This request to Mr. Davis was made necessary by virtue of the contract between the TVA and the Commonwealth and Southern Power Corporation whereby the TVA agreed not to build lines in the Birmingham district.

c. Our letter dated March 28, 1935, to Mr. H. S. Geismer, State Engineer, PWA, Montgomery, Alabama, in re. Docket 7677.

d. Our letter to Mr. H. S. Geismer, State Engineer PWA, Montgomery, Alabama, dated April 13, 1935, in re. Docket 7677.

It is now desired to amend Docket No. 7677 for the second time to provide for the purchase of power from the TVA at the southern border of Morgan County, by the City of Bessemer; for the construction of a double circuit 132 kv. transmission line from that point to a step down transformer sub-station located in the outskirts of Tarrant City; for the sale of power at 22 kv. at the sub-station to the City of Tarrant City, Docket No. 7512; and for the transmission of power at 22 kv. from the sub-station to the City of Bessemer.

Section 7 of the contract dated January 5, 1934, between the TVA and the Power Companies provided that during the period prior to the completion of Norris Dam, the Authority will not sell energy Outside of Said Counties (including Morgan County) to municipalities now served by the Power Company. The inclusion of the limitation Outside of Said Counties thus provides that the Authority may sell power to municipalities such as Bessemer at any point within Morgan County. It is therefore proposed in revising the application of Bessemer, Docket 7677, and Tarrant City, Docket 7512, to provide for the construction of a double circuit, 132 kv., three phase transmission line from the southern border of Morgan County to a step down transformer sub-station located in the outskirts of Tarrant City, and for the distribution of power at three phase, 22 kv. from this sub-station to Tarrant City and Bessemer. It is proposed that Bessemer shall own and operate both the transmission line and the sub-station, and shall sell three phase, 22 kv. power to Tarrant City at TVA wholesale rates.

It is also proposed to re-setup both applications on the basis of a 45% grant to the cities.

* * * * * * *

[fol. 2942] Some of these industries, as will be noted on print BA-O-1 and print BA-O-2, are intra-urban and some extra-urban, but all are within transmission range of the proposed distribution system. The aggregate kw. capacity

COMPLAINANTS' EXHIBIT No. 444

of these industries is very greatly in excess of the aggregate kw. on which the earnings statement herewith incorporated is predicated. It is believed that if and when a loan to the City of Bessemer by the PWA, for the purposes herein provided for, is made contingent upon the sale of industrial power there will be no trouble in signing up a large block of industrial power very much in excess of the aggregate kw. demand herein specified. The franchise conditions of the existing electric utility in Bessemer have been discussed at great length in previous letters and communications, and it is not deemed necessary to repeat these previous discussions at this time. Suffice it to say that it is the belief of the City Attorney of Bessemer and of the legal staff of the City of Birmingham, and of disinterested attorneys, that the franchise of the Birmingham Electric Company in the City of Bessemer has expired and that, when properly litigated, the courts will so adjudicate it.

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2943] COMPLAINANTS' EXHIBIT No. 445

Loan and Grant contract dated December 11, 1935, in the amount of $1,238,182, between Federal Emergency Administration of Public Works and the City of Bessemer, for the construction of an electric distribution system:

Federal Emergency Administration of Public Works

Washington, D. C.

December 11, 1935.

PWA Docket No. 7677

CITY OF BESSEMER,
Jefferson County, Alabama:

1. The United States of America (herein called the "Government") hereby offers to aid in financing the construction of a 50 mile 132 kv. transmission line and a substation (herein called "Sub-Project A") and a 15 mile 22 kv. 2-circuit transmission line together with a complete distribution system (herein called "Sub-Project B", Sub-

Project A and Sub-Project B being herein collectively referred to as the "Project") by making a loan and grant to the City of Bessemer, Alabama (herein called the "Applicant") in an amount not exceeding in the aggregate the sum of $1,238,182.

2. The Government will purchase, at the principal amount thereof plus accrued interest, from the Applicant, obligations of the description and in amounts set forth below (or such other description as shall be mutually satisfactory), less such amount of such obligations, if any, as the Applicant may sell to purchasers other than the Government:

As to Sub-Project A—$324,000:

(a) Obligor: City of Bessemer;

* * * * * * *

3. The Government will make the grant for Sub-Project A in an amount equal to forty-five percent (45%) of the cost of Sub-Project A upon completion, but not to exceed, in any event, the sum of $264,182, and for Sub-Project B in an amount equal to forty-five percent (45%) of the cost of Sub-Project B upon completion, but not to exceed, in any event, the sum of $293,000.

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2944] COMPLAINANTS' EXHIBIT No. 446 (Excluded)

Federal Emergency Administration of Public Works
Electric Power Board of Review

Washington, D. C., August 29, 1934.

Memorandum

To: Mr. Henry T. Hunt.
From: Mr. O. M. Rau.
Subject: Docket #7512—Tarrant City, Alabama;
Docket #7677—Bessemer, Alabama.

The applications for these projects originally proposed the construction and operation of municipal electric sys-

tems consisting of distribution and street lighting systems, purchasing energy from TVA at substations to be installed by TVA in each city.

	Tarrant City	Bessemer
Loan Requested	$184,400	$636,000

It appears that a contract between TVA and the Commonwealth and Southern Corporation, and certain of its subsidiaries including the Alabama Power Company, to acquire certain transmission lines, etc., contain the following conditions:

"During said period (completion of the Norris Dam Power Plant, approximately December 31, 1938) authority will not sell electric energy outside of said counties to any municipality (etc.) which, or the distribution system serving which is now supplied by power companies."

Therefor- during the term of the contract neither Tarrant [fol. 2945] City nor Bessemer may expect to secure a supply of electrical energy for distribution from the TVA.

This situation required the construction of a generating plant from which to obtain originally intended to be purchased from TVA. To meet this situation a second application was filed by the City of Tarrant for a loan to construct and operate a steam generating plant of 15,000 kva. capacity to supply both Tarrant City and Bessemer.

Loan Requested $994,000

It therefor- appears that these three applications must be considered jointly in arriving at a final disposition of the applications for these loans, the total of which is as follows.

Project #7512 Tarrant City Distribution System	$184,400
Project ? Tarrant City Generating Plant	$994,000
Project #7677 Bessemer Distribution System	$636,000
Total—3 Applications	$1,814,400

The construction of additional steam generating capacity in the TVA area should coordinate with the plans of the TVA. The attached maps indicate the existing transmis-

sion lines and power sources from which electric service is available to serve Tarrant City and Bessemer.

[fol. 2946] To obtain energy from the Wilson Dam will require the construction of a transmission line to Tarrant City, a distance of approximately 100 miles, and an extension to Bessemer of approximately 16 miles. At the time of filing the Tarrant and Bessemer applications, it apparently was the intention of TVA to construct a transmission line to Birmingham from which line both Bessemer and Tarrant could have been served with energy from the TVA System.

In considering the approval of a loan to construct a steam generating plant at Tarrant or Bessemer, the plans of TVA regarding the construction of a transmission line to Birmingham should be taken into consideration.

The existing steam generating plants in the immediate vicinity of Birmingham consist of the following important plants:

Gorgas Plant #1—70,000 kw.—Alabama Power Company.

Gorgas Plant #2—60,000 kw.—Alabama Power Company.

Birmingham—13,700 kw.—National Power & Light Company.

Consistent with the policy of the TVA to acquire existing facilities by negotiation, an agreement to use existing steam generating facilities for stand by or emergencies, particularly when such plants are of sufficient capacity to add to the reliability of the entire TVA system, becomes of importance.

The construction of a relatively small steam plant as proposed by the Tarrant City applications would not only be economically unsound but of little value as stand by capacity in case of interruptions from transmission or other trouble should Birmingham, Tarrant, Bessemer and [fol. 2947] surrounding area be served by TVA, the demand of the Birmingham district alone being in excess of 20,000 kw.

The disposition of these three projects so as to coordinate with the plans of the TVA indicates the advisability

of submitting the applications to the TVA for instructions on the principal points involved which appear to be as follows:

A. Was the steam plant with a capacity of 15,000 kw. for which an application for a loan of $994,000 has been proposed by Tarrant City a useful purpose in the plans for the development of the TVA.

B. Are the plans of the TVA in the Birmingham area sufficiently developed to indicate with reasonable assurance when power from Wilson Dam will be available to Tarrant City and Bessemer.

C. Would the approval of these projects have an influence of sufficient importance, by a demonstration of TVA rates in Tarrant City and Bessemer, to favorably effect negotiations for acquiring facilities of existing utilities in this area by TVA.

D. If these projects are approved, would the TVA assume the debt charges on the loan for the steam generating plant, (to be used as stand by capacity) after TVA energy [fol. 2948] was substituted for the power generated by the steam plant.

Recommendation:

Provided the plans of TVA indicate that power from Wilson Dam will be available within a reasonable length of time, these projects exclusive of the steam plant, be approved with a condition that construction work be deferred until power from TVA is available and that the amount of the loan be earmarked for this purpose.

O. M. Rau.

[fol. 2949] COMPLAINANTS' EXHIBIT No. 447 (Excluded)

August 31, 1934.

Mr. David E. Lilienthal, Director, Tennessee Valley Authority, Knoxville, Tennessee.

DEAR MR. LILIENTHAL:

I enclose herewith copy of a memorandum (8-29-34) by Mr. Rau regarding the Tarrant City, Alabama (Docket No.

COMPLAINANTS' EXHIBIT No. 447 (Excluded)

7512) and Bessemer, Alabama (Docket No. 7677) electric projects. Before making any final recommendation on the projects, this Board would like to receive your advice regarding their relation to TVA. Please note especially the questions listed by Mr. Rau on page 3 of his memorandum.

Sincerely yours, Henry T. Hunt, Chairman, for the Administrator.

[fol. 2950] COMPLAINANTS' EXHIBIT No. 448 (Excluded).

Board of Directors: Arthur E. Morgan, Chairman; Harcourt A. Morgan, David E. Lilienthal.

Tennessee Valley Authority, Knoxville, Tennessee.

September 11, 1934.

Honorable Henry T. Hunt, Chairman, Federal Emergency Administration, of Public Works, Washington, D. C.

MY DEAR MR. HUNT:

With reference to your letter of August 31, enclosing copy of a memorandum (8-29-34) from Mr. Rau regarding Tarrant City, Alabama, (Docket No. 7512) and Bessemer, Alabama, (Docket No. 7677) electric projects, I feel that it will be advisable to hold this for Mr. Lilienthal's personal attention, particularly as he is expected to return to the United States from a trip abroad on Friday, September 14.

I can assure you that this matter will be brought to Mr. Lilienthal's immediate attention in order that you may have the information required at the earliest moment possible.

Yours very truly, Tennessee Valley Authority, by V. D. L. Robinson, Administrative Assistant.

VDLR:FD.
wd.

339753. Sep. 14, '34.

[fol. 2951] COMPLAINANTS' EXHIBIT No. 449 (Excluded).

Board of Directors: Arthur E. Morgan, Chairman; Harcourt A. Morgan, David E. Lilienthal.

Tennessee Valley Authority, Knoxville, Tennessee.

September 22, 1934.

Honorable Henry T. Hunt, Chairman, Electric Power Board of Review, Federal Emergency Administration of Public Works, Washington, D. C.

MY DEAR MR. HUNT:

Upon my return to my desk I find your letter of August 31, with enclosures, relating to Tarrant City, Alabama (Docket No. 7512), and Bessemer, Alabama (Docket No. 7677), Electric Projects.

The Tennessee Valley Authority does not now have available power which could be supplied to Tarrant City and Bessemer. Power will, however, be available in very large blocks upon completion of Norris Dam and Wheeler Dam. These dams are both proceeding ahead of schedule. Our engineers inform us that they have every reason to believe that Norris Dam will be completed and the power installation in operation not later than mid-summer of 1936, less than two years hence. The completion of Wheeler Dam, without the installation of power facilities will add 20,000 kw. to the firm power capacity of Wilson Dam, by providing regulation of Wilson lake. This also should be available in 1936, according to present construction schedules.

The plans of the Tennessee Valley Authority are not sufficiently matured as to the disposition of the additional [fol. 2952] 150,000 to 175,000 kw. available in 1936 to permit of wholly specific answers to the questions incorporated in Mr. Rau's memorandum of August 29. We would be unable to advise whether the proposed steam plant would serve a useful purpose if it were located at Tarrant City.

We are of the opinion that Mr. Rau's recommendation is sound, and believe its adoption by your Board would further the TVA program. That recommendation is that "these projects, exclusive of the steam plant, be approved with a condition that construction work be deferred until

COMPLAINANTS' EXHIBIT No. 449 (Excluded).

power from TVA is available and that the amount of the loan be ear-marked for this purpose."

Very truly yours, Tennessee Valley Authority, by David E. Lilienthal, Director and General Counsel.

354367. Sep. 26, '34.

[fol. 2953] COMPLAINANTS' EXHIBIT No. 450 (Excluded.)

Tennessee Valley Authority, Knoxville, Tennessee.

October 8, 1934.

Honorable Henry T. Hunt, Chairman, Federal Emergency Administration of Public Works, Washington, D. C.

MY DEAR MR. HUNT:

I have your letter of October 5 with reference to the Board's conclusions regarding Bessemer (Docket No. 7677) and Tarrant City (Docket No. 7512) electric projects, and your inquiry for certain information in connection with the Oneonta application (Docket No. 7403).

I am requesting our engineers to study this matter and report back to me, at which time I will write you further giving the information desired.

Very truly yours, Tennessee Valley Authority, by David E. Lilienthal, Director and General Counsel.

372015. Oct. 11, '34.

[fol. 2954] COMPLAINANTS' EXHIBIT No. 451

Federal Emergency Administration of Public Works.

Harold L. Ickes, Administrator
Washington

State Mississippi.
State File No. 1028.

The 1. "City of Starkville" a municipal corporation of the State of Mississippi (herein called the "Applicant") hereby makes application to the United States of America

COMPLAINANTS' EXHIBIT No. 451

through the Federal Emergency Administration of Public Works (herein called the "Government"), for a loan and a grant for the purpose of aiding in financing the construction of 2. a power plant for lighting the streets of the City of Starkville, Mississippi, and additions to the water pumping plant of the City of Starkville, Mississippi, and the construction of a street lighting system for said City, including a white way, and additions to fire fighting apparatus of said City, (herein called the "Project") the total cost of which is estimated to be 3. $149,800,000.

• • • • • • •

(For brevity other portions of this exhibit are omitted.)

[fol. 2955] COMPLAINANTS' EXHIBIT No. 452.

Loan and Grant contract dated November 20, 1935, in the amount of $150,909, between Federal Emergency Administration of Public Works and the City of Starkville, Mississippi, for the construction of an electric distribution system and the installation of fire apparatus.

(Omitted)

COMPLAINANTS' EXHIBIT No. 453.

Application of City of Okolona, Mississippi, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $38,181, for the construction of a rural electric distribution system.

(Omitted)

[fol. 2956] COMPLAINANTS' EXHIBIT No. 454

(Omitted)

COMPLAINANTS' EXHIBIT No. 455

Loan and grant contract dated March 14, 1936, between Federal Emergency Administration of Public Works and

COMPLAINANTS' EXHIBIT No. 455

the City of Okolona, Mississippi, in the amount of $38,181, for constructing extensions to a existing electric distribution system consisting of approximately 43 miles of rural lines.

(Omitted)

COMPLAINANTS' EXHIBIT No. 456

Application of City of Aberdeen, Mississippi, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $118,662.60, for the construction of a rural electric distribution system.

(Omitted)

[fol. 2957] COMPLAINANTS' EXHIBIT No. 457

(Omitted)

COMPLAINANTS' EXHIBIT No. 458

Loan and Grant agreement dated December 26, 1938, between Federal Emergency Administration of Public Works and the City of Aberdeen, Mississippi, in the amount of $120,000, for the construction of a rural electric distribution system.

(Omitted)

[fol. 2958] COMPLAINANTS' EXHIBIT No. 459

Application by the City of Knoxville, Tennessee, dated November 15, 1933, to Federal Emergency Administration of Public Works, for loan and grant in the amount of $3,225,000 to construct an electric distribution system.

To the Hon. William Baxter Lee, Hon. Roane Waring, and Hon. Robert H. Baker, State Board Federal Administration of Public Works, Nashville, Tennessee

GENTLEMEN:

The undersigned, City of Knoxville, Tennessee, a municipal corporation under the laws of the State of Tennessee,

respectfully applies to your Board, and through your Board to the Public Works Administration of the United States, for a loan of $3,225,000 to be loaned to the City of Knoxville pursuant to the Federal Public Works Program if and when it obtains final authority to complete such a loan, for the construction or purchase of a municipally owned electric distribution system.

• • • • • • •

IV. The Project

(a) The project is one for the building, or purchase, of a municipal electric distribution system for the City of Knoxville to furnish light and power to its citizens at a much lower rate than now required to be paid by the citizens to the privately owned Company now furnishing light and power in Knoxville. This project is planned in cooperation with and to take advantage of rates proffered by the Tennessee Valley Authority.

Electric power will be delivered by the Tennessee Valley Authority to the City system at a central substation, located on unused City owned property.

The Tennessee Valley Authority plans to construct two high voltage transmission lines into this substation, thus insuring the city against any interruptions of the power supply from accident to one line, and to install the switching, transformer and metering equipment required to meter and deliver energy to the City substation at 15,200 volts.

• • • • • • •

[fol. 2959] (c & d) The economical and social value of the project is readily shown by the reduction in rates to be made available to citizens of Knoxville upon completion of the municipal distribution system. It is planned to take advantage of rates prof-erred by the Tennessee Valley Authority, whose purposes and plans are well known to the Public Works Administration. For this reason, it is not deemed necessary to here set forth a lengthy statement covering the many phases of the broad, social and economic value of the project.

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COMPLAINANTS' EXHIBIT No. 459

(i) It is likely that the project will compete with the Tennessee Public Service Company operating a somewhat similar enterprise.

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V. Revenue and Expenses

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(e) For proposed rates and schedules see report of Burns & McDonnell, pages 37 to 39. These rates are based on the standard schedules prof-erred by the Tennessee Valley Authority. For comparison with present rates see pages 40 to 44. If other details of the present rates are desired, same will be submitted on request.

The rates of the Tennessee Public Service Company are subject to approval by the Railroad & Public Utilities Commission of Tennessee, and the proposed rates of the municipally operated system will be subject to approval and contract with the Tennessee Valley Authority.

(For brevity other portions of this exhibit are omitted)

[fol. 2960] COMPLAINANTS' EXHIBIT No. 460

Loan Agreement Dated as of April 2, 1934, Between The City of Knoxville, Knox County, Tennessee (Herein Called the "Borrower"), and the United States of America (Herein Called the "Government")

Part One

General Provisions

1. Amount of Loan and Grant, Purchase Price and Purpose.—Subject to the terms and conditions of this Agreement, the Borrower will sell and the Government will purchase $2,000,000 aggregate principal amount of the bond, (herein called the "bonds"), of the Borrower, being part of an authorized issue of $3,225,000, at 100 per centum of the principal amount, thereof, plus accrued interest, and, in addition to the amount of Bonds to be purchased, the Government will make a grant, (herein called the "Grant"),

to the Borrower of not to exceed 30 per centum of the cost of the labor and materials employed upon the Project as herein described, but such Grant together with the aggregate principal amount of the Bonds purchased, and any other funds (herein called "Other Funds"), received directly or indirectly from the Government or any agency or instrumentality thereof to be used to aid in financing the construction of the Project, shall not exceed in aggregate amount the total cost of the Project, and in no event shall such aggregate amount exceed $2,600,000 • • •.

Part Two

• • • • • • •

2. Preliminary Proceedings by Borrower.—When the Agreement has been signed on behalf of the Borrower, the Borrower shall promptly:

(a) Send to the Government three signed counterparts of the Agreement and a certified copy of the resolution adopted by the Borrower pursuant to Paragraph 1, Part Two, hereof, together with certified extracts of the minutes pertaining to its adoption and any papers, certificates and other documents which may be requested by the Administrator;

(b) Retain municipal bond counsel satisfactory to the Administrator to assist the Borrower in the proceedings relative to the authorization, issuance and sale of the Bonds, and to give such legal opinions relative thereto as may be requested by the Administrator;

[fol. 2961] (c) Submit to the Government plans, drawings, specifications and schedule of the work and materials to be employed upon the Project; the latest data as to the expected cost of the Project; a statement as to when and how it is proposed to advertise for bids and to let contracts for the work; a statement as to when and how it is proposed to acquire the necessary lands, easements, franchises, and rights-of-way; an estimate as to the amount of money that will be needed at the time of the sale of the Bonds; and any other details or data that may be requested by the Administrator.

(d) Submit to the Government all such authorizations, permits, licenses and approvals from Federal, State, county, municipal and other authorities as the Administrator may deem advisable then to be obtained in connection with the Project or the Bonds;

(e) Take all the proceedings necessary for the authorization and issuance of the Bonds.

(f) Submit for approval a contract with the Tennessee Valley Authority stipulating that the said Authority will agree to furnish to the Borrower for a period of not less than twenty years, to a point or points adjacent to the limits of the City and previously agreed upon, and the Borrower to accept and pay for a supply of electric energy sufficient in quantity at all times to meet the demands of the residential, commercial, and industrial customers to be served by the System. This contract shall contain such other terms and conditions as may be necessary to insure to the Borrower an adequate supply of electric energy, to insure the charging of rates by the Borrower for resale of electric energy and to provide for the disposition of revenues derived from the operation of the System in a manner satisfactory to the Administrator.

• • • • • • •

4. Conditions Precedent to the Government's Obligations.—The Government shall be under no obligation to pay for any of the Bonds or to make any Grant:

(a) Budget.—If in the judgment of the Administrator the Borrower has failed to balance its budget satisfactorily, or has failed to take satisfactory action which is reasonably designed to bring the ordinary current expenditures of the Borrower within the prudently estimated revenues thereof;

(b) Cost of Project.—If the Administrator shall not be satisfied that the Borrower will be able to construct the Project (p.-18) within the cost estimated at the time when the Application was approved by the Government, such esti- [fol. 2962] mated cost being the amount of $2,600,000, unless in the event that additional funds appear to the Adminis-

trator, to be necessary in order to pay in full the cost of the construction of the Project, the Administrator shall be satisfied that the Borrower will be able to obtain such funds, as needed, through additional borrowing or otherwise, in a manner satisfactory to the Administrator.

(c) Compliance.—If the Borrower shall not have complied, to the satisfaction of the Administrator, with all the provisions contained or referred to in this Agreement and in the proceedings authorizing the issuance of the Bonds, theretofore to be complied with by the Borrower;

(d) Legal Matters.—If the Administrator shall not be satisfied as to all legal matters and proceedings affecting the Bonds, the security therefor of the Project;

(e) Representation.—If any representation made by the Borrower in this Agreement or in the Application or in any supplement thereto, or amendment thereof, or in any document submitted to the Government by the Borrower shall be found by the Administrator to be incorrect or incomplete in any material respect;

(f) Financial Condition.—If, in the judgment of the Administrator, the financial condition of the Borrower shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government;

(g) Tennessee Valley Authority Contract.—If the Borrower shall fail to execute and furnish the Government with two certified copies of a contract between the Borrower and the Tennessee Valley Authority, as provided in Paragraph 2 (f) Part Two hereof, such contract to be satisfactory to the Administrator as to form, sufficiency and substance; as to rates to be charged by the Borrower for resale of electrical energy; and as to disposition of revenues of the System;

* * * * * * *

(For brevity other portions of this exhibit are omitted.)

[fol. 2963] COMPLAINANTS' EXHIBIT No. 461 (Excluded)

Public Works Administration

Straight Message

February 18, 1934.

Joseph C. Swidler, Esquire, Power Attorney, Tennessee Valley Authority, Knoxville, Tennessee:

KNOXVILLE POWER CONTRACT APPARENTLY SATISFACTORY TO THE FINANCE DIVISION EXCEPT ALL PARAGRAPH NINE AFTER WORD AUTHORITY UNNECESSARY NO MORTGAGE IN THIS CASE STOP ON RATES SUBJECT TO SATISFACTORY RESOLUTION OF TVA BOARD.

B. W. Thoron, Assistant Finance Director, PWA.

BET:WFL.

[fol. 2964] COMPLAINANTS' EXHIBIT No. 462 (Excluded)

February 16, 1934.

Joseph C. Swidler, Esquire, Power Attorney, Tennessee Valley Authority, Knoxville, Tennessee.

DEAR MR. SWIDLER:

Confirming our telephone conversation and my telegram, I have examined the Knoxville Power Contract with respect to its effect on the financial conditions of the loan agreement to be signed between the City of Knoxville and the Public Works Administration. In general, there appears to be no conflict.

Paragraph 9, of your proposed contracts refers to involuntary transfer or assignment of the contract. In the case of Knoxville, I do not believe this provision is requisite as the Government's security will be general obligation bonds of the City and there will be no mortgage on the plant. There is one improbable contingency which should, however, be provided for in my opinion. If the City should accept a loan from the Public Works Administration for construction of a distribution system and having started the construction should then negotiate a purchase of the [fol. 2965] existing system which would render the partly duplicated facilities useless, it does not appear that the

COMPLAINANTS' EXHIBIT No. 462 (Excluded)

provisions for the disposition of revenue by the contractors would specifically protect the bonds which we would hold. I think a proviso should be added to Paragraph 10 (A) of the Schedule of Rules and Regulations which I assume is made a part of your contract with the City covering this matter.

Approval of your contract as far as the rate schedule is concerned is subject to the adoption of a resolution by the Board of Directors of the Tennessee Valley Authority, that the rates will be so modified as to provide the revenues necessary for the various purposes enumerated in Paragraph 10(A) of the Schedule of Rules and Regulations, including an assurance that a surcharge or other increase will be applied to domestic rates if a reasonable increase in industrial and commercial rates fails to produce the necessary revenue or reacts unfavorably on the use of such power.

I feel that some such formal action by the Authority is requisite.

Very sincerely yours, B. W. Thoron, Assistant Finance Director for the Administrator.

BWT:MF1.

[fol. 2966] COMPLAINANTS' EXHIBIT 463 (Excluded)

February 17, 1934.

Miss Owen, Tennessee Valley Authority, Washington, D. C.

DEAR MISS OWEN:

I would appreciate it very much if you will return the enclosed draft of a contract between the Tennessee Valley Authority and the City of Knoxville when you have made a copy of it as we have no other copy and this one was furnished us for use in connection with our loan to the City of Knoxville.

Sincerely yours, B. W. Thoron, Assistant Finance Director for the Administrator.

Enclosure.
BWT: MF1.

[fol. 2967] COMPLAINANTS' EXHIBIT 464 (Excluded)

March 8, 1934.

Mr. David E. Lilienthal, Tennessee Valley Authority, The Moll Building—9th St., Washington, D. C.

MY DEAR MR. LILIENTHAL:

Referring to our conversation the other day concerning the Knoxville situation:

After I talked with you, I checked up our draft of contract, with Knoxville for this loan. In this draft, we state:

"That we shall be under no obligation to advance any funds to the City for the Construction of the distribution system until we have been satisfied that the City has used without success its best efforts to acquire, upon a basis of value and terms deemed reasonable and satisfactory to us, the existing facilities of the Utility Company for the distribution of electric energy within the territory to be served by the system."

[fol. 2968] In other words, the proposed agreement provides that none of our funds can be used for the acquisition of the existing system.

I drew from our conversation that, in case a satisfactory price can be reached for the purchase of the existing distribution system, Knoxville intends to give them their bonds for the property. If an agreement cannot be reached by the City and the Utility for its purchase, then our loan can be used for the construction of a completing system.

I recall that you mentioned there was a possibility that TVA might purchase the existing distribution system at Knoxville.

If you have any suggestions to make that will assist you in Knoxville in making your trade for the purchase of the Utility other than those outlined above which are in the draft of this agreement—we shall be very glad to have them.

Sincerely yours, H. M. Waite, Deputy Administrator.

H.M.W.:N.Y.S.

[fol. 2969] COMPLAINANTS' EXHIBIT 465 (Excluded)

March 23, 1934.

Mr. David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Washington, D. C.

DEAR MR. LILIENTHAL:

This is to acknowledge receipt of your letter of March 22 with reference to the allotment made by the Public Works Administration to the City of Knoxville, Tennessee. I have shown your letter to the Administrator who agrees that it constitutes satisfactory evidence, for our records, that the intent of the proposed loan agreement provision (which provision was omitted from the final agreement) regarding negotiation for the existing system has been met to his satisfaction.

Your very truly, P. M. Benton, Finance Director for the Administrator.

PMB:AA.

[fol. 2970] COMPLAINANTS' EXHIBIT No. 466 (Excluded)

Excerpts from Minutes of Meeting of Board of Light & Water Commissioners, City of Memphis, held September 28, 1936

The following resolution was offered by Commissioner Mallory:

Whereas, At a meeting of the Board of Light and Water Commissioners duly held on August 31, 1935, a resolution was duly adopted authorizing application to be made on behalf of the Memphis Light and Water Division to the United States of America through the Federal Emergency Administration of Public Works for a loan and grant in the aggregate sum of Ten Million Dollars ($10,000,000.00) to aid in financing the construction of an electric distribution system; and,

Whereas, it is now deemed proper that the aforesaid resolution and the application heretofore made pursuant thereto, be modified so as to make application only for a grant, and to waive the provisions of said application with respect to a loan;

Now, Therefore, be it Resolved, By the Board of Light and Water Commissioners,

COMPLAINANTS' EXHIBIT No. 466 (Excluded)

Section 1. That the aforesaid resolution, and the aforesaid application made pursuant to said resolution, be, and the same are hereby amended for the purpose and to the extent of requesting only a grant, and that the request heretofore made for a loan, as well as a grant, be, and the same is hereby waived.

Section 2. Be it Further Resolved, That Thomas H. Allen duly elected and qualified Chairman of this Board, is hereby authorized to transmit copy of this resolution, duly certified by the Secretary, to the said Federal Emergency Administration of Public Works, and further, to execute any and all documents which may be necessary or proper for the purpose of modifying the aforesaid application so as to withdraw the request for a loan.

C to D. AR. 10/5/36.

PWA Washington Office. This copy made by Projects Division, Record Section.

[fol. 2971] COMPLAINANTS' EXHIBIT No. 467

Application of the Town of Newbern, Tennessee, to Federal Emergency Administration of Public Works, dated June 1, 1935, for a loan and grant in the amount of $104,030, for the construction of a lighting system and power plant.

(Omitted)

COMPLAINANTS' EXHIBIT No. 468

Loan and Grant contract dated October 29, 1936, between Federal Emergency Administration of Public Works and the City of Newbern, Tennessee, in the amount of $59,000, for the construction of an electric distribution system.

(Omitted)

[fol. 2972] COMPLAINANTS' EXHIBIT No. 469 (Excluded)

Tennessee Valley Authority,

Knoxville, Tennessee

June 30, 1936.

Mr. Kenneth Markwell, State Director, Federal Emergency Administration of Public Works, Nashville, Tennessee.

DEAR MR. MARKWELL:

With reference to your letter of June 24, inquiring whether TVA would be in a position to serve the City of Newbern in Dyer County, Tennessee, I am advised by our engineers that a single-phase line is now planned by the West Tennessee Electric Membership Corporation which will reach into Dyer County. This line would probably not be suitable for service to the City of Newbern. However, were the City to take power, it would doubtless be feasible to convert the planned single-phase line to a three-phase line, which would be adequate for serving the load.

Yours very truly, David E. Lilienthal, Director.

[fol. 2973] COMPLAINANTS' EXHIBIT No. 470

Application of City of Paris, Tennessee, dated September 4, 1935, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $325,000 for the construction of an electric distribution system.

(Omitted)

[fol. 2974] COMPLAINANTS' EXHIBIT No. 471

Loan and Grant contract dated December 11, 1935, between Federal Emergency Administration of Public Works and the City of Paris, Tennessee, in the amount of $135,000, for the construction of an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 472

Application of City of Somerville, Tennessee, dated November 2, 1935, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $38,182 for water works and electric plant improvements.

(Omitted)

COMPLAINANTS' EXHIBIT No. 473

Loan and Grant contract dated December 1, 1935, between Federal Emergency Administration of Public Works and the City of Somerville, Tennessee, in the amount of $38,182, for water works and electric plant improvements.

(Omitted)

[fol. 2975] COMPLAINANTS' EXHIBIT No. 474

Application of City of Jackson, Tennessee, dated June 29, 1936, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $575,000 to construct an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 475

Loan and Grant contract dated November 14, 1936, between Federal Emergency Administration of Public Works and the City of Jackson, Tennessee, in the amount of $563,500, for the construction of an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 476

Application of the City of Fayetteville, Tennessee, to Federal Emergency Administration of Public Works, for grant in the amount of $149,000, dated August 5, 1936, to construct an electric distribution system.

(Omitted)

[fol. 2976] COMPLAINANTS' EXHIBIT No. 477

Grant contract dated November 24, 1936, between Federal Emergency Administration of Public Works and the City of Fayetteville, Tennessee, in the amount of $67,050 to aid in financing the construction of an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 478

Application of City of Chattanooga, Tennessee, dated September 2, 1935, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $6,000,000 to construct an electric distribution system.

(Omitted)

COMPLAINANTS' EXHIBIT No. 479

Application of City of Murfreesboro, Tennessee, dated March 28, 1936, to Federal Emergency Administration of Public Works for a loan and grant in the amount of $400,000 to construct an electric distribution system.

(Omitted)

[fol. 2977] COMPLAINANTS' EXHIBIT No. 480 (Excluded)

Tennessee Valley Authority,
Knoxville, Tennessee

December 20, 1933.

K. S. Wingfield, Esq., Finance Division, Public Works Administration, Room 1112 Interior Building, Washington, D. C.

DEAR MR. WINGFIELD:

This letter will confirm the statements I made to you this afternoon in response to your telephonic inquiry with regard to the power policy of the Tennessee Valley Authority in its dealings with municipalities.

[illegible]	Carrollton	8/15/33	[illegible]	Loc	New	1/13/36		3/4/36	[illegible]
6162-F	Lockport	6/20/34	230,000.	0	Additional	11/29/34		12/10/35	
6313-F	Peoria Co.	3/7/34	85,000.	0	Institution	7/24/35		7/30/36	
6959-F	Centralia	6/20/34	477,000.	Loc	New		Federal		
6970-F	Highland	6/20/34	85,000.	0	Additional	10/15/34		9/25/35	
7917-PF	Altamont	7/18/34	1,100.	Loc	Additional	3/24/35		9/3/35	
8806-F-2	Jacksonville	9/12/35	480,800.	Loc	New		Federal		
Ill. 1053-F-D-6	O'Fallon	8/24/37	75,200.	0	New				
Ill. 1521-F-2	Metropolis	9/25/35	85,400.	0	Additional	3/21/36		2/19/37	
Ill. 1636-PF-D	E. St. Louis	11/25/36	7,263.	0	Additional	3/23/37		6/30/37	
	INDIANA								
535-PF	Albion	10/24/33	9,000.	0	Additional	1/11/35		11/22/35	
938-F	Terre Haute	10/3/33	80,000.	0	Additional	4/12/34		6/18/34	
7929-F	Columbia City	12/28/33	25,000.	0	Additional	3/19/34		11/22/34	
8015-PF	Crown Point	4/11/34	7,000.	0	Additional	8/17/35		4/3/36	
Ind. 1025-F-2	Goshen	8/19/35	84,284.	0	Additional	9/9/35		4/25/36	
Ind. 1079-PF-2	Connersville	12/14/35	35,400.	0	Institution	3/9/36		4/15/37	
Ind. 1089-PF-2	Bloomington	9/12/35	4,300.	0	Institution	10/30/35		9/15/36	
Ind. 1127-PF-2	Bloomington	9/25/35	32,300.	0	Institution	1/30/36		9/15/36	
Ind. 1131-F-2	Bluffton	11/14/35	11,250.	0	Additional	5/4/36		8/29/36	
Ind. 1134-F-2	Bremen	9/11/36	13,095.	0	Additional	12/28/36		" "	
Ind. 1178-F-2	Ft. Wayne	9/25/35	69,050.	0	Additional	1/20/36		1/27/37	
Ind. 1185-F-2	Decatur	11/14/35	49,800.	0	Additional	6/22/36		2/10/37	
Ind. 1215-PF-2	Rensselaer	1/3/36	10,850	0	Additional	4/13/36		9/25/36	
Ind. 1348-F-D	Portland	8/20/36	87,000.	0	Additional	10/1/36			
	IOWA								
839-F	Dubuque	9/19/33	6,300.	0	Additional	4/24/34		8/22/34	
3051-PF	Sioux Center	12/28/33	700.	0	Institution	7/25/34		10/24/34	
5421-F	Independence	4/4/34	18,400.	0	Additional	8/21/34		12/3/34	
5831-F	Lenox	12/19/34	97,000.	Loc	New		Federal		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		SUIT DROPPED
Iowa 1256-F-D-6	Morning Sun	8/24/37	25,200.	0	New				
Iowa 1309-F-2	Hopkinton	9/25/35	30,000.	0	New	6/14/37	State		
Iowa 1341-F-2	Ogden	9/25/35	26,988.	0	New	6/23/36			
Iowa 1349-F-D	Elden	9/25/35	50,909.	Loc	New		State		
	KANSAS								
2117-PF	Chanute	11/2/33	26,000.	0	Additional	3/5/34		1/31/35	
2739-PF	Salina	11/21/33	1,500.	0	Institution	12/4/33		4/4/34	
2925-F	McPherson	12/28/33	7,889.	0	Additional	10/22/34		4/12/35	
3286-F	Anthony	12/26/33	18,700.	0	Additional	8/25/34		3/6/35	
3906-F	Augusta	12/28/33	6,000.	0	Additional	2/14/34		4/25/34	
4677-F	McPherson	2/7/34	68,000.	0	Additional	7/2/34		3/26/36	
7490-F	Herington	6/20/34	3,800.	0	Additional	9/25/35		12/14/35	
9005-F-2	Weber	9/12/35	2,050.	0	New	5/11/36		6/4/36	
Kans. 1042-F-2	Abilene	11/18/35	190,000.	Loc	New		Federal		
Kans. 1083-PF-D-6	Strong	7/21/36	6,750.	0	Additional	9/30/36		2/26/37	
Kans. 1090-F-2	Burlingame	9/25/35	23,057.	0	Additional	12/20/35		6/11/36	
Kans. 1101-F-2	Herndon	7/21/36	8,528.	0	New	10/30/36		3/23/37	
Kans. 1103-PF-2	Coffeyville	9/25/35	600.	0	Additional	12/27/35		7/23/37	
Kans. 1112-F	Iola	12/16/35	16,807.	0	Additional	3/30/36		9/15/36	
Kans. 1122-F-2	McPherson	11/18/35	45,000.	0	Additional	4/7/36		2/9/37	
Kans. 1144-F-2	Hugoton	1/15/36	4,909.	0	New	4/14/36		6/20/36	
Kans. 1190-F-D-6	Wellington	7/21/36	57,202.	0	Additional	9/29/36		8/19/37	
Kans. 1232-F-D	Coffeyville	9/21/36	50,000.	0	Additional	11/27/36			
Kans. 1320-F-D-6	St. Francis	8/24/37	40,000.	0	Additional				
Kans. 1344-PF-D-3	Kansas City	8/25/37	27,613.	0	Additional				
	KENTUCKY								
309-F	Middlesboro	12/7/33	91,000.	0	New		State		
8879-PF	Morehead	12/12/34	140,650.	Loc	Institution	8/12/35		11/20/36	
Ky. 1215-F-D-6	Williamstown	8/24/37	28,100.	Loc	New				
	LOUISIANA								
4258-PF	New Orleans	6/24/34	15,000.	Loc	Institution	4/8/35			
MW 1012-1-F-35	ATTACHE	9-18-37	192,400	0	Addition				65%
	MASSACHUSETTS								
875-PF	Boston	10/19/33	101,025.	0	Institution	1/8/36		" "	
2320-PF	Belmont	11/7/33	4,100.	0	Additional	8/1/33		5/30/34	
Mass. 1262-PF-2	West Roxbury	9/25/35	250.	0	Additional	3/26/36		12/15/36	

COMPLAINANTS' EXHIBIT No. 480 (Excluded)

The authority has thus far entered into a formal contract only with the City of Tupelo, Mississippi, although there are pending a large number of other applications by municipalities for power. At your request I am enclosing six copies of the Tupelo contract. Subject to a number of minor changes, and to the addition of such provisions as will inevitably be necessary to meet local conditions, the contract may be considered to represent the power policy of the Authority.

The statement has been made by interested parties that the contract is defective, in that (a) it does not permit the charging of rates high enough to permit successful operation and (b) that it does not permit the charging of rates low enough to meet competition. I shall discuss these two objections separately.

The contract is in three parts, the contract proper, a schedule of rates and charges, and a schedule of rules and regulations, both of the schedules being made a part of the contract by reference. Section 6 of the contract requires that the contracting municipality shall not depart from the schedule of re-sale rates fixed by the Authority, without the Authority's consent. However, by reference to the schedule of rates it will be seen that there is a provision in both the commercial and industrial rates for a surcharge, as provided in Section 6 of the Rules and Regulations (page 2 of Rules and Regulations). The surcharge provisions, as a part of the contract, qualify the prohibition against changing re-sale rates without the Authority's consent, since the surcharge is a part of the schedule of rates and charges, and the application of a surcharge would, therefore, not be a departure from the schedule. The surcharge provision authorizes the municipality to fix the amount of the surcharge in its own discretion and to vary such surcharge [fol. 2978] from time to time in the same manner, subject to the two conditions that the surcharge shall be applied uniformly, and that all profits shall be applied to the reduction or elimination of such surcharge. Initially there is no formal control of the amount of the surcharges, although of course informally the Authority will attempt to limit it to actual requirements. As soon as the results of operation under the surcharges can be determined, the contract formally operates to restrict surcharges to such requirements.

It can thus be seen that while the Authority proposes, by every type of cooperation in its power, to make it possible for all municipalities to render profitable service at its standard re-sale rates, municipalities are authorized to increase these basic rates as may be necessary for business-like and economical operation. In the contract with the City of Tupelo no provision was made for surcharging the residential rate, but this was due to the fact that the engineers of the City of Tupelo and of the Authority agreed that such surcharges were not necessary for the profitable operation of the Tupelo plant. The City of Tupelo has a population of about 6000, and has maintained a successful municipal distribution system for many years. Where such surcharges are necessary they will be permitted are, indeed explicitly authorized in the contract, but I am confident that they will not be required except in smaller municipalities. To repeat, however, they are authorized wherever they are necessary.

You will notice that Section 6 of the Rules and Regulations requires that all profits are to be used for the elimination of surcharges. This Section makes liberal provision for the requirements of municipalities before any revenues are considered applicable to the reduction of surcharges or of the basic rates. Municipalities must pay all operating expenses, interest and amortization on the indebtedness, funded or otherwise, set up reserves for new construction and for other contingencies, and pay to the general fund of the municipality an amount in lieu of taxes at rates equivalent to the taxes assessed against other property of a similar nature, and may pay in addition a return on the municipality's equity of not more than six per cent per annum. Thus, reading the contract as a whole, it will be seen that the municipality is authorized to charge such surplus-*es* as may be necessary, not merely for the actual expenses of operation, but also for a return on the municipality's equity, and for payments to its general fund in lieu of taxes. These authorized appropriations take care of every conceivable requirement for successful operation.

With reference to the assertion that the contract does not authorize the charging of rates low enough to meet competitive conditions, it must be pointed out that the City of Tupelo owns its own distributing plant, and is, therefore,

free from competition. In the circumstances it was not necessary to insert in this contract a provision for meeting [fol. 2979] competitive rates. The purpose of Section 6 of the contract, requiring the approval of the Authority for all changes in rates except as they may be increased under the surcharge provision, is to enable the Authority to supervise rate reductions to prevent discrimination between consumers. As you will see from Section 10 (b) of the Rules and Regulations, reductions are not only authorized, but are required when earnings are in excess of the amounts necessary for the specified appropriations. We expect that as low rates increase consumption, many municipalities will be able to reduce their rates substantially below the Authority's basic resale rates. The contract in its present form (Section 6) in a general way covers the requirements of competitive situations in that there is no limitation upon the reductions which can be made with the approval of the Authority, and the Authority has a very deep interest in seeing to it that its municipal customers operate successfully under competition. However, contracts with municipalities subject to competition will doubtless contain a specific provision granting maximum flexibility in competitive operations.

I have read in the public press a statement by a protestant to the application of the City of Knoxville in which it was contended that the reference to surplus power in the preamble to the contract in some way limited the obligation of the Authority. An examination of the contract shows that this statement is utterly without foundation. The preamble adopts the words of the Tennessee Valley Authority Act in its use of the term surplus power, but under the Act all power is "surplus" which is not needed for the operation of the locks at Wilson Dam and for certain other narrowly specified purposes. The terms of the preamble are intended to provide a background for the contract, not to qualify it. In Section 2 of the contract the Authority covenants to supply absolutely firm power, and the Authority is in a position to supply firm power in tremendous quantities. If the Authority should enter into a contract with the City of Knoxville, such contract will provide for firm power in any amount which the City is capable of absorbing.

COMPLAINANTS' EXHIBIT No. 480 (Excluded)

If I can be of further service to you, please feel free to call upon me.

Sincerely yours, Tennessee Valley Authority, Joseph C. Swidler, Power Attorney.

[fol. 2980] COMPLAINANTS' EXHIBIT No. 481 (Excluded)

December 22, 1933.

Mr. Joseph C. Swidler, Power Attorney, Tennessee Valley Authority, Knoxville, Tennessee

DEAR MR. SWIDLER:

This will acknowledge receipt of your letter of December 20th confirming our telephone conversation. The information contained is very helpful and your courtesy and promptness are greatly appreciated.

Sincerely yours, K. S. Wingfield.

[fol. 2981] COMPLAINANTS' EXHIBIT No. 482 (Excluded)

October 24, 1934.

Mr. V. D. L. Robinson, Administrative Assistant, Tennessee Valley Authority, Knoxville, Tennessee

DEAR MR. ROBINSON:

This will acknowledge your letter of October 17 enclosing copy of Statistical Bulletin No. 1, Development and Utilization of Electricity in Tupelo, Mississippi, referred to in Mr. Lilienthal's letter of September 27 relative to the Muscle Shoals electric project (Docket No. 6648).

Very truly yours, Henry T. Hunt, Chairman for the Administrator.

[fol. 2982] COMPLAINANTS' EXHIBIT No. 483 (Excluded)

Federal Emergency Administration of Public Works

Washington, D. C.

Resolution for Special Board

Subject: Docket No. 6587, Decatur, Alabama

Whereas the Electric Power Board of Review and the Deputy Administrator recommend that the project of the city of Decatur, Alabama, for the construction of an electrical distribution system, including the low side of the substation and equipment, be included in the comprehensive program of public works for the reason, among others, that the Tennessee Valley Authority has acquired the necessary transmission lines to serve said distribution system and the financing of said project will aid said Authority in obtaining a market for its electrical energy:

Resolved that said project be included in the comprehensive program and that the sum of $350,000 (of which not to exceed $100,000 shall be a grant) be allotted to finance the accomplishment thereof, subject to the execution of a contract satisfactory to the Administrator and in accord with the recommendations of the Electric Power Board of Review dated June 22, 1934, as amended by its report of July 30, 1934.

Board approval Aug. 15, 1934.

Presidential approval Aug. 16, 1934.

F. C. H.

[fol. 2983] COMPLAINANTS' EXHIBIT No. 484

The attached table showing PWA allotments for electric and gas projects is intended to be a complete record of all of the allotments made by the Public Works Administration from the various appropriations that have been made for such projects. Some of these may have been changed or dropped and officials now state that the "President's Budget Statement," from which extract as to these public works projects was sent you on October 19, represents what the Administration probably will trim its program down to.

The complete record attached is therefore only of value for the items actually given. This does not necessarily mean that the allotment has been or will be taken up by the applicant or that the PWA considers itself obligated to make the allotment regardless of whether it is or is not included in the President's Budget Statement. It is chiefly of value to show the projects in litigation under construction or completed.

CORRECTED TO OCTOBER 1, 1937

TABLE 1

PWA ALLOTMENTS FOR ELECTRIC POWER PROJECTS

AS OF SEPTEMBER 1, 1937

"REA" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHERE NONE WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.

ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.

ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(L) LOAN (G) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IN LITIGATION	COMPLETED	REMARKS: 45% - GRANT FROM R.E.A. 30% - GRANT FROM N.I.R.A. UNLESS OTHERWISE EXPLAINED
	ALABAMA								
3134-P	Sheffield	11/23/33	$ 52,000.	G	New	3/29/37	Federal		30% TVA
6462-P-D	Courtland	11/19/36	29,000.	L&G	New		Federal		45% TVA
6587-P	Decatur	6/15/34	350,000.	L&G	New		Federal		30% TVA
6611-P-D	Hartselle	9/25/35	60,000.	L&G	New		Federal		45% TVA
6648-P-D	Muscle Shoals	9/25/35	32,727.	L&G	New	2/1/37	Federal		45% TVA
7032-P-D	Russellville	9/25/35	125,454.	L&G	New		Federal	**	45% TVA
7351-P-D	Guntersville	9/25/35	87,272.	L&G	New		Federal		45% TVA
7512-P-D	Tarrant City	9/25/35	329,091.	L&G	New		Federal		45% TVA
7677-P-D	Bessemer	9/25/35	1,238,182.	L&G	New		Federal		45% TVA
	ALASKA								
6279-P	Seward	6/20/34	120,000.	L&G	New	8/6/37			30%
	ARIZONA								
9061-PP	Bisbee	8/23/34	22,500.	L&G	New	9/11/35			30%
	ARKANSAS								
5005-P-D	Paragould	9/11/35	190,000.	L&G	New		Federal		45%
	CALIFORNIA								
1429-P	San Francisco	10/12/33	1,056,000.	G	Additional	5/13/35			30%
2628-P	Anaheim	11/29/33	35,000.	G	Additional	1/19/34			30%
2757-PP	Stanislaus Co.	6/27/34	63,000.	L&G	Additional	11/2/37		9/26/34	30%
Calif. 1049-PP-D	Vallejo	11/19/35	205.	G	Institution	3/9/36		3/25/36	30%
Calif. 1085-P-D	Imperial I. D.	11/23/36	2,760,000.	L&G	New			10/12/36	45%
Calif. 1095-PP-D	Orick	9/25/35	340.	G	Institution	1/1/36			45%
Calif. 1132-PP-D	San Francisco	9/25/35	9,060.	G	Additional	12/15/35	Federal	5/29/36	45%
Calif. 1165-P-D-S	Sacramento	8/24/37	4,000,000.	G	New			7/1/37	45%
Calif. 1886-PP-D-S	Newport Beach	7/21/36	11,250.	G	Additional	10/26/36			33%
Calif. 1907-P-D	Alameda	9/25/35	87,940.	G	Additional	1/6/36		6/5/37	45%
								10/24/36	45%
	COLORADO								
8806-P	Ft. Morgan	6/20/34	25,500.	G	Additional	1/22/35		6/20/35	30%
	CONNECTICUT								
Conn. 1044-PP-D	Milford	9/25/35	450.	G	Institution	12/16/35		6/29/37	45%
	DELAWARE								
Del. 1016-PP-D	Milford	9/25/35	33,500.	G	Additional	1/7/36		9/18/36	45%
	FLORIDA								
702-P	Ft. Pierce	8/2/33	34,000.	L&G	Additional	8/2/33			30%
9215-PP-G	Lakeland	7/21/36	10,980.	G	Additional	11/2/36			45%
Fla. 1035-1-P-G	Jacksonville	11/19/35	76,909.	G	Additional	5/4/36			45%
Fla. 1057-2-P-G	River Junction	9/25/35	65,458.	L&G	New	8/18/36		11/25/36	45%
Fla. 1093-2-P-D	Vero Beach	11/14/35	72,303.	L&G	Additional	6/22/36		**	45%
Fla. 1168-P-D	Ft. Pierce	9/25/35	212,730.	L&G	Additional	12/14/36		**	33%
Fla. 1257-PP-D	Homestead	11/19/35	40,837.	L&G	Additional	4/25/36			30%
Fla. 1269-PP-D-S	Lakeworth	9/21/36	8,400.	G	Additional	11/30/36		6/30/37	45%
Fla. 1302-PP-D	Barlow	9/25/35	154,100.	L&G	Additional	7/6/36		6/4/37	45%
Fla. 1327-PP-D-S	Chattahoochee	8/25/37	107,410.	G	Institution			6/8/37	45%
	GEORGIA								
714-PP	Baldwin	10/24/33	45,000.	L&G	Institution	1/24/35			30%
1015-PP	Macon	10/19/33	6,300.	G	Additional	11/8/33		4/2/37	30%
Ga. 1020-PP-D	Bowman	11/11/35	675.	G	Transmission			7/13/34	30%
Ga. 1033-PP-D									

6611-P-R	Hartselle	9/25/35	60,000.	LAG	New		Federal		30% TVA
6648-P-R	Muscle Shoals	9/25/35	32,727.	LAG	New	2/1/37	Federal	"	30% TVA
7032-P-R	Russellville	9/25/35	125,454.	LAG	New		Federal		30% TVA
7361-P-R	Centerville	9/25/35	87,272.	LAG	New		Federal		30% TVA
7512-P-R	Tarrant City	9/25/35	329,091.	LAG	New		Federal		30% TVA
7677-P-R	Bessemer	9/25/35	1,238,182.	LAG	New		Federal		30% TVA
	ALASKA								
6279-P	Seward	6/20/34	120,000.	LAG	New	8/6/37			30%
	ARIZONA								
9062-PP	Sheeley	8/23/34	22,500.	LAG	New	9/11/35			30%
	ARKANSAS								
5005-P-R	Paragould	9/11/35	190,000.	LAG	New		Federal		45%
	CALIFORNIA								
1489-P	San Francisco	10/12/33	1,058,000.	G	Additional	5/13/35			30%
2628-P	Anaheim	11/29/33	15,000.	G	Additional	1/19/34		9/26/34	30%
2757-PP	Stanislaus Co.	6/27/34	63,000.	LAG	Additional	11/2/35		3/25/36	30%
Calif. 1049-PP-R	Vallejo	11/19/35	205.	G	Institution	3/9/36		10/12/36	45%
Calif. 1088-P-D	Imperial I. D.	11/23/36	2,760,000.	LAG	New		Federal		45%
Calif. 1095-PP-R	Orick	9/25/35	340.	G	Institution	1/1/36		5/29/36	45%
Calif. 1132-PP-R	San Francisco	9/25/35	9,060.	G	Additional	12/15/35		7/1/37	45%
Calif. 1169-P-D-S	Sacramento	8/24/37	4,000,000.	G	New				33%
Calif. 1288-PP-R-S	Newport Beach	7/21/36	11,250.	G	Additional	10/26/36		6/5/37	45%
Calif. 1407-P-R	Alameda	9/25/35	87,940.	G	Additional	1/6/36		10/24/36	45%
	COLORADO								
8808-P	Ft. Morgan	6/20/34	25,500.	G	Additional	1/22/35		6/20/35	30%
	CONNECTICUT								
Conn. 1044-PP-R	Milford	9/25/35	450.	G	Institution	12/16/35		6/29/37	45%
	DELAWARE								
Del. 1016-PP-R	Milford	9/25/35	33,500.	G	Additional	1/7/36		9/18/36	45%
	FLORIDA								
708-P	Ft. Pierce	8/2/33	30,000.	LAG	Additional	8/2/33			30%
9215-PP-D	Lakeland	7/21/36	10,980.	G	Additional	11/2/36			45%
Fla. 1035-1-P-D	Jacksonville	11/19/35	76,909.	G	Additional	5/8/36		11/25/36	45%
Fla. 1057-2-P-D	River Junction	9/25/35	65,458.	LAG	New	8/18/36		" "	45%
Fla. 1093-P-P-R	Vero Beach	11/14/35	72,303.	LAG	Additional	6/22/36		" "	35%
Fla. 1162-P-D	Ft. Pierce	9/25/35	212,730.	LAG	Additional	12/14/36			30%
Fla. 1257-PP-R	Homestead	11/19/35	40,837.	LAG	Additional	4/25/36		6/30/37	45%
Fla. 1269-PP-R-S	Lakeworth	9/21/36	8,400.	G	Additional	11/30/36		6/4/37	45%
Fla. 1302-PP-D	Bartow	9/25/35	154,100.	LAG	Additional	7/6/36		6/8/37	45%
Fla. 1327-PP-D-S	Chattahoochee	8/25/37	107,410.	G	Institution				45%
	GEORGIA								
714-PP	Baldwin	10/28/33	45,000.	LAG	Institution	1/28/35		8/2/37	30%
1015-PP	Macon	10/19/33	6,300.	G	Additional	11/8/33		7/13/34	30%
Ga. 1020-PP-R	Newton	11/11/35	675.	C	Transmission	3/9/36		9/24/36	45%
Ga. 1033-PP-R	Waynesboro	11/27/35	2,500.	G	Additional	2/17/36		12/31/36	45%
Ga. 1121-PP-R	Forsyth	9/25/35	2,107.	G	Additional	1/14/36		7/10/36	45%
Ga. 1152-PP-R	Fort Valley	9/25/35	22,200.	G	Additional	3/30/36		9/17/36	45%
Ga. 1156-PP-D	Milledgeville	9/25/35	8,100.	G	Institution	6/4/36		" "	45%
Ga. 1174-PP-R	Statham	9/25/35	157.	G	Institution	1/21/36		3/9/36	45%
Ga.1218-3-PP-R	Atlanta	12/7/35	6,925.	G	Institution	8/24/36			42%
	IDAHO								
6695-PP	Coeur D'Alene	7/18/34	379,809.	LAG	New		Federal		30%
Idaho 1113-P-R	Soda Springs	9/25/35	19,636.	G	Additional	8/21/36		12/16/36	45%

TABLE 1

PWA ALLOTMENTS FOR HYDROELECTRIC POWER PROJECTS

AS OF SEPTEMBER 1, 1937

"PWP" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHERE WORK WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.
ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.
ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(L) LOAN (G) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IN LITIGATION *	COMPLETED	REMARKS: 30% - GRANT FROM E.R.A. 30% - GRANT FROM E.C.W.A. UNLESS OTHERWISE EXPLAINED
	ILLINOIS								
729-PP	Springfield	9/19/33	$ 34,300.	G	Additional	10/6/33		1/23/36	30%
1116-PP	Elgin	10/3/33	19,100.	G	Institution	4/2/34		11/21/34	30%
3970-P	Cave-in-Rock	8/15/34	23,000.	LAG	New	1/13/36		5/4/36	30%
4162-P	Lockport	6/20/34	230,800.	G	Additional	11/29/34		12/10/35	30%
6313-P	Peoria Co.	3/7/34	25,800.	G	Institution	7/24/35		7/30/36	30%
6852-P	Centralia	6/20/34	477,000.	LAG	New		Federal		30%
6970-P	Highland	6/20/34	25,000.	G	Additional	10/15/34		9/25/35	30%
7975-PP	Altamont	7/18/34	1,100.	LAG	Additional	3/14/35		9/3/35	30%
8206-P-I	Jacksonville	9/12/35	420,000.	LAG	New		Federal		30%
Ill. 1053-P-D-I	O'Fallon	8/24/37	79,800.	G	New				30%
Ill. 1521-P-I	Metropolis	9/25/35	25,480.	G	Additional	3/21/36		2/19/37	30%
Ill. 1638-PP-I	E. St. Louis	11/23/36	7,263.	G	Additional	3/23/37		6/30/37	30%
	INDIANA								
935-PP	Albion	10/24/33	9,000.	G	Additional	1/11/35		11/22/35	30%
938-P	Terre Haute	10/3/33	20,000.	G	Additional	4/12/36		8/18/36	30%
2772-P	Columbia City	12/28/33	29,000.	G	Additional	3/19/34		11/22/34	30%
6015-PP	Crown Point	4/11/34	7,000.	G	Additional	8/17/35		4/3/36	30%
Ind. 1025-P-I	Goshen	6/19/35	24,894.	G	Additional	9/9/35		4/23/36	30%
Ind. 1039-PP-I	Connersville	12/16/35	35,400.	G	Institution	3/9/36		4/15/37	30%
Ind. 1049-PP-I	Bloomington	9/12/35	4,300.	G	Institution	10/30/35		9/15/36	30%
Ind. 1127-PP-I	Bloomington	9/25/35	31,900.	G	Institution	1/30/36		9/15/36	30%
Ind. 1131-P-I	Bluffton	11/14/35	11,250.	G	Additional	5/6/36		8/29/36	30%
Ind. 1134-P-D	Bremen	9/11/36	13,095.	G	Additional	12/28/36		* *	30%
Ind. 1172-P-I	Ft. Wayne	9/25/35	49,030.	G	Additional	1/20/36		1/27/37	30%
Ind. 1185-P-I	Decatur	11/14/35	88,800.	G	Additional	6/22/36		2/10/37	30%
Ind. 1215-PP-I	Bunnelear	1/3/36	10,850	G	Additional	4/13/36		9/25/36	30%
Ind. 1348-P-D	Portland	8/20/36	87,000.	G	Additional	10/1/36			30%
	IOWA								
839-P	Dubuque	9/19/33	6,300.	G	Additional	4/24/34		8/22/34	30%
3051-PP	Sioux Center	12/28/33	700.	G	Institution	7/25/34		10/24/34	30%
5421-P	Independence	4/4/34	18,400.	G	Additional	8/21/34		12/3/34	30%
5831-P	Lemoi	12/19/34	97,000.	LAG	New		Federal		30%
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Iowa 1256-P-D-I	Morning Sun	8/24/37	25,200.	G	New				30% SUIT DROPPED
Iowa 1309-P-I	Hopkinton	9/25/35	30,600.	G	New	6/14/37	State		30%
Iowa 1341-P-I	Ogden	9/25/35	26,909.	G	New	6/23/36			30%
Iowa 1345-P-D	Eldon	9/25/35	50,909.	LAG	New		State		29.6%
									28.7%
	KANSAS								
2117-PP	Chanute	11/2/33	86,000.	G	Additional	3/5/34		1/31/35	30%
2739-PP	Salina	11/21/33	1,500.	G	Institution	12/4/33		4/4/34	30%
2925-P	McPherson	12/28/33	7,809.	G	Additional	10/22/34		4/12/35	30%
3286-P	Anthony	12/26/33	18,700.	G	Additional	8/25/34		3/6/35	30%
3906-P	Augusta	12/28/33	6,000.	G	Additional	2/14/34		4/25/34	30%
4477-P	McPherson	8/7/34	68,000.	G	Additional	7/2/34		3/24/36	30%
7490-P	Barington	6/20/34	3,200.	G	Additional	9/25/35		12/14/35	30%
9005-P-I	Webber	9/12/35	2,950.	G	New	5/11/36		8/4/36	30%
Kans. 1042-P-I	Hutchinson	11/18/35	190,000.	LAG	New		Federal		30%
Kans. 1083-PP-D-I	Strong	7/21/36	6,750.	G	Additional	9/30/36		8/26/37	30%
Kans. 1090-P-I	Burlingame	9/25/35	23,057.	G	Additional	12/20/35		6/11/36	30%
Kans. 1101-P-D	Herndon	7/21/36	8,528.	G	New	10/30/36		3/23/37	30%
Kans. 1103-PP-I	Coffeyville	9/25/35	600.	G	Additional	12/27/35		7/23/37	30%
Kans. 1112-P	Iola	12/16/35	16,807.	G	Additional	3/30/36		9/15/36	30%
Kans. 1122-P-I	McPherson	11/18/35	45,000.	G	Additional	4/7/36		2/9/37	30%
Kans. 1141-P-I	Hugoe	1/15/36	4,909.	G	Additional	4/14/36		6/20/36	30%
Kans. 1190-P-D-I	Wellington	7/21/36	57,202.	G	New	9/29/36		8/19/37	30%
Kans. 1232-P-D	Coffeyville	9/21/36	30,000.	G	Additional	11/27/36			30%
Kans. 1300-P-D-I	St. Francis	8/24/37	80,000.	G	Additional				30%
Kans. 1344-PP-D-I	Kansas City	8/25/37	27,613.	G	Additional				30%
	KENTUCKY								
309-P	Middlesboro	12/7/33	91,000.	G	New				30%
8879-PP	Morehead	12/12/34	140,650.	LAG	Institution	8/12/35	State	11/20/36	30%
Ky. 1215-P-D-I	Williamstown	8/24/37	28,100.	LAG	New				30%
	LOUISIANA								
4281-PP	New Orleans	6/24/34	15,000.	LAG	Institution	4/8/35			30%
MR 1012-1-P-D5	AIRLINE HIGHWAY	9-18-37	102,622	G	Addition				

TABLE 1

PWA ALLOTMENTS FOR HYDROELECTRIC POWER PROJECTS

AS OF OCTOBER 1, 1937

"PPF" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHICH WHEN WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.
ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.
ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(L) LOAN (G) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IRRIGATION COMPLETED		REMARKS: 45% - GRANT FROM E.R.A. 30% - GRANT FROM E.I.E.A. UNLESS OTHERWISE EXPLAINED
	ALABAMA								
191-P	Decatur	8/24/37	$ 187,500.	L&G	New		Total		
2401-P	Allegan	11/29/33	449,000.	L&G	New	6/30/35		6/11/37	
4998-P	Muscatine	6/20/36	805,000.	L&G	New		Federal		
2995-P	Douglas	12/24/35	200,000.	L&G	Additional		Federal		
Mich. 1017-P-2	Mitchfield	9/25/35	89,455.	G	Additional	4/7/36		12/15/36	
Mich. 1031-P-	Detroit	12/19/35	238,100.	G	Additional	6/18/36			
Mich. 1079-P-2	Marshal	9/25/35	40,886.	G	Additional	1/13/36		9/4/36	
Mich. 1242-P-2	Zealand	9/25/35	13,930.	G	New	6/18/36		12/6/36	
Mich. 1287-P-2	Detroit	10/10/36	21,105.	G	Additional	1/30/37		7/30/37	
Mich. 1328-PP-2-2	Manistique	8/24/37	43,364.	G	Additional				
	MINNESOTA								
1198-P	Blue Earth	10/27/33	30,500.	G	Additional	2/17/34		8/3/34	
1484-P	Alexandria	10/19/33	26,500.	G	Additional	12/21/33		12/14/34	
3719-PP	Ihal	2/7/34	5,500.	L&G	Additional	7/30/34		1/31/35	
5119-P	Austin	4/11/34	46,000.	G	Additional	7/24/34		3/15/35	
5272-PP	Thaxton	2/14/34	500.	G	Institution	5/6/34		9/30/34	
5688-P	Litchfield	3/21/34	18,000.	G	Additional	4/24/34		10/12/34	
7465-P-2	Elmwood	9/25/35	67,909.	G	New		Federal		
7656-PP-2	Duluth	9/25/35	416,900.	L&G	New		Federal		
Minn. 1101-P-2	Faribault	12/14/35	51,750.	G	Institution	4/16/36		12/12/36	
Minn. 1111-PP-2	Knoss Lake	9/9/36	85,800.	G	Institution	11/18/36			
Minn. 1145-PP-2	Owatonna	9/25/35	11,820.	G	Institution	12/20/35		9/4/36	
Minn. 1210-P-2	Jamesville	9/25/35	31,455.	G	New		Federal		
Minn. 1252-P-2	Moorhead	9/25/35	17,400.	G	Additional	7/10/36		4/10/37	
Minn. 1263-P-2-2	Lake Crystal	8/24/37	44,550.	G	New				
	MISSISSIPPI								
4253-PP	Bardis	12/28/33	7,000.	L&G	Institution	6/12/34		6/28/34	30% PWA
Miss. 1026-PP-2	Starkville	9/25/35	117,999.	L&G	New		Federal		30% PWA
Miss. 1139-P-2	Chulsea	9/25/35	38,181.	L&G	Additional	3/9/36		2/27/37	30% PWA
Miss. 1203-P-2	Aberdeen	11/14/35	120,000.	L&G	New		Federal		
	MISSOURI								
2427-P	Emmett	1/23/34	160,000.	L&G	New				
2772-P	California	12/28/33	145,000.	L&G	New	6/4/34		12/31/34	
2893-P	Monroe City	6/20/34	17,000.	G	Additional	10/29/34		9/26/35	
4628-P	Trenton	6/20/34	88,000.	G	New	Started			
4826-P	La Plata	7/18/34	100,000.	L&G	New		Federal		
5131-1-PP	Jefferson	6/20/34	180,000.	G	Institution	5/27/35	Federal		
5866-P	Hannibal	6/20/34	81,000.	G	Additional	2/28/35		11/25/35	
7990-P	Independence	6/20/34	52,500.	G	Additional	8/11/35		4/2/36	
Mo. 1001-PP-2	Columbia	8/5/35	3,700.	G	Institution	10/8/35		8/9/37	
Mo. 1111-PP-2-2	Vandalia	8/23/37	1,125.	G	Additional			1/7/37	
Mo. 1134-P-2	Nevada	9/25/35	36,000.	G	Additional	3/16/36			
Mo. 1157-P	Marshall	12/14/35	68,545.	G	Additional	9/9/36			
Mo. 1204-P-2	Shuyer	1/3/36	71,735.	L&G	New		Federal		
Mo. 1328-1-P-2-2	Rock Port	8/24/37	47,250.	G	New				
	MONTANA								
Mont. 1114-PP-2-2	Sidney	8/23/37	17,200.	L&G	Transmission				45%
	NEBRASKA								
573-P	Platte Valley PPAID	11/2/33	*10,165,000.	L&G	New	9/18/34	Federal		30% Bobr. Grid
665-1-P	Loup River PPD	11/14/33	6,700,000.	L&G	New	10/15/34	Federal		30% Bobr. Grid
665-2-P-2	Loup River PPD	10/24/36	2,314,000.	L&G	Transmission	3/15/37			30% Bobr. Grid
1192-P	Fremont	10/19/33	7,300.	G	Additional	12/14/33		3/22/34	
1751-PP-2	*Loup R.PPAID	8/19/36	278,180.	L&G	New	11/2/36			30% Bobr. Grid
3400-1-P-2	Tri-County	10/2/35	*10,000,000.	L&G	New	2/6/36	Federal		30% Bobr. Grid
3400-2-P-2-2	Tri-County	8/26/37	*20,096,000	L&G	Additional		Federal		30% Bobr. Grid
3553-P	Minden	12/28/33	6,000.	G	Additional	8/27/34			
4082-P	Hastings	1/11/34	48,600.	G	Additional	11/6/34		1/26/35	
5055-PP-2	Mid.Loup PPAID	8/19/36	350,000.	L&G	New	12/5/36		12/31/35	30%
Nebr. 1088-PP-2	West Point	12/27/35	9,295.	G	Additional	5/8/36			30% Bobr. Grid
Nebr. 1113-P-2	Scribner	9/25/35	9,000.	G	Additional	7/30/36		10/14/36	
Nebr. 1117-PP-2	Imperial	9/25/35	13,500.	G	Additional	2/10/36		**	
Nebr. 1163-PP-2	Alliance	9/25/35	9,500.	G	Additional			12/14/36	

2995-9	Douglas	12/24/35	202,000.	180	Additional		Federal		305
Mich. 1017-9-2	Hitchfield	9/25/35	29,955.	0	Additional	4/7/36		12/15/36	305
Mich. 1031-9-	Detroit	12/19/35	238,100.	0	Additional	6/18/36			305
Mich. 1073-9-2	Marshal	9/25/35	40,886.	0	Additional	1/13/36		9/4/36	305
Mich. 1240-9-2	Ewland	9/25/35	13,910.	0	New	6/18/36		12/6/36	305
Mich. 1267-9-2	Detroit	10/10/36	21,105.	0	Additional	1/30/37		7/30/37	305
Mich. 1388-99-9-2	Manistique	6/24/37	43,361.	0	Additional				305
	MINNESOTA								
1198-9	Blue Earth	10/27/33	30,500.	0	Additional	2/17/34		8/3/34	305
1408-9	Alexandria	10/19/33	26,500.	0	Additional	12/21/33		12/14/34	305
3719-99	Ihl	2/7/34	9,500.	180	Additional	7/30/34		1/31/35	305
5119-9	Austin	4/11/34	46,000.	0	Additional	7/24/34		3/15/35	305
5479-99	Thaxton	2/14/34	500.	0	Institution	5/8/34		9/30/34	305
5620-9	Litchfield	3/21/34	18,000.	0	Additional	4/24/34		10/12/34	305
7408-9-2	Hammond	9/25/35	67,909.	0	New		Federal		305
7698-99-2	Duluth	9/25/35	416,900.	180	New		Federal		305
Minn. 1101-9-2	Northfall	12/14/35	51,750.	0	Institution	4/16/36		12/12/36	305
Minn. 1111-99-9	Moose Lake	9/9/36	25,800.	0	Institution	11/18/36			305
Minn. 1195-99-2	Owatonna	9/25/35	11,820.	0	Institution	12/20/35		9/4/36	305
Minn. 1250-9-2	Somerville	9/25/35	31,495.	0	New		Federal		305
Minn. 1252-9-2	Moorhead	9/25/35	17,400.	0	Additional	7/10/36		4/10/37	305
Minn. 1263-9-9-2	Lake Crystal	8/24/37	44,950.	0	New				305
	MISSISSIPPI								
4251-99	Bardis	12/28/33	7,000.	180	Institution	6/12/34		8/28/34	305
Miss. 1028-99-2	Starkville	9/25/35	117,899.	180	New		Federal		305 ??A
Miss. 1139-9-2	Chalmus	9/25/35	38,181.	180	Additional	3/5/36		2/27/37	305 ??A
Miss. 1209-9-2	Aberdeen	11/14/35	120,000.	180	New		Federal		305 ??A
	MISSOURI								
2427-9	Emmett	1/23/34	160,000.	180	New				305
2778-9	California	12/28/33	185,000.	180	New	8/4/34		12/31/34	305
2893-9	Sherro City	6/20/34	17,000.	0	Additional	10/29/34		9/26/35	305
4698-9	Trenton	6/20/34	88,000.	0	New	Started	Federal		305
4956-9	La Plata	7/16/34	100,000.	180	New		Federal		305
5131-1-99	Jefferson	6/20/34	188,888.	0	Institution	5/27/35			305
5264-9	Hannibal	6/20/34	81,000.	0	Additional	2/28/35		11/25/35	305
5360-9	Independence	6/20/34	52,500.	0	Additional	2/11/35		4/2/36	305
Mo. 1001-99-2	Columbia	8/5/35	9,700.	0	Institution	10/8/35		8/9/37	305
Mo. 1111-99-9-2	Vandalia	8/25/37	1,125.	0	Additional				305
Mo. 1139-9-2	Knox	9/25/35	36,000.	0	Additional	3/15/36		1/7/37	305
Mo. 1153-9	Marshall	12/16/35	68,545.	0	Additional	9/9/36			305
Mo. 1204-9-2	Sharer	1/3/36	71,735.	180	New		Federal		305
Mo. 1328-1-9-9-2	Rock Port	8/24/37	47,850.	0	New				305
	MONTANA								
Mont. 1114-99-9-2	Sidney	8/25/37	17,200.	180	Transmission				305
	NEBRASKA								
579-9	Platte								
	Valley PPHID	11/2/33	*10,165,000.	180	New	9/18/34	Federal		305 Rehr. Grid
669-1-9	Loup River PPD	11/14/33	6,700,000.	180	New	10/15/34	Federal		305 Rehr. Grid
669-9-9-9	Loup River PPD	10/24/36	2,314,000.	180	Transmission	3/15/37			305 Rehr. Grid
1158-9	Tramnt	10/19/33	7,300.	0	Additional	12/14/33		3/22/34	305
1751-99-2	K.Loup R.PPHID	8/15/36	278,180.	180	New	11/2/36			305 Rehr. Grid
3400-1-9-2	Tri-County	10/2/35	*10,000,000.	180	New	2/6/36	Federal		305 Rehr. Grid
3400-2-9-9-2	Tri-County	8/26/37	*90,096,000	180	Additional		Federal		305 Rehr. Grid
3733-9	Minden	12/28/33	8,000.	0	Additional	8/25/34		1/26/35	305
4082-9	Hastings	1/11/34	48,600.	0	Additional	11/6/34		12/31/35	305
5055-99-2	Elk.Loup PPHID	8/19/36	350,000.	180	New	12/5/36			305 Rehr. Grid
Nebr. 1088-99-2	Spot Point	12/27/35	9,285.	0	Additional	5/8/36		10/14/36	305
Nebr. 1113-9-2	Sudlake	9/25/35	9,000.	0	Additional	7/30/36			305
Nebr. 1117-99-2	Imperial	9/25/35	13,500.	0	Additional	2/10/36		12/14/36	305
Nebr. 1169-99-2	Alliance	9/25/35	9,600.	0	Additional	1/6/36		10/10/36	305
Nebr. 1198-9-2	Potter	9/25/35	5,727.	180	Additional	1/11/36		7/25/36	305
Nebr. 1252-99-2	Hooper	11/18/35	1,440.	0	Additional	4/4/36		8/18/36	305
Nebr. 1306-9-9-2	Ralgler	8/24/37	16,900.	0	New				305
Nebr. 1309-9-9-2	Columbus	8/24/37	[illegible]	[illegible]	New		Fed		305
	NEVADA								
Nev. 1006-9-2	Pioche	9/25/35	600,000.	180	Transmission	12/30/35	Federal	6/31/37	37-35
Nev. 1009-9-9-2	Las Vegas	8/24/37	112,909.	0	New				305

TABLE 1

PWA ALLOTMENTS FOR ELECTRIC POWER PROJECTS

AS OF SEPTEMBER 1, 1937

"MUNI" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHERE HOME WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.
ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.
ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(1) LOAN (2) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IN LITIGATION	COMPLETED	REMARKS: 45% - GRANT FROM E.R.A. 30% - GRANT FROM N.I.R.A. UNLESS OTHERWISE EXPLAINED
	NEW HAMPSHIRE								
5795-PF	Bowring	6/20/34	$ 4,000.	L&G	Transmission	12/1/34		3/16/35	30%
N.H. 1026-PF-2	Exeter	11/11/35	1,575.	L&G	Additional	1/8/36		7/18/36	45%
	NEW JERSEY								
N.J. 1017-P-2	Vineland	9/25/35	250,000.	G	Additional	4/10/36		7/15/37	30%
N.J. 1164-P-D-2	Greystone Park	8/25/37	112,500.	G	Institution				45%
	NEW YORK								
2726-PF	New York	12/14/33	487,000.	L&G	Institution	3/25/35			30%
3247-PF	New York	12/26/33	110,790.	L&G	Institution	10/29/34			30%
4333-PF	New York	7/18/34	5,842.	L&G	Institution	3/23/35			30%
6100-PF	Elmira	6/20/34	65,200.	G	Institution	12/17/34		7/11/36	30%
6478-P	Rockville Center	6/20/34	78,200.	G	Additional	7/22/36		5/15/37	30%
8830-PF-2	New York	7/22/35	20,190.	G	Institution	1/13/36			45%
9062-PF-2	New York	7/9/35	1,000.	L&G	Institution	2/3/36		12/16/36	45%
9205-PF	New York	8/15/34	139,344.	L&G	Institution	2/11/35			30%
N.Y. 1254-P-2	New Hyde Park	9/25/35	300,000.	L&G	New		Federal		45%
N.Y. 1387-P-2	Plattsburg	9/25/35	520,000.	L&G	New		Federal		45%
N.Y. 1467-PF-D	Empire	10/20/36	900.	G	Institution	3/22/37			45%
	NORTH CAROLINA								
986-PF	Durham	10/17/33	70,000.	L&G	Institution	1/1/34		1/15/35	30%
6178-P	Fayetteville	6/20/34	10,000.	G	Additional	7/18/35		3/31/37	30%
N.C. 1006-PF-2	Siler City	9/25/35	3,000.	L&G	Institution	12/2/35		4/10/36	45%
N.C. 1227-P-D-2	Washington	8/20/36	64,500.	G	Additional	9/30/36			45%
N.C. 1301-P-D	High Point	11/16/36	2,595,000.	G	New		State		45%
	NORTH DAKOTA								
6850-P	Mott	6/20/34	600.	G	Additional	11/6/34		11/30/34	30%
	OHIO								
966-P	Shelby	10/27/33	184,000.	L&G	Additional	4/18/34		6/28/35	30%
1448-PF	Cincinnati	10/17/33	1,300.	G	Additional	12/11/33		2/8/35	30%
3812-P	Elyria	6/20/34	32,500.	L&G	New	7/20/35		12/5/35	30%
3894-P	Hagahannock	6/20/34	144,000.	L&G	New				30%
3995-P	Columbus	12/19/34	320,000.	G	Additional		Federal		30%
7009-P	Kentucky	12/16/35	1,515,000.	L&G	New		Federal		30%
8353-PF	Coshocton	8/15/34	74,500.	L&G	Institution	10/29/35		6/20/36	30%
8358-PF-2	Doran	8/26/35	2,795.	L&G	Transmission	1/20/36		**	45%
9227-P	Dover	5/27/35	285,000.	L&G	Additional	7/15/36			30%
Ohio 1166-P-2	Bellaire	9/25/35	34,590.	L&G	Additional	3/5/36		8/8/36	45%
Ohio 1395-PF-2	E. Cleveland	9/25/35	3,235.	G	Additional	1/6/36		12/17/36	45%
Ohio 1402-PF-2	E. Cleveland	9/25/35	10,305.	G	Additional	1/20/36		12/17/36	45%
Ohio 1450-PF-2	Akron	11/11/35	2,688.	L&G	Additional	7/26/36			45%
Ohio 1485-P-2	Niles	10/27/36	79,479.	G	Additional	1/11/37		7/27/37	45%
	OKLAHOMA								
1680-P	Chahing	12/14/33	260,138.	L&G	New	6/4/35		3/13/36	30%
1830-P	Hominy	3/21/34	43,000.	L&G	New	12/14/35		4/7/37	30%
2382-P	Pawnee	12/28/33	65,300.	L&G	New	11/12/34		4/27/35	30%
2962-P	Blackwell	12/12/33	300.	G	Additional	1/22/34		3/24/34	30%
6142-P	Loyal	6/20/34	7,100.	L&G	New	2/26/35		4/4/35	30%
6947-P-2	Moreland	7/16/35	14,400.	G	New	1/28/36		5/18/36	30%
7230-P	Spaunood	8/5/35	65,000.	L&G	New	4/6/36		11/2/36	30%
Okla. 1125-PF-D	Elmon	7/21/36	5,175.	G	Transmission	10/28/36		5/3/37	45%
Okla 1077-P-D5	Grand Rhumba	9/4/37	24,000.00	45 G	New				45%
	OREGON								
Oreg. 1081-P-D	Enterprise I.D.	9/25/35	66,636.	L&G	Institution				45%
	PENNSYLVANIA								

	NEW JERSEY								
N.J. 1017-P-2	Vineland	9/25/35	250,000.	0	Additional	4/10/36		7/15/37	30%
N.J. 1164-P-2-2	Greystone Park	6/25/37	112,500.	0	Institution				45%
	NEW YORK								
2726-PF	New York	12/14/33	487,000.	160	Institution	3/25/35			30%
3267-PF	New York	12/26/33	110,290.	160	Institution	10/29/34			30%
4333-PF	New York	7/18/34	5,842.	160	Institution	3/23/35			30%
6100-PF	Elmira	6/20/34	61,200.	0	Institution	12/17/34		7/11/36	30%
0472-P	Rockville Center	6/20/34	78,000.	0	Additional	7/22/36		5/15/37	30%
8852-PF-2	New York	7/22/35	20,150.	0	Institution	1/13/36			30%
9060-PF-2	New York	7/9/35	1,000.	160	Institution	2/3/36		12/16/36	30%
9207-PF	New York	8/15/34	139,300.	160	Institution	2/11/35			30%
N.Y. 1254-P-2	New Hyde Park	9/25/35	300,000.	160	New		Federal		30%
N.Y. 1387-P-2	Plattsburg	9/25/35	520,000.	160	New		Federal		30%
N.Y. 1467-PF-2	Sanpac	10/20/36	900.	0	Institution	3/22/37			45%
	NORTH CAROLINA								
985-PF	Durham	10/17/33	70,000.	160	Institution	1/1/34		1/15/35	30%
6178-P	Fayetteville	6/20/34	10,000.	0	Additional	7/18/35		3/31/37	30%
N.C. 1006-PF-2	Blue City	9/25/35	3,000.	160	Institution	12/2/35		6/10/36	30%
N.C. 1227-P-2-2	Washington	6/20/36	4,500.	0	Additional	9/30/36			45%
N.C. 1301-P-2	High Point	11/16/36	2,395,000.	0	New		State		45%
	NORTH DAKOTA								
6892-P	Watt	6/20/34	600.	0	Additional	11/6/34		11/30/34	30%
	OHIO								
966-P	Shelby	10/27/33	189,000.	160	Additional	4/18/34		6/28/35	30%
1448-PF	Cincinnati	10/17/33	1,300.	0	Additional	12/11/33		2/8/35	30%
3912-P	Elyria	6/20/34	32,500.	160	New	7/22/35		12/5/35	30%
3934-P	Napoleon	6/20/34	186,800.	160	New				30%
3995-P	Columbus	12/19/34	320,000.	0	Additional		Federal		30%
7084-P	Kentucky	12/14/35	1,515,000.	160	New		Federal		30%
8353-PF	Coshocton	6/15/34	70,500.	160	Institution	10/29/35		6/20/36	30%
8358-PF-2	Dover	6/26/35	2,795.	160	Transmission	1/20/36		" "	45%
9227-P	Dover	3/27/35	285,000.	160	Additional	7/15/36			30%
Ohio 1166-P-2	Wellston	9/25/35	34,989.	160	Additional	3/5/36		8/8/36	45%
Ohio 1375-PF-2	E. Cleveland	9/25/35	3,235.	0	Additional	1/6/36		12/17/36	45%
Ohio 1402-PF-2	E. Cleveland	9/25/35	10,385.	0	Additional	1/20/36		12/17/36	45%
Ohio 1452-PF-2	Akron	11/11/35	2,688.	160	Additional	7/26/36			45%
Ohio 1485-P-2	Niles	10/27/36	79,479.	0	Additional	2/11/37		7/27/37	45%
	OKLAHOMA								
1620-P	Cushing	12/14/33	249,138.	160	New	6/4/35		3/13/36	30%
1820-P	Hominy	3/21/34	43,000.	160	New	12/14/35		4/7/37	30%
2382-P	Pawnee	12/28/33	65,300.	160	New	11/12/34		4/27/35	30%
2960-P	Blackwell	12/12/33	300.	0	Additional	1/22/34		3/29/34	30%
6142-P	Loyal	6/20/34	7,100.	160	New	2/26/35		4/4/35	30%
6947-P-2	Moreland	7/16/35	14,400.	0	New	1/28/36		5/18/36	30%
7230-P	Hammond	8/5/35	55,000.	160	New	4/6/36		11/2/36	30%
Okla. 1175-PF-2	Okmn	7/21/36	5,175.	0	Transmission	10/28/36		5/1/37	45%
Okla. 1077-P-2	Grand Rhumbah	8/6/37	24,000,000	4-H-6	New				45%
	OREGON								
Oreg. 1081-P-2	Enterprise I.D.	9/25/35	66,636.	160	Institution				45%
	PENNSYLVANIA								
1482-P	Chambersburg	10/31/33	26,300.	0	Additional	7/30/34		8/15/35	30%
4242-PF	Woodville	6/20/34	28,900.	0	Institution	6/12/35		11/13/36	30%
7000-PF-2	Allegheny Co.	8/19/35	14,200.	0	Additional	1/14/36		6/15/37	45%
7969-P-2	Fleetwood	9/25/35	166,272.	160	New		Pul. Serv. Com.		45%
Pa. 1148-P-2-2	Weatherly	8/20/36	14,777.	0	Additional	9/29/36		5/15/37	45%
Pa. 1439-P-2-2	Uperatown	8/20/36	68,715.	0	New		Federal		45%
	PUERTO RICO								
P.R., 1077-P	Ponce	8/3/36	1,400,000.	1	Additional	4/2/37			100%

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TABLE 1

PWA ALLOTMENTS FOR HYDROELECTRIC POWER PROJECTS

AS OF SEPTEMBER 1, 1937

"FP" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHERE SOME WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.
ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.
ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(L) LOAN (G) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IN LITIGATION	COMPLETED	REMARKS: 45% - GRANT FROM E.R.A. 30% - GRANT FROM P.W.A. UNLESS OTHERWISE EXPLAINED
	RHODE ISLAND								
4299-P	Howard	6/20/34	$ 11,800.	G	Institution	10/1/36			30%
5338-P	State of R. I.	6/24/34	4,000.	G	Institution	7/15/36		6/30/37	30%
6604-PP	Kingston	6/20/34	300.	G	Institution	10/1/35		10/7/36	30%
R.I. 1002-1-PP-R	State - Howard	9/25/35	153,900.	G	Institution	2/27/36			45%
R.I. 1044-PP-R	Wallum Lake	9/25/35	77,700.	G	Institution	2/17/36			45%
	SOUTH CAROLINA								
3872-P	Greenwood County	7/18/34	2,852,000.	L&G	New		Federal		30%
4329-P-R	Santee-Cooper	10/2/35	6,000,000.	L&G	New		Federal		45%
	SOUTH DAKOTA								
2515-PP	Yankton	12/28/33	2,400.	L&G	Additional	9/5/34		12/20/34	30%
S.D. 1129-P-R-S	Pierre	8/20/36	16,200.	G	Additional	9/22/36		5/7/37	45%
S.D. 1144-P-D	Flandreau	10/20/36	76,000.	G	New		State		45%
	TENNESSEE								
2623-PP	Memphis	12/5/33	9,450.	L&G	Additional	5/1/34		3/31/35	30%
3289-P	Knoxville	12/28/33	2,600,000.	L&G	New		Federal		30% TVA
5449-P-R	Lewisburg	9/25/35	100,000.	L&G	New		Federal		45% TVA
6997-P-R	Columbia	9/25/35	204,000.	L&G	New		Federal		45% TVA
7070-PP	Nashville	6/27/34	2,385.	G	Additional	7/9/35		12/1/36	30%
Tenn. 1105-P-D-S	Chattanooga	8/28/37	4,330,000.	L&G	New		Federal		45% TVA
Tenn. 1107-P-D	Memphis	10/30/36	3,098,000.	G	New	2/15/37	Federal		45% TVA
Tenn. 1119-P-D	Newbern	10/27/36	59,000.	L&G	New		Federal		45% TVA
Tenn. 1124-P-R	Paris	9/25/35	135,000.	G	New		Federal		45% TVA
Tenn. 1183-PP-R	Somerville	11/11/35	5,000.	L&G	Additional	4/17/36		9/22/36	45%
Tenn. 1184-P-R-S	Knoxville	8/20/36	54,000.	G	Institution	9/28/36			45%
Tenn. 1192-P-R	Lenoir City	9/25/35	52,727.	L&G	Additional		Federal		45% TVA
Tenn. 1247-P-D	Jackson	10/24/36	663,500.	L&G	New		Federal		45% TVA
Tenn. 1256-P-D	Fayetteville	11/19/36	67,050.	G	New		State		45% TVA
Tenn. 1268-P-D-S	Clarksville	8/24/37	112,500.	G	New		Federal		45% TVA
	TEXAS								
341-PP	Pecos	10/10/33	260,600.	L&G	New	4/2/34			30%
380-P-R	L.Colo.Riv.Auth.	5/24/34	*15,000,000.	L&G	New	4/9/36	Federal		30%
1168-2-PP	Brownsville	10/12/33	121,875.	L&G	Additional	4/22/35		* *	30%
1866-PP	Seguin	12/26/33	30,500.	G	Additional	5/14/34		2/7/35	30%
2329-PP	Littlefield	6/20/34	19,600.	L&G	Institution	3/28/35		8/2/35	30%
4733-PP	Cleburne	2/21/34	1,300.	G	Institution	9/28/34			30%
8406-PP	Port Lavaca	8/5/35	16,480.	L&G	New	7/2/36		* *	30%
9312-P	Liberty	4/17/35	95,200.	L&G	New		Federal		30%
Tex. 1408-P-D	Brenham	11/19/36	140,000.	G	New		Federal		45%
Tex. 1461-P-R	Leonard	9/25/35	32,727.	G	New		Federal		45%
Tex. 1476-P-R	Yorktown	9/25/35	45,000.	G	New		Federal		45%
Tex. 1485-PP-R	Lolita	9/25/35	498.	G	Institution	9/22/36		12/30/36	45%
Tex. 1720-P-R	Plano	9/25/35	45,000.	G	New		Federal		45%
Tex. 1956-PP-R	Buena Vista	1/4/36	761.	G	Institution	5/12/36			45%
Tex. 1962-PP-R	Kenedy	9/25/35	9,300.	G	Institution	4/14/36		7/31/36	45%
Tex. 2004-P-D	Electra	2/4/37	221,818.	L&G	New		Federal		45%
	UTAH								
6416-PP	Parrowan City	6/20/34	25,698.	L&G	Additional	7/29/35		11/24/36	30%
8857-P	Murray	8/23/34	33,000.	L&G	Additional	10/30/36		2/4/35	30%
Utah 1052-PP-R	Ephraim	1/15/36	2,000.	G	Additional	8/3/36		12/14/36	45%
	VERMONT								
8623-P	Burlington	11/14/33	3,600.	G	Additional	5/17/34		12/31/34	30%
	VIRGINIA								
925-P	Culpeper	11/9/33	162,100.	L&G	New	12/11/33		2/21/35	30%
1151-P-R	Danville	8/13/35	1,529,954.	G	Additional	12/30/35			45%
1544-P	Danville	3/7/34	5,500.	G	Additional	10/30/34		5/8/35	30%
1796-PP	Richmond	11/1/34	12,000.	L&G	Institution	11/20/35			30%
					New		Federal		45%

	SOUTH CAROLINA								
3972-P	Greenwood County	7/14/34	2,852,000.	L&G	New		Federal		30%
4329-P-1	Santee-Cooper	10/2/35	6,000,000.	L&G	New		Federal		45%
	SOUTH DAKOTA								
2515-PF	Yankton	12/28/33	2,400.	L&G	Additional	9/5/34		12/20/34	30%
S.D. 1129-P-D-1	Pierre	6/20/36	16,200.	G	Additional	9/22/36		5/7/37	45%
S.D. 1144-P-D	Pinedrom	10/20/36	76,000.	G	New		State		45%
	TENNESSEE								
2623-PF	Memphis	12/5/33	9,450.	L&G	Additional	5/1/34		3/31/35	30%
3289-P	Knoxville	12/28/33	2,600,000.	L&G	New		Federal		30% TVA
4489-P-1	Lewisburg	9/25/35	100,000.	L&G	New		Federal		45% TVA
6997-P-1	Columbia	9/25/35	204,000.	L&G	New		Federal		45% TVA
7070-PF	Nashville	6/27/34	2,385.	G	Additional	7/9/35		12/1/36	30%
Tenn. 1105-P-D-1	Chattanooga	8/28/37	4,330,000.	L&G	New		Federal		45% TVA
Tenn. 1107-P-D	Memphis	10/30/36	3,092,000.	G	New	2/15/37	Federal		45% TVA
Tenn. 1119-P-D	Newbern	10/27/36	99,000.	L&G	New		Federal		45% TVA
Tenn. 1104-P-1	Paris	9/25/35	135,000.	G	New		Federal		45% TVA
Tenn. 1183-PF-1	Somerville	11/11/35	6,000.	L&G	Additional	4/17/36		9/22/36	45%
Tenn. 1184-P-E-1	Knoxville	8/20/36	9[illegible],000.	G	Institution	9/28/36			45%
Tenn. 1192-P-1	Lenoir City	9/25/35	52,727.	L&G	Additional		Federal		45% TVA
Tenn. 1247-P-D	Jackson	10/24/36	663,900.	L&G	New		Federal		45% TVA
Tenn. 1256-P-D	Fayetteville	11/19/36	67,050.	G	New		State		45% TVA
Tenn. 1268-P-D-1	Clarksville	8/24/37	112,500.	G	New		Federal		45% TVA
	TEXAS								
341-PF	Pecos	10/10/33	260,600.	L&G	New	4/2/34			30%
380-P-1	L.Colo.Riv.Auth.	5/24/34	15,000,000.	L&G	New	4/9/36	Federal		30%
1168-2-PF	Brownsville	10/12/33	121,875.	L&G	Additional	4/22/35		" "	30%
1866-PF	Eagle	12/26/33	30,500.	G	Additional	5/14/34		2/7/35	30%
2329-PF	Littlefield	6/20/34	19,600.	L&G	Institution	3/28/35		8/2/35	30%
4733-PF	Cleburne	2/21/34	1,300.	G	Institution	9/28/34			30%
8406-PF	Port Lavaca	8/5/35	16,480.	L&G	New	7/2/36		" "	30%
9112-P	Liberty	4/17/35	95,200.	L&G	New		Federal		30%
Tex. 1408-P-D	Bonham	11/19/36	140,000.	G	New		Federal		45%
Tex. 1461-P-1	Leonard	9/25/35	32,727.	G	New		Federal		45%
Tex. 1476-P-1	Tarleton	9/25/35	85,000.	G	New		Federal		45%
Tex. 1485-PF-1	Lolita	9/25/35	998.	G	Institution	9/22/36		12/30/36	45%
Tex. 1720-P-1	Plano	9/25/35	45,000.	G	New		Federal		45%
Tex. 1956-PF-1	Buena Vista	1/4/36	761.	G	Institution	5/12/36			45%
Tex. 1962-PF-1	Kenedy	9/25/35	9,300.	G	Institution	4/14/36		7/31/36	45%
Tex. 2004-P-1	Electra	2/4/37	221,818.	L&G	New		Federal		45%
	UTAH								
6416-PF	Parrowan City	6/20/34	25,658.	L&G	Additional	7/29/35		11/24/36	30%
6857-P	Murray	6/23/34	33,000.	L&G	Additional	10/30/34		2/4/35	30%
Utah 1052-PF-1	Ephrain	1/15/36	2,000.	G	Additional	6/3/36		12/14/36	45%
	VERMONT								
8623-P	Burlington	11/14/33	3,600.	G	Additional	5/17/34		12/31/34	30%
	VIRGINIA								
925-P	Culpeper	11/9/33	162,100.	L&G	New	12/11/33		2/21/35	30%
1151-P-1	Danville	8/13/35	1,529,999.	G	Additional	12/30/35			45%
1544-P	Danville	3/7/34	5,500.	G	Additional	10/30/34		5/6/35	30%
1798-PF	Richmond	11/7/34	12,000.	L&G	Institution	11/20/35			30%
Va. 1120-P-D	S. Norfolk	10/24/36	148,000.	G	New		Federal		45%
Va. 1159-PF-1	Front Royal	9/25/35	2,500.	G	Additional	2/21/36		8/1/36	45%
	WASHINGTON								
1136-P-D-1	Seattle	10/5/36	3,000,000.	C	Additional	12/10/36			41.7%
4634-P	Spokane	12/26/34	293,900.	C	New	12/29/35		3/26/37	30%
Wash. 1178-PF-1	Orient	11/23/36	909.	C	Institution	3/29/37		8/9/37	45%
Wash. 1197-PF-1	Toccoa	9/12/35	1,100.	C	Additional	1/6/36		10/16/36	45%
Wash. 1203-PF-1	Entiat	9/12/35	8,600.	C	Transmission	1/21/36		4/14/36	45%
Wash. 1223-PF-1	Seattle	9/25/35	1,460.	C	Additional	2/10/36		1/5/37	45%

TABLE 1

PWA ALLOTMENTS FOR ELECTRIC POWER PROJECTS

AS OF SEPTEMBER 1, 1937

"NEW" INDICATES GENERATING PLANT AND/OR DISTRIBUTION SYSTEM WHERE NONE WAS PUBLICLY OWNED AT TIME OF ALLOTMENT.
ASTERISK (*) INDICATES COMBINED PROJECT. PART OF THE FUNDS WILL BE USED FOR IRRIGATION, FLOOD CONTROL, ETC.
ASTERISKS (**) INDICATE SUBSTANTIAL COMPLETION.

DOCKET NO.	LOCATION	DATE OF ALLOTMENT	POWER ALLOTMENT	(L) LOAN (G) GRANT	TYPE OF PROJECT	CONSTRUCTION STARTED	IN LITIGATION	COMPLETED	REMARKS: 45% - GRANT FROM E.R.A. 30% - GRANT FROM E.R.A. UNLESS OTHERWISE STIPULATED
	WEST VIRGINIA								
W. Va. 1026-PF-2	Fairview	9/25/35	$ 900.	L&G	Institution	2/26/36		8/15/36	45%
	WISCONSIN								
1616-P	Hartford	12/26/33	14,200.	G	Additional	12/19/34		4/30/35	30%
7320-P	Elroy	6/27/34	1,750.	G	Additional	10/22/34		11/17/34	30%
Wisc. 1052-PF-2	Milwaukee	9/25/35	93,060.	G	Institution	4/27/36			45%
Wisc. 1290-P-2	West Allis	9/25/35	81,000.	G	Additional	12/14/35		10/7/36	45%

SUMMARY

TYPE	ALLOTMENTS: POWER PORTION	ALLOTMENTS: NUMBER	NOT STARTED	CONSTRUCTION STARTED *	IN LITIGATION	COMPLETED
New	$ 86,996,986	34	11	13	58	19
Additional	31,943,788	127	4	14	4	105
Transmission	2,952,445	8	1	1		6
Institution	2,388,337	53	3	17		33
Total	$124,281,556	252	19	45	62	163

* Seven projects in litigation are under construction and listed in both columns.

[fol. 2990] COMPLAINANTS' EXHIBIT No. 485

Senate Document No. 184—74th Congress 2nd Session, entitled "Public Works Administration Allotments for Gas and Electric Projects."

(Original Exhibit)

[fol. 2991] COMPLAINANTS' EXHIBIT No. 486

Kilowatt-hours Generated in 1936 by the Electric Light and Power Industry

(From Edison Electric Institute Statistics)

State	Kw. Hrs. Generated Firm and Secondary
Kentucky	816,697,000
Virginia	1,445,273,000
North Carolina	1,756,513,000
Georgia	1,554,710,000
Alabama	2,595,197,000
Mississippi	68,406,000
Tennessee	1,068,792,000

[fol. 2992] COMPLAINANTS' EXHIBIT No. 487 (Excluded)

Chart entitled "Comparison of the Average Yields of the Bonds of Nine of the Complainant Companies."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 488 (Excluded)

Chart entitled "Comparison of the Yield of Alabama Power Company 4½% Bonds, Due 1967."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 489 (Excluded

Chart entitled "Comparison of the Yield of Appalachian Electric Power Company 5% Bonds, Due 1956."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 490 (Excluded)

Chart entitled "Comparison of the Yield of Birmingham Electric Company 4½% Bonds, Due 1968."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 491 (Excluded)

Chart entitled "Comparison of the Yield of Carolina Power & Light Company 5% Bonds, Due 1956."

(Original Exhibit)

[fol. 2993] COMPLAINANTS' EXHIBIT No. 492 (Excluded)

Chart entitled "Comparison of the Yield of Memphis Power & Light Company 5% Bonds, Due 1948."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 493 (Excluded)

Chart entitled "Comparison of the Yield of Mississippi Power Company 5% Bonds, Due 1955."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 494 (Excluded)

Chart entitled "Comparison of the Yield of Mississippi Power & Light Company 5% Bonds, Due 1957."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 495 (Excluded)

Chart entitled "Comparison of the Yield of Tennessee Electric Power Company 6% Bonds, Due 1947."

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 496 (Excluded)

Chart entitled "Comparison of the Yield of Tennessee Public Service Company 5% Bonds, Due 1970."

(Original Exhibit)

[fol. 2994] COMPLAINANTS' EXHIBIT No. 497

Subpoena Duces Tecum.

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock a. m., and bring with them the following documents and records, to wit:

Copy of telegram from TVA dated between January 1 and January 15, 1935, to the Governor of Alabama, stating the terms and provisions of a proposed statute to be submitted to the legislature of Alabama,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this —day of ——, 1937.

—— —— by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 2995] COMPLAINANTS' EXHIBIT No. 498 (Excluded)

STATE OF ALABAMA,
Lawrence County:

Whereas, the Town of Moulton, desires to secure TVA power as soon as possible, and

Whereas, the Alabama Power Company in an agreement with TVA agreed to negotiate with the said TVA for the sale of electric distribution now serving the said Town of Moulton, Alabama, now,

Therefore, the City Council in special session hereby resolved that the Joe Wheeler Electric Membership Corporation enter into negotiation with the said Alabama Power Company for the purchase of said distribution and the rights to operate said system which is now serving the Town of Moulton, Alabama, that the town may receive the TVA power as soon as possible.

Witness our hands and seals this the 29th day of March 1937.

The Town of Moulton, Alabama, by L. W. Gentry, Mayor; Grady Smith, Alderman; C. C. McWhorter, Alderman; J. H. Anders, Alderman; Lowe Harris, Alderman; Marion Barkley, Alderman.

COMPLAINANTS' EXHIBIT No. 499

[fol. 2996]

Annual Sales by Existing Utility Systems to Ultimate Consumers in the Year 1936 Within 100-mile, 150-mile and 250-mile Radii from any TVA Generating Plant Included in the Unified Plan

Sales by TVA and its Wholesale Contractors Excluded Geographical Distribution of Total Sales in Part Estimated

Sales in Millions of Kilowatt-Hours

Within 100-Mile Radius:	Direct Sales	Indirect Sales*	Total Sales	Per Cent
Complainant Companies	2,214	18	2,232	60.9%
Non-Complainants	.....	..	1,429	39.1%
Total			3,661	100.0%
Within 150-Mile Radius:				
Complainant Companies	2,643	26	2,669	37.3%
Non-Complainants	.....	..	4,493	62.7%
Total			7,162	100.0%
Within 250-Mile Radius:				
Complainant Companies	4,439	45	4,484	33.7%
Non-Complainants	.....	..	8,831	66.3%
Total			13,315	100.0%

* Indirect Sales are sales to ultimate consumers by minor utility systems which purchase their power requirements from complainant companies.

[fol. 2997] COMPLAINANTS' EXHIBIT No. 500

Miles of Transmission Lines of Complainant Companies

	Miles of Transmission Lines
The Tennessee Electric Power Company	1,544
Franklin Power & Light Company	—
Memphis Power & Light Company	56
Southern Tennessee Power Company	15
Birmingham Electric Company	4
Mississippi Power Company	857
Appalachian Electric Power Company	1,768
Carolina Power & Light Company	1,746
Tennessee Public Service Company	181
Holston River Electric Company	9
Alabama Power Company	3,435
Kentucky and West Virginia Power Company, Inc.	436
Kingsport Utilities, Incorporated	6
Kentucky-Tennessee Light & Power Company	568
West Tennessee Power & Light Company	99
Mississippi Power & Light Company	457
East Tennessee Light & Power Company	67
Tennessee Eastern Electric Company	66
Total	11,314

Complainants' Exhibit No. 501

[fol. 2998]

Summary of Adequacy

Principal Utility Company Systems Within 250-Miles of TVA Generating Plants Included in the Unified Plan
Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Totals for All Groups Effectively Interconnected (Groups 1 to 5 Incl.):											
Generating Capacity Owned and Leased (Name-Plate Rating)	4376	4610	5001	5085	5078	5069	5074	5069	5244	5583	5623
Load Carrying Ability (In Addition to Standby)	3098	3230	3516	3580	3581	3624	3621	3669	3897	4266	4312
Firm Peak Load	2762	2715	2579	2378	2468	2624	2877	3323	3656	3850	4027
Surplus Capacity Available Over and Above Actual and Predicted Loads (In Addition to Standby)	336	515	937	1202	1113	1000	744	346	241	416	285
Standby Provided for	368	377	378	380	380	380	379	379	383	386	386
Totals for All Groups Not Effectively Interconnected (Groups 6 to 12 Incl.):											
Generating Capacity Owned and Leased (Name-Plate Rating)	351.1	350.6	362.4	418.4	414.4	412.8	407.3	423.3	410.9	435.9	435.9
Load Carrying Ability (In Addition to Standby)	283.4	283.7	292.2	328.2	327.2	326.2	324.7	340.8	354.7	400.7	410.7
Firm Peak Load	230.3	237.2	248.2	235.7	239.3	253.4	279.6	328.6	351.7	376.6	396.4
Surplus Capacity Available Over and Above Actual and Predicted Loads (In Addition to Standby)	53.1	46.5	44.0	92.5	87.9	72.8	45.1	12.2	3.0	24.1	14.3
Standby Provided for	59.5	59.5	60.8	60.8	60.8	60.8	71.8	71.3	78.8	79.8	80.8
Totals for All Groups:											
Generating Capacity Owned and Leased (Name-Plate Rating)	4727	4961	5363	5503	5492	5482	5481	5492	5655	6019	6059
Load Carrying Ability (In Addition to Standby)	3381	3514	3808	3908	3908	3950	3946	4010	4252	4687	4723
Firm Peak Load	2992	2952	2827	2614	2707	2877	3157	3652	4008	4227	4424
Surplus Capacity Available Over and Above Actual and Predicted Loads (In Addition to Standby)	389	562	981	1294	1201	1073	789	358	244	440	299
Standby Provided for	428	437	439	441	441	441	451	450	462	466	467

3335

Complainants' Exhibit No. 502

[fol. 2999]

Detailed

Summary of Adequacy

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Sheet 1 of 7

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 1:											
Alabama Power Company — Mississippi Power Company Birmingham Electric Company (i) — South Carolina Power Company Georgia Power Company — Southern Tennessee Power Company Gulf Power Company — The Tennessee Electric Power Company (a)											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	1142	1271	1297	1299	1299	1295	1295	1296	1306	1331	1371
Load Carrying Ability (in addition to standby)	746	849	885	880	886	899	902	910	919	1003	1049
Firm Peak Load (c)	718	669	644	600	635	691	764	881	892	945	985
Surplus Capacity Available Over and Above Actual and Predicted Loads (in addition to standby)	28	180	241	280	251	208	138	29	27	58	64
Standby Provided For	62	62	62	62	62	62	62	62	62	62	62
Integrated Group 2:											
Duke Power Company:											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	791	791	791	791	791	791	781	781	781	836	836
Load Carrying Ability (in addition to standby) (d)	500	500	548	548	548	548	537	537	537	599	599
Firm Peak Load (e)	451	453	437	418	412	405	440	487	533	531	546
Surplus Capacity Available Over and Above Actual and Predicted Loads (in addition to standby)	49	47	111	130	136	143	97	50	4	68	53
Standby Provided For	64	64	64	64	64	64	63	63	63	65	65
Lexington Water Power Company: South Carolina Electric & Gas Company (Broad River Power Company):											
Generating Capacity Owned and Leased—Name-Plate Rating (b) (f)	81	81	211	211	211	206	206	206	206	206	206
Load Carrying Ability (in addition to standby)	45	45	148	148	148	150	150	150	150	150	150
Firm Peak Load (g)	34	39	139	131	134	133	136	139	143	146	148
Surplus Capacity Available Over and Above Actual and Predicted Loads (in addition to standby)	11	6	9	17	14	17	14	11	7	4	2
Standby Provided For	13	13	13	13	13	13	13	13	13	13	13
Total for Group:											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	872	872	1002	1002	1002	337	987	987	987	1042	1042
Load Carrying Ability (in addition to standby) (h)	545	545	653	653	653	655	644	644	644	706	706
Firm Peak Load (h)	485	492	533	506	503	495	533	583	633	634	651
Surplus Capacity Available Over and Above Actual and Predicted Load (in addition to standby)	60	53	120	147	150	160	111	61	11	72	55
Standby Provided For	77	77	77	77	77	77	76	76	76	78	78

Notes:—(a) The complainant Franklin Power & Light Co. was interconnected with Group 1 in 1936 and thereafter.
(b) Excluding contract capacity.
(c) Includes 23,000 kw. of firm contract capacity to Tennessee Public Service Company in 1929.
(d) Based on largest steam unit out for six weeks at maximum loading for last six months of driest year, average demand outage of 3% applied only to dependable generating capacity for steam, 5% load factor for six months.
(e) Includes firm contract capacity as follows: Carolina Power & Light Co.—14,000 kw. 1929 to 1939 inclusive.
(f) After deducting capacity leased to Duke Power Company.
(g) Includes firm contract capacity as follows: Carolina Power & Light Co.—55,000 kw. 1931 to 1939 inclusive.
Duke Power Company—42,750 kw. 1931 to 1939 inclusive.
(h) Eliminates duplication resulting from 42,750 kw. of Lexington Water Power Company firm capacity contracted for by Duke Power Company from 1931 to 1939 inclusive.
(i) The complainant Birmingham Electric Company is included as a customer of the Alabama Power Company.

MA-1A (1)
12/6/37

3336

COMPLAINANTS' EXHIBIT No. 502

[fol. 3000]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Sheet 2 of 7

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 3:											
Appalachian Electric Power Company											
Kentucky & West Virginia Power Company, Inc.											
Kingsport Utilities, Inc.											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	371	372	373	385	381	381	404	402(j)	447(j)	541	541
Load Carrying Ability (In addition to standby)	317	317	319	322	317	342	353	362	416	499	499
Firm Peak Load	275	281	232	204	239	262	292	346	353	387	406
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	42	36	87	118	78	80	61	16	63	112	93
Standby Provided For	25	40	40	40	40	40	40	40	40	40	40
Carolina Power & Light Company											
Holston River Electric Company											
Tennessee Public Service Company											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	151	259	259	259	259	259	255	252	252	252	252
Load Carrying Ability (In addition to standby) (k)	172	214	270	272	273	276	255	263	252	252	252
Firm Peak Load	133	137	141	130	149	146	155	188	216	219	232
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	39	77	129	142	124	130	100	75	36	33	20
Standby Provided For	23	17	17	17	17	17	17	17	17	17	17
East Tennessee Light & Power Company											
Tennessee Eastern Electric Company											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	23	23	23
Load Carrying Ability (In addition to standby)	...	...	...	...	...	...	...	...	21	21	21
Firm Peak Load	...	...	...	...	...	...	...	...	15	16	17
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	...	...	...	...	...	...	...	...	6	5	4
Standby Provided For	...	...	...	...	...	...	...	...	(m)	(m)	(m)
Total for Group:											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	522	631	632	644	640	640	659	654	722	816	816
Load Carrying Ability (In addition to standby) (k)	489	531	589	594	590	618	610	622	689	772	772
Firm Peak Load	408	418	373	334	388	408	447	534	584	622	655
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	81	113	216	260	202	210	163	88	105	150	117
Standby Provided For	48	57	57	57	57	57	57	57	57	57	57

Notes:—(b) Excluding contract capacity.
(j) Excludes 9000 kw. contract capacity.
(k) Includes firm contract capacity as follows: Duke Power Company—14,000 kw. 1929 to 1939, inclusive.
Lexington Water Power Company—55,000 kw. 1931 to 1939, inclusive.
The Tennessee Electric Power Company—23,000 kw. 1929 only.
(l) See Integrated Group 7 for these years.
(m) Standby for these companies is located in the Appalachian Electric Power Company system above.

MA-1A (2)
12/4/37

3337

COMPLAINANTS' EXHIBIT No. 502

[fol. 3001]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 4:											
The Cincinnati Gas and Electric Company (n)											
The Dayton Power and Light Company											
Indianapolis Power & Light Company											
Kentucky Utilities Company, Inc., & Assoc. (o) (Eastern System)											
Kentucky-Tennessee Light & Power Company (Eastern System)											
Louisville Gas and Electric Company											
Public Service Company of Indiana											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	884	880	880	950	947	947	943	943	1040	1105	1105
Load Carrying Ability (In addition to standby)	653	654	654	722	721	721	736	736	813	874	874
Firm Peak Load (p)	583	563	505	477	497	543	589	708	782	832	878
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	70	91	149	245	224	178	147	28	31	42	*4
Standby Provided For	85	85	85	87	87	87	87	87	90	89	89
Integrated Group 5:											
Central Illinois Light Company (Excluding De Kalb Division)											
Central Illinois Public Service Company											
Illinois Power and Light Corporation (Illinois Iowa Power Company)											
Kentucky-Tennessee Light & Power Company (Western System)											
Kentucky Utilities Company, Inc. (Western System) (q)											
Missouri Power & Light Company											
Super Power Company of Illinois (allocated capacity from Powerton) (r)											
Union Electric Light and Power Company (s) (Union Electric Co. of Missouri)											
Generating Capacity Owned and Leased—Name-Plate Rating (b) (r)	956	956	1190	1190	1190	1190	1190	1189	1189	1289	1289
Load Carrying Ability (In addition to standby) (t)	665	665	804	800	800	800	800	831	832	911	911
Firm Peak Load	568	587	593	530	514	556	613	694	765	817	858
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	97	78	211	270	286	244	187	137	67	94	53
Standby Provided For	96	96	97	97	97	97	97	97	98	100	100

Notes: (b) Excluding contract capacity.

(n) Includes: The Union Gas & Electric Company
The Union Light, Heat & Power Company.
The Southwestern Ohio Power Company.
The Loveland Light & Water Company.
The Harrison Electric & Water Company.
The Hamilton Service Company.

(o) Includes: Kentucky Utilities Company.
Lexington Utilities Company.
Old Dominion Power Company.
Kentucky Power and Light Company.
Dixie Power & Light Company.

(p) Includes 8000 kw. emergency capacity available from Public Service Company of Indiana to Central Illinois Public Service Company (Group 5) in years 1936 to 1939, inclusive.

* Overload on remaining units of group in case of outage of largest unit at time of peak load.

(Notes continued on following page.)

MA—1A (3)
11/30/37

3338

COMPLAINANTS' EXHIBIT No. 502

[fol. 3002]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Totals for 'll Groups Effectively Interconnected (Groups 1 to 5 Incl.):											
Generating Capacity Owned and Leased—Name-Plate Rating (b)	4376	4610	5001	5085	5078	5069	5074	5069	5244	5583	5623
Load Carrying Ability (In Addition to Standby) (u)	3098	3230	3516	3580	3581	3624	3621	3669	3897	4266	4312
Firm Peak Load (u)	2762	2715	2579	2378	2468	2624	2877	3323	3656	3850	4027
Surplus Capacity Available Over and Above Actual and Predicted Loads (In Addition to Standby)	336	515	937	1202	1113	1000	744	346	241	416	285
Standby Provided For	368	377	378	380	380	380	379	379	383	386	386

Notes:—(b) Including contract capacity.

(Cont'd) (q) Includes: Kentucky Utilities Company.
South Fulton Light & Power Company.

(r) Name-plate rating of the total generating facilities at Powerton is 105,000 kw. in 1929 and 1930, and 210,000 kw. from 1931 to 1939 inclusive. Only that portion allocated from Powerton station to companies in Group 5 is included in the item "Generating Capacity Owned and Leased."

(s) Includes: Alton Light & Power Co., Alton, Ill.
Cupples Station Light, Heat & Power Co., St. Louis, Mo.
Dallas City Light Co., Dallas City, Ill.
East St. Louis Light & Power Co., East St. Louis, Ill.
East St. Louis Railway Co., East St. Louis, Ill.
Fort Madison Electric Co., Fort Madison, Iowa.
Keokuk Electric Co., Keokuk, Iowa.
Lakeside Light & Power Co., Lakeside, Miller County, Mo.
Mississippi River Power Co., Keokuk, Iowa.
Missouri Transmission Co., St. Louis, Mo.
Power Operating Co., East St. Louis, Ill.
St. Charles Electric Light & Power Co., St. Charles, Mo.
St. Louis and Belleville Electric Railway Co., East St. Louis, Ill.
St. Louis & East St. Louis Electric Railway Co., East St. Louis, Ill.
Union Colliery Co., St. Louis, Mo.
Union Electric Light & Power Co. of Illinois, Monsanto, Ill.

(t) Includes 5,250 kw. supplied by Kentucky Electric Power Company to Kentucky Utilities Company, Inc. in the years 1929 to 1939 inclusive. Also includes 17,000 kw. contract capacity from Public Service Co. of Indiana (Group 4—8000 kw.), Northern Illinois Public Service Co. and Public Service Co. of Northern Illinois in years 1936 to 1939, inclusive, but does not include contract capacity from these companies prior to 1936.

(u) Eliminates duplication resulting from the following contracts for firm capacity between groups:
Tennessee Electric Power Co. to Tennessee Public Service Co.
23,000 kw. 1929 only.
Duke Power Company to Carolina Power & Light Co.
14,000 kw. 1929 to 1939 inclusive.
Lexington Water Power Co. to Carolina Power & Light Co.
55,000 kw. 1931 to 1939 inclusive.
Public Service Co. of Indiana to Central Illinois Public Service Co.
8,000 kw. 1936 to 1939 inclusive.

MA-1A (4)
12/6/37

3339

Complainants' Exhibit No. 502

[fol. 3003]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 6:											
Arkansas-Missouri Power Company.											
Arkansas Power & Light Company.											
Louisiana Power & Light Company.											
Memphis Power & Light Company.											
Mississippi Power & Light Company.											
West Tennessee Power & Light Company.											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	224	225	225	281	277	276	270	269	274	274	274
Load Carrying Ability (In addition to standby) (2)	206	208	208	244	243	241	239	237	246	276	286
Firm Peak Load (3)	158	166	172	166	167	171	185	222	248	267	282
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	48	42	36	78	76	70	54	15	2*	9	4
Standby Provided For	40	40	40	40	40	40	40	42	42	43	44
Integrated Group 7:											
East Tennessee Light & Power Company.											
Tennessee Eastern Electric Company.											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	23.5	23.5	23.5	23.5	23.5	22.9	22.9	22.9	(4)	(4)	(4)
Load Carrying Ability (In addition to standby)	10.5	10.3	10.3	10.3	10.3	9.5	10.0	10.6			
Firm Peak Load	11.0	9.5	9.6	8.0	7.7	8.6	11.3	13.8			
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	0.5*	0.8	0.7	2.3	2.6	0.9	1.3*	3.2*			
Standby Provided For	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5			
Integrated Group 8:											
The Southern Ohio Electric Company (Excluding Delaware Division) (5):											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
Load Carrying Ability (In addition to standby) (6)	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	27.9	27.9	27.9
Firm Peak Load	13.1	13.1	14.5	12.2	13.4	15.0	17.0	18.3	20.6	21.8	22.9
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	4.8	4.8	3.4	5.7	4.5	2.9	0.9	0.4*	7.3	6.1	5.0
Standby Provided For	2.5	2.5	2.5	2.5	2.5	2.5	2.5	12.5	12.5	12.5	12.5

Notes:—(1) Excluding contract capacity.
(2) Includes firm contract capacity from Tennessee Valley Authority to the Arkansas Power & Light Co. in the amount of 25,000 kw. in 1938 and 35,000 kw. in 1939.
(3) In the absence of complete data for the combined load of the Arkansas-Missouri Power Company and the other companies in Group 6, it was assumed that this combined load would approximate the firm peak load of the latter plus the dependable generating capacity of the former.
(4) August 1937 interconnection with Appalachian Electric Power Co. completely integrates these companies with Group 3.
(5) Includes: Adams County Power & Light Company. Peebles Power Company.
Point Pleasant Water & Light Company.
(6) Includes firm contract capacity from Columbus Railway, Power and Light Company in the following amounts: 10,000 kw.—1929 to 1936, inclusive.
20,000 kw.—1937 to 1939, inclusive.

* Overload on remaining units of system in case of outage of largest unit at time of peak load.

MA—1A (5)
11/18/37

3340

COMPLAINANTS' EXHIBIT No. 502

[fol. 3004]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 9:											
Southern Indiana Gas and Electric Company:											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	39.9	38.4	38.4	38.4	38.4	38.4	38.4	50.9	50.9	70.9	70.9
Load Carrying Ability (In addition to standby)	19.0	17.5	17.5	17.5	17.5	17.5	17.5	30.0	30.0	42.5	42.5
Firm Peak Load	22.5	22.5	22.5	21.0	20.0	23.0	28.0	34.2	38.9	41.2	42.3
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	3.5*	5.0*	5.0*	3.5*	2.5*	5.5*	10.5*	4.2*	8.9*	1.3	0.2
Standby Provided For	3.5	3.5	3.5	3.5	3.5	3.5	14.5	2.0	13.0	11.5	11.5
Integrated Group 10:											
Missouri Electric Power Company (Niangua system only):											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Load Carrying Ability (In addition to standby) (7)	2.4	2.4	2.4	2.4	2.4	4.2	4.2	4.2	4.2	4.2	4.2
Firm Peak Load	1.7	1.8	2.1	2.2	2.1	2.4	2.7	3.5	3.7	3.9	4.1
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	0.7	0.6	0.3	0.2	0.3	1.8	1.5	0.7	0.5	0.3	0.1
Standby Provided For	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Integrated Group 11:											
Kentucky Utilities Company. Kentucky-Tennessee Light & Power Company.											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	6.3	6.3	12.1	12.1	12.1	12.1	12.1	12.1	12.1	17.1	17.1
Load Carrying Ability (In addition to standby)	3.1	3.1	7.6	7.6	7.6	7.6	7.6	7.6	7.6	11.1	11.1
Firm Peak Load	4.9	5.0	6.7	6.1	6.7	6.8	7.6	8.0	9.1	9.6	10.1
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)—(Or Emergency Overload*)	1.8*	1.9*	0.9	1.5	0.9	0.8	0.0	0.4*	1.5*	1.5	1.0
Standby Provided For	2.2	2.2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	5.0	5.0

Notes:—(1) Excluding contract capacity.
(7) Includes 1800 kw. firm contract capacity from Empire District Electric Company in the years 1934 to 1939, inclusive.

* Overload on remaining units of system in case of outage of largest unit at time of peak load.

MA—1A (6)
11/18/37

3341

COMPLAINANTS' EXHIBIT No. 502

[fol. 3005]

Detailed

Summary of Adequacy—Continued

Principal Utility Company Systems Within 250 Miles of TVA Generating Plants Included in the Unified Plan

Thousands of Kilowatts

Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Integrated Group 12:											
Laclede Power & Light Company.											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	32.0	32.0	38.0	38.0	38.0	38.0	38.5	43.0	48.5	48.5	48.5
Load Carrying Ability (In addition to standby)	24.5	24.5	28.5	28.5	28.5	28.5	28.5	33.5	39.0	39.0	39.0
Firm Peak Load	19.1	19.3	20.8	20.2	22.4	26.6	28.0	28.8	31.4	33.1	35.0
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	5.4	5.2	7.7	8.3	6.1	1.9	0.5	4.7	7.6	5.9	4.0
Standby Provided For	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Totals for All Groups Not Effectively Interconnected (Groups 6 to 12 Incl.):											
Generating Capacity Owned and Leased—Name-Plate Rating (1)	351.1	350.6	362.4	418.4	414.4	412.8	407.3	423.3	410.9	435.9	435.9
Load Carrying Ability (In addition to standby)	283.4	283.7	292.2	328.2	327.2	326.2	324.7	340.8	354.7	400.7	410.7
Firm Peak Load	230.3	237.2	248.2	235.7	239.3	253.4	279.6	328.6	351.7	376.6	396.4
Surplus Capacity Available Over and Above Actual and Predicted Loads (In addition to standby)	53.1	46.5	44.0	92.5	87.9	72.8	45.1	12.2	3.0	24.1	14.3
Standby Provided For	59.5	59.5	60.8	60.8	60.8	60.8	71.8	71.3	78.8	79.8	80.8

Notes:—(1) Excluding contract capacity.

MA—1A (7)
11/19/37

[fol. 3006] COMPLAINANTS' EXHIBIT No. 503

Map entitled "Generating Systems Surrounding TVA, January 1, 1937.

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 504—(Excluded)

[fol. 3007]

Power Cost at TVA Generating Plants

Unified Plan—Ultimate Development

Excluding Initial Stage of Wilson Dam

	Installed Generating Capacity Kilowatts *	Total Investment *	Operation and Maintenance of Dams, Locks Reservoirs **
Pickwick	216,000	$42,431,497	$97,000
Wilson	444,000	57,950,748	72,000
Wheeler	256,000	44,757,657	112,000
Guntersville	100,000	38,524,860	141,000
Chickamauga	100,000	45,333,645	117,000
Gilbertsville	192,000	112,000,000	212,000
Watts Bar	150,000	39,800,000	122,000
Coulter Shoals	60,000	30,000,000	110,000
Norris	100,800	36,310,370	82,000
Hiwassee	80,000	22,491,561	42,000
Fontana	180,000	51,000,000	63,000
U. S. N. P. No. 2	Omit	Omit	Omit
	1,878,800	$520,600,338	$1,170,000
Deduct Wilson Dam—Initial Stage	184,000	46,950,748	72,000
Total for Unified Plan Excluding Initial Stage of Wilson	1,694,800	$473,649,590	$1,098,000

	Investment	Yearly Cost
Investment	$473,649,590	
Operation and Maintenance		
Dams, Locks and Reservoirs	.....	$1,098,000
Power Houses and Power Facilities—at 1½% of $114,300,000(1)	.....	1,714,000
Deduction from Norris—Highways, Town of Norris, Forest Lands, etc.	$4,843,000(2)	.....
Net Total for Navigation, Flood Control and Power	$468,806,590	$2,812,000

Complainants' Exhibit No. 504 (Excluded)

Power Cost at TVA Generating Plants—Unified Plan—Ultimate Development—Excluding Initial Stage of Wilson Dam—Continued

	Investment	Yearly Cost
Cost for Navigation Separately—32 low dams..	$74,709,000	$1,580,000
Additional Cost for Flood Control.....	$81,133,600	$400,000
Total Cost for Navigation and Flood Control Independent of Power.....	$155,842,600	$1,980,000
Net Total Increment for Power Generation		
Increment Investment.....	$312,963,990	
Increment Operation & Maintenance.....		$832,0[illegible]
Interest on Increment Investment—3½%.....		$10,954,000
Depreciation on Increment Investment (Sinking Fund Basis—3½% compounded annually)		
On Power Houses & Power Facilities—30 year life— $114,300,000 at 1.94%(1)		$2,220,000
On Remaining Increment Investment—50 year life—$198,663,990 at 0.763%		1,516,000
	$312,963,990	
Total Yearly Cost for TVA Power Generation (Excluding All Taxes).....		$15,522,000

Notes

* From page 403, Hearings on Second Deficiency Appropriation Bill for 1937
** From page 279, Hearings on First Deficiency Appropriation Bill for 1936.
(1) Excluding Initial Stage of Wilson Dam.
(2) From page 385, Hearings on Second Deficiency Appropriation Bill for 1937.

Complainants' Exhibit No. 505—(Excluded)

[fol. 3008]

Out-of-Pocket Costs of TVA Power

Unified Plan—Ultimate Development

Excluding Initial Stage of Wilson Dam

	Generating Plants	Transmission System	Total
Increment Investment for Power	$312,964,000	$116,587,000	$429,551,000
Increment Operation and Maintenance.....	$832,000	$1,861,000	$2,693,000
Interest on Increment Investment—3½%.....	10,954,000	4,080,000	15,034,000
Depreciation on Increment Investment (3½% Sinking Fund Basis).....	3,736,000	3,610,000	7,346,000
	$15,522,000	$9,551,000	$25,073,000
Annual charges on accumulated interest during construction of generating plants 5% of ($10,954,000 + $3,736,000).....			734,000
Commercial and Metering Expense (710 customers at $202)....			143,000
General Administrative Expense.....			1,000,000
Taxes Lost (Excluding 3% Federal Sales Tax).....			5,607,000
Which would have been obtainable from utility company development of facilities obviated by TVA wholesale system.			
Total Increment Yearly Cost for Power.....			$32,557,000

COMPLAINANTS' EXHIBIT No. 505 (Excluded)

Out-of-Pocket Costs of TVA Power—Unified Plan—Ultimate Development—Excluding Initial Stage of Wilson Dam—Continued

Some Other Yardstick Omissions

Net Additional Interest (Increased) and Depreciation (Decreased)		
Interest and Depreciation Incurred by a Utility Company on Generating and Transmission Facilities if Owning and Operating TVA System	$30,602,000	
Deduct Interest and Depreciation Included Above	22,380,000	8,222,000
Additional Taxes (Excluding 3% Federal Sales Tax)		
Taxes Payable by a Utility Company if Owning and Operating TVA System	$7,895,000	
Deduct "Taxes Lost" as Shown Above	5,607,000	2,288,000
Out-of-Pocket Costs Plus Some Other Yardstick Omissions on Wholesale Operations		$43,067,000

I. Additional out-of-pocket losses to tax-payers not evaluated.
   Taxes on gasoline and motor vehicles used in power plant construction.
   Use of franking privilege.
II. Additional yardstick omissions not evaluated.
   Cost of raising capital.
   Preferential Freight Rates.
III. Additional losses and yardstick omissions on distribution facilities provided by TVA Wholesale Contractors.
   Taxes on ownership and operation of distribution facilities.
   Any services rendered gratis by TVA to its Wholesale Contractors, such as sales promotion, engineering, auditing, etc.
   Government grants to finance competing systems.
   Difference of interest on government loans to finance competing systems.
   Immunity from 3% Federal Sales Tax.

Note: Taxes payable by TVA—5% of gross non-governmental revenue.

[fol. 3009] COMPLAINANTS' EXHIBIT No. 506 (Excluded)

Summary of Annual Deficit from TVA Operations Unified Plan—Ultimate Development Excluding Initial Stage of Wilson Dam

Total Increment Yearly Out-of-Pocket:		
Cost of TVA Power		$32,557,000
Estimated Annual Revenue—1943:		
Total TVA Operations	$25,804,000	
Less Initial Stage of Wilson Dam	2,253,000	
Increment Revenue		$23,551,000
Out-of-Pocket Deficit		$ 9,006,000

COMPLAINANTS' EXHIBIT No. 506 (Excluded)

Some Other Yardstick Omissions for Comparable Utility Operation

Additional Fixed Charges:	
Net Additional Interest and Depreciation incurred by a Utility Company on Generating and Transmission Facilities if Owning and Operating TVA System	$ 8,222,000
Additional Taxes (excluding 3% Federal Sales Tax):	
Taxes Payable by a Utility Company if Owning and Operating TVA System in addition to "Taxes Lost" included in Out-of-Pocket Cost	2,288,000
Out-of-Pocket deficit plus some other yardstick omissions	$19,516,000

I. Additional out-of-pocket losses to tax-payers not evaluated:

Taxes on gasoline and motor vehicles used in power plant construction.

Use of franking privilege.

II. Additional yardstick omissions not evaluated:

Cost of raising capital.

Preferential freight rates.

III. Additional losses and yardstick omissions on distribution facilities provided by TVA Wholesale Contractors:

Taxes on ownership and operation of distribution facilities.

Any services rendered gratis by TVA to its Wholesale Contractors, such as sales promotion, engineering, anditing, etc.

Government grants to finance competing systems.

Difference of interest on government loans to finance competing systems.

Immunity from 3% Federal Sales Tax.

[fol. 3010] COMPLAINANTS' EXHIBIT No. 507

Estimated Power Available at TVA Generating Plants Typical Water Year Under TVA Unified Plan—Ultimate Development

	Million Kilowatt-Hours	Kilowatts at 100% Load Factor
Firm Power:		
Total primarily available	5,780	660,000
Deduct energy used to guarantee annual secondary power (see below)	322	36,700
Net Firm Power Available	5,458	
Allowance for average margin between capacity additions and load growth—5% (Salable as "Other Secondary Power"—see below)	273	31,200
Balance salable as Firm Power	5,185	
Annual Secondary Power (guaranteed 75% of the time in every year):		
Salable to certain large industries for electro-chemical and electro-thermal use	917	104,700
Reduces firm capacity by 7/20 or 35% of this amount in order to insure guarantee in critical year when it would be necessary to use reservoir capacity for 7 weeks out of a 20-week draw-down period.		
Other Secondary Power (Guaranteed 75% of the contract period):		
Estimated amount salable to the aluminum industry and to large utility companies, etc. (including 273 million kwh. of firm energy allowed for average margin between capacity additions and load growth)	790	90,200
Total firm and secondary power available	6,892	

COMPLAINANTS' EXHIBIT No. 507

Estimated Power Available at TVA Generating Plants Typical Water Year Under TVA Unified Plan—Ultimate Development—Continued

	Million Kilowatt-Hours	Kilowatts at 100% Load Factor
Dump Power:		
Estimated amount of energy available for fuel-generation replacement	778	
Total energy marketable ...	7,670	
Additional energy available but not Marketable	2,330	
Total energy available within generating capacity	10,000	

[fol. 3011]

COMPLAINANTS' EXHIBIT No. 508

Summary of Power Sales

TVA Unified Plan—Ultimate Development

1943 Sales Under Typical Water Conditions

Millions of Kilowatt-hours

	Output	Sales			Resale Loss and Company Use	Sales to Ultimate Consumers
		Firm Power Customers	Mixed Power Customers	Total		
Present TVA Special Customers	2,379	19.7	2,067.8	2,087.5	31.8	2,055.7
TVA Government Operations	71	10.0	60.0	70.0	.....	70.0
Wholesale Contractors Now Served and Present Direct Service Area	355	300.0	.....	300.0	40.0	260.0
Total 1943 Requirements of Present TVA Business	2,805	329.7	2,127.8	2,457.5	71.8	2,385.7
Additional General Business:						
Mixed Power Customers—Large Industrial Plants using Firm and Secondary Power at High Load Factor	517	.....	440.8	440.8	.....	440.8
Other Direct Industrial-Firm Power	1,042	876.2	.....	876.2	.....	876.2
Wholesale Contractors	2,528	2,110.9	.....	2,110.9	156.3	1,954.6
Total	4,087	2,987.1	440.8	3,427.9	156.3	3,271.6
Total Firm and Secondary Power Available	6,892	3,316.8	2,568.6	5,885.4	228.1	5,657.3
Sales of Dump Power	778	.....	700.0	700.0		
Total Energy Marketable	7,670	3,316.8	3,268.6	6,585.4		

(Here follows one paster, side folio 3012)

COMPLAINANTS' EXHIBIT No. 509

[id. 3012]

Disposition of Generating Plant Output

TVA Unified Plan—Ultimate Development

Typical Water Year

	Point of Sale	Transmission Efficiency	Firm Power			Annual Secondary			Other Secondary			Total		Resale Loss and Company Use	Sales to Ultimate Consumers
			Sales	Max. Demand	Output	Sales	Max. Demand	Output	Sales	Max. Demand	Output	Sales	Output		
		%	Million Kw.-hr.	Kw.	Million Kw.-hr.	Million Kw.-hr.	Kw.	Million Kw.-hr.	Million Kw.-hr.	Kw.	Million Kw.-hr.	Million Kw.-hr.	Million Kw.-hr.	Million Kw.-hr.	Million Kw.-hr.
Present TVA Special Customers															
Volunteer Cement Co	Sec. Substa.	83.5	19.7	3,000	24	.....	.....	...	.....	.....	...	19.7	24	0	19.7
Monsanto Chemical Co	" "	83.5	141.0	17,500	169	262.0	32,500	314	.....	.....	...	403.0	483	0	403.0
Victor Chemical Co	" "	83.5	128.5	16,000	154	128.5	16,000	154	.....	.....	...	257.0	308	0	257.0
Aluminum Company	Pri. Transm.	90.0	262.0	30,000	291	.....	.....	...	262.0	30,000	291	524.0	582	0	524.0
" " (Amendatory)	" "	90.0	.....	.....	...	.....	.....	...	350.0	40,000	389	350.0	389	0	350.0
Arkansas Power & Light Co	" "	90.0	168.5	35,000	187	.....	.....	...	43.8	5,000	49	212.3	236	31.8	180.5
Electro-Metallurgical Co	" "	90.0	193.0	24,000	214	128.5	16,000	143	.....	.....	...	321.5	357	0	321.5
Total permitted by present contracts			912.7	125,500	1,039	519.0	64,500	611	655.8	75,000	729	2,087.5	2,379	31.8	2,055.7
Recapitulation															
Sold from secondary substations	Sec. Substa.	83.5	289.2	36,500	347	390.5	48,500	468	.....	.....	...	679.7	815		
Sold from primary transmission	Pri. Transm.	90.0	623.5	89,000	692	128.5	16,000	143	655.8	75,000	729	1,407.8	1,564		
			912.7	125,500	1,039	519.0	64,500	611	655.8	75,000	729	2,087.5	2,379		
TVA Fertilizer Works	Wilson Dam	98.2	.....	.....	.....	.....		...	60.0	15,000	61	60.0	61	0	60.0
Other TVA Government Operations	At Dams	98.2	10.0	2,500	10	.....		...	.....		...	10.0	10	0	10.0
Wholesale Contractors Now Served and Present Direct Service Areas	At Dams	98.2	20.0		20	.....		...	.....		...	20.0	20		
	Sec. Substa.	83.5	280.0		335	.....		...	.....		...	280.0	335		
			300.0		355	.....		...	.....		...	300.0	355	40.0	260.0
Total 1943 Requirements of Present TVA Business			1,222.7		1,404	519.0		611	715.8		790	2,457.5	2,805	71.8	2,385.7
Additional General Business															
Large Industrial Plants—High Load Factor	Sec. Transm.	85.9	134.0		156	194.1		226	.....		...	328.1	382	0	328.1
" " " " " "	Sec. Substa.	83.5	45.9		55	66.8		80	.....		...	112.7	135	0	112.7
" " " —Normal " "	Sec. Transm.	85.9	216.5		252	.....		...	.....		...	216.5	252	0	216.5
" " " " " "	Sec. Substa.	83.5	73.5		88	.....		...	.....		...	73.5	88	0	73.5
Miscellaneous Direct Industrial	" "	83.5	586.2		702	.....		...	.....		...	586.2	702	0	586.2
Wholesale Contractors	" "	83.5	2,110.9		2,528	.....		...	.....		...	2,110.9	2,528	156.3	1,954.6
			3,167.0		3,781	260.9		306	.....		...	3,427.9	4,087	156.3	3,271.6
Sub-Total			4,389.7		5,185	779.9		917	715.8		790	5,885.4	6,892	228.1	5,657.3
Sales of DUMP POWER for Steam Replacement	Pri. Transm.	90.0										700.0	778		
Total												6,585.4	7,670		
Firm Power Sold as "Other Secondary" (5%)					(273)								.....		
					(5,458)										
Firm Power Used to Guarantee Annual Secondary (7/20=35% thereof)					(322)								.....		
Additional Energy Available but not Marketable					.....								(2,330)		
Total Energy Available Within Generating Capacity					(5,780)								(10,000)		

COMPLAINANTS' EXHIBIT No. 510

[fol. 3013]

Estimated Annual Sales to Ultimate Consumers

1937 and 1943

If Served by Existing Utility Systems Under Their Present Sales Policies

Within 100-Mile, 150-Mile and 250-Mile Radii from Any TVA Generating Plant Included in the Unified Plan Excluding TVA Government Operations, Present TVA Special Customers, Wholesale Contractors Now Served and Direct Service Areas

Millions of Kilowatt-Hours

	Within 100-Mile Radius				Within 150-Mile Radius				Within 250-Mile Radius			
	Direct Sales	Indirect Sales *	Total Sales	Per Cent	Direct Sales	Indirect Sales *	Total Sales	Per Cent	Direct Sales	Indirect Sales *	Total Sales	Per Cent
Year 1937:												
Complainant Companies...	2,456	20	2,476	60.4%	2,916	29	2,945	37.1%	4,876	50	4,926	33.7%
Non-Complainants.....	.....	..	1,620	39.6%	.....	..	4,998	62.9%	.....	..	9,699	66.3%
Total.....			4,096	100.0%			7,943	100.0%			14,625	100.0%
Year 1943:												
Complainant Companies...	3,496	30	3,526	61.6%	4,138	45	4,183	38.0%	6,687	77	6,764	33.9%
Non-Complainants.....	.....	..	2,201	38.4%	.....	..	6,806	62.0%	.....	..	13,173	66.1%
Total.....			5,727	100.0%			10,989	100.0%			19,937	100.0%
Arithmetical Average—1937 and 1943:												
Complainant Companies...	2,976	25	3,001	61.1%	3,527	37	3,564	37.6%	5,782	63	5,845	33.8%
Non-Complainants.....	.....	..	1,910	38.9%	.....	..	5,902	62.4%	.....	..	11,436	66.2%
Total.....			4,911	100.0%			9,466	100.0%			17,281	100.0%

* Indirect sales are sales to ultimate consumers by minor utility systems which purchase their power requirements from complainant companies.

Complainants' Exhibit No. 511

[fol. 3014]

Estimate of Complainant Companies' Load Displaced by TVA

Final Annual Sales by Complainant Companies to Ultimate Consumers

Subsequently Taken Over by TVA and Its Wholesale Contractors

Excluding TVA Government Operations, Present TVA Special Customers, Wholesale Contractors Now Served by TVA and Present TVA Direct Service Areas

Line Number		If TVA Influence Were Uniformly Distributed Within 100-Mile Radius	If TVA Influence Were Uniformly Distributed Within 150-Mile Radius	If TVA Influence Were Uniformly Distributed Within 250-Mile Radius
	Estimated total annual sales, by all agencies in the territory included within the radii indicated, to all ultimate consumers, if TVA rates and TVA sales policies were applied throughout the territory, excluding only TVA Government Operations, Present TVA Special Customers, Wholesale Contractors now served by TVA and Present TVA Direct Service Areas:			
	Year 1943—Millions of Kilowatt-hours:			
(1)	In Areas Served from any source December 31, 1937	5,981	11,913	21,987
(2)	In Areas Unserved from any source December 31, 1937	284	402	890
(3)	Total	6,265	12,315	22,877
	TVA Power available under the Unified Plan for sale to ultimate consumers over and above requirements of TVA Government Operations, Present TVA Special Customers, Wholesale Contractors Now Served by TVA, and Present TVA Direct Service Areas:			
(4)	Year 1943—Millions of Kilowatt-hours	3,272	3,272	3,272

Line Number		52.3%			26.6%			14.3%		
		Direct Sales	Indirect Sales *	Total Sales	Direct Sales	Indirect Sales *	Total Sales	Direct Sales	Indirect Sales *	Total Sales
(5)	Proportion of Market which TVA can serve directly or indirectly with the power available for sale to ultimate consumers (Line (4) above divided by Line (3) above)									
	Prospective annual sales (1937–1943 average) to ultimate consumers within the radii indicated by complainant companies if uninfluenced by TVA:									
(6)	Millions of Kilowatt-hours	2,976	25	3,001	3,527	37	3,564	5,782	63	5,845
	Estimated final annual sales by complaint companies to ultimate consumers subsequently taken over by TVA and its wholesale contractors (Line (6) above multiplied by percentage shown in Line (5) above):									
(7)	Millions of Kilowatt-hours	1,558	13	1,571	937	10	947	827	9	836

* Indirect Sales are sales to ultimate consumers by minor utility systems which purchase their power requirements from complainant companies.

Complainants' Exhibit No. 512 (Excluded)

[fol. 3015] **Estimated Damage per Million Kilowatt-Hours Displaced**

Minimum Loss from Idleness of Complainant Company Facilities

Per Million Kilowatt-Hours of Sales to Ultimate Consumers Subsequently Taken Over by TVA and Its Wholesale Contractors

	Years Idle	Possible Salvage Per Cent	Loss Per Million Kw-Hrs.
Facilities Temporarily Idle:			
Steam Generating Plants	2		$4,200
Step-Up Substations	2		420
Primary Transmission	1		870
Total			$5,490
Facilities Permanently Idle:			
Primary Step-Down		58.5%	$2,140
Secondary Transmission		18.7%	4,770
Secondary Step-Down		58.5%	1,920
Distribution System		34.0%	15,270
Total			$24,100
Grand Total			$29,590
Total Excluding Loss on Distribution System Investment (Applicable to Indirect Sales)			$14,320

Steam generating plants estimated at $85 per kilowatt installed, 5% reserve capacity, 60% load factor.

Other investment costs, operating expenses and taxes based upon Alabama-Birmingham experience.

Interest taken at 6%. Depreciation on sinking fund basis with interest at 6% compounded annually.

(Here follows paster, side folio 3016)

COMPLAINANTS' EXHIBIT No. 513 (Excluded)

[fol. 3016]

Total Damage By Displacement

Minimum Damage to Complainant Companies

Resulting from Idleness of Facilities Displaced by TVA and Its Wholesale Contractors

Excluding TVA Government Operations, Present TVA Special Customers, Wholesale Contractors Now Served and Present Direct Service Areas

	If TVA Influence Were Uniformly Distributed Within 100-Mile Radius			If TVA Influence Were Uniformly Distributed Within 150-Mile Radius			If TVA Influence Were Uniformly Distributed Within 250-Mile Radius		
	Direct Sales	Indirect Sales*	Total Sales	Direct Sales	Indirect Sales*	Total Sales	Direct Sales	Indirect Sales*	Total Sales
Estimated final annual sales by complainant companies to ultimate consumers subsequently taken over by TVA and its wholesale contractors—Millions of Kwhrs.	1,558	13	1,571	937	10	947	827	9	836
Minimum damage resulting from subsequent idleness of facilities required for such final sales:									
Per million kilowatt-hours of such sales	$29,590	$14,320	.....	$29,590	$14,320	.....	$29,590	$14,320	.....
Total Damage	$46,090,000	$190,000	$46,280,000	$27,730,000	$140,000	$27,870,000	$24,460,000	$130,000	$24,590,000

Minimum Probable Damage

Damage to Complainant Companies if TVA Influence were Uniformly Distributed Within 100-Mile Radius	$46,280,000
Damage to Complainant Companies if TVA Influence were Uniformly Distributed Within 150-Mile Radius	27,870,000
Damage to Complainant Companies if TVA Influence were Uniformly Distributed Within 250-Mile Radius	24,590,000
Minimum Probable Damage—Arithmetical Average	$32,913,333
Round Figure	$33,000,000

* Indirect sales are sales to ultimate consumers by minor utility systems which purchase their power requirements from complainant companies.

Complainants' Exhibit No. 514 (Excluded)

[fol. 3017] **Estimated Damage to Complainant Companies**

Which Would Result if Forced by Competition to Reduce Rates to TVA Levels

Year 1943

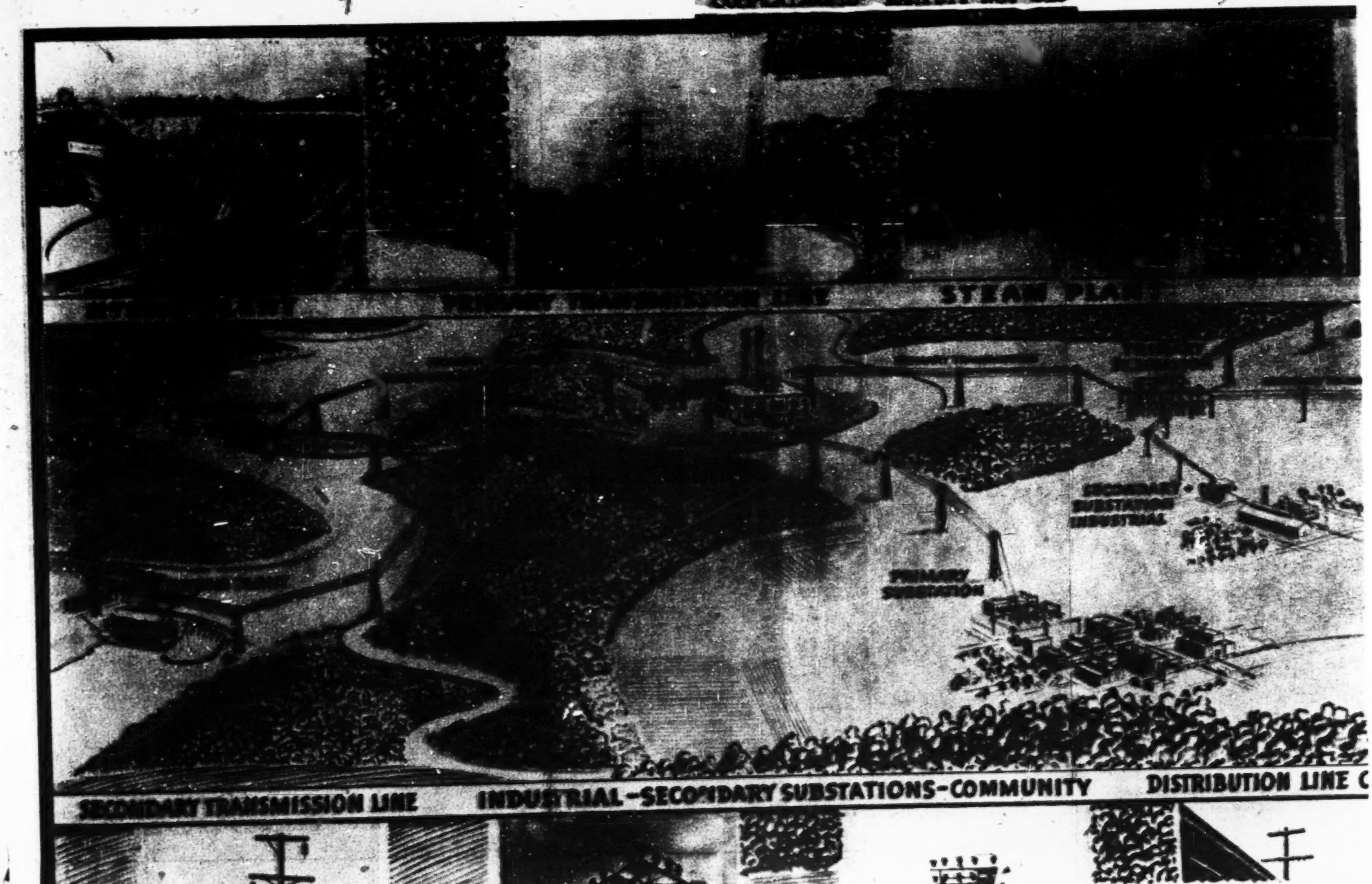
	Annual Damage	Capital Damage*
Carolina Power & Light Co.	$2,927,000	$48,783,000
Birmingham Electric Co.	1,059,000	17,650,000
Memphis Power & Light Co.	1,623,000	27,050,000
West Tennessee Power & Light Co.	240,000	4,000,000
Tennessee Public Service Co.	1,137,000	18,950,000
Holston River Electric Co.	15,000	250,000
Mississippi Power & Light Co.	2,263,000	37,717,000
The Tennessee Electric Power Co.	3,970,000	66,167,000
Mississippi Power Co.	1,333,000	22,217,000
Alabama Power Co.	3,784,000	63,066,000
Kingsport Utilities, Inc.	178,000	2,967,000
Appalachian Electric Power Co.	5,077,000	84,616,000
Kentucky & West Virginia Power Co., Inc.	924,000	15,400,000
Kentucky-Tennessee Light & Power Co.	773,000	12,883,000
East Tennessee Light & Power Co.	300,000	5,000,000
Tennessee Eastern Electric Co.	328,000	5,467,000
Franklin Power & Light Co.	37,000	617,000
Total	$25,968,000	$438,800,000

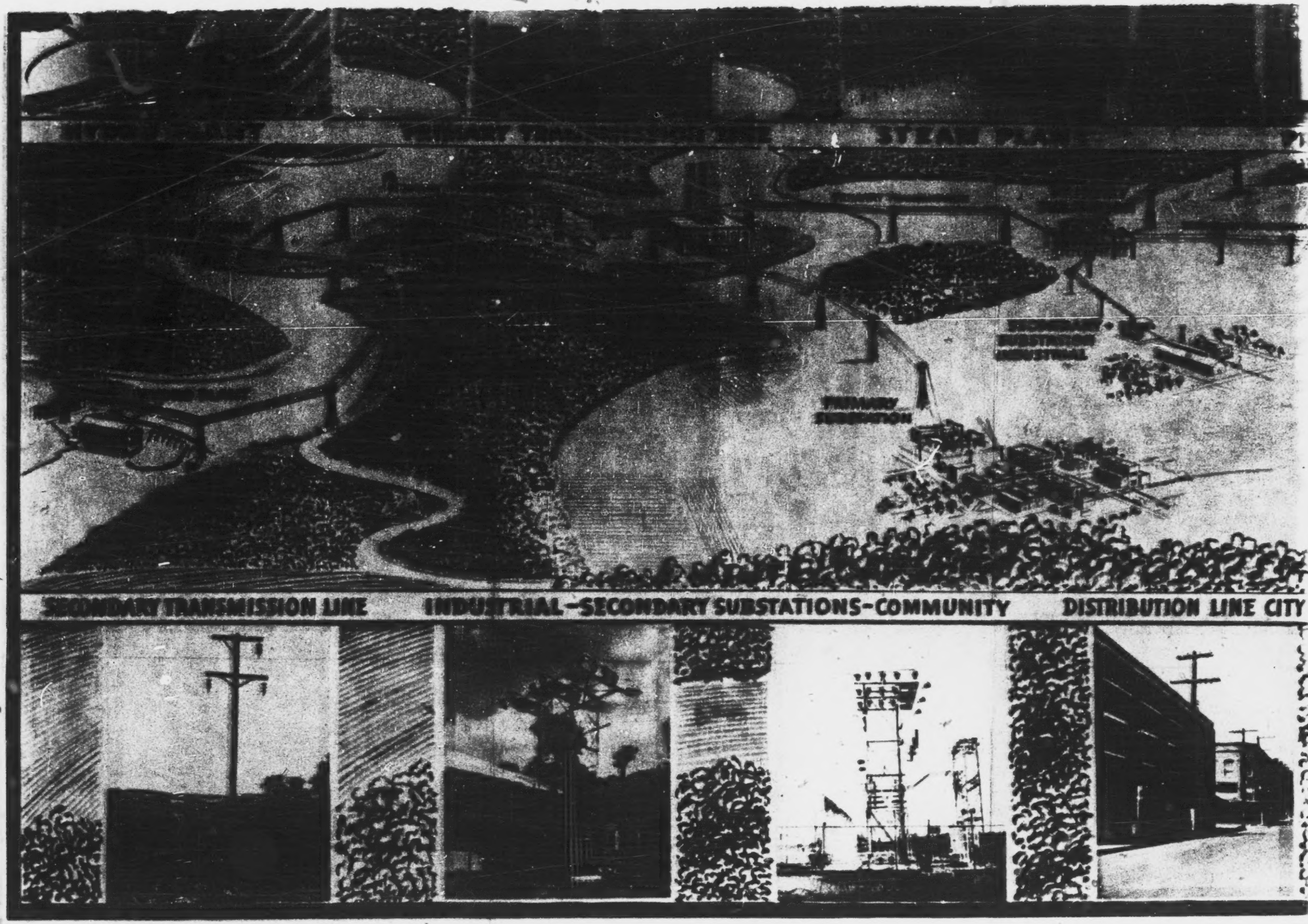
* Utility company securities owned by investors, upon which an income equal to the Annual Damage would have paid an average return of 6% per annum.

(Here follows 1 photolithograph, side folio 3018)

1

COMPLAINANTS' EXHIBIT NO. 515

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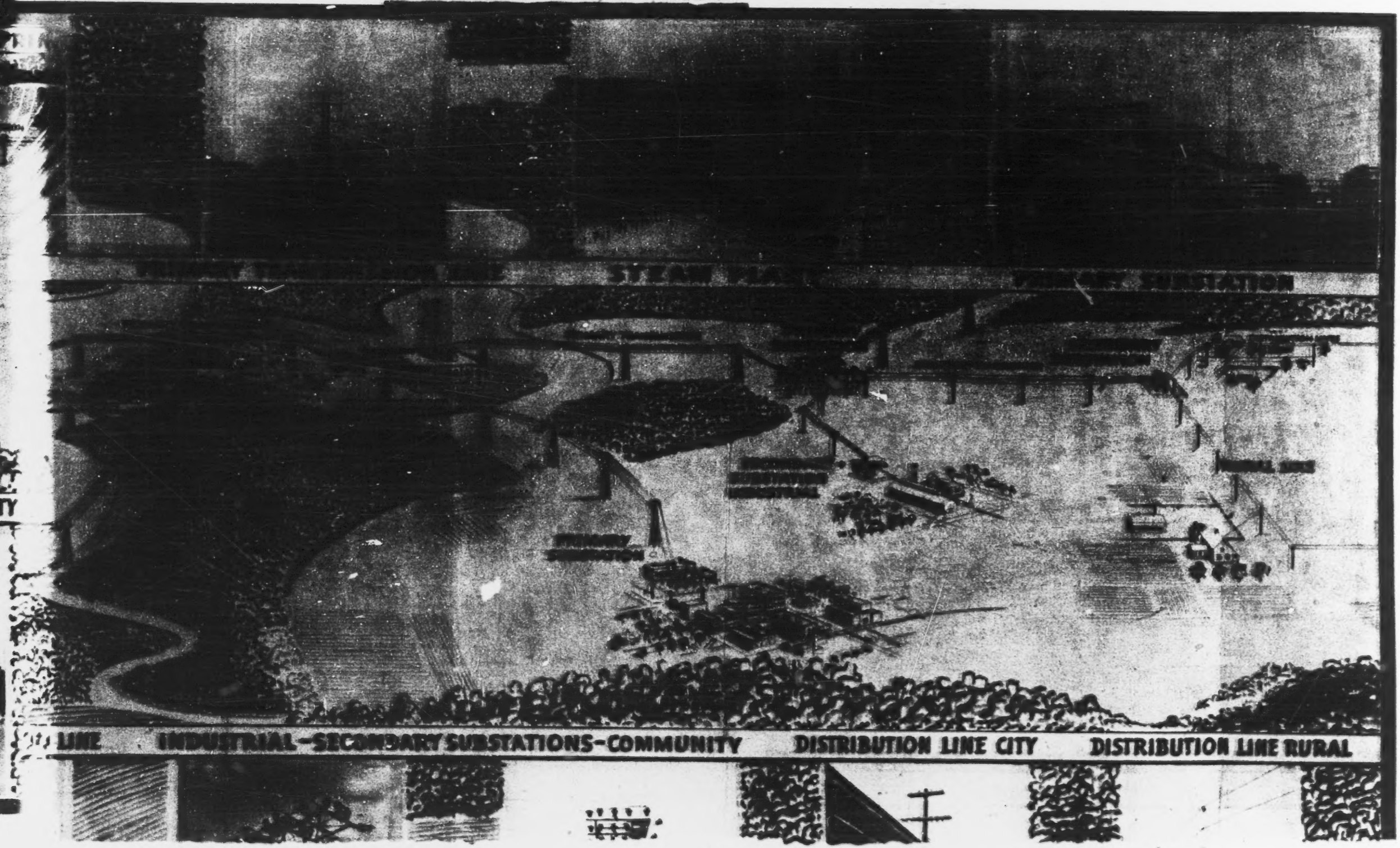
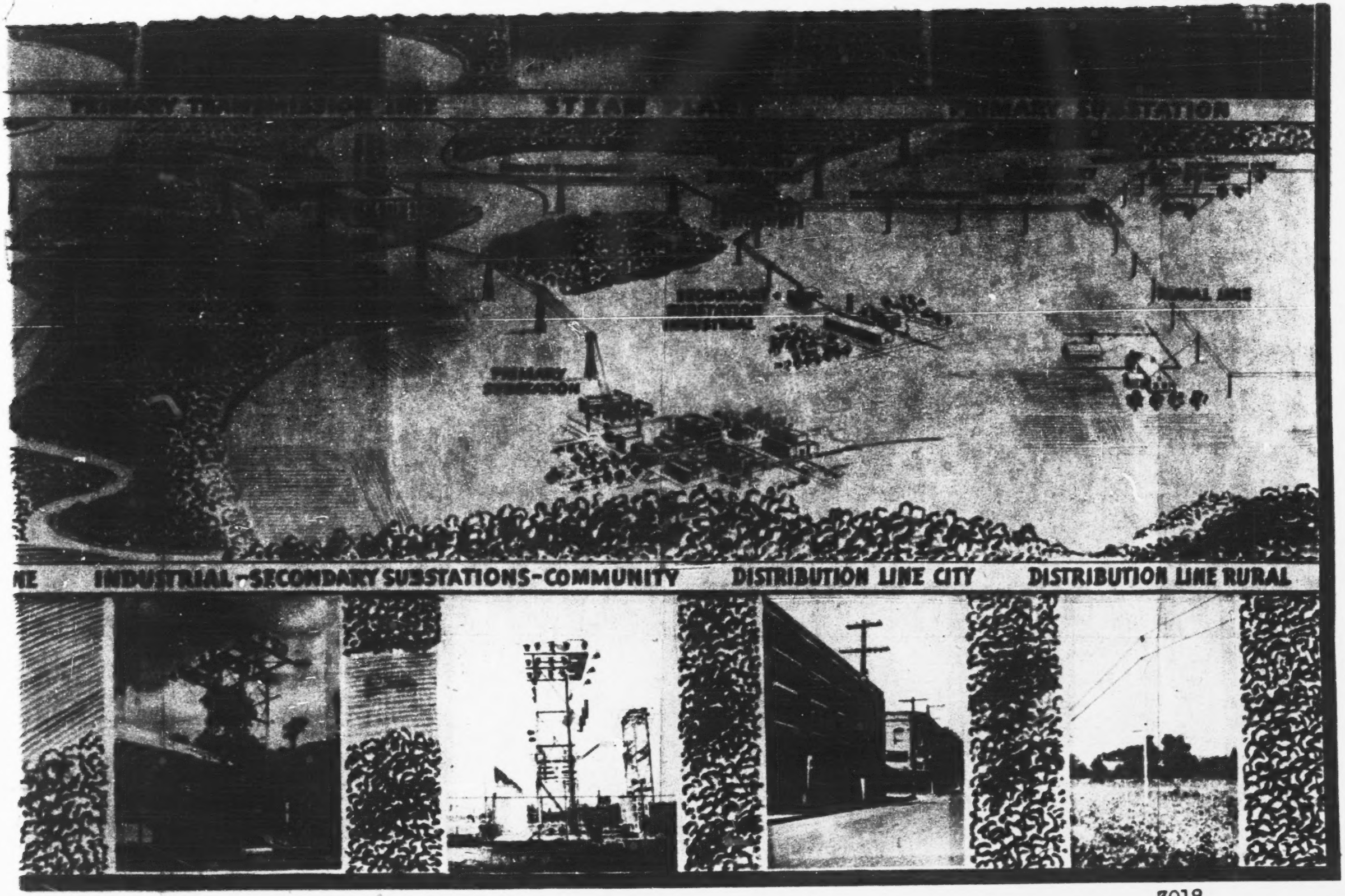
INDUSTRIAL-SECONDARY SUBSTATIONS-COMMUNITY
DISTRIBUTION LINE CITY


LINE
INDUSTRIAL-SECONDARY SUBSTATIONS-COMMUNITY
DISTRIBUTION LINE CITY
DISTRIBUTION LINE RURAL


INDUSTRIAL -SECONDARY SUBSTATIONS-COMMUNITY
DISTRIBUTION LINE CITY
DISTRIBUTION LINE RURAL

[fol. 3019] COMPLAINANTS' EXHIBIT No. 516

TVA corporate resolution dated July 23, 1935, approving allotment release in the amount of $12,127 for construction of "Nettleton-Shiloh Rural Transmission Line, Lee County, Mississippi".

(Omitted)

COMPLAINANTS' EXHIBIT No. 517

TVA corporate resolution dated July 23, 1935, approving allotment release in the amount of $11,495 for construction of "Blue Springs-Fairfield-Elliston Rural Transmission Line, Union County, Mississippi".

(Omitted)

COMPLAINANTS' EXHIBIT No. 518

TVA corporate resolution dated August 29, 1935, approving allotment release in the amount of $1,891 for the construction of Rural Transmission Line in Prentiss County, Mississippi. The allotment release, attached to and referred to in the approving resolution, states:

"Work done under this release will be billed to the Prentiss County Electric Power Association as an increase in the long term indebtedness."

[fol. 3020] COMPLAINANTS' EXHIBIT No. 519

TVA corporate resolution dated October 10, 1935, approving allotment release in the amount of $102,770 for the construction of "Tupelo-New Albany 44 kv. Transmission Line." The allotment release, attached to and referred to in the approving resolution, states:

"This line is necessary to supplement the existing 11 kv. lines because of load growth at New Albany and in the adjacent areas of Union and Pontotoc Counties. Location and arrangement are such that when required, this line can be extended into Oxford or other points west."

COMPLAINANTS' EXHIBIT No. 520

TVA corporate resolution dated November 18, 1935, approving allotment release in the amount of $3,433 for transformer installation at Corinth Steam Plant. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the installation of a 600 kva. 6900 to 2300 volt transformer bank at the Corinth Steam Plant, in order to supply the increased load of the Alcorn County Electric Power Association. This load is being taken care of at the present time by daily operation of the Corinth Steam Plant. Installation of the transformers will eliminate the necessity for the steam plant operation, and will increase the reliability of the Alcorn County service."

COMPLAINANTS' EXHIBIT No. 521

TVA corporate resolution dated January 11, 1936, approving an allotment release in the amount of $189,587 for the construction of Pulaski-Columbia-Dickson Transmission Line and Substation.

(Omitted)

[fol. 3021] COMPLAINANTS' EXHIBIT No. 522

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $597,420 for construction of Wheeler Dam-Columbia Transmission Line and Columbia Substation.

(Omitted)

COMPLAINANTS' EXHIBIT No. 523

TVA corporate resolution dated January 11, 1936, approving allotment release for construction of rural lines for the City of Dayton, in Rhea County, Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

COMPLAINANTS' EXHIBIT No. 523

"This memorandum release covers the construction of approximately 43 miles of rural lines in Rhea County, Tennessee, on behalf of the City of Dayton, to serve 160 customers. This work is being done under the terms of a contract between the City of Dayton and the REA and a contract between TVA and the City of Dayton, under the terms of which this work is to be financed by REA and the TVA is to be reimbursed for the expenditures."

COMPLAINANTS' EXHIBIT No. 524

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $7,946 for the construction of Bodenham Extension from Pulaski, Giles County, Tennessee.

(Omitted)

[fol. 3022] COMPLAINANTS' EXHIBIT No. 525

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $13,656 for the construction of a substation west of Ardmore, Lincoln County, Tennessee.

(Omitted)

COMPLAINANTS' EXHIBIT No. 526

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $30,950 for construction of Mantachie-Kirkville-Marietta Rural Line, Itawamba County, Mississippi.

(Omitted)

COMPLAINANTS' EXHIBIT No. 527

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $16,305 for construction of Birmingham Ridge, Saltillo, Hub Rural Electric Line, Lee County, Mississippi.

(Omitted)

[fol. 3023] COMPLAINANTS' EXHIBIT No. 528

TVA corporate resolution dated January 11, 1936, approving allotment release in the amount of $145,706 for construction of Rural Electric Lines in South Half of Lincoln County, Tennessee.

(Omitted)

COMPLAINANTS' EXHIBIT No. 529

TVA corporate resolution dated January 18, 1936, approving allotment release for Gravel Pit Line Extension to Bigbee, Monroe County, Mississippi. The allotment release, attached to and referred to in the approving resolution, states:

"This line, when complete, will serve 14 residential, 2 commercial, and 1 industrial customers, including the Amory Sand & Gravel Company, and will produce an annual revenue of $1,500 to the City of Amory after the first year.

This line is being constructed on behalf of the City of Amory under the terms of contracts between Amory, the REA, and TVA. The work is to be financed by REA, who are to reimburse the TVA for all expenditures. The cost of this line is estimated at $5,293."

COMPLAINANTS' EXHIBIT No. 530

TVA corporate resolution dated January 18, 1936, approving allotment release in the amount of $128,000 for Rural Electric Line Construction in Hardin and McNairy Counties, Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

"This release provides for the construction of 75.7 miles of primary 12 kv. line, including 15.1 miles of three phase, 60.6 miles of single phase, and the acquisition from the [fol. 3024] Alcorn County Electric Power Association of 27 miles of existing three phase line in Hardin and McNairy Counties, Tennessee.

The proposed project will be operated by a new cooperative membership association in Hardin and McNairy

COMPLAINANTS' EXHIBIT No. 530

Counties, and will include all of the lines in this area now owned by the Alcorn County Association.

The attached summary sheets, which were taken from a detailed report entitled 'Recommendations for Rural Electrification in Hardin and McNairy Counties, West Tennessee, Project No. 1,' dated December 10, 1935, show that the first year revenue, when applied to the operating expenses and fixed charges, leaves a deficit of $75.00 before depreciation, and that the second year annual revenue will be ample to cover all costs except depreciation. Amortization collections based upon first year figures will amortize the project in about twenty-one years, and this period will be reduced on the basis of increased collections in future years."

COMPLAINANTS' EXHIBIT No. 531

TVA corporate resolution dated January 18, 1936, approving allotment release in the amount of $111,133 for the construction of Bedford County, Tennessee, Rural Electrification Project. The allotment release, attached to and referred to in the approving resolution, states:

"This allotment release provides for the construction of approximately 117 miles of single phase, 6900 volt, standard type rural power lines, in Bedford County, Tennessee.

Detailed estimate attached includes cost of complete secondaries, transformers, services and meters to serve 585 prospective rural customers.

The attached report on the financial feasibility of this project indicates that the first year revenue will cover the operating expenses and fixed charges except depreciation, and that the amortization collections should amortize the property in about 22 years."

[fol. 3025] COMPLAINANTS' EXHIBIT No. 532

TVA corporate resolution dated March 17, 1936, approving allotment release in the amount of $114,000 for

COMPLAINANTS' EXHIBIT No. 532.

extension of transmission system to Milan, Bolivar and Somerville, Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the extension of the TVA transmission system to the municipalities of Milan, Bolivar, and Somerville, Tennessee, including the construction of a 44 kv. line from Jackson to Bolivar, which is to be operated temporarily at 12 kv., and 12 kv. lines from Jackson to the Gibson County system, and from Bolivar to Somerville, together with the necessary substations. These three municipalities have already signed contracts for electric service.

Milan will be served by the Gibson County line over the proposed Gibson County rural system. Arrangements will be made for reimbursing the Gibson County Association for our use of their system for transmission purposes. It is expected that the portion of this line which lies in Madison County will eventually be sold to the Madison County Association as soon as this Association may acquire a rural system.

The line from Jackson to Bolivar is to be built for ultimate operation at 44 kv. in anticipation of future load growth and possible extension of this line to other West Tennessee points. Under present conditions, however, this line will operate satisfactorily at 12 kv., making it possible to postpone the construction of 44 kv. substation facilities."

COMPLAINANTS' EXHIBIT No. 533

TVA corporate resolution dated March 17, 1936, approving allotment release in the amount of $110,795 for construction of Rural Electrification Project in Gibson County, Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

"Estimated retail revenues to the Gibson County Association are as follows:

1st year	$14,716
2nd year	22,226
3rd year	28,280

COMPLAINANTS' EXHIBIT No. 533

[fol. 3026] Estimated income and expense statements for the first, second and third years are attached. These statements show that after the first year the annual revenues will pay all operating expenses and fixed charges except depreciation, and that the third year revenue will provide a net income approximately equal to the depreciation.

It is expected that the development of other uses for electricity in the county, such as electric hot beds, will provide additional load which was not included in the revenue estimate."

COMPLAINANTS' EXHIBIT No. 534

TVA corporate resolution dated April 14, 1936, approving allotment release in the amount of $5,400 for the construction of Pratt Single-Phase Rural Line Extension for Prentiss County Association—Prentiss & Lee Counties, Mississippi. The allotment release, attached to and referred to in the approving resolution, states:

"This line is to be built for and on behalf of the Prentiss County Electric Power Association in accordance with the request of its executive committee as of March 24, 1936. The total cost of the work, including overheads of 5%, for engineering, 6½% for administration, and 1% for tool depreciation, will be charged to the Association as an increase in its long term indebtedness.

Twenty-five residential and three commercial customers will be served initially, producing a revenue to the Association of $1,032 the first year and $1,236 the third year, giving ratios of investment to revenue of 5.2 and 4.4 to 1, respectively.

The first year amortization collections will be $218 and, with normal load growth, these collections should be sufficient to amortize the indebtedness in about twenty years. It is estimated that the first year revenue of $1,032, which includes the amortization collections, will be sufficient to pay all operating costs and fixed charges except depreciation. Revenue after the first year is expected to pay all charges."

[fol. 3027] COMPLAINANTS' EXHIBIT No. 535

TVA corporate resolution dated April 14, 1936, approving allotment release in the amount of $87,400 for the construction of Rural Lines in Catoosa County, Georgia, for the North Georgia Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the construction of 92 miles of single-phase 7/12 kv. rural line from the Tennessee-Georgia state line along various county roads and state highways and in Catoosa County for the North Georgia Electric Membership Corporation.

This system will serve initially a total of 509 rural customers in Catoosa County, including 14 commercial and 495 residential. The estimated retail revenues, including amortization charges, are as follows:

1st year	$14,490
2nd year	19,551
3rd year	26,595

The estimated Income and Expense Statement for the first three years indicates that the third year revenue will provide a net income before depreciation of $1,995.00 in addition to the amortization collections which will be sufficient to amortize the investment in 14 years. Revenues after the third year will be sufficient to cover all operating costs and fixed charges."

COMPLAINANTS' EXHIBIT No. 536

TVA corporate resolution dated June 19, 1936, approving allotment release in the amount of $6,000 for construction of Transformer Station at Ooltewah, Tennessee. The allotment release, attached to and referred to in the approving resolutions, states:

"This release covers the installation of a transformer station at Ooltewah, Tennessee, at the proposed interchange point with the Tennessee Electric Power Company, for the purpose of supplying the proposed rural system in North Georgia and the connecting rural lines which are to be financed by REA.

COMPLAINANTS' EXHIBIT No. 536

The construction of the 66 miles of rural line in Catoosa County, Georgia, to be served by this transformer station is practically complete and TVA has been authorized to [fol. 3028] proceed with the survey of approximately 300 miles of additional rural lines in North Georgia, to be financed by REA and served from this same point.

The interconnecting line between Ooltewah and the North Georgia system will be a part of a rural system in Hamilton County, Tennessee, which is also to be financed by REA."

COMPLAINANTS' EXHIBIT No. 537

TVA corporate resolution dated June 29, 1936, approving allotment release for Rural Line Construction for North Georgia Electric Membership Corporation. The Allotment release, attached to and referred to in the approving resolution, states:

"This release covers the construction of 357 miles of 11 kv. rural lines in Hamilton County, Tennessee, and Catoosa, Whitfield, Gordon, Walker, Floyd, Murray and Chattooga Counties in Georgia.

This release is supplementary to previous release entitled 'Engineering for Rural Lines in North Georgia for the North Georgia Electric Membership Corporation', which was issued in the amount of $6,000 for the fiscal year 1936, with a total estimated cost for engineering of $12,050. The estimated total cost of $348,550, as shown in the present supplementary release, includes the amount covered by the previous release.

This construction work will be performed by TVA and financed by REA. The $6,000 covered by the previous release will cover all engineering and construction work to be performed during the present fiscal year.

A contract between TVA and the North Georgia Electric Membership Corporation, covering this construction work, has been executed by the North Georgia Corporation and submitted to TVA for final approval. The REA loan to the North Georgia Corporation has been approved."

COMPLAINANTS' EXHIBIT No. 538

TVA corporate resolution dated July 1, 1936, approving allotment release in the amount of $98,705 for the construction of Cullman County, Alabama—Rural Electrifica-
[fol. 3029] tion Project. The allotment release, attached to and referred to in the approving resolution, states:

"This release provides for the construction of a rural electric system in Cullman County, Alabama, consisting of 98 miles of rural line including 28 miles of 3-phase and 70 miles of single-phase 7/12 kv. lines, including transformers, secondaries, meters and services for serving 478 customers. The first year retail revenue will be approximately $11,141 in addition to amortization collections at $2,938, or a total of $14,079. Ratios of investment to total income, including amortization payments, are as follows:

First year	6.7 to 1
Second Year	6.2 to 1
Third Year	5.4 to 1

This system will be constructed for, and operated by, the Cullman County Electric Membership Corporation, who will repay the Authority for the construction costs out of amortization collections and surplus revenues. Wholesale power revenue to the Authority for the first year will be approximately $3,110.

The REA has been requested to finance a part of the project consisting of approximately 26.6 miles of line, at a cost of approximately $25,270 of the above total. If an REA loan for this purpose is granted a credit release in this amount will be prepared, leaving a balance of $70,230 to be financed by TVA."

COMPLAINANTS' EXHIBIT No. 539

TVA corporate resolution dated July 6, 1936, approving allotment release in the amount of $305,250 for the construction of the Pickwick-Memphis Transmission Line. The allotment release, attached to and referred to in the approving resolution, states:

"The total cost of this line, in addition to the amount covered by the previous release, is estimated at $1,187,725.

COMPLAINANTS' EXHIBIT No. 539

No expenditures will be made during the present budget period, but commitments for the foundation and tower steel, in the total amount of $306,280, will be made prior to June 30, 1936.

This line is to be constructed for ultimate operation at 220 kv. with initial operation at 154 kv. It is to be of single circuit steel tower construction with ground wire and three 636,000 cm. aluminum conductors, steel reinforced. The estimated total length is 110 miles."

[fol. 3030] COMPLAINANTS' EXHIBIT No. 540

TVA corporate resolution dated July 14, 1936, approving allotment release for Rural Line Construction for Meigs County Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers construction of 114 miles of rural line in Meigs, Rhea, Cumberland, and McMinn Counties, Tennessee, for the Meigs County Electric Membership Corporation. This construction is to be financed by REA from a loan of $120,000. A construction contract with the Meigs County Electric Membership Corporation, covering construction of these lines by the TVA, has been executed. The estimated construction costs are as follows:

34.5 miles of 3-phase, 12 kv. lines	$40,986
79.5 " " single-phase "	70,643
Total—114 miles	$111,629"

COMPLAINANTS' EXHIBIT No. 541

TVA corporate resolution dated August 21, 1936, approving allotment release in the amount of $234,685 for the construction of the South Side of Memphis Substation. The Allotment release, attached to and referred to in the approving resolution, states:

"This substation is necessary in order to provide service to the City of Memphis in the Spring of 1937 over the proposed Pickwick-Memphis transmission line."

[fol. 3031] COMPLAINANTS' EXHIBIT No. 542

TVA corporate resolution dated September 5, 1936, approving allotment release in the amount of $19,286 for the construction of Additional Rural Lines in Lincoln County, Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

"This work is to be performed by the TVA for the Lincoln County Electric Membership Corporation as an increase in their long term indebtedness. The cost will be repaid over a period of years out of amortization collections and surplus revenues."

COMPLAINANTS' EXHIBIT No. 543

TVA corporate resolution dated September 21, 1936, approving allotment release for the Rural Electrification Project—Rutherford and Wilson Counties, Tennessee-Transmission Line Construction for the Middle Tennessee Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This memorandum release covers the construction of approximately 261 miles of rural transmission line, complete with secondaries, transformers and services, in Rutherford and Wilson Counties, Tennessee, on behalf of the Middle Tennessee Electric Membership Corporation.

This work is to be financed by REA, who have granted a loan to the above corporation for this project. Repayment will be made by the corporation to TVA from this loan during the current fiscal year.

The estimated total cost of the work is $254,180, with retail revenues to the Middle Tennessee Corporation of approximately $38,000 the first year, which gives a ratio of 6.7 to 1. An estimated total of 1250 customers will be served, of whom 918 have already signed for service. The first year revenue to TVA from this project is estimated at approximately $12,000.

The project will be served from an 11 kv., 3-phase line which is to be run from the Columbia Substation into Bedford County, connecting with the proposed system near Midland, in Rutherford County."

[fol. 3032] COMPLAINANTS' EXHIBIT No. 544

TVA corporate resolution dated September 23, 1936, approving allotment release for Rural Line Construction for the City of Athens in Limestone County, Alabama. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the construction of approximately 65.5 miles of rural lines in Limestone County, Alabama; the addition of a neutral conductor to approximately 2.6 miles of existing 11 kv. lines, and rebuilding approximately 3.4 miles of the present Athens city distribution system, to provide for the installation of a single phase, 6900 volt circuit.

This work is to be financed by the REA and to be constructed by TVA. An REA allotment has been requested.

The estimated income and expense statement for this project shows that the retail operating revenues and amortization collections will be sufficient to pay all operating expenses and fixed charges. The ratio of investment to first year revenue is approximately 6.6 to 1.

Summary of Estimated Cost

New Construction, 65.5 miles	$60,679
Addition of Neutral Conductor, 2.6 miles	430
Rehabilitation of Existing System, 3.4 miles	4,299
Total	$65,408"

COMPLAINANTS' EXHIBIT No. 545

TVA corporate resolution dated September 25, 1936, approving allotment release in the amount of $89,864 for Jackson-Trenton 44 kv. Line and Substations—Engineering, Survey, and Right-of-way. The allotment release, attached to and referred to in the approving resolution, states:

"This work is necessary in order to provide adequate facilities for serving industrial loads at Trenton and to make it possible to serve the proposed West Tennessee rural projects in Dyer, Obion, and Weakley Counties. The

COMPLAINANTS' EXHIBIT No. 545

existing 12 kv. facilities between Jackson, Milan and Trenton are inadequate to serve the contemplated loads at Trenton, and the distances involved are such that it is impracticable to serve the new county projects from the existing system.

[fol. 3033]

A rural electrification project has been approved by REA, covering the rural line construction in the area above mentioned. It will be necessary to complete the work covered by the present release before service can be supplied to the proposed project.

The estimated total cost of this work is as follows:

Jackson-Trenton 44 kv. Line	$78,170
Trenton Transmission Substation	34,259
Jackson Transmission Substation Additions	83,304
Total	$195,733

Of the above amount, the following expenditures are covered by the present release:

Surveying	$3,050
Engineering and Drafting	2,780
Overheads, 12½%	730
Additions to Jackson Substation	83,304
Total	$89,864"

COMPLAINANTS' EXHIBIT No. 546

TVA corporate resolution dated October 6, 1936, approving allotment release in the credit amount of $23,258 for Rural Line Construction—Cullman County, Alabama. The allotment release, attached to and referred to in the approving resolution, states:

"This supplementary release covers a credit in connection with previous release 42521, due to agreement of REA to finance some of the rural line construction in Cullman County which was covered by the previous relea

COMPLAINANTS' EXHIBIT No. 546

The complete rural system in Cullman County as now planned and under construction consists of the following:

	Financed by TVA	Financed by REA
Single-Phase Lines—Miles	55.4	101.0
Three-Phase Lines—Miles	16	0
Totals	71.4	101.0

[fol. 3034] The total cost of the work will be $175,549, of which $72,242 will be financed by TVA and $103,307 by REA.

To date REA has granted allotments of $27,000 and $36,000 respectively for this work, and have under consideration a third allotment in the amount of approximately $43,000, approval of which is anticipated.

Amount of previous release #42521	$95,500
Revised estimate of TVA expenditures	72,242
Net reduction in expenditures by TVA	23,258''

COMPLAINANTS' EXHIBIT No. 547

TVA corporate resolution dated October 22, 1936, approving allotment release in the amount of $7,375 for Mimosa Rural Line Extension in Lincoln County, Tennessee.

(Omitted)

COMPLAINANTS' EXHIBIT No. 548

TVA corporate resolution dated October 26, 1936, approving allotment release in the amount of $2,651 for rebuilding Rural Line for City of New Albany, Mississippi. The allotment release, attached to and referred to in the approving resolution, states:

"This work is necessary in order to meet the requirements of the Mississippi State Highway Department

COMPLAINANTS' EXHIBIT No. 548

program of road building on Highway #78. The cost of the work is to be borne by the City of New Albany and, since they are not in a position to do the work and do not have sufficient funds to finance it, they have requested that we perform and finance the work as an addition to the long-term indebtedness of the City to the Authority, or will be paid by the city out of current surpluses."

[fol. 3035] COMPLAINANTS' EXHIBIT No. 549

TVA corporate resolution dated December 7, 1936, approving allotment release for Rural Line Construction for Gibson County Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This supplementary release covers the construction of 131 miles of rural distribution line in Dyer and Obion Counties on behalf of the Gibson County Electric Membership Corporation, at a cost of $143,323, to be financed by REA.

The existing Gibson County system consists of approximately 104 miles of distribution line. The addition of the proposed lines covered by this release will result in a total of 235 miles of line, serving 1,017 customers, at a total investment of $254,118."

COMPLAINANTS' EXHIBIT No. 550

TVA corporate resolution dated December 7, 1936, approving allotment release for Rural Line Construction for the Southwest Tennessee Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the construction of a rural electric distribution system in Madison, Haywood and Tipton Counties, on behalf of the Southwest Tennessee Electric Membership Corporation. The work covered by this release consists of approximately 295 miles of rural lines, together

COMPLAINANTS' EXHIBIT No. 550

with the necessary transformers, meters, services and secondaries to serve 1,085 customers. The estimated total cost of this work is $289,352, to be financed by REA. Expenditures will be incurred by the TVA and repaid during the present fiscal year by the Southwest Tennessee Corporation out of the REA allotment of $290,000, which has already been approved.

The present TVA investment in Madison County for rural lines which will be transferred to the Southwest Tennessee Corporation is $15,250. This will make a total investment by the Corporation of $304,602, with a first year revenue of $41,040. * * *"

[fol. 3036] COMPLAINANTS' EXHIBIT No. 551.

TVA corporate resolution dated February 5, 1937, approving allotment release for Rural Line Construction for the Duck River Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the construction by the TVA of approximately 218.6 miles of 7/12 KV rural lines in Marshall, Moore, and Franklin Counties for the Duck River Electric Membership Corporation. This work will be financed by REA, and it is anticipated that repayments will be made by the Duck River Corporation out of REA payments during the current fiscal year.

A total of 810 customers have signed applications for service and there are approximately 500 additional potential customers in the area. The Duck River Corporation will obtain a revenue estimated at $28,463, including amortization collections during the first year from the sale of approximately 992,000 KWH. Power purchases by the Corporation from the TVA during the first year are expected to total 1,167,000 KWH, in the amount of $8,057. The ratio of investment to first year revenue is approximately 7.5 to 1.

This project has been approved by REA and is designated as Tennessee 21 Franklin."

COMPLAINANTS' EXHIBIT No. 552.

TVA corporate resolution dated February 16, 1937, approving allotment release in the amount of $16,127 for Rural Line Construction and Capital Repayments for Tombigbee Electric Power Association. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers transactions during the fiscal year 1937 on account of rural line construction for, and capital repayments by, the Tombigbee Electric Power Association.

1. A net balance of $5,857 is required for completion of projects started during the fiscal year 1936 under Allotment Release #2138. Construction by TVA.

2. An estimated credit of $13,200 is included to cover capital repayments of amortization collections by the Association during the current fiscal year.

[fol. 3037] 3. An additional amount of $23,470 is requested to finance the construction of approximately 26.8 miles of single-phase line extensions to serve 170 present and 47 future additional customers in the operating area of the Tombigbee Association, which comprises Lee and Itawamba Counties, Mississippi. Thirteen short extensions, varying from 0.4 to 8 miles in length, are contemplated, as covered by the attached list of extensions and general summary of financial data. Construction by TVA.

The Authority's net investment in the Association as of June 30, 1936, was $374,935. The operations of the Association to the date of October 31, 1936, showed a net deficit of approximately $7,000 after all expenses, including a reserve for depreciation. The proposed extensions appear to be on a very sound financial basis, and will contribute materially to the reduction of this deficit. In view of these conditions, it is recommended that the additional extensions be financed by TVA rather than asking REA to participate."

COMPLAINANTS' EXHIBIT No. 553.

TVA corporate resolution dated April 9, 1937, approving allotment release in the amount of $20,000 for Rural Line Construction in Franklin County, Alabama. The allotment

COMPLAINANTS' EXHIBIT No. 553

release, attached to and referred to in the approving resolution, states:

"The present investment of the Authority in distribution properties in this county is $3,387, of which $2,312 represents the purchase price of rural lines acquired from the Alabama Power Company, and $1,095 the estimated total cost of short extensions and service connections constructed or under construction by the Authority.

The ultimate disposition of this distribution property has not been determined, but it is probable that arrangements can be made for either including it as a portion of the Colbert County system or transferring it to the City of Russellville at such time as the latter municipality may acquire a distribution system and complete a contract for TVA service. It is also possible that a separate power association may be established in Franklin County if the size of the system is sufficiently increased."

[fol. 3038] COMPLAINANTS' EXHIBIT No. 554.

TVA corporate resolution dated May 15, 1937, approving allotment release in the amount of $141,650 for Additions to Tupelo and Pontotoc Substations. The allotment release, attached to and referred to in the approving resolution, states:

"This release covers the estimated obligations during the fiscal year 1937 in connection with the necessary additions to the Tupelo primary substation, and the construction of the Tupelo-Pontotoc line, which are required for the proposed service to Sardis Dam; also construction of a 44 kv. substation at Pontotoc which is necessary in order to supply the increased demands at that location, due to load growth of the Pontotoc Association.

• • • • • • •

The estimated total revenue from the Sardis load will be at least $250,000 over a period of three years, after which time the proposed facilities will be useful in expanding the transmission facilities of the Mississippi Division and in making a possible future connection to the Mississippi Power and Light Company in western Mississippi."

COMPLAINANTS' EXHIBIT No. 555.

TVA corporate resolution dated May 15, 1937, approving allotment release in the amount of $107,914 for Rural Line Construction in Lawrence and Morgan Counties, Alabama. The allotment release, attached to and referred to in the approving resolution, states:

"This release provides for the construction of additional lines in Lawrence and Morgan Counties, Alabama, and the rearrangement of certain existing lines where necessary, in order to complete an integrated distribution system.

* * * * * * *

Upon completion of the proposed lines the entire system, including also the existing lines in Lawrence and Morgan Counties, Alabama, will be transferred to the newly incorporated Joe Wheeler Electric Membership Corporation, and this corporation will enter into negotiations with the Alabama Power Company for the acquisition of the urban distribution systems in Hartselle, Falkville, Moulton, Town Creek, and Courtland. The acquisition, as well as the pro- [fol. 3039] posed construction work, will be financed by the Authority. Release covering the amount necessary for the acquisition, estimated at approximately $132,679, will be prepared at the time when these negotiations are completed.

The attached estimated income and expense statement is based upon the completion of the program outlined above, that is, combination of the existing lines, the proposed new lines, and the existing urban distribution systems into a single project, to be operated by the Joe Wheeler Electric Membership Corporation. On this basis, the estimate shows a surplus after depreciation of $878 the first year and $8,830 the second year."

COMPLAINANTS' EXHIBIT No. 556.

TVA corporate resolution dated May 15, 1937, approving allotment release in the amount of $4,050 for Rural Line Extension to New Harmony for the City of New Albany, Mississippi.

(Omitted)

COMPLAINANTS' EXHIBIT No. 557.

TVA corporate resolution dated June 3, 1937, approving allotment release for construction of Pontotoc-Sardis Transmission Line and Sardis Substation for U. S. Army Engineers.

(Omitted)

COMPLAINANTS' EXHIBIT No. 558.

TVA corporate resolution dated June 3, 1937, approving allotment release in the amount of $2,100 for additional changes to Hartselle Primary Substation.

(Omitted)

[fol. 3040] COMPLAINANTS' EXHIBIT No. 559.

TVA corporate resolution dated June 3, 1937, approving allotment release in the amount of $6,402 for Rural Line Extension and Substation Changes for the Tishomingo County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 560.

TVA corporate resolution dated July 2, 1937, approving allotment release in the amount of $241,000 for Construction of the North Side Memphis Substation.

(Omitted)

COMPLAINANTS' EXHIBIT No. 561.

TVA corporate resolution dated July 2, 1937, approving allotment release in the amount of $610,000 for Additions to the South Memphis Substation for Service to Arkansas.

(Omitted)

COMPLAINANTS' EXHIBIT No. 562.

TVA corporate resolution dated July 2, 1937, approving allotment release in the amount of $60,000 for 110 kv. Arkansas Tie Line from Memphis.

(Omitted)

[fol. 3041] COMPLAINANTS' EXHIBIT No. 563

TVA corporate resolution dated July 2, 1937, approving allotment release in the amount of $206,000 for South Memphis-North Memphis 110 kv. Tie Line.

(Omitted)

COMPLAINANTS' EXHIBIT No. 564

TVA corporate resolution dated July 23, 1937, approving allotment release in the amount of $269,000 for service to Volunteer Portland Cement Company. The allotment release, attached to and referred to in the approving resolution, states:

"This release provides for the construction of the necessary facilities for serving the Volunteer Portland Cement Company near Knoxville, Tennessee. The Authority is under contract obligation to serve this company at the earliest possible date, and it is therefore essential that the facilities be installed without delay.

The necessary facilities include a 110 kv. transmission line from Norris Dam to the Volunteer plant; a 4500 kva., 110/2.3 kv. substation at Volunteer; and temporary transformation and switching facilities at the Norris Dam substation."

COMPLAINANTS' EXHIBIT No. 565

TVA corporate resolution dated August 13, 1937, approving allotment release in the amount of $9,000 for Rural Line Construction for the Duck River Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"We have been requested by the Duck River Corporation to finance and construct this line as an increase in the long-term debt of the Corporation."

[fol. 3042] COMPLAINANTS' EXHIBIT No. 566

TVA corporate resolution dated August 13, 1937, approving allotment release for Rural Line Construction for the Southwest Tennessee Electric Membership Corporation. The allotment release, attached to and referred to in the approving resolution, states:

"The estimated total cost of the work, which is to be financed by REA, is $23,000. The estimated annual revenue to the Association is $6,257, which gives a ratio of 3.7 to 1 and makes this project appear feasible from the financial standpoint.

An REA allotment, in the amount of $23,000, has just been made to cover this project."

COMPLAINANTS' EXHIBIT No. 567

TVA corporate resolution dated September 14, 1937, approving allotment release in the amount of $319,000 for Transmission System Reinforcement in Middle Tennessee. The allotment release, attached to and referred to in the approving resolution, states:

"This release provides for the construction of a 44 kv. transmission line from Pulaski to Fayetteville, Tennessee with the necessary terminal connections to feed the rural system of the Lincoln County Electric Membership Corporation and part of the Duck River system, also a 44 kv. line from Columbia to Murfreesboro, Tennessee, with the necessary substation at Murfreesboro to feed the rural system of the Middle Tennessee Electric Membership Corporation and the balance of the Duck River system. These facilities are necessary in order to overcome existing operating difficulties and also to take care of the rapidly increasing loads of the respective systems and to provide future service to the city of Fayetteville."

[fol. 3043] COMPLAINANTS' EXHIBIT No. 568

TVA corporate resolutions dated October 16, 1933, authorizing the execution of power contracts:

"Resolved, That the Authority enter into contracts to supply power to the Alabama towns of Florence, Tuscumbia,

COMPLAINANTS' EXHIBIT No. 568

Sheffield, and Muscle Shoals City, and to such other municipalities located along the Tupelo transmission line, as already have or will construct at their own expense suitable power transmission facilities, at rates in accordance with the wholesale rate schedule for Tupelo transmitted power contained in Exhibit 10-16-33b, a true copy of which is attached to these minutes.

Further Resolved, That Arthur E. Morgan be and he hereby is authorized to execute on behalf of the Authority, said contracts to supply power to municipalities."

COMPLAINANTS' EXHIBIT No. 569

TVA corporate resolution dated December 15, 1933, authorizing creation of corporation to discount commercial paper:

"At his request the Board granted Mr. Lilienthal authority to create a corporation under the laws of the State of Delaware with power to discount commercial paper to be obtained from manufacturers of electrical appliances licensed by the Authority, and with power to do such other things as are necessary to facilitate the business of discounting commercial paper."

COMPLAINANTS' EXHIBIT No. 570

TVA corporate resolution dated December 16, 1933, approving project for construction of rural electric transmission lines.

"The Board approved the project submitted by David E. Lilienthal dated December 6, 1933, and titled "Construction of Rural Electric Transmission Lines in the Five Mississippi [fol. 3044] Counties of Lee, Pontotoc, Monroe, Alcorn, and Tishomingo, and in Lauderdale County, Alabama". A true copy of the project, labeled Exhibit 12-16-33c, is attached to these minutes and made a part hereof."

COMPLAINANTS' EXHIBIT No. 570

12-16-33C.

Tennessee Valley Authority

CWA Project Authorization Request

Fund CWA-TVA.
Project Rural Electrification.
Allotment Power Fivision

From David E. Lilienthal.
Date: December 6, 1933.

Project Title: Construction of rural electric transmission lines in the five counties of Lee, Pontotoc, Monroe, Alcorn and Tishomingo, Mississippi.

Description

1. Location: General administration from Wilson Dam, Florence, Alabama. Mississippi administration headquarters, Tupelo, Miss.

2. Purpose: Construction of rural electric transmission lines to serve the rural areas of Lee, Pontotoc, Monroe, Alcorn and Tishomingo Counties, Mississippi, using C. W. A. labor.

3. Procedure: With the aid of County Agents, working through the Agricultural section of Dr. H. A. Morgan's department, to locate suitable route for transmission lines to serve the rural residents of the five counties; securing permits and rights of way along County and State highways; securing the aid of farmers in providing tools, transportation and poles in so far as possible; and using C. W. A. workers in getting out poles, digging holes and erecting poles, cross arms, and stringing wire.

4. Organization:

Project Engineer: Llewellyn Evans, Chief Electrical Engineer, will serve as the head of the rural electric transmission section, with Guy W. Thaxton, Assistant Engineer, headquarters Tupelo, Miss., in direct charge, under the supervision of Mr. Evans.

Personnel available for the work: Mr. Thaxton, and such assistants as Mr. Evans may assign to the work.

COMPLAINANTS' EXHIBIT No. 570

Additional personnel required: One thousand and forty five C.W.A. workers, including skilled and unskilled laborers, supervisors and foremen.

Services or cooperation of other departments required: The full cooperation of the Department of Agricultural and Industrial Relations, including Mr. Rommel, Mr. McAmis, and Mr. Ferris, and also the Purchasing Department.

Services or cooperation of outside organization necessary: The C. W. A. administration, both national and for the State of Mississippi, the county agricultural agents, municipal and county officials, and farmers organizations are cooperating even to the point of lending personal services, furnishing tools and transportation for personnel, equipment and materials, aiding in securing rights of way, and such other services which may be helpful in the installation of these county transmission lines.

5. Estimated Cost

	Previously Authorized		Additional Authorization		Total
	Number	Amount		Amount	Amount
Payroll	1	$500	CWA	$112,500	$113,000
Travel & Subsistence			TVA	2,500	2,500
Equipment			TVA	17,000	17,000
Materials & Supplies			TVA	33,500	33,500
Other Expenses			TVA	1,000	1,000
Totals				$166,500	$167,000

* * * * * * * *

9. Recommendations

To take advantage of the opportunity offered by the U. S. Civil Works Administration to furnish skilled and unskilled workers out of C. W. A. funds for the construction of rural electric transmission lines, it is recommended that a maximum of 1,045 C. W. A. workers be used in the construction of such rural electric transmission lines in the counties of Lee, Pontotoc, Monroe, Alcorn and Tishomingo Counties, Mississippi.

The extension of these rural transmission lines will be made in connection with the small industry and agricultural development projects initiated in these five counties by the

industrial and agricultural relations section under Dr. H. A. Morgan's general direction. G. M. Rommel, J. C. McAmis and J. P. Ferris of this section are working closely with Guy W. Thaxton, of the rural electrification section of the Power Division.

The supervisors, foremen, skilled and unskilled labor will be paid entirely out of C. W. A. funds by the C. W. A. Administrator of Mississippi.

Travel and subsistence of T. V. A. staff members assigned to the work, equipment and materials are to be paid out of T. V. A. funds.

The cooperation of the local farmers, city and county officials will be sought in securing all rights of way, permits to use state and county highway rights of way for transmission lines, small tools and transportation for personnel and materials, poles and other equipment. All other equipment and materials not loaned or donated will be rented or purchased. [fol. 3046] The work for which the C. W. A. laborers will be used will consist of staking out the lines, getting out, dressing and hauling poles, clearing any right of way necessary, digging the holes, erecting the poles, putting on the cross arms and stringing the wire. The last items will permit the use of more skilled labor out of C. W. A. funds, and will thereby assist in reducing the ultimate cost of these rural transmission lines.

It is understood that the construction of these rural transmission lines is not for an immediate use; after the lines are completed it will be necessary to provide transformers and sub-stations to step down the current from the Muscle Shoals-Tupelo transmission line, and make the physical connection. It will also be necessary to set up the distribution management organization or system to make contracts with the farmers, and operate the rural lines. It is contemplated that the distribution over the rural lines to be constructed may be in charge of a cooperative association to be set up by the industrial and agricultural section of Dr. H. A. Morgan's department. By furnishing the materials and equipment used in the construction of the lines, the Government may retain title to these lines as long as it may be deemed necessary by the Authority."

To avoid repetition the Project Authorization Request for construction of rural electric transmission lines in Lauder-

COMPLAINANTS' EXHIBIT No. 570

dale County, Alabama, bearing the same date and composing a part of the Exhibit 12-16-33c attached to said resolution is not set forth herein at length. It contains the same comments except only 209 C. W. A. workers were required as additional personnel and the cooperation of C. W. A. administrators in the State of Alabama was contemplated. The total estimated cost was $35,500.

COMPLAINANTS' EXHIBIT No. 571

TVA corporate resolution dated April 13, 1934, approving a project entitled "Marketing of Power Produced by the Tennessee Valley Authority".

"A project, titled 'Marketing of Power Produced by the Tennessee Valley Authority,' was approved. A true copy of the project, labeled Exhibit 4-13-34e, is attached to these minutes and made a part hereof.

4-13-34E.

Tennessee Valley Authority

Project Authorization Request

Fund——

Project Electric Division

Allotment——

From: D. E. Lilienthal
Date: April 4, 1934

Project Title: Marketing of power produced by TVA.

Description

1. Location:
2. Purpose: Increasing the use of electricity in Valley area.
3. Procedure: Employment of advertising agency to furnish special technical assistance in preparation and supervision of specialized printing service and material.

COMPLAINANTS' EXHIBIT No. 571

4. Organization:

Project Engineer:

Personnel available for the work: D. E. Lilienthal, G. D. Munger, W. B. Phillips.

Additional personnel required: Advertising agency.

Services or cooperation of other departments required: Information, Sales Promotion, Purchasing, Accounting, Electric Divisions, EHFA.

Services or cooperation of outside organization necessary:

Printing establishments with specialized equipment.

NOTE: Supplement this project statement with a detailed written report, if necessary.

5. Estimated Cost

	Previously Authorised		Additional Authorization Amount	Total Amount
	Number	Amount		
Payroll				$10,000.00
Travel & Subsistence				
Equipment				
Materials & Supplies				
Other Expenses—Printing service				10,000.00
Totals				$20,000.00

(The above estimate must be supported by detail cost schedules.)

* * * * * * * *

[fol. 3048] 9. Recommendations

In order to lay plans for the marketing of power, to assist our municipal customers in the most efficient ways of increasing their consumption, to assist in reducing the distribution cost of appliances in municipalities served by our wholesale contractors, and to formulate plans for the general program of increasing the use of electricity, it seems

COMPLAINANTS' EXHIBIT No. 571

essential that a contract be entered into between the Tennessee Valley Authority and a large, thoroughly equipped advertising agency, for a period of four months. It is anticipated that the results of this personal service employment will produce results which will be extremely valuable to the Electric Home and Farm Authority, and that the Electric Home and Farm Authority will undoubtedly be willing to bear half of the cost of this service. Mr. Phillips has interviewed the leading advertising agencies in this particular field, and has secured extensive submissions from them.

It is recommended that the Tennessee Valley Authority enter into a contract with the firm of Young & Rubicam, Inc., at a lump sum payment of $10,000.00 to cover the above described services over a period of four months.

These services will include the preparation and technical work involved in the issuance of publications of a character requiring special service. Compensation for the furnishing of such printed material will be on the basis of actual cost of the printing. Compensation for the services rendered by Young & Rubicam, Inc. in the preparation, placing and supervision of this printing will be covered in the compensation of $10,000.00 under the contract recommended above.

COMPLAINANTS' EXHIBIT No. 572

TVA corporate resolution dated June 3, 1937, authorizing communication to War Department re construction of transmission line to Sardis Dam:

"Resolved, That the Board of Directors hereby approves the letter agreement (Exhibit 6-3-37a-1) and authorizes and instructs Arthur E. Morgan to sign and forward the communication to the War Department.

[fol. 3049] Lt. Colonel Lunsford E. Oliver, District Engineer, United States Engineer Office, Vicksburg, Mississippi.

Re Y 131-1.17

DEAR COLONEL OLIVER:

We received your letter of May 25, 1937, advising us that the Chief Engineer desires the Tennessee Valley Authority

to construct for the War Department the so-called Pontotoc-Sardis transmission line and substation, and has authorized your office to make the necessary arrangements with the Authority. We understand that this request of the War Department is made pursuant to section 601 of the Economy Act of 1932 (Public, No. 212, 72d Congress).

Pursuant to your suggestion, Major LaGuardia met with representatives of the Authority at Chattanooga on May 26 and discussed the various matters relative to this project. It is our understanding that the arrangement tentatively agreed upon at that conference was as follows:

1. The Authority will construct for and on account of the War Department a 44,000 volt transmission line from Pontotoc to the Sardis Dam Site and the necessary substation at the Sardis Dam site.

* * * * * * *

4. The Authority will be reimbursed for handling the above work at its actual costs plus its customary charges for overheads. Reimbursement will be made by quarterly payments for the costs incurred by the Authority during the preceeding quarterly periods. The Authority will submit such quarterly statements to you directly and we understand that you will place them in the appropriate channels for payment.

* * * * * * *

Of course this arrangement for construction of these facilities is made in connection with our contract for the sale of power and is contingent upon the execution of that contract. Our Board of Directors has executed the power contract and we understand that the same has been forwarded to you for your approval.

* * * * * * *

There are several other matters which we should like to take up with you as early as possible, but Major LaGuardia asked that they be handled separately from the arrangements for construction of the facilities, in order that work on the latter might not be delayed. A few rural electric

COMPLAINANTS' EXHIBIT No. 572

[fol. 3050] cooperatives in the vicinity of Sardis have applied to us for wholesale power supply. Our engineers advise us that it would be possible for us to transmit from 1,000 to 1,500 kw. of power over your Sardis line, in order to supply these people, without in any way interfering with your power supply or affecting the quality of service which you would obtain. We should like very much to encourage these developments and to supply their power needs, and we are sure that you will feel the same way about it. The Authority would, of course, expect to compensate you for the use of the line. This might be done by way of a reimbursement for line losses, or it might be handled in connection with an arrangement by which the Authority would agree to maintain and operate the Sardis line with its Mississippi personnel. When the Sardis Dam is completed, you will probably have no more use for these transmission facilities, and it may be that by that time the Authority will have developed enough load, or prospective load, in that vicinity to justify us in purchasing the line from you at salvage value. It is our thought that we might provide for an option agreement of this sort and an arrangement with respect to these other matters which would be to the mutual advantage of the Authority and the War Department. We shall appreciate it very much if you will let us have your reaction to these suggestions at your earliest convenience. These matters will, as Major LaGuardia suggested, be considered separately from this agreement regarding the construction of the transmission and substation facilities."

COMPLAINANTS' EXHIBIT No. 573

TVA corporate resolution dated October 5, 1937, re construction of Power Houses at Chickamauga and Guntersville Dams:

"The Board adopted the recommendations of Assistant Chief Engineer Carl A. Bock, concerned with the construction of power houses at Chickamauga and Guntersville Dams, and set out in his memorandum to the General Manager, dated October 5, 1937. A true copy of the memoran-

COMPLAINANTS' EXHIBIT No. 573

dum, labeled Exhibit 10-5-37m, was ordered filed with the Authority's records.

[fol. 3051] Mr. John B. Blandford, Jr., General Manager,
Carl A. Bock, Assistant Chief Engineer

October 5, 1937.

Guntersville and Chickamauga Power Houses (for Board Confirmation)

Upon final discussion with Messrs. A. H. Sullivan, B. M. Jones, T. B. Parker, S. M. Woodward, H. A. Hageman, R. A. Monroe and others we are of the unanimous opinion that the present construction should provide three unit power houses built so as to permit future extension for a fourth unit. This will effect a reduction of some $400,000 or more in our budget requirements for the next two or three years.

Our present plans contemplate providing foundations in the initial construction for the fourth units."

For brevity's sake other portions of this exhibit are omitted.

COMPLAINANTS' EXHIBIT No. 574

TVA corporate resolution dated July 30, 1933, re construction of Wilson Dam—Cove Creek transmission line.

"Resolved, That at the earliest possible date the Board proceed with the construction of a transmission line from Wilson Dam to Cove Creek damsite, to provide power for construction purposes and for distribution to cities, counties, and municipalities as from time to time may be necessary or desirable."

COMPLAINANTS' EXHIBIT No. 575

TVA corporate resolution dated October 16, 1933, approving memorandum setting forth "Basic Provisions for Contracts between the Authority and Municipalities for power".

"Resolved, That every contract to supply power to municipalities be made to contain, in substance, the provi-

COMPLAINANTS' EXHIBIT No. 575

sions set forth in a memorandum titled "Basic Provisions for Contracts between the Authority and Municipalities for power", a true copy of which, labeled Exhibit 10-16-33a, is attached to these minutes.

[fol. 3052] Power Project

Subject: Basic Provisions for Contracts between the Authority and Municipalities for Power

I recommend that provisions should be inserted into any contract between the Authority and Municipalities for the purchase and sale of power embodying the following principles. I shall want an opportunity to put the following statements into better legal form, but the substance will not be changed:

1. This is an agreement between the Tennessee Valley Authority, a Corporation created by and acting under the Tennessee Valley Authority Act of 1933, and the City of X, a municipal corporation created and acting under —— ——, of the State of ——.

Whereas, the Authority, by Section 10 of said Act, is "empowered and authorized to sell the surplus power not used in its operations and for operation of locks and other works generated by it to States, Counties, municipalities, corporations, partnerships or individuals, according to policies hereinafter set forth, and to carry out said authority the Board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the Board it shall give preference to States, Counties, municipalities and cooperative organizations of citizens or farmers not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members"; and

Whereas, by Section 11 of said Act it is provided that "This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose to be utilized principally to secure a sufficiently high

load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity."

The following contract is entered into:

1. The Authority agrees to furnish electricity to the municipality for a period of — years from the date of this agreement. Delivery will be made under the following conditions:

(Here will be set out the voltage and location of the transformer and other physical operating facts respecting delivery, responsibility for the substation and transformers, etc.)

[fol. 3053] 2. The municipality agrees that for said electric service it will make payment to the Comptroller of the Authority, under such rules and regulations as the Authority may from time to time describe, according to the following schedule of rates:

3. It is understood that in the event of a major increase or major decrease in general price levels of such a substantial character as to materially and substantially change the cost basis upon which the rates fixed by this contract are predicated, the parties hereto will cooperate in making adjustments in this contract in the direction of an increase or decrease in the wholesale rates. It is understood, however, that no such adjustments will be negotiated unless the changes in price level are of a major character and of more than momentary duration.

4. It is understood and agreed that if the Authority enters into a contract with any other municipality located on the same transmission line and operating under similar conditions at a lower rate than that fixed by this contract, that the same wholesale rate will be available to the municipality which is a party to this contract.

5. It is understood that this contract is limited to the supply by the Authority of — kilowatt maximum demand. If the needs of the municipality are such as to require an addition to this maximum demand, such increased supply

will be the subject of additional and supplementary agreements.

6. It is understood between the parties that the Authority will share with purchasers of power from it, the benefits accruing in the future of reductions in cost of generating and transmitting power, by way of reductions in the wholesale rate fixed by this contract.

7. In order to carry out the obligations of the Authority with respect to a wider use of electricity throughout the area in which it operates, it is understood that the municipality will charge its domestic, commercial lighting, rural and industrial consumers the following schedule of rates.

8. It is a condition of this contract that revisions in these rates will be made only in accordance with the principles set out in No. 11 herein.

9. In consideration of — and as an express condition of this contract, the municipality agrees as follows:

The city will administer its municipal electric system as a separate department or administrative unit of the city and not mingle funds and accounts with general city operations.

The City will agree to keep its utility accounts according to a system of accounts prescribed by the Authority after conference with the City as to such system of accounts, which system of accounts will so far as possible be uniform with [fol. 3054] other systems prescribed and applied in other municipalities purchasing power from the Authority. It is understood that the Authority, at its own expense, will render advisory accounting service in the setting up and administration of these accounts.

10. Electricity shall be sold and distributed to the ultimate consumer under rates fixed by the municipality without discrimination as between consumers of the same class, and no rate shall be fixed or practice adopted which will grant a discriminatory rate, rebate or other special concession to any consumer or user served by said municipality. The municipality, in fixing its rates, will observe the principle that the sale to and use by industry shall be secondary purpose, to be utilized principally to secure a sufficiently high

COMPLAINANTS' EXHIBIT No. 575

load factor and revenue return which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity.

11. The municipality agrees that it will make the following disposition of revenues from the operation of its municipal electric system:

Revenues will first be used for operating expense, depreciation, payment to the general fund of the City of taxes at rates equivalent to the taxes and assessments a private system would have to pay, interest on bonds or other indebtedness applicable to the electric system, the amortization of such bonds and other indebtedness, reasonable reserves for new construction and contingencies, and a return on the City's equity of not more than six per cent per annum. After the above items have been taken care of out of revenues, the City hereby agrees that any and all surplus sums available shall be applied toward reductions in rates to consumers.

12. It is understood that the above provisions as to accounting and rates and the disposition of funds by the municipality are a condition of this contract and that their violation renders this contract voidable at the option of the Board of Directors of the Authority.

13. The municipality recognizes an obligation to serve adjoining farming areas wherever such service can be feasibly rendered."

[fol. 3055] COMPLAINANTS' EXHIBIT No. 576

TVA corporate resolution dated October 16, 1933, re wholesale rate schedule for Tupelo transmitted power:

"David E. Lilienthal submitted a "Wholesale Rate Schedule for Tupelo Transmitted Power," which was approved by the Board. A true copy of this schedule, labeled Exhibit 10-16-33b, is attached to these minutes and made a part hereof.

COMPLAINANTS' EXHIBIT No. 576

Tennessee Valley Authority
Wholesale Power Rates

10-16-33b.

Available:

1. To Municipalities owning their electrical distributing systems with kw. demands of 750 or more.
2. To Others at option of the Authority.

Transmitted Power Rates:*

Demand Charge—$0.90 per kw. per month.
Demand—Maximum integrated sixty (60) minute period.

Energy Charge:

First	100,000	kilowatt	hours	per	month	at	4	mills	per	kwh.
Next	200,000	"	"	"	"	"	3	"	"	"
Next	700,000	"	"	"	"	"	2.5	"	"	"
Over	1,000,000	"	"	"	"	"	2	"	"	"

Non Transmitted Power Rates:**

Demand and Energy Charges computed as for "Transmitted Power" but subject to ten per cent (10%) differential i. e., Bill is multiplied by .9 which results in total amount to be billed monthly.

Minimum Monthly Bill:

$0.90 per kw. per month, and in no case shall the minimum bill be less than the charge for sixty per cent (60%) of the highest demand occurring during the previous consecutive twelve (12) months period.

Minimum bill subject to a reduction of ten per cent (10%) for customers taking delivery at reservation.

Adjustment of Demand Charge:

Demand charge may be adjusted if, and when, Authority deems necessary to correct for power factors lower than eighty-five per cent (85%). Such adjustments being made in such manner as will adjust the demand charge to the equivalent of eighty-five per cent (85%) power factor.

October 23, 1933.

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*Delivery at outgoing terminals of main line switch on low tension side of step-down transformers.

**Delivery at Boundary line of Reservation as prescribed by law.

[fol. 3056] COMPLAINANTS' EXHIBIT No. 577

TVA corporate resolution dated May 31, 1934, approving Sale, Lease, Trust, and Security Contract between TVA and Alcorn County Electric Power Association:

"Resolved, that the Board of Directors hereby approves a contract between the Tennessee Valley Authority and the Alcorn County Electric Power Association titled "Sale, Lease, Trust, and Security Contract." A true copy of the proposed contract, labeled Exhibit 5-31-34b, is attached to these minutes and made a part hereof.

Exhibit 5-31-34b

This sale, lease, trust and security contract and agreement entered into this 1st day of June, 1934, by and between Tennessee Valley Authority, (hereinafter called Authority), and United States of America (hereinafter called Government), acting through its legal agent, Authority, (both Authority and Government being included within the phrase First Parties where that phrase is used hereinafter), and Alcorn County Electric Power Association of Alcorn County, Mississippi, (hereinafter called Association and being sometimes also referred to as Second Party where that phrase is used hereinafter),

Witnesseth:

Whereas, Authority and/or Government are the owners of the hereinafter described property which has been and is now being used in the distribution of electric energy in Alcorn County, Mississippi, and vicinity, and Association desires to purchase and lease such property and use the same in the transmission and distribution of electric energy under the plan which has been worked out and agreed upon under a contract entitled "Power Contract Between Tennessee Valley Authority and Alcorn County Electric Power Association," dated 1st day of June, 1934; and

Whereas, provision is made in said "Power Contract," under Article I (a), (b), and (c), for the execution of this instrument and that this instrument shall be a part of said "Power Contract",

Now, therefore, in consideration of the mutual benefits to all parties hereto and of the covenants, promises and agreements herein contained, and those also contained in

said "Power Contract," the parties hereto agree and contract as follows:

1. Incorporation of Other Documents: This instrument is executed in connection with and is to be considered a part of a contract styled "Power Contract Between Tennessee Valley Authority and Alcorn County Electric Power Association," dated 1st day of June, 1934.

[fol. 3057] 2. In consideration of the sum of one hundred and fourteen thousand and six hundred and thirty-two dollars and sixty cents ($114,632.60) with interest upon the unpaid balances at the rate of three and one-half (3½) per centum per annu-, to be paid as hereinafter set out, Authority hereby bargains, sells, conveys and delivers unto Association the property located in Alcorn County, Mississippi, described as follows:

(1) All of the line tools now used or useful in the operation and maintenance of the electric distribution system in Corinth, Mississippi, a detailed list of which tools is hereto attached as a part hereof as Exhibit A;

(2) The line materials and supplies now used or useful in the operation and maintenance of said distribution system, a detailed list of which is hereto attached as a part hereof as Exhibit B;

(3) The stock of merchandise now on hand in connection with the operation of the light and power plant at said City of Corinth, a detailed list of which merchandise is hereto attached as a part hereof as Exhibit C;

(4) All office furniture and fixtures now used or useful in connection with the ownership and operation of said light and power plant, a detailed list of which is hereto attached as a part hereof as Exhibit D. But excepting from the above four lists such of the articles listed therein as may have been consumed in use or sold by the time of the delivery thereof hereunder.

If a question shall arise as to what property is intended to be conveyed above, the detailed lists shall control.

(5) One GMC 12000 lb. gross rating truck with which, or separately bought stake body, and one Chevrolet half-ton

commercial light delivery closed cab pick-up truck, used in connection with operating said light and power plant at Corinth;

(6) All right, title and interest of Tennessee Valley Authority in and to a certain franchise granted by said City of Corinth, September 9th, 1927, styled "An Ordinance Granting an Electric Franchise to Mississippi Power Company, Its Successors and Assigns in the City of Corinth, Mississippi," which franchise has been assigned to Tennessee Valley Authority;

(7) All right title and interest of Tennessee Valley Authority in and to a certain lease contract between Mississippi Power Company and Dr. W. A. Johns and Mrs. M. B. Johns, dated March 24, 1933, of a building in Corinth, Mississippi, described in such contract, Association hereby agreeing to carry out the terms of such lease;

(8) All right of Tennessee Valley Authority under a street lighting contract between City of Corinth and Mississippi Power Company;

(9) All rights under and claim of Tennessee Valley Authority to a franchise granted by the Town of Rienzi, Mississippi, styled "An Ordinance Granting an Electric [fol. 3058] Franchise to Mississippi Power Company, Its Successors and Assigns in the Town of Rienzi, Mississippi," dated June 10, 1927.

(10) The electric light and power distribution system now serving the City of Corinth, Mississippi, and vicinity, including switch boards, poles, pole lines, wire, wire lines, distribution lines, service lines, lamps, motors, materials, and other personal property now used or useful in the operation of the distribution system, but not including the power plant lot located at White and Cox Streets nor the buildings and improvements thereon, nor any property in the said buildings, nor any property used or useful in the generation of electric energy at said power plant station, but there is hereby assigned all railroad crossing contracts owned by First Parties, or either of them, needed in the operation of the distribution system conveyed in this article.

(11) The rural distribution electric power line running from the power plant substation in Corinth to the com-

munity of Biggersville extending generally along the public highway, a distance of approximately 8.3 miles, (eight and three tenths miles).

(12) The rural extension electric power line running from substation in Corinth, Mississippi, northwardly to Gaulding, along the public highway a distance of approximately two and one half miles, and all property used or useful in connection with the operation of said line in the distribution of electric energy;

(13) The rural electric line extending from Corinth to Bird's Gin along the Iuka-Corinth public highway, a distance of approximately four and a half miles.

(14) The rural extension electric power line from the substation at Rienzi in Prentiss County, Mississippi, to the Town of Rienzi, Alcorn County, Mississippi.

(15) The rural extension electric power line known as the Thrasher extension from where the same connects with the Rienzi substation line to the Village of Thrasher in Prentiss County, Mississippi, and including all poles, wires, cross arms, insulators, and all property used or useful in the operation of said five rural lines.

(16) The electric distribution system and power line in the Town of Rienzi, Alcorn County, Mississippi, and vicinity, including the wires, poles, wire lines, insulators, transformers, and distribution lines, and all property used or useful in the distribution of electric energy over said line;

3. Government, in consideration of the benefits to it in the performance by Association of this contract and the other interconnected agreements, hereby lets and leases unto Association, for a term of fifty years, subject to termination as hereinafter stated, such right and interest as Government may have in the rights of way and/or easements in any privately owned real property over, through or across which any of above described electric power lines may extend.

[fol. 3059] 4. For the payment of said sum of $114,632.60 and interest thereon as above stipulated, and as security therefor, and to guarantee the faithful performance of the

promises herein of and obligations on the part of Association, it is agreed:

(1) A lien is hereby retained and imposed in favor of Authority on all of the property which is hereby conveyed to Association for the purchase price of such property, plus interest, and as security for faithful performance of all obligations of Association as to deposits and accounts under Article 19 of Power Contract, said lien to be and remain and attach to each and every article of such property until the entire purchase price of all of the property is fully paid, except no lien is retained on the merchandise which is to be sold and which is listed in Exhibit C hereto;

(2) And there is expressly incorporated herein and made a part hereof the provisions of Section 7, Method of Payment for Property; section 8, Repayment of Indebtedness; section 9, Disposition of Association's Revenues, including subheads (a), (b), (c), (d), (e), (f) and (g), under said section 9; section 10, Alienation or Encumbrances of Property or Revenues; section 11, Maintenance and Insurance of Property and all other pertinent provisions of said "Power Contract Between Tennessee Valley Authority and Alcorn County Electric Power Association", dated 1st day of June, 1934. It is specifically agreed and understood that all revenues, membership fees and funds agreed to be paid by Association to Authority under this instrument and under said "Power Contract" are pledged and trust funds while in possession of Association and until paid to Authority as agreed in this instrument and said "Power Contract".

5. It is further agreed and contracted that all repairs, extensions, improvements and additions which may be made to the properties, as provided in section 11 of said "Power Contract", or otherwise, until said sum, with interest is fully paid, shall be and become a part of the property hereby conveyed, and become security for such unpaid balance thereof and a lien thereon shall immediately attach thereto for such purpose.

6. It is further expressly agreed and understood that on the failure of Association to faithfully keep and perform each and every agreement and obligation and promise made and/or imposed upon it by this instrument and said "Power

Contract", or upon the occurrence of any condition giving Authority and/or Government the right to terminate this agreement or the "Power Contract", Authority has the right and power, with or without the aid of court, to immediately take possession of all of the existing properties hereby sold Association, with all additions to and extensions and repairs and improvements of such properties, and to terminate the lease of the leased property, and, if needful, to have a receiver appointed of any or all property, and said Authority itself or through a receiver has the right to operate the properties and continue the business, and all right of Association to operate and/or continue the business shall cease at the option of Authority. In the event Authority exercises the right to retake possession of the property and terminate the [fol. 3060] lease, and, the right of Association to operate the business ceases, then Authority agrees to repay Association the aggregate amount of money which Association has paid to Authority to that date, but not repaying the interest paid by Association to Authority, and without interest on the amount repaid by Authority, upon execution by Association to Authority of the deed provided for in section 7 hereafter.

7. Upon default by Association, or termination, for any reason, of the arrangement hereby made between the parties, Association hereby expressly agrees, contracts, promises and covenants to effectually assign, convey and deliver to Authority the franchises in Corinth and Rienzi and any other municipal franchises for the distribution of electric energy which, until such time, may have been acquired by Association and to reconvey to Authority all of the property hereby conveyed to Association with all extensions, repairs, additions, renewals, and replacements upon tender by Authority of the amount, without interest, which has been paid to Authority by Association, as aforesaid.

8. Neither this contract nor any interest therein shall be transferable or assignable by Association to any other party without first securing the written consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested at Corinth, Mississippi,

COMPLAINANTS' EXHIBIT No. 577

by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors.

Attest: C. A. Bock, Acting Secretary.

United States of America, by Tennessee Valley Authority, Its Legal Agent, by Arthur E. Morgan, Chairman, Board of Directors.

Attest: C. A. Bock, Acting Secretary.

Alcorn County Electric Power Association, by B. F. Liddon, President.

Attest: J. M. Peavey, Secretary."

(Verifications and exhibits omitted.)

[fol. 3061] COMPLAINANTS' EXHIBIT No. 578

TVA corporate resolutions dated July 27, 1934, approving proposed contract between Tennessee Public Service Company and TVA, a contract between Carolina Power & Light Company and TVA, and letter to C. E. Groesbeck:

"Resolved, That after consideration of the foregoing report and of the terms of a certain proposed contract between the Tennessee Public Service Company, a corporation of the State of Maine, and the Tennessee Valley Authority, a copy of which contract is made a part of these minutes as Exhibit 7-27-34a, the Board of Directors hereby approves said contract and authorizes and directs the execution of said contract by the Chairman of the Board, to be attested by the Secretary to the Board of Directors.

. . . . . .

Resolved, That the Tennessee Valley Authority approves the terms and conditions of a certain contract between the Carolina Power and Light Company and the Tennessee Valley Authority, a copy of which contract is attached hereto and made a part of these minutes as Exhibit 7-27-34e, and further directs the Chairman of the Board to execute, and

COMPLAINANTS' EXHIBIT No. 578

the Secretary to the Board of Directors to attest, the aforesaid agreement.

Resolved, That the Board of Directors approves a statement of fact and policy as contained in a draft of letter directed to C. E. Groesbeck, Chairman of the Board, National Power and Light Company, New York, New York, and that the Board hereby authorizes and directs the Chairman of the Board to sign and deliver such a letter, copy of which is embodied herewith in these minutes as follows:

Knoxville, Tennessee, July 27, 1934.

Mr. C. E. Groesbeck, Chairman of the Board, National Power and Light Company, New York, New York.

MY DEAR MR. GROESBECK:

You have inquired as to the plans and policies of the Tennessee Valley Authority with respect to supplying power to communities now served by companies associated with National Power and Light Company operating in the Tennessee Valley region. The Board of Directors authorizes me to reply as follows:

1. You will understand that to the extent that it has power available, the Authority cannot restrict itself in the sale of that power, under the mandatory and directory provisions laid down by Congress. However, the fact is that after allocating all the power generated at Wilson Dam required to serve various areas served or in the process of being [fol. 3062] served by the Authority, together with a reasonable reservation of power for prospective large-scale industrial customers, the Authority does not have available at the present time any large blocks of firm power which could be sold to municipalities. The areas referred to above are northern Alabama, northeastern Mississippi and northeastern Tennessee, none of which areas (except the latter) are served by companies associated with National Power and Light Company. This situation will be changed upon the completion of Norris or Wheeler Dams.

2. Further, the Board has adopted a policy that, in the coming months, for the best interests of the project, it will seek to develop and consolidate the market area which has thus far been acquired, rather than concentrating, as in the past year, upon acquiring additional market area.

In view of the foregoing facts and this policy, you will see that there is no likelihood that the Tennessee Valley Authority will transmit power to municipalities which lie outside of the aforementioned areas, before the completion of Norris or Wheeler Dams.

Yours very truly, Tennessee Valley Authority, by
Arthur E. Morgan, Chairman of the Board.

(Contract above referred to as Exhibit 7-27-34a, between Tennessee Public Service Company and TVA, not included as part of exhibit.)

Exhibit 7-27-34e

This Agreement, made and entered into this 26th day of July, 1934, by and between Carolina Power & Light Company, a North Carolina corporation, hereinafter referred to as "Carolina Company" and Tennessee Valley Authority, a corporation created by the Tennessee Valley Authority Act of 1933, hereinafter referred to as "Authority",

Witnesseth:

Whereas, Carolina Company entered into a contract with Tennessee Public Service Company, a Maine corporation, hereinafter referred to as "Public Service Company", on August 1, 1929, said contract requiring Public Service Company to purchase its entire power requirements except as therein specified, from Carolina Company; and

Whereas, said contract provided that either party thereto may assign its interest to a successor in ownership and operation of its respective property, and

Whereas, Public Service Company has by instrument of 26th day of July, 1934, agreed to convey and deliver at a future date, and subject to the terms and conditions of said instrument, a large part of its electric transmission and distribution property to Authority, whereby Authority will become the successor in ownership and operation of said property; and

Whereas, Public Service Company has agreed to assign to Authority its right, title and interest in, to and under said contract of August 1, 1929, as of the date of the conveyance [fol. 3063] and delivery by it to Authority of ownership and operation of the aforesaid property; (which date is herein-

after referred to and defined as the "effective date" of this agreement); and

Whereas, certain of the provisions of said contract of August 1, 1929 will not be applicable to the conditions of operation which will obtain under the ownership and operation of said transmission and distribution property by Authority, and the parties hereto desire to enter into certain other convenants and agreements.

Now, Therefore, in consideration of the premises and of the covenants and agreements hereinafter set forth, the parties hereto do hereby agree as follows:

Section 1. The aforesaid contract of August 1, 1929, is hereby canceled and rescinded as of the effective date hereof. Authority on the effective date hereof will pay to Carolina Company an amount equal to $247.62 for each day by which the effective date hereof is earlier than June 4, 1936. (For example, if the effective date hereof be October 4, 1934, this amount will be $150,800.00.)

Section 2. Carolina Company as of the effective date hereof, hereby assigns to Authority all of its right, title and interest in, to and under a certain agreement dated June 16, 1930, by and between Carolina Company and Tennessee Electric Power Company, a Maryland corporation; except that Carolina Company shall have the sole right to any benefits under said agreement which have accrued to it prior to this assignment and that Authority shall not be liable for any claims or damages arising or accruing under said agreement prior to this assignment.

Section 3. Carolina Company will deliver to Authority during the period beginning with the effective date hereof and ending with June 4, 1936, such amounts of firm power as Authority may desire to take, not exceeding 40,000 kw. of demand. Authority will pay on the basis of quarterly billings for power and energy so taken in accordance with the terms of the schedule attached hereto and marked "Exhibit A"; provided that the minimum billing demand shall be 20,500 kw. and that Authority will pay a minimum charge of $96,240.00 per quarter, which payment will entitle Authority to a demand of 20,500 kw. and to the use of 19,320,-

000 kwh. per quarter. The use of energy by Authority shall not exceed 9,000,000 kwh. in any one calendar month, unless consent to greater use be given in advance by Carolina Company in each instance.

(For example, if the effective date hereof be October 4, 1934, the sum of the initial payment provided in Section 1 and the minimum bills provided in this Section 3 will be $792,400.00 for the 20 months from October 4, 1934 to June 4, 1936.),

* * * * * * *

Section 16. It is mutually agreed by and between the parties hereto that this agreement is a contingent agreement conditioned upon the consummation of that certain contract of sale and purchase entered into by and between Authority and Public Service Company on the 26th day of [fol. 3064] July, 1934, and that the effective date as in this agreement used is defined as and shall be the date upon which the conveyance and delivery by the Public Service Company of its electric system and properties to Authority takes place and said contract of sale and purchase is consummated, provided, however, that if such consummation is not effected within one year from the date of execution of this agreement, then and in that event this agreement shall become null, void and of no effect.

In Witness Whereof, the parties hereto have caused to be subscribed hereunto their corporate names, signed by their respective officers thereunto duly authorized, and to be affixed hereto their corporate seals, attested by their respective secretaries, the day and year first herein named.

Carolina Power & Light Company, by —— ——, President.

Attest: —— ——, Secretary.

Tennessee Valley Authority, by —— ——, Chairman.

Attest: —— ——, Secretary.

COMPLAINANTS' EXHIBIT No. 578

Exhibit A

Rate Schedule

Demand Charge:
$0.90 per kw. per month.

Energy Charge:

First	300,000 kwh.	per period 4	mills per kwh.
Next	600,000	" 3	"
Next	2,100,000	" 2.5	"
Excess over	3,000,000	" 2.0	"

Billing period shall be three months."

COMPLAINANTS' EXHIBIT No. 579

TVA corporate minutes dated April 4th, 1934, retaining Young and Rubicam, Inc:

"Resolved, that the Authority hereby retains the firm of Young and Rubicam, Incorporated, as consultants on a sales promotion project designed to facilitate the marketing of power, increase the domestic consumption of power, and to reduce the cost of distributing electrical household appliances."

[fol. 3065] COMPLAINANTS' EXHIBIT No. 580

TVA corporate resolution dated October 9, 1934, approving Plan for furnishing electric service to Knoxville, Tennessee:

"Whereas, on the first day of March, 1934 the City of Knoxville, Tennessee, entered into a contract with the Authority whereby the City engaged to acquire a municipal electric distribution system by purchase or construction and the Authority agreed to supply power to the City at wholesale therefor; and,

Whereas, the Tennessee Public Service Company, which now owns the electric distribution facilities within and adjoining said City, on July 26, 1934, entered into a contract with the Authority in which it agreed to sell said facilities to the Authority at a fair price; and,

Whereas, the Authority and the City thereupon agreed upon a plan whereby the Authority, upon acquiring said distribution facilities from the Company, would resell such facilities to the City the terms and conditions of said agreed plan being set out in Resolution #767 of the Council of the City of Knoxville, approved August 14, 1934, a true copy of which, labeled Exhibit 10-9-34a, is attached to these minutes and made a part hereof.

Be It Therefore Resolved, That the plan set forth in said Resolution of the Council of the City of Knoxville, Tennessee, approved August 14, 1934, be and is hereby formally adopted.

Be It Further Resolved, That the said Resolution of the Council of the City of Knoxville, Tennessee, approved August 14, 1934, be and it is hereby accepted by the Tennessee Valley Authority.

Exhibit 10-9-34a

Resolution No. 767

A Resolution Approving the Plan to Acquire a Municipal Electric Distribution System

Whereas, on the 25th day of November, 1933, the citizens of the City of Knoxville, Tennessee, hereinafter called the "City", at a public referendum voted in favor of acquiring a municipal distribution system by purchase or construction for the purpose of distributing electricity purchased at wholesale from the Tennessee Valley Authority, hereinafter called the "Authority"; and

Whereas, the existing electric distribution and local transportation systems in and adjoining the City are now owned by the Tennessee Public Service Company, hereinafter called the "Company"; and

Whereas, the City of Knoxville, in order to avoid the building of a competitive electric distribution system, at- [fol. 3066] tempted without success, to purchase the existing distribution system from the Tennessee Public Service Company; and

Whereas, the City thereupon made application to the Federal Emergency Administration of Public Works for

a loan and grant with which to construct a distribution system, and the Federal Emergency Administration of Public Works has agreed by contract of the 2nd day of April, 1934, to make such loan and grant upon the issuance of general obligation bonds of the City; and

Whereas, on the 1st day of March, 1934, the City entered into a contract with the Authority whereby the City engaged to acquire a municipal distribution system by purchase or construction, and the Authority agreed to supply power at wholesale therefor; and

Whereas, it is desirable to avoid the building of a competitive electric distribution system; and

Whereas, the Company has agreed to sell to the Authority and the Authority has agreed to purchase a major part of the electrical properties of the Company, including the existing electric distribution facilities in and adjoining the City, at a fair price, said agreement being conditioned on the City relieving the Company of certain obligations relating to the local transportation system in the City; and

Whereas, if said sale is consummated it will be desirable for the City to extend relief to the Company in the operation of its local transportation system; and

Whereas, since the execution of the aforesaid contract between the City and the Authority, representatives of the Authority and the City have formulated a plan whereby the City can acquire the existing distribution facilities in and adjoining the City in Knox County, Tennessee, with minimum delay, without pledging its credit, without loss to investors in such facilities, without prejudicing the operation of the local transportation system, and without building a competitive electric plant, the said plan being as follows, to-wit:

1. The City, conditioned on the sale and transfer of said electrical properties of the Company to the Authority, will cooperate with said Company in a joint program of ride-building and will, in lieu of and in the discharge of any obligation of said Company under its present franchises, relieve the Company of any obligation to maintain or repair any street or the pavement thereon, or the pavement upon any viaduct or bridge upon which the Company shall have tracks or operate street cars, trolley buses or other

type of conveyance, provided that if the Company shall remove any track from a street, viaduct or bridge it shall pave the area vacated as the balance of the street, viaduct or bridge shall be paved; and provided further that if the Company voluntarily removes or destroys any pavement in the replacement, repair or maintenance of its track structure, the paving so removed or destroyed shall be replaced by the Company at its expense, and the City will likewise relieve the Company of any obligation to pay any [fol. 3067] part of the cost of constructing, reconstructing, maintaining or repairing any viaduct or bridge over which the Company operates gasoline buses, or other type of vehicle not requiring fixed tracks, but in any case where the Company operates over such bridge or viaduct street cars or other conveyance required fixed tracks, the Company shall bear the additional cost, if any, of construction and/or reconstruction of any such viaduct or bridge made necessary by such fixed tracks, but in lieu thereof the Company may substitute trackless vehicles.

If, however, any vehicle such as a trackless trolley is operated by the Company over a bridge or viaduct and such vehicle requires additional or special construction for its operation, the cost thereof shall be borne by the Company. If the Company elects, it shall be granted the right to substitute for street car service, on any street, viaduct or bridge, gasoline buses or other type of vehicle not requiring fixed tracks.

In event of consummation of such sale to the Authority, suitable ordinances and franchises with necessary details to carry these provisions into effect will be passed by the Council.

The City, subject to the conditions stated, will take appropriate action to sever the street railway and electric rights and obligations in any joint franchise.

2. The Tennessee Valley Authority will purchase the said electrical properties of the Tennessee Public Service Company, including the existing distribution system in and adjacent to the City, at a price which is fair to both consumers and investors.

3. The Authority will operate all of such properties directly for a limited period during which the distribution

system in and adjacent to the City will be rehabilitated, improved, extended and rearranged, in such manner, including such properties, and covering such an area, as the Authority may deem advisable, in order to establish it as an economic and efficient operating unit. The City will grant the Authority whatever franchise rights, within its limits, may be necessary for such direct operation, in form satisfactory to the Authority. During such period of direct operation the Authority may find it desirable upon investigation to extend the farm electric lines in the rural areas adjoining the City, such rural lines, so far as feasible, to be made a part of the existing system. In case such extensions are found to be desirable, the same shall not be made until after conference between the City and Authority, but in no event shall the amount expended therefor exceed the sum of $100,000. The Authority will further undertake, pending transfer of the properties of the City, an intensive program of residential, industrial and commercial load development. All the activities which are to be undertaken by the Authority, as described herein, will be accomplished at the Authority's expense, but the actual net cost thereof will be added to the original cost of acquiring the system.

When the Authority has achieved the objectives above described, estimated to take from one to two years, the period of direct operation by the Authority shall terminate. The Authority will then sell and transfer to the City, and the City will purchase, the distribution system and prop- [fol. 3068] erties appurtenant to or used in connection therewith and lying and being in Knox County, Tennessee, as to rehabilitated, improved, extended and rearranged, at the actual net cost to the Authority of such system, plus the actual cost of such rehabilitation, improvement, extension and rearrangement, subject to reduction as set forth below.

The basic price to be paid by the City for the purchase of the system and properties, as set out herein, is estimated to be approximately $4,250,000, but said amount is subject to additions and reductions, as outlined herein.

The City will be supplied with such accounting records as may be necessary to establish the investment of the Au-

thority in said system. The transfer will be by appropriate instrument securing the interest of the Authority and the City in said system. In this way the City will acquire, and will assume responsibility for managing and operating a well equipped and efficient electric system which will be co-extensive with the City's business and trade area so far as engineering and economic considerations permit.

5. During the period of direct operation, the Authority will add to its resale rates a surcharge of ten percent on all classes of customers. The proceeds of such additional charge, as well as all revenues in excess of the Authority's cost of operation, and interest upon its investment of 4%, shall be applied toward the reduction of the purchase price to the City.

6. The City will pay the Authority, for the system as purchased, plus interest at the rate of 4% per annum, by turning over to the Authority all of its revenues from the operation of the system in excess of the costs of operation thereof. The City will purchase power from the Authority at its standard wholesale rates for transmitted power, and will resell such power at the Authority's basic resale rates, plus an additional ten percent surcharge, until the Tennessee Valley Authority is entirely reimbursed for its investment.

7. It is recognized that the foregoing plan sets up a situation which differs from the situation contemplated under the contract of March 1, 1934, between the City and the Authority, and that, therefore, subsequent to the transfer of the foregoing properties to the Authority from the Tennessee Public Service Company, some of the provisions of the contract of March 1, 1934, will be inapplicable and — lieu thereof, another and different contract will be entered into between the City and the Authority embodying the foregoing plan.

Now, Therefore, be it Resolved by the Council of the City of Knoxville, That said plan hereinabove set out be and it is hereby ratified and approved and that the Tennessee Valley Authority be and hereby is requested to purchase the existing electric distribution system, and to proceed forthwith in carrying out the plan, as above described.

COMPLAINANTS' EXHIBIT No. 580

Be it Further Resolved, That this resolution shall take [fol. 3069] effect from and after its passage and acceptance by the Tennessee Valley Authority.

John T. O'Connor, Presiding Officer of the Council.
W. H. Peters, Jr., Acting Recorder.

I, Helen M. Bunch, Acting Recorder of the City of Knoxville, Tennessee, do hereby certify that the foregoing is a true and correct copy of Resolution No. 767, which passed first and final reading August 14, 1934, as the same appears of record in Minute Book 15, pages 217, 218, 219 and 220, in my office.

Witness my hand and the official seal of said City, this 15th day of August, 1934.

Helen M. Bunch, Acting Recorder, City of Knoxville, Tennessee.

COMPLAINANTS' EXHIBIT No. 581

TVA corporate resolution dated March 18, 1935, approving contract with Electric Home and Farm Authority, Inc.:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 3-18-35h) with the Electric Home and Farm Authority, Inc. in its corporate capacity, and as a trustee under a trust deed dated August 11, 1934.

* * * * * * *

Exhibit 3-18-35h

Agreement, made and entered into as of the 1st day of July, 1934, between Electric Home and Farm Authority, Inc. a corporation organized and existing under the laws of the State of Delaware, in its individual corporate capacity, hereinafter called "Authority"; and Electric Home and Farm Authority, Inc., as Trustee under a trust deed executed in May, 1934, as amended, to secure an issue of notes to aggregate not in excess of Ten Million Dollars ($10,000,000), hereinafter called "Trustee"; and Tennessee Valley Authority, a corporation organized and exist-

ing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called "Utility":

Witnesseth:

Whereas, Authority proposes to cooperate with manufacturers, dealers, and electric utility companies who are operating under the plan to promote the widespread purchase and use of domestic electric appliances, and thereby to make possible an increased use of electricity in the home; and

Whereas, the plan provides for the billing of purchasers [fol. 3070] of said appliances along with the regular monthly service bills of Utilities cooperating in the plan and is therefore limited to customers of such cooperating Utilities,

Now, Therefore, in consideration of the mutual covenants herein contained, the parties hereto for themselves, their successors and assigns, covenant and agree as follows:

Article I. The special terms used herein shall have the following definitions:

"Electric Appliance" shall mean any piece of electric equipment which Authority may agree from time to time to finance. "Manufacturer" shall mean the manufacturer of an electric appliance. "Dealer" shall mean a retailer of electrical appliances who is approved by the Authority and is cooperating in the plan. "Purchaser" shall mean an ultimate user to whom a Dealer sells at retail an electric appliance. "Customer Paper" shall mean chattel mortgages, conditional sale contracts, leases, promissory notes, or other forms of obligation given by purchasers and accepted by Dealers in connection with the sale of electric appliances under a deferred-payment plan.

Article 2. Utility will, in accordance with the terms and conditions herein contained, and as agent for the Authority and/or Trustee, receive Customer Paper from Dealers, and collect installments due on Customer Paper.

Article 3. Utility will receive and transmit to Authority for approval or rejection by Authority, Customer Paper from Dealers only upon the following conditions:

(a) Utility will check the installation of the appliances purported to have been sold. A statement that this instal-

lation has been checked and a statement of the Customer Account number upon the records of the Utility is to be forwarded at the time the Customer Paper is transmitted to the Authority.

(b) The purchaser to whom the Electric Appliance is sold must be using the electric service of the Utility; and the Electric Appliance must be sold for installation in a residence for domestic use;

(c) The Customer Paper must be on forms prescribed and furnished by Authority, completely and properly filled out, and properly assigned by Dealer on the assignment form on the Customer Paper;

(d) Customer Paper shall be received only from approved Dealers. Authority shall advise Utility in writing of all Dealers approved in Utility's territory. Any Dealer may be removed from the approved list at any time by the Authority, and Utility will be notified of any such removal;

(e) Utility shall not receive any Customer Paper if the cash delivered sale price of the Electric Appliance used as the base price in such sale, was in excess of the Manufacturer's suggested retail price approved by Authority:

[fol. 3071] (f) Utility shall not, without written consent of the Authority, receive any Customer Paper which is not presented by the Dealer within thirty (30) days after the sale of the Electric Appliance covered thereby;

(g) Utility shall not receive any Customer Paper unless the finance charges thereon are in accordance with Authority's then prevailing chart of finance charges, and unless the following requirements are observed:

The maximum period for which Customer Paper or terms may be extended shall be three (3) years where one Electric Appliance is sold, and four (4) years if two or more Electric Appliances are sold to the same Purchaser at the same time under the same contract. There shall be minimum equal monthly payments of at least Two Dollars ($2.00) on each contract, and the down payment shall be not less than the monthly installment.

(h) If Customer Paper is offered by Dealer which was received in payment for an approval range or water-heater which Utility refuses to install, or if by reason of any credit information Utility may have on the purchaser or for any other reason Utility deems that any Customer Paper offered by Dealer may be unsatisfactory to Authority and/or Trustee, Utility shall forward to Authority the Customer Paper offered, together with a statement of the reasons why Utility deems it unsatisfactory.

Article 4. Utility will collect from Purchasers who are using electric service of Utility monthly installments on Customer Paper and will pursue the following procedure with reference to collection of such installments:

(a) Utility will send to Purchaser, along with the monthly service bill of Utility, notice of each installment due. The installment will be considered delinquent if not paid within ten (10) days from its due date;

(b) If installment is not paid, Utility will send a delinquent notice to Purchaser within ten (10) days after the installment becomes delinquent;

(c) If installment is still unpaid at the time for mailing the next monthly service bill, Utility will send to Purchaser a second delinquent notice with that monthly service bill;

(d) Utility will assign a collector to contact Purchaser between thirty (30) and forty (40) days after delinquency;

(e) If the installment is unpaid forty (40) days after delinquency, Utility will, within five (5) days thereafter, notify Dealer of the delinquency and send Authority a copy of this notice;

(f) If the installment is unpaid fifty (50) days after delinquency, Utility will, within five (5) days thereafter, send demand notice to the Dealer to repurchase the Customer Paper according to his repurchase agreement;

[fol. 3072] (g) If sixty (60) days after Purchaser's delinquency, Dealer has not repurchased the Customer Paper and Purchaser has not paid all installments then due, Utility will, within five (5) days thereafter, notify Authority of such default on the part of Dealer.

It is understood and agreed that Utility will not be required to comply with the above procedure for billing and collection, with respect to those purchasers who are employees of Utility so long as collections are being effected from such Purchasers by payroll deductions.

Article 5. At the request of any dealer, Utility shall furnish to such Dealer any credit information Utility may have on a proposed Purchaser.

Article 6. Utility shall semi-monthly (fifteenth and end of each month) forward to Authority and/or Trustee all collections on Customer Paper, together with all sums received from Dealers, accompanied by a statement on a form, mutually agreed upon by the parties, of collections and of sums received from Dealers. Any authorized agent of Utility is hereby authorized to indorse to Utility, for deposit only, any check payable to Authority or Trustee which is received by Utility in payment on Customer Paper.

Article 7. Utility shall submit to Authority monthly a statement showing the Outstanding balances, segregated according to Dealers, on all Customer Paper held by Utility for Authority and/or Trustee, on which Utility is still making, or attempting to make, collections.

Article 8. It is understood and agreed that title to all Customer Paper shall be vested in Authority and/or Trustee; Utility shall at all times keep all Customer Paper and accounts in connection therewith entirely separate and distinct from all other papers, accounts, and records of Utility. Title to all collections on Customer Paper shall, from the instant same comes into possession of Utility be vested in Authority and/or Trustee.

Article 9. Utility's books, accounts, correspondence, and other records pertaining to Customer Paper and collections, shall at all times be open for inspection by Authority, and by the Comptroller-General of the United States or their respective authorized agents. Utility shall furnish to Authority and to the Comptroller-General of the United States, upon request, any reasonable information requested by either and pertaining to Customer Paper, or to collec-

tions, or to any other matter in connection with Customer Paper or collections thereof.

Article 10. Utility shall be obligated to furnish to Dealers all information available to it with reference to the operation of Authority's plan of financing Customer Paper, shall maintain a supply of Purchaser contract forms, rate charts, pamphlets (all of which will be furnished by Authority), and distribute the same to Dealers; and shall immediately forward to Authority all communications and inquiries from either Dealers or Purchasers, which Utility is unable to answer or which for any reason require the attention of Authority.

Article 11. Utility shall immediately notify Authority and Dealer concerned:

[fol. 3073] (a) If Utility's electric service is for any reason discontinued to any Purchaser who is thirty (30) days or more in default in payment of any installment due on Customer Paper;

(b) If, to Utility's knowledge, any Purchaser moves off of Utility's lines, or moves and leaves behind an Electric Appliance on which unpaid Customer Paper is held by Authority or Trustee;

(c) If, to Utility's knowledge, any Electric Appliance covered by Customer Paper which is thirty (30) days or more in default is removed from the place originally installed, or is injured, or if for any other reason Utility deems that Authority's or Trustee's rights in such Electric Appliance or the security thereof are jeopardized;

(d) If, to Utility's knowledge, any Purchaser is in default in any obligation under his contract, or becomes insolvent, or if a petition in bankruptcy or for a receiver is filed by or against the Purchaser, or if for any other reason Utility deems action against the Purchaser advisable or necessary to protect Authority's or Trustee's interests. This provision does not apply to a default of a Purchaser in payment of installments due, the procedure in such case being as provided in Article 4 hereof.

The notice to Authority shall contain a statement of Utility's opinion as to whether or not the Dealer involved

will be able and willing to repurchase the Customer Paper involved if so required.

Article 12. If, to Utility's knowledge or belief, any Dealer is in default under, or is violating any obligation of, his contract with Authority and/or Trustee, or ceases to do business as a going concern, or becomes insolvent, or if a petition in bankruptcy or for a receiver is filed by or against any Dealer, or if for any other reason Utility deems action against any Dealer necessary or advisable to protect Authority's or Trustee's interests, Utility shall immediately notify Authority.

Article 13. Utility shall for a flat charge of Five Dollars ($5.00), install inside wiring for approved ranges and water heaters for Customers on Utility's lines, unless Utility does not approve the credit of the Purchaser, or does not believe Purchaser's residence is sufficiently permanent to justify the expense of such installation, or unless the cost of installation is more than Twenty Dollars ($20.00) and the Purchaser is unwilling to pay the amount in excess of said Twenty Dollars ($20.00). Utility shall obtain consent of Authority before refusing installation for any other reason.

Article 14. If any Purchaser whose Customer Paper is being collected by Utility hereunder transfers his Electric Appliance or Appliances from one point on Utility's lines to another point on Utility's lines, Utility will continue to make collections from Purchaser. If electric service of any Purchaser whose Customer Paper is being collected by Utility is discontinued for any reason whatsoever, Utility will continue to make collections from Purchaser and any notice which under regular collection procedure would have been sent to Purchaser with Purchaser's monthly service bill shall be sent to Purchaser on approximately the same [fol. 3074] day of each month on which the last regular monthly service bill was sent to Purchaser.

Article 15. Authority will pay to Utility the sum of One Dollar ($1.00) as booking charge for each item of Customer Paper purchased by Authority or Trustee and handled through Utility, each contract being considered as one item.

In addition, Authority will pay to Utility, at the end of each month, as collection and billing charges, the sum of twelve and one-half cents (12½¢) on each contract on which Utility has sent to the Purchaser during that month a first notice of installment due. Payment of the above sums will constitute payment in full for all services to be performed by Utility hereunder, including all space, mailing service, telephones, personal services, and supplies, except that Authority will furnish to Utility purchaser contract forms, rate charts, and any other standard forms regularly made up by the Authority.

Article 16. Utility may consent that any Dealer make a new contract with the Purchaser under any Customer Paper not in default, if the purpose is to extend the time of credit for payment of the balance due under the original Customer Paper; Provided, that the term of the new contract, plus the time then elapsed since the original contract was executed, shall not exceed the maximum period of time for which credit could have been extended under the original contract, and that the new contract in every other respect meets the requirements of Customer Paper as set out in Article 3 hereof.

The amount of the refinanced contract (which in the making of the refinanced contract shall be treated for all purposes as though it were the cash sale price of the appliance under an original contract) shall be the balance owing under the original contract less unearned finance charges, which latter sum shall be determined as provided in Article 17 hereof. Such refinanced contracts shall thereafter be considered as Customer Paper for all purposes of this contract, and Utility shall be entitled to the same sums for its services in connection therewith as in the case of original Customer Paper. Utility shall not, in any other manner, without written consent of Authority, waive, adjust, compromise, extend, or change any right which Authority or Trustee may have against any Purchaser or Dealer.

Article 17. If any Customer Paper is refinanced, as provided in Article 16 hereof, or is repurchased by Dealer, or is paid up in full in advance of maturity, the amount due

on the Customer Paper at that time shall be the unpaid face amount less unearned finance charges, the latter to be determined as provided in Authority's then prevailing chart of finance charges.

Article 18. If, by reason of any default of Utility in the performance of any of its obligations under this contract, Authority or Trustee shall lose any of its rights with reference to any Customer Paper against any Purchaser or Dealer, Utility shall, upon demand and as liquidated damages for such default, immediately purchase from Authority or Trustee, at a price equal to the unpaid face amount thereof, any such Customer Paper.

Article 19. This contract shall inure to the benefit of and bind the successors and assigns of the parties hereto to the [fol. 3075] same extent as the original parties, and shall be in effect from the date hereof until cancelled by either party by thirty (30) days written notice to the other party. Such cancellation shall not affect any obligation of any party with respect to Customer Paper purchased prior thereto.

Article 20. It is agreed that if any change in the obligation of Utility with reference to receiving or collecting of Customer Paper is mutually agreed on by the parties hereto, such change may be authorized by a letter from Authority to Utility and such letter, when acknowledged by Utility, shall become a part of this contract, which shall otherwise remain unchanged and in full force and effect.

Article 21. The parties hereto agree that Trustee has no obligations hereunder, but that any obligation of Authority hereunder may, at the option of Authority and Trustee (or any successor of Trustee) be performed by Trustee (or any successor of Trustee) and that such performance will be accepted by Utility as a compliance with this contract to the same extent as though such performance had been by Authority itself. The parties hereto further agree that all of Utility's obligations hereunder, however expressed and to whomsoever stated to run, shall be deemed to run severally to Trustee (or any successor of Trustee) and to Authority, and any of said obligations

COMPLAINANTS' EXHIBIT No. 581

may at any time and from time to time be enforced severally, in whole or in part, by suit or otherwise, by Authority or by Trustee (or any successor of Trustee); Provided, that satisfaction to one shall constitute satisfaction to both.

In Witness Whereof, the parties hereto have caused this contract to be executed and their respective seals to be affixed hereto as of the day and year first above written.

Tennessee Valley Authority, (Signed) Arthur E. Morgan. (Seal.)
Attest: (Signed) Charles E. Hoffman.

Electric Home and Farm Authority, Inc., (Signed) F. J. Carr, Treasurer. (Seal.)
Attest: (Signed) Harcourt A. Morgan.

Electric Home and Farm Authority, Inc., Trustee under a trust deed executed in May, 1934, as amended, to secure an issue of notes to aggregate not in excess of Ten Million Dollars ($10,000,000). (Signed) F. J. Carr, Treasurer. (Seal.)
Attest: (Signed) Harcourt A. Morgan."

[fol. 3076] COMPLAINANTS' EXHIBIT No. 582

TVA corporate resolution dated May 7, 1935, approving contract between TVA and City of Athens, Alabama:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the agreement (Exhibit 5-7-35b) with the City of Athens, Alabama.

Exhibit 5-7-35b

This Agreement, made and entered into this 23rd day of April, 1935, between the Tennessee Valley Authority, hereinafter called "Authority," a corporation created by Act of Congress approved May 18, 1933, and the City of Athens, Alabama, a municipal corporation duly organized, created and existing under and by virtue of the laws of the State of Alabama, hereinafter called "City."

Whereas, it is desirable to enlarge and clarify Section 10 of the Rules and Regulations incorporated in the Power

Contract executed on the 6th day of April, 1934, between Authority and City; and

Whereas, a valuation of the City's Electric Distribution System has been completed giving its value as of June 1, 1934, the effective date of the aforementioned agreements; and

Whereas, it is desirable to have a definite determination of the amount of the City's investment in its Electric Distribution System, and the manner in which such investment should be administered.

Now, Therefore, for and in consideration of the mutual covenants contained herein and as a supplement to the aforementioned agreement between the Authority and City, the parties hereto mutually agree as follows:

Article I

The value of the Electric Distribution System of the City as of the 1st day of June, 1934, is $72,607.51.

Article II

The investment of the City in the Electric Distribution System as of June 1, 1934, is $72,607.51. This amount is determined by deducting the total amount of outstanding bonds applicable to the Electric Distribution System from $72,607.51, which is the present value of the System. Since there are no outstanding bonds applicable to the Electric Distribution System, the City's investment in the Electric Distribution System is accordingly $72,607.51.

Article III

The City agrees that it will administer this investment in the following manner:

[fol. 3077] A. Determination of the Maximum Return to be Derived by the City From Its Investment in the Electric Distribution System

The amount set out in Article II above representing the City's investment in the Electric Distribution System shall be adjusted at the end of each fiscal year. The City shall

receive a return on this investment not to exceed one-half (½) of one (1) per cent per month, computed on the basis of the investment as of the last day of the month next preceding.

B. Payment by the City for Electric Service

The City shall pay the Electric Department monthly for all electric services supplied to it. The City shall be billed in the same manner and at the same rate as other customers in the same service classification.

C. Payment by the Electric Department to the City in Lieu of Taxes

The City shall be allowed from the revenues or funds of the Electric Department an amount in lieu of taxes, to be determined as follows:

(a) Tax Equivalent to City Property Tax.—The prevailing city property tax rate shall be applied to the value of the property used in electric operations.

(b) Tax Equivalent to County and State Property Tax.—If the electric operations of the City are not subject to county and state taxation, the tax equivalent paid to the city under (a) above shall be increased by application of the County and State tax rates to the value of the Electric Distribution System. If, however, the County and State governments levy taxes upon the municipal Electric Distribution System, this county and state tax equivalent will not be allowed to the City.

(c) Sales Tax Equivalent.—If there is in effect in the state in which the municipality is located a sales tax applicable to privately owned electric systems and such tax is not applicable to municipally owned electric systems, an amount equivalent to the application of such sales tax to the revenues of the municipal electric system may be paid to the City in addition to the tax equivalent payments set forth above. The payment of this tax shall cease at such time as the state may impose a tax upon municipal electric systems.

(d) In determining the amount to which the City is entitled in lieu of taxes under (a) and (b) above, the tax rate

shall be applied to the value of the property determined in Article I above as $72,607.51, plus additions, less retirements. The computations shall be made monthly and shall be based upon this value plus additions, less retirements, as shown by the books at the beginning of each taxable year. For the current taxable year computations shall be based upon the value of $72,607.51.

D. Payment by Electric Department for Service.

The Electric Department shall pay the salary of those persons who devote their full time to the operation of the [fol. 3078] Electric Distribution System, and an equitable portion of the salary of those persons devoting part time to the operation of the Electric Distribution System.

E. Treatment of Excessive Withdrawals and Reinvestments by the City

If, at any time, the City should withdraw from the funds of the Electric Department amounts in excess of the allowable return on investment and of the tax equivalent, the City's investment shall be reduced in the amount of such excess withdrawals: Provided, however, that withdrawals of the City's investment shall be made only at such times and in such amounts as not to interfere with the efficient operation of the Electric Distribution System; Provided, further, that in no event shall the excess withdrawals in any fiscal year exceed ten (10%) per cent of the City's investment on the initial date of delivery as set out in Article II above without the written consent of Authority; and Provided, further, that in no event shall the excess withdrawals by the City exceed the amount of the City's investment in the Electric Distribution System. If, at any time, the City should fail to withdraw the full amount of return, due on account of its investment and/or on account of tax equivalent, that part or whole of the return and/or tax equivalent which is not withdrawn shall be added to the City's investment.

F. Treatment of Short Term Loans and Advances

The City may borrow funds or lend funds to the Electric Department only on a short term basis (one year or less

without the right of renewal). The amount so borrowed or loaned shall bear a rate of interest not to exceed six (6%) per cent per annum. At the end of each fiscal year all borrowings and advances by the City and the Electric Department shall be paid or closed out by adjustment of the City's investment account; Provided, however, that any short term obligations then outstanding which are to be paid in the succeeding fiscal year may remain outstanding for the unexpired term, in the discretion of the Board of Aldermen, or other governing body of the City.

G. Action by Governing Body of City

Except as limited in this statement, the Board of Aldermen or other governing body of the municipality shall determine the rate of return on the City's investment and/or the interest rate of loans and advances. No transfer of funds shall be made between the City and the Electric Department, nor shall any change in the City's investment in the Electric Distribution System be made except pursuant to a resolution of the Board of Aldermen or other governing body of the City.

H. Publication of Statement of City's Investment

The Board of Aldermen or other governing body of the municipality shall publish a statement of the amount of the City's investment in its Electric Distribution System, the outstanding short term borrowings and advances, and all [fol. 3079] other accounts existing between the City and the Electric Department, at the close of each fiscal year. A copy of such statement shall be forwarded to Authority immediately at its office at Wilson Dam, Alabama. After the closing of the books at the end of each month, the Board of Aldermen or other governing body of the municipality shall make known upon demand to any taxpayer of the City or customer of the Electric Distribution System, the amount of the City's investment in its Electric Distribution System.

Article IV

This agreement is hereby made a part of and incorporated into the Power Contract between Authority and City executed the 6th day of April, 1934.

COMPLAINANTS' EXHIBIT No. 582

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority (Signed) by Arthur E. Morgan, Chairman.

Attest: (Signed) Charles E. Hoffman, Ass't Secretary.

City of Athens (Signed) by R. H. Richardson, Jr., Mayor. (Seal.)

Attest: (Signed) R. A. Smith, City Clerk.

COMPLAINANTS' EXHIBIT No. 583

TVA corporate resolution dated July 25, 1935; approving Sale, Lease and Security Contract between Tennessee Valley Authority and Tishomingo County Electric Power Association.

(Omitted)

To avoid repetition, the contract attached to and referred to in the approving resolution is not set forth herein at length. It is substantially the same as the Sale, Lease, [fol. 3080] Trust and Security Contract comprising a part of Complainants' Exhibit No. 577 hereinbefore set forth as an exhibit, but said contract contains an additional paragraph, to-wit:

"9. Authority shall have, and hereby reserves, the option for a period of ten (10) years from the effective date of this contract to repurchase the personal property, terminate the Government's lease of any real property relating thereto, and retake possession of the 22 kv. transmission line described in Section (19) and (20) of Article 2 hereof, together with all rights-of-way and easements, connected therewith, all railroad crossing contracts covering said line and any other property or rights connected with or appertaining to said 22 kv. transmission line. In the event of the exercise of said option Authority shall pay to Association the purchase price of said line which shall be taken as twenty-three thousand, nine hundred and sixty-two dollars and fifty-eight cents ($23,962.58), plus replace-

COMPLAINANTS' EXHIBIT No. 583

ments, additions, and betterments at actual cost, less actual retirements and less accrued depreciation at the rate of four (4%) per cent per annum.

In the event Authority exercises the option herein granted service to Association or Association's customers shall in no wise be impaired, nor shall the exercise of said option by Authority result in any increased cost to or necessitate any increased investment by Association."

COMPLAINANTS' EXHIBIT No. 584

TVA corporate resolution dated November 16, 1935, approving Sale, Lease and Security Contract between TVA and Tombigbee Electric Power Association.

(Omitted)

To avoid repetition, the contract attached to and referred to in the approving resolution is not set forth herein at length. It is substantially the same as the Sale, Lease, Trust, and Security Contract comprising a part of Complainants' Exhibit No. 577 hereinbefore set forth as an exhibit, but contains as paragraph 11 an option similar in nature to that hereinbefore set forth in the comment, supra, respecting Complainants' Exhibit No. 583.

[fol. 3081] COMPLAINANTS' EXHIBIT No. 585

TVA corporate resolution dated November 16, 1935, approving contract between TVA and the City of Dayton, Tennessee, for cooperation in construction of rural lines:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 11-16-35c) with the City of Dayton, Tennessee.

Exhibit 11-16-35c

This Agreement, made and entered into this 2nd day of November, 1935, by and between Tennessee Valley Authority, hereinafter called "Authority", a corporation created

by the Tennessee Valley Authority Act of 1933, and the City of Dayton, Tennessee, a municipal corporation duly organized, created, and existing under and by virtue of the laws of Tennessee, hereinafter called "Municipality".

Witnesseth:

Whereas, Municipality has executed a loan contract with the Rural Electrification Administration in the amount of $38,058.00 by which Municipality is to receive funds to be used in the construction of rural electric lines in and adjacent to Rhea County, Tennessee, and

Whereas, Authority is preparing engineering plans and specifications which will enable Municipality to advertise for bids and award contracts for the construction of said rural lines and Municipality has agreed to reimburse Authority for the cost of these services, and

Whereas, Municipality is anxious to begin the construction immediately of certain of these rural lines which are now being surveyed, and

Whereas, Authority by Section 10 of the Tennessee Valley Authority Act of 1933 is authorized to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and

Whereas, Municipality has requested that Authority cooperate in the immediate construction of certain proposed rural lines, and

Whereas, all parties to this contract have duly authorized its execution,

Now, Therefore, for and in consideration of the mutual covenants herein contained and subject to all the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

[fol. 3082] 1. Authority will cooperate with Municipality in the construction of rural transmission lines which have been or are to be surveyed by Authority under the terms of the request for these and other services by the Board of Commissioners of Municipality, and contained in an order to the Authority dated October 2, 1935, and signed by the Chairman of said Board and the City Recorder, which order was accepted on behalf of Authority by A. H. Sullivan, Assistant Chief Electrical Engineer, in a letter

to Municipality dated October 31, 1935, in the following manner:

A. Authority will supply to Municipality such poles, conductors, crossarms, transformers, meters, insulators, pole line hardware, and other material necessary or useful in the construction of rural transmission lines in such quantities as Municipality may request and as may be necessary in the construction of the rural lines hereinabove referred to.

B. Authority will furnish to Municipality, at Municipality's request, trucks, tools, and other equipment necessary or useful in the construction of the rural lines referred to hereinabove.

C. Authority will furnish Municipality, at Municipality's request, line crews, laborers, and supervisors, both field and office, in such numbers as Authority may deem advisable for use in the construction of the rural lines referred to hereinabove.

2. Municipality will pay to Authority the Authority's actual cost, plus overhead charges, of the materials, supplies, labor, supervision, and services performed pursuant to this agreement, and for Authority's actual cost for the use of equipment supplied hereunder. Municipality agrees to pay any sums due hereunder to Authority within thirty (30) days after the receipt of invoice therefor from Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, by —— ——, Coordinator.

Attest: —— ——, Assistant Secretary.

City of Dayton Tennessee, by —— ——, Chairman of Board of Commissioners.

Attest: —— ——, Recorder.

[fol. 3083] COMPLAINANTS' EXHIBIT No. 586

TVA corporate resolution dated November 16, 1935, approving contract between TVA and Alcorn County Electric Power Association for interchange of power:

(Omitted)

COMPLAINANTS' EXHIBIT No. 587

TVA corporate resolution dated December 20, 1935, approving Sale, Lease and Security Contract between TVA and the City of New Albany, Mississippi:

(Omitted)

To avoid repetition, the contract attached to and referred to in the approving resolution is not set forth herein at length. It is substantially the same as the Sale, Lease, Trust, and Security Contract comprising a part of Complainants' Exhibit No. 577 hereinbefore set forth as an exhibit, and includes the option for repurchase provision set forth in Complainants' Exhibit No. 583.

COMPLAINANTS' EXHIBIT No. 588

TVA corporate resolution dated December 23, 1935, approving contract between TVA and Lincoln County Electric Membership Corporation for collection of bills and other services:

(Omitted)

[fol. 3084] COMPLAINANTS' EXHIBIT No. 589

TVA corporate resolution dated December 31, 1935, approving supplementary contract between TVA and Alcorn County Electric Power Association for the construction of rural lines by the Association:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 12-31-35d) with the Alcorn County (Mississippi) Electric Power Association.

Exhibit 12-31-35d

This Agreement, made and entered into this 31st day of December, 1935, pursuant to the Tennessee Valley Au-

thority Act of 1933, between the Tennessee Valley Authority, a corporation created by and acting under said Act, hereinafter called "Authority", and the Alcorn County Electric Power Association, a non-profit civic improvement corporation, organized, created and existing under and by virtue of the laws of the State of Mississippi, hereinafter called "Association:"

Witnesseth:

Whereas, Authority is delivering electricity to Association pursuant to a power contract between the parties, dated June 1, 1934, and

Whereas, Authority conveyed certain property to Association on June 1, 1934 under the terms of an agreement entitled "Sale, Lease, Trust and Security Contract Between Tennessee Valley Authority, United States of America and Alcorn County Electric Power Association," and as partial security therefor Association agreed to pay over to Authority all of its surplus revenues and all membership fees received, including installments paid by additions to Association's bills for service to members, and

Whereas, Association desires to construct certain rural lines from the surplus revenues pledged Authority as partial security for Association's debt to Authority.

Now, Therefore, for and in consideration of the premises and the mutual convenants contained herein and subject to all the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. This agreement shall be effective for fifteen (15) months from April 1, 1936, subject to the provisions hereof. Association shall be under no obligation to pay to Authority the surplus revenues (excluding membership fees and charges) from its operations during this period.

2. During the period hereof, Association will construct [fol. 3085] and put into service not less than thirty (30) additional miles of rural lines. All projects must be submitted in advance to Authority, together with general plans and specifications of such projects, and no project shall be constructed until such project, with the general plans and specifications therefor, has been approved by Authority.

COMPLAINANTS' EXHIBIT No. 589

3. Authority may terminate this agreement upon five (5) days written notice, if Association has not substantially completed eight (8) miles of rural lines within six (6) months from the effective date hereof and ten (10) additional miles within ten (10) months from the effective date hereof.

4. In order to afford additional security to Authority in lieu of the payment of surplus revenues, which payment is extended under the terms of this agreement, Association hereby covenants and agrees that Authority shall have a prior lien on all the rural lines constructed or acquired by Association hereunder, said lien to be and remain and attach to each and every article of property constructed or acquired until the entire indebtedness of Association to Authority under the agreement of January 1, 1934, hereinabove referred to is fully paid.

5. The agreement of June 1, 1934 hereinabove referred to is hereby amended to the extent necessary to conform to the provisions hereof.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in duplicate by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors. C. G. D., Leg. Div.

Attest: Charles E. Hoffman, Assistant Secretary.

Alcorn County Electric Power Association, by ——, President.

Attest: H. W. Weeks, Secretary."

(Verifications omitted.)

COMPLAINANTS' EXHIBIT No. 590

TVA corporate resolution dated January 10, 1936, approving construction of Hiwassee Dam:

"Resolved, That the Board of Directors hereby approves and authorizes the construction of a reservoir storage dam

COMPLAINANTS' EXHIBIT No. 590

in the Hiwassee River on the Fowler Bend Site as recommended by the Assistant Chief Engineer, including provision for the future installation of such equipment as is necessary to generate hydro-electric energy."

[fol. 3086] COMPLAINANTS' EXHIBIT No. 591

TVA corporate resolution dated December 31, 1935, approving the construction of Chickamauga dam:

"Resolved, That the Board of Directors hereby approves and authorizes the construction of a high dam in the Tennessee River on the site at the foot of Chickamauga Island located approximately seven miles above Chattanooga, Tennessee, in accordance with the general plan contained in the report labeled exhibit 12-31-35e, including the provision for the future installation of such equipment as is necessary to generate hydro-electric energy."

COMPLAINANTS' EXHIBIT No. 592

TVA corporate resolution dated January 18, 1936, approving sale and loan contract between TVA and The Monroe County Electric Power Association:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 1-18-36b) with the Monroe County (Mississippi) Electric Power Association.

Exhibit 1-18-36b

This Agreement, made and entered into as of the fifteenth day of January, 1936, between the Tennessee Valley Authority (hereinafter called Authority), the United States of America (hereinafter called Government) acting through its legal agent, Authority, and The Monroe County Electric Power Association (hereinafter called Association), a non-profit civic improvement corporation, organized, created and existing under and by virtue of the laws of the State of Mississippi.

Witnesseth:

Whereas, Authority and/or Government are the owners of certain electric properties in Monroe County, Mississippi, and

Whereas, Association desires to purchase said properties for the sum of Seventeen Thousand Two Hundred Thirty-seven Dollars and Eighty-nine Cents ($17,237.89), for the purpose of completing, improving and operating them for the transmission and sale of electric power to its members under an agreement made between Association and Authority entitled "Power Contract Between Tennessee Valley Authority and Monroe County Electric Association" dated July 19, 1935, and

[fol. 3087] Whereas, Authority is authorized by Section 4 (f) of the Tennessee Valley Authority Act of 1933, as amended, to dispose of personal property, and by Section 4 (k) of said Act, as amended, subject to the approval of the President, to dispose of such real property as may no longer be necessary in carrying out the purposes of said Act, and Authority's Board of Directors has found that the following described properties are no longer necessary in carrying out the purposes of said Act, and

Whereas, Association has contracted with the Smithville Light and Power Company to purchase from said Company certain distribution systems and an inter-connecting transmission line, located in Monroe and Lowndes Counties, Mississippi, for the sum of Eleven Thousand Five Hundred Dollars ($11,500) and Association desires to borrow that amount from Authority for the purpose of paying for said properties and operating the same for the transmission and sale of electric power to its members, according to the "Power Contract" hereinabove referred to, and

Whereas, Authority is authorized by Section 12 (a) of the Tennessee Valley Authority Act of 1933, as amended, to assist non-profit organizations in acquiring existing distribution facilities, incidental works and inter-connecting transmission lines, by extending credit to such organizations, and

Whereas, as evidence of Association's obligation to pay Authority the sum of Seventeen Thousand Two Hundred Thirty-seven Dollars and Eighty-nine Cents ($17,237.89) for the properties which Authority herein agrees to sell to

Association, and to repay to Authority the sum of Eleven Thousand Five Hundred Dollars ($11,500) which Authority herein agrees to loan to Association, Association has executed on even date herewith a certain "First Mortgage three and one-half per cent note" (hereinafter called the "Note") for the sum of Twenty-eight Thousand Seven Hundred Thirty-seven Dollars and Eighty-nine Cents ($28,737.89) and a certain First Mortgage (hereinafter called the "Mortgage") to secure the payment of said Note, said Note and Mortgage being incorporated into this contract as fully as if they were physically made a part hereof.

Now, Therefore, for and in consideration of the mutual covenants herein contained, the parties hereto for themselves, their successors and assigns forever covenant and agree as follows:

1. Sale of Property—In consideration of the sum of Seventeen Thousand Two Hundred Thirty-seven Dollars and Eighty-nine Cents ($17,237.89), which sum Association agrees to pay to Authority as hereinafter provided, Government, acting through Authority, its legal agent, and Authority hereby covenant and agree to convey to Association by quitclaim deed executed on even date herewith, all their right, title and interest in and to the following described property, located in Monroe County, Mississippi, to have and to hold the same to itself, its successors and assigns, forever, to wit:

[fol. 3088] (1) The three-phase, 4-wire, 11.9 kv. rural distribution line, known as the Amory-Gravel Pit Line, extending from the Amory-Substation at Amory, Mississippi, in a westerly direction for a distance of approximately one mile to the Amory-Gravel Pit, including poles, cross arms, pole line hardware, conductors, insulators, one service metering equipment, and three 25 kva. 6900/115-230 volt, single-phase transformers.

(2) The poles, cross arms and guying material composing the following uncompleted lines:

The Becker-Hamilton Line, approximately 12.7 miles.

The Smithville-Suggs Pottery Line, approximately 3.6 miles.

The Smithville-Pierce Chapel Line, approximately 3.5 miles.

The Amory-Hatley-Smithville Line, approximately 9.0 miles.

The Parham Store-Greenwood Springs Line, approximately 1.8 miles.

Included in this transfer are 532 poles, 269 6-pin cross arms, and 14 anchor logs, all erected in place.

(3) All the rights-of-way and/or easements now owned by Authority in any privately-owned real property over, through, or across which any of the above lines, complete or incomplete, extend.

(4) All franchises held by Authority for the use of public roads, and all contracts owned by Authority granting privileges for railroad crossings, which are necessary for the completion and operation of the above lines.

2. Title to the above described property shall vest in the Association upon the execution of said quitclaim deed, but Authority shall retain possession and control of said property until Association shall have employed a Superintendent or made the arrangements necessary, in the opinion of Authority, for taking over the possession, control, and operation of the properties, which Association agrees shall be not later than March 1, 1936. Until the possession, control and operation of said properties is transferred to Association, Authority shall be entitled to all the revenues accruing therefrom. Upon the transfer of such possession, control, and operation of said properties, customer bills shall be prorated on a calendar basis.

The sale of the above property is and the conveyance thereof shall be made, subject to the approval by the Presi- [fol. 3089] dent of the United States of the disposal by Authority of such of the property as may be real property. Authority agrees to take the reasonable and proper steps to secure such approval by the President.

3. Loan.—Authority hereby agrees to loan, and Association agrees to borrow, the sum of Eleven Thousand Five Hundred Dollars ($11,500) to be used by Association in payment to the Smithville Light and Power Company for the electric distribution system located in the village of Cale-

donia, Lowndes County, Mississippi, the electric distribution system located in the town of Smithville, Monroe County, Mississippi, the inter-connecting transmission line extending from the city of Amory, Mississippi, to the city of Smithville, Mississippi, together with the properties connected with or incidental to the above described properties, all of which properties Association has agreed to purchase from the Smithville Light and Power Company for the sum of Eleven Thousand Five Hundred Dollars ($11,500), under a contract executed October 25, 1935, and amended November 2, 1935.

Association agrees to take over the possession, operation and control of the above described properties of the Smithville Light and Power Company at the same time that it takes over the possession, operation and control of the properties herein sold to Association by Authority. Upon notice in writing being given to Authority by Association that Association has employed a Superintendent, or made other arrangements necessary, in the opinion of the Authority, for taking over said properties, and upon the presentation to Authority of the certificate of Association's counsel that Association will receive a good and valid title to the above described property of the Smithville Light and Power Company, subject only to a lien for ad valorem taxes for the year 1936, upon the satisfaction of those claims specified in said certificate of counsel which claims shall not exceed Eleven Thousand Five Hundred Dollars ($11,500), Authority will issue a check to the Monroe County Electric Power Association in the sum of Eleven Thousand Five Hundred Dollars ($11,500). If Association is unable to secure such good and valid title to the properties of the Smithville Light and Power Company for the sum so specified Authority shall not be obligated to loan to Association the said Eleven Thousand Five Hundred Dollars ($11,500), and Authority shall credit Association with the payment of said Eleven Thousand Five Hundred Dollars ($11,500) on Association's Note. However, Authority's obligation to transfer, and Association's obligation to receive and pay for Authority's properties described in paragraph 2 of this contract, shall not be thereby affected.

4. Payment of Indebtedness.—The total amount of Association's indebtedness to Authority under this contract is

Twenty-eight Thousand Seven Hundred Thirty-seven Dollars and Eighty-nine Cents ($28,737.89). As hereinabove stated, said indebtedness is evidenced by Association's Note and secured by Association's Mortgage executed on even date herewith, and incorporated as a part of this contract. Said Mortgage shall be deemed to cover and include all the properties described in this contract, as and when they become properties of Association. Association agrees to pay said indebtedness to Authority according to the terms, covenants and agreements contained in said Note and Mort- [fol. 3090] gage, and according to the terms, covenants and agreements contained in this contract and a certain contract entitled "Power Contract Between Tennessee Valley Authority and Monroe County Electric Power Association," dated July 19, 1935, and also incorporated into this Contract.

Upon the date set for the first payment of interest on indebtedness of Association to Authority, Authority agrees to credit Association with payment of interest between the effective date of this contract and the date on which Authority transferred the possession, control and operation of the above properties to Association and issued the above check to the Smithville Light and Power Company.

5. Neither this contract nor any interest therein shall be transferable or assignable by Association to any other party without first securing the written consent of Authority.

In Witness Whereof, the parties have caused this instrument to be signed and attested by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Harcourt A. Morgan, Vice Chairman, Board of Directors. C. G. I., Leg. Div. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

United States of America, by Tennessee Valley Authority, Its Legal Agent, by Harcourt A. Morgan, Vice-Chairman, Board of Directors. C. G. I., Leg. Div. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

The Monroe County Electric Power Association, by R. G. Christian, President. (Seal.)

Attest: A. H. Ritter, Secretary.

(Verifications omitted.)

COMPLAINANTS' EXHIBIT No. 593

TVA corporate resolution dated February 1, 1936, approving contract between TVA and the City of Dayton, Tennessee, to sell rural lines:

[fol. 3091] "Resolved, That the Board of Directors hereby approves and authorizes entry into the revised contract (Exhibit 2-1-36a) with the City of Dayton, Tennessee.

Exhibit 2-1-36a

This Agreement, made and entered into this 24th day of January, 1936, between Tennessee Valley Authority, hereinafter called "Authority", a corporation created by Act of Congress May 18, 1933, and the City of Dayton, Tennessee, hereinafter called "Municipality," a municipal corporation organized and existing by virtue of the laws of the State of Tennessee.

Witnesseth:

Whereas, Municipality has executed a Loan Contract with the Rural Electrification Administration in the amount of Thirty-eight Thousand and Fifty-eight Dollars ($38,058.00), by which Municipality is to receive funds to be used in the construction of rural electric lines in and adjacent to Rhea County, Tennessee; and

Whereas, pursuant to Section 10 of the Tennessee Valley Authority Act of 1933, the Authority agreed to construct rural lines for Municipality in and adjoining Rhea County, Tennessee; and

Whereas, under the terms of a Construction Contract between Authority and Municipality, dated January 24, 1936, Municipality has agreed to pay Authority for the lines so constructed a sum not exceeding Thirty-eight Thousand and Fifty-eight Dollars, ($38,058.00); and

Whereas, both parties feel it desirable to set out the terms by which the payment for said rural lines shall be made;

Now, Therefore, for and in consideration of the mutual covenants herein contained, the parties hereto covenant and agree as follows:

1. In the event Municipality receives the money from the Rural Electrification Administration under the terms of the Loan Contract between Municipality and Rural Electrification Administration, dated the 4th day of November, 1935, before February 1, 1937, Municipality will pay Authority for

the rural lines constructed in and adjacent to Rhea County, Tennessee, under the terms of the Construction Contract between Tennessee Valley Authority and City of Dayton, Tennessee, entered into the 24th day of January, 1936.

2. If Municipality has not received the loan from the Rural Electrification Administration referred to above by February 1, 1937, the parties hereto agree that title to the lines constructed under the terms of the Construction Contract referred to in Section 1 hereof, shall be and remain in Authority as complete satisfaction of Municipality's indebtedness to Authority under the terms of said Construc-
[fol. 3092] tion Contract. Municipality hereby disclaims any ownership of the rural lines due to any ownership of the rights-of-way and/or easements over which the lines extend. In the event title to said rural lines is so retained by Authority, Authority agrees to sell and Municipality agrees to buy the rural lines constructed by Authority under the terms of said Construction Contract on the following terms and conditions:

(a) Municipality will pay monthly to Authority all amortization charges which shall be collected from rural customers of Municipality served from the lines constructed under the terms of the Construction Contract referred to above, and which Municipality agrees to collect from said customers, at the rate of one cent (1¢) per kwh. for each kwh. of electricity used per customer per month up to and including 100 kwh., but not less than twenty-five cents (25¢) per month shall be paid for each customer each month, until Municipality's indebtedness to Authority is fully paid.

(b) Municipality will pay to Authority all remaining revenues before the reduction or elimination of surcharges, or the reduction in rates to consumers required by Section 10 (b) of the Rules and Regulations attached to and incorporated into the Power Contract between Tennessee Valley Authority and the City of Dayton, Tennessee, dated the 12th day of September, 1934.

(c) Municipality will pay interest to Authority on any outstanding indebtedness at the rate of three and one-half per cent (3½%) per annum, payable semi-annually, out of

COMPLAINANTS' EXHIBIT No. 593

the revenues of its electric system and under the terms of Section 10 (a) of the Rules and Regulations attached to and incorporated into the Power Contract between Tennessee Valley Authority and the City of Dayton, Tennessee, dated the 12th day of September, 1934.

(d) Authority will deliver title to the rural lines so constructed by the execution of a quit claim deed to Municipality. As security for the payment of Municipality's indebtedness to Authority, Municipality will execute a mortgage to Authority covering all the rural lines so conveyed.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers the day and year first above written.

City of Dayton, Tennessee, (Signed) by G. W. Taylor, Chairman, Board of Commissioners.

Attest: (Signed) C. D. Sanborn.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors. C. G. D., Leg. Div.

Attest: Charles E. Hoffman, Assistant Secretary.

JLF:CGD:LDN:ml."

[fol. 3093] COMPLAINANTS' EXHIBIT No. 594

TVA corporate resolution dated February 10, 1936, approving Power Interchange Agreement between TVA and City of Amory, Mississippi:

(Omitted)

COMPLAINANTS' EXHIBIT No. 595

TVA corporate resolution dated February 11, 1936, approving Sale and Loan Contract between TVA and Pontotoc County Electric Power Association:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 2-11-36h) with the Pontotoc County (Mississippi) Electric Power Association.

COMPLAINANTS' EXHIBIT No. 595

Exhibit 2-11-36h

This Agreement, entered into this 12th day of February, 1936, by and between the Tennessee Valley Authority (hereinafter called "Authority"), United States of America (hereinafter called "Government"), acting through its legal agent, Authority (Authority and Government being jointly referred to hereinafter by the phrase "First Parties"), and the Pontotoc County Electric Power Association, a non-profit civic improvement corporation, duly organized, created, and existing under and by virtue of the laws of the State of Mississippi (hereinafter called "Association").

Witnesseth:

Whereas, on February 15, 1935, First Parties and Association entered into a contract entitled "Sale, Lease, Trust and Security Contract Between Tennessee Valley Authority, United States of America, and Pontotoc County Electric Power Association" (said contract being hereinafter referred to as "Sale, Lease Contract") under which First Parties sold certain personal property and leased certain real property to Association, Association agreeing to pay to Authority therefor the sum of Sixty-seven Thousand, Six Hundred Forty-five and 36/100 Dollars ($67,645.36), with interest on the unpaid balance at the rate of three and one-half per centum (3½%) per annum, payable semi-annually, and

Whereas, said indebtedness of Association to Authority has been increased to One Hundred Twenty-eight Thousand, Forty-seven and 85/100 Dollars ($128,047.85) by reason of the construction of certain rural lines by Authority as agent [fol. 3094] for Association and the sale of other lines by Authority to Association, the latter being fully described hereinafter, and certain rehabilitation services performed by Authority for Association, and

Whereas, said indebtedness of Association to Authority has been reduced to One Hundred Sixteen Thousand Eight Hundred Thirty-one and 57/100 Dollars ($116,831.57) by adjustments made in regard to work orders, and to the accounts receivable and meter deposits transferred to Association by Authority, in compliance with Sections 3, 4 and 5 of the Sale, Lease Contract, and by payments made on its indebtedness by Association to Authority, and

Whereas, First Parties and Association desire to cancel, annul, and rescind said Sale, Lease Contract and to enter into a new contract providing for the sale of the above mentioned real and personal property by First Parties to Association, and the payment by Association to Authority therefor of the sum of One Hundred Sixteen Thousand, Eight Hundred Thirty-one and 57/100 Dollars $116,831.57), and

Whereas, Association has an option to acquire the urban distribution system in Bruce, Calhoun County, Mississippi, from the E. L. Bruce Company of Memphis, Tennessee, its present owners, for the sum of Four Thousand Dollars ($4,000.00), and has requested Authority to extend credit to Association for the acquisition of said system, and further to extend credit up to the sum of Twenty-five Thousand Dollars ($25,000.00) to finance the construction by Association of a rural electric line connecting Association's present lines at Randolph, Pontotoc County, Mississippi, with said distribution system in Bruce, Mississippi, and

Whereas, all the said properties are to be used by Association in the transmission and distribution of electric energy under a plan agreed upon between Authority and Association in a contract entitled "Power Contract Between Tennessee Valley Authority and Pontotoc County Electric Power Association" executed on even date herewith (said contract being hereinafter called "Power Contract").

Now, Therefore, in consideration of the Mutual benefits to all parties hereto, and of the covenants and agreements herein contained, and those also contained in said Power Contract, and subject to the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto covenant and agree as follows:

1. Rescission of Sale, Lease Contract.—First Parties and Association covenant and agree that the Sale, Lease Contract, hereinabove referred to, is hereby cancelled, rescinded, and rendered null and void, However, neither the rescission of said Sale, Lease Contract nor the execution of this contract shall prejudice any right or cause of action which may have heretofore accrued to either of the parties to the Sale, Lease Contract by reason of the breach thereof by either of the other parties to said Sale, Lease Contract.

2. Sale of Property.—(a) First Parties hereby sell to Association all their right, title, and interest in and to the following described real and personal property, and agree to execute a quitclaim deed to said property to Association on even date herewith:

[fol, 3095] (1) All of the line tools owned by Authority and now used in the operation and maintenance of the electric distribution system in Pontotoc County, Mississippi, a detailed list of which tools is hereto attached and made a part hereof as Exhibit A;

(2) The line materials and supplies owned by Authority and now used in the operation and maintenance of said distribution system, a detailed list of which is hereto attached and made a part hereof as Exhibit B;

(3) All office furniture and fixtures owned by Authority and now used in connection with the ownership and operation of the properties conveyed herein; a detailed list of which is hereto attached and made a part hereof as Exhibit C.

If a question shall arise as to what property is intended to be conveyed above, the detailed lists shall control.

(4) All right, title and interest of Authority in and to a certain franchise granted by the Town of Pontotoc, June 26, 1925, styled "An Ordinance Granting an Electric Franchise to Mississippi Power Company, its Successors and Assigns in the Town of Pontotoc, Mississippi," which franchise has been assigned to Authority:

(5) All rights under and claim of Authority to a franchise granted by the Town of Ecru, Mississippi, December 2, 1930, styled "An Ordinance Granting an Electric Franchise to Mississippi Power Company, its Successors and Assigns in the Town of Ecru, Mississippi," which franchise has been assigned to Authority;

(6) The electric light and power distribution system now serving the City of Pontotoc, Mississippi, and vicinity, including poles, crossarms, pole lines, pole line hardware, conductors, insulators, transformers, service lines, lamps, meters, materials, and other personal property now used or useful in the operation of the distribution system, and

there is hereby assigned all railroad crossing and joint use of poles contracts, if any, owned by First Parties, or either of them, needed in the operation of the distribution system conveyed in this article.

(7) The 11950 Y-volt single phase distribution system now serving the Town of Ecru, Mississippi, and vicinity, including poles, crossarms, pole lines, pole hardware, conductors, insulators, service lines, lamps, meters, transformers, materials and other personal property now owned or useful in the operation of the distribution system, and there is hereby assigned all railroad crossing and joint use of poles contracts, if any, owned by First Parties, or either of them, needed in the operation of the distribution system conveyed in this article.

[fol. 3096] (8) The rural distribution extension running out of the City of Pontotoc, Mississippi, known as the Hardin extension, including poles, crossarms, pole lines, pole line hardware, conductors, insulators, service lines, transformers and meters, extending for a distance of approximately 2.5 miles.

(9) The three phase 11,950 Y-volt transmission or distribution line extending from the Lee-Pontotoc County line along highway No. 6 to the distribution sub-station described below, located in the City of Pontotoc, a distance of approximately 11 miles. Said line consists of 221 creosoted pine poles complete with crossarms and pole line hardware, carrying four No. 2 aluminum conductors and including transformers, meters, and services for serving the rural customers along the line.

(10) The three phase 11,950 Y-volt transmission or distribution line extending from the sub-station described below in or near the City of Pontotoc to a point in or near the Town of Ecru, a distance of approximately 8.5 miles, including all poles, crossarms, pole lines, pole line hardware, conductors, insulators, transformers, meters, and service lines for serving the rural customers along the line.

(11) The Sub-station and equipment known as Pontotoc Central Sub-station located in or near the City of Pontotoc, and consisting of 2 pole 35′ wood structure with metal plat-

form, 13 kv. drop-out fuses, 2.3 kv. reclosing oil circuit breaker in metal switch cabinet, totalizing metering equipment, metal fence, and 3-300 kva. 13,000/2,300 volt transformers.

(12) That parcel of land in Pontotoc County upon which the sub-station above described is located and more particularly described as follows:

Beginning at the northeast corner of lot number 31 in the southeast quarter of Section 32, Township 9; Range 3 east, thence south 87 degrees west 50 feet, thence south 3 degrees east 50 feet, thence north 87 degrees east 50 feet, thence north 3 degrees west 50 feet to the point of beginning.

(13) A single phase two-wire 11,950 Y-volt grounded neutral rural distribution line extending from the town of Ecru in a northerly direction to the community of Ingomar, including two branch lines, a total distance of 7½ miles with poles, crossarms, conductors, meters, pole lines, pole line hardware, insulators, transformers, and service lines.

(14) A three phase four-wire 11,950 Y-volt rural distribution line starting at a point one-half mile from Pontotoc on the Pontotoc-Ecru line and running in a westerly direction for a distance of six miles to a junction point, where one branch of the line proceeds in a northwesterly [fol. 3097] direction for a distance of eight miles to the community of Toccopola, and the other branch proceeds in a southwesterly direction from the junction point for a distance of 4½ miles to the community of Randolph, and includes one mile of single phase two-wire 11,950 Y-volt grounded neutral rural line running through the community of Randolph with poles, crossarms, conductors, meters, pole lines, pole line hardware, insulators, transformers, and service lines.

(15) A single phase two-wire 11,950 Y-volt grounded neutral rural distribution line starting from a point on the Pontotoc-Lee County line approximately five miles east of the town of Pontotoc and extending south on what is known as the Valley Road for a distance of approximately four miles from the point; one branch extends east for a distance of one mile and a second branch extends west from the same

point a distance of two miles, including poles, crossarms, conductors, meters, pole lines, pole line hardware, insulators, transformers, and service lines.

(16) A partially constructed rural line consisting of poles only starting at the southeast end of the Ecru distribution system and extending in a southeasterly direction along the Cherry Creek road a distance of ten miles.

(17) All such rights and interest as Government may have in the rights-of-way and/or easements in any privately owned real property over, through or across which any of the above described electric power lines may extend.

(b) Association hereby agrees to pay to Authority for the above described property the sum of One Hundred Sixteen Thousand, Eight Hundred Thirty-one and 57/100 Dollars ($116,831.57) with interest on the unpaid balance at the rate of three and one-half per centum (3½%) per annum, payable semi-annually.

(c) The sale and conveyance of the above described property shall be conditional upon the approval of the President of the United States of the disposition by Authority of so much of the above described property as may be real property.

3. Loan to Association.—(a) Authority agrees to advance Four Thousand Dollars ($4,000.00) to Association to be used by Association in purchasing the Bruce distribution system from the E. L. Bruce Company. Upon the presentation by Association to Authority of (1) proof that Association has an option to purchase said Bruce system for not to exceed Four Thousand Dollars ($4,000.00), conveyance to be made by warranty deed and free of all liens and encum- [fol. 3098] branches, except liens for ad valorem taxes of 1936, which shall be prorated, and the present owner to operate the system for not less than two months after the exercise of said option, (2) proof that Association has all necessary or advisable franchises, permits, licenses, and other governmental approvals, and all rights-of-way and easements necessary or advisable for the construction and operation of the said distribution system and interconnecting line, (3) a certified copy of a resolution of the Executive

Committee of Association requesting that the advance be made, (4) an opinion of counsel (who shall be satisfactory to Authority) that the E. L. Bruce Company is the owner of said system and is capable of giving Association valid title thereto, and that all the acts and proceedings of Association necessary for borrowing said money from Authority and purchasing said system from the E. L. Bruce Company have been duly taken and are within the power of Association, and (5) a receipt acknowledging the payment of said Four Thousand Dollars ($4,000.00) by Authority to Association, Authority will issue a check payable to Association in the sum of Four Thousand Dollars, ($4,000.00).

(b) Authority agrees to loan to Association that amount required by Association to construct a rural electric line, approximately twenty (20) miles long, connecting Association's lines at Randolph, Pontotoc County, Mississippi, with such Bruce system, said amount not to exceed the sum of Twenty-five Thousand Dollars ($25,000.00). Upon the presentation by Association to Authority of (1) proof that Association has all necessary or advisable franchises, permits, licenses, and other governmental approvals, and all rights-of-way and easements necessary or advisable for the construction and operation of said line, (2) a certified copy of a resolution of the Executive Committee of Association requesting such advance, (3) an opinion of counsel that Association has power to and has taken the necessary steps to borrow such money and construct such line, and (4) a receipt acknowledging the advance of such money, Authority will issue a check payable to Association in the sum of Five Thousand Dollars ($5,000.00). Authority will make further advances to Association up to said Twenty-five Thousand Dollars ($25,000.00), as needed from time to time in the construction of said interconnecting line, upon presentation of similar requests and receipts for such advances, accompanied by a certificate stating in detail the use to which prior advances have been put and the use to which the sum applied for is to be put.

Association agrees that it will construct the interconnecting line according to and in compliance with Authority's schedule entitled "Specifications for Rural Electric Distribution Lines," attached hereto and hereby incorporated

and made a part hereof. Association further agrees that Authority shall have the right to demand that the specifications for such line be presented to Authority, and to inspect such line at any time during the construction thereof, in order that Authority may ascertain whether Association is complying with this section, and Association agrees to reimburse Authority for the actual cost to Authority of making such inspections and reviewing Association's specifications, such sum, however, not to exceed five per centum (5%) of the total cost of constructing the line. If Authority finds that Association's specifications or its construction is not in compliance with the schedule of specifications, and [fol. 3099] Association refuses to alter the same to conform therewith, Authority shall not be obligated to advance any further sums to Association under this section.

(c) Association hereby expressly agrees that it will not use any funds advanced by Authority to Association under paragraphs (a) and (b) hereof except for the purposes therein stated, and Association further agrees that all advances so made shall become a part of the principal obligation of Association to Authority under this Sale and Loan Contract.

4. Construction of Rural Lines.—Authority agrees to construct, at its own expense, on rights-of-way and/or easements to be secured by Association, such additional rural electric distribution or transmission lines in or adjacent to Pontotoc County, State of Mississippi, as the parties may from time to time agree. Said lines will be constructed by Authority for and on behalf of Association as Association's agent for such construction. Association agrees to pay to Authority, in addition to all other outstanding indebtedness to Authority, the actual cost to Authority as billed by Authority of any lines so constructed pursuant to this agreement, and said additional indebtedness shall be added to the principal obligation of Association under this contract and shall become a part thereof.

5. Payment of Indebtedness.—Association hereby agrees that its principal obligation to Authority under this con-

tract as of the effective date thereof, is One Hundred Forty-five thousand, Eight Hundred Thirty-one Dollars and Fifty-seven Cents ($145,831.57) (subject to proper deductions if all of the above described Twenty-five Thousand Dollars ($25,000.00) loan is not required by Association or advanced by Authority). Upon the construction of any lines by Authority for Association, pursuant to Sections 3 and 4 of this contract, or upon the loan of any moneys by Authority to Association, or upon the incurrence of any other indebtedness by Association to Authority, said indebtedness shall become a part of the principal obligation of Association to Authority under this contract, and the payment thereof to Authority shall be secured by the mortgage which Association agrees to execute to First Parties under paragraph 6 of this contract. Association agrees to pay said principal obligation to Authority, with interest on the unpaid balance at the rate of three and one-half per centum (3½%) per annum, payable semi-annually, and at the times and in the manner provided for in said Power Contract between Association and Authority. Interest shall not begin to run, however, on any money loaned by Authority to Association hereunder until such money has actually been advanced and turned over to Association.

6. Security for Payment of Principal Obligation and Performance of Agreements.—Association agrees to execute to First Parties on even date herewith a first mortgage covering all the properties and revenues of Association, including those after acquired, as security for the payment to Authority of the principal obligation of Association to Authority under this contract, and the performance by Association of all its covenants and agreements under this contract and under said Power Contract. Association agrees to perform all its covenants and agreements in, and to observe all the terms and conditions of, said mortgage.

[fol. 3100] 7. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Association to any other party without first securing the written consent of Authority.

COMPLAINANTS' EXHIBIT No. 595

In Witness Whereof, the parties hereto have caused this contract to be signed and attested by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman, Board of Directors. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

United States of America, by Tennessee Valley Authority, Its Legal Agent, by Arthur E. Morgan, Chairman, Board of Directors. (Seal.)

Attest: Charles E. Hoffman, Assistant Secretary.

Pontotoc County Electric Power Association, by M. L. Higgs, President. W. S. M., Leg. Div.

Attest: Jas. I. Wilson."

(Verification and exhibits omitted.)

COMPLAINANTS' EXHIBIT No. 596

TVA corporate resolution dated February 11, 1936, approving contract between TVA and Monroe County Electric Power Association for operation of rural transmission line and collection of bills:

(Omitted)

[fol. 3101] COMPLAINANTS' EXHIBIT No. 597

TVA corporate resolution dated April 27, 1936, approving Sale and Assignment Contract between TVA and Alcorn County Electric Power Association and Pickwick Electric Membership Corporation:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 4-27-36d) with the Alcorn County Electric Power Association and the Pickwick Electric Membership Corporation.

COMPLAINANTS' EXHIBIT No. 597

Exhibit 4-27-36d

This Sale and Assignment Contract, entered into as of the 21st day of April, 1936, between the Alcorn County Electric Power Association (hereinafter called "Association"), a corporation duly organized and existing under the laws of the State of Mississippi, the Pickwick Electric Membership Corporation (hereinafter called "Corporation"), a corporation duly organized and existing under the laws of the State of Tennessee, and the Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933,

Witnesseth:

Whereas, under an agreement entitled, "Power Contract Between Tennessee Valley Authority and Alcorn County Electric Power Association," executed June 1, 1934, Authority agreed to construct rural transmission lines for Association and Association agreed to pay to Authority for such lines the actual cost to Authority, as billed by Authority, of constructing the same, plus interest upon unpaid balances at the rate of three and one-half per cent (3½%) per annum, and Association further agreed that Authority should have and retain a first lien upon any such lines until the obligation of Association therefor was fully paid, and

Whereas, Authority has constructed for and turned over to Association the rural transmission lines described in Article 1, paragraphs (a) and (c) of this contract, and Association has recognized its obligation to Authority therefor, under said Power Contract; and

Whereas, Association has made the service extensions and meter installations on said lines described in Article i, paragraphs (b) and (d) of this contract; and

Whereas, Corporation desires to purchase all the above-described lines from Association, and to borrow the neces- [fol. 3102] sary money from Authority to enable Corporation to purchase such lines; and

Whereas, Authority is authorized by Section 12 (a) of its Act to extend credit to non-profit organizations to assist them in acquiring existing distribution facilities and incidental works; and

Whereas, all parties to this contract have duly authorized its execution,

Now, Therefore, for and in consideration of the mutual covenants herein contained, and subject to the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually covenant and agree as follows:

1. Agreement to Sell Rural Lines.—Association agrees to sell, transfer, assign and convey to Corporation, by valid quitclaim deed executed on even date herewith, all its right, title and interest in and to the following described real and personal property:

(Description of rural transmission lines and other property omitted.)

2. Payment for Rural Lines.—Corporation agrees to pay to Association for all of the above described lines the sum of Forty-eight Thousand and One Dollars and Eighteen Cents ($48,001.18). Authority hereby loans to Corporation the sum of Forty-eight Thousand and One Dollars and Eighteen Cents ($48,001.18), with interest on unpaid balances at the rate of three and one-half per cent (3½%) per annum, payable semi-annually, to enable Corporation to purchase said lines. The payment by Corporation to Association and the loan by Authority to Corporation shall be effected by the following adjustment of accounts on the books of Authority:

(a) Authority shall credit Association with the payment, as of the effective date of this contract, of Forty-eight Thousand and One Dollars and Eighteen Cents ($48,001.18), less the amount of the credit for membership fees transferred under Article 3 of this contract, and less the amount of the credit for surplus revenues transferred under Article 4 of this contract.

(b) Authority shall debit Corporation as of the effective date of this contract in the sum of Forty-eight Thousand and One Dollars and Eighteen Cents ($48,001.18), less the amount of the credit for membership fees transferred under Article 3 of this contract, and less the amount of the credit for surplus revenues transferred under Article 4 of this contract.

3. Transfer of Credit for M bership Fees.—Association agrees to complete the collection of all membership

fees (consisting of the One Cent (1¢) amortization charge, or otherwise) which may be due to Association up to the effective date of this contract by members of Association [fol. 3103] who receive service over the lines to be transferred. Association will complete the payment to Authority of all such membership fees, as required by the Power Contract between Association and Authority. Association recognizes that the credit for such membership fees is properly attributable to the members of Association paying the same. Association agrees that the total credit for such payments shall be transferred to and credited to Corporation on Authority's books, unless deductions from such total credit become necessary under Article 5 (b) hereof. Association and Authority shall advise Corporation of the total amount of such fees paid by each such member in order to make possible full compliance with Article 5 hereof.

4. Transfer of Credit for Surplus Revenues.—Association recognizes that the members of Association receiving service on the lines to be transferred have an equity in such of the total surplus revenues of Association (as defined in Article 9 (c) of the Power Contract between Association and Authority) as were earned since the inauguration of service over the transferred lines. Association and Corporation request Authority to determine within sixty (60) days after the effective date of this contract the total surplus revenues earned by Association from the first day of the month after the date on which such transferred lines were energized up to March 31, 1936, and to make a fair allocation of such total surplus revenues between the members of Association receiving service on such transferred lines and the remaining members of Association. In making such calculation Authority shall allocate to the members on the transferred lines that proportion of the total surplus revenues which the total revenues received from members on the transferred lines bears to the total revenues received from all the members of Association during the above period. Association and Corporation agree to accept the allocation determined by Authority, and further agree that the total amount allocated to members on the transferred lines shall be credited to Corporation and

debited to Association on Authority's books, unless deductions from such total credit become necessary under the provisions of Article 5 (b) hereof. Corporation and Association further request Authority to determine the amount of such credit which is properly allocable to each of the members of Association receiving service on such transferred lines, in order to make possible a full compliance with the provisions of Article 5 hereof. Corporation agrees that Authority shall debit Corporation for the expense involved to Authority in making the calculations provided for in this paragraph.

5. Transfer of Memberships from Association to Corporation:

(a) Corporation agrees to accept as members all of the present members of Association receiving service from Association over the above-described lines on the effective date of this contract, who shall surrender their memberships in and turn in their membership certificate to Association and shall apply for membership in Corporation and agree to abide by its Charter and By-laws. Corporation will issue to said members the regular certificates of membership as soon as such certificates have been made available. The total membership fee and amortization charges required by Corporation of a transferred member shall be Two Hundred Ten Dollars ($210.00), and Corporation will [fol. 3104] credit such transferred members with the payment on said Two Hundred Ten Dollars ($210.00) of all amounts which such transferred members have paid on their membership fees to Association, and all surplus revenues allocated to such members under Articles 3 and 4 of this contract.

(b) If any member of Association who is receiving service over the above-described lines on the effective date of this contract shall be unwilling to become a member of Corporation under the terms provided in this contract Authority shall return to Association all the membership payments which have been made by such member to Association and turned over to Authority by Association, together with the part of the total surplus revenues of Association allocated

to such member to the extent that such surplus revenues have been paid over to Authority by Association. Association shall then return to each such member his membership payments and allocated part of the surplus revenues if his membership in Association is terminated. All such payments made directly to members of Association shall be deducted from the total credit for membership fees and the total credit for surplus revenues to be transferred under Articles 3 and 4 of this contract.

6. Taxes.—Corporation will assume all taxes on the properties herein transferred for the year 1936, in consideration of Association's agreement to make no charges to Corporation or the transferred members for range and water-heater payments made by Association to members on the transferred lines, or for expenses incurred by Association in qualifying to do business in Tennessee.

7. Security for Payment of Corporation's Obligation to Authority.—Corporation hereby agrees that Authority shall hold and retain a first lien on all of the property which is sold herein by Association to Corporation as security for the payment to Authority of the obligation incurred by Corporation to Authority under this contract, and such lien shall remain and attach to each and every article of such property until the entire obligation of Corporation to Authority under this or any other contract is paid. Corporation agrees that it will perform all its covenants and agreements contained in the "Preliminary Operation Contract Between Pickwick Electric Membership Corporation and Tennessee Valley Authority," executed on even date herewith. Corporation further agrees that it will grant to Authority, at such time as Authority may request, a valid first mortgage on all of the properties herein purchased by Corporation and all other properties which Corporation may hereafter own, as further security for the payment of Corporation's obligations to Authority.

In Witness Whereof, the parties have caused this instrument to be signed and attested in triplicate, by the duly authorized officers, the day and year first above written."

(Signatures omitted.)

[fol. 3105] COMPLAINANTS' EXHIBIT No. 598

TVA corporate resolution dated April 27, 1936, approving and authorizing the execution of the quit-claim deed to Alcorn County Electric Power Association:

(Omitted)

COMPLAINANTS' EXHIBIT No. 599

TVA corporate resolution dated April 27, 1936, approving Operation Contract between TVA and Pickwick Electric Membership Corporation:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 4-27-36f) with the Pickwick Electric Membership Corporation."

The Contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 179 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 600

TVA corporate resolution dated April 27, 1936, approving Interchange Agreement between TVA and Alcorn County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 601

TVA corporate resolution dated May 28, 1936, approving Operation Contract between TVA and Bedford County Electric Membership Corporation:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 5-28-36e) with the Bedford County (Tennessee) Electric Membership Corporation."

The contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 180 and to avoid repetition is not here set forth at length.

the amortization charge referred to in this section, Municipality shall charge the same rates for the same classes of service to all customers of Municipality, except that Municipality may add the ten per cent (10%) surcharge provided for in its power contract with Tennessee Valley Authority to all commercial and industrial customers on the lines purchased by and constructed for Municipality under the terms of this contract.

2. Article 10 of the "Agreement for Sale of Properties Between Tennessee Valley Authority and City of Athens, Alabama" executed on October 9, 1936 is hereby amended to read as follows:

10. Execution of Bond and Mortgage—Payment of Principal Obligation.—Authority shall notify Municipality upon the completion of the construction of the work orders described in Exhibit B attached hereto, and upon the determination of the cost thereof. Authority shall also notify Municipality of the final determination of the amounts due under Articles 4 and 5 and under any other provisions of this contract. The total of all amounts due by Municipality to Authority under the terms of this contract shall be considered and hereinafter called the "Principal Obligation." [fol. 3117] Authority shall execute a quit-claim deed conveying to Municipality all the right, title, and interest of Authority and/or the United States Government in and to the properties described in this agreement. The conveyance of so much of said property as may be real property shall be made subject to the approval of the President of the United States. Authority hereby agrees promptly to submit said quit-claim deed to the President and recommend the same for approval.

Simultaneously with the execution of the quit-claim deed Municipality shall issue to Authority its bond or bonds in the amount of Municipality's principal obligation to Authority under this contract. Said bond or bonds shall be payable exclusively from the revenues of the electric transmission or distribution lines sold by Authority to or constructed by Authority for Municipality under this agreement, and shall be issued pursuant to and in accordance with the terms and provisions of the Alabama "Municipal Bond Act of 1935." Such bonds shall be issued in denominations

COMPLAINANTS' EXHIBIT No. 622

of One Thousand Dollars ($1,000.00) each, shall bear interest at the rate of three and one-half per cent (3½%) per annum, payable semi-annually, and shall provide for their payment in full and retirement within twenty (20) years after their date of issuance. In determining the amount of said bonds to be issued to Authority, Municipality's indebtedness to Authority for sale and construction of rural lines shall be considered to have accrued on the date or dates upon which such lines or any part thereof were transferred from Authority to Municipality for maintenance and operation, and all interest shall be calculated from such date or dates of delivery.

At the time of execution of the above described quit-claim deed Municipality shall also execute a mortgage to Authority and the United States Government, or a deed of trust to a trustee satisfactory to Authority, covering all the rural lines and facilities sold by Authority to Municipality hereunder, or constructed by Authority for Municipality hereunder, securing the payment and retirement of the bonds issued to Authority in accordance with the provisions of this article.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers the day and year first above written.

(Signatures omitted.)

COMPLAINANTS' EXHIBIT No. 623

TVA corporate resolution dated July 29, 1937, approving Emergency Operation Contract between TVA and Pickwick Electric Membership Corporation:

(Omitted)

[fol. 3118] COMPLAINANTS' EXHIBIT No. 624

TVA corporate resolution dated July 29, 1937, approving agreement for sale and construction of rural lines between TVA and Joe Wheeler Electric Membership Corporation:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 7-29-37c) with the Joe Wheeler Electric Membership Corporation."

[fol. 3106] COMPLAINANTS' EXHIBIT No. 602

TVA corporate resolution dated July 31, 1936, approving agreement amending contract for engineering services between TVA and Meigs County Electric Membership Corporation.

(Omitted)

COMPLAINANTS' EXHIBIT No. 603

TVA corporate resolution dated August 11, 1936, approving contract between TVA and Cullman County Electric Membership Corporation:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 8-11-36a) with the Cullman County Electric Membership Corporation."

The contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 163 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 604

TVA corporate resolution dated August 21, 1936, approving Sale and Loan Agreement between TVA and Gibson County Electric Membership Corporation:

This contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 181 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 605

TVA corporate resolution dated September 5, 1936, approving agreement for sale between TVA and Pickwick Electric Membership Corporation:

(Omitted)

[fol. 3107] COMPLAINANTS' EXHIBIT No. 606

TVA corporate resolution dated September 5, 1936, approving Supplemental Contract for rehabilitation and improvement of municipal distribution system between TVA and City of Milan, Tennessee:

(Omitted)

COMPLAINANTS' EXHIBIT No. 607

TVA corporate resolution dated September 5, 1936, approving agreement for sale to City of Athens, Alabama, of properties, consisting of certain rural electric lines acquired and constructed by TVA in Limestone County, Alabama:

(Omitted)

COMPLAINANTS' EXHIBIT No. 608

TVA corporate resolution dated December 23, 1936, approving agreement for sale and interchange between TVA and Southwest Tennessee Electric Membership Corporation:

(Omitted)

COMPLAINANTS' EXHIBIT No. 609

TVA corporation resolution dated December 23, 1936, approving agreement for sale of properties between TVA and Duck River Electric Membership Corporation:

(Omitted)

[fol. 3108] COMPLAINANTS' EXHIBIT No. 610

TVA corporate resolution dated January 8, 1937, approving contract between TVA and Lincoln County Electric Membership Corporation for collection of bills and other services:

(Omitted)

COMPLAINANTS' EXHIBIT No. 611

TVA corporate resolution dated February 11, 1937, approving Emergency Operation Contract between TVA and Tishomingo County Electric Power Association:

(Omitted)

COMPLAINANTS' EXHIBIT No. 612

TVA corporate resolution dated February 11, 1937, approving supplemental contract between TVA and city of Holly Springs, Mississippi:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the supplemental agreement (Exhibit 2-11-37v) with the City of Holly Springs, Mississippi."

The contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 122 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 613

TVA corporate resolution dated March 10, 1937, approving Amendment of agreement to sell rural fines between TVA and City of Dayton, Tennessee:

(Omitted)

COMPLAINANTS' EXHIBIT No. 614

TVA corporate resolution dated March 31, 1937, approving Emergency Operation Contract between TVA and Alcorn County Electric Power Association:

(Omitted)

COMPLAINANTS' EXHIBIT No. 615

TVA corporate resolution dated April 9, 1937, approving transfer to Southwest Tennessee Electric Membership [fol. 3109] Corporation of franchise granted to TVA by the Town Council of the Town of Medon, Madison County, Tennessee:

(Omitted)

COMPLAINANTS' EXHIBIT No. 616

TVA corporate resolution dated April 9, 1937, approving supplemental contract between TVA and City of Okolona, Mississippi:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the supplemental agreement (Exhibit 4-9-37a) with the City of Okolona, Mississippi."

The contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 121 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 617

TVA corporate resolution dated June 3, 1937, authorizing construction of 110 kv. transmission lines between Norris Dam and the Volunteer Portland Cement Company and Substation:

(Omitted)

COMPLAINANTS' EXHIBIT No. 618

TVA corporate resolution dated June 3, 1937, approving contract of sale between TVA and Town of Bolivar, Tennessee:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 6-3-37w) with the Town of Bolivar, Tennessee."

Exhibit 6-3-37w

This Agreement, made and entered into as of the 20th day of March, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, United States of America (hereinafter called "Government"), acting through its legal agent, Authority (Authority and Government being jointly referred to hereinafter by the phrase "First Parties"), and the Town of Bolivar [fol. 3110] (hereinafter called "Municipality"), a municipal

corporation duly organized, created and existing under and by virtue of the laws of the State of Tennessee,

Witnesseth:

Whereas, First Parties are the owners of the hereinafter described property which is being used in the transmission and sale of electric energy in Hardeman County, Tennessee; and

Whereas, Municipality desires to purchase said property and to use the same in the transmission and sale of electric energy according to the plan set forth and agreed upon in a certain contract entitled "Power Contract between Tennessee Valley Authority and Town of Bolivar, Tennessee," executed December 31, 1935; and

Whereas, under section 4 (f) of the Tennessee Valley Authority Act of 1933 as amended, Authority is authorized to dispose of any personal property held by it; and

Whereas, under section 4 (k) of said Act as amended Authority is authorized, subject to approval of the President of the United States, to dispose of any such real property owned by Government and entrusted to Authority as in the judgment of Authority's Board of Directors is no longer necessary in carrying out the purposes of said Act, and Authority's Board of Directors has found that such of the property hereinafter described as is real property is no longer needed by Authority for such purposes;

Now, Therefore, in consideration of the mutual benefits of all parties hereto and of the covenants and agreements contained herein and in said Power Contract, the parties hereto covenant and agree as follows:

1. Sale of Property.—In consideration of the sum of Two Thousand One Hundred Ninety-five Dollars and Ninety-five Cents ($2,195.95), which Municipality hereby agrees to pay to Authority in cash, First Parties agree to sell and convey to Municipality the following described real and personal property:

(1) A three-phase, four-wire, 11,950Y volt rural electric transmission line extending from pole No. 33 on the Bolivar-Somerville transmission line now owned by Authority in a northeasterly direction for a distance of approximately 0.23 miles, including all poles, crossarms, pole-line hardware, conductors, insulators, transformers, primary metering

equipment and other personal property now used or useful in the operation of said line.

2. Conveyance of Property.—Upon the tender to Authority of the cash payment in full for the above property, Authority will deliver to Municipality the good and valid [fol. 3111] quitclaim deed of First Parties conveying the above-described property to Municipality. The conveyance of such of said property as may be real property shall be subject to the approval of the President of the United States, but Authority hereby agrees diligently and without delay to have said deed submitted and recommended for such approval of the President.

3. Power Requirements and Resale.—Municipality agrees to purchase from Authority and Authority agrees to supply at wholesale all the electric energy required by Municipality for distribution over the above rural transmission line, and said power shall be purchased from Authority and resold by Municipality in accordance with all the agreements, terms, conditions, rules and regulations contained in, and at the rates prescribed by, the Power Contract entered into between Authority and Municipality on December 31, 1935, as the same may be from time to time amended, revised, re-executed or extended.

4. Point of Delivery.—Authority will deliver the electricity purchased by Municipality for distribution over the above rural transmission line at the point of intersection between said rural line and Authority's Somerville-Bolivar 12 kv. transmission line. Until other arrangements are made, however, Municipality's electricity requirements for said line shall be measured by the metering equipment on the low tension side of the transmission bank located at the Western State Hospital. In billing Municipality for power at wholesale, the latter shall be considered a separate metering point and the demand and consumption there recorded shall not be added to the demand and consumption recorded at the metering equipment located in the Bolivar substation.

If the above metering arrangement shall prove inequitable from the standpoint of either Authority or Municipality, said parties shall agree upon and put into effect other

arrangements for the metering of Municipality's wholesale requirements which will be mutually satisfactory and equitable.

5. Assignment of Contract.—Subject to the approval of the authorized representatives of the Western State Hospital (such approval to be indicated in writing in the space provided at the end of this contract), Authority hereby assigns, transfers and sets over to Municipality, and Municipality hereby accepts the assignment of, all Authority's [fol. 3112] right, title and interest in and to a certain contract entitled "Power Contract between Tennessee Valley Authority and Western State Hospital" executed September 8, 1936. Upon execution of this contract and approval thereof by said Hospital, all rights, privileges, powers, duties, obligations and liabilities which Authority enjoys or to which Authority is subject under the terms of or by virtue of said contract shall be transferred to Municipality as fully as if contract had been originally executed between Municipality and Western State Hospital rather than between Authority and said Hospital.

(Signatures omitted.)

Western State Hospital hereby approves and consents to all of the provisions of the above contract, and specifically approves and consents to the assignment of the Power Contract between Tennessee Valley Authority and Western State Hospital, executed on September 8, 1936.

"(S.) by J. R. Wilson, Supt.

Attest: (S.) Elizabeth Durett."

Power Contract Between Tennessee Valley Authority and Western State Hospital

"This Contract, made this 8 day of September, 1936, by and between Western State Hospital, a corporation organized and existing under the laws of the State of Tennessee, with principal offices at Western State Hospital, Tenn., hereinafter called "Customer" and Tennessee Valley Authority, hereinafter called "Authority":

COMPLAINANTS' EXHIBIT No. 618

Witnesseth:

Whereas, Customer has applied to Authority for electricity for the operation of Hospital at Western State Hospital, Tenn.

Now, Therefore, in consideration of the mutual covenants and agreements hereinafter set forth and subject to the provisions of the Tennessee Valley Authority Act of 1933, the parties hereto mutually agree as follows:

1. Authority will supply and Customer will take and pay for all the electricity required for the operation of Hospital at Western State Hospital, Tenn. up to a maximum demand of 100.0 kw, in accordance with the terms hereof and the Schedule of Terms and Conditions of Contract attached hereto and hereby made a part hereof.

[fol. 3113] 2. The minimum quantity of power contracted for hereunder and to be paid for by Customer shall be a minimum demand of 25.0 kw.

3. Attached hereto and hereby made a part hereof is a rate schedule designated Rate Schedule B-3, and the electricity sold hereunder shall be purchased and paid for by Customer according to the provisions of said Rate Schedule B-3, except as modified by this agreement, including a surcharge of 10% and an amortization charge of 1¢ per kwh. for the first 100 kwh. used per month, the minimum amortization charge to be $0.25 and the maximum $1.00 per month.

4. The electricity furnished hereunder shall be in the form of 3-phase, alternating current, at approximately 60 cycles and approximately 2300 volts.

5. The Point of Delivery for the electricity supplied hereunder shall be the secondary terminals of the Authority's sub-station and maintenance by Authority of approximately the above stated voltage and frequency at said Point of Delivery shall constitute delivery of electricity for the purposes of this contract. The electricity to be supplied Customer hereunder shall be metered at the low tension side of the step-down transformer bank or banks of a substation to be constructed, owned, and operated by Authority, and Authority will install only such protective devices as in its opin-

ion are necessary for the protection of its transformer bank or banks and/or the transmission line or transmission lines supplying power to such substation. Customer shall furnish Authority gratis with suitable substation site for the period hereof, the transformer banks and other equipment installed thereon to be considered the personal property of Authority. Authority shall have free right of ingress and egress on said site, and Customer shall supply a right of way over Customer's property to such site.

6. The term of this contract shall be 5 years. This contract shall begin on the date the delivery of electricity hereunder is actually begun, which it is estimated will be approximately on or about October 1, 1936, and shall be considered renewed for a year from the expiration of said term, and from year to year thereafter, unless a written notice to the contrary is given by either party to the other at least three months prior to the expiration of the term of the contract or any then existing renewal thereof.

7. This contract shall inure to the benefit of and be binding upon the respective heirs, legal representatives, successors and assigns of the parties hereto, but is not assignable by Customer without written consent of Authority.

In Witness Whereof, the parties hereto have caused this contract to be duly executed in duplicate the day and year first above written.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman. Western State Hospital, (S.) by J. R. Wilson, Superintendent.

Approved by: E. P. Pardue, Commissioner.

(Rate Schedule B-3 and Schedule of Terms and Conditions (omitted.)

[fol. 3114] COMPLAINANTS' EXHIBIT No. 619

TVA corporate resolution dated June 9, 1937, approving contract between TVA and Electric Power Board of the City of Chattanooga.

(Omitted)

COMPLAINANTS' EXHIBIT No. 620

TVA corporate resolution dated June 23, 1937, approving Emergency Operation Contract between TVA and Town of Dickson, Tennessee.

(Omitted)

COMPLAINANTS' EXHIBIT No. 621

TVA corporate resolution dated July 12, 1937, extending maturity date for payment of principal installment on note of Monroe County Electric Power Association:

"Whereas, Pursuant to a Sale and Loan Contract dated January 15, 1936, the Tennessee Valley Authority sold to the Monroe County Electric Power Association certain rural electric distribution facilities for the sum of $17,237.89 and loaned to said Association the sum of $11,500.00, and the Association issued to the Authority its first mortgage 3½% note in the sum of $28,737.89 as evidence of the Association's long-term obligation to the Authority therefor, and

Whereas, The principal of said note is payable in semi-annual installments coming due on the 15th day of July, 1937, and on the 15th days of January and July of each succeeding year, including the 15th day of January, 1956, and each semi-annual payment amounting to 1/38 of the principal amount of said note remaining unpaid on July 15, 1937, and

Whereas, The rural electric distribution project of the Monroe County Electric Power Association has not developed to a point enabling the Association conveniently to pay on July 15, 1937, the first principal installment on said note, and the Association has requested the Authority to agree to postpone the date on which the first principal installment on said note is to become due until July 15, 1938, therefore

Be It Resolved, That the Board of Directors hereby ap- [fol. 3115] approves the postponement of the date on which the first payment of principal on the first mortgage 3½% note of the Monroe County Eectric Power Association is to become due from July 15, 1937, to July 15, 1938. The principal on said note shall be payable to the Tennessee Valley

COMPLAINANTS' EXHIBIT No. 621

Authority in semi-annual installments becoming due on the 15th day of July, 1938, and on the 15th days of January and July in each year thereafter, including the 15th day of January, 1956. Each such semi-annual installment of principal shall be an amount equal to 1/36 of the principal amount of the note remaining unpaid on the 15th day of July, 1938. This postponement of the first principal payment by the Association shall not relieve the Association from the obligation of making the regular payments of interest on the amount of the note from time to time remaining unpaid.

Further Resolved, That the Comptroller and the General Counsel are hereby authorized to prepare and submit for execution any amendments to the contract between the Authority and the Monroe County Electric Power Association and any amendments to or substitutions for said note and said first mortgage as may be necessary to effectuate the above resolution."

COMPLAINANTS' EXHIBIT No. 622

TVA corporate resolution dated July 20, 1937, approving supplemental contract between TVA and City of Athens, Alabama:

"Resolved, That the Board of Directors hereby approves and authorizes entry into the contract (Exhibit 7-20-37c) with the City of Athens, Alabama.

Exhibit 7-20-37c

This Agreement, made and entered into this 23rd day of July, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority") a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and the City of Athens, Alabama (hereinafter called "Municipality") a municipal corporation duly organized, created, and existing under and by virtue of the laws of the State of Alabama.

Witnesseth: Whereas, on the 9th day of October, 1936 Authority and Municipality entered into a certain contract entitled "Agreement for Sale of Properties Between Tennes-

see Valley Authority and City of Athens, Alabama" under which it was agreed that Authority should sell certain rural electric transmission and distribution lines and facilities to Municipality, and construct certain additional lines and facilities for Municipality, and

[fol. 3116] Whereas, Authority and Municipality desire to amend the above described contract by changing certain provisions contained therein with respect to the method of payment for such transmission and distribution lines and the means by which such payment shall be secured.

Now, Therefore, for and in Consideration of the mutual covenants and agreements herein contained, the parties hereto covenant and agree as follows:

1. Article 8 of the "Agreement for Sale of Properties Between Tennessee Valley Authority and City of Athens, Alabama" executed October 9, 1936, is hereby amended to read as follows:

8. Amortization Collections. — Municipality shall collect from each customer on the lines sold by Authority to Municipality hereunder, or constructed by Authority for Municipality pursuant to this agreement and/or pursuant to the construction loan contract between United States of America and municipality, and from any additional customers which may hereafter be connected with and receive service from such lines, an amortization charge of one cent (1¢) per kwh. for the first one hundred (100) kwh. used per month, such charge to be not less than Twenty-five Cents (25¢) nor more than One Dollar ($1.00) per customer per month. The amortization charges so collected by Municipality shall be used solely for equal and ratable retirement of the $132,000 of bonds to be issued by Municipality in payment of the lines and the facilities sold by Authority to Municipality and constructed by Authority for Municipality under this agreement and in repayment of the loan of approximately $65,000 to be made by the United States Government through the Rural Electrification Administration to enable Municipality to construct such transmission lines and facilities. As soon as Municipality has fully paid and retired the said bonds issued to Authority and to the United States Government pursuant hereto, Municipality agrees to remove this amortization charge. With the exception of

COMPLAINANTS' EXHIBIT No. 624

This contract attached to and referred to in the approving resolution is the same as Complainants' Exhibit No. 170 and to avoid repetition is not here set forth at length.

COMPLAINANTS' EXHIBIT No. 625

TVA corporate resolution dated August 13, 1937, approving proposed letter to be sent by TVA to the City Manager of Knoxville, Tennessee:

"David E. Lilienthal submitted to the Board for consideration a letter he proposed to send to George R. Dempster, City Manager of Knoxville, Tennessee, requesting an expression from the City concerning its plans covering the acquisition of an electric distribution system. The contents of the communication were found satisfactory. After instructing the Secretary to file a true copy of the communication with the Authority's records as Exhibit 8-13-37e, the Board authorized Mr. Lilienthal to affix his signature to the letter and forward it to the City Manager.

Exhibit 8-13-37e

Tennessee Valley Authority,

Knoxville, Tennessee

Knoxville, Tennessee, August 13, 1937.

Honorable George R. Dempster, City Manager, Knoxville, Tennessee.

DEAR MR. DEMPSTER:

During the past four years the progress of the Tennessee Valley Authority under the policies established by Congress has been materially aided by the splendid cooperation of the various public agencies in the Valley. To no small extent, their willingness to participate in carrying out the objectives of the TVA Act has been the principal factor in the success of many phases of this undertaking.

[fol. 3119] As the Authority has proceeded to put into effect the purposes of the statute, I am confident the people of the Valley have come to a closer and more complete

understanding of the benefits such a program can yield to this region-benefits in navigation and flood control, benefits in agriculture, benefits in the availability of an abundance of low-priced power. This public support and understanding here at home are gratifying to those who have the responsibility of putting these Congressional purposes to work.

As you know, our Board is authorized, in the language of the statute, "in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practical, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority." Thus the Board has a duty to sell its surplus power and to obtain revenues from such sales. "This policy," the Act states, "is further declared to be that the projects herein provided for shall be considered primarily for the benefit of the people of the section as a whole and particularly the domestic and rural customers to whom the power can economically be made available."

The increasing demand for power generated at TVA dams makes it necessary, in connection with the planning of our entire watershed program, that the Authority follow closely the progress of public agencies with which it has contracts to supply power at some future time. To this end, the Authority is now engaged in making studies of immediate and future requirements in electric facilities. These studies require that we be brought up to date on the status of outstanding power contracts where service has not yet begun. Among these, Knoxville is one of the earliest.

The history of Knoxville's effort to obtain public power, as I recall it, is substantially as follows:

On November 25, 1933, the people of Knoxville by referendum approved the acquisition by the City of a distribution system to be supplied with power from TVA. As a result of this election, on February 27, 1934, your City Council approved, and the City Manager signed, a power contract with the Authority, and this contract was signed by Dr. A. E. Morgan on behalf of our Board March 1, 1934. A revision of this contract was signed by you for the City and Chairman Morgan for TVA on February 19, 1936. Upon refusal of the Tennessee Public Service Company to entertain the City's offer of March 3, 1934, to purchase that

Company's system, the City requested the Authority to negotiate with the Company in an effort to buy that system for the City of Knoxville. About the same time the City applied for and obtained a loan and grant from the Public Works Administration for the construction of a distribution system.

During the summer of 1934, with the assistance of an engineering firm employed for that purpose, the City proceeded with its plans for construction. Shortly before the City was to open bids for construction of the first unit, how- [fol. 3120] ever, the Company agreed to sell to TVA. As you know, subsequent litigation prevented that purchase and that particular agreement to sell the Company's system lapsed. Thereupon the City (a) resumed its construction activities, (b) obtained a substantial sum of money from PWA, (c) made the award for the first unit, and, (d) in early March, 1935, saw the contractor begin the placing of poles in a unit which was to serve about 3,500 customers. In addition, I have been informed, a large quantity of materials for this first unit was ordered from manufacturers and received by the City.

Construction on the first unit was halted March 26, 1935, when, on suit of the Tennessee Public Service Company, Chancellor Mitchell first temporarily and later permanently enjoined further building. This injunction was set aside by the Supreme Court of the State of Tennessee March 9, 1936.

Since that time there have been a number of conferences between representatives of the City and members of the Authority. As I recall them, the principal meetings were as follows:

On June 5, 1936, the City Manager, Law Director, and Council Power Committee met with me and several of my associates.

On September 4, 1936, the City Manager, Law Director, and Council Power Committee met with Mr. Swidler and Mr. Muir of the Authority's staff.

On May 17, 1937, the Mayor, City Manager, Law Director, and Council Power Committee met with me and several of my associates.

On June 8, 1937, the Mayor, City Manager, Law Director, and the Council Power Committee met with me and some of my associates.

At the meetings in June, 1936, and in May and June, 1937, I made it clear each time that the Authority stood ready to make good on its commitments to the City, and that it was the Authority's policy to abide by the decision which the voters of Knoxville had expressed in the referendum of November 25, 1933. As you know, the Authority, in its original contract of March 1, 1934, and the revised contract of February 19, 1936, is committed to supply power to a distribution system to be purchased or constructed by the City of Knoxville. In accordance with our commitments under that contract, the Authority, at a considerable cost, has made plans at Norris Dam and elsewhere on the basis of such service and has held in reserve a large block of power for Knoxville.

In view of the foregoing facts, I should like to call attention to some of the language contained in both the 1934 and 1936 contracts. In the contract of February 19, 1936, there is this statement:

[fol. 3121] "The electors of the Municipality have by referendum authorized Municipality to acquire by construction or purchase a municipal electric distribution system, *and Municipality intends, with all possible diligence and expedition, to acquire by construction or purchase and to operate such a system.*"

Again, in Section 2 of that contract, the City of Knoxville agrees:

"to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system for the City of Knoxville."

An allotment of a large block of power has been held in reserve for the City of Knoxville for more than three years under the conditions of these contracts. In view of the ever increasing demand elsewhere for power from TVA dams and the heavy expenditures which are obligated in the Authority's commitments with the City, we should appreciate it if you would advise TVA in the very near future as to the City's plans and proposed procedure. So far as the Authority is concerned, the Board authorizes me to say, as we have informed you and your associates in our con-

COMPLAINANTS' EXHIBIT No. 625

ferences, that you can rest assured that TVA stands ready fully to perform its obligation to the City of Knoxville to supply it with power, in accordance with the terms of the contract and the preference in the allotment of TVA power to which the City of Knoxville is entitled, as a public agency, under the terms of the Act.

There is no question, of course, as to the priority given to public agencies by the statute. If the City Council of Knoxville, however, does not choose to take advantage of that priority in the near future, the Authority should have adequate notice in order that we can review our plans for the provision of other outlets and be free to commit this power to public agencies elsewhere.

I am sending copies of this letter to the Mayor, the members of the Power Committee, and also the other members of the City Council.

Very truly yours, David E. Lilienthal, Director.

DEL: DM.

Copy to Mr. Cecil Arthur, Mr. J. C. Thomason, Mr. W. A. Cockrum, Mr. J. W. Elmore, Mr. Henry S. Bowling, Mr. Carey F. Spence, Mr. Oliver M. Branson, Mr. Dewey M. George, Mr. J. J. Graham, Mr. R. L. Scruggs and Mr. Chas. Siegal."

[fol. 3122] COMPLAINANTS' EXHIBIT No. 626

TVA corporate resolution dated August 13, 1937, approving supplemental contract for collection of bills and other services between TVA and Lincoln County Electric Membership Corporation:

(Omitted)

COMPLAINANTS' EXHIBIT No. 627

TVA corporate resolution dated November 24, 1937, approving schedule of generator installations at dam projects:

"The Board unanimously approved the following schedule of generator installations at the various dam projects:

COMPLAINANTS' EXHIBIT No. 627

Unit		Date put in operation
Guntersville	1	January 1, 1940
"	2	January 1, 1940
"	3	June 1, 1940
Chickamauga	1	August 1, 1940
"	2	November 1, 1940
"	3	January 1, 1941
Hiwassee	1	June 1, 1941
Wheeler	3	June 1, 1941
"	4	August 1, 1941"

[fol. 3123] COMPLAINANTS' EXHIBIT No. 628

Western Union

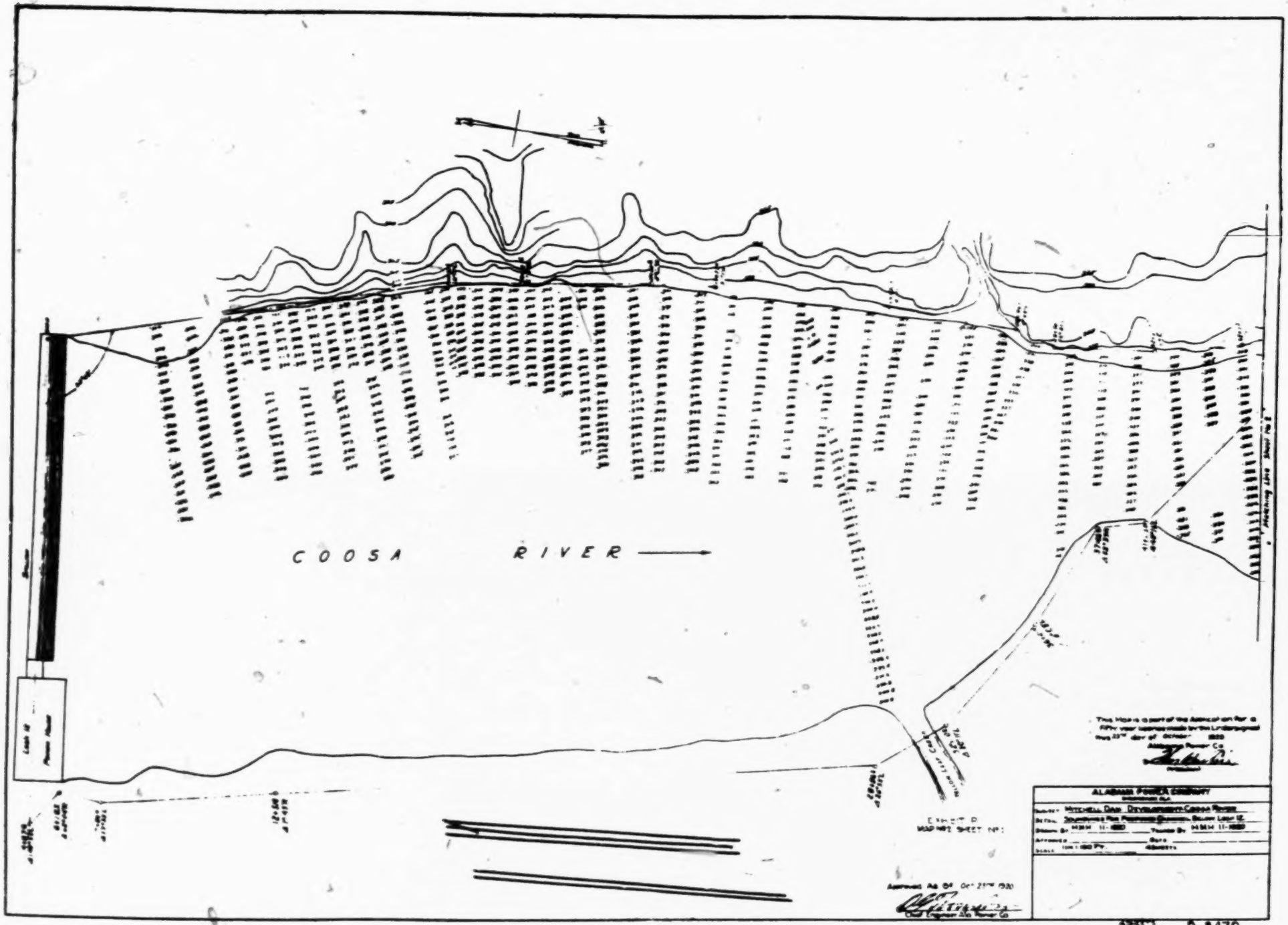
St. Louis, Mo., 1936, May 13.

Wendell L. Wilkie, President Commonwealth and Southern Utilities Co., 20 Pine St. NYK.

Confirming our conversation of yesterday it is Monsantos desire to support and be identified with private enterprise Stop This we have evidenced by our willingness to pay a very large annual premium for your power and to accept from you several other much less favorable contract conditions stop Due to the unfortunate competitive conditions surrounding the Tennessee Electric Power Company our directors are unwilling to hazard a several million dollar investment whose success is entirely dependent upon the continuity of its power supply at contract rates which we believe are insecure without a guarantee from Commonwealth and Southern in substantially the form submitted to you by Mr. Rassieur and which with modifications which our directors believe essential embodies our understanding of the guarantee tentatively agreed upon last week Stop I understood you are unwilling to accept this Stop Please confirm as it is necessary that we act promptly.

Edgar M. Queeny.

(Here follows one photolithograph, side folio 3124)


COOSA RIVER
ALABAMA POWER COMPANY
D-8470

[fol. 3125] COMPLAINANTS' EXHIBIT No. 630 (Excluded)

Alabama Power Company

Cost of Facilities Devoted Solely to Navigation on Alabama, Coosa and Tallapoosa River Systems

Mitchell Dam—Provision for Lock—Coosa River			$70,466.96
Jordan Dam—Provision for Lock—Coosa River:			
Earth and Loose Rock Excavation		$219,948.71	
Backfill		24,962.73	
Concrete—West Core Wall		26,271.66	
Concrete—Lock Section		63,118.10	
			334,301.20
Stream Gauging Stations:			
Jordan Dam	(Coosa River)	$1,619.91	
Childersburg	(Coosa River)	499.77	
Alabama River	(Alabama River)	289.91	
Wadley	(Tallapoosa River)	136.97	
Thurlow Dam	(Tallapoosa River)	3,000.26	
			5,546.82
Total above Navigation Facilities			$410,314.98

[fol. 3126] COMPLAINANTS' EXHIBIT No. 631 (Excluded)

Application for License by Alabama Power Company, Birmingham, Alabama, to Federal Power Commission, Washington, D. C., for Hydro-Electric Power Project Near Wetumpka, on Coosa River, in Alabama

Dated June 13, 1925

[fol. 3127] Exhibit "A"

Corporate Charter

A printed copy of the Charter, Amendments thereto and merger agreements of Alabama Power Company duly certified by the Secretary of State of the State of Alabama, are on file with the Commission and are referred to and made a part of this application as though hereto attached.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, *Lamar Aldridge*, Secretary.

COMPLAINANTS' EXHIBIT No. 631 (Excluded)

[fol. 3128] Exhibit "B"

Official Statement of Organization and List of Officers and Directors

I, Lamar Aldridge, Secretary of Alabama Power Company, a corporation, do hereby certify that the organization of said corporation has been completed, and that the corporation is authorized to proceed with the project applied for according to the existing laws of the State of Alabama, upon the granting by the Alabama Public Service Commission of a certificate of convenience and necessity as hereinafter mentioned.

I further certify that the following is a true list of the principal officers and of the directors of the said Corporation with the full name and official designation of each, to-wit:

List of Officers

Name	Office
Thomas W. Martin	President
Reuben A. Mitchell	Vice President
Eugene A. Yates	Vice President
Oscar G. Thurlow	Vice President
William E. Mitchell	Vice President
Lamar Aldridge	Secretary
Robert M. MacLetchie	Treasurer
Stephen A. Dawley	Assistant Secretary
Marvin P. Randall	Assistant Secretary and Assistant Treasurer.

List of Directors

Thomas W. Martin	Eugene A. Yates
Lawrence Macfarlane	Richard M. Hobbie
Charles E. Groesbeck	Sidney Z. Mitchell
William J. Henderson	William H. Weatherly
Frank M. Moody	William H. Hassinger
David P. Bestor, Jr.	Robert I. Ingalls
E. Carlisle Melvin	Oscar G. Thurlow
Reuben A. Mitchell	William E. Mitchell

Witness my hand and the seal of the corporation this the 13th day of June, 1925.

(Sgd.) Lamar Aldridge, Secretary Alabama Power Company. (Corporate Seal.)

COMPLAINANTS' EXHIBIT No. 631 (Excluded)

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3129] Exhibit "C"

Description of Project Boundary

Field notes, or a description by metes and bounds of the entire final location survey of the project boundary, are not furnished, applicant contemplating that upon the completion of the project, the licensee will submit data showing accurately the boundary of the project area and the ownerships therein, the project area being approximately described on the map made Exhibit "K" to this application.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3130] Exhibit "D"

Evidence That Applicant Has Complied With the Laws of the State

Applicant, Alabama Power Company, is a corporation organized and existing under the general laws of the State of Alabama as more specifically shown in and by the certified copy of its charter, merger agreements and amendments thereto, filed with the Commission and referred to in Exhibit "A" to this application; and applicant has, by its said charter, the right to manufacture, supply and sell to the public power produced by water as a motive force.

Applicant further shows that it heretofore acquired by purchase and not by condemnation, and now owns a dam site or power site at Lock 18 on the Coosa River in Elmore County, Alabama, at which site the proposed development will be made; that said dam site consists of more than one

acre of land upon each and opposite sides of the Coosa River, and which said land is described as follows to-wit:

East Side:

Fraction D and the northeast quarter of the northeast quarter of Section 16; fractional southwest quarter, the south half of the northwest quarter and the southeast quarter of Section 15; the fractional north half of Section 22; all in Township 19 North, Range 18 East, Elmore County;

West Side:

Fractional east half of the southwest quarter and fractional southeast quarter of Section 16; the northeast quarter of Section 21 and the fractional north half of Section 22; all in Township 19 North, Range 18 East, Elmore County;

and by virtue of the aforesaid charter powers and of its ownership of said dam site or power site, has, under the laws of Alabama, the right, power and authority to manufacture, supply and sell to the public power produced by water as a motive force, and to acquire by condemnation the lands and rights necessary for the construction and operation of said dam and works connected therewith or useful thereto, and to construct and operate at said site or other points up or down the stream therefrom and across [fol. 3131] said stream a dam, together with all works incident, necessary or related thereto and in connection therewith to impound or divert the water of the said Coosa River and its tributaries, together with other rights, powers and authority granted it by the laws of Alabama for such services.

Applicant further shows that it will in due time apply to the Alabama Public Service Commission for a Certificate of Convenience and Necessity in compliance with the laws of Alabama for the construction of said project works, and upon the issuance of the same, duly certified copy thereof will be filed with this Commission.

The water impounded by said dam will flood, injure or damage certain public roads in the counties of Elmore, Chilton and Coosa, and by virtue of the laws of Alabama, applicant may acquire the right to flood, injure or damage

such roads by paying the Court of County Commissioners or Board of Revenue of the respective counties the cost of locating, laying out and opening other public roads in lieu of and to the same extent as the public roads are so flooded, injured or damaged. Applicant shows that it will shortly and in due course present its petition to the proper county authorities to ascertain such damages, and will forthwith compensate said county for any injury or damage said county authorities may find proper.

The laws of Alabama confer the right and authority to flood public and private ferries and approaches thereto, with which laws applicant proposes to comply and properly to acquire in the course of construction of the project works, as may be necessary, the privilege of flooding any and all public and private ferries and approaches thereto which may be flooded by said project.

No franchise or other right from municipalities are necessary so far as applicant is now advised before the project can be completed and put into operation.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3132] Exhibit "E"

Statement of Nature, Extent and Ownership of Water Rights, and of Ownership of Lands Which Applicant Contemplates Using in the Development of the Project. Also Statement of Plans With Reference to Procuring Water Rights and of Acquiring Lands

Applicant proposes to use in the development of the project the lands, together with the water rights incident thereto, as indicated on Map No. 1, Exhibit "J". Said map shows the location of the proposed dam and approximately the lands affected by said development. Applicant owns the dam site and has purchased and will continue to purchase or otherwise acquire from time to time before the completion of the project, various other lands in the locality which may be needed in the construction thereof. None of said lands, so far as applicant's information goes, con-

sists of either reservations or public lands, except a parcel of land not a part of other United States Government lands, and entirely isolated from any other lands of the United States. Said land is situated a distance of about three-eighths of a mile from the east abutment of applicant's dam at Duncan's Riffle (known as Mitchell Dam) and is unimproved and described as follows: That part of fractional Section 14, Township 21 North, Range 16 East, which lies west of the Coosa River, in Chilton County, Alabama, and containing 66.16 acres more or less.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3133] Exhibit "F"

Applicant's Plan for Acquiring Title to, or the Right to Occupy and Use, Lands Other Than Those Owned by the Applicant or by the United States, Essential for Carrying Out the Project

The Company has been engaged for some time, and is continuing to purchase outright, or else to acquire by purchase, the right to flood all lands useful or necessary to the project. Such lands and right to flood lands which the Company cannot acquire by purchase, it will acquire the right to use of flood under the Eminent Domain laws of the State of Alabama, and the United States. When required, a complete list and other data with reference to lands acquired will be supplied.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3134] Exhibit "I"

Estimate of Power Capacity

The power capacity is estimated to be:

.08 x 95 x 4000 = 30,400 H. P. where 95 = head in feet, and 4000= flow in sec. ft. for 90% of the time.

COMPLAINANTS' EXHIBIT No. 631 (Excluded)

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3135] This Exhibit M submitted with and made a part of application of the Alabama Power Co. for a license for project No. 618 Alabama is recommended for approval.

(Sgd.) ——— ———, Chief Engineer. (Sgd.) ——— ———, Executive Secretary. (Sgd.) ——— ———, Executive Secretary.

Approved Oct. 3, 1925.
By Order of The Federal Power Commission.
License Issued Nov. 7, 1925.

[fol. 3136] Exhibit "M"

General Description and General Specifications of Mechanical, Electrical and Transmission Equipment and Appurtenances

This project contemplates the construction of a dam and power house on Coosa River in vicinity of site known as Lock 18 as designated by survey of Coosa River from Lock N. 4 in Alabama to Wetumpka, Alabama, made August 2, 1903, to December 19, 1903, under the direction of J. B. Cavanaugh, Corps of Engineers, U. S. A., and by D. M. Andrews, Assistant Engineer, and N. A. Yuille, Chief of Party as indicated in Exhibits "K" and "L" herewith attached.

The dam will be of solid concrete masonry construction, raising elevation of pool approximately 95 feet above present low water level.

The power house will consist of foundations for five generating units, two units of which will be installed in first construction. Further provisions will be made for three more generating units to be constructed from time to time to meet the reasonable market demands for power.

The generating units in first construction will consist of two vertical type water wheels of approximately 36,000 H. P. each driving generators of approximately 25,000 kw. capacity each.

COMPLAINANTS' EXHIBIT No. 631 (Excluded)

Power will be generated at 13,200 volts, stepping up to 110,000 volts for transmission.

This station will be connected to the transmission line system of the Alabama Power Company by means of the now existing transmission line in the vicinity of this site.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3137] Exhibit "N"

Estimated Cost of Project

Earth and Rock Excavation	275,000 cubic yards.
Concrete	354,000 cubic yards.
Railroad	10 miles.
Initial Installation	72,000 horse power.
Lands for Reservoir	8,000 acres.
Total Estimated Cost of Initial Installation	$13,250,000.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. (Sgd.) Lamar Aldridge, Secretary.

[fol. 3138] Exhibit "O"

A Detailed Statement of the Time Required for Completing the Preliminary Construction and for Beginning and Completing the Construction of the Project.

The applicant desires to begin preliminary construction of the project works on or before December 1, 1925. It is estimated that it will require approximately three years for the initial installation. The time required for installation of each additional unit is estimated to be approximately one year, and it is proposed to construct the additional units from time to time to meet the reasonable market demands for power.

This exhibit is a part of the application for license made by the undersigned this the 13th day of June, 1925.

Alabama Power Company, by Thos. W. Martin, (Sgd.) Thos. W. Martin, President. Lamar Aldridge, Secretary.

CLERK'S COPY.

Vol. VI

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

VOLUME VI

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633—Press release dated August 25, 1933, entitled "Power Policy of the Tennessee Valley Authority"	3140	3487
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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., MAY 9, 1938
—5606

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655—EHFA circular 3283 3564
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657-680 Incl.—Correspondence and memoranda between TVA and EHFA 3290 3571
681—EHFA Press Release dated May 26, 1934.
682—List as of June 30, 1937 giving the locations and numbers of dealers for which TVA collects 3338 3598
683—REA Press Release, dated August 7, 1936 [omitted] 3339 3599
684—Letter dated July 2, 1935 to George W. Kable from Harry L. Brown re North Georgia Electric Membership Corporation 3340 3599

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685—Letter dated April 28, 1936 to REA from North Georgia Electric Membership Corporation over the signature of R. C. Pittman to REA 3342 3600
686—Message of the Governor of Tennessee to the Legislature, January 22, 1935..... 3350 3605
687—Message of the Governor of Tennessee to the Legislature, April 8, 1935..... 3356 3609
688—Charter issued by the State of Tennessee to the Middle Tennessee Electric Membership Corporation [omitted]..... 3365 3618
689—A Subpoena Duces Tecum for the books and records of TVA showing the number of employees in the Department of Electricity as of October 1, 1937, etc..... 3366 3618
690—A Subpoena Duces Tecum for a copy of the letter, dated on or about October 15, 1934, from TVA (Lilienthal) to Mayor Overton of Memphis..... 3367 3618
691—A Subpoena Duces Tecum for various letters of TVA beginning with a letter dated on or about March 27, 1934, from TVA or Mr. Lilienthal to the President of the United States or Federal Trade Commission 3368 3619
692—A Subpoena Duces Tecum for various letters and telegrams passing between Senator Black of Alabama and TVA..... 3369 3620
693—A Subpoena Duces Tecum for all letters and telegrams between TVA and REA from and after May 11, 1935..... 3370 3621
694—A Subpoena Duces Tecum for a press release dated on or about September 7 or 8, 1937, and a copy of speech given by David Lilienthal on or about November 17, 1933 ..... 3371 3621
695—A Subpoena Duces Tecum requesting various letters and circular letters issued by TVA beginning with a circular letter dated on or about September 21, 1936, from B. S. Robinson of TVA entitled "Another Electrical Fair for your Benefit" 3372 3622
696—A Subpoena Duces Tecum for various letters and telegrams passing between TVA and the North Alabama cities and PWA officials beginning with a letter dated on or about October 16, 1933, from Harry Berry to TVA or Director Lilienthal.. 3374 3623

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697—A Subpoena Duces Tecum for three letters beginning with a letter dated on or about October 5, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal.. 3376 3625
698—A resolution of the TVA Board of Directors, dated August 21, 1936, concerning pool level elevations at Chickamauga Dam 3377 3626
699—A resolution of the TVA Board of Directors, dated November 18, 1933, authorizing Mr. Lilienthal to continue co-operation with the manufacturers of electrical appliances 3377 3627
700—Tennessee Valley Authority five-year program condensed statement..... 3378 3628
701—Excerpt from TVA Minutes, dated June 26, 1933..... 3379 3629
702—Excerpt from TVA Minutes, dated July 11, 1933 ..... 3380 3629
703—Excerpt from TVA Minutes, dated July 30, 1933 ..... 3382 3630
704—Excerpt from TVA Minutes, dated August 5, 1933 ..... 3385 3631
705—Excerpt from TVA Minutes, dated September 18, 1933..... 3386 3632
706—Excerpt from TVA Minutes, dated September 21, 1933..... 3388 3632
707—Excerpt from TVA Minutes, dated September 29, 1933..... 3396 3636
708—Excerpt from TVA Minutes, dated October 13, 1933..... 3398 3637
709—Excerpt from TVA Minutes, dated October 14, 1933..... 3412 3644
710—Excerpt from TVA Minutes, dated October 24, 1933..... 3413 3644
711—Excerpt from TVA Minutes, dated October 24, 1933 ..... 3416 3645
712—Excerpt from TVA Minutes, dated November 27, 1933..... 3419 3647
713—Excerpt from TVA Minutes, dated December 16, 1933 ..... 3422 3648
714—Excerpt from TVA Minutes, dated January 19, 1934..... 3423 3648
715—Excerpt from TVA Minutes, dated March 30, 1934 ..... 3424 3649
716—Excerpt from TVA Minutes, dated April 13, 1934 ..... 3431 3652
717—Excerpt from TVA Minutes, dated June 30, 1934 ..... 3435 3653

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718—Excerpt from TVA Minutes, dated July 17, 1934 ..... 3438 3655
719—Excerpt from TVA Minutes, dated August 7, 1934 ..... 3439 3655
720—Excerpt from TVA Minutes, dated September 18, 1934..... 3441 3656
721—Copy of letter from Arthur E. Morgan, Chairman of the TVA Board of Directors to President Roosevelt, dated May 10, 1934 ..... 3442 3656
722-769 inclusive—(These numbers were inadvertently given by the reporter to press releases in the Ashwander Case which are given other exhibit numbers in this case. There are, therefore, no physical exhibits bearing these numbers.)..... 3449 3659
770—Synopsis of letter from Henry T. Hunt of PWA to David Lilienthal and letter in reply thereto from Mr. Lilienthal to Mr. Hunt dated November 22, 1934..... 3450 3659
771—Copy of telegram dated June 19, 1934, from Mayor Farr of Tuscumbia to David Lilienthal 3453 3661
772—Telegram dated June 20, 1934, from David Lilienthal to Mayor Farr..... 3454 3661
773—Correspondence between PWA and TVA re allotment to Hartselle, Alabama.... 3456 3662
774—Budgetary statement—"Estimate of appropriations fiscal year ending June 30, 1936" and the justification thereof..... 3457 3663
775—TVA answers to certain interrogations respective to its corporate functions..... 3464 3666
776—Stipulation as to the testimony of Harold L. Ickes 3466 3667
777—Opinion of PWA Electric Power Board of Review re Decatur, Alabama..... 3469 3668
778—Order of the Power Administrator establishing the Electric Power Board of Review 3478 3673
779—TVA Press Release, dated August 22, 1933. Opposition before Federal Power Commission to application by private companies for license 3480 3673
780—TVA Press Release, dated July 24, 1933. Llewellyn Evans sent to Muscle Shoals area 3481 3674
781—TVA Press Release, dated July 31, 1933. Preparation of plans for transmission line 3483 3675

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782—TVA Press Release, dated August 1, 1933. Naming of Norris Dam 3484 3675
783—TVA Press Release, dated August 10, 1933. Division of duties among directors 3485 3676
784—TVA Press Release, dated August 24, 1933. Applications from cities 3488 3677
785—TVA Press Release, dated August 30, 1933. Transmission line surveys start 3489 3678
786—TVA Press Release, dated August 31, 1933. A. E. Morgan address before Kiwanis Club of Knoxville 3490 3679
787—TVA Press Release, dated September 2, 1933. Transfer of Muscle Shoals properties to TVA 3491 3679
788—TVA Press Release, dated September 5, 1933. Application from municipalities .. 3492 3679
789—TVA Press Release, dated September 22, 1933. Conditions for construction of Wheeler Dam 3494 3680
790—TVA Press Release, dated September 28, 1933. D. E. Lilienthal address before Rotary Club of Chattanooga 3496 3681
791—TVA Press Release, dated October 9, 1933. Bids on Transmission line equipment .. 3502 3684
792—TVA Press Release, dated October 11, 1933. Announcement of A. E. Morgan broadcast 3504 3685
793—TVA Press Release, dated October 12, 1933. Text of A. E. Morgan broadcast. 3505 3686
794—TVA Press Release, dated October 13, 1933. Lilienthal's statement re local elections 3508 3687
795—TVA Press Release, dated October 15, 1933. CCC cooperation with TVA 3509 3688
796—TVA Press Release, dated October 17, 1933. Lilienthal address before Rotary Club of Memphis 3511 3689
797—TVA Press Release, Dated October 20, 1933. A. E. Morgan address to Chamber of Commerce of Asheville, N. C..... 3518 3693
798—TVA Press Release, dated November 4, 1933. Awarding contract for Transmission line equipment 3523 3695
799—TVA Press Release, dated November 7, 1933. Lilienthal address before Rotary, Chamber of Commerce and Exchange Clubs of Nashville 3525 3696
800—TVA Press Release, dated November 11, 1933. Lilienthal address before Lawyers Club, Atlanta, Georgia..... 3536 3702

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Statement of evidence—Continued.
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801—TVA Press Release, dated November 15, 1933. Terms and conditions for retail sales of electricity by municipalities... 3548 3709
802—TVA Press Release, dated November 19, 1933. A. E. Morgan statement re importance of electric power..... 3553 3712
803—TVA Press Release, dated November 21, 1933. A. E. Morgan address to National Academy of Sciences, Boston, Mass.... 3555 3713
804—TVA Press Release, dated November 22, 1933. Sheffield, Alabama, contract for TVA power 3561 3716
805—TVA Press Release, dated December 5, 1933. CWA cooperation with TVA.... 3563 3717
806—TVA Press Release, dated December 5, 1933. A. E. Morgan address to American Institute of Electrical Engineers, New York City..... 3564 3718
807—TVA Press Release, dated December 12, 1933. CWA cooperation with TVA.... 3572 3722
808—TVA Press Release, dated December 18, 1933. TVA to develop Aurora project on Tennessee River..... 3574 3723
809—TVA Press Release, dated December 20, 1933. Construction of lines and CWA cooperation 3576 3724
810—TVA Press Release, dated December 20, 1933. Announcement of creation of Electric Home and Farm Authority, Inc. 3578 3725
811—TVA Press Release, dated December 20, 1933. Announcement of creation and purposes of Electric Home and Farm Authority, Inc. 3580 3726
812—TVA Press Release, dated December 28, 1933. Announcement of proposed organization of farm cooperatives..... 3582 3727
813—TVA Press Release, dated January 5, 1934. Announcement of agreement with C. & S..... 3583 3728
814—TVA Press Release, dated January 5, 1934. Supplemental statement re agreement TVA-C. & S..... 3587 3730
815—TVA Press Release, dated January 6, 1934. Lilienthal address before American Academy of Political & Social Science, Philadelphia 3590 3731
816—TVA Press Release, dated January 20, 1934. Organization of EHFA perfected. 3598 3735

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817—TVA Press Release, dated January 20, 1934. Lilienthal address broadcast.... 3601 3737
818—TVA Press Release, dated January 26, 1934. TVA service to Tupelo..... 3610 3742
819—TVA Press Release, dated March 3, 1934. Conferences, City of Knoxville, TVA and Tennessee Public Service Company representatives 3612 3743
820—TVA Press Release, dated March 13, 1934. EHFA activities 3614 3744
821—TVA Press Release, dated March 21, 1934. TVA contracts with nine cities..... 3618 3746
822—TVA Press Release, dated March 25, 1934. Mosquito control on power reservoirs.. 3619 3747
823—TVA—Press Release, dated March 26, 1934. EHFA activities with electric appliance manufacturers 3620 3747
824—TVA Press Release, dated March 28, 1934. Chattanooga as headquarters of EHFA. 3622 3749
825—TVA Press Release, dated April 5, 1934. Personnel of EHFA..... 3624 3750
826—TVA Press Release, dated April 6, 1934. Organization of County cooperatives in Mississippi and Alabama..... 3626 3751
827—TVA Press Release, dated April 6, 1934. Announcement of sale and demonstration by EHFA at Tupelo..... 3629 3752
828—TVA Press Release, dated April 7, 1934. EHFA offices at Chattanooga..... 3632 3753
829—TVA Press Release, dated April 9, 1934. EHFA activities 3634 3755
830—TVA Press Release, dated April 10, 1934. EHFA appliance prices..... 3636 3756
831—TVA Press Release, dated April 10, 1934. Announcement of plan of county cooperatives 3639 3758
832—TVA Press Release, dated April 16, 1934. EHFA and TVA emblem..... 3641 3759
833—TVA Press Release, dated April 17, 1934. TVA emblem and announcement of purpose 3645 3761
834—TVA Press Release, dated April 22, 1934. Lilienthal address before Tennessee Valley Institute of University of Chattanooga 3647 3762
835—TVA Press Release, dated April 22, 1934. EHFA offices and display rooms at Chattanooga 3659 3768

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836—TVA Press Release, dated April 23, 1934. Announcement of TVA contract with advertising agency 3661 3768
837—TVA Press Release, dated April 25, 1934. EHFA electric home specialists..... 3663 3770
838—TVA Press Release, dated April 25, 1934. Electrical home 3664 3770
839—TVA Press Release, dated April 25, 1934. Lilienthal address before League of Women Voters, Boston, Mass..... 3665 3771
840—TVA Press Release, dated April 25, 1934. Origin of TVA emblem..... 3684 3781
841—TVA Press Release, dated April 26, 1934. EHFA demonstration at Tupelo..... 3686 3782
842—TVA Press Release, dated May 16, 1934. A. E. Morgan address before the Lower Tennessee Valley Association..... 3689 3783
843—TVA Press Release, dated May 17, 1934. Lilienthal address before the National Association of Mutual Savings Banks, New York 3699 3788
844—TVA Press Release, dated May 18, 1934. A. E. Morgan address to the Civic Clubs of Huntsville, Alabama..... 3713 3796
845—TVA Press Release, dated May 18, 1934. The first year of the TVA..... 3724 3801
846—TVA Press Release, dated May 21, 1934. Broadcast of Directors..... 3727 3803
847—TVA Press Release, dated January 22, 1936. Lilienthal address to National Retail Dry Goods Association, Annual Convention, New York..... 3731 3805
848—TVA Press Release, dated December 30, 1935. Lilienthal address at meeting of American Historical Association and American Political Science Association. Chattanooga 3733 3806
849—TVA Press Release, dated April 10, 1936. Announcement of expansion of lines—PWA loan to Okolona..... 3738 3809
850—TVA Press Release, dated April 13, 1936. Announcement of construction of rural lines 3739 3809
851—TVA Press Release, dated April 18, 1936. Announcement of construction of rural lines 3740 3810
852—TVA Press Release, dated July 23, 1936. Announcement of contract with Aluminum Company of America..... 3741 3810

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853—TVA Press Release, dated August 7, 1936. Lilienthal attending meeting of Third World Power Conference	3743	3811
854—TVA Press Release, dated August 19, 1936. Announcement of contract with Volunteer Portland Cement Company	3745	3812
855—TVA Press Release, dated August 28, 1936. Cullman County Electric Fair	3746	3812
856—TVA Press Release. Announcement of construction of rural lines	3748	3813
857—TVA Press Release, dated October 1, 1936. Norris Dam generators in operation	3749	3814
858—TVA Press Release, dated October 12, 1936. Athens, Alabama, county-wide distribution	3750	3814
859—TVA Press Release, dated October 17, 1936. Wm. I. Nichols, address before Public Ownership League of America, Springfield, Ill.	3753	3815
860—TVA Press Release, dated November 16, 1936. A. E. Morgan address before U. S. Conference of Mayors, Washington, D. C.	3756	3817
861—TVA Press Release, dated March 23, 1937. A. E. Morgan address before Annual Conference of Schoolmens' Week, University of Minnesota	3759	3818
862—TVA Press Release, dated November 28, 1935. Publication of telegram and TVA letter re construction of rural lines by companies	3763	3820
863—TVA Press Release, dated May 30, 1934. A. E. Morgan address before the Central States Forestry Congress	3774	3826
864—TVA Press Release, dated June 1, 1934. Payment to Mississippi Power Company for property transferred	3781	3830
865—TVA Press Release, dated June 3, 1934. Contract with Alcorn County Electric Power Association	3782	3830
866—TVA Press Release, dated June 12, 1934. EHFA combined appliances	3788	3834
867—TVA Press Release, dated June 13, 1934. Release of correspondence with National Power & Light Company re Knoxville purchase	3790	3834
868—TVA Press Release, dated June 22, 1934. Lilienthal address at Jackson, Tennessee, to civic leaders	3820	3850

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Complainants' Exhibits Nos.—Continued. Original Print
869—TVA Press Release, dated June 23, 1934. Receipt of offer for sale of Alabama properties 3824 3852
870—TVA Press Release, dated July 1, 1934. Statement of Carl A. Bock re dams.... 3825 3853
871—TVA Press Release, dated July 6, 1934. Announcement of plan for purchase of North Alabama properties and exposition of methods whereby towns may obtain TVA electricity..... 3828 3854
872—TVA Press Release, dated July 14, 1934. Statement of Carl A. Bock re construction of dam near Asheville, N. C..... 3830 3856
873—TVA Press Release, dated July 15, 1934. Announcement of reduced bills through TVA power at Athens, Alabama..... 3831 3856
874—TVA Press Release, dated July 15, 1934. Announcement of exercise of option from Alabama Power Company re North Alabama towns 3832 3856
875—TVA Press Release, dated July 17, 1934. Announcement of agreement to acquire property of Tennessee Public Service Company at Knoxville..... 3834 3857
876—TVA Press Release, dated July 18, 1934. Savings which will result from purchase of Tennessee Public Service Company property..... 3842 3861
877—TVA Press Release, dated July 18, 1934. A. E. Morgan announcement re coal industry 3845 3863
878—TVA Press Release, dated July 27, 1934. Announcement of execution of contract for purchase of Tennessee Public Service Company properties..... 3847 3864
879—TVA Press Release, dated August 1, 1934. John B. Blandford, Jr., broadcast..... 3852 3867
880—TVA Press Release, dated August 7, 1934. Lilienthal and Llewellyn Evans study English Grid System..... 3857 3869
881—TVA Press Release, dated August 27, 1934. List of towns applying or making inquiries for power..... 3860 3871
882—TVA Press Release, dated October 1, 1934. Visit of Power Authority of State of New York to TVA..... 3864 3873

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883—TVA Press Release, dated October 2, 1934. A. E. Morgan address before the Technical Club of Madison and Milwaukee Engineering Club	3867	3874
884—TVA Press Release, dated October 6, 1934. Statement filed by the TVA with the Alabama Public Service Commission	3874	3878
885—TVA Press Release, dated October 8, 1934. Service to rural lines in Lauderdale County, Alabama	3886	3884
886—TVA Press Release, dated October 9, 1934. Statement by Lilienthal upon conclusion of visit of trustees of New York Power Authority	3888	3886
887—TVA Press Release, dated October 22, 1934. E. S. Draper, address at National Conference on City Planning and American Civic Association, St. Louis, Mo.	3889	3886
888—TVA Press Release, dated November 7, 1934. Statement issued on first anniversary of Norris Dam construction	3894	3889
889—TVA Press Release, dated October 26, 1934. A. E. Morgan's transactions with coal associations	3896	3889
890—TVA Press Release, dated November 19, 1934. Arrangement for valuation of private utilities' property at Aurora Dam site	3900	3892
891—TVA Press Release, dated December 17, 1934. A. E. Morgan address at Wharton School, University of Pennsylvania	3903	3893
892—TVA Press Release, dated November 5, 1934. A. E. Morgan address before the Democratic Women's Luncheon Club at Philadelphia	3909	3896
893—TVA Press Release, dated January 16, 1935. Announcement TVA will open office in Birmingham on January 18th	3917	3900
894—TVA Press Release, dated May 13, 1935. A. E. Morgan address before Rotary Club of Columbus, Ohio	3918	3901
895—TVA Press Release, dated July 31, 1935. A. E. Morgan address before Chattanooga Flood Protection District Commission, at Chamber of Commerce, Chattanooga	3921	3903
896—TVA Press Release, dated September 22, 1935. Announcement of celebration at Fayetteville, Tennessee	3935	3910

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Complainants' Exhibits Nos.—Continued. Original Print
897—TVA Press Release, dated October 1, 1935. Lilienthal address at Fayetteville on opening of farm lines in Lincoln County, Tennessee 3938 3911
898—TVA Press Release, dated October 21, 1935. Sixth Rural Cooperative launched 3945 3915
899—TVA Press Release, dated October 24, 1935. Lilienthal address at Dickson, Tennessee 3947 3916
900—TVA Press Release, dated November 2, 1935. TVA transmission loop in West Tennessee 3954 3920
901—TVA Press Release, dated November 26, 1935. Lilienthal address before meeting under auspices of City of Louisville, Kentucky 3956 3921
902—TVA Press Release, dated July 29, 1936. Morgan address before TVA employees at Knoxville 3963 3924
903—A map of the Gilbertsville pool at elevation 370 [omitted]..... 3965 3925
904—"Figure 3. Capacity Curve for Norris Reservoir with Controlling Elevations" taken from article by James S. Bowman in "Civil Engineering", April, 1935 (original exhibit) 3966 3925
905—"Figure 2. Storage Required for Various Regulated Flows at Florence, Alabama" taken from article by James S. Bowman in "Civil Engineering" for April, 1935 (original exhibit) 3966 3925
906—A photograph of the plaque on the Miami Conservancy dams, stating that the use of the dams for power development would be a menace to the cities below [omitted] 3966a 3926
907—A hydrograph of elevation of Norris Reservoir during 1936 and 1937 (original exhibit) [omitted] 3967 3929
908—A Resolution of the Board of Directors of TVA dated July 1, 1936, creating a Committee on Water Control Operations... 3968 3929
909—A chart from page 515 of Complainants' Exhibit 115 (Hearings on Second Deficiency Appropriations Bill, 1937) showing TVA system demand generator installations and firm power capacity, actual and projected to the end of 1940 (original exhibit) [omitted]..... 3969 3929

Record from D. C. U. S., Eastern District of Tennessee—Continued.
Statement of evidence—Continued.
Complainants' Exhibits Nos.—Continued. Original Print
910—Daily reports of releases of water at Norris Dam [omitted] 3970 3929
910-A—A water control bulletin dated December 19, 1936, concerning the operation of Wheeler reservoir 3971 3930
910-B—A sheet of statistics concerning river stages and rainfall for the date February 9, 1937..... 3972 3930
911—Daily reports of releases of water at Norris Dam [omitted] 3973 3931
912—Defendants' Exhibit 29 in the Ashwander case, showing Norris Dam and the amount of dead storage available there and the amount available for flood control (original exhibit) [omitted]..... 3974 3931
913—Plate 19 from Volume 2 of House Document 328, which is a graph of floods on the Tennessee River (original exhibit) [omitted] 3975 3931
914—Defendants' Exhibit 30 in the Ashwander case, which is a sketch showing surcharge storage provided to compensate for flood storage displaced by a reservoir (original exhibit) [omitted]..... 3975 3931
915—Defendants' Exhibit 31 in the Ashwander case, which is a graph of the Tennessee River showing channel storage below Knoxville (original exhibit) [omitted]. 3975 3931
916—A table based upon the daily river bulletins of TVA, identified as Complainants' Exhibit 910, showing the discharge below Norris Dam in August, September and October, 1936..... 3976 3932
917—A list of the dams proposed in C. T. Barker's substitute navigation scheme..... 3977 3933
918—The TVA Neighborhood Plan..... 3978 3934
919—Operating statistics of TVA for the month of August, 1937..... 3990 3946
920—A table showing the farm census data for Alabama as of January 1, 1935..... 3997 3953
921—A table prepared by the Statistical Department of the Edison Electric Institute stating certain figures concerning rural electrification in the United States 3998 3954
922—A letter dated January 8, 1938, to the Alabama Power Company from the Rockwood Alabama Stone Company [omitted] 3999 3955

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Complainants' Exhibits Nos.—Continued.	Original	Print
923—Water control bulletins Nos. 1 to 9 inclusive	4000	3955
924—Papers designated as water control memorandum Nos. 1 to 24 inclusive, the first one being dated July 27, 1937, and the last one being dated December 31, 1937	4007	3961
925—Map prepared by the Tennessee Valley Authority Project Planning Division entitled "Tennessee River Plan and Profile Existing and Proposed High Dams" (original exhibit) [omitted]	4019	3973
926—Table entitled "Tennessee Valley Authority Tabulation of Principal Features of Present and Proposed Dam and Reservoir Projects September 29, 1937"	4020	3974
927—Chart entitled "Tennessee Valley Authority Proposed Program of Dam Construction"	4021	3974
928—The original power contract between TVA and the City of Florence, dated March 12, 1934	4022	3975
929—The original power contract between TVA and the City of Tuscumbia, dated March 14, 1934	4029	3980
930—The original power contract between TVA and the City of Sheffield, dated March 14, 1934	4030	3981
931—Subpoena duces tecum for report of United States Department of the Interior, Bureau of Reclamation, entitled, "Economic Height of Norris Dam," by E. B. Debler, Hydraulic Engineer, dated November 1, 1933	4031	3982
932—Table entitled "Comparative Lockage Times per Lock (no allowance for open river navigation)"	4032	3982
933—A diagram entitled "Coal Transfer and Transit Facilities" at Norris Dam (original exhibit) [omitted]	4033	3983
934—A table showing the gross hydro plant generation in kwh. of the Alabama Power Company at Lay Dam, Mitchell Dam, Jordan Dam, Martin Dam, Upper Tallassee Dam and Thurlow Dam for the years 1932 to 1936	4034	3984
935—A table entitled "Comparative Lockage Times—Tennessee River"	4035	3984
936—House Document 306, 74th Congress, First Session (original exhibit) [omitted]	4036	3985

Record from D. C. U. S., Eastern District of Tennessee—Continued.
Statement of evidence—Continued.
Complainants' Exhibits Nos.—Continued. Original Print
937—Four sheets showing the proposed subscribers on Highway No. 15 near Fayetteville, Tennessee, and the amount subscribed by each 4037 3986
938—A report labeled "Memorandum Covering Proposed Electric Service to Elora, Tennessee, Flintville, Tennessee, U. S. Government Fish Hatchery in Warren Hollow, Kelso, Tennessee 4041 3987
939—A letter dated November 10, 1932, to Mr. Joe C. Guild, Jr., from Malcolm R. Williams enclosing a letter to Mr. Williams dated September 27, 1932, from Charlie Beatty 4045 3991
940—A report of the district engineer entitled "Memorandum as to the feasibility of extending a 2300 volt single phase line from Fayetteville to serve the communities of Kelso, Flintville and the U. S. Government Fish Hatchery" 4047 3993
941—A tabulation of floods which have occurred between April 15 and November 30 on rivers in and near the Tennessee River basin 4048 3994
942—A table and a chart showing the weekly loads of the Complainant Companies for the year 1937 ..... 4050 3996
943-953, Inc.—Certificates of Incorporation of Mississippi Rural Cooperative Organizations 4051 3996
954—A subpœna duces tecum for material on pages 7, 8, 9, 10, 11, 14, 15, 30, 31 and 32, submitted to Congress by TVA in December, 1937 ..... 4058 4002
955—A subpœna duces tecum for TVA's detail statement of budget estimates for the fiscal year ending June 30, 1939, submitted to Congress in December, 1937 .. 4059 4003
956—A subpœna duces tecum for minutes of the board of directors of the TVA approving the recommendations or reports relating to the methods of operating Norris, Wheeler or any other TVA dam or prescribing levels at any of the reservoirs at said dams 4060 4004
957—Resolutions of TVA Board of Directors dated October 26, 1936, March 12, 1937, March 31, 1937, May 5, 1937, and June 3, 1937, relating to water control bulletins 4061 4004

[fol. 3139] COMPLAINANTS' EXHIBIT No. 632 (Excluded)

Alabama Power Company

Annual Payments to United States on Account of Licenses Issued by Federal Power Commission by Projects

Year	Mitchell Dam—Project 82. License Issued 6-27-21	Martin Dam—Project 349 Unit #4. License Issued 6-9-23	Jordan Dam—Project 618. License Issued 11-7-25	Total
1921	$225.45	.....	.....	$225.45
1922	437.70	.....	.....	437.70
1923	437.71	$190.86	.....	628.57
1924	1,193.00	576.61	.....	1,769.61
1925	2,281.00	755.00	$91.62	3,127.62
1926	5,545.00	755.00	608.00	6,908.00
1927	5,545.00	1,887.50	608.00	8,040.50
1928	5,545.00	3,775.00	608.00	9,928.00
1929	5,545.00	9,437.50	1,520.00	16,502.50
1930	5,545.00	9,437.86	3,040.00	18,022.86
1931	5,545.00	9,437.59	7,624.99	22,607.58
1932	5,545.00	9,437.59	7,608.33	22,590.92
1933	5,545.00	9,437.59	7,608.33	22,590.92
1934	5,545.00	9,437.59	7,608.33	22,590.92
1935	5,545.00	9/437.59	7,608.33	22,590.92
1936	5,545.00	9,437.59	7,608.33	22,590.92
Total	$65,569.86	$83,440.87	$52,142.26	$201,152.99

[fol. 3140] COMPLAINANTS' EXHIBIT No. 633 (Excluded)

The Power Policy of the Tennessee Valley Authority

1. The business of generating and distributing electric power is a public business.

2. Private and public interests in the business of power are of a different kind and quality and should not be confused.

3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures

which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant, or setting up a competing plant, as circumstances may dictate.

6. The fact that action by the Authority may have an adverse economic effect upon a privately-owned utility, should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately-owned utility.

7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite regions and to develop its program in those areas before going outside.

8. The initial areas selected by the Authority may be roughly described as:

(a) The region immediately proximate to the route of the transmission line soon to be constructed by the Authority between Muscle Shoals and the site of Norris Dam.

(b) The region in proximity to Muscle Shoals, including northern Alabama and north-eastern Mississippi.

(c) The region in the proximity of Norris Dam (the new source of power to be constructed by the Authortiy on the Clinch River in north-east Tennessee).

[fol. 3141] At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia and North Carolina, and that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size, (such as Chattanooga and Knoxville) and, ultimately, at least one city of more than a quarter million,

within transmission distance, such as Birmingham, Memphis, Atlanta, or Louisville.

While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately-owned utilities in the area do not cooperate in the working out of the program.

Nothing in the procedure here adopted is to be construed in any sense a commitment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest require. Where special considerations exist, justifying the Authority going outside this initial area, the Authority will receive and consider applications based on such special considerations. Among such special considerations would be unreasonably high rates for service, and a failure or absence of public regulation to protect the public interest.

9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately-owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis.

10. Accounting should show detail of costs, and permit of comparison of operations with privately-owned plants, to supply a "yard-stick" and an incentive to both private and public managers.

11. The accounts and records of the Authority as they pertain to power, will always be open to inspection by the public.

[fol. 3142] COMPLAINANTS' EXHIBIT No. 634 (Excluded)

Tennessee Valley Authority

Temporary Building F, Washington

For Release to Afternoon Papers, Thursday, September 14, 1933

Electric Rates Announced

The following statement respecting rates for electric power from the publicly-owned plant at Muscle Shoals was made today by David Lilienthal, member of the Board of Directors of the Tennessee Valley Authority to whom has been assigned the execution of the Authority's power program.

"At the direction of the Board of Directors of the Tennessee Valley Authority, rates for electricity supplied from the publicly-owned plant at Muscle Shoals have been formulated, after weeks of careful study of costs and market factors.

"Any municipality, in the area we plan to serve initially, which owns its distribution system, assuming half-time use, may secure wholesale power from the Authority at an average cost to it of seven mills a kilowatt hour. We propose that our municipal wholesale customers charge the individual residence consumer in the towns and cities thus served a maximum gross rate of 3 cents a kilowatt hour for the first block, and for subsequent blocks 2 cents, 1 cent, and 4 mills. For the typical general consumer this is an average of about 2 cents a kilowatt hour, and for the typical limited user an average of about 2¾ cents. For a fully electrified home—which is our objective—the rate would average 7 mills per kilowatt hour.

"The farm user, we propose, should pay the same rate for energy as the town and city householder. These schedules, both for town and farm, carry with them a requirement that the customer use a reasonable amount per month as a minimum. These minimum requirements vary, both in urban and farm territory, with the size of the customer's meter. Farm users will have a larger minimum requirement wherever the greater distances between customers result in increased cost of service.

COMPLAINANTS' EXHIBIT No. 634 (Excluded)

"These wholesale rates have been computed on a conservative basis to cover all the costs of furnishing the service, including operation, maintenance, depreciation, and taxes. In addition to these costs, we have made provision for interest and retirement, although such provision is not required by the Tennessee Valley Authority Act. The power project is designed to be strictly self-supporting and self-liquidating.

"We believe that these low rates will mean that the people of the Valley will greatly increase their use of electricity—which is one of the objectives of the President and Congress. [fol. 3143] If this occurs, even lower rates can be planned for the future.

"The proposed rates to the householder and farmer should be explained in more detail. Under the rate for domestic service, it is proposed that for the first 50 kilowatt hours which the householder uses he shall pay 3 cents a kilowatt hour. These 50 kilowatt hours, in the ordinary small or medium sized house, would care for the lights and small electrical appliances, such as the flat iron, toaster, percolator, vacuum sweeper, washing machine, and similar small devices. For these 50 kilowatt hours the user would pay $1.50. If the consumer has an electric refrigerator and an electric range which together consume 200 kilowatts, 150 of these kilowatt hours per month he would get for 2 cents per kilowatt hour, and the remaining 50 kilowatts at 1 cent. If in addition to an electric refrigerator and range the customer had an electric hot water heater, this service he could secure partly for 1 cent per kilowatt hour, and partly for 4 mills per kilowatt hour. All these services the consumer would receive for $6.70 a month. Any other appliances which the consumer installed such as electrical house heating or cooling, he could operate at 4 mills per kilowatt hour.

"It is apparent that the rates proposed are designed to encourage and make possible the widest use of electric service, with all the individual and community benefits which go with such wide use."

Reprinted from
THE JOURNAL OF THE NATIONAL EDUCATION ASSOCIATION
December, 1934

COMPLAINANTS' EXHIBIT NO. 635 (EXCLUDED)

A Learning Unit for Schools

The Tennessee Valley Looks to the Future

WALTER E. MYER
Editor, The American Observer

EDITORIAL NOTE—*Of all the activities of the present administration, the TVA is the most constructive and prophetic. Here is the story told by a keen student and observer, after spending weeks in the Valley gathering material for this special* JOURNAL *feature.*

IN THE SPRING of 1933 the United States government began an experiment in economic planning. By Act of Congress, May 18, it created the Tennessee Valley Authority. The Authority was given a very important—and a very difficult—assignment. Its job is to plan the industrial life and improve the well-being of a large section of the country. The region selected for the experiment is the territory which drains into the Tennessee River and its tributaries. This watershed, somewhat inaccurately termed the Tennessee Valley, takes in a great part of Tennessee and portions of six other states: Virginia, North Carolina, Georgia, Alabama, Mississippi, and Kentucky. Its area is about 42,000 square miles. Only 2,000,000 people live within the Valley area, but 6,000,000 are to be found within its sphere of influence.

The Tennessee Valley Authority, or the TVA as it is called, is doing its work in this territory. It is studying social conditions and social needs. It is making a survey of the natural resources, the soil, minerals, forests. It is canvassing the possibilities of water power development and is actively at work harnessing the waters of the Tennessee and its branches, creating a great, integrated power system. It is already generating electric power and selling it at low rates. It is devising means of preserving the fertility of the soil, of checking erosion, of encouraging the reforestation of the wooded regions. It is trying to find steady employment for the people of the Valley.

But it is doing more than that. Its work in this Valley serves as a yardstick for the whole nation. In showing what can be done in planning the future of industry and agriculture, and in maintaining high standards of workmanship in all its operations, it will be suggesting what may be done elsewhere. It is working not only to promote industrial growth but to see that this growth contributes to the welfare of human beings. If the TVA succeeds in directing business and agricultural development so that the people of the Valley are happier and more secure, it will serve as an object lesson to the nation.

But why is it that this particular part of the country is being used as an experiment ground by the United States government? The choice of the Tennessee Valley is really a product of historical accident. There had been a long drawn-out discussion as to what should be done with the great dam and power plant at Muscle Shoals, Alabama. These had been built by the government during the war. They were to generate power for the production of nitrogen, needed in the making of explosives. When peace came, many people thought that the government should generate electricity for domestic and commercial use. Others said the government should keep out of business; that it should sell the plant to private interests. Twice Congress declared in favor of government operation. Each time the congressional bill was blocked by presidential veto. Finally, after more than a decade of indecisive wrangling, President Roosevelt settled the question. The government would operate the Muscle Shoals properties. But it would do more than that. It would use the power developed along the Tennessee as a part of a larger plan—a plan for the economic safety and welfare of the whole [illegible] leads logically to national planning for a complete river watershed involving many states and the future lives and welfare of millions. It touches and gives life to all forms of human concerns.

I, therefore, suggest to the Congress legislation to create a Tennessee Valley Authority—a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise. It should be charged with the broadest duty of planning for the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and its adjoining territory for the general, social, and economic welfare of the nation. This Authority should be clothed also with the necessary power to carry these plans into effect. Its duty should be the rehabilitation of the Muscle Shoals development and the coordination of it with the wider plan.

Many hard lessons have taught us the human waste that results from lack of planning. Here and there a few wise cities and counties have looked ahead and planned. But our nation has "just grown." It is time to extend planning to a wider field, in this instance comprehending in one great project many states directly concerned with the basin of one of our greatest rivers.

This in a true sense is a return to the spirit and vision of the pioneer. If we are successful here we can march on, step by step, in a like development of other great natural territorial units within our borders.

The Authority is a corporation, owned by the government. There was set aside for its use $50,000,000 from the $3,300,000,000 public works fund. It is authorized to issue $50,000,000 more in bonds on the credit of the United States. The Authority is administered by a Board of Directors consisting of three members appointed by the President.

The three directors are men who have long been interested in problems such as the Authority must meet. Arthur E. Morgan, chairman of the board, has had experience as a practical engineer. He is also a social engineer. As president of Antioch College he was deeply concerned

ment in economic planning. By Act of Congress, May 18, it created the Tennessee Valley Authority. The Authority was given a very important—and a very difficult—assignment. Its job is to plan the industrial life and improve the well-being of a large section of the country. The region selected for the experiment is the territory which drains into the Tennessee River and its tributaries. This watershed, somewhat inaccurately termed the Tennessee Valley, takes in a great part of Tennessee and portions of six other states: Virginia, North Carolina, Georgia, Alabama, Mississippi, and Kentucky. Its area is about 42,000 square miles. Only 2,000,000 people live within the Valley area, but 6,000,000 are to be found within its sphere of influence.

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The TVA is working to improve conditions in the Tennessee Valley. That is its immediate object. But it is doing more than that. It would use the power developed along the Tennessee as a part of a larger plan—a plan for the economic safety and welfare of the whole watershed. His concept of the project is admirably stated in his address to Congress:

> The continued idleness of a great national investment in the Tennessee Valley leads me to ask the Congress for legislation necessary to enlist this project in the service of the people.
>
> It is clear that the Muscle Shoals development is but a small part of the potential public usefulness of the entire Tennessee River. Such use, if envisioned in its entirety, transcends mere power development: it enters the wide field of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short, this power development of war days must mark the beginning of a new relationship between the Federal Government and the Tennessee Valley. It must look to the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and its adjoining territory for the general, social, and economic welfare of the nation. This Authority should be clothed also with the necessary power to carry these plans into effect. Its duty should be the rehabilitation of the Muscle Shoals development and the coordination of it with the wider plan.
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The three directors are men who have long been interested in problems such as the Authority must meet. Arthur E. Morgan, chairman of the board, has had experience as a practical engineer. He is also a social engineer. As president of Antioch College, he was deeply concerned with the possibilities inherent in the development of small industries. He was concerned with methods of cooperation. He has for years been a student of problems relating to the development of a more stable society. Harcourt A. Morgan came to the TVA from the presidency of the University of Tennessee. He has been recognized as an authority on soils and on the problems of agriculture. He has been a leader in the advocacy of the decentralization of industry. David E. Lilienthal, a lawyer of Chicago, came to the TVA as a public utilities specialist.

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[Order additional copies of this reprint for classroom use from the National Education Association, 1201 16th St., N. W., Washington, D. C.; 2 copies, 10¢; 25, 75¢; 50, $1.50; 100, $3; 300, $8; 500, $13.25]

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The Valley As It Is

BEFORE we inquire any further into the activities of the TVA, perhaps we should consider the nature of the problems with which it has to deal. It is concerned, of course, with human problems; with conditions under which men and women and children live. It is trying to alter conditions so that people may be freer and happier. But what are some of these conditions? That we may better answer that question, suppose we make an imaginary journey thru the Valley region, visiting several representative sections of the watershed.

TVA photos

WASHDAY without modern conveniences is "blue Monday" indeed; two familiar landmarks—the old mill and the general store.

As we travel thru the mountains which make up the eastern part of this territory, we are impressed by the facts of poverty and primitive living. The first impression is that the region is very sparsely peopled, since for long distances [illegible] and more substantial than they are now. The time was when pioneer men and women, with hope in their hearts, pushed into the mountains and built these little homes. For a while hope may have seemed justified for there were fish in the streams and game in the woods. The forests themselves, while they lasted, furnished a source of revenue, and patches of the hillsides could be cleared for the planting of corn and potatoes.

But now the best of the forests are gone. Game is less plentiful. And the little fields on the steep slopes are denuded of their soil, for the heavy rains wash it from the cultivated spots into the swift mountain streams. So poverty has settled upon the mountain families, and hope has departed. Mile after mile, as one drives along, he sees tumble-down cabins, with the large families sitting aimlessly on the porches. The cabins are distressingly similar and the conditions of life are painfully alike. These families, sitting idly on the porches from Virginia to Georgia, are the victims of a regimentation of poverty which casts all into a mold of hopeless inactivity. Left to their own devices, there seems to be little prospect that these mountain people can find the way to a better industrial order. None of them sees the way, acting individually, to shake off the forces which have rendered them helpless.

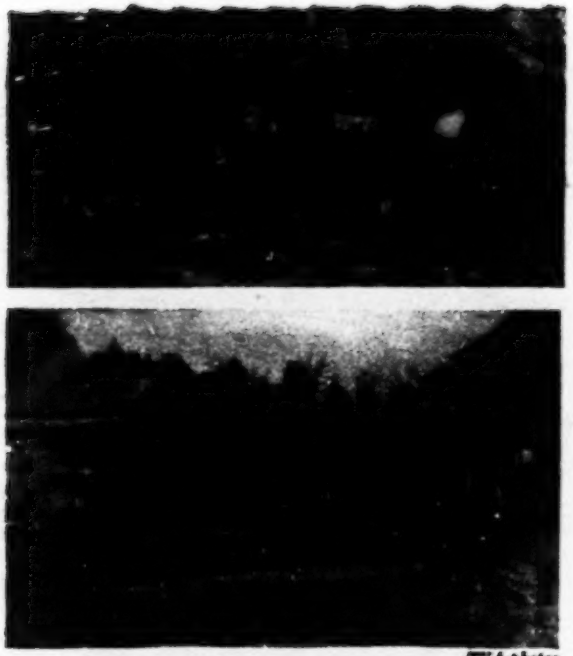
As we reach the westward turn of the river and travel along the south-central portion of the watershed, we leave the hills and come to the cotton fields—the old plantation district. But the glamour [illegible] So here, as in the mountains, we look about and say, "This land has seen better days." Here, as there, the individual farmers seem unable to reorganize their economic lives.

Thru south-central Tennessee we find a richer soil and a more diversified agriculture. We see comfortable dwellings and well-kept farms. The villages and towns, tho perhaps not bustling with pre-depression activity, are showing, at any rate, no positive signs of decadence. On the Cumberland plateau, which forms a considerable portion of central and northern Tennessee, the soil appears to be thin, due in many cases to erosion; the forests have been cut and the second growth is not yet ready for cutting; the farms bear evidences of poverty; and the villages are running down. The frequent coal mining areas are victims of the depression. Many of the mines have ceased operation and where that has happened one finds stranded towns, the inhabitants sitting about, waiting for jobs which will probably never come back and meanwhile living largely upon charity and relief.

There are regions of neatness, thrift, and as much prosperity as American farming communities enjoy. Yet in the large, the prospect in the Valley is not encouraging.

Not that the inhabitants themselves are backward. They are of old-line American stock. They are as intelligent and resourceful as the natives of other sections. But they have been unable to make a living except by farming methods which have robbed the soil of its fertility. Fertilizers have not been available and the soil has got away from them. So have the forests. They have not developed a rich or diversified agriculture.

Even in the pre-depression days they were not finding employment for a[illegible]



TVA photos

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better answer that question, suppose we make an imaginary journey thru the Valley region, visiting several representative sections of the watershed.

As we travel thru the mountains which make up the eastern part of this territory, we are impressed by the facts of poverty and primitive living. The first impression is that the region is very sparsely peopled, since for long distances few signs of human habitation are visible. But the narrow little valleys, or "hollers" as they are locally called, winding among the hills, are more thickly settled. On the small hillside farms are to be found the homes of the mountaineers—small huts or cabins, often of one or two rooms, and often in pitiful state of disrepair.

These little cabins were never spacious or comfortable, but once they were newer plentiful. And the little fields on the steep slopes are denuded of their soil, for the heavy rains wash it from the cultivated spots into the swift mountain streams. So poverty has settled upon the mountain families, and hope has departed. Mile after mile, as one drives along, he sees tumble-down cabins, with the large families sitting aimlessly on the porches. The cabins are distressingly similar and the conditions of life are painfully alike. These families, sitting idly on the porches from Virginia to Georgia, are the victims of a regimentation of poverty which casts all into a mold of hopeless inactivity. Left to their own devices, there seems to be little prospect that these mountain people can find the way to a better industrial order. None of them sees the way, acting individually, to shake off the forces which have rendered them helpless.

As we reach the westward turn of the river and travel along the south-central portion of the watershed, we leave the hills and come to the cotton fields—the old plantation district. But the glamour of the old plantation days is gone. The planters have moved into the towns. The land is farmed largely by "sharecroppers."

The soil, planted year after year to cotton, becomes worn out. Dilapidated buildings tell the story of hard times which go back far beyond the crash of 1929. Cotton is the money crop of this region, and despite the failing yield, prices suffer from the fact of surplus. considerable portion of central and northern Tennessee, the soil appears to be thin, due in many cases to erosion; the forests have been cut and the second growth is not yet ready for cutting; the farms bear evidences of poverty; and the villages are running down. The frequent coal mining areas are victims of the depression. Many of the mines have ceased operation and where that has happened one finds stranded towns, the inhabitants sitting about, waiting for jobs which will probably never come back and meanwhile living largely upon charity and relief.

There are regions of neatness, thrift, and as much prosperity as American farming communities enjoy. Yet in the large, the prospect in the Valley is not encouraging.

Not that the inhabitants themselves are backward. They are of old-line American stock. They are as intelligent and resourceful as the natives of other sections. But they have been unable to make a living except by farming methods which have robbed the soil of its fertility. Fertilizers have not been available and the soil has got away from them. So have the forests. They have not developed a rich or diversified agriculture.

Even in the pre-depression days they were not finding employment for all their workers. Their problems were social in nature and called for cooperative effort. But they did not act collectively. They did not plan their economic life. They depended upon individual effort and found it inadequate. Today conditions are such that some form of public planning—either that offered by the TVA or something of like nature—appears necessary if prosperity is ever to be attained.

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are now working on the dam. A considerable number will remain in charge of the property when it is completed. Probably a few small industries will locate in Norris. Negotiations are now under way looking in that direction. It seems likely, therefore, that a permanent population of perhaps 2000 can be expected. Houses are being built to meet the demand, inexpensive houses of a beautiful design, built and equipped for comfort and convenience as well as beauty. The houses will remain in the possession of the TVA and will be rented to the occupants at a reasonable rental.

The houses which were built first had to be rented at a price which fit the pocketbooks of executives, engineers, and the highly skilled rather than unskilled workers. Experiments were later made with cinder block houses which can be rented at from $14 to $20 a month; houses which may set a new standard for low-cost construction. With each house will go a four-acre tract of farming ground. The farming plots will not be adjacent to the houses but will be near enough for convenience. The residents of Norris will have a chance to practise subsistence farming.

The Division of Social and Economic Development has collected an imposing body of information about local conditions in the Valley. Every county has been examined. Studies have been made of schools, of tax collections, financial conditions of counties and cities, unemployment, administration of justice, and a hundred other subjects. This information is so varied that it gives a very complete picture of the situation in every community. It is doubtful whether anywhere else in the United States an accumulation of so much definite information about local communities and their social, economic, and governmental problems exists.

If the TVA is thinking of helping an industry locate in a certain county, it goes to this division and finds out about the financial and social situation. This will help it to decide whether the industry should be established. This economic and social material is also useful if a cooperative association is planned or if a new highway is projected. The TVA needs it whenever any of its community plans are being considered. The TVA is also obliged to meet many immediate problems as a result of its developments. In the area soon to be flooded by the waters of Norris Lake, for example, there are some 3000 families, 26 schools, dozens of churches, sixty cemeteries, most of them small.

TVA photo

Looking down one of the streets of Norris, Tennessee, we see a few of the finished houses

The TVA employs a large body of workers in its various operations, principally in the building of Norris and Wheeler Dams. These workers are of many classifications, skilled and unskilled. They are taken from the Tennessee Valley area. Negroes are employed in the same proportion that the negro population of the locality bears to the total population. For example, 20 percent of the workers at Wheeler and 4 percent at Norris are colored. An examination is given to applicants for work. It is a comprehensive examination designed to test ability to follow printed or oral directions, and mechanical aptitudes. Account is taken of those who cannot read or write. Selections are made from the applicants with the higher scores. Need as well as competence is given consideration. A disproportionate number are taken from stranded communities where the need for employment is especially acute.

Close and sympathetic relations are maintained with the workers. They may do as they please about joining unions. Most of the crafts are organized, being members of national organizations. Those in charge of the labor policy impress upon the foremen the desirability of establishing cordial and helpful relations with the men.

This enlightened labor policy is bearing fruit. The relationship with the workers is peculiarly constructive. Union committees confer with the management about efficiency measures, and union officials negotiate with the authorities about the possibility of bringing in new industries in order to furnish continuous employment.

At Norris the men work in four shifts, 5½ hours a day, six days a week. Provision is made for leisure time. A recreation hall is maintained; dances are given; speakers are brought in, sometimes by the unions. Vocational training is given to those who wish it. Instruction is given voluntarily by members of the TVA staff. There are courses in agriculture, motor mechanics, electricity, and forms of engineering. The purpose of the training is to fit the workers to better their lot when the Norris job is finished. The men taking this training will be able to hold better places in their own communities.

The spirit of the workers is indicated by the fact that not long ago the entire machine shop force gave notice that they wished instruction from the training section. In the request it was stated that the unskilled wanted training which would fit them for skilled positions, and that the skilled workers wanted instruction "so that they may be more useful to the TVA and be better all round mechanics."

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Looks to the Future

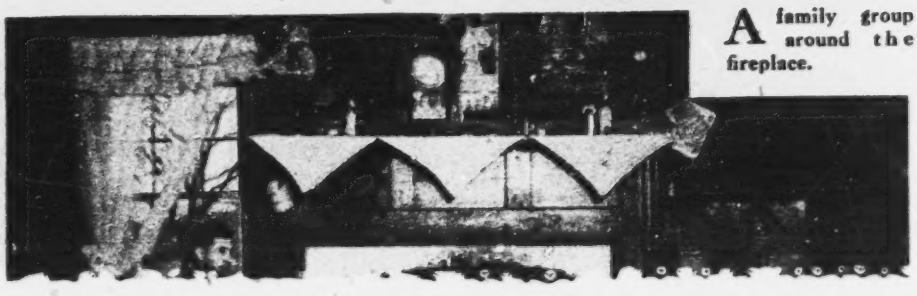
The New Industrialism—Promise or Threat?

THE STUDENT of Valley conditions does not come away, however, with a feeling of hopelessness. An appraisal of the resources of the region leads to the conviction that an economic development beyond anything the past has known is a possibility. It seems by no means out of the question for this region in the middle South to become a great center of industry and trade. Enthusiasts speak of it as the coming "American Ruhr." There are fuels here, coal in abundance, lignite, petroleum, natural gas. There are such heavy metals as iron ore, manganese, chromium, and nickel. Among the light metals are aluminum and magnesium. There are quantities of materials for the production of cement, fertilizers, ceramics, and chemical products. Add to the abundant mineral resources the fact of low-cost electric power in generous quantities and adequate transportation facilities—water, rail, and highway—and we have the foundations upon which a flourishing society may be built.

The industrialization of this section of the South was already under way during the years preceding the depression. Textile manufacturers, taking advantage of cheap labor and relatively cheap power, had been moving from New England and the Middle Atlantic states to the South, and mill towns, scattered over the Tennessee Valley region, are the result. Here and there, the mill owners have due regard for the labor forces, and higher standards of living have been attained. In other instances, however, the mills have operated by a system amounting practically to peonage. Men, women, and children, brought in from the hills, were given work at starvation wages. Industry in the South has indeed been stimulated, but southern standards of living have not been adequately raised. The shifting of industry has too often impoverished sibility under the rules of the old game of "rugged individualism."

We sometimes say as we look upon the once prim villages and green fields of industrial England, now bleak and begrimed; as we see men and women shambling from their miserable hovels to the sordid factories, their lives as bleak as the smoke-befouled hills themselves—we say as we look upon this cradle of the Industrial Revolution, or upon the more recent examples of industrialization in Pittsburgh or northern Indiana and Ohio, "If we but had this to do over again! We would direct the forces of industrialization in such a way as to conserve the beauties of nature and the welfare of human beings." Well, here in the Tennessee Valley is a soil ready for industrialization, and thoughtful people are beginning to inquire what that industrialization shall mean in human values. It is because of the possibilities involved in the developments of the next few decades, possibilities of tragic import to the whole nation, that the TVA finds this Valley such a fertile field for its program of economic and social development with human wellbeing rather than excessive manufacturing profits as the guiding aim.

UPPER RIGHT—This old mill wheel built in 1885 is still being used. CENTER RIGHT—Girl operating the warp compressor in a textile mill. The industrialization of the south was under way before the depression. [TVA photos]



A family group around the fireplace.

Photo by U. S. Forest Service

Heavy stand of timber, state of Washington

THE Tennessee Valley Authority is trying to save or restore the soil and the forests of the Valley. That is one of its first and most important jobs. The forests present a difficult problem. There are eighteen million acres of forest land in the Valley area, but only one-half million is virgin forest. The rest is second growth. Now forest land, if it is to be productive, must be cared for. The owner must cut only a certain proportion a year, cutting his forest slowly enough so that by the time he gets over the ground the plot first cut will be ready for cutting again. Only by such a method of cutting will the yield from the forest be regular and stable. Privately-owned forests are seldom cut in that way, because the owner cannot wait so long for his income—he cannot wait fifty years or so to cut his trees. Forests can be preserved satisfactorily only if they are public-owned. Public authorities alone can be depended upon to adopt and maintain long-range policies.

That is the big problem with the Tennessee Valley forest lands. Only one and one-half million acres are owned by the public. The public forests are mostly in the Smoky Mountain National Park and the National Forests, tho there are state forests, and the TVA has some forest land. The National Forest Service intends to obtain three million acres more, bringing the publicly-owned forests to four and one-half million acres. Scientific reforestation will be carried on in these forests.

[illegible] that industries calling for the use of wood be discouraged until the forests are ready.

Plans for the future prosperity of the Tennessee Valley must consider the restoration of the soil. Wasteful, careless, and unskillful methods of agriculture have caused an alarming loss of fertility. A great portion of the land is mountainous, hilly, or rolling in character, and much of the surface soil has been washed away from the slopes. Steep lands, which should never have been cultivated, have been plowed and put to crops, and this cultivated soil has washed away, leaving an unfertile subsoil on the surface. In the plateau region, which makes up from a tenth to a sixth of the Tennessee watershed, the soil has grown thin thru erosion. In the lower country there are large one-crop areas. The farms have been planted to corn or cotton or tobacco year after year, and these recurring crops have drawn so much of the substance from the soil that fertility can be maintained only thru the use of fertilizers.

Four fertilizer elements are needed for the support of vegetation. These plant foods are nitrogen, phosphorus, potash, and lime. There is no very serious problem in connection with lime for it is found in sufficient quantities and may be had at a low price. Nitrogen is greatly needed but, until lately, the price was high. Recently new methods of manufacturing nitrates, from the nitrogen which makes up a large part of the air, have been developed, and the price has fallen. At the same time it has been found that farmers need not depend upon commercial nitrates at all. They can develop their own supply. Nitrogen is present in the air everywhere. Legumes, such as clover or alfalfa, extract the nitrogen from the air and establish it in the soil. Land sown for a few years to legumes becomes rich again in nitrogen.

Another food required by plants is phosphorus and the problem of obtaining phosphates is not so simple. Phosphate rock is found in abundance in the growth of vegetation, such as cotton, but because it gives strength to the cotton plant and insures it against disease. It also lends quality and flavor to vegetables of nearly all kinds. Potash may be had commercially in large quantities in Germany and in considerable quantities in New Mexico. It is also present in manures and may be obtained in sufficient quantities in regions where stock is raised. Potash production, therefore, works well with the production of nitrogen, for stock may be pastured on the legumes which put nitrogen into the soil.

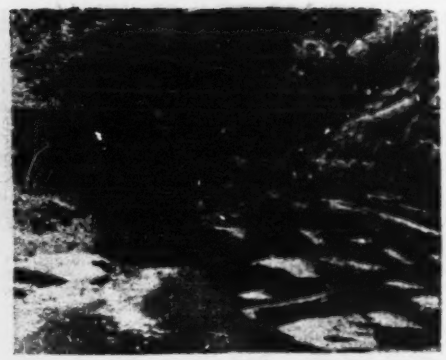
The most serious problem of fertilizer development is the production of phosphates, and on this problem the TVA is seriously at work. The great nitrate plants at Muscle Shoals are no longer needed for the production of nitrogen, but Nitrate Plant No. 2, a huge development, costing originally $75,000,000, covering 2300 acres and containing fourteen factory buildings, is being used as an experiment station for the production of cheap phosphates. Considerable progress has already been achieved thru the operations which are being performed on the phosphate rock brought in from central Tennessee.

In its effort to produce and distribute more and better fertilizers, the Tennessee Valley Authority is not working alone. It is cooperating with agricultural stations in each of the seven states within the Valley area. Representatives from institutions in each state work with the Authority in devising plans for fertilization. The different state institutions are kept informed as to the progress of the experiments. Careful studies are being made of soils and soil needs in all parts of the Valley, and a concerted effort is being made by associated scientists, under the leadership of the TVA, in an effort to restore and maintain the fertility of the entire region. New and better means of producing fertilizers as perfected by TVA will be available to private industry, providing a share of the savings is passed on to the farmer.

become a great center of industry and trade. Enthusiasts speak of it as the coming "American Ruhr." There are fuels here, coal in abundance, lignite, petroleum, natural gas. There are such heavy metals as iron ore, manganese, chromium, and nickel. Among the light metals are aluminum and magnesium. There are quantities of materials for the production of cement, fertilizers, ceramics, and chemical products. Add to the abundant mineral resources the fact of low-cost electric power in generous quantities and adequate transportation facilities—water, rail, and highway—and we have the foundations upon which a flourishing society may be built.

The industrialization of this section of the South was already under way during the years preceding the depression. Textile manufacturers, taking advantage of cheap labor and relatively cheap power, had been moving from New England and the Middle Atlantic states to the South, and mill towns, scattered over the Tennessee Valley region, are the result. Here and there, the mill owners have due regard for the labor forces, and higher standards of living have been attained. In other instances, however, the mills have operated by a system amounting practically to peonage. Men, women, and children, brought in from the hills, were given work at starvation wages. Industry in the South has indeed been stimulated, but southern standards of living have not been adequately raised. The shifting of industry has too often impoverished New England without greatly helping the people of the South.

A renewed drive toward industrialization is in prospect for the Valley as soon as normal times return. What will be the fruit of that industrialization? Will these new industries displace those of the North because of their cheaper power and labor? Will they bring unemployment and decay to the industrial centers of the East and the Midwest without greatly raising the standards of living in the South? That would be a distinct possay as we look upon this cradle of the Industrial Revolution, or upon the more recent examples of industrialization in Pittsburgh or northern Indiana and Ohio, "If we but had this to do over again! We would direct the forces of industrialization in such a way as to conserve the beauties of nature and the welfare of human beings." Well, here in the Tennessee Valley is a soil ready for industrialization, and thoughtful people are beginning to inquire what that industrialization shall mean in human values. It is because of the possibilities involved in the developments of the next few decades, possibilities of tragic import to the whole nation, that the TVA finds this Valley such a fertile field for its program of economic and social development with human wellbeing rather than excessive manufacturing profits as the guiding aim.



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A family group around the fireplace.

3146

3495

Laying Out the Plans

Preparing clay for pottery

IF AN industrial counselor were appointed adviser to a large estate and were asked to help shape the policies of the manager, his first step could easily be predicted. He would find out all he could about the estate's resources. He would inquire about its properties and the personnel. He would study the men and women with whom he would be obliged to work.

That is the sort of thing the TVA is doing as it takes the position of adviser to the Tennessee Valley. It maintains a Division of Land Planning and Housing and another Division of Social and Economic Studies. The Land Planning Division is making an inventory of the natural resources. It is locating mineral deposits. It is classifying the soils of the different sections. It is studying transportation facilities.

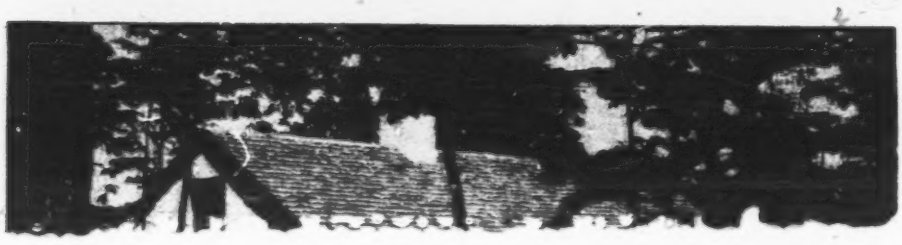
When the TVA learns about the minerals and soils and railroads and highways and waterways and water power sites, it will be in a better position to give industrial advice. It may discover, for example, that kaolin and feldspar are located in a certain district. It knows that these materials are used in the making of chinaware. It sees that a ceramic or chinaware industry can be developed in that locality. But the TVA is not passive. It does not stop when it discovers the possibility of the ceramic industry. It gives positive assistance. It may, for example, furnish low cost electric power so that the industry can get under way on advantageous terms. It finds out what industries can be operated profitably in the Valley and at what locations. In this way it gives direction to the course of industrial development.

THE three directors: Harcourt A. Morgan; Arthur E. Morgan, *chairman;* and David E. Lilienthal.

The Tennessee Valley Authority undertakes to assist industries which will contribute to the welfare of the people. It is not interested in developing industrial centers merely in order that profits may be made or in order that population in certain cities may increase. It wants the low cost electric power and fertilizer which it furnishes actually to help raise the standard of living. That is why it goes to such pains to study resources, human and material. It must know how to use all its powers effectively toward the betterment of human conditions.

The TVA does not think exclusively of the Tennessee Valley in its planning. It takes the rest of the nation into account. It is in a position to help business enterprises materially. It may, for example, furnish them with electric power at low cost. This may give a business a decided advantage. But the TVA does not want to develop industries which will compete ruinously with industries in other parts of the country. If it can avoid the danger of cut-throat competition between sections, which we spoke of a while ago, it will do so. Here is where the Division of Planning is influential. It finds opportunities for the development of industries in which the Valley may specialize. If, for example, it can point the way to the development of a chinaware industry in Tennessee, it will be helping the people of Tennessee without hurting other parts of the country, for there is no chinaware industry of importance in America. Our high grade china is imported.

The Division of Land Planning and General Engineering Division draw up plans for dams, reservoirs, and all sorts of public works. With all these plans at hand it advises with the highway commissions of all the states so that roads will be built where they will be perma-



factors. A great deal of the land slopes steeply; the soil is especially soft; and the rainfall is very heavy.

Naturally we find erosion at its worst on the steep mountain slopes. The wearing away of the land goes on very slowly and is not an alarming problem when the surface is covered with forests or a thick growth of grass. But hillside farmers have in many cases cut down the trees and have plowed the land where the slope is so steep that it should never have been cultivated. Land is cleared and planted to corn and potatoes, and within three or four years the soil from the fields is washed away, so that the yield falls to almost nothing. The farmers often abandon a field after a few years and clear other patches and put them out to crops, until the new fields, too, have washed away. On the gentler forests. Cattle raising should in many cases take the place of corn and potato cultivation. With the cheap fertilizers which the TVA hopes to develop, the growing of the sod crops should be easier.

Meanwhile, a positive work of erosion prevention is necessary. The gullies must be filled so as to check the wearing away of the soil. The problem is particularly acute in the territory which drains into the lake to be created thru the erection of Norris Dam. This lake lies in a hilly country where erosion is proceeding at a rapid rate.

The TVA is conducting an intensive campaign of erosion prevention in this territory. It is cooperating with the Civilian Conservation Corps. It is directing the efforts of twenty-one camps consisting of over 4000 CCC boys.

It is systematically filling the gullies caught by this mass of brush and is deposited. The grass grows and, after a while, the torrents of water are stopped and a beginning is made in the covering of the slope with grass. At the very outset the filling in of the gullies retards the swiftness of the streams and checks the cutting away of the soil. It is thought that if the TVA can keep the CCC boys at this task for two years, the worst of the soil erosion in the region about Norris Lake may be checked.

But in the long run effective erosion prevention thruout the Valley must be effected, not thru the positive acts of the TVA or any other central organization, but thru the enlightened efforts of the farmers themselves. Encouraging progress has been made in arousing a public sentiment which may lead to a general campaign for the preservation of the soil.

TVA photo

CCC boys starting to work on a badly eroded hillside

Preparing clay for pottery

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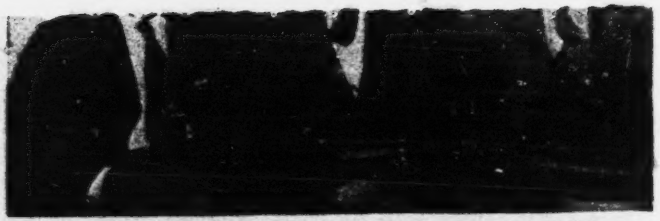

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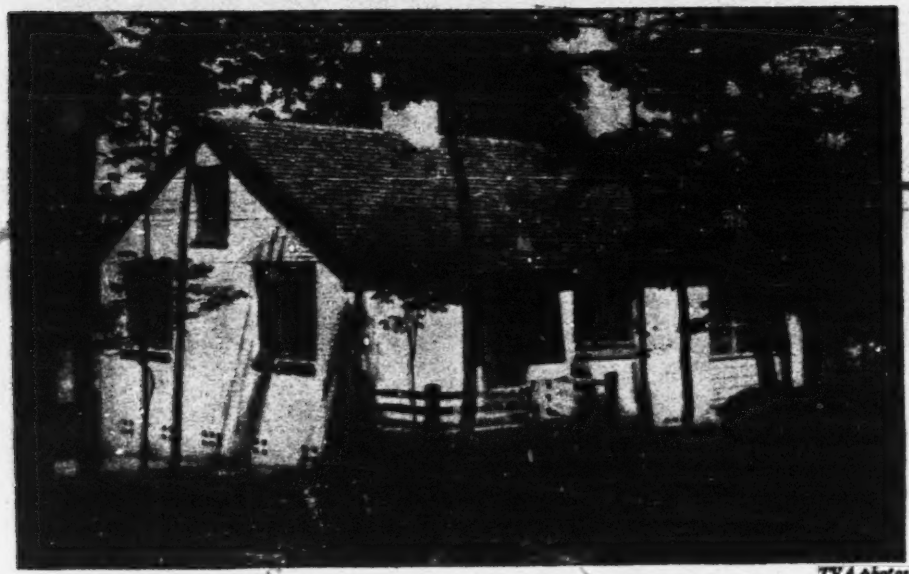
The Division of Land Planning and General Engineering Division draw up plans for dams, reservoirs, and all sorts of public works. With all these plans at hand it advises with the highway commissions of all the states so that roads will be built where they will be permanently most useful; so they will not be built, for example, thru territory that will be flooded when, in a few years, a dam is constructed. A little way east of Knoxville is a million dollar bridge, just opened for use, which stands on ground which soon would be flooded should the TVA build a contemplated dam. The million dollars would be wasted because the bridge was not built in accordance with a general plan. Such mistakes will be avoided in the future if state and federal agencies continue to make use of the Land Planning Division's blue prints.



TVA photos

An electrified house at Norris, Tennessee

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Looks to the Future

Experiments in Planning

THIS DIVISION is also building a little town, Norris, named in honor of the Nebraska Senator who so long led the campaign for the operation of Muscle Shoals by the government. The town is near the dam of the same name—about twenty miles northwest of Knoxville, Tennessee. Nearly 2000 men are now working on the dam. A considerable number will remain in charge of the property when it is completed. Probably a few small industries will locate in Norris. Negotiations are now under way looking in that direction. It seems likely, therefore, that a permanent population of perhaps 2000 can be expected. Houses are being built to meet the demand, inexpensive houses of a beautiful design, built and equipped for comfort and convenience as well as beauty. The houses will remain in the possession of the TVA and will be rented to the occupants at a reasonable rental.

TVA photo

Looking down one of the streets of Norris, Tennessee, we see a few of the finished houses

The houses which were built first had to be rented at a price which fit the pocketbooks of executives, engineers, and the highly skilled rather than unskilled workers. Experiments were later made with cinder block houses which can be rented at from $14 to $20 a month; houses which may set a new standard for low-cost construction. With each house will go a four-acre tract of farming ground. The farming plots will not be adjacent to the houses but will be near enough for convenience. The residents of Norris will have a chance to practise subsistence farming.

The Division of Social and Economic Development has collected an imposing body of information about local conditions in the Valley. Every county has been examined. Studies have been made of schools, of tax collections, financial conditions of counties and cities, [illegible] and social material is also useful if a cooperative association is planned or if a new highway is projected. The TVA needs it whenever any of its community plans are being considered. The TVA is also obliged to meet many immediate problems as a result of its developments. In the area soon to be flooded by the waters of Norris Lake, for example, there are some 3000 families, 26 schools, dozens of churches, sixty cemeteries, most of them small.

The TVA employs a large body of workers in its various operations, principally in the building of Norris and Wheeler Dams. These workers are of many classifications, skilled and unskilled. They are taken from the Tennessee Valley area. Negroes are employed in the same proportion that the negro population of the locality bears to the total population. For example, 20 percent of the workers at Wheeler and 4 percent at Norris are [illegible] members of national organizations. Those in charge of the labor policy impress upon the foremen the desirability of establishing cordial and helpful relations with the men.

This enlightened labor policy is bearing fruit. The relationship with the workers is peculiarly constructive. Union committees confer with the management about efficiency measures, and union officials negotiate with the authorities about the possibility of bringing in new industries in order to furnish continuous employment.

At Norris the men work in four shifts, 5½ hours a day, six days a week. Provision is made for leisure time. A recreation hall is maintained; dances are given; speakers are brought in, sometimes by the unions. Vocational training is given to those who wish it. Instruction is given voluntarily by members of the TVA staff. There are courses in agriculture, motor [illegible] city.

on power development than on all the rest of its program. It is engaged in a great power project, harnessing the waters of the Tennessee and its tributaries for production on a great scale. It is utilizing these waters to develop an integrated system of power plants, which, when completed, will have capacity to generate more electricity than is now consumed in all the southeastern states.

This integrated system, all under the TVA unified control, consisting of a string of dams and generating plants, will place low-cost electricity at the service of the people. It will brighten millions of homes, on the farms as well as in the cities; it will lighten the burdens of domestic labor; it will stimulate industry. It may be a powerful tool in the hands of the industrial planners.

The first link in this chain of plants with which the Tennessee River system is to be harnessed has already been forged. The Wilson Dam and power [illegible] dam. On the crest of the dam is a 20-foot highway across the river. Running parallel with the dam is the power house, nearly a quarter of a mile long and 145 feet wide. In this power house nine great turbines are installed and there is room for as many more. When this plant is fully equipped it will be capable of meeting the power needs of literally hundreds of towns.

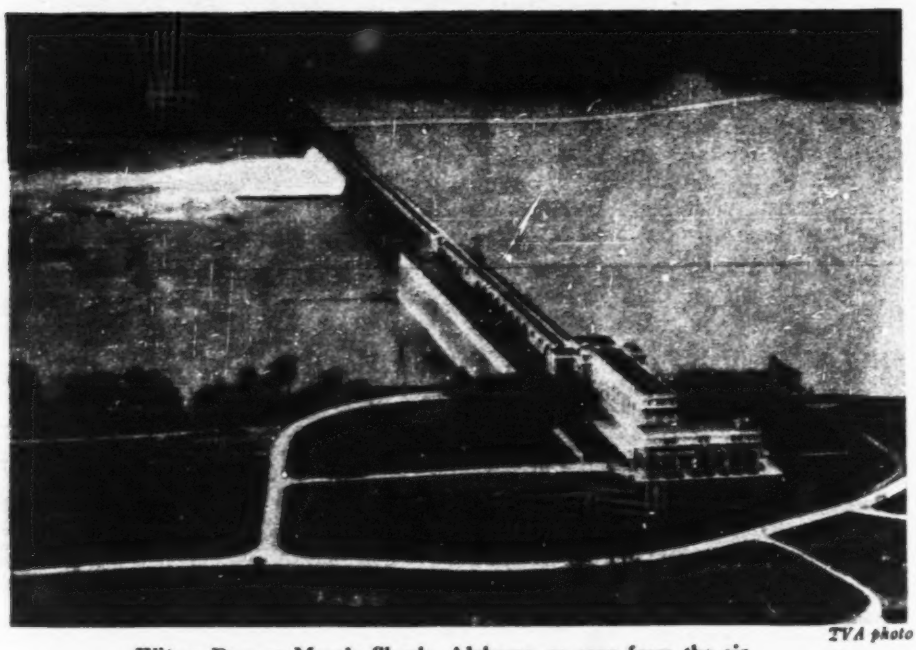
But the Wilson Dam and power plant, located at Muscle Shoals, Alabama, must not be thought of as an isolated unit. It is a link in a chain, the other links being either under construction or under consideration. Up the river fifteen miles from Muscle Shoals, the Wheeler Dam is being built. The power plant at this dam, when completed, will have a capacity about half that of the plant at Wilson Dam. The Wheeler Dam will serve another purpose. It will be an aid to navigation. It will create a lake which will extend up the river for eighty miles, rendering the river navigable for that distance. [illegible] age dam. It is being built chiefly for the purpose of holding back and storing the water of the river during the flood seasons—fall and spring—thus creating a lake. The lake will have an area of 83 square miles. During the dry season, when the river is ordinarily very low, the water will be released, generating power at Norris Dam and at every dam down the river. In addition, by regulating the river's flow, it will aid navigation.

The storing of the water during the rainy season will prevent floods down the river and will thus save lives and property. The operation of the Norris Dam will also increase the efficiency and productivity of the plant at Wilson Dam. During the rainy season the river is high and there is plenty of water. The power plant can run at capacity. But during the dry seasons the river is low and there is not enough water to keep the turbines going at capacity. Only about a fifth as much electricity can be produced during the dry season as can be generated when the river is high.

This is a serious matter, for a power plant cannot sell more electricity at any time than it can produce at *all* times. No city and no private firm will contract to buy power unless it can be assured that delivery will be made at all times.

The practical capacity of the Muscle Shoals plant is, therefore, only a fraction of the capacity which appears on paper. Norris Dam will regularize the flow of the river, so that there will never be a very low period. The building of Norris Dam will increase the practical capacity at Muscle Shoals severalfold. Norris Dam itself will produce some power. During the dry time when water is flowing thru the dam, electricity will be generated at the Norris plant.

Four other dams are planned. They, too, are parts of a unified system. Water stored at Norris Dam will help all the plants down the river because it will equalize the flow of water.



TVA photo

Wilson Dam at Muscle Shoals, Alabama, as seen from the air

COMPLAINANTS' EXHIBIT No. 635 (Excluded)

Forests and Soil

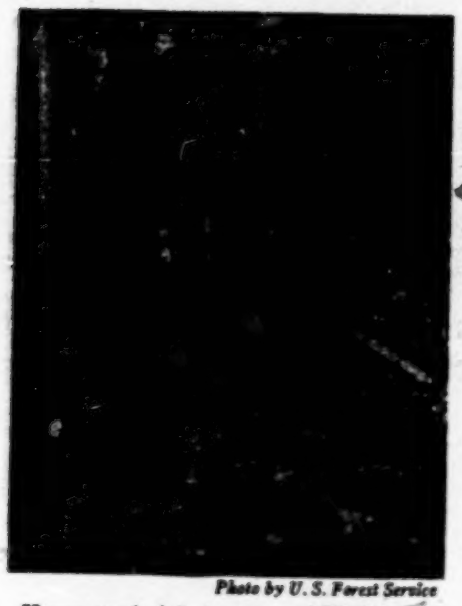


Photo by U. S. Forest Service

Heavy stand of timber, state of Washington

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But twelve or thirteen million acres are in private hands and it will be very hard to do anything with the private woodlands. The TVA is making an inventory of the forests so that it will know the ownership of every tract. Then it will try to formulate and carry out a policy. Meanwhile, those in charge of the forestry work of the TVA are advising that industries calling for the use of wood be discouraged until the forests are ready.

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central Tennessee, but present methods of extraction and distribution are such as to render the finished product expensive. There is this further complication: Phosphates are needed especially in the growing of legumes, so its presence is necessary to create the conditions under which nitrogen may be developed. Potash is needed, not because it contributes to the growth of vegetation, such as cotton, but because it gives strength to the cotton plant and insures it against disease. It also lends quality and flavor to vegetables of nearly all kinds. Potash may be had commercially in large quantities in Germany and in considerable quantities in New Mexico. It is also present in manures and may be obtained in sufficient quantities in regions where stock is raised. Potash production, therefore, works well with the production of nitrogen, for stock may be pastured on the legumes which put nitrogen into the soil.

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is more effective protection of the public interest, by the setting up of a measure of public operation of power as a 'yardstick.' The second objective of this new national policy is a greatly increased use of electricity in the homes, the farms, and the factories of the United States—*an electrified America.*"

A yardstick to determine the fairness of rates charged by private power companies has long been needed. It has been almost impossible to find what rates were reasonable. Customers complained when they thought their bills were too high. Sometimes they took their grievances to state utility boards. Arguments were presented before the boards. The companies pointed to their heavy investments, their interest charges, costs of operation, taxes. They held that their profits were small. Representatives of consumers declared the companies were over-capitalized, that the financial interests owning the companies were wasteful, inefficient; that exorbitant salaries were paid and bonuses given to insiders.

When arguments of this sort are going on it is natural that both sides, the utilities on the one hand and consumer interests on the other, should try to control the bodies which regulate rates. The utility companies say that they must protect themselves against unjust regulation; that is, against what they consider to be unjust regulation. So they take a hand in politics. They seek to influence public opinion insofar as it relates to the regulation of utility rates. They buy advertising in newspapers. They seek to influence editorial policy. They carry their influence to the schools and secure the adoption of textbooks which are favorable to utility companies and the elimination from other textbooks of statements they consider harmful. They bring about the rejection of texts which are too critical. Sometimes they induce boards of education to dismiss teachers who criticize the policies of the great power companies. Arguments carried on in such

Here is where the government steps in. When Congress created the TVA and defined its powers it said in effect: "We will settle this question of rates by a trial comparison; we will have the government generate, transmit, and sell electricity in a given region.

TVA photo

GENERATORS in the great hall of Wilson Dam power house. This hall is 1197 feet long and 145 feet wide. Many feet below the generators are the giant rotors thru which the waters of the Tennessee are passed to manufacture cheap power for people in the region.

Acting thru the TVA, the government will manufacture the power as private companies do. It will charge against itself all the expense which it incurs, including taxes. It will sell the power to the same sort of customers to whom they sell. It will keep a careful record of its costs. It will find out how much it costs to produce and sell electric power. This action of the government will serve as a 'yardstick' by which to determine what the costs of production are and what prices are fair."

The TVA is authorized to use as much electricity as it needs in the development of its own projects. The surplus power will be sold. It will undertake to provide electricity to states, cities, and cooperative associations. These cooperatives may distribute electricity to towns or to farmers. The usual procedure is for the TVA to generate the electricity and send it over its own transmission lines to a town which is to use it. The town or city usually owns its own distribution system. It buys the electricity at wholesale rates from the TVA and sells it to its own citizens. The TVA has a fixed price at which electricity is delivered to municipalities. It also prescribes the retail rates which the municipalities shall make to private users. In this way it is assured that the benefit of cheap electric power furnished by the TVA shall be passed on to consumers. If there is a surplus of electricity after states, towns, and cooperative associations are served, the TVA may sell it to private companies for manufacturing purposes, or it may sell its surplus to private power companies.

When the TVA makes a contract to sell electricity to a municipality which has been getting its power from a private company, the TVA offers to buy the company's equipment. It does not want to go into the community and build its own transmission lines, duplicating the equipment which the private company already has. Arrangements have already been made whereby the TVA has taken over the transmission lines previously owned by private companies in a number of counties of northern Alabama, northern Mississippi, and Tennessee. It is prepared, therefore, to furnish power to the communities of these areas. It is already serving several small cities and it has formed an agreement whereby it is to serve the larger city of Knoxville, Tennessee. It has purchased the equipment of the private power company with which Knoxville has been dealing. In order that the costs of producing and selling electricity may be fairly measured, the TVA feels that it must have a reasonably good territory to serve. It must sell to a number of small towns. It must have lines going to farmers. It must have a few larger cities and must serve industrial plants of considerable size. If it is selling electricity to a varied field of this kind, it can determine the cost of electric power under conditions similar to those under which the large private companies operate.

3152

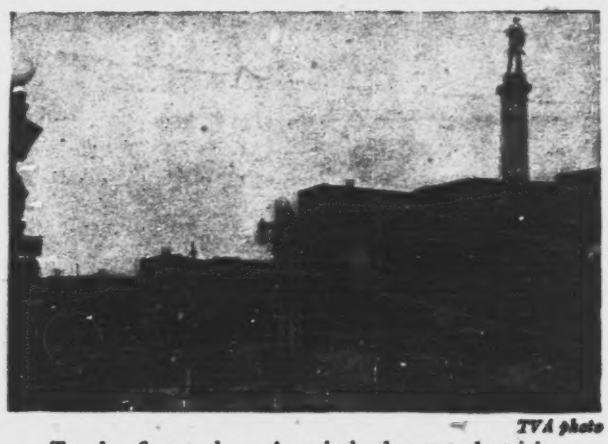
3501

The Tennessee Valley

Encouraging Electrification

THE FIRST CITY to begin the use of TVA power was Tupelo, Mississippi, a town of about 6000. Tupelo already owned its own distribution system, buying its power from a private company. It now buys power from the TVA. It operates this system as a strictly business enterprise. The books are kept separately from other city accounts and are carefully audited. Taxes, interest, and depreciation are counted as part of the costs. Consumers are charged enough to meet all these expenses of distribution and to pay off the indebtedness. After meeting all these charges, however, just as a private company would, Tupelo is able to sell electricity to its inhabitants at a price about 40 percent lower than that which had been paid to the private company. The TVA sells electricity cheaply enough to make this saving possible.

The lower price of electricity has resulted in increased use. During the first six months that Tupelo was getting its power from the TVA, there was an increase of 83 percent in the amount of electricity used in the homes of the city. In part this came thru the securing of new customers. Families which had not been able to afford electricity before were electrifying their houses. In part it came from increased use by families which had been customers all the time. During the first two months that Tupelo was using TVA electricity, $6000 worth of electrical equipment was sold in the city. This means one dollar's worth of equipment per person, or about five dollars' worth per family. The cheap electricity obtained by Tupelo is thus having the effect



TVA photo

Tupelo—first to have America's cheapest electricity

thusiastically to the time when a considerable number of the farmers may have electricity in their homes.

Electricity can be sold more cheaply if it is sold in great quantities. If the power plants can run at capacity, and if all the product can be disposed of, the cost of production per kilowatt hour will be very much less than it would if a large part of the equipment were lying idle. Prices have been high because so little electricity was consumed, and consumption has been low because prices have been high. The TVA now comes in producing electricity in quantities and planning to produce it in vastly greater quantities. It is planning to produce more than the region it intends to serve is now consuming. It is acting on the theory that use depends largely upon prices and that if prices go down use will increase.

Consumption of electricity has been held down not only by high rates but by the price of electrical appliances. Electric refrigerators, electric stoves, and electric water heaters have been so costly that many consumers have hesitated [illegible] and it gives it on favorable terms. It secures the cooperation of the manufacturers of electrical equipment. The manufacturers of electric refrigerators, for example, put on the market a specially made ice box. It is simple in design and less costly than the standard refrigerators. It is a serviceable product, however, and it bears the stamp of TVA approval. These refrigerators sell for as little as $75 each. They are sold by the manufacturing companies to private dealers, just as other refrigerators are. They are purchased by individual customers. The customer pays perhaps 10 percent in cash and agrees to pay the rest in monthly installments over a period of three years. These monthly payments are added to his electric bill.

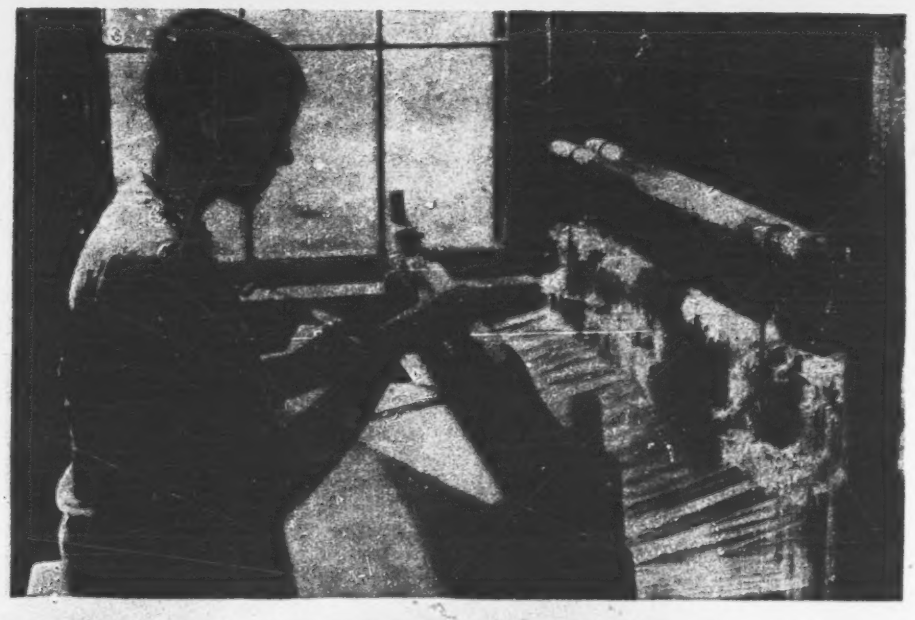
The EHFA thus encourages the more widespread use of electricity by furnishing credit to purchasers of equipment on easy terms and by inducing manufacturers of equipment to put out low-cost, high-grade products. But it does not stop there. It cooperates with manufacturers and dealers in setting up displays, in providing cooking schools, which emphasize the use of electrical equipment, and, in every possible way, it works with manufacturers, dealers, and private power companies in popularizing the use of electricity. It is the hope of those in charge of the TVA and EHFA that, by furnishing cheap power and cheap electrical equipment and by bringing the advantages of the use of electricity to the attention of the people, great strides may be made toward the electrification of America.

[illegible] steps and it was very difficult for them even to obtain a living from the soil. Acting individually they seemed condemned to the same meagre existence which characterizes the lives of most mountaineers thruout this region. A really effective leader, however, appeared among them, S. T. Henry—like Johnson of Kingsport, an unusual man. Henry is a graduate of Illinois University. He has had Wall Street experience. He has engaged in the publishing business. But years ago he went to Spruce Pine, built a little home on a mountain top, and identified himself with the community.

Under the leadership of Mr. Henry and with the help of the Tennessee Valley Authority, a cooperative association was formed. This association could not possibly have gained support had it not had the endorsement of the TVA, and it could not have carried on its work without loans and expert counsel from that quarter. This cooperative has developed a seed potato industry. It has put up canneries so that now the farmers have a market for their tomatoes and beans at the local canneries. The cooperative secures a market for these products. It turns out, however, that the canned goods which are manufactured in the locality are not all thrown upon the markets of the nation to add to the surplus of agricultural products. Much of the canned vegetables are consumed by the people of Spruce Pine, people who before had been eating vegetables only during the vegetable season. A new market has thus been created in the community, the result being a higher standard of living.

But the cooperative association of Spruce Pine has further ideas as to the development of the locality. The raw materials needed in making dishes are all present in the soil of that district. It is planned, therefore, to engage in the manufacture of pottery. Arrangements are being considered whereby TVA electric power may be made available, and thru use of the electric process it is thought that a cheap and fine grade of pottery may be produced. Nor is that all. It is hoped that herds of cattle may be kept during the winter down in the valleys where corn and other concentrated forms of feed may be had, and driven to the mountain sides in the summer.

In the little town of Banner Elk, also in the North Carolina mountains, is Lees-[illegible] [illegible] by the TVA. Half a dozen cooperatives, assisted by the TVA are in operation, and several more are being formed. They have thousands of members. In these little communities, as in the others we have spoken of, one feels that a new and better and more secure way of life is being discovered.



TVA photos

Handicraft school loom and shop in Gatlinburg, Tennessee

Looks to the Future

Checking Soil Erosion

LITTLE can be done, however, to maintain the fertility of soil which is constantly wearing away under pressure of heavy rains. Erosion is, of course, going on at all times in all parts of the country. Every creek or river valley is the result of the carrying away of soil thru the ages. Soil is washing away and blowing away. But the problem is especially serious in the Tennessee Valley because of a combination of three factors. A great deal of the land slopes steeply; the soil is especially soft; and the rainfall is very heavy.

Naturally we find erosion at its worst on the steep mountain slopes. The wearing away of the land goes on very slowly and is not an alarming problem when the surface is covered with forests or a thick growth of grass. But hillside farmers have in many cases cut down the trees and have plowed the land where the slope is so steep that it should never have been cultivated. Land is cleared and planted to corn and potatoes, and within three or four years the soil from the fields is washed away, so that the yield falls to almost nothing. The farmers often abandon a field after a few years and clear other patches and put them out to crops, until the new fields, too, have washed away. On the gentler slopes, erosion is not so bad, but it goes on just the same, as occasional great gullies with a thin and barren soil between abundantly show.

The TVA is at work on this problem. It is cooperating with farm bureaus and other organizations to teach people how to use their sloping lands. These slopes should not be plowed, but should be given over to sod crops, to grass or clover, or should be turned back into forests. Cattle raising should in many cases take the place of corn and potato cultivation. With the cheap fertilizers which the TVA hopes to develop, the growing of the sod crops should be easier.

Meanwhile, a positive work of erosion prevention is necessary. The gullies must be filled so as to check the wearing away of the soil. The problem is particularly acute in the territory which drains into the lake to be created thru the erection of Norris Dam. This lake lies in a hilly country where erosion is proceeding at a rapid rate.

The TVA is conducting an intensive campaign of erosion prevention in this territory. It is cooperating with the Civilian Conservation Corps. It is directing the efforts of twenty-one camps consisting of over 4000 CCC boys.

It is systematically filling the gullies and ditches thru which the water pours in torrents, carrying tons of soil with it. In some cases stone dams are built across the gullies to check the flow of water. This is an expensive process, however, so a more economical method has been developed. Brush and branches of cedar trees are thrown into the gullies, staked down, and fastened with a tangle of wire. Grass seeds are thrown among the branches. As the soil washes down it is caught by this mass of brush and is deposited. The grass grows and, after a while, the torrents of water are stopped and a beginning is made in the covering of the slope with grass. At the very outset the filling in of the gullies retards the swiftness of the streams and checks the cutting away of the soil. It is thought that if the TVA can keep the CCC boys at this task for two years, the worst of the soil erosion in the region about Norris Lake may be checked.

But in the long run effective erosion prevention thruout the Valley must be effected, not thru the positive acts of the TVA or any other central organization, but thru the enlightened efforts of the farmers themselves. Encouraging progress has been made in arousing a public sentiment which may lead to a general campaign for the preservation of the soil.

are carefully audited. Taxes, interest, and depreciation are counted as part of the costs. Consumers are charged enough to meet all these expenses of distribution and to pay off the indebtedness. After meeting all these charges, however, just as a private company would, Tupelo is able to sell electricity to its inhabitants at a price about 40 percent lower than that which had been paid to the private company. The TVA sells electricity cheaply enough to make this saving possible.

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In Corinth, Mississippi, a town about the size of Tupelo, the local distribution system is owned not by the municipality but by a county cooperative association. Electricity is being obtained from the TVA on the same terms as it is obtained in Tupelo, and with about the same reduction in cost to consumers. The people of Alcorn County, of which Corinth is the county seat, are looking forward en-

be very much less than it would if a large part of the equipment were lying idle. Prices have been high because so little electricity was consumed, and consumption has been low because prices have been high. The TVA now comes in producing electricity in quantities and planning to produce it in vastly greater quantities. It is planning to produce more than the region it intends to serve is now consuming. It is acting on the theory that use depends largely upon prices and that if prices go down use will increase.

TVA photo

Tupelo—first to have America's cheapest electricity

Consumption of electricity has been held down not only by high rates but by the price of electrical appliances. Electric refrigerators, electric stoves, and electric water heaters have been so costly that many consumers have hesitated to buy them. They must be in the homes, however, if electricity in considerable amounts is to be consumed. A way has been devised by which this electrical equipment is made available at a cheaper price than it formerly was and on easier terms of payment.

This cheapening of electrical equipment has been made possible thru the efforts of the Electric Home and Farm Authority, which is an agency of the TVA and controled by the same board of directors. The EHFA does not manufacture or sell equipment. It furnishes credit to persons who buy the equipment and it bears the stamp of TVA approval. These refrigerators sell for as little as $75 each. They are sold by the manufacturing companies to private dealers, just as other refrigerators are. They are purchased by individual customers. The customer pays perhaps 10 percent in cash and agrees to pay the rest in monthly installments over a period of three years. These monthly payments are added to his electric bill.

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At the present time the average consumption of electricity in the average American home is 50 kilowatt hours a month. In Ontario, where cheap power has long been distributed, the average use is 150 kilowatt hours. If American standards of electricity consumption can be brought to those of Canada, it will mean a tremendous stimulation of the electrical industry and a transformation of our ways of living. It will also mean the need for additional sources of electricity. The increased sales of electricity, in turn, will cheapen the cost of production, resulting in lower prices, and still more extensive electrification.

3153

35102

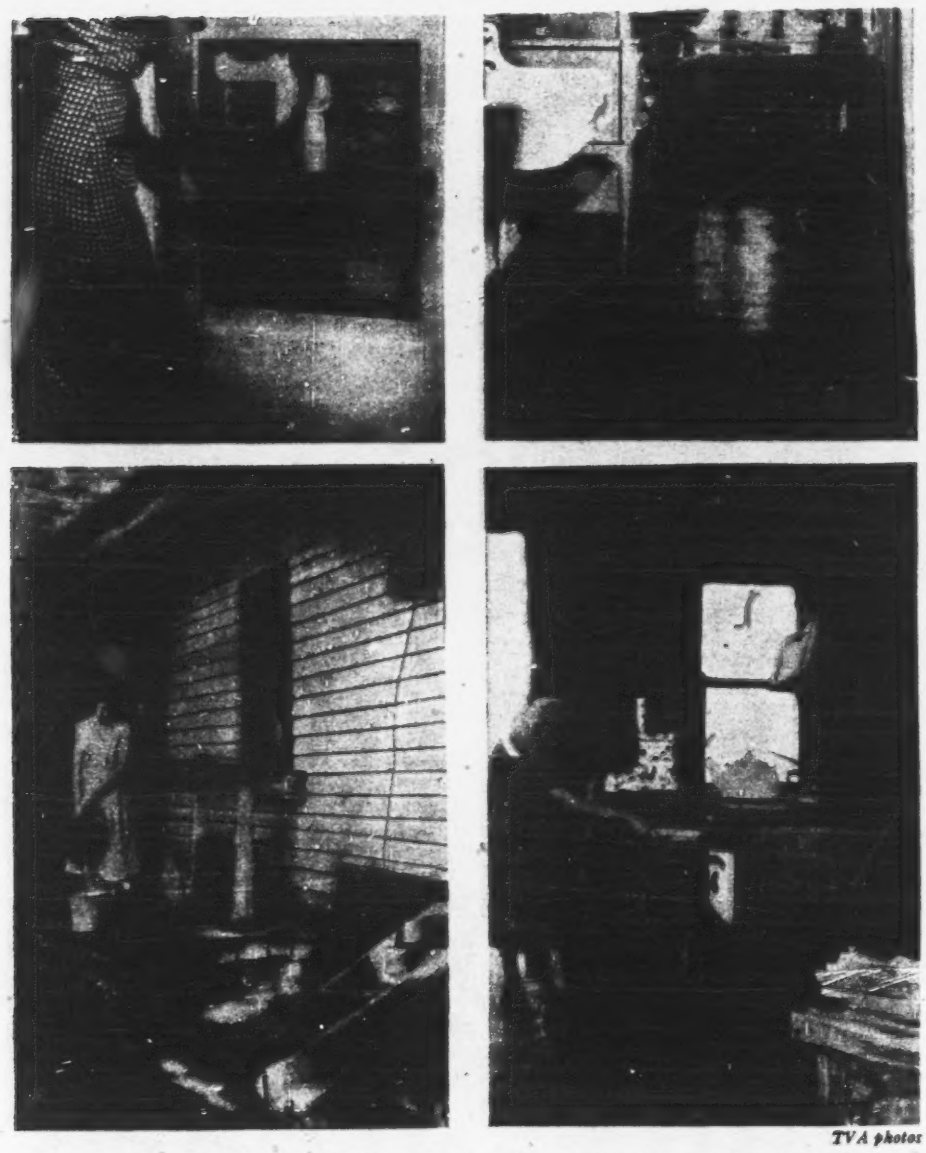
Looks to the Future

Government and Industry

An air view of the Nitrate Plant at Muscle Shoals, Alabama, with Wilson Dam in background

TVA photo

WHAT will the entry of the government into the field of electricity mean to the private power companies and to those whose funds are invested in public utility stocks and bonds? The answer frequently given is that nothing which the government might do is likely to cause investors in private utility companies greater loss than these investors have already suffered as a result of financial manipulations of such power- that direction. The private power companies may be forced, by government competition, to lower their rates also. Some of them have already cut their charges. These companies, like the TVA, may have greatly increased business and may make satisfactory profits thru mass production, even tho prices are cut. Perhaps the electrical industry may undergo a change similar to that which occurred in the [illegible] to operate on a similarly large scale. Private companies would have to obtain their own great river systems. Perhaps public opinion, however, would not permit such monopolistic use of river systems. It seems not improbable that, if the development of a chain of unified government-owned plants along the Tennessee River insures cheaper production of electric power, the people of the nation



TVA photos

THIS comparison of the old with the new shows how the standard of living is raised, ideas of beauty and utility cultivated, and the work lightened—think of the implications here for leisure-time activities!

THIS IS the sort of thing the TVA is hoping to encourage thruout the Tennessee Valley region. In certain instances the result may be gained, as it has been at Spruce Pine, by working with cooperative associations. There is a fertile field for such efforts, especially in North Carolina. The Extension Division of North Carolina University has been active for a long time in promoting cooperative associations among the farmers, and the people of that state appear ready to turn to such a form of organization. In other states the cooperative idea is less advanced and it will not be so easy to make headway along that road. expert guidance and counsel.

In carrying out industrial plans for the Valley, the TVA will not rely by any means, however, upon cooperative associations. It is working also with private industry. The Division of Land Planning is determining the best uses of land in various sections. Plans are being made for the betterment of the transportation systems. The TVA is finding out what new industries might be developed and where they might profitably be located. Its chemists, for example, are studying processes for the use of coal not as a fuel but as a raw material. It is gaining a mass of information which will be useful in mapping out future industrial possibilities.

Manufacturers, large and small, will make use of this information. They will come to the TVA for advice about the locating of factories in the district. Already a considerable number of manufacturers are calling upon the Authority for counsel. The TVA thru its negotiations with these industrialists, will be able to exert a considerable influence in shaping the industrial life of the communities in this region. It may be able to do for the Valley what J. Fred Johnson did for Kingsport. It may be able to bring in industries which will conform to the principles of industrial development the TVA lays down. And the TVA will have in mind the development of industries which will furnish employment to the local inhabitants. The officials know that in each of the counties of rural Tennessee there are from 500 to 3000 persons who are not needed either by agriculture or by industry. The effort will be made to find employment for such persons and to keep a considerable number of them on the farms even after they are employed in the factories. Such local employment will bring with it, it is hoped, progress for the whole region rather than decadence in the rural sections, with alternating periods of prosperity and starvation in the cities.

3157

3506

The Production of Power

SOIL, mineral resources, forests—all these are needed for the development of stable and prosperous conditions, and all of them are receiving the attention of the TVA. They are figuring in its plans. But something else is needed—electric power—and it, too, is figuring largely in plans for the Valley. As a matter of fact, the TVA today is spending more money and more energy on power development than on all the rest of its program. It is engaged in a great power project, harnessing the waters of the Tennessee and its tributaries for production on a great scale. It is utilizing these waters to develop an integrated system of power plants, which, when completed, will have capacity to generate more electricity than is now consumed in all the southeastern states.

This integrated system, all under the TVA unified control, consisting of a string of dams and generating plants, will place low-cost electricity at the service of the people. It will brighten millions of homes, on the farms as well as in the cities; it will lighten the burdens of domestic labor; it will stimulate industry. It may be a powerful tool in the hands of the industrial planners.

The first link in this chain of plants with which the Tennessee River system is to be harnessed has already been forged. The Wilson Dam and power plant were built during the War. The TVA took them over in the summer of 1933. The dam is one of the largest in the world. It is nine-tenths of a mile long, 101 feet wide at the base, and it rises 107 feet above the base to the level of the lake which the dam creates. There are 58 spillways, each 38 feet wide. Any or all of these spillways may be opened, permitting the flow of water thru the dam. On the crest of the dam is a 20-foot highway across the river. Running parallel with the dam is the power house, nearly a quarter of a mile long and 145 feet wide. In this power house nine great turbines are installed and there is room for as many more. When this plant is fully equipped it will be capable of meeting the power needs of literally hundreds of towns.

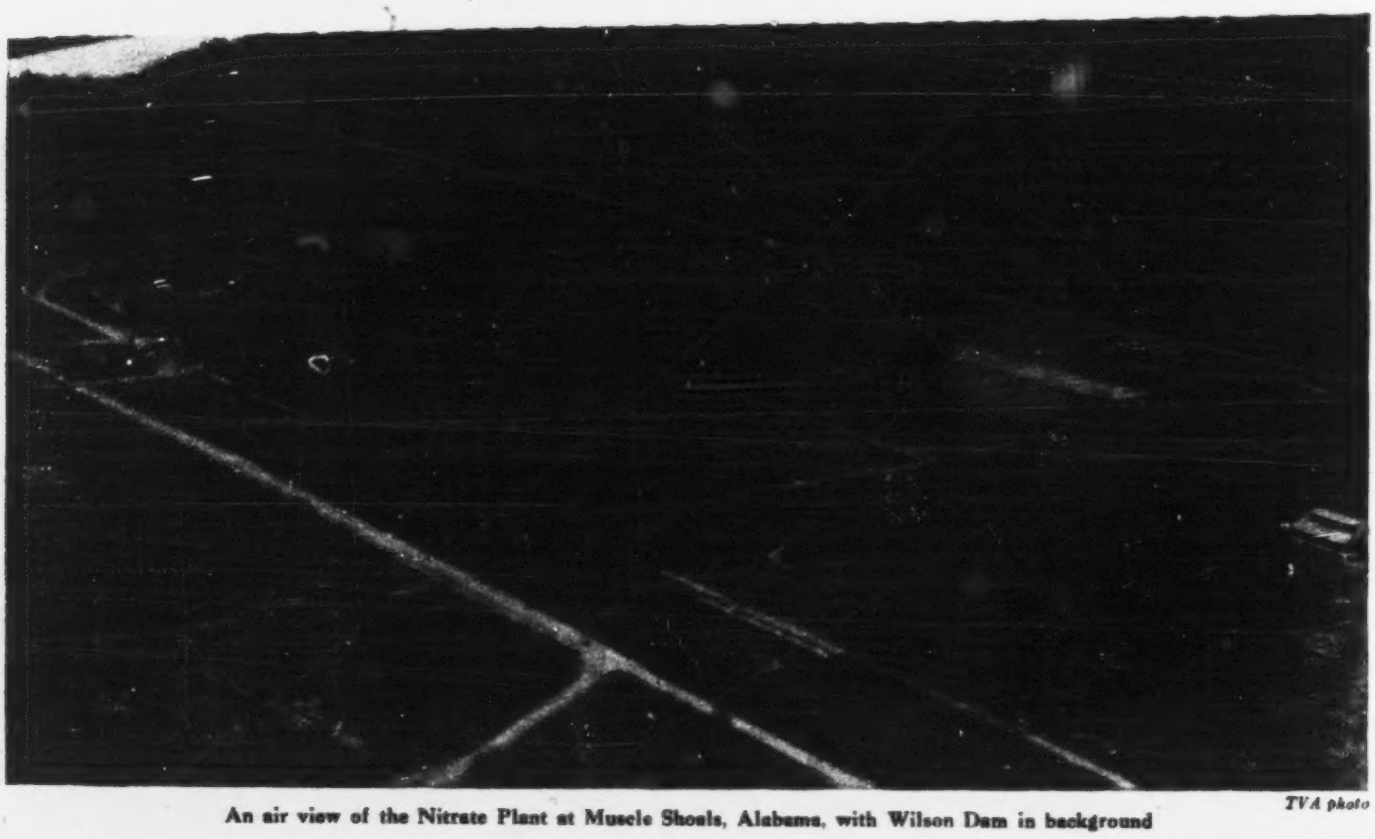
But the Wilson Dam and power plant, located at Muscle Shoals, Alabama, must not be thought of as an isolated unit. It is a link in a chain, the other links being either under construction or under consideration. Up the river fifteen miles from Muscle Shoals, the Wheeler Dam is being built. The power plant at this dam, when completed, will have a capacity about half that of the plant at Wilson Dam. The Wheeler Dam will serve another purpose. It will be an aid to navigation. It will create a lake which will extend up the river for eighty miles, rendering the river navigable for that distance. Locks are being built at the dam to allow boats to pass up and down the river.

A third link in the chain of dams is being built on the Clinch River, a tributary of the Tennessee, about 400 miles from Muscle Shoals. This is the Norris Dam, to which we referred a while ago. It is not so long as the one at Muscle Shoals but is much higher. It is a storage dam. It is being built chiefly for the purpose of holding back and storing the water of the river during the flood seasons—fall and spring—thus creating a lake. The lake will have an area of 83 square miles. During the dry season, when the river is ordinarily very low, the water will be released, generating power at Norris Dam and at every dam down the river. In addition, by regulating the river's flow, it will aid navigation.

The storing of the water during the rainy season will prevent floods down the river and will thus save lives and property. The operation of the Norris Dam will also increase the efficiency and productivity of the plant at Wilson Dam. During the rainy season the river is high and there is plenty of water. The power plant can run at capacity. But during the dry seasons the river is low and there is not enough water to keep the turbines going at capacity. Only about a fifth as much electricity can be produced during the dry season as can be generated when the river is high.

This is a serious matter, for a power plant cannot sell more electricity at any time than it can produce at *all* times. No city and no private firm will contract to buy power unless it can be assured that delivery will be made at all times.

The practical capacity of the Muscle Shoals plant is, therefore, only a fraction of the capacity which appears on paper. Norris Dam will regularize the flow of



TVA photo

An air view of the Nitrate Plant at Muscle Shoals, Alabama, with Wilson Dam in background

WHAT will the entry of the government into the field of electricity mean to the private power companies and to those whose funds are invested in public utility stocks and bonds? The answer frequently given is that nothing which the government might do is likely to cause investors in private utility companies greater loss than these investors have already suffered as a result of financial manipulations of such power magnates as Samuel Insull. This answer is probably true so far as it goes, but it does not cover the entire problem. Will the development of the TVA program, if successful, drive the private companies out of business? Can these companies stand competition from the government?

It is not easy to answer that question. The lower rates charged by the TVA may lead to a vast increase in power business. The indications, as we have seen, look in that direction. The private power companies may be forced, by government competition, to lower their rates also. Some of them have already cut their charges. These companies, like the TVA, may have greatly increased business and may make satisfactory profits thru mass production, even tho prices are cut. Perhaps the electrical industry may undergo a change similar to that which occurred in the automobile industry when Henry Ford produced a cheap car and took automobiles out of the luxury class, into the class of large-scale production and use.

It is a fact, however, that the TVA is operating not a single power plant but a whole river system. The costs of generating water power may be lowered almost a half thru such large-scale operation. If that is true, it would seem that a private company, in order to compete with the government's rate, would be obliged to operate on a similarly large scale. Private companies would have to obtain their own great river systems. Perhaps public opinion, however, would not permit such monopolistic use of river systems. It seems not improbable that, if the development of a chain of unified government-owned plants along the Tennessee River insures cheaper production of electric power, the people of the nation may insist that the government develop other chains of plants on other rivers.

Those who feel, therefore, that the TVA experiment looks toward the probable substitution of public for private production and sale of power have some grounds upon which to base their predictions. The directors of the TVA have said frankly that, while private business interests are given serious consideration, the TVA is chiefly concerned with the interests of the public.

COMPLAINANTS' EXHIBIT No. 635 (Excluded)

The Future of Farms and Industry

TVA photo

SKILLED workmen at Kingsport Press—one of the largest printing establishments in the world.

IT SHOULD BE kept in mind that the TVA is trying to make life and happiness in the Tennessee Valley more secure. That is why it is surveying the region's resources and trying to save the forests and the soil; that is why it is developing a great power system. But in order to bring about economic security, the TVA planners must change the industrial set-up, or so they believe.

No one has known in the past what proportion of the Valley's workers should operate farms and what proportion should work in the factories. Neither the agricultural nor the manufacturing industry was organized according to plan. As a matter of fact, many farmers did not have a ready market for their products, partly because factories were not located near at hand. There were no local city workers to feed. The farmers had to sell their produce to distant markets and these markets were glutted. Conditions were equally unsatisfactory in the industrial centers. Employment was not stable and when workers lost their jobs they had no means of support.

The TVA is seeking a remedy for this situation. Those who are making the plans think the answer is decentralized industry. If factories were scattered among the small rural communities, they require the continued efforts of a generation. Forests cannot be restored in a day; soil cannot be refertilized; people cannot be brought suddenly into cooperative enterprises; nor can industrial habits be hurriedly changed.

No one can tell as yet to what extent the TVA vision will be realized. Much will depend upon the continued interest and support of the Valley people. At present the majority of them appear friendly, disposed to cooperate. The test will come when the novelty of the idea wears off, and when the absence of quick and tangible results of TVA efforts may try the popular patience. It is not enough that the people tolerate the Authority. They must follow its guidance actively if its purposes are to be achieved.

The TVA must expect active hostility at times from business groups who feel themselves adversely affected by its operations. If, as is clearly possible, the factory. They are not obliged to depend wholly upon commercial agriculture—upon selling their products to distant and undependable markets. Neither are the factory workers wholly dependent upon steady work in the factories. If the shops close down people living in the country have at least food and shelter, and they need not ask for help.

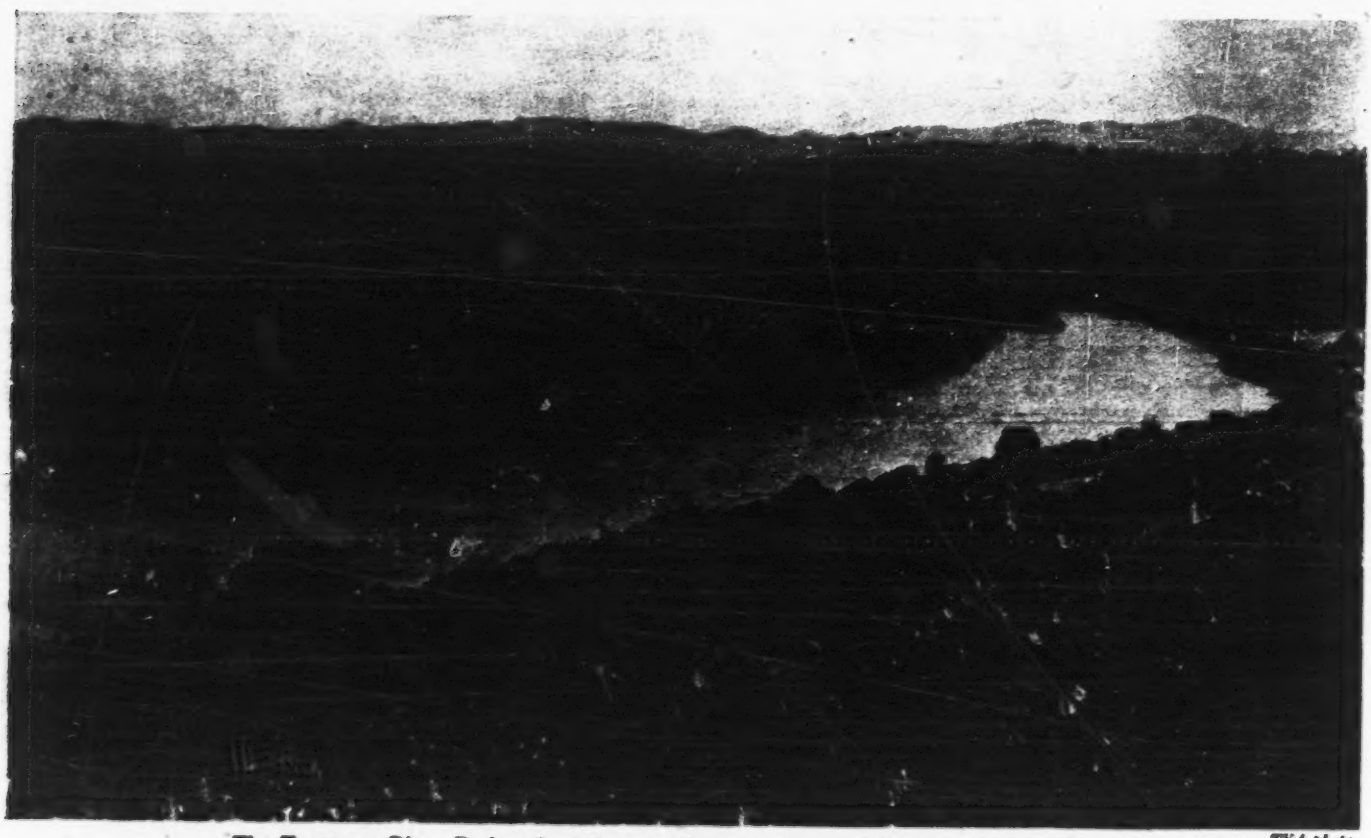
In seeking to promote the decentralization of industry, with a better balance between industry and agriculture, the TVA is not breaking new ground. It is not advocating a novel idea. It is merely throwing its influence behind a movement which has been under way in this section of the country for a quarter of a century. The coming of the automobile, making quick travel possible, and the building of good roads, helping the movement of workers and materials, have led factories to break away from crowded regions to go to small towns or villages. The use of electricity leads to the same result, for power can be carried long distances. Electricity plays such a large part in the decentralization of industry that the Tennessee Valley Authority may push that movement along at rapid rate once its plans for the cheap electrification of the Tennessee Valley area are realized. The planning for the future of industry which the Authority is doing is seen, therefore, to dovetail nicely into its power program.

We may be able to see more clearly the picture of future industrial development which the leaders of the TVA have in mind by examining certain communities which are already practising the decentralization idea. Let us take the cases, for example, of Tupelo and Corinth, Mississippi, two towns which are now buying their electricity from the TVA. In each of these towns there are small factories or his father or brother.

These farmers do not use their farms just for money crops. They do not raise cotton or anything else exclusively as many other southern farmers do. They look upon their farms largely as a place to raise food for themselves. Their money income is largely from the factory. Since they live on the farm they are not obliged to spend the greater part of their wages for rent and food so they can spend their money for other things and can have a higher standard of living. The houses and farms are wellkept and there are signs of comfort and progress. These small communities seem to have taken long steps toward the solving of their economic problems. They seem to have gone far toward the attainment of a way of life far more secure than that in most of the communities of the nation.

A different kind of situation is to be found in the industrial city of Kingsport, Tennessee. Where this remarkable town now stands, there were only bare hills and impoverished hillsmen twenty years ago. Then a railroad came thru the country and the company bought up a large tract of land on the present site of Kingsport and decided to develop an industrial center. The work of development was placed in the hands of a most unusual man, J. Fred Johnson. He conceived the idea of building a community which maintained truly humane and enlightened standards, a town where a high level of living might be insured. He went to experts for counsel. He called upon land planning authorities, among them Earle S. Draper, the present director of land planning and housing of the Tennessee Valley Authority, to lay out plans for the town. For a model municipal charter he went to the Rockefeller Institute of Municipal Research. For a school system he went to Columbia University for counsel. He brought in factories whose owners wanted to maintain high standards for workers. He brought in a rayon mill and a large branch of the Eastman Camera plant. One of the largest printing establishments in the world came to Kingsport. Careful attention was given

[illegible] equivalent of war. These engineers, land planners, agriculturists, social scientists, industrial technicians, are bending their energies, not, as in the case of war, toward the destruction of life, but toward the devising of means whereby thousands of families may live in greater comfort and security. About the offices of the TVA one senses an atmosphere of enthusiasm consistent with the size of the experiment in human welfare which is being made. Even the workmen engaged in the building of the great dams give evidence of a zeal such as one might expect of soldiers in a popular war. They appear to feel a sense of the dignity of the undertaking of which they are a part. Rarely has a constructive effort of peace time fired the imaginations and stirred the hopes of participants and spectators as has this experiment in economic and social planning which is under way in the Valley of the Tennessee.



The Tennessee River Basin, where "an experiment in human welfare" is being made

TVA photo

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Looks to the Future

Power Policy

BUT WHAT IS the purpose of the TVA in going so heavily into the power business? David E. Lilienthal, one of the directors, answers that question. "The Tennessee Valley Authority Act," he says, "marks the beginning of a new national power policy and national power program. This new national policy has two major objectives. The first objective is more effective protection of the public interest, by the setting up of a measure of public operation of power as a 'yardstick.' The second objective of this new national policy is a greatly increased use of electricity in the homes, the farms, and the factories of the United States—*an electrified America.*"

A yardstick to determine the fairness of rates charged by private power companies has long been needed. It has been almost impossible to find what rates were reasonable. Customers complained when they thought their bills were too high. Sometimes they took their grievances to state utility boards. Arguments were presented before the boards. The companies pointed to their heavy investments, their interest charges, costs of operation, taxes. They held that their profits were small. Representatives of consumers declared the companies were over-capitalized, that the financial interests owning the companies were wasteful, inefficient; that exorbitant salaries were paid and bonuses given to insiders.

When arguments of this sort are going on it is natural that both sides, the utilities on the one hand and consumer interests on the other, should try to control the bodies which regulate rates. The utility companies say that they must protect themselves against unjust regulation; that is, against what they consider to be unjust regulation. So they take a hand in politics. They seek to influence public opinion insofar as it relates to the an atmosphere of confusion and propaganda cannot easily come to definite and generally accepted conclusions. The question as to what rates are fair remains undetermined.

Here is where the government steps in. When Congress created the TVA and defined its powers it said in effect: "We will settle this question of rates by a trial comparison; we will have the government generate, transmit, and sell electricity in a given region. Acting thru the TVA, the government will manufacture the power as private companies do. It will charge against itself all the expense which it incurs, including taxes. It will sell the power to the same sort of customers to whom they sell. It will keep a careful record of its costs. It will find out how much it costs to produce and sell electric power. This action of the government will serve as a 'yardstick' by which to determine what the costs of production are and what prices are fair."

The TVA is authorized to use as much electricity as it needs in the development of its own projects. The surplus power will be sold. It will undertake to provide electricity to states, cities, and cooperative associations. These cooperatives may distribute electricity to towns or to farmers. The usual procedure is for the TVA to generate the electricity and send it over its own transmission lines to a town which is to use it. The town or city purposes, or it may sell its surplus to private power companies.

When the TVA makes a contract to sell electricity to a municipality which has been getting its power from a private company, the TVA offers to buy the company's equipment. It does not want to go into the community and build its own transmission lines, duplicating the equipment which the private company already has. Arrangements have already been made whereby the TVA has taken over the transmission lines previously owned by private companies in a number of counties of northern Alabama, northern Mississippi, and Tennessee. It is prepared, therefore, to furnish power to the communities of these areas. It is already serving several small cities and it has formed an agreement whereby it is to serve the larger city of Knoxville, Tennessee. It has purchased the equipment of the private power company with which

TVA photo

GENERATORS in the great hall of Wilson Dam power house. This hall is 1197 feet long and 145 feet wide. Many feet below the generators are the giant rotors thru which the waters of the Tennessee are passed to manufacture cheap power for people in the region.

TVA photo

SKILLED workmen at Kingsport Press—one of the largest printing establishments in the world.

IT SHOULD BE kept in mind that the TVA is trying to make life and happiness in the Tennessee Valley more secure. That is why it is surveying the region's resources and trying to save the forests and the soil; that is why it is developing a great power system. But in order to bring about economic security, the TVA planners must change the industrial set-up, or so they believe.

No one has known in the past what proportion of the Valley's workers should operate farms and what proportion should work in the factories. Neither the agricultural nor the manufacturing industry was organized according to plan. As a matter of fact, many farmers did not have a ready market for their products, partly because factories were not located near at hand. There were no local city workers to feed. The farmers had to sell their produce to distant markets and these markets were glutted. Conditions were equally unsatisfactory in the industrial centers. Employment was not stable and when workers lost their jobs they had no means of support.

The TVA is seeking a remedy for this situation. Those who are making the plans think the answer is decentralized industry. If factories were scattered among the small rural communities, they say, there would be a better balance between industry and agriculture. Farmers would have a local market for their food supplies. Not only would this give them better prices but it would encourage them to diversify their crops, raising more food products instead of relying wholly on one money crop such as cotton, corn, or tobacco.

These small factories might employ many members of farm families. These employees would live on the farms. Under such a system of industry and agriculture farmers have a living from their land and a money income from the

In seeking to promote the decentralization of industry, with a better balance between industry and agriculture, the TVA is not breaking new ground. It is not advocating a novel idea. It is merely throwing its influence behind a movement which has been under way in this section of the country for a quarter of a century. The coming of the automobile, making quick travel possible, and the building of good roads, helping the movement of workers and materials, have led factories to break away from crowded regions to go to small towns or villages. The use of electricity leads to the same result, for power can be carried long distances. Electricity plays such a large part in the decentralization of industry that the Tennessee Valley Authority may push that movement along at rapid rate once its plans for the cheap electrification of the Tennessee Valley area are realized. The planning for the future of industry which the Authority is doing is seen, therefore, to dovetail nicely into its power program.

We may be able to see more clearly the picture of future industrial development which the leaders of the TVA have in mind by examining certain communities which are already practising the decentralization idea. Let us take the cases, for example, of Tupelo and Corinth, Mississippi, two towns which are now buying their electricity from the TVA. In each of these towns there are small factories. There are textile mills in Tupelo, and at Corinth there is a textile mill employing 200 workers and a pants factory employing 700 workers. Forty percent of all persons employed live on farms. This is true in both towns. In the textile mills, most of the workers are women. The farm women go back and forth to the factory in school buses. When the men work in the factory it does not mean that they also work on the farms and thus have excessive hours of labor. One member of the family may work in the factory. The farm is cared for by other members, by the farmer's son, perhaps, to spend the greater part of their wages for rent and food so they can spend their money for other things and can have a higher standard of living. The houses and farms are wellkept and there are signs of comfort and progress. These small communities seem to have taken long steps toward the solving of their economic problems. They seem to have gone far toward the attainment of a way of life far more secure than that in most of the communities of the nation.

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Looks to the Future

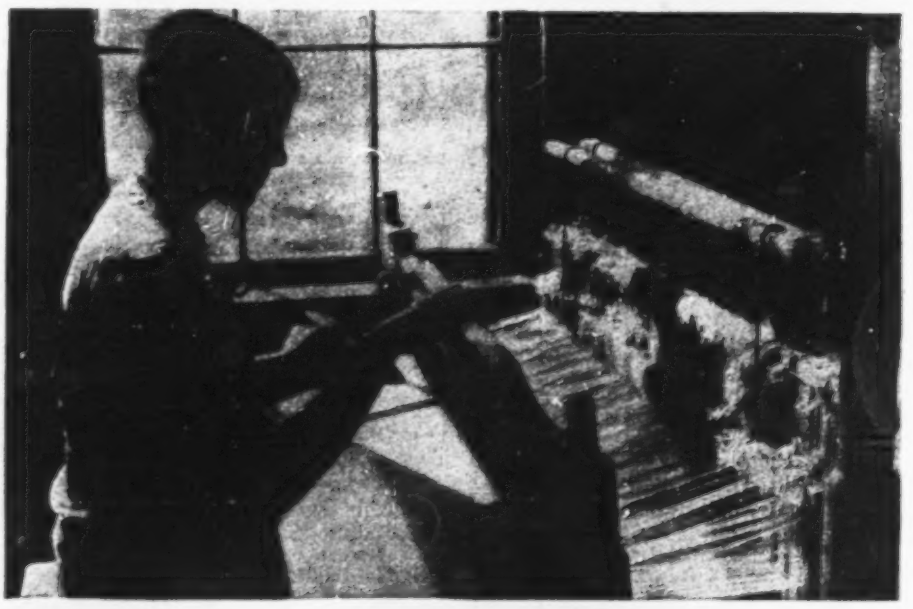
Working with the Cooperatives

UP in the mountains of North Carolina there is another variety of development. Another community is being made over here, this time with the active support of the TVA. Spruce Pine is, or was, a typical mountain village. The people were very poor, for on the steep slopes they could raise no money crops and it was very difficult for them even to obtain a living from the soil. Acting individually they seemed condemned to the same meagre existence which characterizes the lives of most mountaineers thruout this region. A really effective leader, however, appeared among them, S. T. Henry—like Johnson of Kingsport, an unusual man. Henry is a graduate of Illinois University. He has had Wall Street experience. He has engaged in the publishing business. But years ago he went to Spruce Pine, built a little home on a mountain top, and identified himself with the community.

Under the leadership of Mr. Henry and with the help of the Tennessee Valley Authority, a cooperative association was formed. This association could not possibly have gained support had it not had the endorsement of the TVA, and it could not have carried on its work without loans and expert counsel from that quarter. This cooperative has developed a seed potato industry. It has put up canneries so that now the farmers have a market for their tomatoes and beans at the local canneries. The cooperative secures a market for these products. It turns out, however, that the canned goods which are manufactured in the locality are not all thrown upon the markets of the nation to add to the surplus of agricultural products. Much of the canned vegetables are consumed b[y] th[e]

Mr. Henry, knowing that the steep mountain slopes should be used as grass lands and should not be cultivated, is planning that the cooperative shall secure cheap fertilizers from the TVA and shall grow good grass on the hillsides. Then this land shall be taken out of cultivation and used as pasture land. Eventually, it is hoped that herds of cattle may be kept during the winter down in the valleys where corn and other concentrated forms of feed may be had, and driven to the mountain sides in the summer.

In the little town of Banner Elk, also in the North Carolina mountains, is Lees-MacRae College. Here also a cannery cooperative and the seed potato cooperatives are at work. Further south, also in the North Carolina mountains, is the Campbell Folk School, similar to folk schools in Denmark. Here a dairy cooperative is at work, with a canning cooperative close by, both helped by the TVA. Half a dozen cooperatives, assisted by the TVA are in operation, and several more are being formed. They have thousands of members. In these little communities, as in the others we have spoken of, one feels that a new and better and more secure way of life is being discovered.



shows such foresight, such intelligence, such concern for the welfare of its citizens? Why should they not come to realize that no great and worthwhile thing is done without careful planning, and that the Tennessee Valley project is a gigantic demonstration of planning, a demonstration which is peculiarly needed at this juncture in the national life? Why should not the curriculum of the school reach out constantly for new materials that would help young people to understand and take part in matters of national policy which concern them vitally? Would not the school make a stronger appeal to youth and to the citizens who support it, if it contained at least 10 percent of new, more vital, experimental material, properly integrated with the best elements of the older curriculum? Cannot the curriculum be so arranged that every student will be studying some current activity, so that his powers of observance and analysis will be trained to look upon the passing scene?

Such questions as these were in the editor's mind, when the plan was made to work out in cooperation with the Tennessee Valley Authority, the story of what is being done in that great watershed. By a piece of good fortune, arrangement was made for Walter E. Myer, editor of the *American Observer*, and a gifted writer and student, to prepare the story. Try it in your classes. Perhaps it will help young people to realize that America has a great future, if it wills to have such a future.

This special feature in the fifteen pages preceding provides specific and abundant teaching material for a study unit based on one of the most significant developments now taking place in the United States. It can be used to vitalize the teaching of many school subjects. It will turn teachers' attention to a study of their own communities—their resources and needs. Perhaps most important, is the emphasis this special feature makes on the idea of planning and that a new and better civilization can and is being created in the Tennessee Valley, which classroom teachers are farreaching.

School subjects with which this feature can be used—Geography, history, civics, current events, economics, sociology, geology, agriculture, forestry, general science, town and regional planning.

How this feature can be used in rural schools—The older children could use this feature in connection with geography, current events, and agriculture. An outline map of the United States might be used, locating on it important geographic names in this feature; the states, rivers, dams, towns. An imaginary trip by boat up the Tennessee River or by automobile thru this region is an opportunity for an interesting project. The children might contrast the effect of a few "money crops," as cotton, with the addition of new industries, as ceramics, which the TVA is seeking to develop. Also, in a region where pioneers like Daniel Boone once lived, pupils will see that the TVA is doing a truly heroic piece of pioneering in the interest of the public good. Lead the children to recall that this area has witnessed such battles as Shiloh and Lookout Mountain; but now the TVA is battling against desperate poverty, against further destruction of soil, forests, and watersheds to save a virile people and to lay the cornerstone for similar development elsewhere in the nation. Pupils in the Middlewest, where soil erosion because of winds during the 1934 drought has been heavy, might contrast the work being done in the Tennessee Valley with erosion measures in their own section. The use of electric power on farms and better housing for rural people are questions of intense interest to children, when applied to their own homes and lives. Children will enjoy making scrapbooks of pictures and newspaper clippings about the TVA.

Additional references—*American Forests*, October 1934 [special TVA number]. 35¢. The American Forestry Ass'n. 1713 K St., Washington, D. C. [2] Write to the Tennessee Valley Authority, Knoxville, Tennessee, for material.

Courtesy, American Forestry Association.

GENERAL outline of the Tennessee River Basin. The shaded area indicates the sphere of development by the Tennessee Valley Authority.

[3] Special TVA assembly program in which the topics of this JOURNAL feature could be used for the subjects of talks by students. TVA activities could be dramatized: George W. Norris and the Senate debates on Muscle Shoals, President Roosevelt signing the TVA Act, etc.

[3] A program for a parent-teacher meeting given by students on the educational phases of the TVA: the modern school at Norris, the training of TVA personnel thru leisure-time opportunities, diversity of jobs, health examinations; the education of adults in home planning, use of modern conveniences, hygiene and sanitation, modern methods of agriculture. Include in such a program, Arthur E. Morgan's Antioch College work-study plan; also the educational aspects of the CCC.

[4] A TVA commencement program. The Knoxville, Tennessee, high school has already used the TVA as a theme for commencement. Students impersonated the three directors and other TVA workers; maps, a model of a mountain cabin, and a home in Norris were shown.

[5] Debate by students, the public invited, on the *laissez faire* policy vs. government planning, as shown in the TVA.

[6] Exhibits, for the entire school and the public, of maps, pictures, models of the town of Norris, mountain cabin, modern houses in Norris, "Then and Now" exhibits.

Additional references—See references above; also consult *Reader's Guide to Periodical Literature* [H. W. Wilson Co. N. Y.] in your library for titles of many magazine articles on the TVA.

Suggestions for colleges, including those for the education of teachers—This JOURNAL feature on the TVA may suggest several questions to which college students may wish to give intensive study. One of these may be city and regional planning. See *The New Exploration: A Philosophy of Regional Planning* by Benton Mackaye. [Harcourt, Brace & Co. N. Y. 1928. $3.]; also *The Awakening Community* by Mary Mims. [Macmillan Co. N. Y. 1932. $2.] Other questions students may well ask are: What are the rates for electric service in my community? How do these compare with charges in other communities of similar size? Under public ownership? Private ownership? Write to the Federal Power Commission, Washington, D. C., for information about rates for electric power thruout the country; also to the Dominion Waterpower and Hydro-Electric Bureau, Ottawa, for rates in Canada. Among the many books on electric power, are: *The Power Age* by Walter N. Polakov [Covici, Friede] 1933, $2. *What Electricity Costs* by Morris L. Cooke. 1933. New Republic. 421 W. 21st, New York. $1.

[2] Summer camping trips to the Tennessee Valley for classes in regional planning, rural economics, geology, sociology, forestry, will be profitable and enjoyable in preparation and in actuality.—Joy Elmer Morgan.

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The Tennessee Valley

Planning the Industrial Future

Everywhere, however, cooperation for the purpose of developing a planned community life will be encouraged. A special organization, the Tennessee Valley Associated Cooperatives, Inc., an agency of the TVA, is working to that end. It is making loans to cooperative associations when necessary and it is offering expert guidance and counsel.

In carrying out industrial plans for the Valley, the TVA will not rely by any means, however, upon cooperative associations. It is working also with private industry. The Division of Land Planning is determining the best uses of land in various sections. Plans are being made for the betterment of the transportation systems. The TVA is finding out what new industries might be developed and where they might profitably be located. Its chemists, for example, are studying processes for the use of coal not as a fuel but as a raw material. It is gaining a mass of information which will be useful in mapping out future industrial possibilities.

Manufacturers, large and small, will make use of this information. They will come to the TVA for advice about the locating of factories in the district. Already a considerable number of manufacturers are calling upon the Authority for counsel. The TVA thru its negotiations with these industrialists, will be able to exert a considerable influence in shaping the industrial life of the communities in this region. It may be able to do for the Valley what J. Fred Johnson did for Kingsport. It may be able to bring in industries which will conform to the principles of industrial development the TVA lays down. And the TVA will have in mind the development of indus-

Looks to the Future

What to Expect

WE HAVE spoken now of the plans and the achievements of the Tennessee Valley Authority. The plans naturally bulk larger than the achievements. The TVA, after all, is but a little more than a year old, and much of the work it has laid out for itself will require the continued efforts of a generation. Forests cannot be restored in a day; soil cannot be refertilized; people cannot be brought suddenly into cooperative enterprises; nor can industrial habits be hurriedly changed.

No one can tell as yet to what extent the TVA vision will be realized. Much will depend upon the continued interest and support of the Valley people. At present the majority of them appear friendly, disposed to cooperate. The test will come when the novelty of the idea wears off, and when the absence of quick and tangible results of TVA efforts may try the popular patience. It is not enough that the people tolerate the Authority. They must follow its guidance actively if its purposes are to be achieved.

The TVA must expect active hostility at times from business groups who feel themselves adversely affected by its operations. If, as is clearly possible, the dominance of the private power companies in the utility field is seriously challenged by the TVA, the companies may throw their great influence into the scales against the practise of governmental competition. Other industrial interests will have their grievances. If the TVA maintains its purpose to encourage industries which contribute to the public good and to discourage those which do not, it would be fatuous to suppose that it will not step on the toes of a good many very powerful business men. It would be equally fatuous to suppose that they will not strike back. But perhaps the TVA's most serious problems may come, not from outside opposition, but from the difficulty of the planning job itself. It is easy to plan on paper, but if plans for an extensive region are put into practise, it must be expected that unexpected obstacles will arise and that certain disharmonies may result. All of which is not to say that the TVA task is impossible, but merely that it is infinitely complicated and difficult.

No one expects, of course, that it will be an easy thing to help in the development of a new industrial society, to assist in the discovery of new ways of life, to participate in the reshaping of a civilization. But this much can be said:

The job is being undertaken with a calm determination, with an efficiency of organization, with a spirited enthusiasm, which reminds one of William James' vision of "a moral equivalent of war." These engineers, land planners, agriculturists, social scientists, industrial technicians, are bending their energies, not, as in the case of war, toward the destruction of life, but toward the devising of means whereby thousands of families may live in greater comfort and security. About the offices of the TVA one senses an atmosphere of enthusiasm consistent with the size of the experiment in human welfare which is being made. Even the workmen engaged in the building of the great dams give evidence of a zeal such as one might expect of soldiers in a popular war. They appear to feel a sense of the dignity of the undertaking of which they are a part. Rarely has a constructive effort of peace time fired the imaginations and stirred the hopes of participants and spectators as has this experiment in economic and social planning which is under way in the Valley of the Tennessee.

COMPLAINANTS' EXHIBIT No. 641 (Excluded)

lieve it is for the municipal applicant to determine whether or not it desires to compete with privately owned utilities. It is our policy to consider such applications particularly where franchises are soon to expire, provided the project is self-liquidating at rates lower than those which the existing utility is willing to put into effect."

[fol. 3172] COMPLAINANTS' EXHIBIT No. 642 (Excluded)

Federal Emergency Administration of Public Works

PWA Press Section, Release Sunday, December 30, 1934

Release No. 1165

The President has written letters to Governors or Governors-elect in the forty-eight States offering the assistance of the Public Works Administration in the preparation of legislation which would enable municipalities and other public bodies to obtain fuller benefits of whatever additional public works program is authorized at the coming session of Congress.

The President submitted to the States for their consideration general suggestions covering the simplification of procedure for bond issues, the delegation of greater powers to municipalities to issue bonds, slum-clearance and low-cost housing, rural electrification, and creation of municipal improvement authorities.

The Legal Division of PWA, which already has assisted a number of States at their request in the preparation of legislation designed to facilitate and expedite the public works program, was designated by the President as the Federal agency which upon invitation will assist the States in the [fol. 3173] formulation of their legislative programs.

The following letter is typical of those sent out by the White House:

The White House, Washington

MY DEAR GOVERNOR:

In the event that an additional public-works program is authorized at the coming session of the Congress, I should

like to see the municipalities of your State legally able to take full advantage of such a program. With this in mind, I have instructed Administrator Ickes to place at your disposal the Legal Division of the Public Works Administration for the purpose of suggesting bills which if enacted into law would enable municipalities of your State to secure the benefits of this phase of the recovery program.

Our experience in the past eighteen months has brought to light the difficulty of gearing the legal machinery which has served municipalities of your State adequately for decades to the speed with which the Federal Government must extend credit to achieve desired results. It has been found that revision of the procedure relative to municipal financing is essential, at least for the duration of the exist- [fol. 3174] ing emergency. I wish to submit for your consideration in formulating your legislative program, the following general suggestions:

(1) Simplification of the procedure for the authorization and financing by municipalities of public-works projects, for example, by eliminating the requirement for an election and in lieu thereof substituting a permissive referendum on bond issues, by shortening the periods of notices before such referendum elections, and by permitting the sale of bonds privately to the Federal Government.

(2) Conferring of additional powers upon municipalities to undertake public-works projects and issue bonds to finance the same, including the relaxing of statutory limitations upon taxing power to pay debts, and the delegation of a broader authority to municipal officials to make such contracts with the Federal Government as are deemed in the best interests of the municipality.

(3) Creation of municipal improvement authorities without power to tax, but with power to issue bonds payable solely from the income of revenue-producing improvements, such as water, sewer, and electric light and power systems.

(4) Authorizing municipalities to engage in slum clearance, including condemnation of necessary lands, and the construction, operation and maintenance of low-cost housing, to make contributions therefor, and to enter into con-

COMPLAINANTS' EXHIBIT No. 642 (Excluded)

tracts with the Federal Government in connection therewith.

(5) Providing for the creation of non-profit public benefit [fol. 3175] corporations or agencies to provide for the electrification of rural communities with the assistance of the Federal Government.

(6) Validation of bonds and other obligations heretofore issued by municipalities for public-works projects and sold to the Federal Government.

If you will write me how you feel about these suggestions, I will request Administrator Ickes to have prepared such bills as may be deemed advisable.

Quite apart from the above suggestions, I think it would be helpful if arrangements could be made whereby the Public Works Administration is furnished with copies of all laws enacted at the forthcoming legislative session. This will materially aid the Administration in advancing funds on approved projects.

Very sincerely, Franklin D. Roosevelt.

[fol. 3176] COMPLAINANTS' EXHIBIT No. 643 (Excluded)

Federal Emergency Administration of Public Works

PWA Press Section, Immediate Release

Release No. 1396

An allotment of $125,000 to the Federal Power Commission to continue the electric rate survey and the national power survey was announced today by Public Works Administrator Harold L. Ickes.

Of the amount, $25,000 will be used for a tabulation and analysis of an investigation of rates paid for electric light and power by Federal agencies and institutions; $25,000 for a special field investigation of the power requirements and power resources in the area that may be served by the Tennessee Valley Authority, and $75,000 for the completion and publication of studies, maps and charts now in the course of preparation by the Federal Power Commission.

The Tennessee Valley Looks to the Future

A Study Unit: Suggestions About Its Use

SOMEDAY students of American history will read about the development of the Tennessee Valley as one of the great events in the life of the Republic. Why should not today's students study this great development while the building is actually going on? Why should they not learn to be proud of the nation that shows such foresight, such intelligence, such concern for the welfare of its citizens? Why should they not come to realize that no great and worthwhile thing is done without careful planning, and that the Tennessee Valley project is a gigantic demonstration of planning, a demonstration which is peculiarly needed at this juncture in the national life? Why should not the curriculum of the school reach out constantly for new materials that would help young people to understand and take part in matters of national policy which concern them vitally? Would not the school make a stronger appeal to youth and to the citizens who support it, if it contained at least 10 percent of new, more vital, experimental material, properly integrated with the best elements of the older curriculum? Cannot the curriculum be so arranged that every student will be studying some current activity, so that his powers of observance and analysis will be trained to look upon the passing scene?

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is possible in other sections of our country. The potential public usefulness of the entire Tennessee Valley "enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry." The implications of all this for education and classroom teachers are farreaching.

School subjects with which this feature can be used—Geography, history, civics, current events, economics, sociology, geology, agriculture, forestry, general science, town and regional planning.

How this feature can be used in rural schools—The older children could use this feature in connection with geography, current events, and agriculture. An outline map of the United States might be used, locating on it important geographic names in this feature; the states, rivers, dams, towns. An imaginary trip by boat up the Tennessee River or by automobile thru this region is an opportunity for an interesting project. The children might contrast the effect of a few "money crops," as cotton, with the addition of new industries, as ceramics, which the TVA is seeking to develop. Also, in a region where pioneers like Daniel Boone once lived, pupils will see that the TVA is doing a truly heroic piece of pioneering in the interest of the public good. Lead the children to recall that this area has witnessed such battles as Shiloh and Lookout Mountain; but now the TVA is battling against desperate poverty, against further destruction of soil, forests, and watersheds to save a virile people and to lay the cornerstone for similar development elsewhere in the nation. Pupils in the Middlewest, where soil erosion because of winds during the 1934 drought has been heavy, might contrast the work being done in the Tennessee Valley with erosion measures in their own section. The use of electric power on farms and better housing for rural people are questions of intense interest to children, when applied to their own homes and lives. Children will enjoy making scrapbooks of pictures and newspaper clippings about the TVA.

Additional references—*American Forests*, October 1934 [special TVA number]. 35¢. The American Forestry Ass'n. 1713 K St., Washington, D. C. [2] Write to the Tennessee [illegible]

[3] Write to U. S. Department of Agriculture, Washington, D. C., or to your state department of agriculture for bulletins on soil erosion, forestry, etc.

Suggestions for junior and senior high schools—Scrapbooks of pictures and newspaper articles, outline and relief maps, imaginary trips to the Tennessee Valley will be enjoyed in many classes.

[2] Special TVA assembly program in which the topics of this JOURNAL feature could be used for the subjects of talks by students. TVA activities could be dramatized: George W. Norris and the Senate debates on Muscle Shoals, President Roosevelt signing the TVA Act, etc.

[3] A program for a parent-teacher meeting given by students on the educational phases of the TVA: the modern school at Norris, the training of TVA personnel thru leisure-time opportunities, diversity of jobs, health examinations; the education of adults in home planning, use of modern conveniences, hygiene and sanitation, modern methods of agriculture. Include in such a program, Arthur E. Morgan's Antioch College work-study plan; also the educational aspects of the CCC.

[4] A TVA commencement program. The Knoxville, Tennessee, high school has already used the TVA as a theme for commencement. Students impersonated the three directors and other TVA workers; maps, a model of a mountain cabin, and a home in Norris were shown.

[5] Debate by students, the public invited, on the *laissez faire* policy vs. government planning, as shown in the TVA.

[6] Exhibits, for the entire school and the public, of maps, pictures, models of the town of Norris, mountain cabin, modern houses in Norris, "Then and Now" exhibits.

Additional references—See references above; also consult *Reader's Guide to Periodical Literature* [H. W. Wilson Co. N. Y.] in your library for titles of many magazine articles on the TVA.

Suggestions for colleges, including those for the education of teachers—This JOURNAL feature on the TVA may suggest several questions to which college students may wish to give intensive study. One of these may be city and regional planning. See *The New Exploration: A Philosophy of Regional Planning* by Benton Mackaye. [Harcourt, Brace & Co. N. Y. 1928. $3.]; also *The Awakening Community* by Mary Mims. [Macmillan Co. N. Y. 1932. $2.] Other questions [illegible]

COMPLAINANTS' EXHIBIT No. 643 (Excluded)

These studies include rural electrification, the cost of the distribution of electricity and economics of interconnection and coordination. They are of great practical value.
[fol. 3177] The tabulation and analysis of rates was requested by the Procurement Division, of the Treasury Department, to be used in connection with negotiations for light and power contracts for the next fiscal year. The field investigation in the TVA area will be of use to TVA.

The original investigations by the Federal Power Commission, financed by a PWA allotment, were authorized by the Senate and by executive order.

[fol. 3178] COMPLAINANTS' EXHIBIT No. 644 (Excluded)

Federal Emergency Administration of Public Works

November 8, 1933.

To State Engineers:

A number of inquiries have come in to me regarding our attitude and procedure in regard to applications for loans for municipal light plants. I have prepared the present letter to set forth my views.

It seems to me that we should do all in our power to prevent becoming embroiled in local political disputes. I think it is going a bit too far and creates an unnecessary amount of work to notify all the utility companies when a municipal utility application comes in. Isn't it a fact that when you hear one argument you hear all of them? In principal they are the same. After all, the question for you to decide is one of whether or not it is engineeringly, economically and socially sound.

The entire procedure of the utility company is one of delay. You find this everywhere. We are most anxious to set up around the country sound publicly owned utilities as yard-sticks to determine the principle of whether or not communities can satisfy themselves and give lowered rates [fol. 3179] for electricity.

Where you do find it necessary to have a hearing, both sides, of course, should be present. I cannot see why it is necessary for the utilities to get into the whole file. If you

COMPLAINANTS' EXHIBIT No. 644 (Excluded)

do this you immediately get into a three-cornered engineering discussion, the utilities, the applicant and ourselves. As far as the engineering is concerned I don't think it is any of the utilities business. Your engineering force, together with the engineering which has been done by the applicant and which will be checked here, is sufficient.

If the utility desires to file a brief or be heard, and you decide it is necessary and advisable to do so, you can give them enough of the facts on which they can prepare their brief.

H. M. Waite, Deputy Administrator.

P. W. 1073.

[fol. 3180] COMPLAINANTS' EXHIBIT No. 645 (Excluded)

President's Letter Creating the National Power Policy Committee

Establishment by the President in the Public Works Administration of a Committee called the "National Power Policy Committee" was announced today at the White House. (July 16, 1934.)

Secretary Ickes will be Chairman of this Committee, the membership of which will be composed of:

Dr. Elwood Mead, of the Bureau of Reclamation,

Honorable Frank R. McNinch, of the Federal Power Commission,

Honorable Morris L. Cooke, of the Mississippi Valley Committee, PWA,

Major General Edward M. Markham, Chief of Engineers, War Department,

Honorable Robert E. Healy, of the Federal Stock Exchange Commission,

Honorable David E. Lilienthal, of the Tennessee Valley Authority,

Honorable T. W. Norcross, Assistant Forrester of the Forest Service.

In the following letter from the President to Secretary Ickes under date of July ninth the purpose and duties of this Committee are outlined:

"I wish to establish in the Public Works Administration a Committee to be called the "National Power Policy Com-

[fol. 3181] mittee." Its duty will be to develop a plan for the closer cooperation of the several factors in our electrical power supply—both public and private—whereby national policy in power matters may be unified and electricity be made more broadly available at cheaper rates to industry, to domestic and, particularly, to agricultural consumers.

"Several agencies of the government, such as the Federal Power and Trade Commissions, have in process surveys and reports useful in this connection. The Mississippi Valley Committee of Public Works is making studies of the feasibility of power in connection with water storage, flood control and navigation projects. The War Department and Bureau of Reclamation have under construction great hydro-electric plants. Representatives of these agencies have been asked to serve on the Committee. It is not to be merely a fact-finding body, but rather one for the development and unification of national power policy.

"As time goes on there undoubtedly will be legislation on the subject of holding companies and for the regulation of electric current in interstate commerce. This committee should consider what lines should be followed in shaping up this legislation. Since a number of the States have commissions having jurisdiction over intrastate power matters, it is necessary that whatever plan is developed should have regard to the powers of these various State commissions as well as of the States in general.

[fols. 3182-3208] "It is not thought that it will be necessary to have frequent meetings of the full Committee. An adequate administrative staff will be provided, and personal expenses of the members of the Committee in connection with its meetings will be met.

"The Committee is to be advisory to the President. I hope that you will accept membership on this Committee and act as its Chairman."

[fol. 3160] COMPLAINANTS' EXHIBIT No. 636

No such Exhibit number.

[fol. 3161] COMPLAINANTS' EXHIBIT No. 637 (Excluded)

Federal Emergency Administration of Public Works

Release No. 44

Room 6013—Interior Department

Release August 8

An allotment of $400,000 from public works funds to the Federal Power Commission was announced today by Public Works Administrator Harold L. Ickes.

The Power Commission, under the direction of President Roosevelt, will prepare a comprehensive national plan for the development of water power and the transmission of electricity, examine public works power projects referred to it by the Public Works Administration and make a study into the costs of the transmission of electricity from generating stations to consumers.

The allotment will enable the Commission to begin its investigations and studies at once.

The determination of facts with regard to the cost of transmitting and distributing electricity to consumers under varying conditions is of great importance not only in ascertaining the economic feasibility of power projects but also the distribution cost element properly to be included in rates to consumers of electricity.

Such an investigation was ordered by the Senate at the last session through a resolution introduced by Senator [fol. 3162] Costigan, of Colorado.

National planning of water power development, the Federal Power Commission advises the Public Works Administration, will effectuate the purposes of Congress, which in the Federal Water Power Act of 1920, authorized the commission to investigate "the water power industry and its relation to other industries and to interstate or foreign commerce, and concerning the location, capacity, development costs, and relation to markets of power sites, and whether the power from Government dams can be advan-

tageously used by the United States for its public purposes, and what is fair value of such power, to the extent the Commission may deem necessary or useful for the purpose of this act."

The Federal Power Commission points out that up to the present time the development of the water power resources of the United States, both public and private, has been carried on without reference to any comprehensive or integrated national plan. As a result, there have been many instances in which the full economic and social value of the Nation's resources has not been secured. In other cases there has been a lack of proper coordination between projects developed in the same region. Power projects have also sometimes been developed without proper regard for the available market to consume the electricity generated. The failure to develop a national power program has therefore resulted in great economic loss.

It is planned to organize the work on a regional basis so that local projects under the Public Works Administra-
[fol. 3163] tion may receive prompt consideration. Making use of the trained personnel and facilities of the Power Commission will obviate the necessity of setting up a new organization for this purpose within the Public Works Administration.

In the preparation of the national plan the Federal Power Commission will cooperate with the Public Service Commissions of the several States, as well as with the Public Works Administration, the Tennessee Valley Authority and leading authorities of the electrical industry throughout the United States.

The Federal Power Commission is composed of Frank R. McNinch, of North Carolina, Chairman; Basil Manley, of the District of Columbia, Vice Chairman; Herbert J. Drane, of Florida; Claude J. Draper, of Wyoming, and George Otis Smith, of Maine.

[fol. 3164] COMPLAINANTS' EXHIBIT No. 638 (Excluded)

PWA Press Release No. 468

(Omitted)

[fol. 3165] COMPLAINANTS' EXHIBIT No. 639 (Excluded)

Federal Emergency Administration of Public Works

PWA Press Section, Immediate Release

Release No. 709

A Public Works Administration Electric Power Board of Review has been established Public Works Administrator Harold L. Ickes today announced.

This board will be comprised of Henry T. Hunt, General Counsel of PWA, Morris L. Cooke, Chairman of the Mississippi Valley Committee, and Otto M. Rau, Counselor for the Administrator. Mr. Cooke is a Pennsylvania authority on power development and Mr. Rau is a qualified expert on utilities costs and operations.

It will be the duty of this board to review disapprovals and special conditions imposed by any division of PWA and to make recommendations to the Deputy Administrator with regard to applications of public bodies to finance the construction, repair, improvement or extension of electrical power plant facilities.

Because of the wide variety of conditions under which such applications are made the controversial nature of cer-
[fol. 3166] tain of the projects and the important economic factors involved in the general questions of power development, Administrator Ickes has decided such projects should receive the attention of the new review board comprised of men who have made detailed studies of the issues involved and who are fully informed on various developments in this field.

The Administrator ordered the Technical Board of Review and the Projects Division of PWA to refer such applications to the Electric Power Board of Review.

The Administrator directed the power board to formulate and submit instructions for the guidance of various PWA divisions with regard to controversial questions affecting this class of projects so that uniform policies and handling of these questions might be evolved.

[fol. 3167] COMPLAINANTS' EXHIBIT No. 640 (Excluded)

PWA Press Release No. 868

(Omitted)

[fol. 3168] COMPLAINANTS' EXHIBIT No. 641 (Excluded)

Federal Emergency Administration of Public Works

PWA Press Section, Immediate Release

Release No. 989

Achievement in certain instances of the administration purpose of making electric energy more widely available at cheaper rates today lead to a clarification of the policy on power by the Public Works Administration.

Municipal or local publically owned power projects will be aided by PWA only when, in addition to meeting those qualifications necessary for public works projects, they assure electricity to communities at rates subtantially lower than otherwise obtainable under the unchanged basic policy enunciated by Public Works Administrator Ickes.

The statement of Administrator Ickes followed action by some privately owned utilities, which, on reexamination of their condition, found it possible to reduce rates to a point below those proposed by municipal project plants.

In all allotments made for municipal power plants by the [fol. 3169] Public Works Administration proposed rates have been well below existing private company rates. Consequently, the fact that the companies in some instances have met these proposed municipal rates has been deemed as showing progress toward one of the aims of this phase of the public works program.

In the cases affected Public Works Administration policy will be so administered that municipal plant construction will not be deprived of the possibility of public works support until such time as the local Government feels assured the proposed rate reduction by the existing utility will be in effect on a reasonably permanent basis.

Since the public works program began financing electric plants, where they are socially desirable and where they will be self-liquidating, there have been reductions of rates

by private utilities in different localities. The private utilities are becoming increasingly cognizant of the greater use of power resulting from lower rates.

Administrator Ickes said:

"PWA has endeavored to make electric energy more broadly available at cheaper rates by acting on applications of municipalities for loans and grants to finance municipal systems where reasonable security is offered and the project is socially desirable. They are deemed desirable where the loan can be amortized in a reasonable period while charg-
[fol. 3170] ing rates substantially lower than those of the existing utility.

"However, we make it a practice before approving the loan to give the company an opportunity to put in effect rates at least as low as those at which the municipal system will be self-liquidating. Several utility companies have accepted this opportunity. It is obvious that in such cases it is advantageous to the city and to PWA that the offer be accepted and the applications withdrawn. To make loans and grants to finance projects where the competitor offers rates which are lower than those possible by the city plant, would duplicate facilities without any social betterment and impose on the city a burden which it probably could not meet without resort to taxation.

"Furthermore, in the described situation Public Works will be free to use its funds to better advantage elsewhere. The action of the utility companies referred to supports the belief that domestic rates, in certain instances at least, are so high as to be disadvantageous to the company as well as unjust to the consumers. Experience shows that lower rates may produce larger profits particularly (p-2) where promotional campaigns are conducted and the cost of electrical appliances is made reasonable.

"PWA will cooperate with cit-es to prevent rates rising on an indication municipal plants may not be built. PWA will not rescind allotments or suggest the withdrawal of applications until the lowered rates are legally in effect.
[fol. 3171] "State laws authorize municipal competition, hence it is PWA's position that the State has determined that such competition may be socially desirable. We be-

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

gives to the government, viz., the people, that same very essential "birch rod" in the cupboard.

• • • The water power of the State should belong to all the people. The title to this power must rest forever in the people. No commission—not the Legislature itself—has any right to give, for any consideration whatever, a single potential kilowatt in vital perpetuity to any person or corporation whatever. It is the duty of our representative bodies to see that this power is transferred into useable electrical energy and distributed at the lowest possible cost. It is our power, and no inordinate profits must be allowed to those who act as the people's agent in bringing this power to their homes and workshops.

• • • Here you have the clear picture of four great government power developments in the United States, the St. Lawrence River in the Northeast, Muscle Shoals in the Southeast, the Boulder Dam project in the Southwest, and, [fol. 3224] finally, but by no means the least of them, the Columbia River in the Northwest. Each one of these will be forever a national yardstick to prevent extortion against the public and to encourage the wider use of that servant of the people—electricity.

The power issue, where vigorously handled in the public interest, means abundant and cheaper current for American Industry, reduced rates and increased use in millions of urban and rural homes, and preservation of our water power resources in coordination with flood control reclamation and irrigation.

• • • My distinguished opponent is against giving the Federal Government in any case the right to operate their own power business.

I favor giving the people this right where and when it is essential to protect them against inefficient service or exorbitant charges.

As an important part of this policy, the natural hydroelectric power resources belonging to the people of the United States or the several States shall remain forever in their possession.

• • • Never shall the Federal Government part with its sovereignty and control over its power resources while I am President of the United States.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

[fol. 3225] P. W. 22982

"Looking Forward" by Franklin D. Roosevelt

March, 1933.

The Power Issue

The power issue, where vigorously handled in the public interest, means abundant and cheaper power for American industry, reduced rates and increased use in millions of urban and rural homes—to say little of the preservation of our water power resources in coordination with flood control, reclamation and irrigation. The American people have a vital stake in the proper handling of this issue.

Let us be clear at the outset that the liberty of individuals to carry on their business should be *be* abrogated unless the larger interests of the many are concerned. It is the purpose of government to see that not only the legitimate interests of the few are protected but that the welfare and rights of the many are conserved. These are the principles which must be remembered in any consideration of this question. This, I take it, is sound government—not politics. Those are the essential basic conditions under which the government can be of service.

The regulation commission must be a tribune of the people, putting its engineering, accounting and legal resources [fol. 3226] into real use for the purpose of getting the facts and doing justice to both the consumers and the investors in public utilities. This means positive and active protection of the public against private greed.

Therefore I lay down the following principle: that where a community or a district is not satisfied with the service rendered or the rates charged by a private utility, it has the undeniable right as one of its functions of government, one of its functions of home rule, to set up, after a fair referendum has been taken, its own governmentally owned and operated service.

This right has been recognized in most of the states of the Union. Its general recognition by every state will hasten the day of better service and lower rates.

State-owned or Federal-owned power sites can and should properly be developed by government itself. When so

developed, private capital should be given the first opportunity

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F. D. R.—"Looking Forward".

March, 1933.

to transmit and distribute the power on the basis of the best service and the lowest rates to give a reasonable profit only.

As an important part of this policy, the natural hydro-electric power resources belonging to the people should re- [fol. 3227] main forever in their possession. This policy is as radical as American liberty, as radical as the Constitution of the United States. Never shall the Federal Government part with its sovereignty and control over its power resources while I am President of the United States.

Holding Companies.

We must have uniform accounting systems.

Stockholders in holding companies, on suitable representation, must have the right at any time to examine the transcript of every word that is said at a directors' meeting.

A stockholder must have the right to examine every company contract—be it with officers or directors or with other companies.

Reports of holding companies must show actual ownership in shares and changes of ownership by officers and directors.

With the knowledge that such information can at any time become public many holding company irregularities would automatically cease.

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"On Our Way" by Franklin D. Roosevelt

1934

[fol. 3228] There is, however, an obligation upon us to insist that every issue of new securities to be sold in interstate commerce shall be accompanied by full publicity and information, and that no essentially important element attending the issue shall be concealed from the buying public.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

P .W. 22982

Message of President Roosevelt

April 10, 1933.

The continued idleness of a great national investment in the Tennessee Valley leads me to ask the Congress for legislation necessary to enlist this project in the service of the people.

It is clear that the Muscle Shoals development is but a small part of the potential public usefulness of the entire Tennessee River. Such use, if envisioned in its entirety, transcends mere power development; it enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short this power development of war days leads logically to national planning for a complete river water shed involving many States and the future lives and welfare of millions. It touches and give- [fol. 3229] life to all forms of human concerns.

I, therefore, suggest to the Congress legislation to create a Tennessee Valley Authority—a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise. It should be charged with the broadest duty of planning for the proper use, conservation and development of the natural resources of the Tennessee River drainage basin and its adjoining territory for the general social and economic welfare of the nation. This Authority should also be clothed with the necessary power to carry these plans into effect. Its duty should be the rehabilitation of the Muscle Shoals development and the coordination of it with the wider plan.

Many hard lessons have taught us the human waste that results from lack of planning. Here and there a few wise cities and counties have looked ahead and planned. But our nation has "just grown". It is time to extend planning to a wider field, in this instance comprehending in one great project many States directly concerned with the basin of one of our greatest rivers.

This in a true sense is a return to the spirit and vision of the pioneer. If we are successful here we can march on, step by step, in a like development of other great natural [fol. 3230] territorial units within our borders.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

P. W. 22982

Message of President Roosevelt

June 8, 1934.

• • • The extent of the usefulness of our great natural inheritance of land and water depends on our mastery of it. We are now so organized that science and invention have given us the means of more extensive and effective attacks upon the problems of nature than ever before. We have learned to utilize water power, to reclaim deserts, to recreate forests and to redirect the flow of population. Until recently we have proceeded almost at random, making many mistakes.

• • • The rate of speed that we can usefully employ in this attack on impossible social and economic conditions must be determined by business-like procedure. It would be absurd to undertake too many projects at once or to do a patch of work here and another there without finishing the whole of an individual project. Obviously, the government cannot undertake national projects in every one of the 435 Congressional districts, nor even in every one of the 48 states. The magnificent conception of national realism and [fol. 3231] national needs that this Congress has built up has not only set an example of large vision for all time, but has almost consigned to oblivioin our ancient habit of pork barrel legislation: to that we cannot and must not revert. When the next Congress convenes I hope to be able to present to it a carefully considered national plan, covering the development and the human use of our natural resources of land and water over a long period of years.

• • • This seeking for a greater measure of welfare and happiness does not indicate a change in values. It is rather a return to values lost in the course of our economic development and expansion.

Ample scope is left for the exercise of private initiative. In fact, in the process of recovery, I am greatly hoping that repeated promises that private investment and private initiative to relieve the government in the immediate future of much of the burden it has assumed will be fulfilled. We have not imposed undue restrictions upon business. We have not opposed the incentive of reasonable and legitimate private profit. We have sought rather to enable certain

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

aspects of business to regain the confidence of the public. We have sought to put forward the rule of fair play in finance and industry.

[fol. 3232] P. W. 22982

President's Letter Creating The National Power Policy Committee

July 9, 1934.

I wish to establish in the Public Works Administration a Committee to be called the "National Power Policy Committee." Its duty will be to develop a plan for the closer cooperation of the several factors in our electrical power supply—both public and private—whereby national policy in power matters may be unified and electricity be made more broadly available at cheaper rates to industry, to domestic and, particularly, to agricultural consumers.

Several agencies of the government, such as the Federal Power and Trade Commissions, have in process surveys and reports useful in this connection. The Missisippi Valley Committee of Public Works, is making studies of the feasibility of power in connection with water storage, flood control and navigation projects. The War Department and Bureau of Reclamation have under construction great hydroelectric plants. Representative of these agencies have been asked to serve on the committee. It is not to be merely a fact-finding body, but rather one for the development and unification of national power policy.

[fol. 3233] As time goes on there undoubtedly will be legislation on the subject of holding companies and for the regulation of electric current in interstate commerce. This committee should consider what lines should be followed in shaping up this legislation. Since a number of the States have commissions having jurisdiction over intrastate power matters, it is necessary that whatever plan is developed should have regard to the powers of these various State Commissions as well as of the States in general.

It is not though- that it will be necessary to have frequent meetings of the full Committee. An adequate administrative staff will be provided and personal expenses of the members of the Committee in connection with its meetings will be met.

The Committee is to be advisory to the President.

[fol. 3209] COMPLAINANTS' EXHIBIT No. 647 (Excluded)

Power Views of Franklin D. Roosevelt

Compiled November, 1934, for National Power Policy Committee

[fol. 3210] P. W. 22982

Hon. Harold L. Ickes, Chairman, National Power Policy Committee.

SIR:

Submitted herewith is a compilation of extracts from public statements by Franklin D. Roosevelt, as President and as Governor of the State of New York, revealing his views with regard to electric power.

Here, too, are presented excerpts from Federal laws, and documents which disclose the policy of the United States in this regard.

Respectfully, (Signed) Joel David Wolfsohn, Executive Secretary.

Washington, D. C., November 23, 1934.

[fol. 3211]

18. Grand Coulee Dam Speech
13. Holding Company
9. Holding Company—Regulation
23. Ickes (Secretary) Statement of PWA Policy
4. Inaugural Address—F. D. R.—As Governor
25. Johnson Act
6. Judicial Protection for Utilities
16. Legislation Needed
4. Legislature—Duty of
17. Letter Creating Nat'l Power Policy Com.
12. "Looking Forward" by F. D. R.
5. Messages—Jan. 2, 1929
6. " March 12, 1929
7. " Jan. 1, 1930
15. " April 10, 1933
16. " June 8, 1934
6. " St. Lawrence River
15. " Tennessee Valley Authority
23. Municipal Power Plants—PWA Policy
22. National Industrial Recovery Act

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16. National Plan
17. National Power Policy Committee
4. New York State Water Power Policy

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14. "On Our Way" by F. D. R.
5. Ownership of Water Power Sites
23. Policy of PWA on Municipal Plants
8. Portland Speech
18. Power in Home
12. Power Issue
4. Power Policy—New York
31. Power Policy—Reclamation
16. Private Initiative
4. Problem of Water Power
8. Protection of Public Interest
23. Public Works Administration Policy
31. Reclamation Power Policy
9. Regulation—Holding Companies
6. Regulation vs. Contract
18. Speeches—Grand Coulee Dam
4. " Inauguration as Governor
8. " Portland
19. " Tupelo
34. Senate Bill on Reclamation Power Policy
26. Tennessee Valley Authority Act
15. " " Message
28. " " Policy.

[fol. 3213] Inaugural Address of Franklin D. Roosevelt as Governor of New York

January 1, 1929.

State Water Power Policy

I should like to state clearly the outstanding features of the problem itself. First, it is agreed, I think, that the water power of the State should belong to all the people. There was, perhaps, some excuse for careles legislative gift of power sites in the days when it was of no seemingly great importance. There can be no such excuse now. The title to this power must vest forever in the people of this

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

State. No commission, no, not the Legislature itself has any right to give, for any consideration whatever, a single potential kilowatt in virtual perpetuity to any person or corporation whatsoever. The Legislature in this matter is but the trustee of the people, and it is their solemn duty to administer such heritage so as most greatly to benefit the whole people. On this point there can be no dispute.

[fol. 3214] It is also the duty of our legislative bodies to see that this power, which belongs to all the people, is transformed into useable electrical energy and distributed to them at the lowest possible cost. It is our power; and no inordinate profits must be allowed to those who act as the people's agents in bringing this power to their homes and work shops. If we keep these two fundamental facts before us, half of the problem disappears.

I, as your Governor, will insist, and I trust with the support of the whole people, that there be no alienation of our possession of and title to our power sites, and that whatever method of distribution be adopted there can be no possible legal thwarting of the protection of the people themselves from excessive profits on the part of anybody.

P. W. 22982

Message to the Legislature by Governor Roosevelt

January 2, 1929.

* * * On the subject of the development of water power sites, owned in part or in whole by the people of the State, I am convinced of two facts: First, that there is a definite demand for the undertaking of their develop-

[fol. 3215] ment—not several years hence but this year; second, that the title and constant control of the power generated at the sources shall remain definitely in the people and shall not be alienated by long term leases. This is one of those questions on which I hope we can reach an agreement * * *.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

P. W. 22982

Special Message of Governor Roosevelt on St. Lawrence Power Development

March 12, 1929.

In the matter of the actual development of the St. Lawrence power, it is not enough that the ultimate title vest in the State. I hope there will be no difficulty in securing agreement that not only title buy physical possession of the development should at all times vest in direct representatives of the people.

At least of equal importance is the problem of transmission and distribution to the ultimate consumer. A mere development of power at a low production cost is insufficient unless, at the same time we make certain that it is finally distributed to the ultimate consumer at a fair price, under which no individual or corporation, involved in the business of transmitting or distributing, will make more than a [fol. 3216] reasonable profit.

First arises the question of who should do the transmitting and distributing of the power actually generated by representatives of the people of the State. I follow, I think, the opinion of my distinguished predecessor in saying that because of the complications involved, the actual operation of a transmission or a distribution system in this field of activity should, if possible with safety to the people, be undertaken by private enterprise, and that the State should undertake it only if private enterprise proves that it cannot, or will not, successfully carry out the task. * * *

(Referring to the extent to which the Federal Courts had nullified the protection to the consumer originally embodied in public utility regulation, he said:)

That is why in trying to treat this whole problem of development, transmission and distribution of the St. Lawrence power as a complete picture in the interests of the people of the State, I have sought a method by which we could avoid the rate regulating powers of the Public Service Commission, tied up as it is at the present time by Federal Court rulings. I have, therefore, after consultation with many experts on the subject, come to the conclusion that the

representatives or trustees who develop the power can enter [fol. 3217] into contract with transmitting and distributing companies, under which contracts a fair price to the consumer will be guaranteed, this price to make allowances only for a fair return to the companies on the actual capital invested in the transmitting and distributing of this particular power energy. It is a matter frankly based on theory of contract rather than the theory of regulation.

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Annual Message by Governor Roosevelt

January 1, 1930.

At the same time I thought it advisable that the State agency should at least provide the financing of, and retain the fee to, any system of statewide transmission of electricity made necessary by the new power development. As a mere matter of saving in interest rates alone this would reduce the cost of electricity many millions of dollars each year, for the consumer, of course, pays the interest and dividend charges on the project.

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[fol. 3218] Speech of Governor Roosevelt at Portland, Oregon

September 21, 1932.

Protection of the Public Interest

* * * I have strengthened the belief that I have had for a long time, and that I have constantly set forth in my speeches and papers in my work as Governor of the State of New York, that the question of power, of electrical development and distribution is primarily a national problem. * * * As I see it, the object of government is the welfare of the people. The liberty of people to carry on their business should not be abridged unless the larger interest of the many are concerned. The interests of the few must yield. It is the purpose of government to see not only that the legitimate interest of the few are protected but that the welfare and rights of the many are conserved. These

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

are the principles which we must remember in any consideration of this question. This I take it, is sound government—not politics. Those are the essential basic conditions under which government can be of service.

• • • When the great possessions that belong to all of us—that belong to the nation—are at stake, we are not partisans, we are Americans.

[fol. 3219] • • • A false public policy has been spread throughout the land, through the use of every means, from the innocent school teacher down to a certainly less innocent former chairman of the Republican National Committee itself.

• • • Let me make it clear that I have no objection to the method of control through a public service commission. It is in fact, a proper way for the people themselves to protect their interests.

In practice, however, it has in many instances departed from its proper sphere of action and, I may add, from its theory of responsibility.

It is an undoubted and undeniable fact that, in our modern American practice, the public service commissions of many States have often failed to live up to the high purpose for which they were created.

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Protection of the Public Interest

Sept. 21, 1932.

In many instances their selection has been obtained by the public utility corporations themselves. These corporations have often influenced, to the prejudice of the public, the actions of public service commissions.

• • • The regulating commission, my friends, must be a tribune of the people, putting its engineering, accounting, legal resources into the breach for the purpose of getting the facts and doing justice to both the consumers and investors [fol. 3220] in public utilities.

This means positive and active protection of the people against private greed.

• • • But • • • cold figures do not measure the human importance of electric power in our present social

order, Electricity is no longer a luxury—it is a definite necessity. It lights our homes, our places of work and our streets.

• • • The reason that we cannot take advantage of our own possibilities is frankly and definitely because many selfish interests in control of light and power industries have not been sufficiently far-sighted to establish rates low enough to encourage widespread public use. The price you pay for your utility service is a determining factor in your use of it.

• • • True regulation is for the equal benefit of the consumer and the investor, and the only man who will suffer from true regulation is the speculator or the unscrupulous promoter who levies tribute equally from the man who buys the service and from the man who invests his savings in this great industry,

I seek to protect both the consumer and the investor, To that end I propose and advocate now, as I have proposed and advocated heretofore, the following remedies, on the part of the government for the regulation and control of public utilities engaged in the power business and companies [fol. 3221] and corporations relating thereto:

1. Full publicity as to all capital issues of stock, bonds and other securities, liabilities and indebtedness, and capital investment, and frequent information as to gross and net earnings.

2. Publicity on stock ownership of stocks and bonds and other securities, including the stock and other interest of all officers and directors.

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Protection of the Public Interest

Sept. 21, 1932.

3. Publicity with respect to all inter-company contracts, and services and interchange of power.

4. Regulation and control of holding companies by Federal Power commission and same publicity with regard to such holding companies as provided for the operating companies.

5. Cooperation of the Federal power commission with public utilities commissions of the several States, obtaining

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

information and data pertaining to the regulation and control of such public utilities.

6. Regulation and control of the issue of stocks and bonds and other securities on the principal of prudent investment only.

7. Abolishing by law the reproduction cost theory for rate making and establishing in place of it the actual money, [fol. 3222] prudent-investment principle as the basis for rate making.

8. Legislation making it a crime to publish or circulate false or deceptive matter relating to public utilities.

* * * I do not hold with those who advocate government ownership or government operation of all utilities. I state to you categorically that as a broad general rule the development of utilities should remain, with certain exceptions, a function for private initiative and private capital.

* * * I therefore lay down the following principle: That where a community, a city or county or a district is not satisfied with the service rendered or the rates charged by the private utility, it has the undeniable right as one of its functions of government, one of its functions of home rule, to set up, after a fair referendum has been taken, its own governmentally-owned and operated service.

That right has been recognized in most of the States of the union. Its general recognition by every State will hasten the day of better service and lower rates.

* * * State-owned or Federal-owned power sites can and should properly be developed by government itself. When so developed, private capital should be given the first opportunity to transmit and distribute the power on the [fol. 3223] basis of the best service and the lowest rates to give a reasonable profit only.

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Protection of the Public Interest

Sept. 21, 1932.

The right of the Federal Government and State Governments to go further and to transmit and distribute where reasonable and good service is refused by private capital

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

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Speech of President Roosevelt at Grand Coulee, Washington

August 5, 1934.

Sees Power in Every Home

* * * It is going to affect not only the Columbia River Basin, but it is going to affect all mountain States and the Pacific Coast territory, and we are going to see, I believe, [fol. 3234] with our own eyes, electricity and power made so cheap that they will become a standard article of use not only for agriculture and manufacturing, but also for every home within reach of an electric light line.

The experience of those sections of the world that have cheap power proves very conclusively that the cheaper the power the more of it is used—the more of it is used in home and small businesses; and that makes me believe that this low dam which we are undertaking at the present time is going to justify its existence before it is completed by our being able to contact for the sale of practically all of the power it will develop. * * *

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Speech of President Roosevelt at Tupelo, Mississippi

November 18, 1934.

I would not make a speech to you today because we are assembled on this glorious Sunday morning more as neighbors than as anything else.

I have had a very wonderful three days and everywhere that I have gone the good people have come as neighbors to talk with me, and they have not come by the thousands they have come literally by the acres.

[fol. 3235] This is the first time in my life that I have had the privilege of seeing this section of the State of Mississippi. Many, many years ago, when Pat Harrison and I were almost boys, I got acquainted with his stamping ground down on the gulf. Today I am especially glad to come into the northern part of the State.

Two years ago, in 1932, during the campaign, and again in January, 1933, I came through Kentucky—through the

Tennessee Valley—and what I saw on those trips—what I saw of human beings, made the tears come to my eyes. The great outstanding thing to me for these past three days has been the change in the looks of people's faces.

It has not been only a physical thing. It has not been the contrast between what was actually a scarcity of raiment two years ago or a lack of food two years ago—the contrast between that and better clothing and more food today—but it is something in people's faces, and I think you understand what I mean. There wasn't much hope in those days. People were wondering what was going to come to this country. And yet today I see not only hope, but I see determination—knowledge that all is well with the country and that we are coming back.

I suppose that you good people know a great deal more of the efforts that we have been making in regard to the work of the Tennessee Valley Authority than I do, because you [fol. 3236] have seen its application in your counties and your own towns and your own homes, and, therefore, it will be like carrying coals to Newcastle for me to tell you about what has been done.

But perhaps in referring to it I can use you as a text—a text that may be useful to many other parts of the

P. W. 22982

F. D. R. Speech at Tupelo

Nov. 18, 1934.

Nation, because people's eyes are upon you and because what you are doing here is going to be copies in every State in the Union before we get through.

We recognize that there will be a certain amount of—what shall I say?—rugged opposition to this development, but I think we recognize also that the opposition is fading as the weeks and months go by, fading in the light of practical experience.

I cite certain figures for the benefit of the gentlemen of the press, who have come hither from many climes. I am told that from March of this year, when you started using TVA power, the consumption of power for residential purposes has risen from 41,000 kilowatts to 89,000 kilowatts, an increase of 126 per cent. I understand that from the finan-

cial point of view, in spite of various fairy tales that have been spread in other parts of the country, your power sys- [fol. 3237] tem is still paying taxes to the municipality. That is worth remembering. Furthermore, that, as a whole, it is a remarkabel business success.

I talk about those figures first because it has been so often wrongly alleged that this yardstick which we are using could not be applied to private business and because a Government yardstick receives so many favors, that it is left off from paying this and paying that and paying the other thing. Well, we are proving it in this Tennessee Valley that by using good business methods we can instruct a good many business men in the country.

And there is another side of it. I have forgotten the exact figures and I can't find them in the voluminous report at this moment, but them number of new refrigerators that have been put in—that means something besides just plain dollars and cents. That means a greater human happiness.

Electric cookstoves and all the other dozens of things which, when I was in the Navy—we used to call gadgets—are making it possible. All of us working together, to improve human life through the introduction of things that aren't especially new so far as invention is concerned, but things which are becoming more and more necessities in our American life in every part of the country.

[fol. 3238] And I have been interested this morning in seeing these new homesteads—not just the buildings, not just the

land that they are on, not just the excellent landscaping of the trees among which those homes have been set, but especially the opportunities that those homes are giving to families to improve the standard of living.

And finally, my friends, there is one thing about all that you are doing here in Tupelo, that they are doing in Corinth, that they are doing in Athens, and Norris and the various other places where accomplishment can be seen today—aye, the most important thing of all, I think, is that it is

being done by the communities themselves. This is not coming from Washington. It is coming from you. You are not being Federalized. We still believe in the community, and things are going to advance in this country exactly in proportion to the community effort. This is not regimentation—it is community rugged individualism. It means no longer the kind of rugged individualism that allows an individual to do this, that or the other thing that will hurt his neighbors. He is forbidden to do that from now on—and it is a mighty good thing. But he is going to be encouraged in every known way from the National Capitol and the State capital and the county seat to use that individualism in cooperating with his neighbor's indi-
[fol. 3239] vidualism so that he and his neighbors may improve their lot in life.

Yes, I have been thrilled by these three days—thrilled in the knowledge not only of practical accomplishment, but thrilled also in the belief—the deep-seated belief on my part—that the people of this Nation understand what we are trying to do, are cooperating with what we are trying to do and have made up their minds that we are going to do it.

And so, in saying "good bye" to you for a short time—because I am coming back—I ask all of you, throughout the length and breadth of the Tennessee Valley and those areas which form an economic portion of that valley—I ask you all to remember that the responsibility for success lies very largely with you—confident that you are going to give to the Nation an example which will be a benefit not only to yourselves, but to the whole 130,000,000 Americans in every part of the land.

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National Industrial Recovery Act

Public No. 67

1933

Sec. 202. The Administrator, under the direction of the President, shall prepare a comprehensive program of pub-
[fol. 3240] lic works, which shall include among other things the following: * * * (b) conservation and development

of natural resources, including control, utilization and purification of waters, prevention of soil or coastal erosion, development of water power, transmission of electrical energy. * * *

P. W. A. 22982

Press Release of PWA

September 27, 1934.

Achievement in certain instances of the administration purpose of making electric energy more widely available at cheaper rates today lead to a clarification of the policy on power by the Public Works Administration.

Municipal or local publicly owner power projects will be aided by PWA only when, in addition to meeting those qualifications necessary for public works projects, they assure electricity to communities at rates substantially lower than otherwise obtainable under the unchanged basic policy enunciated by Public Works Administrator Ickes.

The statement of Administrator Ickes followed action by some privately owned utilities, which, on reexamination of their condition, found it possible to reduce rates to a point below those proposed by municipal project plants. [fol. 3241] In all allotments made for municipal power plants by the Public Works Administration proposed rates have been well below existing private company rates. Consequently the fact that the companies in some instances have met these proposed municipal rates has been deemed as showing progress toward one of the aims of this phase of the public works program.

In the cases affected Public Works Administration policy will be so administered that municipal plant construction will not be deprived of the possibility of public works support until such time as the local Government feels assured the proposed rate reduction by the existing utility will be in effect on a reasonably permanent basis.

Since the public works program began financing electric plants, where they are socially desirable and where they will be self-liquidating, there have been reductions of rates by private utilities in different localities. The private utilities are becoming increasingly cognizant of the greater use of power resulting from lower rates.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

Administrator Ickes said:

"PWA has endeavored to make electric energy more broadly available at cheaper rates by acting on applications of municipalities for loans and grants to finance municipal [fol. 3242] systems where reasonable security is offered and the project is socially desirable. They are deemed desirable where the loan can be amortized in a reasonable period while charging rates substantially lower than those of the existing utility.

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Press Release of PWA

September 27, 1934.

"However, we make it a practice before approving the loan to give the company an opportunity to put in effect rates at least as low as those at which the municipal system will be self-liquidating. Several utility companies have accepted this opportunity. It is obvious that in such cases it is advantageous to the city and to PWA that the offer be accepted and the applications withdrawn. To make loans and grants to finance projects where the competitor offers rates which are lower than those possible by the city plant, would duplicate facilities without any social betterment and impose on the city a burden which it probably could not meet without resort to taxation.

"Furthermore, in the described situation Public Works will be free to use its funds to better advantage elsewhere. The action of the utility companies referred to supports the [fol. 3243] belief that domestic rates, in certain instances at least, are so high as to be disadvantageous to the company as well as unjust to the consumers. Experience shows that lower rates may produce larger profits particularly where promotional campaigns are conducted and the cost of electrical appliances is made reasonable.

"PWA will cooperate with cities to prevent rates rising on an indication municipal plants may not be built. PWA will not rescind allotments or suggest the withdrawal of applications until the lowered rates are legally in effect.

"State laws authorize municipal competition, hence it is PWA's position that the State has determined that such

competition may be socially desirable. We believe it is for the municipal applicant to determine whether or not it desires to compete with privately owned utilities. It is our policy to consider such applications particularly where franchises are soon to expire, provided the project is self-liquidating at rates lower than those which the existing utility is willing to put into effect."

P. W. 22982

(Public No. 222—73d Congress)

May 14, 1934.

[fol. 3244] Johnson Act

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the first paragraph of section 24 of the Judicial Code, as amended, is amended by adding at the end thereof the following: "Notwithstanding the foregoing provisions of this paragraph, no district court shall have jurisdiction of any suit to enjoin, suspend, or restrain the enforcement, operation, or execution of any order of an administrative board or commission of a State, or any rate-making body of any political subdivision thereof, or to enjoin, suspend, or restrain any action in compliance with any such order, where jurisdiction is based solely upon the ground of diversity of citizenship, or the repugnance of such order to the Constitution of the United States, where such order (1) affects rates chargeable by a public utility, (2) does not interfere with interstate commerce, and (3) has been made after reasonable notice and hearing, and where a plain speedy, and efficient remedy may be had at law or in equity in the courts of such State."

Sec. 2. The provisions of this Act shall not affect suits commenced in the district courts, either originally or by removal, prior to its passage; and all such suits shall be continued, proceedings therein had, appeals therein taken, [fol. 3245] and judgment therein rendered, in the same manner and with the same effect as if this Act had not been passed.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

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Public No. 17

1933

Tennessee Valley Authority

(1) To produce, distribute, and sell electric power, as herein particularly specified • • •

Sec. 10. The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporation-, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens [fol. 3246] or members: Provided, That all contracts made with private companies or individuals for the sale of power, which power is to be resold for a profit, shall contain a provision authorizing the board to cancel said contract upon five years' notice in writing, if the board needs said power to supply the demands of States, counties, or municipalities. In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines the board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable; Provided further, That the board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational

or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region.

Sec. 11. It is hereby declared to be the policy of the Gov-
[fol. 3247] ernment so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties, and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose,

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Public No. 17

to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. • • •

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The Power Policy of the Tennessee Valley Authority

August 25, 1933.

1. The business of generating and distributing electric power is a public business.

[fol. 3248] 2. Private and public interests in the business of power are of different kind and quality and should not be confused.

3. The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail.

4. Where there is a conflict between public interest and private interest in power which can be reconciled without injury to the public interest, such reconciliation should be made.

5. The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant, or setting up a competing plant, as circumstances may dictate.

6. The fact that action by the Authority may have an adverse economic effect upon a privately-owned utility, should be a matter for the serious consideration of the Board in framing and executing its power program. But it is not the determining factor. The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound [fol. 3249] financial policy, and the accomplishment of the social objectives which low cost power makes possible. The Authority cannot decline to take action solely upon the ground that to do so would injure a privately-owned utility.

7. To provide a workable and economic basis of operations, the Authority plans initially to serve certain definite regions and to develop its program in those areas before going outside.

8. The initial areas selected by the Authority may be roughly described as:

(a) The region immediately proximate to the route of the transmission line soon to be constructed by the Au-

thority between Muscle Shoals and the side of Norris Dam.

(b) The region is proximity to Muscle Shoals, including northern Alabama and north-eastern Mississippi.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

(c) The region in the proximity of Norris Dam (the new source of power to be constructed by the Authority on the Clinch River in Northeast Tennessee).

[fol. 3550] At a later stage in the development it is contemplated to include, roughly, the drainage area of the Tennessee River in Kentucky, Alabama, Georgia and North Carolina, and that part of Tennessee which lies east of the west margin of the Tennessee drainage area.

To make the area a workable one and a fair measure of public ownership, it should include several cities of substantial size, (such as Chattanooga and Knoxville), and ultimately, at least one city of more than a quarter million, with transmission distance, such as Birmingham, Memphis, Atlanta, or Louisville.

While it is the Authority's present intention to develop its power program in the above-described territory before considering going outside, the Authority may go outside the area if there are substantial changes in general conditions, facts, or governmental policy, which would necessarily require a change in this policy of regional development, or if the privately-owned utilities in the area do not cooperate in the working out of the program.

Nothing in the procedure here adopted is to be construed in any sense a com-itment against extending the Authority's power operations outside the area selected, if the above conditions or the public interest required. Where special considerations exist, justifying the Authority going outside this initial area, the Authority will receive and consider applica-[fol. 3251] tions based on such special considerations. Among such special considerations would be unreasonably high rates for service, and a failure or absence of public regulation to protect the public interest.

9. Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately-owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

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The Power Policy for the Tenn. Valley Authority

Aug. 25/34.

effort will be made to purchase such facilities from the private utilities on an equitable basis.

10. Accounting should show detail of costs, and permit of comparison of operations with privately-owned plants, to supply a "yardstick" and an incentive to both private and public managers.

11. The accounts and records of the Authority as they pertain to power, will always be open to inspection by the public.

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[fol. 3252] Annual Report of the Commission of Reclamation for 1932

Power Policy

* * * What should be the policy of the Government with relation to the income from these commercial plants built as adjuncts to irrigation development? The position of the bureau is that the profits from these power plants should be applied—

1. To the repayment of the construction cost of the power system.

2. To aid in repayment of the construction cost of the dam or other structure which creates or makes possible the power development.

3. To be covered into the reclamation fund to be used as other moneys in this fund in the construction of additional works.

The reason for this policy is that in every case these works have been wholly built at the cost of the Government. Irrigators under these projects have advanced no part of the money for their construction, and in some part of the recent works have not obligated themselves to pay any part of the

construction. Where they have obligated themselves such payments have not been required because the income from [fol. 3253] the power plant has more than met the repayments on its cost required by the Government. If the income from these power works is to be given to the water users under the projects, it will be made as a gift. The revenue will furnish a perpetual income for which no investment was made and which benefit is not shared by the irrigators on projects where power development is not possible.

The position of the bureau is that these commercial power plants should be the perpetual property of the Federal Government; that after they have been paid for out of power revenues the water users have no further claim on the power plants or their revenues. Because of the fact that the small plants built for construction purposes were turned over to the water users those dwelling under the larger commercial plants insist that they shall also be turned over to them and that they have the revenues to put in their pockets as a perpetual dividend on the investment not made by them but by the Government.

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Power Policy

There is need for a definite policy applicable alike to all future Federal reclamation projects, involving power developments, to control the construction of power plants and related features where needed either to provide cheap power [fol. 3254] for use in construction, for irrigation and drainage purposes, or to produce and dispose of surplus power for commercial and industrial uses, as a means of providing revenues to repay the cost of the power development as well as part of the cost of the irrigation development, thereby relieving the water users of some of the financial burden which otherwise they would have to bear. The policy should also provide for disposition of the power revenues.

The Bureau of Reclamation has taken the position that the power plants which are built with Government funds or which utilize power opportunities created by such expenditures should be the perpetual property of the Federal Government and that the profits resulting therefrom should be used to further the work of reclamation.

COMPLAINANTS' EXHIBIT No. 647 (Excluded)

Some of the more recent appropriation acts for certain projects established a new plan for the disposition of power revenues under which they are applied, first, to the cost of operation and maintenance of the power system, and, second, to the repayment of the cost of the power system and other related works, and after these costs have been repaid then the new power revenues are to go into the reclamation fund. This plan has several advantages over the original plan. It relieves the water users of the obligation to repay [fol. 3255] part of the project costs which are to be repaid out of power receipts. Eventually after the costs of the power systems have been repaid the reclamation fund will receive substantial revenues from power which will enable reclamation work to proceed at a faster rate than would otherwise be possible. Water users on projects having power income and on projects having no power income would be placed on a more nearly equal basis.

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Thirteenth Annual Report of the Federal Power Commission

1933

The Federal Water Power Act represents a declared policy of the Congress to provide for the improvement of navigation and the development of water power through the instrumentality of private and governmental agencies, which, by the act, may be licensed to use, upon prescribed conditions, the water power of streams subject to Federal jurisdiction or to use public lands. These conditions to the granting of such valuable privileges are intended to promote the fundamental conservation purposes of the act through improvement of navigation and development of [fol. 3256] water power, and at the same time to safeguard the public interest by protecting the consumers of the generated power against exorbitant charges.

* * * Pursuant to an Executive order of the President (Executive Order No. 6251, Aug. 19, 1933, under title 11 of the National Industrial Recovery Act), the Commission has undertaken a survey of the water resources of the Nation as they relate to the conservation, development, control, and

utilization of water power and of the relation of water power to other industries and to interstate and foreign commerce. The allocation of necessary funds available under the public works section of the National Industrial Recovery Act for this purpose permits the Commission to make an investigation prescribed by section 4(a) of the Federal Water Power Act, which heretofore has not been possible for lack of necessary funds.

On the basis of this survey the Commission is directed to assist the Federal Emergency Administrator of Public Works in formulating a comprehensive program — public works pertaining to the development of water power and the transmission of electrical energy. Under authority of this Executive order, the Commission has also instituted an investigation of the cost of the transmission of electrical energy in the United States and its distribution to con- [fol. 3257] sumers, this being in harmony with the purpose of Senate Resolution 80, introduced by Senator Costigan. A still further duty imposed by this Executive order upon the Commission is that of investigating and reporting upon applications for loans referred to it by the Federal Emergency Administrator of Public Works for construction of public-works projects involving the development and utilization of electric power. In order to assist in expediting the national recovery program, the Commission has given immediate consideration to such applications in reporting on the engineering and economic aspects of the proposed projects.

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S. 3375, 73d (2d Session) Passed by the Senate Only

June 6, 1934.

AN ACT To provide for the distribution of power revenues on Federal reclamation projects, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any power system hereafter built on Federal reclama- [fol. 3258] tion projects heretofore or hereafter constructed by the United States under the provisions of the Act of June 17, 1902 (32 Stat. 388), and Acts amendatory thereof and supplementary thereto, shall be operated by the United

States as a separate and distinct system, independently of the irrigation system. The construction cost of such power system, including such portion as the Secretary of the Interior may find (his finding to be conclusive) to be proper and equitable of the cost of structures and other facilities provided and used primarily for irrigation purposes but incidentally used in connection with and as a part of said power system, shall be returnable from power revenues and shall not be charged to or repaid, in whole or in part, by the water users of the project. Power furnished from such power system for construction of project features, for operation of project pumping plants, and for any and all project purposes shall be considered a sale and purchase and shall be charged for at such rate as determined by the Secretary of the Interior. Such charge for power furnished for project purposes during the period of construction and operation of the irrigation system by the United States and any rentals or sale of power to water users and their organizations after they have taken over the operation and [fol. 3259] maintenance of the irrigation system shall not be construed as vesting in them any interest in the power system. All revenues realized from the operation of any such power system shall be covered into the reclamation fund and shall not be credited in payment of any obligations payable by the water users of the project or any division thereof.

Sec. 2. That as to reclamation projects now constructed or partially constructed having a power development in operation the cost of which has been charged to the water users who have obligated themselves to repay the same, the water users of the project, or any division thereof, who have assumed such obligation, may, at their option, be placed upon the same basis and become subject to the same conditions as those outlined in section 1 hereof, upon the execution of appropriate contract or contracts therefor satisfactory to the Secretary of the Interior.

P. W. 22982

S. 3375, 73d (2d Session)

Sec. 3. That wherever any power system now in operation, constructed under the provisions of the reclamation

law by and at the expense of the United States, shall be enlarged or new construction work done thereon in the way of betterments or otherwise, such additional construction work shall be upon the same basis and subject to the same conditions as those provided for in section 1 hereof.

[fol. 3260] COMPLAINANTS' EXHIBIT No. 648 (Excluded)

Electric Home and Farm Authority, Inc., Activities Review

Chattanooga, Tennessee, May 20, 1935.

The Electric Home and Farm Authority, a federal agency, was incorporated on January 17, 1934. Its purpose was to increase electricity's usefulness to homes by reducing the costs of electrical services.

Activities and results up to this date may be summarized as follows:

A new plan for financing retail sales of approved electrical appliances, at lowered prices and lowered financing costs has been made available to approximately 375,000 home users of electricity in parts of Tennessee, Alabama, Georgia and Mississippi, and to many more within potential reach of electrical service in that area.

Eleven manufacturers of electric refrigerators, thirteen manufacturers of electric ranges, thirteen manufacturers of electric water heaters and fifteen manufacturers of electric water pumps have joined the Authority's program for marketing low-cost, standard quality appliances at prices and finance costs which made their use economical for families of average means.

[fol. 3261] Eight manufacturers of refrigerators introduced new models designed expressly for the EHFA program and sold at prices which made electric refrigeration a practical possibility for homes which could not afford it before.

The program's effects became national with the announcement that these manufacturers planned to sell the new models throughout the country at the prices effective in the EHFA's immediate territory.

Approximately 300 independent retail dealers, and the retail departments of five power companies, are participat-

ing in the selling of EHFA approved and financed appliances.

A comprehensive educational program has been undertaken. It is intended to help home makers obtain the greatest possible benefits from electricity at the least possible cost.

Sales figures collected by private agencies not connected with EHFA indicated that amid a nation-wide upswing in appliance sales, the sales increases in the area affected immediately by EHFA and TVA exceeded the increases recorded in other sections.

An account of EHFA requires some statement of its official personnel and financial structure, of the conditions which brought it into being, and of the means it is using to develop its program.

The directors of EHFA are Dr. A. E. Morgan, David E. [fol. 3262] Lilienthal, and Dr. H. A. Morgan. Mr. Lilienthal is president of EHFA. Other principal officers are F. J. Carr, treasurer, and George D. Munger, commercial manager.

On April 5, 1935, Electric Home and Farm Authority extended its financing facilities to include the complete line of appliances rather than approved models only. This means that if there is an approved model in the line, EHFA will finance the other models at the standard EHFA financing terms that have heretofore been applicable to approved models only.

As an example to demonstrate the meaning of the new policy, assume Blank Company has received an EHFA approval on its small model refrigerstor, which up to this time is the only model that could be financed through EHFA. Under the new policy of financing the complete line, EHFA will finance the other models of domestic refrigerators that are manufactured by Blank Company. This same policy of course applies to electric ranges, water heaters, and deep and shallow well pumps.

EHFA operated with a capital of one million dollars allocated from funds of the National Industrial Recovery Act, and a credit of ten million dollars from the Reconstruction Finance Corporation. This credit provides capital for EHFA's retail sales financing.

COMPLAINANTS' EXHIBIT No. 648 (Excluded)

EHFA came into being primarily because the high cost of electric power and the high cost of household appliances have been a double barrier to the full use of electricity in homes and on farms. EHFA set out to remove this barrier [fol. 3263] by encouraging the reduction of rates and prices.

EHFA works with and through existing manufacturers, retailers and electric power distributors. EHFA makes no appliances, it does no selling, it is not in the power business. It cooperates with many agencies, private and public, engaged in these activities.

EHFA's financing plan affects the manufacturer, the seller, and the user of electrical appliances.

The plan provides that the buyer of an electric refrigerator, range, water heater, or electric pump sold by an authorized dealer in an authorized locality may pay for the equipment in three years if one appliance is bought, or in four years if two or more appliances are bought. The interest charges, and a small additional charge for bookkeeping and collection costs, are substantially lower than any previously available to buyers of electrical household equipment. These low charges and long terms, in conjunction with the low retail prices required for EHFA approval of an appliance, have materially reduced the costs of electrical appliances in the areas served by TVA and EHFA.

In the EHFA financing areas, the appliances are purchased on low monthly payments, collected by the local utility and billed with the user's monthly light bill. The utility forwards the payments to EHFA. The retailer receives his money immediately after the purchase is com- [fol. 3264] pleted, EHFA buying his paper after the usual manner of commercial financing practice.

EHFA requires that its financing plan may be used only where rates are low enough to justify the full use of electricity by families of moderate income.

At this time it is available in the following territories: The part of Georgia served by the Georgia Power Company and the part of Tennessee served by the Tennessee Electric Power Company. The territory also includes the following independent utilities: Alcoa, Etowah, Lebanon, Cookeville, Dayton, Pulaski, and Franklin in Tennessee; Barnesville and Cartersville in Georgia; Athens in Alabama; Alcorn County, Amory, Tupelo, and New Albany in Mississippi,

and the following counties in northeast Mississippi which are served directly by TVA power: Benton, Tippah, Tishomingo, Prentiss, Pontotoc, Lee, Itawamba, Union, and the northern half of Monroe. Also rural lines in western half of Lauderdale County, Alabama, and rural lines in eastern half of Colbert County, Alabama.

The electrical appliance industry has been linked to the EHFA program from the start. The first move of EHFA was a series of conferences with a special committee of the National Electric Manufacturers Association, and manufacturers have been in close cooperation since. One result was Mr. Lilienthal's announcement of July 28, 1934, that "through action on the part of the manufacturers," low-[fol. 3265] cost refrigerators approved for EHFA financing would be sold nationally at prices effective in EHFA territory.

This announcement was in line with Mr. Lilienthal's repeated statement that "the EHFA program is a consumer program."

The appearance of the EHFA emblem on an appliance means that the appliance was manufactured to quality standards, that it was priced reasonably and that its retail sale can be financed by EHFA in authorized localities.

A comprehensive domestic electric service program is under way, directed by Miss Eloise Davison, director of domestic electric service. One of her first activities was assistance to the University of Tennessee in setting up a modern electric home laboratory, equipped with a full assortment of household appliances consigned by manufacturers, and the offering of courses in home electrification as part of the home economics curriculum.

Cooperation is being given other universities and colleges in providing up-to-date instruction in the home uses of electricity.

Electric Home and Farm Authority maintains central offices at Chattanooga, Tennessee, using for this purpose the Old Post office and Federal Building.

[fol. 3266] COMPLAINANTS' EXHIBIT No. 649

Contract No. TVHU-8A

EHFA 2A.

To Tennessee Valley Authority, Knoxville, Tennessee.

GENTLEMEN:

Under a contract made effective as of the 1st day of July 1934 you agreed with the Electric Home and Farm Authority, Inc., in its individual corporate capacity, hereinafter called "Authority", and with the Electric Home and Farm Authority, Inc., in its capacity as Trustee under a trust deed executed in May, 1934, hereinafter called "Trustee," to receive as the agent of the Authority and/or Trustee, as those terms were defined in the aforesaid agreement, "customer paper" received by retailers through the sale of "approved appliances."

It is now the wish of certain of the retailers operating under the Electric Home and Farm Authority plan that the Authority and/or Trustee directly, or operating through its agents, undertake to purchase deferred payment paper received by said retailers through the sale of electrical appliances other than "approved appliances." Authority and Trustee have indicated to said retailers a willingness [fol. 3267] to purchase such deferred payment paper on the condition that said paper shall be subject to all the terms, conditions, obligations, and warranties which attach to the form, offer, sale, recording payment, assignment, or repurchase of "customer paper," as that term is defined in the Retailers Application and Repurchase Agreement and in the above mentioned contract with you.

To carry out this extended financing plan the Electric Home and Farm Authority, Inc. wishes to extend the agency powers granted to you under the above mentioned contract of July 1, 1934 in such manner that your company will undertake to receive as agent for Authority and/or Trustee, deferred payment paper received by the retailers through the sale of an appliance other than an "approved appliance" in the same manner as you now receive "customer paper" from said retailers.

To perform this service the Authority offers to pay you the same consideration for each item of deferred payment paper purchased hereunder for the account of the Author-

ity as it now pays you for each item of "customer paper" in accordance with Article 18 of the existing agency contract of July 1, 1934.

Any deferred payment paper purchased by you in behalf of the Authority hereunder shall be subject to the same terms and conditions, and you will be subject to the same responsibilities for said deferred payment paper, as now [fol. 3268] exist with reference to "customer paper" under the aforesaid contract with you.

If you are willing to accept this offer and to act as the agent of the Electric Home and Farm Authority, Inc., in the extended financing plan above set forth, indicate your acceptance by the signature of your duly authorized officers in the places provided for herein and this offer shall thereupon become a binding contract effective as of the 1st day of July, 1934.

Electric Home and Farm Authority, Inc., (Signed) by David E. Lilienthal. W.C.F., Jr., Legal Division. Electric Home and Farm Authority, Inc., Trustee under a Trust Deed Executed in May, 1934, to Secure an Issue of Notes to Aggregate Not in Excess of Ten Million ($10,000,000) Dollars, (Signed) by David E. Lilienthal. (Seal.)

Attest: (Signed) Charles E. Hoffman, Asst. Secretary.

Accepted this — day of ——, 19—.

Tennessee Valley Authority (Signed) by Arthur E. Morgan, Chairman. (Seal.)

Attest: (Signed) Charles E Hoffman, Asst. Secretary.

[fol. 3269] COMPLAINANTS' EXHIBIT No. 650 (Excluded)

Electric Home and Farm Authority—Its plan for financing the retail purchase of electrical appliances:

Revised March 1937—Electric Home and Farm Authority.

This circular describes the time payment plan of Electric Home and Farm Authority for financing the retail purchase of electrical appliances.

Among the principal objectives of this program, in addition to offering a beneficial and necessary service to the

users of electricity, is to lessen the burdens in the home and to increase efficiency on the farm, through the greater use of electricity. The beneficial effects of this program are felt not only by the actual consumers of electricity but also by the producers and distributors of electric power as well as manufacturers of and dealers in electrical appliances.

Electric utilities and appliance manufacturers participating in this plan realize that the way to increase appliance sales and the use of electricity is to provide a plan which makes their use feasible and economical. The utilities cooperating with Electric Home and Farm Authority are selling electricity at rates which make the use of appliances economical.

Electric Home and Farm Authority is not a manufacturing or a merchandising organization. It is interested in making the benefits of electricity more generally available through the greater use of electricity consuming appliances. It seeks to bring about cooperation among the electrical utilities and electric appliance manufacturers and the dealers with the view of accomplishing the widespread purchase and use of electricity and electric appliances.

How the Plan Operates

Utilities.—The program may be extended only to those areas where the rates for electricity are such as to make feasible the purchase and use of electrical appliances by families of average income. The plan is available to the customers of those publicly owned and privately owned electric utilities who enter into an agreement with Electric Home and Farm Authority. This agreement provides that the utility, as agent for the Authority, shall collect monthly installments on appliances finances through Electric Home and Farm Authority. The utility is reimbursed for this service. In addition, the agreement may provide for the utility to purchase for Electric Home and Farm Authority, customer contracts that are presented to it by authorized dealers; that is, dealers may present their retail customer sales contracts to the utility and receive cash immediately for the unpaid balance of the contracts. The funds so advanced to dealers are repaid to the utility by Electric Home and Farm Authority.

COMPLAINANTS' EXHIBIT No. 650 (Excluded)

[fol. 3270] If, for any reason, arrangements cannot be made for the utility to advance funds to the dealer, an agreement may be made whereby the customer contracts will be forwarded directly to Electric Home and Farm Authority. In these cases Electric Home and Farm Authority pays directly to the dealer the cash selling price of the appliance, minus the down payment and the utility collects the installments due.

Manufacturers.—All electrical appliances eligible for financing under this plan must be first approved by Electric Home and Farm Authority. A large number of manufacturers have received Electric Home and Farm Authority approvals on their products. Other manufacturers whose products have not been approved for financing, but who desire to participate in the plan, are invited to communicate with Electric Home and Farm Authority, Washington, D. C., and submit their products for consideration. The appliances which have been approved for financing up to this time are as follows:

Refrigerators, Ranges, Water Heaters, Water Pumps, Domestic Clothes Washers, Domestic Clothes Ironers, Cream Separators, Portable and permanent Motors, Dishwashers, Waste Disposal Units, Radios, Domestic Clothes Driers, Vacuum Cleaners, Bottle Coolers, Milk Coolers, Milking Machines.

Dealers.—Dealers wishing to obtain approval under the plan will submit an application in triplicate directly to Electric Home and Farm Authority, Washington, D. C. Application forms for this purpose may be secured from the Electric Home and Farm Authority offices or from the nearest cooperating utility. The dealer will be informed of the action on his application as a retailer under the plan at the earliest possible date. With their application retailers will sign the standard form of Electric Home and Farm Authority contract by which the retailer agrees to buy back, upon default, purchaser contracts sold by him to the Authority for a price equal to the unpaid balance less unearned discount on each contract repurchased.

Approved dealers may obtain without charge purchaser contract forms and time payment charts by Application to Electric Home and Farm Authority. These forms and

charts may be obtained also from the nearest cooperating utility.

Electric Home and Farm Authority will not buy any purchaser's contract unless it is on the Authority's forms and unless the contracts comply with the latest Electric Home and Farm Authority chart of time payments.

The contract periods applicable to the appliances listed heretofore are as follows:

1. Water heaters, milk coolers, water pumps, cream separators, ranges, home and farm motors, refrigerators, domestic clothes ironers and driers—purchased individually—36 months maximum.

2. Combinations of any two or more appliances listed in No. 1—48 months maximum.

[fol. 3271] 3. Clothes washers or vacuum cleaners purchased individually or combined on one contract—24 months maximum.

4. Clothes washer or vacuum cleaner purchased with any one appliance listed in No. 1—36 months maximum.

5. Clothes washer or vacuum cleaner purchased with any two appliances in No. 1—48 months maximum.

6. Dishwashers—18 months maximum.

7. Waste disposal units—12 months maximum.

8. Bottle coolers—24 months maximum.

9. Milking machines—30 months maximum.

10. Radios (priced at $100 or less)—12 months maximum. Radios (priced at over $100) 18 months maximum.

The minimum unpaid balance (retail price less down payment) of any contract financed through Electric Home and Farm Authority is $40: The down payment on any contract must be at least 5 per cent, except the down payment on bottle coolers, milking machines, and radios, on which it shall be at least 10 per cent.

Consumers.—The routine of purchasing an approved electrical appliance and financing it under the Electric Home and Farm Authority plan is not unlike purchasing many

COMPLAINANTS' EXHIBIT No. 650 (Excluded)

other commodities on a plan of deferred payments. The customer, after selecting the approved appliances desired from a dealer participating in the program, merely makes an initial payment of 5 per cent or more of the cash retail price and executes an Electric Home and Farm Authority conditional sale contract. Monthly installments are payable to the utility at the same time the electric service bills are due. These payments are credited to the customer's account and forwarded to Electric Home and Farm Authority.

Utility companies, department stores, electrical equipment shops, dealers, and others who are in the business of retailing electrical appliances and serving the customers of a cooperating utility, may apply for an authorization to participate in this program.

Any additional information that may be required can be secured from Electric Home and Farm Authority, Washington, D. C.

[fol. 3272] COMPLAINANTS' EXHIBIT No. 651 (Excluded)

Circular No. 1, Electric Home & Farm Authority—Its Plan For Financing The Retail Purchase Of Electrical Appliances, May 1936.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 650.

[fol. 3273] COMPLAINANTS' EXHIBIT No. 652 (Excluded)

(Omitted)

[fol. 3274] COMPLAINANTS' EXHIBIT No. 653 (Excluded)

Finance Plan of Electric Home and Farm Authority, Inc.

Electric Home and Farm Authority—The Program

This pamphlet describes the time payment plan of Electric Home and Farm Authority, Inc. (EHFA) for the purchase of electric appliances. The plan provides lower rates, smaller down payments and longer terms than previously have been available.

COMPLAINANTS' EXHIBIT No. 653 (Excluded)

The full program involves an utterly new approach to the whole problem of distribution and financing of electric appliances and the adjustment of rates for electricity. The major objective is a lessening of the burdens in the home and an increased efficiency on the farm through the greater use of electricity.

One of the first functions of the EHFA has been to convince electric utilities and appliance manufacturers that the way to increase appliance sales and the use of electricity is to reduce appliance prices and electric rates below prevailing levels, depending upon volume to bring a satisfactory profit to both.

As another function of the program, EHFA has undertaken, through educational work throughout the territory of its operations, to increase the demand for electric appliances and to bring about a greater usefulness of electricity for the householder and the farmer.

[fol. 3275] Utilities co-operating with EHFA have so adjusted electric rates as to make the use of appliances economical. These utilities have further indicated their willingness to assist in collecting installments on appliance sales at a low cost.

The program does not favor any manufacturer. All established manufacturers, operating in conformity with NRA, who wish to and who can meet provisions as to quality and price, may participate. It does not favor any utility. All utilities, publicly and privately-owned, in the territory who are willing to meet requirements as to rates and who are willing to undertake the obligations involved, are urged to participate.

It is equally open to all dealers. All dealers able to meet the necessary requirements will be eligible to participate. Every dealer is on the same footing as every other dealer and every utility merchandise department. Electric appliances will continue to be distributed through existing channels.

EHFA is not a manufacturing or a merchandising organization. It is interested only in promoting and financing sales of electric appliances to make electricity more generally available. It seeks to bring about cooperation among the electrical utilities and electric appliance manu-

[fol. 3276] facturers and the dealers as to rates and prices

with a view to accomplishing the widespread purchase and use of appliances at fair profits to all.

To best accomplish the purpose of this plan, complete co-operation must be had among:

Consumers,
Retailers,
Manufacturers,
Utilities.

The EHFA Time Purchase Plan

Electric Home and Farm Authority has approved certain electric appliances, manufactured to a standard of specifications established by the Authority, and will from time to time approve the products of other manufacturers who qualify. The manufacturers are authorized to place on these products the emblem of the Authority. EHFA will finance time payment sales of emblem appliances, as well as other models of domestic appliances where the manufacturers have an approved model of the same type in their line, and through retailers who have been approved under the Authority's plan. This means that a manufacturer who has an approved refrigerator in his line may have the sales of other domestic models of refrigerators which he manu- [fol. 3277] factures financed through EHFA. This same policy applies to all appliances approved by the Authority.

Retailers wishing to obtain approval under the plan will apply direct to EHFA. The dealer will be informed of his approval as a retailer under the plan at the earliest possible date. With their application, retailers will sign the standard form of EHFA contract by which the retailer agrees to buy back, upon default, purchaser contracts sold by him to the Authority.

Because of the unusual advantages offered it will be necessary to remove dealers from approved lists if they fail to comply within ten days after a request by the Authority to repurchase a contract.

EHFA has made arrangements with a group of electric utilities by which these utilities will co-operate under the plan. Since purchasers desiring to take advantage of the finance plan will be billed along with their monthly electric bill, the finance program will be limited to sales to pur-

chasers served by electric utilities cooperating in the program.

Approved dealers may obtain without charge purchaser contract forms and Time Payment Charts by application to EHFA. These forms and charts may be obtained also from the nearest co-operating utility.

EHFA will not buy any purchaser's contract unless it is [fol. 3278] on the Authority's forms and unless the contracts comply with the latest EHFA chart of time-payments.

The purchaser's contract period must be 36 months or less on one appliance, 48 months or less on more than one appliance. The down payment on each contract must meet requirements set out in the Official Time Payment Chart. The monthly payment must be not less than $2.00.

Purchaser contracts will be presented by the retailer to the utility, which will forward them to EHFA. The utility is authorized in most cases to pay the retailer immediately for contracts so tendered. In other cases, the utility is required by EHFA regulations to forward the purchaser's contracts to the Authority before making payment to the retailer.

A retailer may elect to carry his own EHFA paper but if he sells any such paper to EHFA he will be required to offer to EHFA all EHFA paper thereafter taken by him until he has given 30 days notice that he intends to carry his own EHFA paper. A retailer will not be permitted to sell any EHFA paper to anyone else unless each contract is first offered to EHFA.

EHFA will not generally record installment contracts. Retailer may record contracts for his own protection.

EHFA may call on the retailer to repurchase a contract prior to the time provided in the retailer's contract with [fol. 3279] EHFA. Retailer will not, without consent of EHFA, repossess any appliance until he has repurchased the contract from the Authority. Retailer's cooperation will be expected in collecting accounts which are not paid after the sending of the first notice to purchaser.

Approved retailers will be permitted to use the EHFA insignia in advertising, subject to the Authority's rules and regulations.

EHFA is co-operating with retailers, manufacturers and distributors, through education and demonstrations or such

other means as deemed advisable, to promote the wide distribution of electric appliances.

Retailers are urged to apply direct to EHFA for any information or assistance they may need in operating under the EHFA plan.

How to Operate under the EHFA Plan

1. Make application for approval on EHFA application form (either direct or through distributor or utility).

2. Upon notice of approval from EHFA, obtain from utility or EHFA (at no cost to you) purchaser contract forms and EHFA Time Payment Charts. Contracts on other than Authority forms will not be accepted.

3. Negotiate your sale, obtaining as large a down pay-
[fol. 3280] ment as possible. (See Official Time Payment Chart as to requirements of minimum down payment). Follow carefully instructions in filling out purchaser contract forms. Only forms completely and properly filled out will be accepted.

4. Purchaser's credit statement must be filled out in full. Send in any other information on purchaser which leads you to believe purchaser a good credit risk. It is recommended that delivery be withheld until full information is obtained and you are confident that purchaser is acceptable. You may make inquiry of utility for any credit information it may have available.

5. Make sure that purchaser is using electric service of a utility which is co-operating under the EHFA plan and that the appliance is to be installed in a residence for domestic use.

6. Make sure that the time balance conforms with the EHFA rate chart; that the contract term is not over 36 months if for one appliance, or 48 months if for two or more; that the monthly installment is at least $2.00 on each contract; and that the down payment meets the requirements stated in the Official Time Payment Chart.

7. When you are sure of acceptability, get signature of purchaser on contract, making certain that the purchaser

COMPLAINANTS' EXHIBIT No. 653 (Excluded)

[fol. 3281] understands fully the terms of the contract, and deliver the appliance.

8. Forward promptly the executed contract in duplicate, properly assigned by you, to the office of the utility where the purchaser's bill for electric service is payable.

9. If you have any reason at any time to feel that action against the purchaser is necessary to save Electric Home and Farm Authority or yourself from loss under this plan, please communicate promptly with utility and with the Authority.

10. Retailers are to report monthly to EHFA their sales for the previous month, on forms supplied by EHFA, and such other reports or information as may be required from time to time.

This pamphlet is explanatory only and nothing herein contained shall impose any obligation of any nature whatsoever upon the Electric Home and Farm Authority, Inc.

EHFA Press and Publications.

Form 113 Revised April 5, 1935.

[fol. 3282] COMPLAINANTS' EXHIBIT No. 654 (Excluded)

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 653.

[fol. 3283] COMPLAINANTS' EXHIBIT No. 655 (Excluded)

TVA—Electricity for All

"A Realization for all the people of the benefits electricity brings—in lightening their burdens, in increasing their incomes, in making for a richer and better life."

Look at the towers of a great transmission line. There goes electricity in large quantities • • • through woods, across fields, over the distant hillsides.

COMPLAINANTS' EXHIBIT No. 655 (Excluded)

Formerly only a small portion of the power carried in such a line entered private homes. The home owner used very little current * * * he was content if he had electric lights and a few small appliances * * * a toaster, a fan, an electric iron.

Today electricity in large quantities is going into homes. Not just electricity for lights and a few small appliances, but electricity in large enough quantities—and at low enough rates—to do heavy work.

That power in a great transmission line will cook food * * * heat and pump water * * * freeze ice. Well-cooked food, firm butter, cool milk, health, comfort, and cleanliness for you and your children * * * and all at the turn of a switch * * * this is the promise of cheap electricity for every American family.

This little booklet will tell you how your Government, through Electric Home and Farm Authority, is trying to bring you the full benefits of low-cost electricity.

By order of the President of the United States in December, 1933, a new kind of governmental agency was created. It is known as Electric Home and Farm Authority. Its directors are the directors of the Tennessee Valley Authority, and it is allied in spirit and policy with that great national undertaking in the Tennessee River basin.

The certificate of incorporation summarizes the objectives of Electric Home and Farm Authority. The agency was established, "to advance the general economic welfare of the nation" by developing and fostering and increased use of electric power through the double reduction of the cost of electricity to the consumer and the cost of electric appliances.

Electric Home and Farm Authority has obtained agreements from the principal electric equipment manufacturers of the country by which standard quality appliances are now manufactured for you at very low prices.

These appliances bear the emblem carried on the cover of this booklet. They are sold as other electric merchandise is sold through existing dealers who have made contracts with EHFA. Sale of emblem appliances is restricted [fol. 3284] to communities served by electric utilities which

in co-operating with the Authority have lowered their rates for current.

They are financed on term payments through the EHFA finance plan, which permits purchase of a single appliance over a period of three years or less. The interest rate on the unpaid balance of the cash-sales price is low. The down payment and monthly payment vary, but they cannot be less than $2 down nor less than $2 a month.

On an appliance, the emblem means that the product has been manufactured to quality standards set by EHFA, that it is priced reasonably, and that it can be financed by EHFA. Emblem appliances now are electric refrigerators, ranges and water heaters. These appliances are on sale in the area of the Tennessee Valley.

Should you desire to purchase an emblem appliance you would go to your regular — or retailer and select it. You would then sign a purchase contract and make your down payment.

The unpaid balance, including the finance charges, will be divided into equal monthly installments and collected, by the electric company which served you with electricity, at the same time you pay your light bill. The payments you make will be turned over to EHFA by the electric company.

Electric Home and Farm Authority will maintain several display rooms and conduct demonstrations of the uses of electricity in the home and on the farm. But it will not sell or distribute appliances.

In order to be sure that the use of equipment such as electric ranges, refrigerators and water heaters is feasible for householders and farmers of average income, Electric Home and Farm Authority must have a rate agreement with the utility serving the area before it will finance the emblem appliances.

The Authority must approve the domestic and farm electric rates as being sufficiently low to warrant a wider use of house appliances. As the use of appliances increases and there is a much greater consumption of electricity in the home and on the farm, further rate reductions may become possible.

A wider use of electricity will mean that a great natural resource becomes a servant in your home.

COMPLAINANTS' EXHIBIT No. 655 (Excluded)

Thus there are two major objectives of Electric Home and Farm Authority:

One—standard quality appliances reasonably priced;

Two—low electric rates for home and farm.

[fol. 3285] There is a third objective for which this emblem stands. That is a wider use of electricity through use of all electric appliances—those which bear the emblem on an appliance does not mean that it is not a part of this program of electrification.

By purchase of refrigerators, ranges and water heaters which bear the emblem, families of average income may enjoy the full benefits of electricity. For other families larger sizes and different types may be more suitable.

"Electricity for All."

That slogan, appearing on the emblem sums up the aim of Electric Home and Farm Authority.

Fulfillment of this aim is possible only by:

—obtaining reductions in electric rates through agreements with utilities, publicly and privately owned, so as to make the use of efficient, low-priced electrical equipment feasible for the householder or farmer of low or average income.

—By assisting in financing the consumer in the purchase of this equipment.

—By engaging in educational work in the use of appliances, and research to further lower the manufacturing costs of electrical equipment, and to still better adapt it to the needs of the average home and farm.

—By encouraging and stimulating the production of new and better designs in appliances.

—By assisting the manufacturers in their tests for quality and performance so that both makers and purchasers always will be assured that the approved appliances represent the best values manufacturers can produce at the prices asked.

Any question you may have about this program and how it can benefit you, will be gladly answered by your electric dealer. Or you may address your inquiries to Electric Home and Farm Authority, Chattanooga, Tennessee.

[fol. 3286] COMPLAINANTS' EXHIBIT No. 656 (Excluded)

Electric Home and Farm Authority, Washington
June 14, 1937

Territories in Which EHFA Financing Facilities Are Available

1. Municipally Owned Systems:

Athens, Alabama
Florence, Alabama
*Muscle Shoals, Alabama
Sheffield, Alabama
Tuscumbia, Alabama
Burbank, California
Los Angeles, California
Jacksonville, Florida
Barnesville, Georgia
Cartersville, Georgia
Dalton, Georgia
*Elberton, Georgia
Fitzgerald, Georgia
Griffin, Georgia
*LaFayette, Georgia
Mairetta, Georgia
Springfield, Illinois
Crawfordsville, Indiana
Fort Wayne, Indiana
Frankfort, Indiana
Goshen, Indiana

Lansing, Michigan
Amory, Mississippi
Greenwood, Mississippi
Holly Springs, Mississippi
New Albany, Mississippi
(Including rural lines in Tippah, Benton and Uunion Cos., Mississippi)
Okolona, Mississippi
Oxford, Mississippi
Tupelo, Mississippi
*Fairbury, Nebraska
Orrville, Ohio
Bolivar, Tennessee
Cookeville, Tennessee
*Covington, Tennessee
Dayton, Tennessee
Dickson, Tennessee
Ducktown, Tennessee
Dyersburg, Tennessee
Lebanon, Tennessee

[fol. 3287]

Rensselaer, Indiana
Richmond, Indiana
Kansas City, Kansas

Milan, Tennessee
Pulaski, Tennessee
Somerville, Tennessee

2. Privately Owned Systems:

Hartford Electric Light Co.
Hartford, Connecticut
Georgia Power Co.
Atlanta, Georgia
Suburban Electric Corp.
Dunlap, Illinois
Elizabeth Lt. & Pr. Co.
Galena, Illinois
Interstate Lt. & Pr. Co. of Delaware

Iowa Electric Light & Pr. Co.
Cedar Rapids, Iowa
Minneapolis General Electric Co.
Minneapolis, Minnesota
Northern States Power Co. of Minn.
Minneapolis, Minnesota
Northern States Power Co. of N. J.
Minneapolis, Minnesota
St. Croix Falls Minnesota Improvement Co.

* Indicates additions to list since previous announcement.

COMPLAINANTS' EXHIBIT No. 656 (Excluded)

Electric Home and Farm Authority, Washington—June 14, 1937—Territories in Which EHFA Financing Facilities Are Available—Continued

2. Privately Owned Systems:

Galena, Illinois	Minneapolis, Minnesota
Interstate Lt. & Pr. Co.	Western Wisconsin
of Wisconsin	Power Co.
Galena, Illinois	Minneapolis, Minnesota
Indiana Service Corporation	Elkhorn Valley Power Co.
Fort Wayne, Indiana	Scribner, Nebraska
Etowah Water & Light Co.	Midland Public Service Co.
Etowah, Tennessee	Eau Claire, Wisconsin
Franklin Pr. & Lt. Co.	Northern States Pr. Co.
Franklin, Tennessee	of Wisconsin, Eau Claire
Knoxville, Power Co.	Wisconsin
Alcoa, Tennessee	St. Croix Falls, Wisconsin
Tennessee Electric Power Co.	Improvement Co., St. Croix
Chattanooga, Tennessee	Falls, Wisconsin

[fol. 3288] 3. Electric Power Associations & Cooperatives:

Cullman County Elec. Membership Corp.	Booneville, Mississippi
Cullman, Alabama	Alcorn County Elec. Power Assn.
Imperial Irrigation District	Corinth, Mississippi
Imperial, California	Tishomingo County Elec. Power Assn.
*Grand Valley Rural Power Lines, Inc.	Iuka, Mississippi
Grand Junction, Colorado	Pontotoc County Elec. Power Assn.
North Georgia Elec. Membership Corp.	Pontotoc, Mississippi
Dalton, Georgia	Tomgibgee Elec. Power Assn.
*The Troup County Rural Electrification Corp.,	Tupelo, Miss. (Lee & Itawamba Counties, Mississippi)
LaGrange, Georgia	Eastern Nebraska Public Power
*Toombs County Rural Electrification Association, Lyons,	District, Lincoln, Nebraska
Georgia	
Whitley County Rural Elec	Pickwick Electric Membership
Membership Corp., Columbia	Corp. Adamsville, Tenn.
City, Indiana	(Chester, McNairy and Hardin
Prentiss County Elec. Power Assn.	Counties, Miss.)

* Indicates additions to list since previous announcement.

COMPLAINANTS' EXHIBIT No. 656 (Excluded)

Electric Home and Farm Authority, Washington—June 14, 1937—Territories in Which EHFA Financing Facilities Are Available—Continued

3. Electric Power Associations & Cooperatives:—Continued

*Huntington County Rural Electric Membership Corporation Huntington, Indiana

Boone County Rural Elec Membership Corp., Lebanon Indiana

*Shelby County Rural Electric Membership Corporation, Shelbyville, Indiana

*The Menard Electric Cooperative Petersburg, Illinois

Eastern Iowa Light & Power Corp. Davenport, Iowa

Pioneer Rural Elec Cooperative Inc., Piqua, Ohio (Incorporating Shelby, Miami and Champaign Counties)

Southwest Tennessee Elec Membership Corp., Brownsville, Tennessee.

Meigs County Elec Membership Corp., Decatur, Tennessee

Middle Tennessee Elec Membership Corp., Murfreesboro, Tennessee

Duck River Electric Membership Corp., Shelbyville, Tennessee.

Gibson County Elec Membership Corp., Trenton, Tennessee

Farmers Rural Utilities Inc. Bowling Green, Virginia

Columbus Rural Electric Cooperative, Columbus, Wisconsin

[fol. 3289] Lorain-Medina Rural Elec Corperative Inc., Wellington, Ohio

Monroe County Elec Power Association Amory, Mississippi

Richland Cooperative Elec., Assn Richland Center, Wisconsin

4. Rural electric lines in Lauderdale, Colbert, Franklin, Lawrence, Limestone and Morgan Counties, Alabama.

5. Pickwick Landing) Dam) Chickamauga Dam) Employees of TVA residing in these locations may finance the purchase of appliancesthrough EHFA over a maximum period of twenty-four months from February 7, 1936.

6. Guntersville Dam) Employees of TVA residing in this location may finance the purchase of appliancesthrough EHFA over a maximum period of twenty-four months from March 18, 1936.

* Indicates additions to list since previous announcement.

COMPLAINANTS' EXHIBIT No. 656 (Excluded)

The time limitations notes in paragraphs 5 and 6 are due to the temporary nature of the work being done by a large number of the employees in these areas.

* Additions to this List:

Electric Power Associations & Cooperatives
Colquitt County Rural Electric Co.
Moultrie, Georgia
Carroll Rural Electric Association,
Carrollton, Georgia
Joe Wheeler Electric Membership Corporation
Hartselle, Alabama
Meeker Cooperative Light & Power Association,
Litchfield, Minnesota

[fol. 3290] COMPLAINANTS' EXHIBIT No. 657 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. G. D. Munger, Commercial Manager, EHFA. Chattanooga, Tenn.
From: Guy W. Thaxton, Division Engineer, Tupelo, Miss.
Date: Sept. 14, 1934.
Subject: Utilization of Traveling Kitchen as Load Builder.

This will acknowledge receipt of your letter of the 11th on this subject. In view of the many suggestions incorporated therein, and the fact that the program is already under way and making progress, I will discuss these things with you when I am in Chattanooga next week.

Guy W. Thaxton.

GWT/mi.
EHFA. Received Sept. 15, 1934. Central Files.

[fol. 3291] COMPLAINANTS' EXHIBIT No. 658 (Excluded)

Mr. Guy W. Thaxton, TVA, Tupelo.
G. D. Munger, Commercial Manager, EHFA.

September 11, 1934.

Utilization of Traveling Kitchen as Loan Builder

As a result of Miss Davison's inspection of the first traveling kitchen demonstration at Booneville, certain rec-

ommendations were made to me for the effective utilization of this project as a load builder. I have transmitted these recommendations to Mr. Sullivan who asks me, because his time is so taken up at this period, to forward the suggestions to you.

Miss Davison reported that there was a very enthusiastic turn-out at Booneville, over 300 people attending the three demonstrations—although dealers had maintained that not more than 150 or so could be expected. The visitors asked many questions and appeared to be keenly interested in the talk of Miss Frow, the demonstrator.

Each visitor to the Booneville demonstration made out a card giving name and address and what appliances the visitor was interested in. I am herewith transmitting to you the cards for the first two Booneville demonstrations. These people should be followed up at once. A rough calculation shows that if all the appliances which are noted on these [fol. 3292] cards were put into service, load in this one small area would be increased by 120,000 kwh a year.

Miss Davison believes that a home economics agent should be detached from present duties in your area so as to act as an advance agent for the visits of this kitchen in each town on the route. The duties of this agent would be to organize local groups, such as the P-T-A and the women's clubs, back of the project. If the president of the women's club and a leader of the P-T-A were to act as hostesses for the kitchen demonstration, it is felt that an even more cordial reception would be given the work. The advance agent should call on such leaders immediately in advance of the visit of the kitchen and visit the county and home demonstration agents if such persons are located in the town and endeavor to mass all such support solidly behind the project.

Many of the women who attended the Booneville demonstration reported themselves as owning electric equipment which was out of service for one reason or another. I believe it would be worth while to assign on — to check on unused equipment immediately after each demonstration. If only a small part of this unused equipment is brought back into service, there will be an appreciable effect upon load.

COMPLAINANTS' EXHIBIT No. 658 (Excluded)

EHFA. Received Sep. 11, 1934, Central Files.

[fol. 3293] I believe that this kitchen project can be made to return immediate results in load if the above suggestions are followed out. Both Mr. Rogers and Mr. Dorsey have carried out preliminary contacts in a satisfactory manner, but it is perhaps advisable now that actual demonstrations are under way to attempt to engage dealers more fully in the program. I suggest that an Electric Home Representative be on the ground at the time of each demonstration to further dealer cooperation in the program.

We are going to attach another demonstrator to the project as an assistant to Miss Frow. This will be Miss Wilson, who will be transferred from her present duties in Alabama. The plan as it stands is to visit two towns a week, with a day's interval usually falling on Wednesday of each week to allow for moving the kitchen to the next location. Two demonstrations a day will be held in each town, a typical schedule being as follows:

Morning of first day—Demonstration for High School Home Economics class.
Afternoon—General Demonstration.
Morning of second day—Demonstration for colored cooks.
Afternoon—General Demonstration.

We hope to be able to finish each week's work with a Saturday stand at a county seat where the kitchen can be [fol. 3294] visited by rural people as an exhibit, but without actual demonstrations being conducted.

I am attaching the revised itinerary for the truck up to September 22. The itinerary for the week of September 24 to 29 Mr. Dorsey promises to furnish us within the next few days. During the week of October 1 to 6 the kitchen will be on the fair ground at Tupelo. I shall be obliged if you will transmit this schedule to the home economics agent suggested above as advance worker so that she can visit the towns on the route at proper intervals before the kitchen arrives. The schedule will also enable you to follow up on service work and, in general, should permit you to tie this project in thoroughly as an effective load builder for the Mississippi territory.

COMPLAINANTS' EXHIBIT No. 658 (Excluded)

A program of this sort has consistently brought returns to utility companies. If we make aggressive use of this program, beginning at once, I am sure we can secure very satisfactory results for our efforts in terms of added load on the Mississippi system before the end of the year.

G. D. Munger.

[fol. 3295] COMPLAINANTS' EXHIBIT No. 659 (Excluded)

Mr. A. H. Sullivan, Assistant Chief Electrical Engineer.
G. D. Munger, Commercial Manager, EHFA.

September 7, 1934.

Recommendations for Effective Use of Traveling Kitchen as Load Builder in TVA Territory.

Miss Davison has reported that there was a very enthusiastic and marked response to the traveling electric kitchen project during its first showing at Booneville, Mississippi. She believes the program can be made to show immediate returns to the Mississippi area in terms of load if the project is properly tied in with local interests and with the operation as a whole.

It is recommended that a home demonstration agent be detached from present duties in Mississippi and transferred to the kitchen project as an advance organizer of local groups in each town on the schedule of the kitchen. The duties of this person would be to organize key people in towns visited behind the kitchen. Such persons would be the president of the local women's club and the president of the Parent-Teachers Association, as backers of the program and to induce such persons to act as hostesses at the demonstration. Such local backing can be made to have an immediate effect in load.

It is further recommended that a service man be assigned to follow up the program of the kitchen so as to check on [fol. 3296] unused home electric equipment. Miss Davison reports a large amount of equipment out of service in towns in area to be visited by the truck. She feels that a service

follow-up in connection with the interest aroused by the visit of the kitchen would bring much of this unused equipment back into line. This activity will assist in building load.

It is recommended that the local field representatives continue their calls on dealers in the towns to be visited, but with a more intensive effort to draw dealer customers to the demonstration.

We propose to add a second demonstrator to the project so that the demonstrations themselves may be carried through more intensively. Two-day stands will be the rule for each town visited. On the morning of the first day the high school economics class will visit the kitchen; in the afternoon the general demonstration to the public will be held. On the morning of the second day a class will be held for colored cooks; in the afternoon, the second public demonstration. The duties of the advance home demonstration agent would be organizing these showings so thoroughly behind local leaders that not one opportunity is overlooked in each town visited for drawing all possible attention to home electrification. It is proposed in addition to hold one evening meeting in each town to which men might come and, if possible, to end each week's work with a Saturday stand at a county seat.

[fol. 3297] The drawing power of the truck has proved itself and should be effectively capitalized in relation to load.

At each demonstration registration cards listing appliances in which visitors are interested are filled out. This is a detailed record. Immediately after the truck leaves the town, an aggressive canvass should be made on items noted on the cards, and to interest people further in the purchase of load building appliances.

If the program outlined above is followed through in an active way and beginning at once, I feel that this project will return results which will be definitely measurable for the territory involved before the first of the year.

G. D. Munger.

EHFA. Received Sep. 7, 1934, Central Files.

[fol. 3298] COMPLAINANTS' EXHIBIT No. 660 (Excluded)

Mr. Guy W. Thaxton, Division Engineer, Tupelo.
W. I. Nichols, Administrative Assistant, Chattanooga.
March 1, 1935.

Merchandise Sales

I attach herewith copy of a letter sent today to Mr. Warner in regard to the Pontotoc County Electric Power Association. After some delay, I have been requested to consult with the division engineers in regard to plans for future activity and I am planning to be in Mississippi next week. At that time I hope that it will be possible to get your ideas on future organization and activities. In the meanwhile, I am very anxious to get the suggestions and ideas of the field staff and if it meets with your approval, I would appreciate it very much if you would ask them to express their ideas along the lines of the attached memorandum.

I am enclosing six copies and I would appreciate it very much if you could distribute them to Messrs. Warner, Halsey, Bridges and Ludeman, Mrs. Tandy and Miss Frow, and ask them to forward their suggestions to me in Chattanooga by March 12.

W. I. Nichols.

WIN:mld.
EHFA. Received March 21, 1935, Central Files.

[fol. 3299] COMPLAINANTS' EXHIBIT No. 661 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. Henry D. Brite, Asst. to Commercial Manager, Chattanooga.
From: H. A. Warner, TVA, Tupelo.
Date: February 27, 1935.
Subject: Pontotoc County Electric Power Association.

As you may know already this Association has been organized and set up and will take charge of all electric dis-

COMPLAINANTS' EXHIBIT No. 661 (Excluded)

tribution in its territory on March 1st. Its relation with us will be similar in every way to those of the A. C. E. Power Association, with the exception that the Pontotoc Association plans to merchandise electrical appliances to its members.

We are desirous of signing up this Association on the stand- form of EHFA Utility Contract, and very much desire to have a supply of these contracts sent to us for handling this matter with them. If you will assist us in this matter by securing them and forwarding them to us it will be appreciated.

H. A. Warner.

HAW/rp.

EHFA. Received Mar. 21, 1935, Central Files.

[fol. 3300] COMPLAINANTS' EXHIBIT No. 662 (Excluded)

Mr. H. A. Warner, TVA, Tupelo, Mississippi.

Henry D. Brite.

February 28, 1935.

I have referred your memorandum of February 27 to Mr. W. I. Nichols, who has recently been appointed to the Electricity Division and who will handle some of the work in TVA territory that was formerly handled by EHFA.

Mr. Nichols is planning to be in northeastern Mississippi the early part of next week and has told me today that he is desirous of discussing the Pontotoc situation with you and others. For this reason, I am enclosing copies of the utility agreement only because, as before stated, Mr. Nichols desires to discuss the merchandising question with you.

Henry D. Brite.

HDB:DH.
Enclosure.

EHFA. Received Mar. 11, 1935, Central Files.

[fol. 3301] COMPLAINANTS' EXHIBIT No. 663 (Excluded)

Mr. H. A. Warner, Commercial Field Superintendent, Tupelo.
W. I. Nichols, Administrative Assistant.

March 1, 1935.

Pontotoc County Electric Power Association

Mr. Bright has just referred to me your letter of February 27 in regard to the Pontotoc County Electric Power Association. The proposed merchandise activity of the County Association raised certain questions of policy on which I am anxious to have your opinion and Mr. Munger has asked me to go into this matter with you. At the request of Mr. Evans, I am planning to be in the Mississippi area next week and at that time I hope we can meet and go over the situation together.

W. I. Nichols.

WIN: mld.

cc: H. F. Bright, Guy W. Thaxton.

EHFA. Received Mar. 1, 1935, Central Files.

[fol. 3302] COMPLAINANTS' EXHIBIT No. 664 (Excluded)

Mr. Guy W. Thaxton, % TVA, Tupelo, Miss.
Mr. G. D. Munger, Electric Home & Farm Authority, Knoxville, Tenn.

April 30, 1934.

Mr. Brite has informed me that you wanted me to come to Tupelo relative to the site for the new store, and to assist in putting the men to work.

There are several matters here in Knoxville which require my personal attention, such as the time payment contracts, instructions to dealers, instructions to manufacturers and etc. As soon as these plans have been worked out, and the forms have been printed, Mr. Carr and I intend to come to Tupelo in order to explain them to the salesmen and the dealers. I expect that this will be the first of next week.

COMPLAINANTS' EXHIBIT No. 664 (Excluded)

In connection with the celebration which we were discussing Mr. Lilienthal feels that he would be able to come to Tupelo perhaps on Thursday, May 24th, and thinks that probably this celebration could be postponed until that week. This would not mean that our representatives could not start work before that time.

You will be interested to know that the three directors are to speak over a national hook-up on May 22nd. I do not know yet at just what time this will be. Each one of [fol. 3303] them is to have six minutes. It is Mr. Lilienthal's id-a to make considerable mention of the Tupelo project, and I thought that it could be capatalized by having loud speakers placed in prominent locations and used as part of the program during this celebration week. If we could get the city to promote this celebration week, I believe it would react to our benefit rather than for the T. V. A. to sponsor it. I believe that these are details which we can work out at our next meeting.

G. D. Munger.

GDM/HDB/neh.

[fol. 3304] COMPLAINANTS' EXHIBIT No. 665 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. G. D. Munger, Chattanooga.
From: Guy W. Thaxton, Tupelo.
Date: May 9, 1934.

Subject: ——.

Mr. Wank the architect, was here yesterday and I was very much disappointed in the information which he gave as to the prospects of being able to arrange this place so that the opening could be held as scheduled.

In a telephone conversation with Mr. Evans this morning, I reported this fact and he and I agreed that we would go ahead and open on the 21, regardless of everything. He told me that it would be necessary to stick to that date now, as Mr. Lillienthal had arranged to be with us on the 25th.

COMPLAINANTS' EXHIBIT No. 665 (Excluded)

Since everything which is to be done to the building will have to be done by us here on the ground, I suggest that you come here at once, prepared to stay long enough to help me arrive at definite conclusions as to what should be done.

Guy W. Thaxton, Division Engineer.

GWT:k.

[fol. 3305] COMPLAINANTS' EXHIBIT No. 666 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. George D. Munger, E. H. & F, A., Knoxville.
From: Guy W. Thaxton, Tupelo.
Date: May 1, 1934.
Subject: Exhibition and Demonstration.

In connection with our program to be put on during the week beginning May 14, I have several points to bring to your attention.

In order to boost the attendance and keep up the interest throughout the entire week, I think it would be well for us to give a prize each day for the four days when demonstrations will be given, viz: Tuesday, Wednesday, Thursday and Friday.

I have asked Mrs. Tandy to prepare a four-day program containing a demonstration of one hour to one and a half hour's duration, each of these four afternoons. I think it would be well for us to award a prize each afternoon.

Another point is in connection with kitchen utensils. In order to hold this mass demonstration and to do some of [fol. 3306] the other work which our specialists will be called upon to do, it will be necessary for us to have a complete set of kitchen utensils put up in some kind of a kit, so as to be readily transportable. If you will tell me how to handle this purchase, I will have Mrs. Tandy work up a list of items needed and will enter the requisition therefor immediately so that everything will be on hand when needed.

COMPLAINANTS' EXHIBIT No. 666 (Excluded

In connection with this work, it is going to be necessary to have a maid to assist Mrs. Tandy while the demonstrations are under way. I am planning to handle this on emergency employment basis.

Guy W. Thaxton, Division Engineer.

GWT:k.

[fol. 3307] COMPLAINANTS' EXHIBIT No. 667 (Excluded)

May 24, 1934.

Mr. Roland A. Wank, Tennessee Valley Authority, Knoxville, Tenn.

DEAR MR. WANK:

I would like to tell you how much we appreciate the work of Mr. Stanley Reese in helping us last week in the preparation of the Tupelo display center.

Mr. Reese's assistance was extremely valuable, not alone in supervision of construction but in many details as well in connection with placing the contract and handling labor on the job. He secured cooperation from all of the men engaged for the work. As construction proceeded day and night the factor of cooperation became extremely important. I feel it is only justice to Mr. Reese to say that without him the job could not have been finished in so short a time nor so well.

Also we would like to extend our thanks to you and the other members of your staff at Knoxville who assisted in drawing the plans.

The display center is very attractive and I am sure will be a credit in the Northern Mississippi region to the two authorities.

Very truly yours, Electric Home and Farm Authority, by W. B. Phillips.

P:j.

[fol. 3308] COMPLAINANTS' EXHIBIT No. 668 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. G. D. Munger, Electric Home and Farm Authority, Knoxville.
From: Guy W. Thaxton, Tupelo, Mississippi.
Date: May 3, 1934.
Subject: ——.

With reference to your letter of April 30, as I explained to you over the telephone, I regret very much to see this opening celebration of ours postponed another week. However, if you people there think best to postpone it, it will be all right with me. It really does give me a little difficulty in finding something for the Electric Home and Farm Authority specialists to do.

Today and tomorrow, I am putting them through the Home Lighting School, which is being conducted by the representatives of the Westinghouse Lamp Company and from which I expect that they will secure a great deal of valuable information to better equip them to perform their duties as Electric Home Specialists, exponents of the art of living electrically.

I am having the names of the customers here taken from the tabulation of the survey which was made, and divided into lists to be used by the Electric Home and Farm Authority Specialists. Mrs. Tandy will be started immediately [fol. 3309] after the end of our lighting school, on the job of contacting and helping the present owners of electric ranges. Mrs. Bradley will campaign here.

The men will be provided with the lists which we are preparing and will be started out Monday morning on a definite program of beginning to contact the people, in spite of the fact that the dealers here do not as yet have stocks of TVA appliances and we have not yet given the dealers or the people the answers to the questions which they are asking with regard to the financing plan.

If you think we should further delay this work, please let me know immediately upon receipt of this letter.

I trust that you will let nothing prevent you from making the trip down here at the earliest possible moment, and in

COMPLAINANTS' EXHIBIT No. 668 (Excluded)

the meantime, I am awaiting the coming of Mr. Wank, the architect, so as to make some final negotiations with the people from whom we expect to rent offices.

Guy W. Thaxton, Division Engineer.

GWT:k.

[fol. 3310] COMPLAINANTS' EXHIBIT No. 669 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. G. D. Munger, Commercial Manager, EHFA, Chattanooga.

From: H. A. Warner, Tupelo.

Date: November 3, 1934.

Subject: EH&FA Financing for Rural Customers.

Many present and prospective customers living along rural lines receive the bulk of their annual cash income at one time each year, usually in the fall when harvested crops are sold. This contrasts sharply with urban customers whose incomes are received monthly and often weekly.

It is believed that a financing plan that would best fit into the rural customers' needs would be worth while. We would like to offer for consideration a suggested plan as follows:

The rural customer purchases on a 36 months Conditional Sale Contract making a down payment equal to the minimum specified Down Payment plus the monthly payments for the first twelve-months period of the contract. One year later the purchaser pays in one lump sum the monthly payments for the second twelve-months period. Two years later the purchaser pays in one lump sum the monthly payments for the third twelve-months period. When the third [fol. 3311] and final payment is made the amount can be adjusted to compensate purchaser for the unearned finance charges incident to completion of contract before expiration date.

This suggested plan would appear to satisfy the following conditions:

Meet the financial condition of the rural customer; Split the total cost into three annual payments, each approxi-

COMPLAINANTS' EXHIBIT No. 669 (Excluded)

mately one-third of the total; Provide a very satisfactory cash, or down payment; Avoid any past due monthly payments; The dealer's position as to credit and endorsement is not affected.

This suggestion in effect obtains a much larger down payment than usual and leaves an approximate two-thirds of contract price as the Unpaid Balance although the Contract would indicate that some 96% of cash delivered price is the unpaid balance. This would appear to be necessary in order to avoid showing any monthly payments as being in arrears. The rural purchaser is slightly penalized under this plan to the extent that he has paid twelve monthly payments in advance instead of paying each as it became due each succeeding month. We do not think it a strong argument against the plan.

We appreciate that there may be other factors with which we are not familiar which may indicate the necessity of modifications or disapproval. The objective is our prime interest.

H. A. Warner.

EHFA. Received Nov. 12, 1934, Central Files.

[fol. 3312] COMPLAINANTS' EXHIBIT No. 670 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: W. B. Phillips, Chattanooga, Tennessee.
From: J. Van Rogers, Tupelo, Mississippi.
Date: August 16, 1934.
Subject: Travelling Demonstration Kitchen.

Replying to your memorandum of August 12, and your request for information on this subject, dated July 26, I am attaching a list of towns and date set-up for demonstration of this truck, along with comments and reactions of the different county agents with whom I have discussed this matter.

From day to day I will send you additional schedules as they are completed.

COMPLAINANTS' EXHIBIT No. 670 (Excluded)

You will note that I have scheduled September 4 as the opening date, as September 3 is Labor Day and we feel that it would not be a very good day to hold a demonstration.

The locations of cooking schools on the attached list have been obtained without any cost to the TVA.

J. Van Rogers.

JVR/wal.

EHFA. Received Apr. 27, 1935, Central Files.

[fol. 3313] Travelling Demonstration Kitchen, Mississippi Division

Date of Demonstration: September 4-5-6.

Number of Days: 3.

Town: Booneville, Mississippi.

County: Prentiss.

Location of Demonstration: Community House, Seating Capacity 350.

Number of Customers: 316.

Newspapers and Publishing Dates: Banner, Thursday; Independent, Friday.

Dealers: M. A. Brown Plumbing & Electric Supply Co., Booneville Hardware Co., Milton Motor Company, E. M. Hale Company.

County Agent: Clifford G. Wallace, Booneville.

Home Economics Teacher: Mabel Cunningham, Booneville.

Remarks: Telephone Directory is attached.

Misses Lipsey and Cunningham stated that they would give their whole hearted support to the venture.

Booneville is proud of the fact that it is first to receive a visit from the truck. The newspapers wish to give as much publicity as possible as soon as they are given definite dates. They are awaiting your confirmation of the above dates.

Dealers expressed great enthusiasm and are willing to give 100% co-operation.

[fol. 3314] Date of Demonstration: September 7.

Number of Days: 1.

COMPLAINANTS' EXHIBIT No. 670 (Excluded)

Travelling Demonstration Kitchen, Mississippi Division—Continued

Town: Wheeler, Mississippi.
County: Prentiss.
Location of Demonstration: Wheeler High School Building, Seating Capacity 300.
Number of Customers: 18.
Newspapers and Publishing Dates: Baldwyn Home Journal, Thursday.
Dealers: Served by dealers from Baldwin.
County Agent: Clifford G. Wallace, Booneville.
Home Demonstration Agent: Johnnie Lipsey, Booneville.
Home Economics Teacher: None.
Remarks: Miss Lipsey and Mr. Wallace agreed to arrange their schedules so as to be of assistance in this work.
Newspapers and dealers in Baldwyn will co-operate to give this community a- good coverage and advertisement as possible.

[fol. 3315] Date of Demonstration: September 10-11.
Number of Days: 2.
Town: Baldwyn, Mississippi.
County: Lee.
Location of Demonstration: McWorter Building, Seating Capacity 300.
Number of Customers: 140.
Newspapers and Publishing Dates: Baldwyn Home Journal, Thursday.
Dealers: Prather Auto Company.
County Agent: W. C. Inzer, Tupelo, Miss.
Home Demonstration Agent: Hallie Prather, Tupelo, Miss.
Home Economics Teacher: None.
Remarks: Prather, of Prather Auto Company was very enthusiastic about project, and will offer any assistance needed.
Miss Prather, Lee County Home Demonstration Agent, and Mr. Inzer agree to co-operate with the venture in the various towns in Lee County.

[fol. 3316] Date of Demonstration: September 12.
Number of Days: 1.
Town: Guntown, Mississippi.

COMPLAINANTS' EXHIBIT No. 670 (Excluded)

Travelling Demonstration Kitchen, Mississippi Division—Continued

County: Lee.

Location of Demonstration: Luther Waters Store Building, Seating Capacity 100.

Number of Customers: 41.

Newspaper and Publishing Dates: Covered by Baldwyn and Tupelo papers.

Dealers: Served by dealers from Baldwyn and Tupelo.

County Agent: W. C. Inzer, Tupelo, Miss.

Home Demonstration Agent: Hallie Prather, Tupelo, Miss.

Home Economics Teacher: None.

Remarks: County Agents, Miss Prather and Mr. Inzer agree to cooperate with the demonstration at this place.

Dealers and agents in Tupelo and Baldwyn will aid in spreading news of the event.

Telephone Directory attached.

[fol. 3317] COMPLAINANTS' EXHIBIT No. 671 (Excluded)

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Complainants' Exhibit No. 670.

[fol. 3318] COMPLAINANTS' EXHIBIT No. 672 (Excluded)

Mr. Guy Thaxton, TVA, Tupelo.
W. B. Phillips, Chattanoga.

August 13, 1934.

Itinerary for Traveling Kitchen

We are becoming a little bit anxious about the itinerary for the traveling kitchen. Will you kindly let us know or ask Mr. Rogers to let us know what progress has been made in working out the route for the truck.

The truck is going to be ready to go on the road without fail Monday, September 3. The demonstrator has been employed and all preparations at this end are well in hand. Please let us know what has been accomplished at your end.

W. B. Phillips.

EHFA. Received Aug. 13, 1934, Central Files.

[fol. 3319] COMPLAINANTS' EXHIBIT No. 673 (Excluded)

Mr. Guy Thaxton, Tupelo, Miss.
W. B. Phillips.

July 26, 1934.

Travelling Demonstration Kitchen

I believe it is going to be possible to get the travelling demonstration kitchen on the road in your district during the week beginning August 13.

Attached herewith you will find a tentative itinerary for the work over a two months period which Mr. Osborne has prepared as a result of his discussions with you and Mr. Rogers last week. This itinerary is tentative only and its final form is dependent upon such definite arrangements only *and its final form is dependent upon such definite arrangements* as can be made in each of the towns scheduled. We would very much like to have Mr. Rogers go over this route beginning Monday of next week so that we can be certain by the 13th of a final itinerary for the truck.

You will note that on each weekly schedule, so far as our information allows, we have placed the names of the county agent, the home demonstration agent and the home economist teachers, as well as the names of dealers. We believe it would be well for Mr. Rogers to make initial contacts with each one of these persons to inform them of the visit [fol. 3320] of the truck and to tell them as definitely as he is able, though subject to a possible revision, when the demonstration kitchen will reach the town noted. We will want to engage home economics teachers and county and home demonstration agents very fully in this work. Miss Davison will follow up Mr. Rogers' initial visits to these people with personal letters.

We would like a report from Mr. Rogers on this itinerary with some definite comment as to locations for displaying the kitchen and as to cooperation from dealers and others, in our hands not later than August 8, as we will need a few days before the truck goes on the road to send out our advance information to consumers.

While our consumer list for your territory is fairly complete, we think it would be advisable to have in addition the telephone directory for each town on the route of the demonstration. If Mr. Rogers will secure these direc-

tories as he goes along and forward them to us with his report, they will prove helpful in circularizing advance material.

A sufficient length of time before the arrival of the truck in each town on the route, we will see that local newspapers in the neighborhood are supplied with stories and photographs. We will also see that dealers in each of the towns are supplied with window cards and other material announcing the day and location in the town of the kitchen. The posters and window cards will have a blank space which [fol. 3321] can be filled in showing the location of the kitchen and the time the demonstration will be held in each town. Mr. Rogers' report should allow us to schedule this material accurately.

Mr. Thaxton, W. B. Phillips, July 26, 1934

Travelling Demonstration Kitchen—2

In speaking to dealers of the visit of the kitchen to their towns Mr. Rogers should be careful not to present the idea as a definite tie-in on the part of EHFA, for sales. The demonstrator will keep records of attendance on individual registration cards which will be forwarded to the division office after each demonstration for follow-up by Electric Home Representatives. The kitchen will carry an L. & H. Range, Cleveland water heater, and Kelvinator chest-type and Frigidaire front-opening refrigerators. It will be obviously impossible to tie-in all manufacturers and dealers by products. But all dealers should be encouraged to work with the kitchen and should be assured that demonstrations will be carried out with impartiality and in a strict spirit of fairness.

The itinerary which accompanies this memorandum is dependent upon available facilities for display as uncovered by Mr. Rogers. He should make his report to us complete enough for the itinerary to be drawn up in definite and final [fol. 3322] form before the truck starts on the road.

The project is so drawn as to allow a small sum of money for rentals on empty store buildings, et cetera, although we would of course prefer to hold the demonstrations in schools or other public places. Where schools and other places of the sort are not available, Mr. Rogers should make

COMPLAINANTS' EXHIBIT No. 673 (Excluded)

arrangements for renting suitable space. Where we have to rent space, we would like to get by for as little as possible and without formal agreements. The demonstrator will settle for the amount at the time the kitchen visits the town. She will also settle for the local labor which the project allows the truck driver as assistance in putting up the kitchen. Rentals should average not more than $5.00 a stand. Dealers should be helpful in finding free space, although dealers' stores, I think you will agree with me, are unsuitable as locations for demonstrations of this type.

Mr. Osborne tells me that you will want your own men to make the electrical connections for the demonstration in each town along the route. I think this is a good idea, but to be sure that the appliances will work properly, we are going to send Mr. Pierson along with the demonstration for the first week; he will be able to make all necessary adjustments and to instruct the truck driver in care of the appliances.

The itinerary attached does not show the actual dates [fol. 3323] when the demonstration will be held in each town. Mr. Rogers' report should supply this information. We ought also to have the addresses of the locations he will arrange for in each town along the route.

Mr. Guy Thaxton, W. B. Phillips, July 26, 1934

Travelling Demonstration Kitchen—3

It is a rather large order to cover the entire ground in the short time remaining before the 8th. If Mr. Rogers can give us a definite schedule for the first two weeks, it will be sufficient; subsequently he can complete the itinerary over the two months period.

W. B. Phillips.

WBP:ikm.

EHFA. Received Jul. 27, 1934, Central Files.

[fol. 3324] COMPLAINANTS' EXHIBIT No. 674 (Excluded)

(Omitted)

[fol. 3325] COMPLAINANTS' EXHIBIT No. 675 (Excluded)

Mr. George W. Kable.
G. D. Munger.

October 30, 1934.

Your memo 10/25 to Mr. H. J. C. Pearson.

Your memorandum of October 25, addressed to Mr. Pearson relative to approval of equipment, has been received and Mr. Pearson has asked me to answer certain questions in it.

The news release which you saw relative to financing other than TVA models was approximately as follows: In territory served by TVA power EHFA will finance all domestic models of a manufacturer having a TVA model in his line. You will see that this confines this particular feature to the Mississippi territory at the present time and will be extended to northern Alabama and Knoxville when the transfer is made to TVA of those properties. This policy if flexible and can be changed should it prove to be desirable, for example, while it will apply to ranges, refrigerators, and water heaters it might not apply on some future appliances if the risk involved would not justify it.

In requesting the Industry Division to test pumps for approval by TVA we had in mind to see that they measured [fol. 3326] up to our specifications and that their performance would justify their inclusion in our program. In other words, this testing would be very similar to that which was carried out on water heaters. I believe that we should be constantly seeking ways to lower the cost of high-quality appliances. However, our specifications should be so written that a consumer buying too small a pump for the job it has to do would not place the blame on TVA because it had approved the appliance. If there is any way in which your division can cooperate with us in this matter we would appreciate it.

For your information you will be interested to know that I am today advising the pump manufacturers that we are rejecting their proposals and inviting them to submit new proposals either on the same equipment at a lower price or no new equipment. In view of the contribution which TVA is willing to make towards the popularizing of electric pumps in securing low energy cost and low finance cost it

COMPLAINANTS' EXHIBIT No. 675 (Excluded)

seems to me that the pump manufacturers should be willing to contribute something in the line of price reductions.

G. D. Munger.

EHFA. Received Oct. 31, 1934, Central Files.

[fol. 3327] COMPLAINANTS' EXHIBIT No. 676 (Excluded)

Tennessee Valley Authority

Office Memorandum

To: Mr. H. J. C. Pearson, EHFA, Chattanooga, Tennessee.

From: George W. Kable.

Date: October 25, 1934.

Subject: EHFA Approval of Equipment Other Than TVA Models.

A week or more ago I saw a brief news release to the effect that a company had submitted and received approval of a TVA model refrigerator, and that EHFA financing was to be extended to other models of refrigerators made by the same company.

A representative of the Dayton Pump Company was in the office today and wished to know whether this policy would extend to pumps, and if so to what extent it would apply.

This bring- up another point on which I think it would be well for us to have some discussion. It is obvious that our specifications cannot cover all types and sizes of water systems which might be desirable for use in this area. I have in mind particularly some of the lower cost pumps which are being placed on the market just now in order to increase the sales of equipment during this period of low income. This includes shorter stroke, higher speed, deep well pumps of lighter construction that we have specified, [fol. 3328] and designed for use on wells where the water level is only 20′ to 50′ deep, below the section lift of a shallow well pump. There is also the possibility for a considerable demand for the lower cost shallow well pumps of the fresh water type, particularly in suburban communities where the demand for water is relatively low.

COMPLAINANTS' EXHIBIT No. 676 (Excluded)

Some of the companies are interested in pushing these pumps at present, and there is a question whether we should draw up additional specifications to include these in the near future or whether the Industry Division might investigate this equipment from the standpoint of research on lower cost pumps. Our attitude in regard to this problem will be dependent on whether our division is to function merely as a testing agency for determining whether pumps submitted measure up to our specifications, or whether we are to cooperate with EHFA in the future in deciding upon what equipment shall be accepted for EHFA financing.

George W. Kable.

GWK/aw.

EHFA. Received Oct. 31, 1934, Central Files.

[fol. 3329] COMPLAINANTS' EXHIBIT No. 677 (Excluded)

Mr. A. J. Robertson, General Accountant, TVA, Knoxville.
William A. Weaver, Assistant Treasurer, EHFA, Chattanooga.

May 1, 1935.

Contract No. TVHu-8

At the present time there is a contract existing between the Tennessee Valley Authority and the Electric Home and Farm Authority, which contract is numbered TVHu-8 and is dated the first day of July, 1934.

This contract has designated the Tennessee Valley Authority to receive, as agent for Electric Home and Farm Authority, customer paper received from retailers for the sale of approved appliances.

Since April 5 you have been receiving and purchasing for our account paper on appliances other than the so called approved appliances referred to above.

Submitted to you herewith is an amendment to contract TVHu-8, this amendment being known as TVHu-8A. This amendment is being submitted to you in triplicate. Will you please have these copies signed by the individuals who [fol. 3330] signed the original contract, and return them

COMPLAINANTS' EXHIBIT No. 677 (Excluded)

to us. At that time we shall complete the contract by having the proper authorities sign same, and shall return a copy to you for your file.

William A. Weaver.

WAW:fp
Enclosure

EHFA. Received Jun. 12, 1935, Central Files.

[fol. 3331] COMPLAINANTS' EXHIBIT No. 678 (Excluded)

F. F. Beauchamp, Wilson Dam; E. W. Baughman, P. O. Box 110, Athens.
G. D. Munger.

August 28, 1934.

This is to advise that the finance plan which is effective in Tupelo can be applied to Athens immediately. In other words sales of large models of ranges, water heaters and refrigerators may be financed by the Authority if the manufacturer has an approved model in his line. This is to be effective immediately.

G. D. Munger.

cc—Mr. A. H. Sullivan.

EHFA. Received Aug. 29, 1934, Central Files.

[fol. 3332] COMPLAINANTS' EXHIBIT No. 679 (Excluded)

Mr. F. J. Carr.
Mr. G. D. Munger.
Mr. W. A. Weaver.
Mr. H. J. C. Pearson.

August 29, 1934.

New Policy

Effective immediately, in the territory described below, the Electric Home and Farm Authority is extending its

financing facilities to include models of electric appliances other than those actually bearing the TVA emblem of approval.

This additional financing service is available on domestic electric ranges, refrigerators, and water heaters where the manufacturer has an approval on one model of the range or refrigerator or water heater being sold. As an example, the Malleable Iron Range Company have an EHFA approval on their Monarch model 15-G domestic range. Up to the present time the model 15-G is the only model in their line of ranges that has been eligible for EHFA financing. Under the new policy all domestic electric ranges manufactured by the Malleable Iron Range Company are eligible for EHFA financing. However, commercial and industrial appliances or equipment are not included in this additional financing service; nor does this mean that the TVA emblem can be carried on any model other than the approved model. [fol. 3333] The territory in which this additional financing service is available is the territory which is supplied with electricity by the Tennessee Valley Authority. The enclosed map and list of cities and communities will indicate that this territory is at present confined to the northeastern area of Mississippi and the City of Athens, Alabama. However, it is expected that the designated area in northwestern Alabama and northeastern Tennessee will be eligible for the additional financing service as soon as negotiations now being conducted are completed.

A copy of this letter and enclosure is being sent to all manufacturers having an EHFA approval in their line, and to all dealers in the northeastern Mississippi territory and Athens, Alabama, which is the territory effected immediately

Very truly yours, Electric Home and Farm Authority, Inc., by G. D. Munger, Commercial Manager.

Enclosures

EHFA. Received Sep. 4, 1934, Central Files.

(Here follow two photolithographs, side folios 3334-3335)

COMPLAINANTS' EXHIBIT No. 680 (Excluded)

Mr G.D Munger

ELECTRIC HOME AND FARM AUTHORITY, INC.
AN AGENCY OF THE TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE

DAVID E. LILIENTHAL, PRESIDENT
ARTHUR E. MORGAN, VICE PRESIDENT
HARCOURT A. MORGAN, SECRETARY
FRANK J. CARR, TREASURER
WILLIAM A. SUTHERLAND, COUNSEL
GEORGE D. MUNGER, COMMERCIAL MANAGER

April 3, 1935

To All Cooperating Utilities, Dealers, Distributors, and Manufacturers:

Effective April 5, 1935, Electric Home and Farm Authority will extend its financing facilities to include the complete line of appliances rather than approved models only. This means that if there is an approved model in the line, EHFA will finance the other models at the standard EHFA financing terms that have heretofore been applicable to approved models only.

In order to preclude the possibility of misunderstanding or confusion, the following is an example of the correct interpretation of this new policy:

Assume Blank Company has received an EHFA approval on its small model refrigerator, which up to this time is the only model that could be financed through EHFA. Under the new policy of financing the complete line, which is effective April 5, EHFA will finance the other models of domestic refrigerators that are manufactured by Blank Company. This same policy of course applies to electric ranges, water heaters, and deep and shallow well pumps.

The territory in which this service will be available is restricted to the area in which EHFA is operating at the present time and is described in detail on the attached sheet.

Very truly yours,

WILLIAM A. SUTHERLAND, COUNSEL
GEORGE D. MUNGER, COMMERCIAL MANAGER

To All Cooperating Utilities, Dealers, Distributors, and Manufacturers:

Effective April 5, 1935, Electric Home and Farm Authority will extend its financing facilities to include the complete line of appliances rather than approved models only. This means that if there is an approved model in the line, EHFA will finance the other models at the standard EHFA financing terms that have heretofore been applicable to approved models only.

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The territory in which this service will be available is restricted to the area in which EHFA is operating at the present time and is described in detail on the attached sheet.

Very truly yours,

ELECTRIC HOME AND FARM AUTHORITY, INC.

By G. D. Munger

G. D. Munger
Commercial Manager

Enclosure

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COMPLAINANTS' EXHIBIT No. 680 (Excluded)

ELECTRIC HOME AND FARM AUTHORITY, INC.
AN AGENCY OF THE TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE

DAVID E. LILIENTHAL, PRESIDENT
ARTHUR E. MORGAN, VICE PRESIDENT
HARCOURT A. MORGAN, SECRETARY
FRANK J. CARR, TREASURER
WILLIAM A. SUTHERLAND, COUNSEL
GEORGE D. MUNGER, COMMERCIAL MANAGER

April 5, 1935

TERRITORY IN WHICH EHFA FINANCING FACILITIES ARE AVAILABLE

Following are the areas in which the financing facilities of Electric Home and Farm Authority are available. In accordance with a recently adopted policy, EHFA will not only finance approved models but will also finance the other domestic models where there is an approved model in the line. This plan will be in effect throughout the entire EHFA territory beginning April 5, 1935.

1. That part of Tennessee which is served with electricity by the Tennessee Electric Power Company and subsidiaries, the Toccoa Electric Power Company of Blue Ridge, Georgia, and the South Kentucky Power Company of Alexandria, Tennessee.

2. That part of Georgia which is served with electricity by the Georgia Power Company.

3. The following individual communities:

Municipally Owned Systems	Privately Owned Systems
Cookeville, Tennessee	Alcoa, Tennessee
Dayton, Tennessee	Etowah, Tennessee
Lebanon, Tennessee	Franklin, Tennessee
Pulaski, Tennessee	
Barnesville, Georgia	
Cartersville, Georgia	
Athens, Alabama	
Amory, Mississippi	County Power Associations
Tupelo, Mississippi	Alcorn County, Mississippi
New Albany, Mississippi	Pontotoc County, Mississippi

4. The Counties of Benton, Tippah, Tishomingo, Prentiss, Lee, Itawamba, Union, and the northern half of Monroe. These counties are all located in northeast Mississippi.

5. Rural lines in western half of [illegible]

TERRITORY IN WHICH EHFA FINANCING FACILITIES ARE AVAILABLE

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3. The following individual communities:

Municipally Owned Systems	Privately Owned Systems
Cookeville, Tennessee	Alcoa, Tennessee
Dayton, Tennessee	Etowah, Tennessee
Lebanon, Tennessee	Franklin, Tennessee
Pulaski, Tennessee	
Barnesville, Georgia	
Cartersville, Georgia	
Athens, Alabama	
Amory, Mississippi	County Power Associations
Tupelo, Mississippi	Alcorn County, Mississippi
New Albany, Mississippi	Pontotoc County, Mississippi

4. The Counties of Benton, Tippah, Tishomingo, Prentiss, Lee, Itawamba, Union, and the northern half of Monroe. These counties are all located in northeast Mississippi.

5. Rural lines in western half of Lauderdale County, Alabama.
   Rural lines in eastern half of Colbert County, Alabama.

6. Norris Dam) Employees of TVA residing in these locations may finance
   Wheeler Dam) the purchase of appliances through EHFA over a maximum
   Wilson Dam) period of two years. This limitation to two years is due to the temporary nature of the work being done by a large portion of the employees in these areas.

TVA

196633

[fol. 3336] COMPLAINANTS' EXHIBIT No. 681 (Excluded)

Electric Home and Farm Authority,

Chattanooga, Tennessee

Press Release—for Release at Will

May 22, 1934.

The electric home equipment program of Electric Home and Farm Authority will open May 22, David E. Lilienthal President of EHFA, announced today.

Sales of electric ranges, refrigerators and water heaters carrying the Authority's emblem will begin in all areas served directly by Tennessee Valley Authority power and in the territories served by Commonwealth and Southern Electric utilities in Tennessee, Alabama, and Georgia.

Sale of the emblem appliances on time-payment purchases will be financed by Electric Home and Farm Authority throughout the area affected.

A low finance charge will be made on purchases under the time-payment plan. A single appliance may be financed over a period of three years or less. Purchases of two or more appliances will be financed over a period of four years or less. Down payment and monthly payment on a single purchase will be less than $2.00.

Participation in the plan, Mr. Lilienthal said, is open to all retailers who are approved by the manufacturers of emblem appliances. The retailers wishing to participate will *make appliances. The retailers wishing to participate will* make application to the manufacturer for sale of the financed appliance. On notice from the manufacturer, EHFA will notify the dealer of his approval as a licensed retailer to sell EHFA financed appliances.

All forms and financed charts will be supplied the retailers and utilities by EHFA at no cost.

Once the sale of an emblem appliance is made, Mr. Lilienthal said, the retailer delivers the purchaser's contract to the utility serving the purchaser and the utility pays the retailer the cash-sale price of the appliance less the down payment.

Electric Home and Farm Authority

Press Release—for Release at Will

A finance chart will be given to dealers on which they will determine amount of down payment and monthly install-

COMPLAINANTS' EXHIBIT No. 681 (Excluded)

ment. The utility serving the purchaser will make collection of the monthly installment at the same time the electric [fol. 3337] bill is collected.

Mr. Lilienthal stated that all licensed dealers will be treated alike and that individual makes of EHFA-financed appliances, which will be designated by the presence of the Authority's emblem, will be sold at the same price by all retailers, including merchandising departments of utilities.

The area in which sale of emblem appliances will begin includes virtually all of the state of Georgia, a large part of Alabama, not including Birmingham, and the middle and a part of the eastern section of Tennessee, and including the cities of Nashville and Chattanooga. Sales in the TVA Power area will begin at Tupelo, Mississippi, first municipality to contract for TVA power.

Sales in territory served by other utilities and municipal plants in the Valley states will be authorized upon application of those utilities and adjustment of their rates.

Mr. Lilienthal said that a pamphlet giving a detailed explanation of the retailer's participation in the program is now being printed. This pamphlet, he said, will be given wide distribution in the areas where initial sales operations begin.

[fol. 3338] COMPLAINANTS' EXHIBIT No. 682 (Excluded)

List of Dealers as of June 30, 1937, from Whom Electric Home and Farm Authority Has Purchased Conditional Sale Contracts on Which the Tennessee Valley Authority Was Collecting Monthly Installments for the Account of Electric Home and Farm Authority.

Location	Number of Dealers
Florence, Alabama	8
Hartselle, Alabama	3
Decatur, Alabama	3
Athens, Alabama	2
Corinth, Mississippi	4
Iuka, Mississippi	2
Harriman, Tennessee	1
Pulaski, Tennessee	1
Fayetteville, Tennessee	5

COMPLAINANTS' EXHIBIT No. 682 (Excluded)

Location	Number of Dealers
Henderson, Tennessee	1
Ardmore, Tennessee	1
Sheffield, Alabama	2
Shelbyville, Tennessee	1
Town Creek, Alabama	1
Clinton, Tennessee	1
Huntsville, Alabama	1
Moulton, Alabama	2
Leighton, Alabama	1
Tuscumbia, Alabama	2

[fol. 3339] COMPLAINANTS' EXHIBIT No. 683 (Excluded)

Release by Rural Electrification Administration

(Omitted)

[fol. 3340] COMPLAINANTS' EXHIBIT No. 684 (Excluded).

Cooperative Extension Work in Agriculture and Home Economics State of Georgia

Athens

July 2, 1935.

Ga. . 7 . Catoosa

Mr. George W. Kable, % M. O. Swanson, Rural Electrification Administrator, 2000 Massachusetts Avenue, Washington, D. C.

DEAR MR. KABLE:

There have just come to my desk a petition signed by 297 farmers of a community in Catoosa County, Georgia, a map of the county showing the proposed rural electrification lines, a list of the names of the farmers who signed the petition, and a letter relative to this proposed project from county agent J. P. Nicholson. A copy of Mr. Nicholson's letter and the other material he sent me are enclosed herewith.

COMPLAINANTS' EXHIBIT No. 684 (Excluded)

At the suggestion of Mr. J. G. Woodruff, Assistant District Agent, who is supervisor of the farm management program looking particularly toward prevention of soil erosion in the Georgia counties that lie in the Tennessee Valley area, I am sending these things to you. Mr. Woodruff tells me that he talked to you about the matter while in Knoxville some days ago. I shall greatly appreciate your presenting the matter as a request from the farmers concerned to Mr. Cook who is in charge of the rural electrification national program.

[fol. 3341] It seems unnecessary for me to say that these farmers are interested in getting electric service. I am approving and passing on their request in the hope that it will be handled as rapidly as possible to the end that this project be gotten underway in accordance with whatever regulations the different agencies concerned may have prescribed. Your assistance in the matter will be greatly appreciated.

Very truly yours, (S.) Harry L. Brown, Director.

enclosures.

[fol. 3342] COMPLAINANTS' EXHIBIT No. 685 (Excluded)

Rural Electrification Administration, Washington, D. C.

GENTLEMEN:

We are submitting herewith two copies of a report regarding a rural electrification project of the North Georgia Electric Membership Corporation. This report was prepared by the Tennessee Valley Authority as a part of its rural electrification activities, and they have very kindly furnished us with copies and consented to our use of them for this purpose.

At this time we should like to make an informal application for the necessary funds for constructing a rural electric distribution system throughout the North Georgia area, as covered by this report. The total estimated cost for constructing such a system is approximately $298,000. This amount covers the construction of approximately 300 miles of rural lines, both single-phase and three-phase, together with necessary transformers, protective equipment, meters,

services, secondaries, and other appurtenances necessary to complete this project. The information embodied in this report is based on the results of a commercial and field survey conducted in March, 1936. The area covered by this survey includes Catoosa, Whitfield, Walker, Chattooga, Gordon, Murray and Dade Counties.

[fol. 3343] The total estimated revenue derived from this proposed system will be approximately $55,000 for the first year's operation, showing an initial ratio of 5.4 to 1, and an annual kilowatt-hours consumption of 1,862,000. According to the income and expense statement which forms a part of the report, the net income before depreciation on the basis of estimated first year revenues is $1,439; on the basis of second year revenues, $7,527; and on the basis of estimated third year revenues, $11,814, in all cases after the payment of interest at 3%. In addition, there will be available for amortization in these years amortization collection of $11,955, $14,510, and $16,945, respectively. On the basis of first year estimates, the loan will be repaid in twenty-five years, on the basis of second year estimates, in twenty-two years and on the third year basis, in twenty years.

In compiling the income and expense statement, as well as in computing the construction cost, Catoosa County and Dade County have been excluded because the Catoosa project is now under construction and is being financed by the Tennessee Valley Authority, and Dade County, because, in our opinion, it shows an inadequate number of customers to justify the construction of any rural lines at this time.

On April 6, 1936, a tentative plan or organization was worked out for the North Georgia Electric Membership Corporation, and subsequently on April 8, a petition for charter for this organization was filed under the Georgia laws. [fol. 3344] A copy of the petition is attached hereto. In accordance with the laws of the State of Georgia, this charter will be granted on or about May 8, 1936.

Therefore, it is our desire at this time to make every effort to obtain all necessary instructions pertaining to the requirements for completing such a loan in order that a contract may be executed at the earliest possible date after the charter has been granted, thereby enabling our organization

to start actual construction of this project immediately. We think that the situation is especially urgent inasmuch as a local power company is attempting to secure enough signatures to warrant the construction of rural lines which will take the cream of our territory and perhaps defeat the whole project, and any substantial delay might alienate enough of our supporters to make such "spite line" construction feasible.

We shall greatly appreciate your prompt reply regarding this subject.

Yours very truly, North Georgia Electric Membership Corporation, by R. C. Pittman, Chairman of the Board.

[fol. 3345] Introduction

This report and the accompanying data is the result of a survey recently completed in North Georgia under the TVA "Neighborhood Plan". The survey was started in January, 1936, under the leadership of the several county agents representing their respective county, including the following:

Catoosa County
Whitfield County
Murray County
Walker County
Chattooga County
Gordon County
Dade County

This survey was completed in March 1936, and at which time all customer applications, together with maps and [fol. 3346] other information, was submitted to the TVA, Chattanooga, Tennessee, for study and to determine the economic soundness and feasibility as viewed from a financial and operating standpoint.

This proposal includes the construction of approximately 300 miles of rural electric lines consisting of 6,900 volt single phase and 11,000 volt 3 phase together with all necessary transformers, meters, services, secondary lines, etc., in accordance approximately with the routes and locations as shown by the accompanying map, at an estimated cost of approximately $298,000.00.

The system would serve approximately 2,000 domestic, commercial and industrial rural customers, using initially approximately 1,852,000 KWH. annually, with an estimated annual gross revenue of $55,000.00.

The area proposed to be developed under this program embraces something like 2,115 square miles, most of which is fertile soil and highly adaptable to diversified agriculture. A total of approximately 12,000 farms with a rural population of approximately 101,000, now without electric service in this area may be served by carrying out such a program and it is conservatively estimated that at least 3,000 rural customers will be receiving electric service from this system within 24 months after completion of the lines. The progressiveness and a desire for better living conditions in this area manifested by the rural people is strikingly noticeable.

[fol. 3347] The principal revenue producing items ranking in the order named are:

Cotton
Dairy products
Peaches and apples

also a rural home enterprise is gaining wide spread recognition through the handicraft work of weaving, and knitting of hook rugs, bed spreads, and other similar articles.

In addition to the agricultural activity, this section has an unusual large number of both large and small industrial plants to whom the rural people may turn for employment during the periods when not engaged in their agricultural activities. Being close to the industrial center of Chattanooga, Dalton, and Calhoun makes it very probable that country homes will be built by a number of the people employed in the large plants. Especially is this true in Walker, Catoosa, Murray, and Whitfield Counties. In Murray County there is under way a Federal Project of building a large lake in the Cherokee National Park and long time leases are being granted in this park to persons wishing to build cabins and homes. The average income per capita in these counties is considerably higher than the average in the south, due to two factors—farm ownership combined with modern and progressive farming, and the location of

industrial plants in the area that helps to supplement the farm income.

This section indicates a large percentage of farm owners [fol. 3348] and operators when compared with the general conditions found in the South. Thus a higher income is enjoyed and subsequently a higher standard of living brought about, electrified and modernized homes and farms will be inevitable.

The proposed operating headquarters for the system will be located in Dalton, Georgia, this is the largest town in the area as well as being the geographic center. The TVA's point of delivery for service to the system will be at a point on the north central Catoosa County line which also is the Tennessee-Georgia state line. The source of supply will be through an interchange between the TVA and the Tennessee Electric Power Company at Ooltewah, Tennessee, located approximately six miles northeast of the described delivery point. This particular section of the line (approximately 6 miles) together with the necessary substation facilities and equipment is being installed by the TVA. This interchange agreement will remain in force until the TVA has completed the construction of its transmission and substation facilities at Chickamauga Dam, at which time the North Georgia proposed system would be served direct from this location.

Particular attention is called to the unusual size of this proposed system which offers a decided advantage from the standpoint of efficient and economical operation—with larger operating units, as this would be, it enables the operators to employ a well trained and efficient operating personnel, to make material and equipment purchases in quantity lots, to economize to the fullest extent through system diversity, [fol. 3349] and the wholesale purchase of energy in large blocks, thereby realizing the greatest benefits, from the low brackets of the wholesale rates.

The appendix to follow embodies the principal figures and factors for further study of the proposed project.

(Appendix omitted.)

[fol. 3350] COMPLAINANTS' EXHIBIT No. 686 (Excluded)

Message by Hill McAlister, Governor of the State of Tennessee, to the General Assembly of Said State on January 22, 1935.

[fol. 3351] To the Honorable Senate and House of Representatives of the Sixty-Ninth General Assembly:

By House Joint Resolution No. 38 passed at the regular session of the Tennessee General Assembly in 1933, I was authorized and directed to appoint a committee of six outstanding citizens, two from each grand division of the State, to be designated as the "Tennessee Valley Commission." The duties of this body are specified in said resolution, and, in brief, authorize them to represent the State of Tennessee in matters pertaining to the development of Muscle Shoals and the Tennessee Valley and to cooperate with the Federal Government in such matters, and to study the benefits that may be derived by Tennessee from such development, and to make a comprehensive survey of the possibility of obtaining cheaper power or electric rates for the citizens of Tennessee and to report to the Governor and legislature all necessary legislation needed to protect the interest of the people of this State.

In conformity with the direction contained in said joint resolution, I appointed the following citizens as the members of the said commission. From East Tennessee Hon. D. C. Webb of Knox County and Hon. John A. Chambliss of Hamilton County. From Middle Tennessee Hon. A. J. Dyer of Davidson County and Hon. W. R. Rackley of Giles County. From West Tennessee Hon. C. E. Pigford of Madison County and Hon. Wm. W. Goodman of Shelby County.

These gentlemen promptly undertook the duties specified and met within the Tennessee Valley Authority Commissioners in their offices in Knoxville early in April 1934. At this meeting, at which I had the honor to be present, the ways in which this commission so appointed by me could be helpful to the Tennessee Valley Authority were discussed at length. It was then pointed out by the Tennessee Valley Authority Commissioners that the Federal Government was deeply interested in the creation of planning [fol. 3352] boards within the various states, and that it would be helpful if I, as Governor, would create such a board in Tennessee to work in connection with the Ten-

nessee Valley Authority, and, likewise, with the Federal Planning Board already created by President Roosevelt. I accordingly designated the six members of the Tennessee Valley Commission, appointed by me as aforesaid, as the Tennessee Planning Board, and they have been functioning also in that capacity ever since. They have been in constant touch not only with the Tennessee Valley Authority but also with Federal Planning Board authorities and with the office of the Secretary of the Interior, from each of which organizations they have received suggestion and recommendations for the enactment of laws in Tennessee that would serve the purposes that the Federal Government now has in view in the various states of the Union in carrying out the national recovery program.

In conformity with the requirement of said House Joint Resolution No. 38 the said commission so appointed by me has reported as follows:

"In accordance with joint resolution thirty-eight (38) of the General Assembly of the State of Tennessee of 1933, creating the Tennessee Valley Commission, we have formulated a legislative program to operate with the Tennessee Valley Authority, and we do hereby report that the enclosed bills are recommended by us for passage.

"All of these bills have been approved by the Tennessee Valley Authority, and the Tennessee Valley Authority feels that the passage of all these bills will materially expedite the extension of the planning electric, navigation, housing and other phases of the Tennessee Valley Authority's program within the State of Tennessee.

"In addition, Bill No. 12, relating to the creating of Housing Authorities, has been approved by the National Association of Housing Officials, on behalf of the Federal Emergency Administration of Public Works.

"Since some of the counties or municipalities of the State may wish to use Federal funds to enable them to operate under the Municipal Electric Plant Act, being known as Our Bill No. 7, we have deemed it desirable to secure the Public Works Administration's approval of the form and substance of this bill. We have been notified that the Public Works Administration does approve same.

COMPLAINANTS' EXHIBIT No. 686 (Excluded)

"It is not unlikely that additional supplemental legislation will be recommended by us for passage, before the end of the present session of the legislature, to cooperate fur- [fol. 3353] ther with the Tennessee Valley Authority. We deem the enclosed bills so important, however, that we are now forwarding them to you, in the hope that all of said bills can be passed at an early date, pending the formulation of supplemental bills."

The bills referred to in this report may be briefly described as follows:

(1) A bill that will authorize the various counties, incorporated cities and towns of Tennessee to construct, purchase or otherwise acquire and operate electric generating, or distribution systems, and to enable such counties, incorporated cities and towns to utilize the surplus power generated by the Tennessee Valley Authority dams.

(2) An Act to authorize municipal corporations, counties, towns and cities owning and operating electric generating transmission or distribution systems, to stipulate in any contract they may desire to make with the Tennessee Valley Authority, or other similar governmental agency, such covenants, terms and conditions as the governing power of such municipal corporations, counties, towns and cities may deem appropriate.

(3) An Act to authorize the Highway Department of Tennessee to purchase or construct and operate landing and loading facilities on the navigable waters of the State, in connection with State Highway facilities parallel to and intersecting such navigable waters.

(4) An Act to define the jurisdiction of the Railroad and Public Utilities Commission so as to exempt therefrom certain Federal and State corporations, agencies, instrumentalities and other public bodies and certain non-profit organizations defined as non-utilities and also to authorize utilities to sell or otherwise dispose of their property to non-utilities.

(5) An Act regulating appeals or reviews of the judgments of the Railroad and Public Utilities Commission.

COMPLAINANTS' EXHIBIT No. 686 (Excluded)

(6) A bill to provide for the creation and establishment of a State Planning Commission for the State of Tennessee.

(7) A bill to provide for the regulation of and for the approval by regional planning commissions before filing for record of plots of the sub-division of land outside the boundaries of municipal corporations.

(8) To empower county courts to provide for the establishment of districts or zones within portions of counties which lie outside of municipal corporations, and to empower County Courts to regulate within such zones the location, height and size of buildings and structures, etc.

(9) An Act to empower municipalities to provide for the establishment of municipal planning commissions.

(10) A bill to empower municipalities to provide for the establishment of districts or zones within the corporate limits for the purpose of regulating within such districts, the location, height, and size of buildings, etc.

[fol. 3354] (11) A bill to provide for the regulation and approval by municipal planning commissions before filing for record of plots of the sub-division of lands lying within such municipalities.

(12) A bill to promote the public health, safety, morals and general welfare by providing for the establishment of housing authorities designed to eliminate unsanitary and dangerous housing conditions by providing for the construction, operation, supervision or safe and sanitary dwellings.

The bills referred to in this report, as indicated therein, were carefully prepared under the direction of the Tennessee Planning Board with the aid of counsel designated and recommended by the Secretary of the Interior, and they follow, as I am informed, the lines that are desired by the Secretary of the Interior, through whose office must pass the various requests that may be made of the Federal Government for the financial assistance that will doubtless be necessary in many instances to enable Tennessee counties, cities and towns to obtain the full benefit of what is being done at this time by the Tennessee Valley Authority. The

COMPLAINANTS' EXHIBIT No. 686 (Excluded)

first five of these acts deal primarily with conditions affecting immediately the work of the Tennessee Valley Authority and the others are enabling acts designed to give the State its counties and cities and towns the benefit of the planning Board activities of the National Government both through the work of the Tennessee Valley Authority as well as in other ways. I have recently received letters from the Hon. Harold L. Ickes, Secretary of the Interior, in which he recommends the enactment of these bills into law, and requests that copies of them, when so enacted, be promptly furnished his office.

It is unnecessary for me to emphasize at this time the importance of thorough cooperation between the State of Tennessee and its various counties, cities and towns on the one hand, and the Tennessee Valley Authority on the other. The Tennessee Valley Authority was created by act of Congress in May 1933 and has been functioning in our State for more than a year and a half. The time of actual [fol. 3355] realization of the tremendous benefits expected to be derived from the expenditure in Tennessee of the great sums that have been made available by Congress for the work of this authority, is rapidly approaching. The bills that I have referred to above have been drawn to give this cooperation. They were introduced in both of your honorable bodies on last Friday, and I am taking this opportunity of especially directing your attention to them and of recommending their prompt enactment.

Respectfully,

Hill McAlister, Governor.

[fol. 3356] COMPLAINANTS' EXHIBIT No. 687 (Excluded)

Message by Hill McAlister, Governor of the State of Tennessee, to the General Assembly of Said State on April 8, 1935

[fol. 3357] To the Honorable Senate and House of Representatives of the Sixty-Ninth General Assembly:

GENTLEMEN:

I have received from the Honorable Harold L. Ickes, National Public Works Administrator, a series of fourteen

(14) bills which he requests that I lay before your honorable bodies for enactment into laws. These bills are intended to aid the National Public Works Administration in the expenditure in our State of the large sum of money that it is expected will be allocated to Tennessee from the Public Works bill finally enacted by Congress a few days ago, and which now awaits the signature of the President.

These Acts are described in the letter of Secretary Ickes to me as follows:

(1) "An Act entitled, 'An Act authorizing incorporated cities and incorporated towns to construct, acquire, improve, extend, operate and maintain public works, undertakings and projects; prescribing mode of procedure for and regulating the issuance and sale of bonds and other obligations to finance such works, undertakings and projects, providing for the payment of such bonds and other obligations; and authorizing agreements with the holders of such bonds and other obligations.'

(2) "An Act entitled, 'An Act authorizing counties to construct, acquire, improve, extend, operate and maintain public works, undertakings and projects; prescribing the mode of procedure for and regulating the issuance and sale of bonds and other obligations to finance such works, undertakings, and projects, providing for the payment of such bonds and other obligations; and authorizing agreements with the holders of such bonds and other obligations.'

(3) "An Act, entitled, 'An Act providing for the acquisition, purchase, construction, reconstruction, improvement, betterment, extension, operation, and maintenance of revenue producing public works by any incorporated city or town; authorizing and regulating the issuance of revenue bonds for financing such public works; and providing for the payment of such bonds and the rights of holders thereof.'

(4) "An Act entitled, 'An Act simplifying the procedure for the construction and financing of public works projects by municipalities, enabling municipalities to make and perform contracts with federal agencies relating to the con- [fol. 3358] struction and financing of such projects and conferring additional powers upon municipalities.'

COMPLAINANTS' EXHIBIT No. 687 (Excluded)

(5) "An Act entitled, 'An Act validating, ratifying, approving and confirming all bonds, notes, warrants and other instruments, obligations, and/or evidences of indebtedness heretofore issued and sold by any incorporated city or town, county or special taxing district to the United States of America or any agency or instrumentality thereof.'

(6) "An Act entitled, 'An Act validating, ratifying, approving and confirming all agreements heretofore entered into between incorporated cities or towns, counties and/or special taxing districts of this state and the United States of America for the making of any loan and/or grant under the National Industrial Recovery Act, and all proceedings taken in performance, in whole or in part, of any such agreements, including the authorization of any bonds, notes, warrants and other instruments, obligations and/or evidences of indebtedness, and authorizing completion of all such proceedings, including the issuance, sale and delivery of such bonds.'

(7) "An Act entitled, 'An Act to amend an act entitled "An Act providing for the creation and establishment for the State of Tennessee of a State Board for Licensing General Contractors; providing for the appointment and qualification of the members and the organizations and jurisdiction thereof; for the purpose of safeguarding life, health and property, and of promoting public welfare by requiring that only properly qualified persons shall engage in general contracting; prescribing the duties of and the grant of powers to said Board to issue certificates of license and to regulate the practice of general contracting in the State of Tennessee, to fix the standards of qualification and eligibility for the practice thereof; to authorize the collection and expenditure of fees for the purpose of this Act, and to make all such legal rules and regulations necessary and proper to carry out the purpose of this Act; and providing penalties for violation of this Act," approved July 2, 1931 and being Chapter 70 of the Public Acts of the General Assembly of Tennessee of 1931, to provide that the provisions of said Act shall not apply to any public work or project financed in whole or in part by a loan or grant or both from the United States of America, or any agency or instrumentality thereof.'

COMPLAINANTS' EXHIBIT No. 687 (Excluded)

(8) "An Act entitled, 'An Act to constitute and confirm certain educational institutions of the State as separate legal entities; to confer powers upon such educational institutions, including the powers to purchase, construct, better and equip buildings and to make other improvements to their plants, and for such purposes to borrow money and accept grants from any federal agency; to issue bonds and to provide for the payment of such bonds and interest thereon and to secure such payment; to confer further [fol. 3359] powers for the making of agreements with the holders of such bonds; to supersede inconsistent provisions of all other laws; and to declare an emergency.'

(9) "An Act entitled, 'An Act to declare the necessity of creating public bodies corporate and politic to be known as housing authorities to engage in slum clearance and/or projects to provide dwelling accommodations, for persons of low income; to provide for the creation of such housing authorities; to define the powers and duties of housing authorities and to provide for the exercise of such powers, including acquiring property by purchase, gift or eminent domain, and including borrowing money, issuing revenue and credit bonds and other obligations, and giving security therefor; to confer remedies on obligees of housing authorities; to provide that the bonds of the authority shall be legal investments; and to declare that this act take effect from the date of its passage.'

(10) "An Act entitled, 'An Act to authorize cities and towns and the State, its subdivisions and agencies to cooperate with housing authorities and the United States of America by rendering services, conveying or leasing property, and providing for streets, roads and other facilities, and otherwise; and to declare that this act take effect from the date of its passage.'

(11) "An Act entitled, 'An Act to authorize corporate agencies of the United States and corporations receiving aid from the United States to exercise the power of eminent domain to acquire property for housing projects; and to declare that this act take effect from the date of its passage.'

(12) "An Act entitled, 'An Act creating the Rural Electrification Authority of Tennessee for the purpose of pro-

moting and encouraging the fullest possible use of electric energy in the State by making electric energy available to certain inhabitants of the State at the lowest cost consistent with sound economy and prudent management; authorizing the Authority to sell and distribute electric energy and to construct or otherwise acquire a system or systems for the generation, transmission and distribution of electric energy to carry out the purposes of this Act; providing for the rights, powers and duties of the Authority; authorizing and regulating the issuance of bonds by the Authority; and providing for the payment of such bonds and the rights of the holders thereof.'

(13) "An Act entitled, 'An Act providing for the creation of power districts; prescribing powers and duties of such districts, and authorizing such districts to conduct and operate utilities for the production, transmission or distribution of electric energy, and to issue bonds and providing for the payment of such bonds.'

[fol. 3360] (14) "An Act entitled, 'An Act providing for the formation of non-profit membership corporations to be known as Electric Membership Corporations for the purpose of promoting and encouraging the fullest possible use of electric energy by making electric energy available at the lowest cost consistent with sound economy and prudent management of the business of such corporations; providing for the rights, powers and duties of such corporations; authorizing and regulating the issuance of bonds by such corporations and providing for the payment of such bonds and the rights of the holders thereof'."

The specific purposes which the Public Works Administrator has in mind in asking for the enactment of these laws are further described in his letter as follows:

"The first bill, which may be cited as the Public Works Act of 1935, confers powers upon cities and towns to engage in public works projects which it is not clear that present laws permit them to undertake. The powers of cities and towns to borrow money and issue bonds are also clarified and placed in a single comprehensive act. Similar bills enacted into laws in other states have proved very helpful.

"The second bill, which may be cited as the County Pub-

lic Works act of 1935, confers powers upon counties to construct and finance public works projects which are appropriate to the corporate purposes of counties, and is analogous to the first bill.

"The third bill, which may be cited as The Revenue Bond Act of 1935, authorizes the issuance of bonds by cities and towns for the purpose of financing the construction of revenue-producing undertakings, such bonds being payable solely from the revenues of such undertaking, without recourse to tax levies, legislation similar to this bill has been enacted in more than thirty states.

"The fourth bill, which may be cited as The Municipal Emergency Procedure Act of 1935, applies to counties, cities, towns, and special taxing districts. Its purpose is to eliminate technical difficulties which tend to impede the closing of loans from the Public Works Administration, to delay the beginning of construction on Public Works projects, and to obstruct the carrying out of the rules and regulations prescribed by the Administration.

"The fifth bill, which may be cited as the 1935 Validating Act, is intended to validate bonds which have been purchased by the Public Works Administration. You will recall that as funds were advanced to each applicant you addressed a letter to me in which you stated that you would be glad to cooperate in securing legislation to validate any defects or irregularities in connection with the specific project then in question. Rather than give you a number of validating bills, it has seemed more convenient and equally as effective to draft a single bill covering all bonds heretofore issued to the Government.

[fol. 3361] "The sixth bill does not relate to the validation of bonds which have already been purchased by the Administration but is concerned with the validation of loan and grant agreements between the United States and cities, towns, counties and special taxing districts of Tennessee, and also with the validation of election and other proceedings heretofore taken by such municipalities which are defective to such an extent that unless the proceedings are ratified by this curative bill, it may be necessary to request that the proceedings in certain cases be taken again.

"The seventh bill amends the act which establishes State board for licensing general contractors by providing that

the act shall not apply to public works projects. I recognize the fact that this is a matter of state policy and I want to make it clear that the fact that I am suggesting this bill is not in any way intended as a criticism of the State Licensing Board. Our experience has indicated that the act is equitably administered and we have received splendid cooperation from the Board. The limitations of the act, however, are such that the field of competition is seriously restricted. Much may be said in favor of the licensing act which this bill amends, but the reasons for the licensing of contractors do not exist to the same degree in the case of projects financed by the Public Works Administration which are under constant supervision by our engineer inspectors.

"The eighth bill is intended to authorize state educational institutions to borrow money for the purpose of constructing revenue producing improvements and to issue bonds payable solely from the revenue of such improvements. Similar legislation has been enacted in several states. The bill presents some constitutional questions which may ultimately have to be determined by the Supreme Court of Tennessee.

"The ninth, tenth and eleventh bills, if enacted into law, will provide enabling legislation pursuant to which public bodies in your State will be able to participate in a Federal low-cost housing program. These bills involve certain matters of legislative policy which may require adjustment to meet local needs. You undoubtedly will desire to make certain changes and I suggest that you communicate with Colonel Horatio B. Hackett, Director of the Housing Division of the Public Works Administration, in regard thereto.

"The twelfth, thirteenth and fourteenth bills, which may be cited respectively as the State Rural Electrification Authority Act, the Power District Law and the Electric Membership Corporation Act, illustrate different methods of attacking the problem of encouraging the fullest possible use of electric energy in the State."

An examination of each of these bills will reveal that they are emergency measures, and expire by their own limitations June 30th, 1937. They are intended to obviate legal difficulties that the National Public Works Administration

has encountered during the last year and a half in the ex-
[fol. 3362] penditure of such funds in Tennessee.

The eighth of these bills, as enumerated in the letter of Secretary Ickes to me, would be unconstitutional if enacted in its present form, as I am advised by Attorney General Beeler. If the substance of the measure should be agreed to by your honorable bodies, it must be put in a radically different form.

The bills numbered nine, ten and eleven are measures designed to further the Housing program of the Federal Government, and are intended to take the place of a bill on this subject introduced prior to the legislative recess, and the final enactment of which was delayed at the request of agents of the Public Works Administrator. The bills on this subject now laid before you only apply to municipal corporations having a population of twenty thousand and over.

The bills numbered 12, 13 and 14 are three bills that are designed to give rural sections of Tennessee the benefit of the cheap electric power to be generated by the Tennessee Valley Authority in our State. I have submitted them to the Tennessee Valley Authority and they recommend their enactment, though it is possible that they will desire hereafter to make certain changes from their present form.

The bills numbered 1 and 2 of the series now submitted to you, confer for two years additional emergency powers upon cities and towns of Tennessee to issue bonds with which to aid the Federal program for the construction of such municipal public works. In addition to already existing charter powers, the powers that municipal corporations now have in our State on this subject are set forth in Sections 3608 of the Code of 1931. So far as the additional powers sought to be given cities and towns under Act No. 1 are concerned, it seems to me that it would be more easily accomplished by an amendment to these sections which have been upon the statute books of our State since 1917. How-
[fol. 3363] ever, I transmit the Act to you in the form in which it has been drafted at Washington, and as recommended to me by the Public Works Administrator.

It should be pointed out, however, that the powers sought to be conferred upon the various counties of Tennessee by Bill No. 2 do not already exist under general laws of the

State, as is the case with municipal corporations. In order to confer general powers upon counties to issue bonds for the purposes named, it would either be necessary to enact this Bill No. 2 or to extend the provisions of Section 3696 to 3708 of the Code to counties.

There will doubtless be differences of opinion among you as to the wisdom of the enactment of several of these bills. It is certain that you will desire to amend some of them. I recommend their enactment to you in view of the grave emergency that exists in the State.

The National Government, by the enactment of the large Public Works Appropriation bill, which has been before Congress for a number of weeks, now proposes to deal with the unemployment problem in the nation in a manner quite different from the way in which it has been dealt with during the last two years. It is the purpose of the President now to relieve this situation by putting men to work in the construction of public works enterprises on a scale not heretofore possible. Tennessee has already sent to the National Administrator, a long list of public works which it is hoped will be undertaken with funds appropriate in the bill before mentioned.

The President has not as yet indicated in just what manner the sum carried by the bill will be allocated to the several States, nor the details of the method of its expenditure, but it was in anticipation of the enactment of this Public Works measure soon to be signed by the President that all of the bills now transmitted to you were prepared by the Public [fol. 3364] Works Administrator at Washington.

You are shortly to adjourn and it would be a calamity of Tennessee if we failed to obtain the allotments that would otherwise be given to us by our failure to meet the conditions requested by the National Administrator.

I respectfully urge upon your honorable bodies the prompt reference of these bills to your appropriate committees and their enactment into law, as is requested by Secretary Ickes.

Respectfully, (Signed) Hill McAlister, Governor.

Nashville, Tennessee, this 8th day of April, 1935.

[fol. 3365] COMPLAINANTS' EXHIBIT No. 688 (Excluded)

Certificate of Incorporation issued by the State of Tennessee to the Middle Tennessee Electric Membership Corporation.

(Omitted)

[fol. 3366] COMPLAINANTS' EXHIBIT No. 689

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M.,

Books and records of Tennessee Valley Authority showing (a) the number of employees in the Department of Electricity as of October 1, 1937, and (b) the headquarters or offices of each of said employees as of October 1, 1937, and (c), the names of any additional employees in said Department of Electricity who are now employed in said Department and earning compensation at a rate of Fifteen Hundred Dollars ($1500) per annum, or over, other than those whose names are published in the Annual Report of Tennessee Valley Authority for the fiscal year ending June 30, 1936,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3367] COMPLAINANTS' EXHIBIT No. 690

Subpoena Duces Tecum.

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Di-

COMPLAINANTS' EXHIBIT No. 690

vision, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Copy of letter dated on or before October 15, 1934, from TVA (Lilienthal) to Mayor Overton of Memphis, relating to the possible purchase by TVA of Memphis Power & Light Company,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3368] COMPLAINANTS' EXHIBIT No. 691

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Copy of letter or letters dated on or before March 27, 1934, from TVA or Lilienthal to the President of the United States or Federal Trade Commission, requesting that an examination be made of the books and records and capitalization of Tennessee Public Service Company.

Copy of letter dated on or about June 30, 1937, from Director H. A. Morgan to John N. Garner, President of the Senate.

Copy of letter dated on or about July 20, 1936, from TVA signed by J. M. Peavey, to K. T. Hutchinson, President, Middle Tennessee EMC.

Copy of letter dated September 4, 1937, from Llewellyn Evans to the City Manager of the City of Knoxville, Tenn.,

COMPLAINANTS' EXHIBIT No. 691

(Dempster) approving the plans of said City for construction of an electric distribution system.

All letters and telegrams between TVA or any of its representatives and National Power Policy Committee or any of its representatives or members, from July 9, 1934, to date.

All surveys made by Tennessee Valley Authority or by any individual, corporation, association or agency, either public or private, and furnished to Tennessee Valley Authority of any of the customers of any of the complainants, together with any estimates relating thereto showing the consumer demand, cost of service to or revenues from said customers or any of them.

[fol. 3369] COMPLAINANTS' EXHIBIT No. 692

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Letter dated on or about August 7, 1933, from U. S. Senator Black of Alabama to TVA, re Wheeler Dam.

Copy of letter dated on or about August 24, 1933, from TVA to U. S. Senator Black, re Wheeler Dam.

Letter dated on or about September 8, 1933, from U. S. Senator Black to TVA, re construction of Wheeler Dam.

Telegram dated on or about September 22, 1933, from U. S. Senators Black and Bankhead of Alabama to TVA, re construction of Wheeler Dam,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3370] COMPLAINANTS' EXHIBIT No. 693

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

All letters and telegrams between TVA or any of its representatives and Rural Electrification Administration or any of its representatives, from and after May 11, 1935, having to do with or discussing the organization, construction of lines, sale of electric energy to, or operating reports of any of the electric power cooperatives or electric membership associations in the states of Tennessee, Alabama, Mississippi, Georgia and Kentucky, or any of them,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3371] COMPLAINANTS' EXHIBIT No. 694

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Copy of the outgoing news dispatch or press release dated on or about September 7 or 8, 1937, containing a

COMPLAINANTS' EXHIBIT No. 694

summary of the power generation and gross revenue for the fiscal year ending June 30, 1937.

A copy of the speech given by David E. Lilienthal on or about November 17, 1933, before the Civitan and Shrine Clubs of Knoxville, Tennessee, or a copy of the report thereof or the portions or excerpts therefrom released, sent or handed out to newspapers at or about said date as a press release or otherwise.

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3372] COMPLAINANTS' EXHIBIT No. 695

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Copy of circular letter dated on or about September 21, 1936, from TVA signed by B. S. Robinson, entitled "Another Elecrical Fair For Your Benefit."

Copy of letter dated on or about April 7, 1937, from E. W. Baughman, TVA Division Superintendent, to Mr. Wingo, Gibson County Agent.

Copy of letter dated on or about February 21, 1936, from W. H. Halsey, Commercial Field Supervisor, to all cooperating dealers, distributors and wiring contractors.

A copy of all forms of letters, or other communications prepared by TVA or any of its representatives and de-

livered or sent to any of the county agents engaged in cooperative extension work in agriculture and home economics in the states of Tennessee, Alabama, Mississippi, Georgia and Kentucky, or any of them, having to do with or discussing the generation, transmission, distribution, sale or marketing of electric energy or benefits of farm or rural electrification or the creation of a consumers demand therefor, and any and all replies thereto or reports or memoranda received from TVA from any of said county agents.

The books and records of Tennessee Valley Authority showing the amount expended in promotional and advertising expenses for the development of electric energy and sale for each of the years 1933 to date.

[fol. 3373] The books and records of TVA showing the payment of a fee, salary or wages to Walter E. Meyer on or before December 1934 and the payment of the purchase price of 50,000 copies of the December 1934 issue of the Journal of National Education Association containing an article by said Walter E. Meyer entitled "The Tennessee Valley Looks to the Future."

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3374] COMPLAINANTS' EXHIBIT No. 696

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

COMPLAINANTS' EXHIBIT No. 696

Letter dated on or about October 16, 1933, from Harry Berry, Engineer of the Tennessee Public Works Board, to TVA or Director Lilienthal, and copy of reply thereto.

Copy of letter between the dates of October 16 and November 2, 1933, from TVA or Lilienthal to PWA or Administrator Ickes, mentioning letter from Harry Berry referred to above, and letter in reply thereto.

Telegram dated on or about December 4, 1933, from Glenn, Mayor of Florence, Ala., to TVA or Lilienthal, and reply thereto on or about December 5, 1933.

Copy of letter dated on or about December 7, 1933, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Copy of telegram dated on or about December 27, 1933, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

Letter dated on or about January 4, 1934, from TVA (Lilienthal) to Mayor of Florence, Ala.

Copy of telegram dated on or about January 4, 1934, from Lilienthal to Sheffield and Tuscumbia, Ala., stating that PWA loans approved would be released.

Copies of letters or telegrams dated on or about March 13, 1934, from TVA to PWA or Ickes requesting appointment or describing the then status of negotiations for purchase by City of Knoxville of facilities of Tennessee Public Service Company.

Copy of letter dated on or about March 19, 1934, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

[fol. 3375] Copy of letter dated on or about March 22, 1934, from TVA or Lilienthal to PWA or Harold Ickes, re negotiations for purchase of properties of Tennessee Public Service Company in and about Knoxville.

Telegram dated on or about June 19, 1934, from W. L. Farr, Mayor of Tuscumbia, Ala., to TVA or Lilienthal.

Copy of telegram dated on or about June 20, 1934, from Lilienthal to Mayor Farr, of Tuscumbia, and copies thereof mailed to the Mayors of Sheffield and Florence, Ala.

Telegram dated on or about June 21, 1934, from Mayor Lee Glenn of Florence, Ala., to Lilienthal.

Telegram dated on or about June 27, 1934, from A. H. Carmichael to Lilienthal.

Copy of telegram dated on or about July 10, 1934, from TVA (Lilienthal) to Mayor Glenn of Florence, Ala.

COMPLAINANTS' EXHIBIT No. 696

Copy of letter dated August 27, 1937, from TVA to Tennessee PWA Administrator, probably Harry S. Berry or Kenneth Markwell, approving the plans of the City of Knoxville, Tenn., for an electric distribution system.

All letters and telegrams between TVA or any of its representatives and PWA or any of its representatives from and after July 1, 1933, relating to the applications of any of the cities or towns of Decatur, Sheffield, Tuscumbia, Courtland, Hartselle, Muscle Shoals, Russellville, Guntersville, Tarrant City, Bessemer and Florence, Alabama; Starkville, Okolona and Aberdeen, Mississippi; Knoxville, Memphis, Newbern, Paris, Somerville, Jackson, Fayetteville, Murfreesboro, Lenoir City, Lewisburg and Columbia, or Chattanooga, Tennessee, for federal loans and grants of funds from PWA for the construction of a municipal electric distribution system in any of said cities or towns.

All letters and telegrams between TVA or any of its representatives and PWA or any of its representatives from and after March 3, 1934, relating to negotiations for or attempts to purchase all or any part of the electric properties of Tennessee Public Service Company in and about Knoxville, Tenn., or the disposition to be made of the PWA allotment for the City of Knoxville for the construction of an electric distribution system.

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3376] COMPLAINANTS' EXHIBIT No. 697

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern

Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following documents and records, to wit:

Letter dated on or about October 5, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal in reference to applications for loans and grants or contracts with Bessemer and Tarrant City, Ala.

Letter dated on or about November 17, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal relating to TVA option to purchase Alabama Power Company properties in Alabama towns and copy of the reply thereto dated on or about November 22, 1934.

Letter dated on or about December 21, 1934, from PWA signed by Henry T. Hunt to TVA or Lilienthal relating to Hartselle, Ala., and copy of reply thereto dated on or about December 28, 1934.

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 3377] COMPLAINANTS' EXHIBIT No. 698

Resolution of the Board of Directors of TVA, Dated August 21, 1936

"Resolved, That the Board of Directors hereby approves the following pool level elevations at Chickamauga Dam:

Surcharge for flood control	Elev. 685
Surcharge for malaria control	Elev. 683
Normal pool level	Elev. 682
Minimum pool level	Elev. 675"

COMPLAINANTS' EXHIBIT No. 699

Resolution of the Board of Directors of TVA, Dated November 18, 1933

"David E. Lilienthal reported the results of his conference to date with the manufacturers of electrical appliances. He was authorized by the Board to continue to cooperate with the manufacturers of electrical appliances in an effort to effect a marketing plan whereby residents of the Valley who have relatively low incomes can obtain standard electric equipment at very low cost."

[fol. 3378]

Complainants' Exhibit No. 700 (Excluded)

Tennessee Valley Authority

Five-Year Program

Condensed Statement

	Total	1934	1935	1936	1937	1938	1939
Dam and Power House Construction	$129,400,000	$7,150,000	$20,750,000	$32,700,000	$19,500,000	$24,300,000	$25,000,000
Land Purchase	27,300,000	2,300,000	11,900,000	6,350,000	4,850,000	1,800,000	200,000
Land Clearing	9,320,000	920,000	4,450,000	2,000,000	950,000	950,000	50,000
Camps, Highways, etc	6,630,000	2,950,000	1,480,000	1,300,000	900,000	.....	.....
Highway and Railroad Relocation	19,500,000	200,000	8,550,000	1,450,000	2,200,000	4,400,000	2,700,000
Locks	5,800,000	.....	.....	700,000	2,200,000	2,200,000	700,000
Total Dam Construction	$197,950,000	13,520,000	47,130,000	44,500,000	30,500,000	33,750,000	28,650,000
Power Program	43,450,000	5,150,000	20,100,000	4,800,000	3,800,000	4,800,000	4,800,000
Agriculture and Fertilizer	15,310,000	1,960,000	3,860,000	2,410,000	2,360,000	2,360,000	2,360,000
General Program	24,450,000	1,100,000	4,750,000	4,650,000	4,650,000	4,650,000	4,650,000
Supervision and Coordination	2,750,000	250,000	500,000	500,000	500,000	500,000	500,000
Total	$283,910,000	21,980,000	76,340,000	56,860,000	41,810,000	45,960,000	40,960,000

[fol. 3379] COMPLAINANTS' EXHIBIT No. 701.

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 531:

TVA Minutes, June 26, 1933.

"The Board directed counsel to request the Federal Power Commission not to grant further licenses in the Tennessee River basin, and authorized counsel to file appearances and take appropriate action to oppose the granting of such further licenses."

[fol. 3380] COMPLAINANTS' EXHIBIT No. 702 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 531:

TVA Minutes, July 11, 1933.

"The discussion raised the issue of whether the Authority should seek an area arrangement with the Commonwealth & Southern Corporation under which the Authority would refrain from serving municipalities outside a particular area, provided the Commonwealth & Southern Corporation would refrain from operating within the area to be served by the Authority. It was suggested on the one hand that the arrangement was worth attempting; that it would be feasible; and that it would carry into effect the purposes of the President. On the other hand, it was pointed out that such an area arrangement was impracticable; that general co-operation from utilities could not be anticipated in view of the adverse effect such policy would have upon their position; that such a commitment would be premature at this time; that such an area arrangement would probably require many municipalities to acquire [fol. 3381] a distribution system, a long and slow process; that other municipalities outside such area in the meantime, would be denied service unnecessarily; and that much valuable time would be lost which should be devoted to carrying forward the objectives of the Corporation. As an alternative, David E. Lilienthal proposed that immedi-

COMPLAINANTS' EXHIBIT No. 702 (Excluded).

ate steps be taken to enter into wholesale power contracts with the cities of Florence, Tuscumbia and Sheffield, Alabama, using these municipalities as a proving ground and entering wedge. He suggested that the Authority's subsequent course be determined by events as they develop."

[fol. 3382] COMPLAINANTS' EXHIBIT No. 703 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) 532:

TVA Minutes, July 30, 1933.

"Policies concerned with the power project were discussed. The question arose as to whether friendly attempts should be made to buy out power companies or whether the Authority should refuse to deal with them. It was suggested that the views of President Roosevelt and Senator Norris be obtained on this point.

Arthur E. Morgan proposed that an area be delimited roughly equal in size and corresponding in many respects to the Tennessee River drainage basin, in which the Tennessee Valley Authority might buy up the private power company properties. Under this proposal the Authority would have a clear field in which to operate.

It was suggested that a study be made of this proposal and of the cost involved. David E. Lilienthal was authorized to make such investigation and to employ as much help as is needed for this and other power studies to be made by him. It was understood that before the key posi-
[fol. 3383] tions are filled the names of applicants for these positions must be submitted to the Board for approval.

The Aurora power project, which comes before the Federal Power Commission for decision August 17, was discussed. Arthur E. Morgan suggested that it might be well for the Tennessee Valley Authority to condemn the Aurora and Tennessee sites, as well as all other sites located by the Army Engineers, in order that the Tennessee Valley Authority would have control of future power developments in the area.

COMPLAINANTS' EXHIBIT No. 703 (Excluded.)

David E. Lilienthal suggested that wholesale power rates be definitely worked out on a conservatively basis for the three communities near Muscle Shoals.

Construction of a transmission line from the Muscle Shoals plants to the Cove Creek Dam site was discussed by the Board which gave careful consideration to the time needed to build the line and to the engineering staff required to supervise its construction. The Board adopted the following resolution:

[fol. 3384] 'Resolved, that at the earliest possible date the Board proceed with the construction of a transmission line from Wilson Dam to Cove Creek Dam site, to provide power for construction purposes and for distribution to cities, counties and municipalities as from time to time may be necessary or desirable.'

In reaching this conclusion, it was pointed out that a tie-line connecting Muscle Shoals and Cove Creek Dam was essential to co-ordinated operation of the two power plants and that existing transmission lines of private companies were too circuitous and not feasible otherwise. The decision to construct the tie-line was based upon the following facts: That low prices now exist but higher prices are predicted; that a considerable number of applications for power service from communities located near the transmission line have been received; that the need for power at Cove Creek for construction work is imperative; and that the demand for employment is great."

[fol. 3385] COMPLAINANTS' EXHIBIT No. 704 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 533:

TVA Minutes, August 5, 1933.

"It was decided that all publicity shall issue through the publicity department and that special publicity dealing with particular phases of the work shall have the approval of the director concerned before it is released."

[fol. 3386] COMPLAINANTS' EXHIBIT No. 705 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 534:

TVA Minutes, September 18, 1933.

"The chairman discussed the possibility of constructing the General Joe Wheeler Dam in the near future. He stressed the need for having available complete information on other projects, such as the Aurora Landing and Chickamauga Dams, so the Board would be in position to deal with proposals regarding such projects. David E. Lilienthal pointed out a conflict of interests in this connection, suggesting that the Corporation must not ruin its power market by making available at once extraordinarily large amounts of power, but that it must be ready to deal with questions regarding these projects as they arise. He suggested that the cost of the preliminary investigations and construction work on such projects should, insofar as consistent, be allocated against navigation and unemployment relief and not alone against the power project. The Chairman concurred in this, stating that the Authority should not accept unwarranted charges against the power development. Harcourt A. Morgan warned the Board [fol. 3387] that Congress may force the Authority to build other dams as an emergency measure. He suggested that the Board make reasonable preparations in anticipation of such action. It was decided that the Chairman should see Senator Bankhead and discuss with him the policy of the Public Works Administration about the possible construction of other dams. David E. Lilienthal will consider various projects which have been suggested to get a general picture of possibilities and report at a future meeting."

[fol. 3388] COMPLAINANTS' EXHIBIT No. 706 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 535:

TVA Minutes, September 21, 1933

"The Board discussed what its policy should be with reference to the proposed construction of the General Joe

Wheeler Dam with funds to be supplied by the Public Works Administration. David E. Lilienthal submitted a proposed statement of policy which has been approved by the Board. A true copy of the statement labeled exhibit 9-21-33-b, is attached to these minutes and made a part hereof.

The proposed statement of policy attached to the foregoing minutes is exhibit No. 9-31-33-b, which is as follows:

Statement of Policy

Part I.

The Authority has been requested by public agencies by members of Congress representing this area, by leading citizens and by private groups to cooperate and participate in securing funds from the Public Works Administration to be devoted to various public works projects intended to provide unemployment relief.

1. In General. The Board, of course, being a public agency heartily favors large expenditures within the Ten- [fol. 3389] nessee Valley to relieve the acute distress which exists because of the depressed state of industry and agriculture. Few agencies are in a position to know more intimately the acuteness of this situation, and therefore, few can feel more strongly the dire need of adopting every measure of reemployment.

2. Power and Navigation Dams to be constructed and held by the Authority.

The Board conceives that the power phase of the Authority's work was intended by Congress to operate on business principles and was to be self-liquidating and self-supporting. Therefore, if the Board were to construct additional facilities for power production in the way of power dams, this would result in additions to capital account against which heavy fixed charges will run. The Board is now spending from its appropriation, substantial sums in the construction of Norris Dam and in the construction of a transmission line between Wilson and Norris Dam-. If business principles are to be observed as the policy of Congress requires, then the

Board should not expend further sums than those indicated [fol. 3390] applicable to Norris Dam and the transmission line for power production purposes, until a market has been found which will support the existing investment and the investment now being made in Norris Dam and the transmission line.

To add further to the Authority's fixed capital charges by way of additional construction of power dams, until a market has been found for existing investment might make the conduct of the power project of the Authority impossible on a self-supporting basis for many years to come. Such a result might well imperil the future, not only of the power project but of the broad plan of the Tennessee Valley Authority Act.

If, however, the construction of additional dams by the Authority is explicitly treated as a reemployment measure, then the Authority would be pleased to proceed with such construction as rapidly as possible, provided the funds are supplied from the funds of the Public Works Administration appropriated for industrial recovery purposes, and provided further that in our accounting it is understood that additional dam facilities are needed for power purposes [fol. 3391] the additional investment will not be carried as a power investment of the Authority, but would be treated as any expenditure for other public works enterprise, chargeable against the Public Works Administration and for the purposes of that administration. Then when such dam becomes useful, because of the market situation, for power production by the Authority, the Authority would then and not until then begin to be charged with the investment and the fixed charges applicable thereto.

Subject to these qualifications, the Board of Directors heartily approves the immediate construction of Dam No. 3, as an unemployment relief measure. An important consideration in our conclusion is the fact that the construction of Dam No. 3 will be a substantial aid to navigation on the Tennessee River below Chattanooga. Navigation locks are, in fact, now in process of construction by the Army Engineers at Dam No. 3. This position we conceive to be in the interest of the public welfare.

COMPLAINANTS' EXHIBIT No. 706 (Excluded)

[fol. 3392] Part Two

Power dams to be constructed with Public Works money by public agencies other than the Authority or by private agencies using Public Works money.

If the Tennessee Valley Authority power program is to function as a business enterprise as Congress has directed, it must secure a reasonably adequate market in which to sell the power it has available.

It is now proposed that there be constructed within the Authority's market area, additional power facilities, primarily as an unemployment relief measure. Whatever the primary purpose, the effect would be to add further public power facilities to those already existing and in process of construction by the Authority. These additional facilities would be paid for principally from the same source as are the funds with which the Authority operates, namely, public monies. Such further facilities would be constructed on a public stream over which the Authority has been given responsibility, that its development shall be according to a plan formulated and executed by the Authority. On the one hand, therefore, Congress has directed the Authority to operate certain existing and future power facilities on a [fol. 3393] self-supporting basis, which implies the acquisition of a market. On the other hand, the proposal of additional construction at this time would add to the publicly financed power facilities in the same market area in such a way as to render more difficult of accomplishment the direction of Congress that the power development functions of the Authority function on a self-supporting basis. The addition of other publicly financed power facilities in the Authority's market area will make more difficult the attachment of a market adequate to support the Authority's present facilities or facilities in process of construction. In short, the effect would be that in one enactment Congress would tend to negative another enactment in the same session.

Therefore, we do not approve the construction of any dams for the production of power within the Tennessee Valley by agencies other than the Authority with public funds, at least until Muscle Shoals and Norris Dam's power has been marketed by the Authority. For these reasons, we have [fol. 3394] concluded to disapprove all Governmental loans

COMPLAINANTS' EXHIBIT No. 706 (Excluded)

for the production of additional power within the area of the Tennessee Valley.

We are of the opinion that, in general, to carry through the objective of the Tennessee Valley Act, of an integrated development of economic resources of the region, it is imperative that the water power resources be developed as a single system, with single ownership and control. While concrete cases may arise in which this principle would not apply, the rule, we believe, is generally sound."

"The minutes of said Board of the meeting held September 21, 1933, recites that a telegram was sent to Secretary Ickes advising that TVA approved the construction of Dam No. 3 'as an emergency employment relief measure, on condition that it is built with Public Works money and not with TVA money, that the carrying charges and construction costs shall not be charged to the TVA until the demand for power justifies the construction for the purpose. The dam is an integral part of the navigation program for the Tennes- [fol. 3395] see River, and will be a part of the power development program when it is needed—this position we conceive to be in the interest of the public welfare. The Board of Directors of the Tennessee Valley Authority took formal action to this effect."

[fol. 3396] COMPLAINANTS' EXHIBIT No. 707 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 535:

TVA Minutes, September 29, 1933

This excerpt relates to application by a committee from Hamilton County, Tennessee, relative to the construction of Chickamauga Dam, proposing that TVA construct the dam with funds to be secured by Hamilton County under a contract with TVA for the latter's control and operation of the dam, such dam to make provision for future installation of power facilities. The Board adopted a resolution concurring in the suggestion based on the securing of the funds by Hamilton County, the dam to be purchased from Hamilton

COMPLAINANTS' EXHIBIT No. 707 (Excluded)

County, "on the basis of fair value" if Congress authorized TVA to do so and its discretion determines this course. It was to be understood that there would be no power operation of the dam by Hamilton County or any other agency "unless or until the Tennessee Valley Authority agrees, or unless operation is done directly by the Tennessee Valley Authority by recapture."

[fol. 3397] The resolution continued with this clause:

"It is understood that the participation of the Tennessee Valley Authority in its present construction is only to enable the county to carry on its unemployment relief program, and not because of present necessity of the dam."

[fol. 3398] COMPLAINANTS' EXHIBIT No. 708 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwanderer, et al.) page 540:

TVA Minutes, October 13, 1933.

"David E. Lilienthal submitted a memorandum entitled 'basis for negotiation' which might serve as the basis for negotiations with private utilities. A copy of the memorandum is attached and made a part of these minutes. Alternative #1, proposing the sale of entire power output of the Authority to the private utility, subject to instruction as to the resale price in accordance with section 12 of the Act, is in the opinion of the Board not open to the Authority and that negotiations on this basis cannot be entered into. Alternative #2, proposing an agreement with the private utilities binding the Authority to confine its operations within a certain definite territory, was not considered by the Board to be a satisfactory basis for negotiations with privately owned utilities, and a definite binding agreement limiting the Authority's operations was not feasible as a matter of law or policy.

The Board was reminded of President Roosevelt's [fol. 3399] desire that the Authority's power operations be centered in a delimited area. The idea of dividing territory between privately owned utilities and the Authority

met with the approval of the Board but the suggestion that the Authority be excluded from operating in certain areas was disapproved.

David E. Lilienthal called attention to an area in northeastern Mississippi which he recommended as an excellent place for the Authority to start the development of a sound power program and recommended that this area be included in the Authority's operations. The Board was of the opinion that requests for power from areas contiguous to the Valley area should not be turned down, especially when such areas are near the power generating site.

The question was raised as to whether or not the power program which is being set up will provide a yardstick which can be applied with accuracy to the power industry. The consensus of opinion was that an accurate yardstick might be developed within three or four years if the Authority's power operations can be centered in a delimited area.

[fol. 3400] Arthur E. Morgan suggested that the Authority issue a statement of policy which would put it in a position of making a fair and practical attempt in a delimited area to develop a real yardstick which could be applied to the power industry.

David E. Lilienthal stressed the fact that the Authority must work towards an increase in the use of electricity as its main power outlet and that increased uses of current would benefit both the utility companies and the Authority. He called attention to the possibility of marketing electrical appliances and suggested that the Authority get permission from Congress to do this. This proposal met with the general approval of the Board. The Board decided to proceed with its program for furnishing power to three cities at Muscle Shoals and to the territory near Tupelo, Mississippi."

Attached to and made a part of these minutes of the meeting of the Board of Directors of the Tennessee Valley Authority held October 13, 1933, is an exhibit designated as exhibit 10-13-33-a—"Basis for negotiation" to the following effect:

[fol. 3401] "(A) That two major holding companies, the Commonwealth & Southern Corporation and the Electric Bond & Share Company own a network of transmission

lines and distribution systems, together with generating facilities within the area of operations of the Tennessee Valley Authority. In the scale of rates charged by these companies these facilities are more than ample to meet existing effective demand for electric service and represent an investment of many millions of dollars. A substantial, and perhaps the major, part of the securities issued to finance these facilities are in the hands of the public.

"(B) The Tennessee Valley Authority has available about 105,000 KW of firm power at Muscle Shoals and with the completion of Norris Dam this will be more than doubled. The existing demand is being adequately supplied by privately owned utilities. There are only two ways whereby the Authority can dispose of this additional block of power: (1) Sale in bulk to the private utilities. Since these utilities have now adequate supplies, this alternative [fol. 3402] implies the creation of additional demand consequent upon either a substantial industrial development or a substantial increase in domestic farm use, rendering existing privately owned facilities inadequate. Distribution would continue to be through the facilities of existing companies. Rates to the ultimate consumer of power purchased from the Authority would be regulated by the Authority under terms of the contract of purchase.

(2) By the sale of such power to the municipalities or to the public agencies which are now being served by private utilities. The Authority might dispose of its power by taking part of the field now occupied and served by the existing utilities. Since there are few municipalities in the area which own their distribution systems such a method of disposing of the Authority's power would involve the acquisition by such municipalities of the distribution facilities now owned by the utilities or the construction of competing facilities. The statute contemplates both the above methods [fol. 3403] of disposing of the Authority's power; that is, sale to the existing utilities and invasion of the field now occupied by the utilities, but the primary method is distribution to and through public agencies.

(C) President Roosevelt has uttered publicly that one of the functions of operation of Muscle Shoals is a "yard-

stick" by which to measure the reasonableness of the electric rate charges. In view of his sponsorship of this legislation the yardstick idea must be taken to be definitely a part of the policy embodied in the Tennessee Valley Authority Act.

(D) The Authority would violate the purposes and policies laid down for its direction if it were to sell its entire output to privately owned utilities, even if such corporations were ready and willing to make such a purchase at a figure favorable to the Authority. The Authority must consider the sale of electricity to non-profit agencies as a preliminary obligation and within reasonable limitations hold its power resources available for purchase by such agencies which can be feasibly and economically served. [fol. 3404] For the Authority's operations to provide a yardstick of public operation by which to measure private operations it is essential that the Authority engage not only in the generation but participate in the transmission and distribution of electricity, since these latter two phases of electric service represent the most important part of the cost of such service. A public yardstick to have value necessarily means public operation from power house to consumer's premises. (It is for this reason that the Authority has adopted a policy of rate and accounting control of municipal distribution operations.)

(E) Contracts with private utilities for sale of current is definitely contemplated by the law, subject only to the policy of giving preference to public agencies. The following are possible alternatives which might serve as the basis for negotiations with private utilities:

(Alternatives)

"1. Sale of entire outpnt of the Authority to the private [fol. 3405] utility, subject to restrictions as to the resale price in accordance with section 12 of the Act.

2. An agreement with the private utilities binding the Authority to confine its power operations within a certain definite territory.

3. The most feasible alternative basis for negotiation consistent with our conclusions as to the law and the yard-

stick policy, which we conceive to be part of the law, would be something along the following line:

The Authority would proceed to enter into contracts with municipalities owning or about to own their distribution systems in the area immediately around Muscle Shoals and in the northeast Mississippi territory. This supplies some public operation and in a measure meets the yardstick policy.

Surplus power not needed in the aforesaid areas should be sold to the private power companies at a remunerative rate to the Authority under a co-operative arrangement whereby the Authority will attempt to secure from Congress funds with which to finance large-scale purchasing [fol. 3406] and distribution of heavy use electrical appliances, notably ranges, refrigerators and hot water heaters. The Authority will seek to be authorized by Congress to provide for the sale of these appliances to any customers directly served by the Authority, or indirectly served by the Authority, that is to say, customers on the distribution system of private utilities which are purchasing the Authority's power at wholesale. This arrangement will furnish an inducement and a consideration to the private power companies for the purchase of our surplus power. In such an arrangement it should be provided that the resale price fixed by any private power company on whose system Authority power is being conducted and utilized should carry a very low rate at the end of the schedule which will encourage and make feasible the use of the heavy appliances, the financing of which is provided for under this co-operative arrangement. It is almost certain that as a condition of any such arrangement the power companies will desire some kind of assurance that the Authority will not serve [fol. 3407] at wholesale the municipalities which do not now own their distribution systems, the point being that the principal fear of the utility is that the distribution systems which they now own will be acquired or that they will be subject to competition in the distribution end of the business. Such an agreement the Authority cannot make for the same reason set out as to an agreement to confine operations to a certain territory. If a municipality being served by a private company in whole or in part with power

supplied at wholesale by the Authority and within the purview of this co-operative arrangement as to appliances determines to acquire its distribution system and applies to the Authority directly for a supply of electricity, the present state of the law, in my judgment, would not permit the Authority to reject such application if in other respects a feasible and economical arrangement were proposed.

4. The Authority could urge that a substantial area now served by private utilities be transferred to public agencies. That is to say, that in the area, for example, in a strip of [fol 3408] perhaps fifty miles in width between Muscle Shoals and Norris Dam, that it be definitely determined that electricity shall be furnished to the consumers through public agencies, principally municipalities. This would be an important accomplishment of the yardstick theory. It would necessitate the Authority going to Congress for a large appropriation with which to assist in the financing of municipalities for the acquisition by them of their distribution systems. Obviously, the power companies would not be interested in this proposal unless they were given assurance that their properties would be purchased and not merely that the Government would finance competing systems which would leave them with their property on their hands. Some measure of protection against unreasonable acquisition prices would have to be provided. In order to take care of the existing generating facilities of private utilities, provision would have to be made either for the Authority to buy a part or all of their output or to buy the facilities themselves.

[fol. 3409] 5. Another possible alternative would be an agreement with the power companies to accept as compensation for the distribution systems in such area the bonds of the respective municipalities. Such a measure, however, has this difficulty, namely, that the municipalities generally are not in position to issue general obligations. If they issue liens against the property a conflict of interests is produced which can be productive of much disharmony and operating difficulties.

6. A further alternative would be for the Authority to cooperate in working out some method of financing these ac-

quisitions through private sources. The difficulty here is that for the Government to work on a co-operative basis with a private investment concern presents some difficult questions of policy and control. It virtually shifts for the time being control of the municipal systems from the governing bodies to a centralized financial organization which, under these circumstances, would exercise considerable power.

[fol. 3410] If none of these alternatives is acceptable to the Board or can form the basis for successful negotiations with companies, the Board is left to its present policy namely, of entertaining applications from any municipality within the areas described in the Authority's announced power policy, of building necessary transmission lines and other facilities to serve such applicants and to gradually build up an area of operations which, over a period of years if successful, will furnish a balanced load and insure the accomplishment of the yardstick objective. This could be, and it is desirable that it should be, combined with an arrangement with the power companies whereby they will continue to purchase as much power as we have available on the most advantageous basis that can be negotiated. At the present time the Authority's operation expenses are being met with some surplus out of the proceeds of the 2 mill contracts with the Alabama Power Company. Continuation of some kind of contract for the purchase and sale [fol. 3411] of power at wholesale to the Alabama Power Company is important to the Authority.

7. In pursuing the present practice of Authority of gradually working toward the building up of a separate system, it is almost inevitable that the availability of the Authority's power at fair rates will produce a market. Part of this market will be the outgrowth of agricultural experimentation projects which will spread to other areas not now served by any central station energy. Part of this growth will be through the establishment, for example, of electro chemical plants along the transmission system. In other words, the building up of a balanced load is not by any means wholly dependent upon our taking away of a market now served by the private companies. That is to say, it is not wholly dependent on the result of municipal elections and acquisitions."

[fol. 3412] COMPLAINANTS' EXHIBIT No. 709 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 547:

TVA Minutes, October 14, 1933

"The Chairman announced that President Roosevelt had ordered the Tennessee Valley Authority to proceed at once to construct General Joe Wheeler Dam (Dam No. 3), and to use its own funds for this purpose. The President will undertake to have Congress reimburse the Corporation at the next session.

The Chairman requested Authority to increase the engineering force and to employ John L. Savage, Sherman M. Woodward, Charles H. Paul, Charles H. Locher, and such other men as are needed to make preliminary investigations, prepare plans, and to begin construction of the General Joe Wheeler Dam. The Board approved the request."

[fol. 3413] COMPLAINANTS' EXHIBIT No. 710 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 551:

TVA Minutes, October 24, 1933

"David E. Lilienthal reported the results of his conference with the Commonwealth & Southern Corporation and stated that substantial progress was being made. It was his impression that the utility is tacitly recognizing that the Authority is definitely in the power business and that its purpose in being there is to develop a "yardstick" for measuring power costs.

The Authority's proposal to delimit an elliptical area for its power operations was not favorably received by the utility, Mr. Lilienthal reported, but the utililty has agreed that municipalities which desire to obtain power from the Authority shall not be denied this privilege.

It was suggested that the Authority might start its power operations in a relatively small area and expand as conditions warrants since that power program of the Authority

COMPLAINANTS' EXHIBIT No. 710 (Excluded)

assumes that surplus power will be sold to power companies upon request, subject to recovery should such surplus power be required for the use of municipalities.
[fol. 3414] The suggestion was made that the Authority buy the Tennessee Electric Power Company. The advantages and disadvantages of such a purchase were discussed at length. Mr. Lilienthal pointed out that present excess power capacity should be considered and that existing distribution systems should not be duplicated.

David E. Lilienthal suggested that the Authority attempt to develop a technique for appraising power distribution systems.

Ways and means of acquiring the power company's property were discussed. Arthur E. Morgan suggested that purchase might be made by means of a bond issue. He pointed out the merits of the plan and said it would place the Board in the position of having taken advantage of every possible opportunity to carry out a sound power program.

The results of his conference with manufacturers of electrical appliances were described by David E. Lilienthal who stated that the companies were in complete accord with the policy of the Authority to increase domestic con-
[fol. 3415] sumption of power through greater usage of electrical appliances. He expressed the opinion that the business of selling and installing electrical appliances could be put on a self-liquidating basis and that this aspect probably would meet with the approval of Congress, the Reconstruction Finance Corporation, and the Public Works Administration."

[fol. 3416] COMPLAINANTS' EXHIBIT No. 711 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 552:

TVA Minutes, October 24, 1933

The results of his conference with manufacturers of electrical appliances were described by David E. Lilienthal who stated that the companies were in complete accord with the policy of the Authority to increase domestic con-

The Tennessee Valley Authority is utilizing the nitrate properties at Muscle Shoals and is adding materially to the [fol. 3445] plant in the conduct of experiments seeking processes in the cheaper production and distribution of plant foods. This is very necessary in the rehabilitation of the land and in a permanent program of land ownership and rural development. In the preparation of phosphates, the program may require that part of the manufacturing process should be at the phosphate beds, either within or without the Tennessee Valley. The continuation of this research, together with demonstration of possible economics in actual production, distribution, and use on a commercial scale, is desirable.

Of the total area within the Tennessee River system, which has at one time been in cultivation, perhaps a quarter has been destroyed by soil erosion and that destructive process is now more active than ever. This soil erosion is also filling up and destroying the reservoirs of water-power systems. Unless it is checked, this great region and much greater areas in the Southern uplands will slip backward in material well-being. A program of land use planning has been instituted to determine the best use of the land, and [fol. 3446] the best manner of preventing its further destruction.

The forests of the region have been steadily destroyed by wasteful lumbering, by the common habit of setting fire to the woods each winter, and by the habit of clearing steep hillsides for the four or five corn crops that they will produce before the soil is washed away. The Tennessee Valley Authority has undertaken a program of devising and putting into operation a forest policy appropriate to this region, in cooperation with the United States Forest service and the several states of the Tennessee Valley area, and in harmony with regional planning of the Federal Government.

In the Tennessee Valley area there are many more people engaged in agriculture than are needed in that pursuit. As a part of the program of social and economic planning, studies and demonstrations are being undertaken for readjusting this population, with the encouragement of local industries especially for home consumption and resettlement of families displaced by the establishment of na- [fol. 3447] tional forests, the construction of reservoirs, or

by other causes. Studies are under way of economies and improvements in industrial and community organization, including cooperatives, in the use of natural resources of the region, and of the relation of agriculture to industry, with appropriate experiments and demonstrations. One of the aims is to prevent a recurrence of the congestion of people from those rural areas in our industrial centers.

The transportation system of the region, by rail, highway, water and air, has never been coordinated as to service or rates. A regional study is planned of the transportation rates, facilities, and needs of the Tennessee Valley, in cooperation with other Federal agencies, and the local agencies as a guide to a transportation policy for this region and as an example to other regions.

In cooperation with the educational, health, highway, public safety, and other authorities of the Federal Government, and of the states of the Tennessee Valley area, the Authority has undertaken to promote common understand-
[fol. 3448] ing and common effort to work out solutions to the common problems of the region. These efforts to bring about cooperation should continue.

If these and similar problems of social and economic organization can be successfully solved in this limited region, the methods and results developed will be of great value to the rest of the United States.

Respectfully, Arthur E. Morgan, Chairman of the Board.

[fol. 3449] COMPLAINANTS' EXHIBITS No. 722 TO 769, Inclusive

There are no such Exhibit numbers.

[fol. 3450] COMPLAINANTS' EXHIBIT No. 770 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 661:

Synopsis of Letter from Henry T. Hunt, Chairman of Electric Power Board of Review, to Mr. Lilienthal, November 17, 1934, and Letter from Mr. Lilienthal to Mr. Hunt, November 22, 1934

"In reply to this interrogatory, as to correspondence between TVA and the office of Federal Emergency Admin-

sumption of power through greater usage of electrical appliances. He expressed the opinion that the business of selling and installing electrical appliances could be put on a self-liquidating basis and that this aspect probably would meet with the approval of Congress, the Reconstruction Finance Corporation, and the Public Works Administration.

A memorandum dated October 20, 1933, titled, "A proposed cooperative program between the Tennessee Valley Authority and the manufacturers of electrical equipment," was submitted by David E. Lilienthal who said that the proposed program had been presented to the manufacturers of electrical appliances. A true copy of the memorandum, labeled exhibit 10-24-33-a, is attached to these minutes and made a part hereof.

David E. Lilienthal recommended that the Authority proceed with its power plans for the three cities at Muscle [fol. 3417] Shoals and the Northeastern Mississippi area; that negotiations to supply power to towns along the projected transmission line between Wilson Dam and Norris Dam be continued; and that the Authority attempt to develop additional uses for power.

Arthur E. Morgan suggested the electrification of a railway at Asheville, North Carolina, as a possible power outlet for the Authority. He also mentioned as a possibiity for increasing power usage the development of some 400 deposits of manganese ore in the valley region.

The general conclusion of the Board was that conferences with power companies should not be discontinued as long as there is evidence of good faith in the negotiations; that conferences regarding the distribution of electrical appliances to encourage the use of electric power should proceed; that there should be a continuation of effort toward working out an arrangement for delimiting power areas; and that further consideration should be given to the proposal to purchase the Tennessee Electric Power Company's property.

[fol. 3418] It was decided that Mr. Lilienthal should confer with Senator Norris and get his views on the power projects and negotiations pending."

[fol. 3419] COMPLAINANTS' EXHIBIT No. 712 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 554:

TVA Minutes, November 27, 1933

"David E. Lilienthal reported that he is attempting to work out a comprehensive plan with the cooperation of the Commonwealth & Southern Corporation which will enable the Authority to set up an area for its power operations, and in which its relations with the private utilities will be comparable to the relations which might exist between two privately-owned utilities operating in the same area. He stated that he would like to integrate the existing facilities but not in any way relinquish any of the rights that the Authority is trying to establish in connection with its experimental power project.

He pointed out that through agreements covering the use of rights-of-way and the interchange of facilities, the Authority can cut down its power construction budget tremendously because the program of constructing costly transmission lines can be delayed until the Authority is in a position to see clearly the character of its objectives and determine the quality of the obsticles which confront its efforts.

[fol. 3420] In accordance with Mr. Lilienthal's suggestion, the Board adopted the policy of holding up actual construction of transmission lines, except those being constructed in rural districts by labor provided by the Civil Work Administration until January 1, 1934, so that the results which will accrue from the operation of the program now being prepared can be observed. The planning, drafting, and specification work is to proceed inasmuch as the results of this effort can be used elsewhere.

The Board approved Mr. Lilienthal's work and authorized him to continue his negotiations with the utility as outlined and to report the results of his conferences to the Board.

Mr. Lilienthal stated that he had been convinced since he had conferred with the Electrical Manufacturers Association on the project of making and distributing low cost domestic electrical equipment of good quality, that the policy for the Authority to follow is to contact all manu-

COMPLAINANTS' EXHIBIT No. 712 (Excluded)

facturers of electrical appliances in order to get the benefit [fol. 3421] of competition on prices. One advantage would be that the most aggressive and most imaginative manufacturer would be the one to set the price and quality rather than the dullest and least ambitious of the group."

[fol. 3422] COMPLAINANTS' EXHIBIT No. 713 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 557:

TVA Minutes, December 16, 1933

"The Board discussed the Aurora Landing Dam project, and reached the conclusion that it would not be advisable to have the dam financed and built by private parties, inasmuch as such an arrangement would interfere with unified control of the water power development of the Tennessee River system.

The Board decided not to make at this time a survey of the flood control problem affecting the city of Chattanooga, as requested."

[fol. 3423] COMPLAINANTS' EXHIBIT No. 714 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 557:

TVA Minutes, January 19, 1934

"The Board considered the desirability of establishing the complete control and jurisdiction over all power sites in the Tennessee Valley area so that the power resources of the Valley can be developed in an orderly, systematic, and efficient manner. Messrs. Bock, Snyder and Swidler were instructed to study the problem and make recommendations to the Board.

A request received from the Lord Construction Company asking permission to proceed with the construction of a proposed steam power development located about one hundred (100) miles east of Asheville, North Carolina, was referred to Mr. Lilienthal for reply."

[fol. 3424] COMPLAINANTS' EXHIBIT No. 715 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 557:

TVA Minutes, March 30, 1934

The minutes of this meeting approved a project entitled "Tennessee Valley Section of the National Plan." This project contained the following provisions:

"Purpose of Project:" To prepare a comprehensive regional plan of the entire Tennessee River basin, as a guide and coordinator of public and private developments now under way or in prospect.

"Personnel Required:" Staff of 30 to be built up during the remainder of February, March and April, together with consultants as needed.

"Appropriation Required: (From 1934-5 budget, submitted February 15, 1934—division of land planning and housing, regional planning section).

Personal services—project R. P. 1	$30,769.50
Other obligations (Supplies, Communications, travel, etc.—Share of $13,500 total shown in budget)	$ 4,000.00
Administrative Expense—(Share in administrative expense of Regional Planning Section and of Land Planning Division)	$ 4,000.00
Total — to June 30, 1934	$38,769.50

[fol. 3425] Time Required for Completion: Remainder of fiscal year, 1934, continuing through 1935 in expanded form, for completion of major portion of plan by June, 1935. Work to go on thereafter as continuation project with reduced staff.

Cooperation: All Divisions. This is essentially a project for the coordination of all TVA and outside activities affecting land development. It will depend, for factual material and recommendations, on all Divisions engaged in development work, as well as on Federal, State and local agencies.

Need of Project: The Tennessee Valley is not waiting for a plan—its development is constantly going on and the

pace is daily quickening. During the next few years miles of new pavement will be laid that will later be abandoned, expensive bridges, schools and homes will be built below the level of future lakes, settlers will start farms on land that shortly will be incorporated in public parks and forests, transmission lines will be built to serve areas that will be [fol. 3426] depopulated, mistakes by the hundred will be made, costly mistakes and damaging mistakes,—unless there is a comprehensive plan against which individual developments can be checked in advance.

The Authority is embarking on a hydro-electric program which will completely change the physical structure of large sections of the Valley, and will affect every part of it. Extensive rearrangement of the highway system and of railroad lines will be required. Other parts of the program, coupled with the operations of other Federal agencies will alter established modes of living, change farming methods and industrial operations, make substantial changes in the ownership and use of lands, and cause major shifts in population.

The result of all these forces acting in the Valley will be utter confusion unless there is prepared a master plan through which they may all be coordinated and directed toward a common objective. The entire program of the Authority will be brought to naught and the huge public and private investments in the Valley jeopardized if the estab- [fol. 3427] lishment of such a plan is too long delayed. Its preparation is a long and careful process, it cannot be completed overnight. It will require extensive study, wide collaboration, and much reshaping and adjustment after it is put in preliminary form. An early beginning is therefore imperative.

It is to develop the skeleton of such a plan that this Project is set up. Every part of the Valley program, whether it is physical or social or economic or political, public or private, relates in some way to the arrangement and use of land, and through its relation to the land is brought into relationship with every other part. Land planning is the coordinator between the physical construction of dams and roads, the economic effect of cheap power and fertilizer, and the social composition of the region. Through the planning of the physical development of the Valley, the other essen-

tial elements of planning are brought together and given comparable expression.

A comprehensive plan presented graphically will bring [fol. 3428] out instantly any conflicts that may exist between highway and reservoir proposals and lead to their correction before expensive construction is undertaken. It will show the relationship of proposed centers of agricultural or industrial production to their urban markets, the avenues for transportation of their products, their place in the power transmission system. Map presentation will show at a glance the bearing on county consolidations of physical barriers, routes of communication and population centers. It will show the relative amounts of land and relative position of areas classed as crop or grazing land, forests or submarginal areas, and relate them to centers of population, mineral resources, transportation and all the other elements of the Valley life. Map presentation of physical conditions and proposals frequently discloses economic opportunities arising from the juxtaposition of factors whose relationship would otherwise be missed.

As a protection to the Authority itself against costly [fol. 3429] mistakes; as an aid to intelligent coordinated planning of the Valley life; and as a guide for those myriad private and public developments in progress throughout the Valley at all times, a master plan of the whole Valley area is urgently needed, and the Division of Land Planning and Housing, herewith requests Authority to commence its preparation.

The type of personnel required for this work will not be readily found, and it will probably be some time before an adequate and qualified staff can be selected and brought together. For this reason at least preliminary aut' orization will be required several weeks before the project itself can be inaugurated. The emphasis of all branches of the President's program on planning has already brought into Government service the majority of those proficient in the planning field. There are few, if any, of those qualified for a responsible part in the preparation of a Valley plan who are in need of employment. The result is that this Division will have to offer salaries in excess of those received in other professions where the number of men available is greater or the current demand less, and it will have to offer an

COMPLAINANTS' EXHIBIT No. 715 (Excluded)

[fol. 3430] opportunity for constructive service and a degree of permanency at least as great or greater than is now offered in other planning activities of the Government. It is believed that the salary schedules set up in the budget for this project are sufficient to attract the type of men required if reasonable permanency can be assured."

[fol. 3431] COMPLAINANTS' EXHIBIT No. 716 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 563:

TVA Minutes, April 13, 1934

At the meeting of the Board of Directors of Tennessee Valley Authority held on April 13, 1934, there was approved a project designated "Tennessee Valley Authority project authorization request," to the following effect:

"From Llewellyn Evans, Chief Engineer, dated March 27, 1934, Project Title, Acquisition of power Distribution Facilities to serve the City of Athens and Limestone County, Alabama. Purpose, purchase of properties from Alabama Power Company to serve Athens, Alabama, and Limestone County, covered in contract negotiated with the above company January 4, 1934. Procedure, Legal Department to Examine Title of all Property involved as described on page 3 of this request, and Treasury Department be authorized to make payment for property transferred thus acquiring title in the name of the Tennessee Valley Authority after engineering division has made suitable inventory. Estimated cost, $177,396.52. Recommendations, briefly this project consists of completing a portion of the contract entered into [fol. 3432] January 4, 1934, between the Tennessee Valley Authority and the Commonwealth & Southern Corporation to purchase properties owned and operated by the Alabama Power Company in Limestone County, Alabama. The properties to be taken over as described in exhibit B of the Commonwealth & Southern contract as follows:

Page 2 of exhibit B: Approximately 14½ miles of 44,000 volt transmission line from Athens to Belle Mina.

Sheet 4 of exhibit B: Belle Mina central substation, consisting of three 150 kva transformers with one outgoing

COMPLAINANTS' EXHIBIT No. 716 (Excluded)

unregulated circuit and the Athens district substation consisting of four 1,000 kva transformers 44,000 to 11,000 volts supplying three outgoing unregulated circuits.

Sheet 5 of exhibit B: Item 10, which lists all of the rural lines in Limestone County.

Sheet 6 of exhibit B: Items 8 and 10, describing the Belle Mina distribution and the Athens distribution.

[fol. 3433] It might be well at this point to discuss properties, described on sheet 6 of exhibit B, since this property is not included in the $1,000,000 mentioned in paragraph 2 of the Commonwealth & Southern contract. Without item No. 10, exhibit B, sheet 6, will be unable to serve the city of Athens and by acquiring the property listed in this item as well as item 8, we will acquire all power facilities in Limestone County. The City of Athens being a municipally owned distribution system, will be able to supply all of the service required within the corporate limits. The Tennessee Valley Authority can organize the remaining rural territory consisting of Belle Mina, Capshaw, Tanner, Ardmore and Elkmont in a rural power district administered by the present personnel of the Alabama Power Company at Athens, or personnel that we may see fit to substitute in place of them and thus operate this rural section until such time as a reasonable rural cooperative organization may be formed to take over the operation of this territory.

There might be some hitch in the acquisition of the properties listed on sheet 6 of exhibit B, due to the fact that this [fol. 3434] property is not included in paragraph 2 of the contract, but we are sure the power company would prefer to accept our money for a definite sale rather than risk the chance of these facilities being duplicated by the communities themselves."

[fol. 3435] COMPLAINANTS' EXHIBIT No. 717 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 564:

TVA Minutes, June 30, 1934

David E. Lilienthal described to the Board the status of negotiations with the Alabama Power Company and sub-

mitted recommendations concerning the acquisition of electric distribution properties in Northern Alabama. The Board unanimously adopted his recommmendations which are contained in exhibit 6-3-34-b, a true copy of which is attached to these minutes and made a part hereof.

The recommendations referred to were as follows:

"To: The Board of Directors.
From: David E. Lilienthal.
Date: June 30, 1934.
Subject: Recommendations to the Board for acquiring distribution properties in Northern Alabama.

"It is proposed that the Authority shall immediately acquire from the Alabama Power Company distribution properties in Northern Alabama to be operated under the following plan.

1. Properties shall be purchased for the lump sum of $1,000,000.00, and retained by TVA for an interim period of direct operation during which additional rural lines will be [fol. 3436] constructed and the urban properties rehabilitated and improved. The rates to be charged shall be the basic TVA rates plus a surcharge of 10 per cent to be applied to all classes of customers. This surcharge is required in order that the capital investment may be returned to the TVA within 10 years. If no surcharges were imposed, it would require from 15 to 25 years to retire the investment.

2. At the expiration of the interim period, which may be from six months to several years as the Authority may determine, the properties will be reconveyed to local municipalities, county associations, or other local organizations, upon terms and conditions outlined in the attached "Plan for Distribution of TVA Electricity in North Alabama."

3. During the period of operation, the accounts will be carefully kept and all profits from operations and income from surcharges will be applied toward the reduction in purchase price offered to the local organizations.

4. It is understood that the plan will not be operative [fol. 3437] unless and until definite and satisfactory commitments have been made by local organizations expressing

COMPLAINANTS' EXHIBIT No. 717 (Excluded)

their willingness to assume responsibility and control of local distribution systems at a later date.

5. The proposed plan will permit the Authority to increase its power market almost immediately. It will prevent duplication of existing systems by municipalities now contemplating construction with PWA funds. It will make possible the throwing together of rural and urban electric systems and the development of economic load areas.

6. Figures on evaluation and earning power justifying the option price of $1,000,000 which TVA has obtained from the Commonwealth and Southern are given in a memorandum entitled "Program for Acquisition of Distribution Properties in Northern Alabama."

[fol. 3438] COMPLAINANTS' EXHIBIT No. 718 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 566:

TVA Minutes, July 17, 1934

"The Board approved David E. Lilienthal's acceptance of President Roosevelt's invitation to serve on the National Power Policy Committee whose function it will be to work out a plan to unify the power resources of the country and to develop a national policy designed to make an abundant supply of power available to the consumer at reasonable rates."

[fol. 3439] COMPLAINANTS' EXHIBIT No. 719 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al, v. Ashwander, et al.) page 570:

TVA Minutes, August 7, 1934

"The Board considered the proposed budget covering the Authority's operations for the fiscal year ending June 30, 1935, copies of which the Board members had previously studied individually. After spending two days analyzing, discussing and revising the various items in the proposed

COMPLAINANTS' EXHIBIT No. 719 (Excluded)

project, the Board unanimously adopted the following Resolution:

The budget referred to above contained under caption 'Electricity Program for the Fiscal Year Ending June 30, 1935,' an item of $100,000 entitled 'Sales Promotion—EHFA'; also, 'Sales Promotion-Chattanooga Merchants Display'; also 'Sales Promotion Electric Kitchen.' This budget also included the following items: For the fiscal year stated $270,490 for engineering and general data and land acquisition (dam) for Hiwassee Dam and included certain supporting statements; set out on pages 4 and 5 thereof. The budget also included similar items for the French Broad Dam and included design studies 'which will ultimately lead [fol. 3440] to the final project plans and working drawings from which dams, power houses and other structures will be built.' Also like items for Aurora Dam with like supporting statements.

[fol. 3441] COMPLAINANTS' EXHIBIT No. 720 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 571:

TVA Minutes, September 18, 1934

"David E. Lilienthal reported to the Board that he had conferred with representatives of the City of Memphis with regard to supplying the City with power. He described the present status of negotiations."

[fol. 3442] COMPLAINANTS' EXHIBIT No. 721

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 575:

Report of Arthur E. Morgan to the President on the Activities of the Tennessee Valley Authority

"The President, The White House, Washington, D. C.

MY DEAR MR. PRESIDENT:

"The Tennessee Valley Authority has been operating for approximately ten months. In that period rapid progress

has been made in the construction of Norris Dam as well as in the other features of the program. The Authority has taken over the operation of the Muscle Shoals power plant, and by construction and purchase is acquiring a distribution system which should absorb all of the electric power now available at the plant. Arrangements are now being made for the sale of this power, including the development of rural electrification. A corporation known as the "Electric Home and Farm Authority" has been organized [fol. 3443] to stimulate the use of electric appliances and the consumption of electric power.

Last October you asked the Authority to start construction on Joe Wheeler Dam as a means of providing additional employment. Work was begun immediately. In view of the rapid development of the power program, the need for this additional power may materialize sooner than was expected.

In the past our water resources developments have merely been in separate, uncoordinated units. The development and utilization of the water resources of the Tennessee River system in accordance with a single unified plan by a single public Authority, as contemplated in the Tennessee Valley Authority Act of 1933, makes possible great increase in use and very great economics of expenditure. I therefore am pleased to report the beginning of such development and control of the Tennessee River and its tributaries for navigation, flood control, power development, and other uses, except for the operation of navigation facilities, under [fol. 3444] the administration of the Tennessee Valley Authority, and the unified development of that river system by this Government agency as a national policy. Provision should be made at present for continuing the construction of the Joe Wheeler Dam, and for beginning work on about four other dams on the Tennessee River or its branches.

The power program of the Authority, in promoting the wider and better use of electricity for the Tennessee Valley and for the nation, its program of encouraging rural electrification, and the design and distribution of low-cost electrical appliances, is a stimulus to the manufacturer of appliances, to both publicly owned and privately owned utilities, and the larger and better use of electric power by the whole people. That program should be continued and extended.

istration of Public Works, relating to loans to municipalities in Alabama for the purpose of constructing electric utility systems, TVA se-t out a letter dated November 17, 1934, from Henry T. Hunt, Chairman of Electric Power Board of Review (Federal Emergency Administration of Public Works) to the defendant David E. Lilienthal, Director and General Counsel of TVA, asking to be advised as to the developments in the matter of TVA's option to purchase Alabama Power Company's properties, and requesting a list of the towns, and to be advised "how this and other recent developments will affect the attitude of TVA towards applications now before PWA for electric projects in the area."

The following was the reply of TVA, by David E. [fol. 3451] Lilienthal:

Knoxville, Tennessee,
November 22, 1934.

Hon. Henry T. Hunt, Chairman, Electric Power Board of Review, Federal Emergency Administration of Public Works, Washington, D. C.

DEAR MR. HUNT:

I have your letter of November 17, regarding the 14 north Alabama towns. A list of the towns follows:

Courtland	Red Bay
Decatur	Sheffield
Falkville	Town Creek
Florence	Tuscumbia
Hartselle	Cherokee
Leighton	Russellville
Moulton	Rogersville

As to the TVA's attitude toward applications now before PWA for electric projects in this area: If the transfer of these properties by purchase can be effected in the reasonably near future, then it is the expressed position of these [fol. 3452] communities, as our records indicate, that PWA loans will not be utilized to carry out the mandate of their electorate for the acquisition of a distribution system. If, however, the purchase transaction is blocked and indefinitely delayed by tactics which has been heretofore em-

COMPLAINANTS' EXHIBIT No. 770 (Excluded)

ployed, then it may well be that the communities will not desire to wait indefinitely but will take the position that they desire to construct their own distribution systems.

We will advise you promptly as to developments in this proceeding. The Alabama Commission has taken under advisement the matter of approving the sale by Alabama Power Company to TVA. The other day Judge Grubb of the Federal Court denied a temporary injunction against the transfer petitioned for by certain stockholders of the Alabama Power Company. I will keep you advised of developments.

Very truly yours, Tennessee Valley Authority by David E. Lilienthal, Director and General Counsel.

[fol. 3453] COMPLAINANTS' EXHIBIT No. 771 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 662:

Synopsis, Telegram, W. L. Farr, Mayor of Tuscumbia, Alabama, June 19, 1934

On June 19, 1934, W. L. Farr, Mayor of Tuscumbia, Alabama, wired Lilienthal advising that the Carmichael Act had been declared valid by the Supreme Court and asking: "May we expect you to negotiate purchase existing distribution system or shall we proceed with application for loan from WPA?"

[fol. 3454] COMPLAINANTS' EXHIBIT No. 772 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 663:

Telegrams, David E. Lilienthal to Mayor W. L. Farr, June 20, 1934

"Dated Knoxville, Tennessee, June 20, 1934.

MAYOR W. L. FARR, Tuscumbia, Alabama:

"Replying your wire in which you inquire if TVA will negotiate purchase existing distribution system or whether

COMPLAINANTS' EXHIBIT No. 772 (Excluded)

City should proceed with application for loan from PWA. For several months TVA actively considering purchase existing distribution systems in Northern Alabama such cities later to repurchase from TVA systems including rural without issuance of bonds and solely out of electric revenues. This program was intended to eliminate delays and uncertainties involved in PWA situation and obviate duplication of distribution systems and expensive competition. Negotiations with Alabama Power Company for option on distribution facilities throughout Northern Alabama by TVA thus far unsuccessful because we find price fixed by company in excess reasonable value of property [fol. 3455] considering depreciation. Due to this failure of negotiations undersigned conferred June thirteenth with Administrator Ickes and General Counsel Hunt of PWA. Expect further work from PWA June twenty first. Regard inability to buy existing facilities most unfortunate but see no alternative for cities but to press PWA applications. Unless pressure occasioned by passage additional appropriation prevents desire to spend several days conferring with you and other responsible parties in Northern Alabama early as possible. Your fine assurance of cooperation in advancement of entire Valley deeply appreciated.

David E. Lilienthal."

[fol. 3456] COMPLAINANTS' EXHIBIT No. 773 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 664:

Synopsis of Correspondence Between PWA and TVA Reallotment to Hartselle

Correspondence was also produced between the Federal Emergency Administration of Public Works and TVA inquiring whether TVA could serve the City of Hartselle in the event that a PWA allotment should be made to Hartselle for the construction of a distribution system. The letter discusses the question whether the Alabama Power Company should be compelled to serve the proposed mu-

COMPLAINANTS' EXHIBIT No. 773 (Excluded)

nicipal distribution system, and concluded, "however, if TVA can supply the City with power upon completion of the project it will not be necessary for us to go into this question." TVA replied under date December 28th, 1934 that "TVA can supply the City of Hartselle with power upon completion of the project which it now has under way."

[fol. 3457] COMPLAINANTS' EXHIBIT No. 774 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 664:

Budgetary Statement—"Estimate of Appropriations, Fiscal Year Ending June 30, 1936) and the Justification, Relating to the Electricity Program

13. In answer to this interrogatory, requesting TVA to attach a copy of its operating budget, its budget for capital expenditures, a statement of its operating revenues and expenses, and as to the — amounts set aside for construction of generating plants, transmission lines and distribution systems, the TVA set out in its answers a report entitled "Estimate of appropriations fiscal year ending June 30, 1936 (revised November, 1934)."

This document is set out in full in the Appendix.

The document is prefaced by a statement entitled "Justification, Tennessee Valley Authority Budgetary Request," stating that the general purposes of the Tennessee Valley Authority are as follows:

1. Unified development and control of the water resources of the Tennessee River and its tributaries through the construction of dams to provide navigation control floods, and produce power.

[fol. 3458] 2. Utilization of the power resources as a yardstick in determining the relative costs of public and private power operation, and distribution of this power to the greatest number of people.

3. Experimentation to lower the cost of production, distribution and application of the major elements of plant food.

4. National planning for a complete river watershed, including erosion control, afforestation, the further use of mineral resources, the promotion and coordination of industry and agriculture, surveys and plans for the proper use of land, and the general social and economic well-being of the Valley.

This "justification" thereupon proceeded to describe the progress of the work under construction on Norris and Wheeler Dams, and included the following statements:

"A power policy has been formulated. Wholesale and retail rates have been fixed. The nucleus of a TVA power system has been established through the purchase of transmission and distribution facilities. One hundred miles of [fol. 3459] rural lines have been constructed. Arrangements have been made to serve more than 50 municipalities and private power companies have been stimulated to substantial rate reductions. Low cost electric appliances have been made available through regular retail dealers by the Electric Home and Farm Authority in cooperation with manufacturers. In Tupelo, the first city to use Muscle Shoals power, low rates and low cost appliances have increased the use of electricity one hundred per cent over last year. Similar increase is in evidence elsewhere.

"The budget request for 1936 provides for the continuation of the above program. Norris and Wheeler Dams will be completed. Two additional dams are proposed as navigation and flood control projects, and as a means of providing additional employment. Electrical properties acquired or constructed in 1935 will be operated and will provide additional revenues. Further steps will be taken to round out the electrical system and to increase the use of electricity."

The budgetary request or estimate contained a summary of all its programs, divided into Water Control, Electricity, [fol. 3460] Fertilizer, Regional Development, Administrative in General, Service Activities, aggregating for 1936 $57,169,954; for 1935, $67,550,023; and for 1934, $12,365,175.

Under Water Control were listed Norris, Wheeler and Pickwick Landing Dams, and an undesignated "tributary dam or dams" and "main river dam."

COMPLAINANTS' EXHIBIT No. 774 (Excluded)

The Electricity program for 1936 is subdivided into Planning and Development, Administrative and Equipment, Engineering and Design, operation of power plants ($608,000), Mississippi Division operation, Alabama Division operation, Tennessee Division operation, and construction and/or acquisition ($13,211,400). This summary indicated revenues for 1936 from the operation of the electricity program of $4,600,000. The summary set out the expected cost of operating the respective steam and hydro plants, and indicated the revenue to be expected from wholesale sales, indicated $770,000 of revenue expected from the Mississippi Division, $800,000 from the Alabama Division, and $2,630,000 from the Tennessee Division.

[fol. 3461] Under the sub-division Construction and/or acquisition under the Electricity Program, the estimate indicated that * * * items of classifications of expenditure, including transmission lines, substations, power plants and facilities to serve tributary dam, service connections with industries, increasing the generator capacity at Wilson Dam, high tension circuit and equipment, transformers, new rural lines in Mississippi, service extensions and connections, voltage regulators, rural lines in Alabama and Tennessee, the purchase of properties of Tennessee Public Service Company, of Tennessee Electric Power Company, Alabama Power Company, new service extensions and connections, communication circuits, interconnection circuits, the construction of a 110 kv. line from Wilson Dam to Tupelo, industrial lines and extensions in Alabama and Tennessee, miscellaneous high tension lines and substations ($4,250,000), and concluded with the following items:

"Purchase of Additional Transmission System, $5,017,000."

[fol. 3462] Under the estimate for the Fertilizer Program were included $1,940,000 for the operation of an electric fertilizer plant, construction of additional furnaces, etc., aggregating $4,010,000 for 1936; and indicated expected revenues from fertilizer operations of $1,340,000.

Under the item Administrative Equipment is included, among others, "Sales Promotion, $100,888 (1935)."

COMPLAINANTS' EXHIBIT No. 774 (Excluded)

Under the heading Regional Development Program were included $1,500,000. Under the caption "Industry, $805,000; under agriculture, $300,000; under Social and Economics, — and $2,200,000 under Norris area development, etc. This $1,500,000 of industrial development included for the year 1936, $700,000 for research, $180,000 for surveys and promotion of industries, $50,000 for industries and power market studies, etc.

The estimate contained the break-down under the respective headings Engineering, Planning and Geology, For-
[fol. 3463] estry, Social and Economic, and Land Planning, including among others, $100,000 for research in social studies, and archaeological survey, planning mountain regions, etc. The summary also included $40,000 of indicated expenditure under the heading "Materials and services to EHFA and others."

[fol. 3464] COMPLAINANTS' EXHIBIT No. 775 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 669:

TVA Answers Respecting Its Corporate Functions.

28. In answer to interrogatories as to its corporate functions, TVA set out its departmental organization. The Electric Department indicated a steam power generation division, hydraulic power generation, internal combustion generation, transmission, distribution (city and rural), utilization, commercial, new business, and general office. The statement set out the production expense by plants, breaking them down into hydro-electric plants, steam plants, and internal combustion plants.

Among the activities scheduled under the Industrial Division were shown to be 44 employees, and were included the following captions:

"Number of Representatives of Industrial Companies canvassed with a view to locating plants in the Tennessee Valley."

COMPLAINANTS' EXHIBIT No. 775 (Excluded).

"Number of Companies which have established branches in the South or moved to the Tennessee Valley as a result [fol. 3465] of representations made by TVA Industrial Division employees."

In the analysis of the production cost of electric plants, division is made between production for commercial use and non-commercial use, and the figures are set out for the operation of the steam stand-by plant at Tupelo, Mississippi, having a plant generating capacity of 3,500 kw.

[fol. 3466] COMPLAINANTS' EXHIBIT No. 776 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 683:

Stipulation as to Testimony of Harold L. Ickes.

"The parties to the above styled cause, acting by and through their respective solicitors of record, do hereby stipulate and agree that if his testimony had been taken in this case, Harold L. Ickes would have testified in substance as follows:

"That the telegram from him to Mayor Lee Glenn, Florence, Alabama, dated July 11, 1934, was sent after a conference with David E. Lilienthal.

"That prior to November 1, 1933, David E. Lilienthal conferred with the Administrator of Public Works, and that the Administrator expressed his willingness to consider in a co-operative manner applications for loans in the Tennessee Valley Area for municipal electric systems where towns had entered into contracts for power with Tennessee Valley Authority.

"That from time to time after January 4, 1934, consideration and action on applications for loans from Alabama towns in the area covered by that contract were affected by advice from the Tennessee Valley Authority as to the existing status of negotiations for the purchase of such [fol. 3467] properties. Within the last few weeks, at about the time of the letter of David E. Lilienthal to the Alabama

COMPLAINANTS' EXHIBIT No. 776 (Excluded).

Municipalities, consideration and action upon such application was expedited.

"That counsel for Tennessee Valley Authority appeared as amici curiae with counsel for the Public Works Administration in filing the brief in the Supreme Court of Alabama in the case of Oppenheim versus City of Florence in support of the validity of the proposed revenue bonds proposed to be issued by the City of Florence to PWA for the proposed PWA loan and grant to that town.

"That the reference in the Chattanooga Times of November 19, 1934, quoting Mr. Ickes as stating that the power companies have instituted suit and are using the money of the companies to go into Court with dummy lawsuits in an effort to stop the inevitable" is a correct quotation.

"That the Administrator of Public Works regards that part of the Tennessee Valley Authority program relating [fol. 3468] to the generation, transmission and sale of power as constituting a part of the general policy and program of the national administration."

Supplementing the stipulations as to the testimony of Harold L. Ickes, it was agreed that counsel for Plaintiffs might read in evidence the following letter addressed to him from Henry T. Hunt, Chairman of the Electric Power Board of Review:

"As to the action taken on a protest filed by Mr. A. C. Garber, Chairman, Alabama Power Company's Preferred Stockholders Protective Committee, I read the protest as chairman of the Electric Power Board of Review and concluded that all matters on which the protest was based had been considered by the Board. Accordingly, the protest was filed."

[fol. 3469] COMPLAINANTS' EXHIBIT No. 777 (Excluded).

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 686:

PWA Electric Power Board of Review Opinion re Decatur, Alabama.

Introduced in evidence as representative of the method of handling the Public Works Administration loans to the

municipalities, and of the attitude of PWA with reference to such loans, were various proceedings relating to the loan of the City of Decatur, as follows:

"Whereas, the Electric Power Board of Review and the Deputy Administrator recommended that the project of the City of Decatur, Alabama, for the construction of an electrical distribution system, including the low side of the substation and equipment, to be included in the comprehensive program of Public Works for the reason, among others, that the Tennessee Valley Authority has acquired the necessary transmission lines to serve said distribution system and the financing of said project will aid said Authority in obtaining a market for its electrical energy:

"Resolved that said project be included in the comprehensive program and that the sum of $350,000 (of which not [fol. 3470] to exceed $100,000 shall be a grant) be allotted to finance the accomplishments thereof, subject to the execution of a contract satisfactory to the Administrator and in accord with the recommendations of the "Electric Power Board of Review" dated June 22, 1934, as amended by its report of July 30, 1934."

The recommendations of the Electric Power Board of Review, referred to in the above resolution, introduced as Plaintiff's Exhibit 28-A, was as follows:

"Subject: Application for loan and grant of the City of Decatur, Alabama, (Docket No. 6587) for the purpose of constructing distributing system, including low side of the substation and equipment, in the sum of $371,743.

After review of the Docket, this Board finds:

"1. The engineering division by its supplemental report made the following conclusion and recommendation:

'It is our opinion that the proposed project is a public necessity and of social desirability; that it will afford needed employment, and that on the above assumptions it is technically and economically sound.'

[fol. 3471] "The assumptions referred to are that.

(a) 'The municipal plant will receive, in addition to all the municipal load, 60 per cent of all other business in the

first year of operation, and 80 per cent at the end of the loan interval.'

"This assumption, in the opinion of this Board, is far below that portion of the total business the municipality will receive, inasmuch as it will offer rates at least 60 per cent less than the present rates being charged by the Alabama Power Company by reason of the contract offered the City by the TVA; and as the Alabama Power Company, the competitor, cannot reduce its rates by anything like 60 per cent of its present rates by reason of its service to the City of Birmingham, and as it would be under the necessity of reducing its rates to other cities served by it in Alabama. If rates required by the TVA, contract are charged and the city obtains the same business the company now has, its income will provide for maintenance and operating costs, interest, amortization, and taxes, and a net income [fol. 3472] over all $10,525. This appears by the estimate of O. M. Rau attached. This estimate makes no allowance for what may reasonably be expected in the way of increase of current sold and of income by reason of the heavy reduction of rates. That a reduction of rates produces larger net incomes is shown, among other examples, by the experience of the City of Washington, under its contract with the Potomac Electric Company covering the years 1925 to 1934. Under this contract the Company is required to apply one half its surplus to rate reduction. The maximum rate in 1924 was 10 cents per kwh. Rates are now, after successive reductions, 3.9 cents for the first 50 kwh., 3.3 cents for the next 50, 2 cents for the next 100 and 1.5 cents for all over 200. In 1924 the Company earned 3.4 times its bond interest after allowing for depreciation and taxes. In 1932 with rates cut to one-third it earned its interest twelve times. Earnings per share increased from $26.90 in 1924 to [fol. 3473] $68.08 in 1932. The privately owned electric company in Hartford, Connecticut, has had a like experience. Hence this Board finds that the assumption of the Engineering Division on which it bases its conclusion that the project is technically and economically sound is far less favorable to the City than the facts warrant.

The same finding applies to the estimate of Mr. O. M. Rau. This Board is of opinion that during the first year after the City begins business it will have at least 75 per

cent of the business measured in dollars, and an increase of not less than 10 per cent in each succeeding year. Accordingly it finds that the project is technically, economically and financially sound.

The said finding of financial soundness is supported by the report of the Finance Division dated April 12, 1934. This report was based upon a report of the Engineering Division dated March 6, 1934, a prior report to that referred to above and one less favorable to the City. The [fol. 3474] Finance Division report of April 12, found that on the basis of the division of business estimated by the engineer-examiner, '50 per cent of sales the first year and 75 per cent the 20th year and all municipal business' the project will earn only about 1.05 times the debt service for the first several years with a deficit for the first year. Inasmuch as the estimate of the engineer-examiner referred to has now been modified so that the estimates of division of business is altered to all the municipal load and 60 per cent instead of 50 per cent the first year, with an increase of 2 per cent each year, it is obvious that the Finance Division would approve the loan on the revised basis. Furthermore, this Board is of opinion as stated above, that even the revised estimate upward of the engineer-examiner is too low in view of the heavy reduction of rates proposed. As stated above this Board is of opinion that the said reduction will increase the portion of business obtained by the City and also the net revenue.

[fol. 3475] 2. This Board has further reviewed the conditions attached to the report of the Engineering Division dated March 6th 1934, as follows:

'3-a The applicant shall furnish evidence satisfactory to the Administrator that the Alabama Power Company can be legally required to furnish service on a day to day basis until the acquisition by the municipality of the used and useable portions of the existing distribution system.'

This condition having been reviewed by this Board is disapproved as impossible of performance; and the following condition substituted:

"The applicant shall furnish evidence satisfactory to the Administrator that the Alabama Power Company can be legally required to furnish service on a day to day basis until the municipal system is ready for service.

COMPLAINANTS' EXHIBIT No. 777 (Excluded).

This Board has reviewed the further condition:

'3b. And that thereafter' (the acquisition of the competitive system) 'the power company will be without au-
[fol. 3476] thority to sell power within the municipal limits.'

This condition is also disapproved by the reason that it prevents any loan being made as such a showing involves a lawsuit and is probably impossible of performance as the company has a franchise until October 1, 1949. If the TVA fails to purchase the distribution system of the company and the municipal system being under the necessity by its contract with TVA of offering rates at least 60 per cent less than existing rates, the company, being unable to provide an equally low rate will be unable to continue to compete and must withdraw. Hence this condition should be stricken out.

This Board has further reviewed conditions 4a of the engineer-examiner:

'(a) That no depreciation charges, taxes or any other items of expense, except normal operating expenses and power and lighting extensions shall be charged against the revenues of this project.'

It approves this condition.

[fol. 3477] It has also reviewed condition 4b:

'That all municipally used electric energy shall be paid for at current selling rate schedules annually during the interval of the loan from the general fund into the account of this project.'

This Board also approves this condition.

This Board finds also that the Engineering Division omitted to recommend a grant. Its report does not show any reason for this omission.

This Board finds that the applicant is as much entitled to a grant as other applicants to which grants have been allowed.

Resolved, that this Board recommends an allotment to the applicant in the sum of $372,000, of which not to exceed thirty per cent of the cost of the labor and materials employed thereon, estimated at $100,000, shall be a grant.

(Signed) Henry T. Hunt, Chairman."

[fol. 3478] COMPLAINANTS' EXHIBIT No. 778 (Excluded)

Excerpt from "Exhibit K" to Defendants' Answer (Transcript of Record in the case of TVA, et al., v. Ashwander, et al.) page 691:

Reestablishment of Electric Power Board of Review in PWA

"Effective May 9, 1934, the 'Electric Power Board of Review' is established, membership, Henry T. Hunt, Norris L. Cooke, and Otto M. Rau.

It will be the duty of this Board to review disapprovals, and special conditions imposed, by any division of PWA and to make recommendations to the Deputy Administrator with regard to applications of public bodies to finance the construction, repair, improvement or extension of electric power plant facilities.

The Technical Board of Review is instructed to refer to said Board, Henry T. Hunt, Chairman, room 5139, all such projects now pending before it on which it has not given notice of hearing.

The Projects Division is instructed to refer to Mr. Hunt summary report folders for such applications as have heretofore been and may hereafter be disapproved by any [fol. 3479] division or approved with any special conditions appearing on any divisional report.

The Electric Power Board of Review is directed to formulate and submit to the Administrator instructions for the guidance of the several divisions with regard to competitive situations and other controversial questions affecting this class of projects.

(Signed) Harold L. Ickes, Administrator."

[fol. 3480] COMPLAINANTS' EXHIBIT No. 779 (Excluded)

TVA Press Release of August 22, 1933

The Tennessee Valley Authority will oppose application by Southern Industries and Utilities, Inc., for permission to construct the Aurora Dam and power plant on the lower Tennessee river. This was announced today by Director David E. Lilienthal, in charge of the power phases of the Tennessee Valley program.

COMPLAINANTS' EXHIBIT No. 779 (Excluded)

W. E. Waldo, president of the utility company which has been working on the site under a preliminary permit, has requested the Federal Power Commission for a 50-year permit to enable his firm to go ahead with its development. Counsel for the Authority will argue against the granting.

This is the first test of the Authority's opposition to further exploitation of the Valley's waterpower and other resources until a definite conservation policy is worked out. The Authority is of the opinion that Congress intended that the former, being charged with the public's interests, should have exclusive jurisdiction in all future developments on the Tennessee River and its tributaries.

[fol. 3481] COMPLAINANTS' EXHIBIT No. 780 (Excluded)

TVA Press Release of July 24, 1933

The Tennessee Valley Authority has sent its consulting electrical engineer, Mr. Llewellyn Evans, into the Muscle Shoals area for the two-fold purpose of investigating the power field and checking up the readiness of the Wilson Dam for commercial light and power service. In the former connection, Mr. Evans will inquire into the proposed tie transmission line between Muscle Shoals and the Cove Creek project. If this line is deemed feasible, the Authority would like to begin its construction this fall.

Mr. Evans, who is a national authority on power rates, intends to make contact with enough prospective users of electricity to get an intimate picture of what they want and expect with the idea of supplying their needs.

The Authority has received tentative power applications from about 25 municipalities in Alabama, Kentucky, Mississippi and Tennessee, and inquiries involving others. Some of these places have municipal plants; others are served by private lines, and several have no electric service whatever.

[fol. 3482] There are two avenues open for the Authority to afford power service. The first is to bargain with existing private lines for service on a rate schedule to be established. The second is to build its own lines, serving groups of municipalities in the order of their application in so far as possible.

[fol. 3483] COMPLAINANTS' EXHIBIT No. 781 (Excluded)

TVA Press Release of July 31, 1933

The directors of the Tennessee Valley Authority have ordered the immediate preparation of preliminary plans for the tie transmission line between Wilson Dam at Muscle Shoals and the proposed dam at Cove Creek. The distance between these points is approximately 220 miles. Preparation of the plans will be under the direction of Mr. Llewellyn Evans, consulting electrical engineer, who is now at Muscle Shoals.

The directors have also authorized immediate action to provide power for Florence, Sheffield and Tuscumbia, Alabama. These municipalities are in the immediate vicinity of the power plant at Muscle Shoals. Negotiations with these places will be undertaken at once by Mr. Evans.

The directors' action on the transmission line and furnishing power to the three Alabama municipalities followed the report of Mr. David E. Lilienthal, member of the Board, who inspected the Government power facilities at Muscle Shoals before attending the meeting of the directors at Knoxville, Tennessee, where application for service was received from officials of that city.

The directors announce that the Authority will take over the services of approximately 200 men now employed by the War Department in the Cove Creek area.

[fol. 3484] COMPLAINANTS' EXHIBIT No. 782 (Excluded)

TVA Press Release of August 1, 1933

In recognition of his long and successful fight for Government control of the power resources of the Tennessee river system, the board of directors of the Tennessee Valley Authority announces that the proposed dam at Cove Creek will be named in honor of Senator George W. Norris of Nebraska. Thus, "the great Nebraskan and the New Deal will be remembered together in the historic Norris Dam in eastern Tennessee upon which work will shortly begin," declares Chairman Arthur E. Morgan.

Norris Dam will hold a commanding position in regulating the flow of the Tennessee river, and in providing the valley with the power needed to develop the new and enduring

COMPLAINANTS' EXHIBIT No. 782 (Excluded)

prosperity which President Roosevelt hopes to bring it through the agency of the Tennessee Valley Authority. The building of this dam and reservoir is the first major construction project in the huge undertaking. * * *

[fol. 3485] COMPLAINANTS' EXHIBIT No. 783 (Excluded)

TVA Press Release of August 10, 1933

In furthering its organization and looking toward executing preliminary projects with the least possible delay, the Board of Directors of the Tennessee Valley Authority has allocated specific duties to its three members as follows:

Arthur E. Morgan, chairman of the board, is delegated to supervise all matters concerned with the Norris Dam and reservoir and town at Cove Creek; land and regional planning, including subsistence homesteads (except agriculture), and housing; educational and training program, other than agriculture; engineering, including studies, plans and constructions for the control and use of water and mineral resources (except Muscle Shoals dam and power house and electrical transmission and distribution) and matters concerning raw material for fertilizer; social and economic organization and planning; forestry, soil erosion and conservation methods (tentatively), and will share with Dr. Harcourt A. Morgan matters relating to industry, especially relating to training for industry and its association with cooperatives, besides administration of general functions and coordination of a unified program.

[fol. 3486] All matters relating to agriculture are placed in charge of Dr. Harcourt A. Morgan. This includes rural life planning and matters relating to localized industry and its relation to agriculture. I addition, Dr. Harcourt A. Morgan will direct the design, construction and operation of smelters for phosphorous and for potash; a research program in the nature and behavior of fertilizers; the purchase, blending and sale of fertilizers; a chemical engineering department, and the program of research and development in the manufacture of fertilizers, cement and dry ice; maintenance and operation of Nitrate Plant No. 2 at Muscle Shoals; plans for a cement plant.

COMPLAINANTS' EXHIBIT No. 783 (Excluded)

Besides being in charge of the legal department and of all land appraisal, purchase and condemnation, David E. Lilienthal will look after the distribution of power, including relations with purchasers and prospective purchasers; all matters relating to the operation of the hydro-electric and steam-electric plants at Muscle Shoals; construction and operation of transmission lines, development of standardized accounting. Methods for power generation, transmission, and distribution, and the supervision of accounting for [fol. 3487] the Authority; proposals to exchange power for power sites, and transportation rate problems.

This does not mean that the individual directors will formulate policies for their separate divisions. The board as a whole will continue to adopt all policies. It will be the duties of the directors to see that the board's projects are carried out in their respective channels.

The chief purpose of this apportionment of duties is to enable the Authority to launch its vast program as expeditiously and as efficiently as possible.

[fol. 3488] COMPLAINANTS' EXHIBIT No. 784 (Excluded)

TVA Press Release of August 24, 1933

Formal or informal applications for power service received by the Tennessee Valley Authority to date involve more than 50 places in or near the sphere of development. The list includes:

Alabama	Georgia	Mississippi	Tennessee
Courtland	Augusta	Aberdeen	Beans Creek
Decatur	Dalton	Amory	Bells
Florence		Belmont	Blanche
Hillsboro	Kentucky	Booneville	Bolivar
Leighton	London	Coffeeville	Dyer
Moulton	Paducah	Columbus	Elora
Sheffield		Corinth	Flintville
Tuscumbia	Missouri	Fulton	Grand Junction
Wheeler		Houston	Henderson
	C. Girardeau	Iuka	Huntland
		Macon	Jackson

COMPLAINANTS' EXHIBIT No. 784 (Excluded)

TVA Press Release of August 24, 1933—Continued

Alabama	Georgia	Mississippi	Tennessee
		Nettleton	Kenton
		Prairie	Lebanon
		Starkville	Martin
		Tupelo	Maxwell
		West Point	Milan
			Newport
			Parsons
			Pulaski
			Rutherford
			Selmer
			Toone
			Trenton
			Union City
			Whiteville

[fol. 3489] COMPLAINANTS' EXHIBIT No. 785 (Excluded)

TVA Press Release of August 30, 1933

Transmission Line Surveys Start Aerial Mapping Bids to Be Opened

Two survey parties are in the field locating the route of the transmission line which will tie in the Wilson Dam power plant at Muscle Shoals with the future power of the Norris Dam project, 220 miles distant, according to a statement made in Knoxville, Tenn. by David E. Lilienthal, a director and in charge of the power phases of the Tennessee Valley Authority. One party is working toward Knoxville from Wilson Dam, near Florence, Ala., while the other is starting from the Norris Dam site, 20 miles northwest of Knoxville. They expect to meet near the Alabama State line. Preliminary plans for the transmission line have been made from maps and data previously compiled by Federal and State engineers.

[fol. 3490] COMPLAINANTS' EXHIBIT No. 786 (Excluded)

TVA Press Release of August 31, 1933

Address of Dr. Arthur E. Morgan Before the Kiwanis Club of Knoxville, Tennessee, August 31, 1933

* * * As the Tennessee Valley Law finally emerged from Congress it represented two kinds of purposes and aims. One kind was the definite purposes and aims to do specific things. One example of this was to make available to the public the power from the Wilson Dam at Muscle Shoals. Another purpose was to increase the steadiness and value of that power by building this large dam near your own city for the storage of water. Still another purpose was to connect those two with a transmission line so that the power could be regulated between them, and would be available along the way.

[fol. 3491] COMPLAINANTS' EXHIBIT No. 787 (Excluded)

TVA Press Release of September 2, 1933

Florence, Alabama. September 1. The final act in the transfer of Muscle Shoals property to the Tennessee Valley Authority was completed late Friday when David E. Lilienthal, Director in Charge of Power Development, formally signed a receipt for Wilson Dam and its power plant. Major R. R. Neyland represented the Army Engineering Office in the transfer.

[fol. 3492] COMPLAINANTS' EXHIBIT No. 788 (Excluded)

TVA Press Release of September 5, 1933

The names of more than 100 municipalities concerned by formal or informal applications for power received by the Tennessee Valley Authority were made known today by David E. Lilienthal, director in charge of the Authority's power program.

Prospective TVA power users now include 52 places in Mississippi, 36 in Tennessee, 16 in Alabama and 5 elsewhere. The list to date follows:

Mississippi—Tupelo, Aberdeen, Amory, Belmont, Booneville, Columbus, Corinth, Fulton, Iuka, Macon, Littleton,

COMPLAINANTS' EXHIBIT No. 788 (Excluded)

Coffeeville, Houston, Prairie, Starkville, West Point, Baldwyn, Gunton, Saltillo, Rienzi, Verona, Shanon, Sturgis, Longview, Bradley, Caledonia, Smithville, Tremont, Burnville, Halcut, Paden, Tishomingo, Denis, Plantersville, Golden, Kossuth, Mantachie, Dorsey, Mooreville, Ratlift, New Albany, Tibee, Mayhew, Artesia, Crawford, Brooksville, Shuqualak, Pontotoc, Canton, Indianola, Cedar Hill and Ripley.

Tennessee—Grand Junction, Lebanon, Newport, Pulaski, Milan, Jackson, Bolivar, Selmer, Henderson, Whiteville, Martin, Parsons, Bells, Dyer, Rutherford, Kenton, Trenton, Union City, Cash Point, Blanche, Elkwood, Toney, Harvest, [fol. 3493] Elora, Huntland, Beans Creek, Maxwell, Flintville, Lewisburg, Columbia, Manchester, Taft, LaFollette, Lenoir City, Dayton and Dickson.

Alabama—Muscle Shoals City, Town Creek, Courtland, Hillsboro, Wheeler, Moulton, Leighton, Decatur, Florence, Sheffield, Tuscumbia, Red Bay, Athens, Huntsville, St. Florian, and Bridgeport.

Georgia—Augusta and Dalton.
Kentucky—Paducah and London.
Missouri—Cape Girardeau.

[fol. 3494] COMPLAINANTS' EXHIBIT No. 789 (Excluded)

TVA Press Release of September 22, 1933

Construction of Dam No. 3 (the Joe Wheeler Dam) above Muscle Shoals is approved as a relief measure by the Tennessee Valley Authority providing the cost is met with public works money.

Chairman Arthur E. Morgan of the Authority has wired Secretary of the Interior Harold L. Ickes, and Senators Hugo L. Black and John H. Bankhead of Alabama, as follows:

"The Tennessee Valley Authority heartily approves the construction of Dam No. 3 above Muscle Shoals on the Tennessee River as an emergency employment relief measure, on condition that it is built with public works money and not with Tennessee Valley Authority money, and that the carrying charges and construction cost shall not be charged

COMPLAINANTS' EXHIBIT No. 789 (Excluded)

to the Tennessee Valley Authority until the demand for power justifies the construction for that purpose.

"The dam is an integral part of the navigation program for the Tennessee River, and will be a part of the power development program when it is needed. The only disadvantage to building the dam now is that it will not come into full use at once. This disadvantage may be overweighed by the great advantage of providing employment, by favorable [fol. 3495] construction prices and the fact that the construction of Dam No. 3 will be a substantial aid to navigation on the Tennessee River below Chattanooga. The navigation locks at Dam No. 3 are, in fact, now in process of construction by the Army Engineers.

"This position we conceive to be in the interest of the public welfare. The Board of Directors of the Tennessee Valley Authority took formal action to this effect."

The site of Dam No. 3 is at the head of Wilson Lake, in Alabama, about 16 miles above Wilson Dam.

[fol. 3496] COMPLAINANTS' EXHIBIT No. 790 (Excluded)

TVA Press Release of September 28, 1933

Address of David E. Lilienthal, Director of the Tennessee Valley Authority, before the Rotary Club of Chattanooga, September 28, 1933.

The Tennessee Valley Project is an opportunity and a challenge to the people of the South. It is an opportunity without parallel, for it puts behind your plans for regional development the leadership, the prestige, and the power of the President and the Congress of the United States. It is a challenge because the eyes of the entire Nation are focused upon the people of this valley, who in the spirit of their sturdy pioneer forebears are breaking new ground and establishing a national leadership.

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Let us look at this problem in a cold blooded business way.

The Tennessee Valley Authority power program is not a taxpayers' subsidy. It is a business undertaking.

COMPLAINANTS' EXHIBIT No. 790 (Excluded)

You are business men. Many of you are manufacturers just as we are. We are both obligated to operate our business on a sound basis. As a manufacturer, you would consider as most unsound any suggestion that you double the capacity of your plant, even if your bank would advance the money, unless you were pretty sure that you would be able to develop a market for the increased product by the time the plant addition was completed. Rightly so, you [fol. 3497] would be most critical of us, were we to do the same thing.

We would be doing just that, if we authorized or approved putting on the market additional blocks of power from these proposed new dams, before the market of the area could absorb the power of Muscle Shoals and Norris Dams. That we must not do, for it would violate the expressed mandate of Congress and of the President to operate the present and future power facilities on a self-supporting basis.

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The power program is one in which, of course, all of us are interested. The starting point in any discussion of the power policy and program of the Authority must be this: That the distribution of electricity is not like the usual private business, but, in the language of the ancient common law, is a business "affected with a public interest." By its very nature, the business of generation and distribution of power is a public business, because in our present-day community life we are all dependent upon that service. We need constantly to revert to this fundamental principle of the public character of the electric business.

How dependent we are upon power we sometimes fail to [fol. 3498] realize. It is in large measure due to electric power that for the first time in the history of civilization man is able to produce enough commodities to supply the necessities and even many of the luxuries to most of our people. We are fast approaching the mastery of production. It may well be that our chief difficulties in this depression center around the fact that we have not yet learned as a community to adjust ourselves to this revolutionary change.

This capacity to produce enough for all of us, which holds such great promise for a more universal and adequate

standard of living, has been made possible, in large part, by electric power. And we are just at the beginning of this power age. The future possibilities are as limitless as the practical imagination of our scientists and the ingenuity of our inventors. No wonder, then, that it is so vital that we maintain the strictest public control over this great natural resource. The public must protect its interests in so vital a force. There are various expedients to accomplish this result. One is by commission regulation. It is pretty well recognized that regulation has not been entirely adequate to protect the public interest, and so to supplement regulation, Congress has provided for a measure of public [fol. 3499] operation on a limited scale. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity is a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interests involved, that the public at any time, may itself assume the function of providing itself with this necessity of community life.

This power program is a constructive measure. Congress has not declared a national policy against the private ownership and operation of public utilities. It has merely provided for an additional measure of public protection against unreasonable or arbitrary conduct of a business which, by its very nature, is a matter of fundamental public concern.

What the Authority is trying to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations. To set up such a "yardstick" the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, with enough population density and with a sufficiently diversified industrial, commercial [fol. 3500] and residential load to provide a fair test. As business men it is apparent to you that if the Authority is only to serve the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod. The Authority will necessarily

COMPLAINANTS' EXHIBIT No. 790 (Excluded)

have to undertake to serve an area of concentrated industrial territory, good farms and favorable distribution possibilities. It will, therefore, be necessary to include several cities of fair size in the area. The people of Knoxville and Birmingham are soon to vote on the acquisition of their distributing systems. We are now constructing a tie line between Muscle Shoals and the new dam at Cove Creek and we propose to enter into contacts with municipalities and other agencies desiring this service in the territory between those two points.

Obtaining this fair market in which to sell power, seems to be in sight, in view of the interest shown by about one hundred fifty municipalities. In fact, the problem of choosing between applicants will apparently be a real one.

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As a new neighbor of yours, I appeal to you not to permit [fol. 3501] this opportunity for national leadership to fail through any lack of your support. I appeal to you to refuse to listen to the voices of those of little vision and of selfish purpose. This program will succeed only if you of the Valley treat this as a national project. I appeal to you to throw your energies and devotion into this national program which can mean so much to you and to your children.

[fol. 3502] COMPLAINANTS' EXHIBIT No. 791 (Excluded)

TVA Press Release of October 9, 1933

The Tennessee Valley Authority today called for bids on 675 miles of copper conductor for the tie transmission line to connect the Muscle Shoals power plant with Norris Dam near Knoxville. In an effort to spread employment, the Board of Directors announced that local labor will be utilized in the clearing of the right of way wherever feasible. Contracts will be made with the owners of the land across whose property the line is to extend. The owners will be permitted to retain the timber and will be required to pile and burn the brush. Special contracts, however, may be let wherever the right of way passes over large tracts.

COMPLAINANTS' EXHIBIT No. 791 (Excluded)

According to David E. Lilienthal, Director in charge of the Tennessee Valley Authority power program, this is the first of two transmission lines to be erected. While this line will furnish the current necessary for the construction of the Norris Dam, it is intended primarily as a tie line to connect the Wilson Dam power plant with the generators later to be installed at the Norris Dam. Later another line will be constructed along a different route so as to afford a wider distribution of power as well as to provide against interruption of service due to storms or accidents. The [fol. 3503] initial tie line will be 226 miles in length, or about eight miles longer than the air line distance between Wilson and Norris dams. An aerial survey of the right of way was recently completed.

Crossing the Tennessee River about 1,200 feet below the site of proposed Dam No. 3 near Muscle Shoals, the line will pass near the site of the proposed White Creek Dam and come within 23 miles of Chattanooga and 18 miles of Knoxville. The Board of Directors also decided to have the foundations for the towers where the line crosses the Tennessee River near Muscle Shoals installed by special contracts, with the Authority furnishing the necessary cement and foundation bolts. Contracts for the steel towers will provide for delivery and erection both in the case of river crossings and terminals and substations.

Not only will the construction of the tie line afford considerable employment at this time, Mr. Lilienthal pointed out, but will result in a saving for material costs which are expected to be much higher later on. In addition, the use of Muscle Shoals power in the construction of Norris Dam will pay the carrying charges on the line for almost two years.

[fol. 3504] COMPLAINANTS' EXHIBIT No. 792 (Excluded)

TVA Press Release of October 11, 1933

Chairman Arthur E. Morgan of the Tennessee Valley Authority will speak over the Columbia network from Station WJSV at Washington, D. C., at 3:30 P. M., Knoxville time, on Thursday. Local listeners probably will have to tune in on Station WHAS of Louisville if they care to hear this talk.

[fol. 3505] COMPLAINANTS' EXHIBIT No. 793 (Excluded)

TVA Press Release of October 12, 1933

The Tennessee Valley Authority Radio Talk for the American Legion, October 12, 1933

Arthur E. Morgan

When President Roosevelt outlined his recovery program, he planned for the spending of several billions of dollars for emergency work or relief. But he determined that, if possible, one undertaking should be of a different sort. Somewhere in America he wanted to see a beginning of social and economic planning.

In his message on the Tennessee Valley Authority he said that in the past America has "just grown" and that it is time this casual and haphazard development be replaced by design and forethought. He chose the Tennessee River region as the site of such an undertaking, and the Tennessee Valley Authority is the organization set-up to give expression to that hope.

Mr. Tugwell, in one of his articles discussing the President's program, says this of the Tennessee Valley Authority:

"This work carries more significance for the future than any other single attempt of the Administration to make life [fol. 3506] better for all of us. It is in no sense emergency as so many other actions have necessarily been. It did not have to be done to stave off financial panic or avert war, or to relieve distress. It is a deliberate turning toward the future, a commitment to an ideal. Its success can depopulate cities, destroy a thousand intrenched privileges, invalidate a whole tradition of single-hearted self interest."

Mr. Tugwell tells me that he discussed the project with the President before writing this article, and it is in line with what I myself have heard from the President.

In addition to the general program of economic planning, the Tennessee Valley Authority Act provides for two clearly defined projects. They are the generation and transmission of power, and the development of cheaper fertilizer.

COMPLAINANTS' EXHIBIT No. 793 (Excluded)

The Wilson Dam at Muscle Shoals can produce a variable amount of power. When the Tennessee River is high, there is water enough to develop three hundred thousand horsepower or more. When the river is very low, there is water enough for only fifty thousand. By building the Cove Creek Dam, now called the Norris Dam, on the Clinch [fol. 3507] River, which is a branch of the Tennessee above Muscle Shoals, a vast storage reservoir will be formed which will regulate the flow and also produce power. With this regulation the dependable power will be increased about four times. A transmission line will unite the two power plants. The power program is to transmit electric current to cities and towns and rural communities, and to sell it at rates that will encourage widespread use. As soon as a market is established, this part of the program should be self-sustaining. A great increase in the use of electric power for household and farm use will be a powerful element in improving social and economic welfare.

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The Tennessee Valley region contains twice as many people in rural areas as are necessary for agricultural work. It should be possible to develop local industries, with the help of cheap power, that will enable these communities to manufacture what they would like to buy. With an intelligent and ambitious population, great natural resources, and cheap power, human ingenuity should bring to an end the present wide-spread want and idleness.

[fol. 3508] COMPLAINANTS' EXHIBIT No. 794 (Excluded)

TVA Press Release of October 13, 1933

Statement by David E. Lilienthal, TVA director in charge of power development:

Determined efforts are being made to inject the Authority into local situations in which voters are considering the policy of acquiring their electric distribution systems and then contracting with the Authority for low cost Muscle Shoals power. These local questions are matters for the

COMPLAINANTS' EXHIBIT No. 794 (Excluded)

citizens of each community to decide for themselves. It should, however, be obvious that the Authority does not have enough power to supply all the communities in the area and that, therefore, the rule of "first come, first served" will almost be a necessity.

[fol. 3509] COMPLAINANTS' EXHIBIT No. 795 (Excluded)

TVA Press Release of October 15, 1933

In addition to providing for the enrollment of young men from local areas, the Tennessee Valley Authority has announced that five thousand experienced forest workers, members of the Civilian Conservation Corps, will leave Idaho today and tomorrow for the Tennessee Valley to begin work of reforestation, flood control and soil erosion in the Norris Dam Watershed and in the vicinity of Muscle Shoals.

Chairman Arthur E. Morgan said that definite locations have been selected for twenty-five camps to provide living quarters for these units. Twenty camps providing for 4,000 men will be located on the Norris Dam Watershed. Five camps to house 1,000 men will be erected on the 1,200 acre Government reservation at Nitrate Plant No. 2 at Muscle Shoals. Each camp will provide for approximately 200 men.

The arrival of these units will mark the beginning of a widespread attack on the problem of flood control and soil erosion in the Tennessee Valley, Edward C. M. Richards, forester and head of the Forestry and Soil Erosion Department of the Tennessee Valley Authority, said today.

[fol. 3510] "We have arranged to bring these young men to the Valley to carry out a very important part of the Tennessee Valley Authority's program." Mr. Richards added. "It is evident that when the Government invests a large sum of money in a power system, this investment should be protected against destruction through floods and the silting up of the storage reservoirs. This is particularly important in the case of the Norris Dam-Muscle Shoals development.

[fol. 3511] COMPLAINANTS' EXHIBIT No. 796 (Excluded)

TVA Press Release of October 17, 1933

Address of David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Before the Rotary Club of Memphis, Oct. 17, 1933.

Seated before an open fire in his home in Warm Springs last February, Franklin D. Roosevelt formulated and expressed a new national policy for the development of the resources of our country. In one of his first informal conversations with the people, he told of his plan for the development of the Tennessee River Valley—a plan which marks the beginning of a new departure in American economic and political history.

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This Tennessee Valley project is an opportunity and a challenge to the people of the South. It is an opportunity without parallel, for it puts behind your plans for regional development the leadership, the prestige, and the power of the President and the Congress of the United States. It is a challenge because the eyes of the entire nation are focused upon the people of this area, who in the spirit of their sturdy pioneer forebears are breaking new ground and establishing a national leadership.

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I want to talk to you first about the immediate program [fol. 3512] for today and what the Authority is doing to carry that forward. In order to expedite matters, the Board some weeks ago determined to divide initial responsibility for the execution of this program among its three members. To Chairman Arthur E. Morgan went the heavy responsibility for the construction of the dam at Cove Creek, which will be one of the largest power dams in the country when it is completed. * * *

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In addition to the construction work going on at the Norris Dam, work is under way on the transmission line between the Wilson and Norris Dams. The Aerial survey

for the lines has been completed. Easements are being purchased. * * * Bids will be received on October 20th for 675 miles of wire. Coincident with this bids will be asked for the clearing of the right of way, for the construction of the foundations and for the construction of the transmission line towers.

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The power program of the Authority is an important part of its present plans and of the long-range regional program. The starting point in any discussion of this power policy and program must be this: That the distribution of electricity is not like the usual private business, but, [fol. 3513] in the language of the ancient common law, is a business "affected with a public interest." By its very nature, the business of generation and distribution of power is a public business, because in our present day community life we are all so utterly dependent upon that service. We need constantly to revert to this fundamental principle of the public character of the electric business.

What power has done for us and what promise it holds we often fail to realize. It is in large measure due to electric power that for the first time in history we are equipped to produce enough commodities to supply the necessities and even many of the luxuries to most of our people. The future possibilities are limitless. Of "the promise of power, Mr. Stuart Chase recently said: "We are witnessing the oncoming of a new kind of civilization as electric power displaces older other power forms. It will shift populations, change the map, profoundly affect both the number and the skills of workers, revise—upward—the quality and variety of commodities, break down the division between country man and city man; and, if it is not wrecked by the brute claims of an obsolete financial system, it promises a world replete with more freedom and happiness than mankind has ever known * * * Electricity can give us universally [fol. 3514] high standards of living, new and amusing kinds of jobs, leisure, freedom, an end to drudgery, congestion, noise, smoke and filth."

Is it any wonder then that the people are determined to maintain the most vigilant public control of this liberating

force? Various expedients for the public's protection have been adopted. One is regulation by state commissions. It is generally recognized that such regulation has not been entirely adequate to protect the public interest. And so, to supplement regulation, Congress has provided for a measure of public operation on a limited scale. This public operation is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service and that unless it is exercised by private corporations with fairness, with efficiency, without financial jugglery and with a due sense of responsibility to the paramount public interests involved, that the public, at any time, may itself assume the function of providing itself with this necessity of community life.

This power program is a constructive measure. Congress has not declared a national policy against the private [fol. 3515] ownership and operation of public utilities. It has rather provided for an additional measure of public protection against abuses in the conduct of a business which, by its very nature, is a matter of fundamental public concern.

What the Author[redacted]is required to do in its power program is to set up an area for power operations which will be on a comparable basis with typical private operations. To set up such a "yardstick" the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, with enough population density and with a sufficiently diversified industrial, commercial and residential load to provide a fair test. As business men, it is apparent to you that if the Authority is only to serve the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod. The Authority will necessarily have to undertake to serve a balanced area of concentrated industrial activity, including some cities of substantial size, good farms and reasonably favorable distribution possibilities.

The Board of the Tennessee Valley Authority some weeks ago directed the formulation of wholesale rate

COMPLAINANTS' EXHIBIT No. 796 (Excluded)

[fol. 3516] standards to form the basis for contracts for power with municipalities and other agencies within the yardstick area. Since the statute imposes a measure of responsibility upon the Authority for the rates charged to the ultimate consumers of electricity, a proposed schedule of rates to the householder and farmer was also worked out. * * *

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I suppose it is obvious that all computations concerning costs are based on the expectation that the Authority will sell the power which it has available. Muscle Shoals was turned over to us as a going plant, but not as a going concern with customers. Obviously, if we sell only one kilowatt hour, our cost will be hundreds of thousands of dollars a kilowatt hour rather than a few mills. If the power is not utilized in volume, no one will receive the great potential benefits of the wealth of the Tennessee River. It is axiomatic in the electric business that an increase in use decreases the cost per unit of output. Accordingly, we look forward to a maximum use of our facilities, because it is in that way that the Authority and those agencies which buy its power at wholesale can steadily bring down rates to the householder, the farmer and the business man, and [fol. 3517] bring to this area the economic and social benefits of the President's plan.

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As a new neighbor of yours, I appeal to you not to permit this opportunity for national leadership to fail through any lack of your support. I appeal to you to refuse to listen to the voices of those of little vision and of selfish purpose. This program will succeed only if you of the area treat this as a national project. I appeal to you to throw your energies and devotion into this national program which can mean so much to you and to your children.

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[fol. 3518] COMPLAINANTS' EXHIBIT No. 797 (Excluded)

TVA Press Release of October 20, 1933

What Difference Will the Tennessee Valley Authority Make?

Talk at Chamber of Commerce Meeting, Asheville, North Carolina, October 20, 1933, by Arthur E. Morgan, Chairman of the Board, Tennessee Valley Authority

* * * Wilson Dam was undertaken as a war measure. Its completion after the war was opposed by those who insisted that the generation and distribution of power should be solely a private industry. Finally Wilson Dam was completed, and then it lay almost idle for six years while a contest was fought out in Congress between the advocates of public and those of private generation and distribution of power. Twice Congress passed bills for the public operation of the Wilson Dam power plant, but each time the bill was vetoed by the President. Finally President Franklin Roosevelt proposed a general program of public generation and transmission of power as a part of the Tennessee Valley Authority program. One of his aims was to prepare a "yard stick" of public ownership. In this division of work among the directors, that of trans-[fol. 3519] mitting and selling power was assigned to Mr. David Lilienthal.

The law provides that power from Muscle Shoals or from other developments must be sold primarily for domestic use in cities and rural areas. Sales can be made to private power companies or for manufacturing purposes, but household and farm use shall have first place.

The Wilson Dam power plant at Muscle Shoals is called a "run of the river" plant. That is, there is very little storage of water in the lake above the dam in the Tennessee River. When the Tennessee River is high during the winter there is an abundance of water, and therefore an abundance of power. During the driest summer seasons the flow is small and therefore only a relatively small amount of power can be developed. To correct this wide variation of flow the Tennessee Valley Authority Act provides for the construction of the Norris Dam and power plant on the Clinch River more than 200 miles upstream from

Muscle Shoals. In the distribution of work among the directors, the building of this and other dams fall- to me. The Norris Dam, formerly called the Cove Creek Dam, will create a great storage reservoir, great enough to store [fol. 3520] almost a year's rainfall. By operating the Norris Dam and power plant and the Wilson Dam and power plant as a single system, a very great increase of power is possible. During the winter, when the Tennessee River is high and power is abundant at Muscle Shoals, the Norris Dam plant will be shut down and the water will be stored in the reservoir. During the summer when the Tennessee River is low and power is scarce the Norris Dam power plant will be operated. The water used for generating power at the Norris Dam will then flow down to the Wilson Dam where it will be used again to develop more power. The two dams operate- as a single system will generate about six times as much dependable power as either one alone. A transmission line is provided for in the law to connect these two plants and to regulate the supply of power between them. Materials are now being purchased and the land cleared for building that line.

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Further down on the Tennessee River are other power projects. I spoke of the Wilson Dam project as a "run of the river" power plant. That is, it develops a large amount of power in high water and a small amount in low water. [fol. 3521] Now the management of a power plant up here in Western North Carolina has a great deal to do with the nature of a plant lower down. If the plant on the upper branches, with a large storage reservoir is run for its own industry alone, then it must use its water somewhat uniformly throughout the year. That which is let down during the summer helps the power plants down the river, where summer power is scarce. But the water let out of the upper reservoir during the high water season of winter and spring is wasted below, for there is already more water in the lower river than is needed.

If the up-river plants and down-river plants are connected by transmission lines and are oper ted as a single system, a different result can be achie . During high water in the winter the lower plants, where there is no

storage, will be run to full capacity. The upper plants that have a large amount of storage will shut down and will save their water, and will use electricity from the down-river plants. Then during low-water in summer, when the down-river plants do not have enough water, the up-river plants will draw on their storage reservoirs and will produce power in larger quantities when it is most needed. Not only that, [fol. 3522] but the water which passes through the up-river plants must pass through every power plant on the Tennessee River all the way down to the Ohio River, and produces power at each one at the time of year when it is needed most.

By operating the entire Tennessee River and its branches as one organized system under government control, the value of the power developed would probably be at least twice as great as though the various developments should be operated independently. The exchange of power among private companies does not eliminate these wastes, though it may reduce them. Here is a practical case of economic planning which is possible of achievement.

Now, in closing, how does this directly affect North Carolina?

Personally, I should hope that in the spreading system of power plants North Carolina would soon be included, as soon as demand for power may justify an increase of supply. • • •

[fol. 3523] COMPLAINANTS' EXHIBIT No. 798 (Excluded)

TVA Press Release, of November 4, 1933

The Tennessee Valley Authority today awarded a contract for 675 miles of aluminum conductor cable, steel reinforced, to the Aluminum Company of America. The conductor is to be used in the construction of the tie transmission line between Muscle Shoals and Norris Dam.

The Aluminum Company's bid of $400,149.39 for the conductor and accessories showed a saving of approximately $278,000 over the next lowest bid. This represents a sum equal to the cost of operating the Muscle Shoals power plant for more than a year.

COMPLAINANTS' EXHIBIT No. 798 (Excluded)

The acceptance of the Aluminum Company's bid was recommended by Llewellyn Evans, chief electrical engineer for the Authority, and his recommendation was approved after extensive study by other engineers of the Authority. The bid was accepted by the Board after consultation with the Bureau of Standards.

In accordance with the standard practices of the TVA, all bidders were required to show compliance with the applicable rules and regulations of the NRA.

The tie transmission line is approximately 228 miles long and will pass within 23 miles of Chattanooga and about 18 [fol. 3524] miles of Knoxville. Acquisition of right of way for the line is already under way. Contracts for clearing the right of way and installing foundations will be let in localized groups so as to spread benefits over the entire distance traversed by the line.

[fol. 3525] COMPLAINANTS' EXHIBIT No. 799 (Excluded)

TVA Press Release of November 7, 1933

Address of David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Before Joint Meeting Rotary Club, Chamber of Commerce and Exchange Club of Nashville, Tennessee, November 7, 1933

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This Tennessee Valley Project is an opportunity and a challenge to the people of the South. It is an opportunity without parallel, for it puts behind your plans for regional development the leadership, the resources and the power of the President and the Congress of the United States. It is a challenge because the eyes of the entire Nation are focused upon the people of this area, who in the spirit of their sturdy pioneer forebears are breaking new ground and establishing a national leadership.

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The power program of the Authority is an important part of its present plans and also of the long range regional [fol. 3526] program. The starting point in any discussion

of this power policy and program must be this: That the distribution of electricity is not like the ordinary private business. By its very nature, the generation and distribution of power is a public business, because in our present day community life we are all so utterly dependent upon that service.

What power has done for us and what promise it holds, we often fail to realize. It is in large measure due to electric power that for the first time in history we are equipped to produce enough commodities to supply the necessities and even many of the luxuries to most of our people. And we are witnessing but the beginning of the power age. The future possibilities are limitless. Of "the promise of power," Mr. Stuart Chase recently said: "We are witnessing the oncoming of a new kind of civilization as electric power displaces older power forms. It will shift populations, change the map, profoundly affect both the number and skills of workers, revise—upward—the quality and variety of commodities, break down the division between country man and city man; and, if it is not wrecked by the brute claims of an obsolete financial system, it promises a [fol. 3527] world replete with more freedom and happiness than mankind has ever known. * * * Electricity can give us universally high standards of living, new and amusing kinds of jobs, leisure, freedom, and end to drudgery, congestion, noise and smoke." Is it any wonder then that the people are determined to maintain the most vigilant public control of this liberating force?

In order to comprehend fully the reasons for the power program set out in the Tennessee Valley Authority Act, it is necessary to recall what has been happening in the United States during the past ten years. It is necessary to understand that the people back home have become thoroughly aroused; that they are determined that the disgraceful looting of the public business of power shall not be repeated. You are all familiar with the sordid story. I need not recall to your minds the quarter of a million dollars which that leading citizen of Greece, Mr. Samuel Insull, paid to the Chairman of the State Commission which was supposed to be regulating his Illinois utilities. Those of you who are investors are familiar with the story of how some operating utilities were bled by speculating holding companies, of the

dizzy pyramiding of stocks, of write-ups, of unconscionable [fol. 3528] bonuses, of the purchase of utility plants at outrageously high figures and the issuance of securities on the basis of such prices. Instances of those practices can be cited to you from coast to coast.

I have no desire to intimate that every public utility followed such practices. There were many notable exceptions. But there can be no question that in the last decade the power business was dominated by financial pirates.

Nor have the people back home forgotten the story which was revealed by the Federal Trade Commission in its investigation of the propaganda activities of the electric industry. There has never been a bolder attempt to buy the public opinion of the people of the United States. That widespread scheme of capturing the sources of public information would have destroyed the American system of democracy which Jefferson and Jackson established.

The attempt to gain editorial favor and color the news through advertising contracts was one of the most brazen steps in this program. A few years ago the publicity director for the utilities for Tennessee made the following report: "Our advertising campaign started in the middle of January and since that time advertising has been carried [fol. 3529] in more than 100 papers in Tennessee. These were placed during a personal call on the editors, at which time an occasion was taken to discuss the matter with the editors, and place before them the facts as we see them. We have approximately forty favorable editorials written on this matter * * * at a cost of less than $700.00, we have been able to get our story in papers whose combined circulation is approximately 350,000, and as a result of these advertisements and our personal contact with the editors we have received a very large number of favorable editorials."

Now this is what had been going on throughout the United States. Regulation by commission had in many states proved ineffectual. In some states it was perfectly obvious that the regulators were not regulating the utilities, but in effect the utilities were regulating the regulators. In other states, the regulatory commissions were doing an honest and sincere job, but were hampered by the interminable procedure of regulation. And so, to supple-

ment regulation by Commissions, Congress passed the Tennessee Valley Authority Act. This Act is not an assault upon private ownership and management of public utilities. But it is a determined attack on private mismanagement of [fol. 3530] the public business of power at the expense of the people back home—consumers and investors alike.

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This public operation is to serve as a "yardstick" by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service. It is a reminder that unless that business is carried on by private corporations with fairness, without financial jugglery and with a due sense of responsibility to the paramount public interest, that the public, at any time may assume the function of providing itself with this necessity of community life.

What the Tennessee Valley Authority is required to do in its power program is to set up an area for power operations. That area is to be on a comparable basis with typical private operations. To set up such a "yardstick" the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, and with an adequately diversified industrial, commercial and residential load to provide a fair test. As business men, it is apparent to you that if the Authority is to serve only the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring [fol. 3531] rod. The Authority will necessarily have to undertake to serve a balanced area, including some cities of substantial size, good farm territory and reasonable faborable distribution possibilities.

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The Authority is under a duty to promote the widest possible use of electricity. The rate charged the ultimate consumer by those who purchase electricity from the Authority is, therefore, a proper subject of such a contract as that with the City of Tupelo. The domestic rates which Tupelo proposes to charge its citizens are identical with

those suggested by us in a public statement released on September 15. Those rates are as follows: For the first 50 kilowatt hours per month 3 cents per kilowatt hour; for the next 150 kilowatt hours 2 cents per kilowatt hour, for the next 200 kilowatt hours 1 cent. The excess over 400 kilowatt hours, four mills per kilowatt hour. A minimum monthly use is provided for. A householder in Tupelo using fifty kilowatts per month at the present time pays $3.50. After Tupelo is operating under the terms of this contract, he will pay $1.50 or 57.2 per cent less.

The industrial rates which the city of Tupelo proposes to put into effect will be of benefit to that community. For ex- [fol. 3532] ample, a large cotton mill in Tupelo for one month's electric supply in 1933 paid $3375. Its bill under new rates to be put into effect by Tupelo would have been $1865; a saving of $1510, or 44.7 per cent.

The Commercial lighting bills are equally interesting. At the present time, a user of commercial power consuming 500 kilowatts per month pays $34.00 a month. Under the contract to which Tupelo has agreed, the cost will be $13.75, a saving of $20.25, or 59.4 per cent reduction.

The Authority is planning to throw its energies and resources into a program of electrification of Lee County. The combined efforts of Tupelo, the Lee County Farmers Power Association and the Tennessee Valley Authority will produce definite results in the next three years. The consumption of power in the city of Tupelo is going to greatly increase. These people are determined even to make sacrifices in order to show the country that when Tupelo sets out to accomplish a great enterprise that the spirit and community pride of that city will conquer every difficulty. The rates which Tupelo has established for domestic, commercial and industrial purposes are going to bring great changes and benefits to this community. They are casting aside all [fol. 3533] the warnings of the timid, and in the spirit of the New Deal, are going forward to a more prosperous city and country and a fine balance between industry and agriculture.

Industrialists will become interested in Lee County. There will be many inquiries about the feasibility of locating small factories within this area where they will have the benefits of low cost of power, a high grade of people with which to

work and community leadership. The people of Tupelo are not interested in a huge industrial city, for they know of the ills which accompany such an enterprise. They prefer to continue as they have begun, with a sane development in which the city and the farmer work hand in hand toward a stable prosperity for both city and country.

The rural areas will greatly benefit from the leadership and the organizing ability which the farmers of this area have exhibited. The Authority plans to put at the disposal of this alert group of farmers the services of technical experts. The most economical means of building farmers lines through cooperatives will be worked out. Plans for refrigeration, for water pumping and for making farm life more pleasant will be the subject of cooperative study and activity for the Farmers Association and the Tennessee Valley Authority. Lee County we believe will give a picture [fol. 3534] of what power can do in the hands of townspeople and farmers who are determined to secure its full benefits.

I do not want to be misunderstood; what Tupelo agrees to do and what the Authority agrees to do cannot be done in every community. It cannot be done in a community in which the municipal utility is left the subject of political fortune. It cannot be done where the people of the community are not actively interested in the success of the enterprise. It cannot be done where the city officials are timid or badly advised. It cannot be done where the city officials are not free agents, but have been bought and paid for by private interests.

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Here is an opportunity for industry and for government to display qualities of statesmanship. The Authority must carry out the national policy entrusted to it. It must acquire a market for its power. It must work toward a wider use of electricity in the home, the farm and the factory. All of these objectives can be reached without the predicated calamities to the industry and its bona fide investors. If the Authority succeeds in its plans to develop new uses for electricity, and by low rates and wide distribution of low cost appliances can increase existing uses, private utilities

COMPLAINANTS' EXHIBIT No. 799 (Excluded)

[fol. 3535] and the electric manufacturers can both share in the benefits. If in acquiring a market we can use existing facilities of private utilities, of course we will pay a fair price for them. By contracts with private utilities for interchange of power, economies and service betterment can be effected in which the utilities will derive benefits. I could cite other concrete instances to the same point. There will be room for both private and public operations, and both can succeed, if fair dealing and moderation prevail over councils of warfare and malice. If there is a genuine desire to work with this project and not to obstruct or destroy it, ways and means can and will be found for the electrical industry and government to work without friction in expanding the use of electrical energy for the benefit of all of our people.

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As a new neighbor of yours, I appeal to you not to permit this opportunity for national leadership to fail through any lack of your support. I appeal to you to refuse to listen to the voices of those of little vision and of selfish purpose. I appeal to you to throw your energies and devotion into this national program which can mean so much to you and to your children.

[fol. 3536] COMPLAINANTS' EXHIBIT No. 800 (Excluded)

TVA Press Release of November 11, 1933

"A Five Point Program for the Electrification of America"

Address of David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, before the Lawyers Club. Atlanta, Georgia, Friday Evening, November 10, 1933.

The Tennessee Valley Authority Act marks the beginning of a new national power policy and national power program. This new national policy has two major objectives. The first objective is more effective protection of the public interest, by the setting up of a measure of public operation of power as a "Yardstick." The second objective of this new national policy is a greatly increased use

of electricity in the homes, the farms, and the factories of the United States—an electrified America.

The President and the Congress have set themselves [fol. 3537] to the task of putting to work the vast sources of electricity which lie idle and unused. We are working toward no less a goal than the electrification of America. The plans have been laid. Legal authority is ample. The economic difficulties can be overcome. The project is practical and feasible. The program can be carried out. Within the next decade it lies within the power of the people of the United States to make electricity in very truth the servant of the average man and woman in the homes, farms and places of business of this country.

The power program of the Authority is a crucial part of its plans for immediate action and of the long range program for the development of this region. This power program is of particular interest not only within the valley, but it has and is intended to have a national significance. For the problems which center about the power question here in the Southeastern region of the United States are questions not peculiar to this area, but which are common to the country as a whole.

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The national power policy of the President and the Congress written into the Tennessee Valley Authority Act recognizes that electric power, next to the soil, is our greatest [fol. 3538] resource. It recognizes that the people must maintain public control of this liberating force. This is the first objective of the national power policy to which I have referred.

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Now that is what had been going on throughout the United States. Regulation by commissions had in many states proved ineffectual. In some states it was perfectly obvious that the regulators were not regulating the utilities, but, in effect, the utilities were regulating the regulators. In other states, the regulatory commissions were doing an honest and sincere job, but were hampered by the interminable procedure of regulation, with rate cases sometimes dragging through a decade. And so, to supplement regulation by

commissions, Congress passed the Tennessee Valley Authority Act. This Act is not an assault upon private ownership and management of public utilities. But it is a determined attack on private mismanagement of the public business of power at the expense of the people back home—consumers and investors alike.

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It was with such a background that Congress passed the Tennessee Valley Authority Act, and set up a measure of public operation of the power business. This public opera- [fol. 3539] tion is to serve as a yardstick by which to measure the fairness of electric rates. It has an additional function. It is a reminder that electricity performs a public service. It is a reminder that unless that business is conducted by private corporations with fairness, without financial jugglery and with a due sense of responsibility to the paramount public interest, that the public at any time may itself assume the function of providing itself with this necessity of community life.

What the Tennessee Valley Authority is required to do in its power program is to set up an area for power operations. That area is to be on a comparable basis with typical private operations. To set up such a "yardstick" the Authority obviously must undertake to serve an area which is large enough and sufficiently concentrated, and with an adequately diversified industrial, commercial, and residential load to provide a fair test. As business men, it is apparent to you that if the Authority is to serve only the parts of a territory which a private utility has not chosen to serve, or is to serve only sparsely populated areas, the result of our operations cannot possibly be set up as a measuring rod. The Authority will necessarily have to undertake to serve a balanced area, including some cities of substantial size, good farm territory, and reasonably favor- [fol. 3540] able distribution possibilities.

This power program is a constructive measure. Congress has not declared a national policy against the private ownership and operation of public utilities. It has rather provided for an additional measure of public protection against abuses in the conduct of a business which, by its very nature, is a matter of fundamental public concern.

COMPLAINANTS' EXHIBIT No. 800 (Excluded)

So much for the first objective of the Tennessee Valley Authority—the regulatory, public control purposes of this national power policy. We come then to the second objective, of at least equal significance.

The power program of Congress and the President has as its major objective a constantly wider use of electricity. The goal of this national power policy is a constructive one: it is nothing less than the electrification of the homes and farms of the United States. • • •

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Looking at the country as a whole, without respect to public operation or private operation, it is perfectly evident that we now have and soon will have a tremendous surplus supply of electricity. Within the area of the Tennessee Valley for example, privately owned electric companies have generating and transmission facilities which [fol. 3541] can care for between 30% and 40% more demands for electricity than is now required, even allowing for reasonable spare capacity. A fair estimate is that 25 per cent of the investment in power houses and transmission lines is idle, and is piling up fixed charges, because the customers of these companies are still tied to a low average use of electricity. The Tennessee Valley Authority has a hydro-electric plant at Muscle Shoals with a rated installed capacity of 250,000 hp. But that is only the beginning of the story. The Authority is constructing a dam and power house at Cove Creek, and another dam and power house above Muscle Shoals at what is known as the "Joe Wheeler" dam, which, together will increase the capacity of Wilson Dam to at least 600,000 hp. • • •

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I suggest a 5-point program which I should first like to enumerate and then discuss more in detail:

1. We must begin thinking in terms of an electrified America, and cast aside the tradition which is binding us to our present niggardly use of electricity.

2. Our entire electric rate structure must be re-examined and drastically revised.

COMPLAINANTS' EXHIBIT No. 800 (Excluded)

3. Electric-using appliances must be put into the homes and on the farms on a scale heretofore not successfully attempted.

[fol. 3542] 4. All the forces of business, scientific, and engineering ingenuity and technique must be concentrated upon the problem of reducing certain of the costs of operation.

5. The people of the country must be brought to realize that there is a pool of electricity lying idle, ready and waiting to be used, and to realize what electricity can do in lightening their burdens, in increasing their incomes and making for a richer and better life.

Turning to the first point of the program. If we load our minds with the idea that because a thing has not been done that it cannot be done, we might as well admit complete defeat in this whole program. If we admit that the use of electricity cannot be increased many fold; if that is our mental attitude, then we must be logical and immediately stop construction of the Cove Creek dam and of the Joe Wheeler dam. * * *

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Second: The revision downward of electric rates. In my considered judgment the greatest single obstacle in the way of a widespread use of electricity has been the rates which have been charged for electricity. We believe that, with notable exceptions, the rates for electricity throughout the United States constitute a barrier between the people and [fol. 3543] the great resource of electricity. A drastic revision downward of electric rates is an essential part of this program. Such drastic reductions in electric rates, in our judgment are essential to any substantial increase in the use of electricity for domestic, farm, and industrial purposes. It is our opinion, amply supported by experience, that the effect of such drastic provision will not result in a decrease in gross revenues, or in net income, if the revisions are thorough-going and skillfully made.

Some weeks ago at the direction of the Board of the Authority, a proposed standard of domestic and farm rates was announced, which were recommended to those com-

munities and farm organizations which might desire to enter into contracts with the Authority for power at wholesale. Those rates represent our views as to the first step in a drastic downward revision of electric rates, essential to a wider use of electricity. * * *

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Now the reasons for the existing rate schedules are many. Part is due to tradition. There is a tremendous accumulation of musty legal theory and outmoded engineering practices in the field of electric rates. Part of it is due to the fact that domestic and farm electric service is monopolistic; [fol. 3544] and it is typical of monopolies that they change their practices very slowly, if at all. In many cases it is due to pressure of an outrageous capital structure, to bad management, to lack of foresight. We believe that definite plans of the Authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inaugurated by the Tennessee Valley Authority Act.

Third. Wide distribution of electric-using appliances. We then are faced with this situation: We have and are in process of constructing a tremendous pool of power for the nation, most of which is in private ownership; a considerable percentage of which is represented by Government investment. A large portion of these power facilities will be idle and unused and a burden upon the investors and on the taxpayer unless we can get electricity through to the people on a broad scale. Low rates which will promote and encourage the use of electricity is an essential part of this program. But low rates alone will not do the job. The people must have in their homes and on their farms the appliances, the devices, by which electricity is used. Par- [fol. 3545] ticularly, they must have the heavy use appliances: In the home, they must have electric ranges, electric water heaters, refrigerators, and the like, with house heating and air conditioning within the range of probability. On the farm they must have motors for many purposes, and water pumps, as well as domestic appliances.

The existing methods of getting these appliances to the average man and woman also requires drastic revision if a widespread electrification program is carried out. It is probably accurate to say that the principal item of cost in getting these appliances into the homes and on the farms has not been the cost of materials and labor in their construction, but has been the cost of financing and selling; in other words, distribution. The 200 odd electric manufacturers of the country are equipped today to turn out the hundreds of thousands of heavy use electric appliances which the people of the country want and which, under a properly planned program, they can pay for. In fact, with proper rates, the bulk of our people literally cannot afford not to own and use such appliances. But I repeat, low rates alone are not enough. Without large-scale distribution of low-cost appliances, there will never be a widespread use of electricity. I am calling this matter of electric appliances to your attention because it should be an integral [fol. 3546] part of this national program. Anyone who leaves this factor out of consideration is not thinking this matter through.

There are difficulties in the way of effectuating a wide distribution at low cost, of standardized high-quality electric appliances which the manufacturers of this country are producing. These difficulties are by no means insuperable. While I am not at liberty to discuss the matter at this time, I would be less frank than I have a right to be if I did not say that a definite plan for this phase of the program is approaching completion, with the co-operation of many interests.

Fourth. Reduction in costs. Time does not permit of a discussion of our program looking toward reductions in operating and construction costs. Here again we need and will receive co-operation from many sources. To meet the mounting cost of complexities and of losses in transmission net-works is particularly a subject upon which the Authority hopes to make a contribution. A reduction in costs will inure to lower rates and constantly increase use of electricity.

And then the last point in this program: We must all of us begin to think in terms of an "Electrified America."

COMPLAINANTS' EXHIBIT No. 800 (Excluded)

We must keep before our minds the great potential wealth [fol. 3547] which is lying at our doors, now idle. What American people want badly enough—they get—whether it is the conquering of a wilderness, an education for every child, or a decent and orderly revision of our entire economic structure. The imagination of our people must be fired with the prospect of electrified homes. Farmers must be given a picture of what electricity can do to relieve farm life of many of its burdens. The business man must come to see the possibilities for commercial and industrial development which lie ahead, if such a program is carried out.

[fol. 3548] COMPLAINANTS' EXHIBIT No. 801 (Excluded)

TVA Press Release of November 15, 1933

Washington, Nov. 15.—Terms and conditions for the sale of electricity by municipalities purchasing power from the Tennessee Valley Authority were announced here today by David E. Lilienthal, director in charge of power development.

In making public the details of the initial TVA contract for the sale of Muscle Shoals energy, Director Lilienthal also made known the industrial and commercial rates which supplement the Authority's standard residence and wholesale rate structure made public September 15th last.

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Under this contract a user of 500 kilowatts of commercial power per month pays $13.75; a saving of $20.25 as compared with the present Tupelo rate.

The 20 year agreement between the TVA and Tupelo is expected to set a standard for contracts with other municipalities within transmission distance of Muscle Shoals. Besides rate schedules, the Tupelo contract carries with it certain rules and regulations applicable to all TVA customers. Among other things, Tupelo agrees:

"(a) To administer its electric system as a separate [fol. 3549] department and not to mingle funds or accounts with those of any other of its operations.

"(b) To keep its electric system accounts according to a system of accounts to be prescribed by Authority after conference with Contractor, which system of accounts will so far as possible be uniform with other systems prescribed and applied in other municipalities purchasing electrical energy from Authority. Authority agrees at its own expense to render advisory accounting service in the setting up and administering of such accounts.

"(c) To furnish promptly to Authority such operating and financial statements relating to electrical system operations.

"(d) To allow the duly authorized agents of Authority to have free access to all books and records relating to electric system operations.

"(e) To sell and distribute electrical energy to the ultimate consumer without discrimination between consumers of the same class. and no rate shall be charged or practice adopted which will grant a discriminatory rate, rebate or other special concession to any consumer served by Contractor. Contractor shall observe the principle that the [fol. 3550] sale of energy for industrial use shall be a secondary purpose, to be utilized principally to secure a sufficient high load factor and revenue to permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity."

The schedule further provides:

"Lower Rates to Other Municipalities—if at any time during the term of this agreement Authority should supply electricity to any municipality at a lower rate than that applicable to Contractor, and such lower rate shall not be justified by different conditions of service, making the cost to such other municipality relatively less than to Contractor, such lower rate shall be made available to Contractor.

"Developmental Surcharge.—Contractor agrees not to depart from the resale rates set forth in Schedule B (resale rates) without first securing the consent of Authority: Provided, however, that in order to maintain Contractor's rev-

enues in the developmental period in which the increased demand for power may not compensate for the greatly reduced rates provided for in Schedule B, Contractor may impose a surcharge upon those classes of consumers subject to a surcharge under the provisions of said Schedule. [fol. 3551] Contractor may initially determine and may from time to time vary such surcharge, with the understanding, however, that all revenues over those required for the appropriations set forth in Section 10 (a) herein shall be applied to the reduction or elimination of surcharges. Surcharges shall be based on a straight percentage of net bills, and shall apply uniformly to all members of classes as to which surcharges are authorized.

"Adjustment of Rates.—Should the cost of living index compiled by the Department of Labor show a decrease for six consecutive calendar months of 20 per cent or more under the index figures for the month in which this contract is signed, Contractor may in writing request Authority to agree to such a reduction in rates as the circumstances may warrant, and should such index figures show a 20 per cent or more increase for the same period, Authority may in writing request Contractor to agree to such an increase in rates as the circumstances may warrant. If within thirty days after the receipt of such a request the parties shall be unable to agree to a satisfactory adjustment, the question shall be submitted to three arbitrators, one to be appointed by each of the parties, and a third to be appointed by the two so selected. A decision of the arbitrators shall require only a majority vote, and [fol. 3552] such a decision shall be final and binding upon both parties.

"Disposition of Contractor's Revenues.—Contractor agrees to dispose of revenues from the operation of its municipal electric system in the following manner: (a) Revenues will first be used for operating expenses, after which, in the order named, revenues shall be made applicable to interest on electric system bonds and/or other indebtedness applicable to said electric system, amortization of such bonds, or other indebtedness, reasonable reserves for new construction and other contingencies, payment to the general fund of Contractor for taxes at rates equivalent to the taxes assessed against other property of

COMPLAINANTS' EXHIBIT No. 801 (Excluded)

a similar nature, and a return on Contractor's equity of not more than six per cent per annum. (b) After the appropriation of the above amounts the Contractor agrees that all remaining revenue shall be applied to reductions in the rates to consumers."

Tupelo is expected to use Muscle Shoals current on February 7, 1934, when Tupelo's contract with the Mississippi Power Company expires. The Authority will cooperate with Tupelo in encouraging a wider use of electricity, and plans an intensive demonstration in rural electrification in the heavily settled county of Lee of which Tupelo is the county seat.

[fol. 3553] COMPLAINANTS' EXHIBIT No. 802 (Excluded)

TVA Press Release of November 19, 1933

Is Electric Power Important, by Arthur E. Morgan

I have seen references in the local press to a supposed statement of mine that electric power is an unimportant incident in the Tennessee Valley Authority program. May I express my opinion on the matter. The problem of electric power is extremely important in the program of the Tennessee Valley Authority, but it ought not to continue to be so. * * *

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There are a number of fundamental needs of people which are matters of almost life and death if they are not supplied, but which ought to be supplied so freely that they seem unimportant. Air and water are such needs. A few others are roads for transportation; mail, telegraph and telephone for communication; and electric power. These fundamental needs of men are so fundamental and must be supplied on such a large organized scale that the sup-
[fol. 3554] plying of them is not a private affair but a concern of the public. It is the business of the public to supply such needs one by one until they are so well provided for that we need to think little about them, and can turn our minds to other matters.

COMPLAINANTS' EXHIBIT No. 802 (Excluded)

At present, the power issue is in the Tennessee Valley Authority region. Let us hope that in the next few years, it can become so thoroughly mastered that we need give it but little thought. Our power resources here are so abundant that an adequate supply of power for all our needs should be no more of a problem and a little more of tax than abundant and pure water supply is at present. In fact, in our rural regions, an abundant supply of power should be less difficult to secure in many cases than an abundant supply of pure water. The power program of the Tennessee Valley Authority is being worked out under the direction of Mr. Lilienthal. His aim is to bring about a time when power will no longer be an important matter to demand our time and attention, when an abundant supply will be available to all at a cost so low as not to tax the family budget. Whether that program does succeed, will depend, of course, on the cooperation of the Authority and the people of the territory.

[fol. 3555] COMPLAINANTS' EXHIBIT No. 803 (Excluded)

TVA Press Release of November 21, 1933

The Tennessee Valley Authority

Address to the National Academy of Sciences in Boston, by Arthur E. Morgan, Chairman of the Tennessee Valley Authority, November 20, 1933.

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* * * The power program of the Tennessee Valley Authority has been worked out under the direction of David E. Lilienthal, a member of the Board, with vigor and dispatch, and I believe, in a masterful manner. The first contract for furnishing power to a municipality has recently been executed, and several hundred miles of transmission line will shortly be under construction.

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Then there is the great waste in the electric power situation. Men have a few basic needs which must be supplied as

[fol. 3556] part of a civilized environment. One of these is an abundant supply of pure water. Other basic sources are transportation, communication and power. We shall steadily approach the time when these services are so cheaply and abundantly supplied that they fall into the background as requiring but little of our thought.

At the present time electric power is one of the live issues of social planning. Everyone is familiar with the disclosures of the Federal Trade Commission, of the widespread endeavor by secret and open propaganda to control the thinking of the nation on this issue. In a few cases where unusual indiscretion has opened the scene to the public, as in the case of the once very honorable Mr. Insull, we can see what the industry is like on the inside.

The Tennessee Valley Authority is interested in the electric power issue on several counts. First, if a case of public ownership and operation can be established, with fully open and comparable cost accounts and records, we may be provided with a "yardstick" by which we may discover what electric power actually ought to cost. The private utilities, if they are sincere in their expressed belief of the superiority of private ownership and operation, should welcome such an example.

[fol. 3557] It is not only the private utilities that will be provided with a "yardstick." Public ownership will be on trial. * * *

Another object of the TVA is to make this region and the country as a whole more fully aware of the vast possibilities of electric power for enlarging the freedom and scope of modern life in the home and on the farm. This can only come with cheap power, from which all speculation and exploitation have been removed. The electric power business is one of the simpler industries of our country. It does not compare in complexity with the shoe industry, the automobile industry or the railroad industry. No vast tribute should be paid for management and financing. Brought down to its simpler necessities, electric power should be a universal convenience, supplied as city water supplies usually are, on a basis of service and not of commercial exploitation.

Lastly, the economy of electric power in the Tennessee Valley area will depend much on large scale developments

that are designed and operated as single integrated systems. The entire Tennessee River System, with its thousands of miles of streams, should be under one control and ownership, which means Government ownership. An example will illustrate: all along the Tennessee River power plants can [fol. 3558] be installed with a total fall of about five hundred feet. But these are "run-of-the-river plants." That is, they provide little storage, and the water must be used as it flows. At Muscle Shoals, for instance, the capacity during high water in winter may be 600,000 kilowatts, whereas, the low water of a dry summer may generate only 40,000 kilowatts. The maximum capacity of high water is fifteen times the minimum capacity at low water. Yet it is only the "prime power," or power that is nearly always available, that has much value. Now, up river on one of the main branches of the Tennessee is a power project of another sort. A high dam will produce vast storage capacity, great enough, in fact, to store a year's supply of the stream. There has been a project on foot to build a great industrial plant at this upstream site, using the power for manufacturing purposes. The control of flow would be determined by the orders received by that one plant, and by its need for power. It might be using much power, and therefore releasing much water, during the high water of winter, when there is already a super-abundance of water in the river below. During the summer the plant might be shut down and water might be stored above when it is most needed below.

[fol. 3559] If the entire system should be owned and operated as one, the situation would be very different. The entire system would be inter-connected by transmission lines. During the high water of winter the upper plant would be shut down and the water stored in the reservoir. Abundant power would be available from the river plants below where no storage is available, and where the water must be used as it comes. Then, during the summer, when the river is low and electric power scarce and most valuable, the upper plant would be operated. Not only would a large amount of power be available there, if the whole year's storage were to be used in those months, but all the water used in the plant above would have to pass through each of the plants below, all the way to the mouth of the Tennessee. By such united operation probably twice as much "prime power"

COMPLAINANTS' EXHIBIT No. 803 (Excluded)

or dependable power could be generated for a given investment, or, in other words, the power would cost half as much per kilowatt hour.

Private utility men say that they would get the same result by trading power among themselves. That, however, does not answer the question. In the original installation of an up river power plant, the investment which is justified in providing storage will be determined by whether an income will be produced by the water which is released from the [fol. 3560] reservoir, as it goes through other power plants down the river. For instance, the Norris Dam now being built by the government on Clinch River is made higher and the reservoir is made larger than would be justified by the power possibilities for the dam itself. The Norris Dam plant will be worth more as a regulator for Muscle Shoals than for the power it could generate at its own plant treated independently. The water going through Norris Dam plant will be worth twice as much at the plants below as it is at its own plant. An investment justified by the whole system would not be justified for an independent plant.

Down stream from the Norris Dam is a private power development on the Tennessee River—the Hales Bar Dam and Power Plant. The value of that private plant will be doubled by the building of Norris Dam at public expense. Only by a single organized system of water power plants for the whole Tennessee River System can the full economy be realized. With that organization, water power may cost less than half what it would if the various units should be developed independently by private companies.

Water power is to have stiff competition from steam to Diesel engine. If the Tennessee River region is to realize its possibilities in water power it cannot afford to throw away this economy.

[fol. 3561] COMPLAINANTS' EXHIBIT No. 804 (Excluded)

TVA Press Release of November 22, 1933

Washington, Nov. 22.—Sheffield, Alabama, adjacent to the Muscle Shoals hydro-electric plant, gives every indication of being the second municipality to obtain TVA power, according to David E. Lilienthal, in charge of the Authority's electrification program.

COMPLAINANTS' EXHIBIT No. 804 (Excluded)

"An agreement between Sheffield and the Tennessee Valley Authority for the use of Muscle Shoals power will be entered into as soon as certain formalities are concluded," Director Lilienthal announced today. "It had been expected that the contract would have been signed by this Thursday, but the untimely death of Mr. T. Herbert Clegg, in charge of negotiations for the Authority, will mean a little delay."

Sheffield has applied to the Public Works Administration for a loan in order to finance its own distribution plant, to be built or acquired. The franchise of the Alabama Power Company in the city has expired.

"Sheffield is very anxious to secure this power from the Authority and is ready to do all in its power to close this matter as quickly as possible," declare Sheffield's Board of Commissioners in a formal letter to Director Lilienthal. Signed by W. H. Richardson, president, and [fol. 3562] Commissioners R. R. Hill and Hoyt Greer their statement continues:

"Messrs. Lide & Adler, engineers employed by the City to negotiate with you for the purchase of power from the Authority, have conferred with your engineers in the matter of the contract for the power. In all substantial provisions of the contract there was agreement between them and only a few minor details need to be corrected before the City will sign the contract offered. These matters are detail only and will not materially affect or change the contract offered."

The terms of the contract under consideration are of the same character as those in the contract signed on November 11, by the City of Tupelo, Mississippi. A lower wholesale rate prevails, since no transmission line is involved. Retail rates will be much lower than those now in effect.

[fol. 3563] COMPLAINANTS' EXHIBIT No. 805 (Excluded)

TVA Press Release of December 5, 1933

Officials of the Tennessee Valley Authority today conferred with John L. Neely, Jr., newly-appointed coordinator between the TVA and the Civil Works Administration, to

COMPLAINANTS' EXHIBIT No. 805 (Excluded)

complete the program for creating new jobs for approximately 16,500 men in the Tennessee Valley, starting within a week.

The CWA already has turned over $3,343,500 to the Authority for emergency work in the portions of seven states comprising the basin. These are Virginia, North Carolina, Tennessee, Alabama, Georgia, Mississippi and Kentucky.

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In preparation for construction of rural electrification lines, men are expected to start work this week in five counties in Mississippi and one in Alabama. They will cut trees for poles and dig holes in which to set them, principally along the rights-of-way of county roads.

[fol. 3564] COMPLAINANTS' EXHIBIT No. 806 (Excluded)

TVA Press Release of December 5, 1933

The Tennessee Valley Authority and Electric Power, by Arthur E. Morgan

Chairman of the Tennessee Valley Authority. Address to the American Institute of Electrical Engineers (New York Section) at the Engineering Society's Building New York City, December 4, 1933, 8:00 P. M.

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The Authority has in view a policy which would lead to great economy in hydroelectric power generation. Water power in the future may have very stiff competition from [fol. 3665] both steam and Diesel engines. Whether these three million kilowatts of potential water power in the Tennessee river system can be developed in competition with other sources of power will depend upon whether every possible economy is achieved in its development. If the cost of generating water power should be half a cent per kilowatt hour it may lose out before steam or the Diesel engine. If the cost of water power can be reduced

to a quarter of a cent per kilowatt hour it may have a relatively clear field.

Without suggesting any particular level of unit cost, I venture the opinion that if the water power development of the entire Tennessee river drainage area of 40,000 square miles can be given a single unified ownership and control, the unit cost of power may be no more than half of what it would be with divided ownership and management. Let me illustrate—

Near the East boundary of Tennessee is a dam site which will provide vast storage capacity for an area of very heavy rainfall and run-off of a few thousand square miles. From this point down the Tennessee River to its mouth is a fall of roughly one thousand feet, nearly all of which can be used for generating power. A plan has been proposed by [fol. 3566] a private company for generating power at the upper site with a dam perhaps 200 feet high, and to administer this power plant as an independent industrial undertaking, perhaps for the operation of a large manufacturing plant. If this is operated as an independent unit it will be regulated with a view to its own needs. In determining how much storage can be economically provided in the original construction, only the value of storage to that plant alone can be considered. The management cannot invest money in this upper plant on the ground that the investment would be justified in the use of stored water at each of the eight or ten plants down below, in which it has no financial interest. Some of these lower plants may not yet be built.

If there were only one up-river plant and one down river plant some arrangement might conceivably be worked out, but with eight or ten down-river plants which have little or no storage, and twenty or thirty up-river plants on half a dozen tributaries, each with storage which could be released, all prospect for voluntary unified and coordinated control fades away. Each plant would be run when its owner should choose, without regard to the abundance or deficiency of water at plants below or on other tributaries. Trading of water and even exchange of power, would become [fol. 3567] cumbersome and relatively ineffective.

Now consider what would be accomplished by a single unified system, thoroughly interconnected by transmission

lines and controlled from a single office. During wet seasons or wet years the storage dams would be closed until their reservoirs were filled, and all power would be developed from plants having no storage, or inadequate storage. If rains should be heavier on one tributary than on another, the full reservoirs would be drawn upon. If some reservoir had only enough capacity to store the flow for a few months, its supply might be used ahead of a reservoir that would store one or two years run-off. If during the low water of a summer a freshet should occur on an uncontrolled tributary, that freshed flow could be used to the utmost, and an equivalent value in stored water would be saved.

In any single reservoir it seldom pays to store water for more than two years in preparation for a dry cycle, but in a large system the exceptionally cheap reservoir space could be used for that purpose, thus giving additional security against extreme drouth.

On some of the smaller tributaries of the Tennessee sometimes at high elevations there are reservoir sites of very large capacity, but without water enough to fill them. [fol. 3568] These cheapest and most capacious sites could be developed by building dams, and then all surplus power could be used to pump water up hill into them from the Tennessee river. For off peak hours at night, for a few wet months during the year, and for intermittent wet seasons, all surplus power could be used in pumping water into these high reservoirs which would have power plants to be used during peak loads or for a standby supply.

With such a single integrated system under a single control, the full hydroelectric power possibilities could be realized, and the cost per unit of private power might be not more than a half or even a third of the cost of separately owned and operated plants. In this process navigation and flood control also would be provided for, with substantial contributions to the low water flow of the Ohio and the Mississippi.

I hold that such unified control and operation implies government ownership and operation. It may be argued that all this could be accomplished under private ownership and operation. But I hold that it should not be in private hands unless that should be necessary to avoid gross inefficiency and corruption of the spoils system.

COMPLAINANTS' EXHIBIT No. 806 (Excluded)

[fol. 3569] The control of this great electric power system by a private corporation would give economic power over the people of the region which no self-appointed men ought to hold. Such management and operation would of necessity be governmental and public in its nature, whether privately or publicly owned. It would be necessary to exercise the right of eminent domain, and to have control over the economic life blood of a vast region. Public regulatory bodies have not proved their ability to control such vast aggregations of economic power.

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Just as an adverse balance of foreign trade tends to bankrupt a nation, so the constant drain from a municipality of payments to a foreign owned utility tends to economic impoverishment. Given administration of equal quality, the ideal status of a city utility is that it is fully amortized and is owned by the public it serves. Regional independence from a perpetual drain is no less important for an area as large as that of the Tennessee Valley Authority than for a city. In good economics only that should be imported which cannot reasonably well be produced at home. Absentee ownership of utilities is an unsound policy unless there are determining reasons for it. One of the purposes of the [fol. 3570] Tennessee Valley Authority to provide a case in public ownership and operation and to discover wherein lies the mysterious difficulty in utility operations. Since an important municipal system like that of Tacoma has not disclosed those difficulties, a trial on a larger scale seems desirable.

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• • • We need a new psychology about electric power. We need to think of it as an ever present servant, practically unlimited in quantity and convenience. For ordinary purposes we should be able to practically forget its cost as we do water in the household. This should be especially true in the Tennessee Valley Authority, where a great surplus of intelligent and efficient labor is available to use a great supply of raw materials in the development of a well nigh limitless supply of power.

COMPLAINANTS' EXHIBIT No. 806 (Excluded)

The first restrained and modest steps toward these results are being taken by the Tennessee Valley Authority. The power program of the Authority is in the hands of Mr. David E. Lilienthal, one of the directors. Contracts have been made for furnishing electric current to one municipality in Mississippi, and two in Alabama. Various other requests have been received from those states and from Tennessee, Georgia and Kentucky. It is the hope of the Authority to so stimulate the use of electric power that its activities [fol. 3571] shall be a stimulus and not a deterrent to the whole industry. In setting rates, an effort has been made to include every legitimate item of cost, including interest, amortization and taxes. There is an honest effort to make costs genuinely comparable to those of private industry. The Authority is refraining from any campaign to take customers from private utilities. Prospective customers must take the initiative. Genuine effort is being made to disturb security holders as little as possible. Statements spread broadcast by the utilities themselves among the small holders of their securities during the consideration of the TVA bill in Congress, to the effect that if the Bill should pass the utilities would be ruined, have perhaps been believed by some persons. The Authority cannot, of course, be held responsible for the unfortunate results of the pessimistic forebodings of this propaganda of the private companies. The power program of the Tennessee Valley Authority is an effort in a limited area to bring about a cheap and ample supply of power on a self-supporting basis, as one of the several conditions necessary to an enlightened and wholesome economy in the region it is trying to serve.

[fol. 3572] COMPLAINANTS' EXHIBIT No. 807 (Excluded)

TVA Press Release of December 12, 1933

The first crew of CWA workmen assigned to TVA Saturday began surveying and staking rural electrification lines in Lee county, Mississippi, of which Tupelo is the county seat, the Tennessee Valley Authority announced.

Tupelo was the first city to contract with the Authority for power from Wilson dam. An aggressive campaign is now

COMPLAINANTS' EXHIBIT No. 807 (Excluded)

being waged in Tupelo and Lee county to increase the use of electricity, particularly by farm families.

As soon as labor crews can be assembled, electric lines will be extended in four other Mississippi Counties, according to Guy W. Thaxton, TVA engineer in charge of development work in Northern Mississippi.

Rural lines in these counties will be constructed as rapidly as the projects can be set up and approved by Greek L. Rice, Chairman of the Civil Works Administration for Mississippi.

John L. Neely, Jr., TVA-CWA coordinator, will confer with Mr. Rice Tuesday in Jackson, Miss., relative to these projects. On Monday Mr. Neely will discuss similar matters with Algernon Blair, CWA chairman for Alabama, in Montgomery.

[fol. 3573] While the routes are being surveyed and staked, CWA workers are cutting the poles, digging holes in which to set them, and making ready to string the wires. Most of the new lines run along county road rights-of-way and penetrate areas heretofore without electricity.

[fol. 3574] COMPLAINANTS' EXHIBIT No. 808 (Excluded)

TVA Press Release of December 18, 1933

The Tennessee Valley Authority has decided that development of the Aurora Dam on the Tennessee river should be a part of the Authority's plan for an integrated power program embracing the entire Tennessee river basin. This decision has been forwarded to private interests which sought control of the Aurora dam site.

The Aurora project is located in Kentucky approximately 44 miles up stream from the confluence of the Tennessee and Ohio rivers at Paducah, Kentucky.

"From an engineering standpoint Aurora dam is being studied by the Authority to determine whether it should not be one of its next projects," Chairman Arthur E. Morgan said. "The Tennessee Valley Authority, however, does not feel justified in starting another project with its present funds. We have only enough to finish one job and make a good start on Wheeler dam.

COMPLAINANTS' EXHIBIT No. 808 (Excluded)

"The value of a power dam is roughly the value of the least amount of power which that project can produce. For example, during the high water season there would be little or no power at Aurora dam because the Ohio river is so [fol. 3575] high that it backs up nearly to what would be the top of the dam. On the other hand, Muscle Shoals in high water has a great excess of power. The two units and Norris Dam supplement each other. For the Tennessee Valley Authority to have an effective unit of power, it should control both Muscle Shoals and Aurora Dams. Operated as a single private unit Aurora dam would have much less value because it would have little, if any, 'prime' power, or power which is available without interruption during high or low water."

[fol. 3576] COMPLAINANTS' EXHIBIT No. 809 (Excluded)

TVA Press Release of December 20, 1933

Sixty men have started constructing the 17-mile transmission line that will carry power from Wilson dam, Muscle Shoals, Ala., to the site of the new Joe Wheeler dam, the Tennessee Valley Authority announced today.

Work at present consists of clearing the right-of-way and digging holes for poles. It is planned to complete the line by January 1, 1934, and begin furnishing Wilson dam power for construction of the Wheeler dam.

Terminal connections already have been made at the Wilson dam sub-station for the line which, after completion of Wheeler dam, will serve as an auxiliary tie transmission line between the two dams. It will also be used as a feeder for rural electrification lines along its route.

Simultaneously, the Authority announced that CWA workmen, directed by TVA engineers, are making rapid progress in extending rural electrification lines in Northern Alabama and Mississippi. In Lauderdale county, Alabama, 74 CWA men are at work, while in Alcorn county, Mississippi, 30 men are employed in erecting county lines.

[fol. 3577] In addition, many farmers are using their spare time to cut poles and dig holes so as to be ready to

COMPLAINANTS' EXHIBIT No. 809 (Excluded)

cut in on the Tupelo, Miss., transmission line when the Authority begins delivering current there February 7, 1934.

Intense interest is being shown by farmers of Lee County, of which Tupelo is the county seat. They have formed a county-wide organization, with active units in each of the county's 26 school districts, and a membership of 2,000. Efforts to increase the use of electricity in the county seem certain of success due to the splendid voluntary response of the people to the Authority's program.

[fol. 3578] COMPLAINANTS' EXHIBIT No. 810 (Excluded)

TVA Press Release, of December 20, 1933

The creation of Electric Home and Farm Authority by order of President Roosevelt is the outgrowth of negotiations instituted two months ago by the Tennessee Valley Authority with the Electric manufacturers of the country, and with the principal electric utilities operating in the Tennessee Valley area.

The next step in the development of the cooperative program is being worked out in conferences in New York the balance of this week between a special committee representing the National Electric Manufacturers Association, and Director David E. Lilienthal and General Solicitor William A. Sutherland representing the Authority.

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In a statement today Director Lilienthal, in charge of the Authority's power program, said:

"The home or the farm of the family of modest income has never had the benefit of a general use of electricity. [fol. 3579] In the Tennessee Valley, although there are vast sources of power available, the people have had to use electricity sparingly. Two barriers have prevented a full enjoyment of the benefits of this great natural resource: prohibitive rates for energy, and the high cost of electric appliances. Electric Home and Farm Authority plans to remove those barriers in the Tennessee Valley.

COMPLAINANTS' EXHIBIT No. 810 (Excluded)

"The consuming public has been suffering from an impasse which the electric industry has been unable or has lacked the leadership to break. The prevailing high rates for electricity has stood in the way of a more general use of electric appliances. In turn, the high cost of appliances has prevented a greater use of electricity, which would mean lower rates. Thus, the electric utilities and the appliance manufacturers have been standing in their own and in each other's light. In this situation government leadership is essential. The agency set up by the President in the Tennessee Valley states, if it receives the wholehearted cooperation of all interests, can break this 'vicious circle', and, with injury to no one, reduce the cost of electricity and electrical appliances both, thereby bringing the comforts and conveniences of electricity into many homes."

[fol. 3580] COMPLAINANTS' EXHIBIT No. 811 (Excluded)

TVA Press Release of December 20, 1933

David E. Lilienthal, Director of the Tennessee Valley Authority in charge of its power program, tonight issued the following statement in explanation of the purposes of the Electric Home and Farm Authority, Inc., just created by Executive Order of President Roosevelt.

"The objective of this program is a wider and greatly increased use of electricity in the homes and on the farms in the seven states of the Tennessee Valley. In order to carry out the program there must be a broad scale distribution of very low cost standard quality electric using appliances and concurrently a revision downward of electric rates. The new agency is based on a cooperative program in which the federal government, the electric utilities both publicly and privately owned, the electric manufacturing industry and dealers will participate through the Electric Home and Farm Authority, Inc.

"It is proposed that the federal government participate in this program in the following ways:

"1 By assisting in financing the consumer in purchasing [fol. 3581] standard electric equipment at very low prices.

COMPLAINANTS' EXHIBIT No. 811 (Excluded)

"2. By securing reductions in electric rates by agreement with the utilities publicly and privately owned so as to make use of this equipment feasible for the average householder and farmer.

"3. By engaging in educational work and research to further lower the cost of electric equipment and to make it better adapted to the needs of the average home and farm.

"Electric appliances are now sold by regular dealers for the manufacturers, by hardware and department stores, and by electric utilities. The program does not contemplate a disruption of these outlets. Each dealer will, of course, continue to exhibit and sell any lines of electric appliances he desires but he will also have an opportunity to sell the low-priced appliances which this program is expected to create. The program will stimulate the dealers' general business.

[fol. 3582] COMPLAINANTS' EXHIBIT No. 812 (Excluded)

TVA Press Release of December 28, 1933

Organization of farmers of six northeast Mississippi Counties into rural electric power associations, to buy current at wholesale from the Tennessee Valley Authority, will be conducted by the agricultural extension service of Mississippi State College, Starkville, it was announced today by the TVA.

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Rural electric transmission lines are now being built in Mississippi, CWA funds being used for labor and TVA money for the purchase of poles, transformers, wire and other transmission line equipment. The county associations, incorporated under Mississippi laws, will retail TVA power to their members on a no-profit basis. Resale rates, however, will provide for repayment of the Authority's cash outlay in constructing the lines.

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COMPLAINANTS' EXHIBIT No. 812 (Excluded)

A similar plan for rural electrification is being worked out by the Tennessee Valley Authority in several north west Alabama counties as rapidly as the proper cooperation can be obtained.

[fol. 3583] COMPLAINANTS' EXHIBIT No. 813 (Excluded)

TVA Press Release of January 5, 1934

The Tennessee Valley Authority and Alabama Power Company, Tennessee Electric Power Company, Mississippi Power Company and Georgia Power Company today entered into a comprehensive agreement, after extensive negotiations extending over the past three months, under which the Tennessee Valley Authority acquires electric facilities in a substantial territory in three states in which to conduct its power operations. Under the agreement the President's power "yardstick" is set up in initial form, and immediate Muscle Shoals power service is provided to householders and farmers in the Tennessee Valley. Six months after the creation of the Valley Authority a market has been provided for all the power resources of Muscle Shoals, after a dozen years of plant idleness.

The contract, which will terminate as soon as power is available from Norris Dam, contains the following major provisions:

1. Purchase by the Authority of approximately $3,000,000 of property from the Alabama Power Company, Mississippi Power Company and Tennessee Electric Power Company, by which the Authority obtains immediate urban and rural markets in Mississippi, Tennessee and Alabama.

[fol. 3584] 2. Sale of municipal systems in the Mississippi counties affected to the Authority.

3. Sale of municipal systems in the Alabama counties affected to the municipalities by the Alabama Power Company.

4. Option is granted the Authority to purchase municipal systems in Tennessee counties affected.

5. An agreement to reduce electric rates by the Tennessee Electric Power Company to the level recently established by the Georgia Power Company.

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COMPLAINANTS' EXHIBIT No. 813 (Excluded)

"The size of the area which the Authority determined to acquire, was determined in a large measure by the amount of power it now has available, that is, by the existing firm power capacity of the Muscle Shoals plant. Until further power is available to the Authority by the completion of Norris Dam (estimated to be ready in three years) only those communities could be served which in the aggregate would not exceed in their power demands our capacity to furnish immediate and continuous electric energy. The area ceded by this contract, together with the city of Knoxville, which recently voted to become a wholesale purchaser of Muscle Shoals power, added to the require-[fol. 3585] ments of rural electrification projects now under way, and demands in territory outside the ceded area, will absorb virtually all of the power which Muscle Shoals can produce, allowing a safe margin for increased use of electricity which the Authority's low cost appliance program is certain to induce. The precise boundaries of the area chosen were determined by the physical location and sizes of existing transmission centers."

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"The contract carries forward one of the Authority's objectives of effectuating lower rates to all consumers in the Tennessee Valley area. Rate reductions of a substantial character have been announced recently in Alabama and Georgia on the properties of the companies parties to this arrangement. As part of this contract the utilities further agreed with the Authority to reduce rates throughout their territory in the State of Tennessee. These new rates represent a reduction of 28 per cent under the 'inducement' rate and 15 per cent under the 'immediate' rate, with a total saving to householders of $415,000 annually."

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[fol. 3586] Reductions in Rates.—The Tennessee Electric Power Company agrees to reduce the domestic electric rates to the level recently established by the Georgia Power Company. These rates will result in a reduction of $415,000 in bills for domestic service in all territory served by the Tennessee Electric Power Company.

[fol. 3587] COMPLAINANTS' EXHIBIT No. 814 (Excluded)

TVA Press Release—Undated.

Under the contract between the Tennessee Valley Authority and the Commonwealth and Southern Corporation of January 4, the Authority will acquire all of the transmission and distribution facilities of the Mississippi Power Company in the following counties in Mississippi: Pontotoc, Lee, Itawamba, Union, Benton, Tippah, Prentiss, Tishomingo and Alcorn. The Authority will be in position to serve all towns and communities in this territory. In addition, the Authority has the right to serve all rural customers and rural consumer organizations in Monroe County not now served by Mississippi Power Company. The Authority has the right to contract with other municipal consumers outside of these counties which are not now customers of the Mississippi Power Company.

In the state of Alabama, the Authority will acquire all of the property, excepting municipal distribution systems, of the Alabama Power Company in the counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan, the northern half of Franklin and some of the northern part of Cullman. The Authority will be able to serve such municipalities in these counties as construct or acquire their own distribu-[fol. 3588] tion systems. In the event that municipalities fail to construct or acquire distribution systems, the Authority will serve the Alabama Power Company which will operate municipal distribution systems. However, the Alabama Power Company has agreed to make every effort to agree with municipalities on a price at which to sell the municipal distribution systems. In no event will the negotiations and transfer pursuant to the contract cause any discontinuity or interruption of service to users of electricity.

In the state of Tennessee, the Authority will acquire properties of the Tennessee Electric Power Company, excluding distribution systems, in the counties of Anderson, Campbell, Morgan, Scott, and the west part of Claiborne. The Authority has the right to serve rural customers and rural consumer organizations in the counties of Rhea, Roane, Meigs and the western part of McMinn which are not now customers of the Tennessee Electric Power Company.

COMPLAINANTS' EXHIBIT No. 814 (Excluded)

In general, the Authority retains its right to sell electric energy to any and all municipalities not only within the territory acquired by it, provided that such municipalities [fol. 3589] are not at present served by any company in Commonwealth and Southern Systems, but also all other municipalities, without restriction as to territory, so long as such municipalities are not now served by one of the following companies: Alabama Power Company, Tennessee Electric Power Company, Mississippi Power Company and Georgia Power Company.

In addition to the above, the contract provides for intertie connections to supply up to 25,000 kilowatt capacity for rural and industrial use outside of the contract territory to customers not now served by the power companies above named.

[fol. 3590] COMPLAINANTS' EXHIBIT No. 815 (Excluded)

TVA Press Release of January 6, 1934

Business and Government in the Tennessee Valley

Text of Paper by David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority Read Before American Academy of Political and Social Science in Philadelphia, Penn., January 5, 1934

* * * * * * *

The public utility business has long borne a different relationship to government from other businesses not so peculiarly affected with a public interest. The whole community relies so completely upon public utility service that for generations the government has found it necessary and appropriate to regulate the rates and services of these quasi-public agencies. During the past quarter of a century, the regulation of public utilities has been vested in state commissions. Through these commissions the force of government was exerted upon public utilities to the end that [fol. 3591] the rates charged consumers should be reasonable, and that financial practices injurious to the consumers and to the public investors should be prevented.

COMPLAINANTS' EXHIBIT No. 815 (Excluded)

There has been a growing feeling that this method of expressing the regulatory relation of the government to the public utility business was inadequate to meet the needs of the situation. These critics insisted that commission regulation, by and large, had been ineffective; that in many states instead of the regulators regulating the utilities, the utilities were regulating the regulators; that financial abuses of the most lurid sort had taken place despite regulation; that the processes of regulation were too slow; and that the great technological savings in the field of electricity had not been passed on to the consumers.

The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public utilities not by quasi-judicial commissions, but by competition. The Act definitely puts the Federal government into the business of rendering electric service. The Authority is required to acquire a market, to set up an area in which to conduct its operations. The results of these operations in this limited area are intended to serve as a "yard-stick" by which to measure the fairness of the rates of private utili- [fol. 3592] ties, and to prevent destructive financial practices by private utilities. In carrying out this competitive relation between the Federal government and the private business of electricity, the wastes of competition are to be eliminated, and the regulatory function of competition emphasized. In other words, duplication of facilities and competition in the same community is to be avoided. There is not time to discuss in detail the principles which the Authority has adopted to govern its operations in this new relation as a competitor of a public business. Those principles have been set out by the Authority in its Power Policy, and have been discussed in some detail in various public statements.

* * * * * * *

In common with other recently created agencies of government, the Tennessee Valley Authority has a definite duty and a definite role to play in this new function of government as a stimulating and coordinating force. There are a number of illustrations in the work of the Tennessee Valley Authority of this need of government stimulation. The most recent, and perhaps the best illustration, is afforded by the

creation a few days ago, by order of President Roosevelt, of a subsidiary of the Tennessee Valley Authority, a Delaware [fol. 3593] corporation known as Electric Home and Farm Authority. The occasion for the creation of this agency and a brief analysis of its functions will show how the government can act as a stimulator and coordinator in its relation to business.

In the Tennessee Valley there are great actual and potential sources of electricity. Private and publicly-owned agencies now have developed generating capacity from thirty to forty per cent in excess of existing requirements. Additional generating capacity is being developed with public funds. The same situation is true throughout the country. The people need and want this electricity in their homes, on their farms, and in their places of business, but as a matter of fact the use of electricity in the United States has been extremely limited. The average domestic consumer throughout the United States uses about 50 kwh. of energy a month, a niggardly and parsimonious use of a great resource.

Two barriers have stood in the way of a widespread use of this liberating force. The first and most important barrier is the rates charged for electricity. These rates have been too high to permit of the general use of electricity. As a result the use of electricity has been restricted and has never, except in unusual communities, reached the proportions [fol. 3594] justified by the universal need and effective demand for this service.

The electric power industry has consistently stated that if the consumers would use more electricity the rates could be greatly decreased. One leader among the utility executives, for example, pointed out recently that his most profitable customers were those who, with an extensive use, are charged a rate of less than 1.7 cents per kwh. as compared with the average user's rate of 4½ cents per kwh. and the small users' rate of 8 cents per kwh. Increase in use is essential to bring down unit costs. And yet to increase the use, the rates to the consumers must be decreased.

Not only the high cost of electricity, but the relatively high cost of electric-using appliances has constituted a serious

barrier to the increased use of electricity. The labor and material costs of electric appliances have always been but a fraction of the total retail price. Volume production could have brought greatly decreased prices to the ultimate consumer, but with electric rates on a luxury basis, volume production of electric appliances in this field has never been accomplished.

Here we have a picture of a complete business stalemate. [fol. 3595] The electric utilities' position is that until the use of electricity is greatly increased, the rates cannot be drastically decreased. Nor will the use of electricity be greatly increased, they urge, unless electric-using appliances come into general use. The general use of electric appliances on the basis of present prices is concededly impossible. The electric appliance manufacturers, on the other hand, say that unless electric rates come down, volume production of electric appliances is impossible, and without volume production of electric appliances the per unit cost of manufacture and distribution cannot be substantially reduced. Electric utilities, electric manufacturers, and consumers all suffer from this vicious circle: the electric utilities, because they have great excess capacity which is idle and against which fixed charges are continuing to pile up; the electric manufacturers, because they have idle capacity on which overhead continues to be incurred. Here was an opportunity for government, represented by the Tennessee Valley Authority, to exercise its catalytic function.

By Executive Order, the agency known as Electric Home and Farm Authority was created to cooperate with business in an effort to break this impasse and to bring the benefits of a wide use of electricity at low cost to consumers through- [fol. 3596] out the seven Tennessee Valley States. Electric Home and Farm Authority was created to remove these barriers to a wide use of electricity and to a more stable and prosperous business for the electric manufacturers and the utilities. The plan, in brief, is as follows: the manufacturers of electric equipment have indicated their willingness to participate in a program of producing certain types of standard quality, low-cost electric-using appliances. These will be offered for sale by the existing dealer outlets, at prices very substantially lower than any heretofore known. These manufacturers will cooperate with Electric Home and

COMPLAINANTS' EXHIBIT No. 815 (Excluded)

Farm Authority in certain research and educational activities designed to bring home to people of the area the most economical and most satisfactory ways of using electricity in the home and on the farm. Further, Electric Home and Farm Authority will arrange for a more satisfactory basis for the financing of electric appliances. While the Reconstruction Finance Corporation will, in effect, guarantee ten million dollars of consumer paper, we are confident that the actual credit will come through the commercial banking system, which has been looking for just such high type of consumer paper, consistent with the needs for liquidity. The cost of financing to the consumer will be greatly reduced, [fol. 3597] due in considerable part to a cooperative arrangement whereby collections will be made by the utility company on the consumer's electric bill rather than through a separate and duplicating medium.

Negotiations are being carried on with electric companies operating in the area, looking toward a reduction in electric rates which will make it feasible for people of average and low income to use these electric appliances. Evidences of cooperation in this direction on the part of power companies have been most reassuring. They foresee that if this program is successful, there will be a great increase in the use of electricity, which will make for lower unit costs. The Tennessee Valley Authority, within the sphere of its own power operations, is setting rates for domestic and rural service which we believe will demonstrate not only the social desirability but the business wisdom of radically reduced electric rates. With those reductions in electric rates, one of the principal barriers to the use of electric appliances will be removed, and general, widespread use of electricity will become feasible.

[fol. 3598] COMPLAINANTS' EXHIBIT 816 (Excluded)

TVA Press Release—Undated

Washington, D. C., January 20, 1934.—Organization of the President's new Electric Home and Farm Authority, Inc., was effected late yesterday at a meeting of the incorporators at the Washington offices of the Tennessee Valley Authority at which time these officers were elected: David

E. Lilienthal, general counsel of the Tennessee Valley Authority and director in charge of the TVA power program, president; Arthur E. Morgan, chairman of the TVA, vice president; Francis J. Carr, controller of the TVA, treasurer; Dr. Harcourt A. Morgan, a director of the TVA, secretary, and William A. Sutherland, solicitor of the TVA, counsel.

Pursuant to the Executive Order of December 19, 1933, which authorized the Electric Home and Farm Authority, the directors of the Tennessee Valley Authority are also directors of the new body—the Messrs. Morgan and Lilienthal.

The Board of directors of the Electric Home and Farm Authority authorized issuance of 10,000 shares of capital [fol. 3599] stock of the new corporation, with a par value of $100 per share, as provided in the Executive Order, and also authorized execution of a contract with the Reconstruction Finance Corporation looking to the setting up of $10,000,000 of credit in connection with the Tennessee Valley electrification program.

The papers of incorporation, filed in Delaware, provide a life of seven years for the Electric Home and Farm Authority and list among the new corporation's objects and duties the following:

"To advance the general economic welfare of the nation by developing and fostering the increased use of electrical power through the reduction of the cost thereof to the consumer and through the reduction of the cost and price of electrical equipment and appliances; to aid in the distribution of electric appliances and equipment by financing the purchase thereof through the lending and advancing of money, extending of credit and guaranteeing of obligations of individuals, firms, corporations and others, upon the security of mortgages or other liens upon or claims against electrical appliances and equipment, and in general to carry on in connection with such financing a chattel mortgage-loan business; to cooperate with any Federal agency or branch of the Federal Government, or with any of the several States, [fol. 3600] or subdivisions or agencies of such states, or with cooperative or other organizations, or with private corporations or associations, and to make such studies, experi-

ments or demonstrations as may be necessary and suitable to advance and foster an orderly and proper physical, economic and social development in any of the several states by means of the use of electricity or electrical power; to make such surveys and general plans for the use of electricity and electrical appliances and equipment as may be useful to Congress and to the several States in guiding and controlling the extent, sequence, and nature of development which may be equitably and economically advanced through the expenditure of public funds or through the guidance or control of public authority; to perform any and all functions, and exercise any and all powers which may be duly delegated to it under and pursuant to the National Industrial Recovery Act, approved June 16, 1933, and any amendment or amendments hereafter made to said Act.

"To manufacture, buy, sell, deal in, and to engage in, conduct and carry on the business of manufacturing, buying, selling and dealing in electrical appliances and equipment and in goods, wares and merchandise of every class and description necessary or useful for the operations of the Corporation."

[fol. 3601] COMPLAINANTS' EXHIBIT No. 817 (Excluded)

TVA Press Release of January 20, 1934

"The Electrification of the American Home"

(Address by David E. Lilienthal, Director and General Counsel of the Tennessee Valley Authority to be Delivered over the Columbia Broadcasting System, National Radio Net Work from Station WJSV, Washington, D. C., on Saturday, January 20, Starting at 2:30 P. M. E. S. T.)

I want to talk to you this afternoon about that which I suppose is closest to the heart of every man and woman—the home. I want to tell you of some of the things which your Federal Government is doing in the field of electricity to make your home more convenient and more comfortable; what it is doing to lighten the labors of the millions of women who have the responsibility of guiding and caring [fol. 3602] for the home. More specifically, I shall speak

of the work the Tennessee Valley Authority is doing to electrify the American home.

It was six months ago, as many of you will recall, that upon the urgent recommendation of President Roosevelt, Congress created a publicly owned corporation known as the Tennessee Valley Authority. To this new agency many duties and powers were given. To it was transferred the famous government-owned hydro-electric plant at Muscle Shoals. One of the Tennessee Valley Authority's principal duties was to extend and broaden the use of electricity in the homes and on the farms, particularly in the seven states of the Tennessee Valley. By experiments and demonstrations, the Authority was to act as a spur in hastening the time when electricity would be widely and generously used in making every home more comfortable and convenient.

The Tennessee Valley Authority is now employing thousands of men, and spending millions of dollars in the construction of two great power dams and a 230 mile electric transmission line. But what we are constantly keeping in mind in this electricity program is not dams, or generators, or lines, but the every-day needs and desires of the men, [fol. 3603] women and children of the Tennessee Valley Authority. We have devised practical ways and means to make electricity available at rates so low as to be within the most modest budget. With the approval and support of President Roosevelt a plan has just been worked out which will make it possible for most housewives in the Tennessee Valley to have in their homes many of the labor saving electric appliances, and thus to enjoy the comforts and conveniences which electricity brings.

* * * * * * *

We all know what a transformation was wrought in the American home when the electric bulb replaced the kerosene lamp. Many of you who are home makers know what this has meant in increased convenience, comfort and safety, and in relieving women of tiresome duties. Twenty million housewives now have electric lights in their homes, but only a small percentage of these have the other equally important advantages which electricity brings. Only a few have the advantage of electric cooking and of electrically

heated water; relatively few enjoy the benefits of such other mechanical aids to the housewife as electric refrigeration.

The housewives of the country use an amazingly small quantity of electricity. The average use of electricity by [fol. 3604] the domestic user for the country as a whole is only about 50 kilowatt hours a month. This means that electricity in the home is still limited principally to lighting. It means that the average home is still barred from the almost limitless advantages of this great national resource. There is no sound reason why this condition should exist. It is part of the job of the Tennessee Valley Authority to see that this condition should not continue.

There is no scarcity of a supply of electricity. The sources of electricity are abundant. We are convinced that the principal barrier to a wider use of electricity by the American housewife is the rates which are charged for electricity. We believe that, before the American home can be electrified, the rates charged in the country generally must be substantially and drastically reduced. And we believe further, that such reductions in rates will so greatly increase the sale of electricity that these reductions will be beneficial to the electric business.

Drastically lower rates for electric service is the first step toward a wider use of electricity. The Tennessee Valley Authority is proceeding to put such substantially lower rates into effect in the area in which it is to distribute [fol. 3605] Muscle Shoals Electricity. These rates proposed by the Authority are based upon a consideration of all costs, including taxes, and will, we believe, justify themselves on a business basis. The Authority's electric rates carry a maximum charge of 3 cents per kilowatt hour, and, for the general user, an average of less than 2 cents per kilowatt hour. For example, a home using 300 kilowatt hours, or six times the national average use, a month, would be charged $5.50 per month. This expenditure of $5.50 would ordinarily cover the use of lights, electric refrigerator, electric range, vacuum sweeper, washing machine, toaster, percolator, iron, radio, and other miscellaneous electric appliances.

In addition to rate reductions to those housewives who are served directly or indirectly with Muscle Shoals Electricity, the Tennessee Valley Authority has recently been able to induce privately owned utilities, operating in the

area to make very substantial rate reductions to their consumers.

We realize, of course, that low rates for electricity alone will not accomplish the goal of an electrified home. Electric appliances must be used. At the present prices and terms of these appliances, thousands upon thousands of families [fol. 3606] of modest income are unable to take advantage of these low rates for electricity. To meet this situation the Tennessee Valley Authority, with the cooperation of the great electric manufacturing industry, is working out a plan whereby standard, high quality electric appliances will be available at prices much below those now charged, and the early installation of such equipment into thousands of homes made feasible. On December 19th, President Roosevelt issued an executive order creating an agency through which the Tennessee Valley Authority will carry this appliance program forward. It is called: Electric Home and Farm Authority, and its articles of incorporation were filed today. At present the corporation has funds to operate only in the seven Tennessee Valley states.

The future possibilities for use of electricity in the home are almost limitless. The Tennessee Valley Authority's program has already stimulated the inventive genius and practical resourcefulness of electrical engineers. The designing rooms and experimental laboratories of the manufacturers are now humming with activity. Almost unbelievable advances in the electric home equipment are being made and may be ready for announcement in the coming [fol. 3607] month. This remarkable progress is the best possible news to housewives, and to everyone who enjoys a comfortable place to live.

Briefly, this is the way the plan will work:

Mrs. Jones who, let us say, lives in a town in Tennessee, will go to the store of a dealer in electric appliances in her home town. There she will see on display, not only the dealer's regular line of refrigerators, ranges, etc., but also a standard model, bearing the trademark of a recognized manufacturer, and also the mark of approval of the Tennessee Valley Authority. This refrigerator, or water heater, or range, will be priced very much lower than has heretofore been the case for even the least expensive of standard equip-

ment of that kind. She will order one of the special refrigerators, let us say, and her husband will sign the proper papers. If his credit is acceptable, a delivery will be made immediately and the dealer will be paid in cash by the Electric Home & Farm Authority. Each month, over a period, there will appear on the Jones Electric bill an item in partial payment for the equipment which has been purchased. The plan will not be made available in any town in which the electric utility has not revised its rate to meet the require-
[fol. 3608] ments of Electric Home & Farm Authority.

Some years ago, when Franklin Roosevelt was a candidate for Governor of New York, he urged strenuously the importance of lower rates and power development which would make possible a wider use of electricity in the home. His opponents tried to poke fun at this program, by saying that Roosevelt wanted to put a waffle iron in every farm house. The women of Upstate New York saw nothing funny about the program at all, and voted accordingly. An attempt is now being made to ridicule the Tennessee Valley Authority's program of electrified homes, strongly reminiscent of that used in attempting to defeat Franklin Roosevelt's program in New York. We believe that the women of the Tennessee Valley will respond to the Authority's program, now sponsored by President Roosevelt, just as did the women of New York State in the case of Governor Roosevelt. Electric appliances are just as appropriate in the humble household as in the home of wealth. A love of home and a pride in that home is, by no means, a special possession of any group.

We have been talking thus far about increasing the use of electricity in homes in which electric service is already
[fol. 3609] available. A further point in the Tennessee Valley Authority's program is to bring electric service to homes which heretofore have never had it at all. This is particularly the case with the farm home. The number of farms which have electric service in the Tennessee Valley and in the United States generally, is shockingly small. The Tennessee Valley Authority is definitely committed to an extensive program of rural electrification. The other day, on a country road in Northern Alabama, I watched a crew set poles for the first farm line ever constructed by the United States Government. This line will bring electric service to

COMPLAINANTS' EXHIBIT No. 817 (Excluded)

farmers in that area who have for years desired service, and who have adequate income to justify such service. Similar lines are being constructed in about 18 counties in Mississippi and Alabama, and others are planned in Tennessee.

The Tennessee Valley Authority from its offices at Muscle Shoals, Alabama, or Knoxville, Tennessee, will be glad to supply information, or answer inquiries not only from the Tennessee Valley area, but in any part of the country, concerning the Federal Government's plan, of bringing about a more comfortable and convenient home—through the use of the great national resource of electricity.

[fol. 3610] COMPLAINANTS' EXHIBIT No. 818 (Excluded)

TVA Press Release of January 26, 1934

TVA Electricity delivered over lines acquired from the Mississippi Power Company will light the homes and turn the wheels of industry in the city of Tupelo, Mississippi, beginning at one minute after midnight of February 7. When the switch is thrown turning electric energy from the Government owned plant at Muscle Shoals into the distribution lines of Tupelo, the program of the Tennessee Valley Authority of setting up a "yardstick" will be formally launched.

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Tupelo is but one of a number of cities and towns in the ten counties of Northeast Mississippi which will likewise be supplied with TVA power at Government "yardstick" rates. * * *

* * * The Tennessee Valley Authority is also at work building hundreds of miles of rural transmission lines which will serve the rural population in a large part of these ten counties acquired in Mississippi. More than sixty miles of rural transmission line has been completed and as soon as arrangements can be made for the distribution of TVA [fol. 3611] power, these communities likewise will have the benefit of electric service which has heretofore not been available, and the low rates, which is a part of the TVA program.

COMPLAINANTS' EXHIBIT No. 818 (Excluded)

In the territory in Northwest Alabama which has been turned over to the Tennessee Valley Authority by the Alabama Power Company, engineers of the Authority are making extensive studies with a view of aiding the various municipalities in the area in effecting satisfactory negotiations, if possible, with the Alabama Power Company for the acquisition of municipal distribution systems. Every effort will be made by the Authority, according to a statement made today, to speed up the completion of necessary arrangements for furnishing TVA power to the communities in the area. As in Mississippi, the Tennessee Valley Authority is engaged in the construction of rural transmission lines in Lauderdale County. Plans are well under way for the extension of these rural lines into other counties in the Alabama area.

[fol. 3612] COMPLAINANTS' EXHIBIT No. 819 (Excluded)

TVA Press Release of March 3, 1934

Following an all-day conference between representatives of the City of Knoxville, Tenn.; C. E. Groesbeck, Chairman of the Board of the Electric Bond and Share Co., owners of the Knoxville Electric System, and David E. Lilienthal, representing the Tennessee Valley Authority, the following statement as to the results of the conference was issued tonight by representatives of the city:

"We made a definite offer to buy the existing electric distributing facilities within the City of Knoxville at a price fixed as fair by an exhaustive engineering survey. The price offered for the purchase of the Knoxville Electric System was not acceptable to the owners of that property. We have exhausted every possible means of purchasing this property at a fair price. The city of Knoxville, being unable to purchase the existing plant, now has no alternative but to proceed immediately with the construction of its own plant with funds loaned for that purpose by the Public Works Administration."

Mr. Lilienthal's statement follows:

[fol. 3613] "I indicated to the conference that I would recommend to the Board of Directors of the Tennessee

COMPLAINANTS' EXHIBIT No. 819 (Excluded)

Valley Authority that the Tennessee Valley Authority purchase transmission facilities and rural and semi-urban facilities owned by the company serving Knoxville lying within Knox County and the adjoining area, at a fair price to be determined under accepted engineering practice. This offer was made in an effort to make easier the problems of transfer, by purchase, of the properties within the City of Knoxville. This offer, when combined with -he offer of the city, was not accepted."

The conference was attended by Mayor John T. O'Connor, City Manager W. W. Wynatt, Councilman W. A. Cochran, Chairman power committee; Charlton Evans, W. N. Smithson and W. H. Peters, Jr., Representing the Electric Bond and Share Co., and its subsidiary, the Tennessee Public Service Co., were C. E. Groesbeck, chairman of the board of directors, and MacGregor Smith, vice-president and manager of the New Orleans subsidiary of the Electric Bond and Share Co., and representing the Tennessee Valley Authority, David E. Lilienthal, member of the Board of Directors.

[fol. 3614] COMPLAINANTS' EXHIBIT No. 820 (Excluded)

TVA Press Release of March 13, 1934

Washington, March 13.—Low-cost electrical appliances to further Tennessee Valley electrification were brought a step nearer realization this morning with announcement by David E. Lilienthal, president of the EHFA and director of the Tennessee Valley Authority power program that some of the electric ranges and water heaters submitted by manufacturers give promise of being financed through the $10,000,000 set aside by the Reconstruction Finance Corporation for the purpose. Though Mr. Lilienthal at the same time made it known that the prices of electric refrigerators offered for use in this connection, are still too high for the families of modest incomes, he indicated that the general plan as worked out in cooperation with the nation's leading manufacturers was about to be put into operation in the Valley.

COMPLAINANTS' EXHIBIT No. 820 (Excluded)

Last Friday, at the headquarters of the National Electrical Manufacturers' Association in New York, Mr. Lilienthal and his aides examined some 40 varieties of these labor-[fol. 3615] saving devices, built to conform to specifications drawn up by the respective manufacturing groups. As a result of this exhibition and inspection, Mr. Lilienthal today made public letters which he has dispatched to various exhibitors (copies of which are attached).

In his communication to each of the firms which exhibited refrigerators, Mr. Lilienthal said in part:

"It is our conclusion that this price, while lower than the existing price, is still too high to accomplish the wide distribution in the huge market of people of moderate and low income which the Electric Home and Farm Authority contemplates. * * * We are committed to the opinion that electric refrigeration should be obtainable even in the humblest home, and particularly in states having a warm climate. The electric rates fixed by the Tennessee Valley Authority, and those recently fixed by negotiation between the TVA and companies which are part of the Commonwealth and Southern System, have removed cost of operation as a serious deterrent to electric refrigeration in the section affected by these rate reductions. I am confident that the electric refrigeration industry, in turn, is sufficiently resourceful to do its part in making such service generally available. Our objectives may call for an entirely [fol. 3616] new approach in the design of electric refrigerators, in which costs are markedly reduced without loss of essential quality and durability."

To the makers of ranges which met his approval, Mr. Lilienthal remarked:

"It is gratifying to note that the price you have submitted is substantially lower than the prevailing price for equivalent quality. Our technical committee advises me that you have not sacrificed quality or performance. This price reduction is in line with our urgent recommendation to you that a huge mass market of users of electric ranges would respond to substantially reduced prices, and that with this increased volume there would be a decrease in unit cost, with consequent benefit to consumer and manu-

COMPLAINANTS' EXHIBIT No. 820 (Excluded)

facturer, and stimulation of business and employment in many fields. Although your company and others participating have taken this first step in the direction we have been urging, I am convinced that still greater reductions can be effected in the future if manufacturers have further time to study the matter of design and develop, through perhaps a new approach to the structure of electric ranges, designs which will be lower in cost and yet of unquestionable quality."

[fol. 3617] To water heater manufacturers Mr. Lilienthal held out the prospect of laboratory tests "under recognized auspices and with the continued cooperation of the United States Bureau of Standards and the Bureau of Home Economics of the Department of Agriculture.

[fol. 3618] COMPLAINANTS' EXHIBIT No. 821 (Excluded)

TVA Press Release of March 21, 1934

Contracts to serve cheap TVA electricity to nine cities with a population of approximately 200,000 have been signed by the Tennessee Valley Authority, David E. Lilienthal, TVA director in charge of power, announced today.

Heading the list is Knoxville, Tennessee, which already has been granted a loan by the Public Works Administration to construct distributing lines. The city's offer to purchase the existing facilities having been turned down, officials are now negotiating with an engineering firm to draw plans for a new system.

Other cities with which contracts have been signed are Decatur, Florence, Sheffield, Tuscumbia, and Russellville, in Alabama; Pulaski, Tennessee, and Amory, Mississippi. Tupelo, Mississippi, the first city to sign for TVA power, is now being served with low cost electricity from Muscle Shoals.

"As soon as these cities have acquired their distribution facilities the Electric Home and Farm Authority will begin an intensive campaign to make available low-cost high-grade electrical appliances — householders," Mr. Lilienthal said today. "The outlook at Tupelo already indicates that there

COMPLAINANTS' EXHIBIT No. 821 (Excluded)

will be a large expansion in the use of electricity under the low TVA rates. As a result, the contracts with the eight cities just signed provide for a large expansion in their electric consumption."

[fol. 3619] COMPLAINANTS' EXHIBIT No. 822 (Excluded)

TVA Press Release of March 25, 1934

Mosquito control similar to that used when Wilson Lake was formed at Muscle Shoals will be applied to both Norris Dam and Joe Wheeler Dam reservoirs immediately on completion of those two projects by the Authority, W. G. Stromquist, sanitary engineer for the Tennessee Valley Authority, said today. * * *

Three control methods that have proved successful at Wilson Lake will be used on Norris Lake and Wheeler Lake. The most effective of these, since these lakes will be primarily power reservoirs, will be the operation of the power generating plants at the dams. The draw-down of the water for the generating of power will come at the season when millions of the mosquitoes are in the larva stage and floating on the surface along the shores of the lake. The release of the water at the dam will lower the reservoir and strand the mosquito larvæ on the shore, where lack of moisture and the heat of the sun will eliminate them as a health menace. The draw-down of the water by the power plant corresponds to the drainage operations now being carried on by CWA workers in the state malaria control campaign.

[fol. 3620] COMPLAINANTS' EXHIBIT No. 823 (Excluded)

TVA Press Release of March 26, 1934

Washington, March 25.—Radical departure in the design of refrigerators is the answer of the General Electric Co. to call made some weeks ago by the Electric Home and Farm Authority through its president, David E. Lilienthal, for proposals from manufacturers on a line of high-quality electric appliances to sell at low price in the Tennessee Valley area.

The new refrigerator submitted by General Electric is combined with an electric range, also new in design, forming a compact and attractive "electric kitchen" unit which can be quickly installed in any home.

"We have tried to meet your requirements by making an entirely new approach in design," says Mr. T. A. Quinn, vice president of the General Electric Co. in submitting the unit. "We are reducing costs in anticipation of greater volume, and at the same time improving the quality and durability of the product."

"This is what we have wanted," comments Mr. Lilienthal, "a fresh attack through the medium of advanced design upon the prices charged consumers for electrical appliances, to make these conveniences available to the home of modest income. The new General Electric refrigerator and range appear to be in line with our technical requirements."

Mr. Lilienthal states that he has also received definite assurances from a number of other manufacturers of totally [fol. 3621] new designs for refrigerators and ranges under way in their plants. He expresses "gratification of the progress made in the appliance program and announces acceptance, pending early submission of new designs, of revised price proposals made by the Kelvinator Sales Corp., Frigidaire Corp., and the Leonard Refrigerator Co. on standard refrigerators. The Kelvinator Sales Corp. expects to submit to EHFA an entirely new design in early April.

"We are confident that prices of refrigerators as approved for the Valley market will be between $70 and $80," declares Mr. Lilienthal. "This price is to be compared with present installed prices for the same equipment of around $115. And with the increase in volume we may anticipate further reductions in the future."

Mr. Lilienthal, who is also director of the TVA power program, indicates that after negotiation with TVA, recently lowered rates for electricity in the Valley localities served by private utilities will make it possible for the $10,000,000 customer-credit established for the EHFA to be extended through most of the Valley and also in some adjacent zones influenced by the TVA rural electrification program. He reports that utility companies in the southeast are inquiring as to what electric rate reductions they

COMPLAINANTS' EXHIBIT No. 823 (Excluded)

would have to make in order to bring the benefits of the EHFA program to their territories.

[fol. 3622] COMPLAINANTS' EXHIBIT No. 824 (Excluded)

TVA Press Release of March 28, 1934

Chattanooga has been selected as headquarters for the Electric Home and Farm Authority, David E. Lilienthal, its president and director of TVA, announced today.

"This location is predicated upon our ability to obtain suitable offices and display rooms in Chattanooga at a reasonable rental," Mr. Lilienthal said. "It will be necessary to have the display rooms and offices in the same building and centrally located."

"The electric division of TVA also will be centered in Chattanooga. The amount of personnel of both the EHFA and the electric division of the TVA will be limited at the start, but both will be expanded as the development of the program warrants."

Mr. Lilienthal said that Mr. F. J. Carr, Treasurer of EHFA and Mr. V. D. L. Robinson, administrative assistant to Mr. Lilienthal, would be in Chattanooga next Tuesday to look over proposed offices and display space.

Upon his return to Knoxville from Washington and the East Mr. Lilienthal expressed gratification over the speed with which manufacturers had prepared to market low-cost high-grade electrical appliances.

"The EHFA technical committee already has approved types of electric ranges, refrigerators, and water heaters," [fol. 3623] Mr. Lilienthal said. "Some of these models will be ready for market within a month."

Manufacturers are designing entirely new products which will no doubt revolutionize appliance design. An instance of this is a combined refrigerator and range which the General Electric Company has specifically designed for the EHFA. Kelvinator and Frigidaire engineers also are designing an entirely new type of refrigerator.

COMPLAINANTS' EXHIBIT No. 824 (Excluded)

Mr. Lilienthal also announced that the financial set-up of the EHFA has been completed and that the million dollar capital from the NRA has been made available. In addition to this, the EHFA has access to a credit of ten million dollars from RFC.

[fol. 3624] COMPLAINANTS' EXHIBIT No. 825 (Excluded)

TVA Press Release of April 5, 1934

David E. Lilienthal, president, Electric Home and Farm Authority, appliance subsidiary of the Tennessee Valley Authority, today announced the following administrative appointments for Electric Home and Farm Authority:

George D. Munger, to be in charge of development of domestic electric consumption in the Tennessee Valley area.

William B. Phillips, assistant to the president.

Forrest Allen, director of press and publications.

Mr. Munger has been associated with the Central Hudson Gas and Electric Co. at Poughkeepsie for the past 10 years. During the past five years he has been in charge of developing and executing a general program of domestic electrification in the area served by the Central Hudson Co., an area extending from Albany to Peekskill, N. Y.

In 1931 Mr. Munger was recipient of the McGraw award for the best developmental plan in a specific industry. The program encouraged the wider use of electric appliances [fol. 3625] in the home.

Mr. Phillips has been associated with several advertising agencies. Before his connection with EHFA he was with the agency of Ewin, Wasey and Co., New York. He has also engaged in educational work and for a year was a faculty member of Dr. Alexander Meiklejohn's Experimental College at the University of Wisconsin.

Mr. Allen has been a member of the editorial staffs of Scripps-Howard newspapers in Tennessee and before joining EHFA was with the News-Sentinel at Knoxville.

Officers of EHFA announced previously are Francis J. Carr, comptroller of the Tennessee Valley Authority, who will be treasurer of EHFA, and W. A. Sutherland, solicitor of the Tennessee Valley Authority, who will be counsel for EHFA.

COMPLAINANTS' EXHIBIT No. 825 (Excluded)

The Electric Home and Farm Authority is a special agency created by executive order of the President to carry out an appliance program for TVA. Its central offices are to be established at Chattanooga.

[fol. 3626] COMPLAINANTS' EXHIBIT No. 826 (Excluded)

TVA Press Release of April 6, 1934

Dr. H. A. Morgan and David E. Lilienthal, directors of the Tennessee Valley Authority, were to leave Knoxville today for a conference with the Alcorn County Electric Association at Corinth, Miss.

Mr. Lilienthal made the following announcement in regard to the conference:

The Tennessee Valley Authority will submit a proposal to the Alcorn County Electric Association for sale of the electric distribution system in the county and in the city of Corinth. The Authority purchased the system from the Mississippi Power Company under the terms of the TVA contract with Commonwealth & Southern Corp.

It will be proposed that the electric cooperative enter into a power and purchase contract with the Authority, by which it is expected that the cooperative will have completed the purchase payments for the city and rural system within a period ranging from five to seven years.

The Alcorn County Electric Association is a non-profit corporation incorporated under the laws of Mississippi.

[fol. 3627] Under the plan proposed the rural resident's investment in the cooperative will be the same per customer as that of the city resident. The rural and city rates will be the same, an innovation in electric service.

Base rates for electric service will be the same as those now in force at Tupelo, Miss., first municipality to contract for the Authority's power. Added to those rates, however, will be a surcharge which will take care of the purchase of the system.

At the completion of purchase from TVA, the rates will be reduced the amount of the surcharge.

COMPLAINANTS' EXHIBIT No. 826 (Excluded)

With the surcharge added, the new Corinth and Alcorn County rates will be substantially less than those paid prior to the Authority's entry into this area.

"This type of organization may be the key to the rural electrification program," Mr. Lilienthal said.

"It will mean that the power business of Corinth and Alcorn County is being conducted by a private, non-profit corporation rather than by the city government of Corinth and the county Government of Alcorn County.

"It is an entirely new departure in the set-up of a com-
[fol. 3628] bined rural and urban electric distribution system. One of the outstanding results will be an equality of rates between the farmer and his neighbor in town. This will be made possible by townsmen sharing a part of the cost of the rural system.

"The plan proposed also evolves a method of plant and system purchase without increasing the debt burden of the city and county. Payment for the system will be made from the purchase surcharge added to the rates."

The conference is set for Saturday afternoon.

[fol. 3629] COMPLAINANTS' EXHIBIT No. 827 (Excluded)

TVA Press Release of April 6, 1934

David E. Lilienthal, President, Electric Home and Farm Authority, appliance subsidiary of the Tennessee Valley Authority, today made the following announcement:

First sale and demonstration of electric appliances manufactured for the Electric Home and Farm Authority will be held at Tupelo, Miss., early in May. All appliances will carry a distinguishing mark of the Authority.

These appliances will be electric refrigerators, ranges and water heaters. They will be sold by Tupelo dealers on a term payment plan financed by EHFA, and are the products of a group of Manufacturers cooperating with the Authority.

Mr. Lilienthal and other officials of EHFA will attend the opening day sales and demonstrations at Tupelo, where civic organizations and municipal officials have planned a celebration for the day.

COMPLAINANTS' EXHIBIT No. 827 (Excluded)

Dealers will hold special demonstrations of the new equipment and EHFA will open a permanent exhibit and demon-
[fol. 3630] stration there. Daily instructional talks will be given in the use of the appliance.

Demonstration work will be organized under the direction of Miss Marie White of the TVA training division. She will have a trained assistant who will remain in Tupelo.

Guy Thaxton, division engineer for TVA in the Tupelo district, will become district manager for EHFA.

"The opening at Tupelo will mark the beginning of a concentrated effort to electrify the American Home," Mr. Lilienthal said. "Tupelo was selected for the launching of our appliance program because it was the first municipality to contract for TVA power."

"We hope and believe that the example being set by Tupelo will be followed throughout the country. It will be a demonstration of the widest possible use of electricity in the home.

"This abundant consumption of electric power is to be made possible by the combination of low electric rates and low-cost appliances, financed through EHFA.

"Application of our appliance program at Tupelo and in the surrounding area is a natural outgrowth of the spirit [fol. 3631] of active cooperation this community has demonstrated since the passage of the Tennessee Valley Authority Act a year ago."

The Electric Home and Farm Authority is a corporation established by direction of President Roosevelt to promote the use of low-cost electricity through low-cost appliances. Home offices of the corporation are being established at Chattanooga.

Mr. Lilienthal is one of the three directors of the TVA.

[fol. 3632] COMPLAINANTS' EXHIBIT No. 828 (Excluded)

TVA Press Release of April 7, 1934

David E. Lilienthal, President, Electric Home and Farm Authority, announced today that floor plans for EHFA offices at Chattanooga are now being prepared for the establishment of the appliance corporation's central headquarters at Chattanooga.

COMPLAINANTS' EXHIBIT No. 828 (Excluded)

Mr. Lilienthal said that the Authority expects to begin occupancy of its Chattanooga central office about May 1.

He said also that EHFA is contemplating the establishment of a completely electrified house in Chattanooga, as a part of the demonstration of electric appliance.

First sale and demonstration of the appliances approved by EHFA will be held at Tupelo, Miss., early in May. These appliances are electric ranges, refrigerators and water heaters.

Mr. Lilienthal said that the Authority was not ready to announce the building selected by it for its Chattanooga offices.

"Our offices in Chattanooga will be started on a limited scale," Mr. Lilienthal said.

[fol. 3633] "We expect to begin our occupancy of EHFA headquarters there about May 10. The extent of EHFA personnel in Chattanooga cannot be determined at present. It will depend upon the progress of our organization and the speed with which the program expands.

"In addition to a complete display of EHFA appliances at our headquarters, definite consideration is being given to the establishment of a house in Chattanooga which will be made into a fully electrified home.

"Such a house would be a center of attraction for all who are interested in applying the energy of electricity to the tasks of the home.

"It seems to me that some city in the United States is going to be called the electric city. We hope to see this title go to Chattanooga. It should become the actual realization of the Tennessee Valley Authority's power program."

Appliances approved by EHFA will be offered for sale by dealers in May in the cities using TVA power and throughout the area served by the operating companies of Commonwealth and Southern Corp.

This area includes the territories served by Tennessee Electric Power Co., Mississippi Power Co., Georgia Power Co., and Alabama Power Co. Large cities served in this area are Nashville, Chattanooga and Atlanta.

[fol. 3634] COMPLAINANTS' EXHIBIT No. 829 (Excluded)

TVA Press Release of April 9, 1934

William B. Phillips, assistant to the president of Electric Home and Farm Authority, will meet Wednesday in New York with advertising managers of electric appliance manufacturers who are cooperating with EHFA.

Purpose of the conference will be to coordinate advertising programs of manufacturers with the promotion work of EHFA. Representatives of all manufacturers whose products have met EHFA quality and price specifications will be present.

Companies which are manufacturing one or more appliances approved by EHFA are:

Estate Stove Company, Hamilton, Ohio.
A-B Stove Company, Battle Creek, Michigan.
Landers, Frary & Clark, New Britain, Connecticut.
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.
Edison General Electric Appliance Co., New York City, N. Y.
Westinghouse Electric & Mfg. Co., New York City, N. Y.
Cleveland Heater Company, Cleveland, Ohio.
Hynes & Cox Electric Corp., Albany, N. Y.
McGraw Electric Company, Chicago, Illinois.
Malleable Iron Range Co., Beaver Dam, Wisconsin.
Kelvinator Corp., Detroit, Michigan.

Approved appliances will carry a distinguishing mark of the Authority and will be sold through regular dealer outlets. They will be financed on term payments by EHFA [fol. 3635] with the cooperation of local electric service utilities.

Sale of approved appliances is restricted to areas served by the Tennessee Valley Authority or by electric utilities under an appliance agreement with TVA which includes domestic rates low enough to make use of appliances feasible for low or moderate income groups.

First EHFA equipment will be electric refrigerators, ranges and water heaters.

[fol. 3636] COMPLAINANTS' EXHIBIT No. 830 (Excluded)

TVA, Press Release of April 10, 1934

George D. Munger, in charge of the domestic appliance program of Electric Home and Farm Authority, today announced that EHFA approved electric ranges and refrigerators would all retail at not more than $80.00, and all approved electric water heaters would retail at not more than $65.00.

Mr. Munger also announced the list of manufacturers and the appliances they make which have been approved by EHFA as to quality and price.

These manufacturers are:

Electric Ranges:

A-B Stove Company, Battle Creek, Mich.
Edison General Electric Appliance Co., New York City, N. Y.
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.
Malleable Iron Range Co., Beaver Dam, Wis.
Landers, Frary & Clark, New Britain, Conn.
Westinghouse Elec. & Mfg. Co., New York, N. Y.
Estate Stove Company, Hamilton, Ohio.

Electric Refrigerators:

Kelvinator Corp., Detroit, Mich.

Electric Water Heaters.

Malleable Iron Range Co., Beaver Dam, Wis.
Westinghouse Elec. & Mfg. Co., New York City, N. Y.
Cleveland Heater Co., Cleveland, Ohio.
[fol. 3637] A. J. Lindemann & Hoverson Co., Milwaukee, Wis.
Hynes & Cox Electric Corp., Albany, N. Y.
McGraw Electric Co., Chicago, Ill.
Edison G. E. Appliance Co., New York City, N. Y.

Mr. Munger said that while only one refrigerator has been approved, negotiations for the approval of other makes are now under way.

At the outset of the appliance program, Mr. Munger said, the EHFA-approved line will have only one type in each item.

The electric ranges will all be of a three-burner, temperature controlled oven type.

The refrigerators will all be of four cubic feet capacity or its equivalent.

In the water heaters there will be some variation as to capacity, depending upon the make of the heater.

"The refrigerators and ranges carrying the approval of EHFA," Mr. Munger said, "will all retail for not more than $80.00 and the water heaters will sell for not more than $65.00.

"A distinguishing mark of the Tennessee Valley Authority will be carried on each appliance, so that the purchaser will recognize products accepted for the low-cost appliance program."

The appliance program will be opened early in May at Tupelo, Miss., the first municipality to contract for TVA power. At about the same time these appliances will be [fol. 3638] offered for sale throughout the area served by operating electric utilities of the Commonwealth and Southern system.

This area includes rural and city areas served by the Tennessee Electric Power Co., the Mississippi Power Co., the Alabama Power Co., and the Georgia Power Co. Included in the region are the cities of Nashville, Chattanooga and Atlanta.

Sale of EHFA approved appliances in these areas will be made possible through an agreement now being negotiated between Commonwealth and Southern and the Tennessee Valley Authority. This agreement will include the stipulation that domestic electric rates must be low enough to make use of appliances feasible for low or moderate income groups.

"Approval by EHFA of an appliance," Mr. Munger explained, "and the presence of the TVA mark of approval on the product means that the quality of the appliance is acceptable, the price reasonable, and the domestic electric rates where it is to be used are low enough to conform to the power policy of TVA."

The Electric Home and Farm Authority is a subsidiary corporation of TVA to promote use of electric appliances and finance their purchase on term payments.

[fol. 3639] COMPLAINANTS' EXHIBIT No. 831 (Excluded)

TVA Press Release—Undated

A new plan of power distribution, embracing an entire county whereby city residents and farmers will be supplied with electricity at the same rate, has been set up in Alcorn County, Mississippi, which includes Corinth, a city of more than 6,000 population is reported by the Tennessee Valley Authority through its adjunct, the Electric Home and Farm Authority.

Distribution will be managed by the Alcorn County Electric Association, a non-profit organization, incorporated under the laws of Mississippi, City and county governments will not be involved in either the purchase or management of the system.

The distribution lines in Corinth with two rural extensions were purchased by the Tennessee Valley Authority under terms of its contract with the Commonwealth and Southern Corporation. The TVA is completing the rural system. The County Association will enter into a power and purchase contract with TVA and take over the complete system. Base rates for current will be the same as those now in force at Tupelo, Mississippi, the first municipality to contract for TVA power. Added to these rates will be a surcharge which will amortize the cost of the system within [fol. 3640] a few years. When the Association has completed the purchase from the Authority, the surcharge will be removed. With the surcharge added, the new rates will be substantially lower than those paid prior to the Authority's entry into this area.

"This plan may be the key to the rural electrification program," reports Chairman Arthur E. Morgan of the TVA, who points out: "It will not increase the bonded indebtedness of county or city, and will not place additional duties upon public officials."

[fol. 3641] COMPLAINANTS' EXHIBIT No. 832 (Excluded)

TVA Press Release of April 16, 1934

Electric Home and Farm Authority, Inc.

General Information (Supplement)

Emblem: A TVA emblem has been designed for certain electric appliances for purposes of identification. The presence of this emblem on an appliance means that the appliance has been built to EHFA specifications as to quality and design, and that the retail price fixed by the manufacturer is one which EHFA considers reasonably low.

Appliances to be financed.—In the beginning the EHFA-approved line of appliances will be confined to electric ranges, refrigerators and water heaters. There will also be portable motors and a pump motor. It is possible that in the course of a few months other items will be added to the list. The manufacturers whose appliances have been approved by EHFA to date as to quality, design and price are Electric Ranges:

A-B Stove Co. (A-B), Battle Creek, Michigan.

Edison General Electric Appliance Co. (Hotpoint), New York, N. Y.

[fol. 3642] A. J. Lindemann & Hoverson Co. (L&H), Milwaukee, Wisconsin.

Malleable Iron Range Co. (Monarch), Beaver Dam, Wisconsin.

Landers, Frary & Clark (Universal), New Britain, Connecticut.

Westinghouse Elec. & Mfg. Co. (Westinghouse), New York, N. Y.

Estate Stove Co. (Estate), Hamilton, Ohio.

Electric Refrigerators:

Kelvinator Corporation (Kelvinator), Detroit, Mich.
Leonard Refrigerator Co. (Len-a-dor), Detroit, Mich.
Norge Corporation (Norge), Detroit, Michigan.

Electric Water Heaters:

Malleable Iron Range Co. (Monarch), Beaver Dam, Wis.
Westinghouse Elec. & Mfg. Co. (Westinghouse), New York, N. Y.
Cleveland Heater Co. (Rex), Cleveland, Ohio.

COMPLAINANTS' EXHIBIT No. 832 (Excluded)

A. J. Lindeman & Hoverson Co. (L&H), Milwaukee, Wisconsin.

Hynes & Cox Electric Corp. (Red Crown), Albany, N. Y.

McGraw Electric Co. (Clark), Chicago, Illinois.

Edison General Elec. Co., (Hotpoint), New York, N. Y.

Philadelphia Elec & Mfg. Co. (Pemco), Philadelphia, Pa.

Prices, Description and Delivery Dates: Prices, descrip-
[fol. 3643] tive matter, and probable date delivery can be made can be secured through the local dealers representing the manufacturers named above. It is expected that full information will be in the hands of dealers in EHFA territory around the 1st of May.

Consumer outlets.—Arrangements will be completed as rapidly as possible for the sale and delivery of EHFA approved appliances through existing dealer outlets. Similar outlets will be established from time to time if it is found necessary to do so in order to render proper and convenient service to the citizens of the area.

Territory.—EHFA-approved appliances will be placed on sale by dealers about May 1st in all communities now directly served by TVA power. In addition, these appliances will also be on sale throughout the entire area served by the Commonwealth & Southern Corporation's operating companies under special agreement with EHFA. These are the Tennessee Electric Power Company, the Alabama Power Company, the Georgia Power Company, and the Mississippi Power Co.

TVA emblem-bearing appliances cannot be sold or financed under the EHFA plan in a community until the local electric
[fol. 3644] utility in such community has entered into a special agreement with EHFA. Items included in this agreement will have reference to domestic rates for electricity, disposition of installation charges, collection methods, etc.

Central Office.—Central offices of EHFA are to be established at Chattanooga about May 15. Until permanent offices have been established, inquiries should be addressed to Electric Home and Farm Authority, Knoxville, Tennessee. Inquiries to manufacturers can be addressed directly to them at addresses given above.

[fol. 3645] COMPLAINANTS' EXHIBIT No. 833 (Excluded)

TVA Press Release of April 17, 1934

David E. Lilienthal, president, Electric Home and Farm Authority, appliances subsidiary of the Tennessee Valley Authority, today announced the selection of a special TVA emblem to be placed on all appliances sold under the EHFA program.

The emblem was designed by Young and Rubicam, a New York advertising agency, and was selected from a large number of emblems submitted by various advertising agencies.

It consists of a blue hand holding a lightning bolt in red, with TVA in large red block letters below the hand. Beneath the TVA, there is the slogan: "Electricity for all."

This emblem, Mr. Lilienthal said, would be first used on the electric ranges, refrigerators and water heaters being manufactured for the EHFA program.

Sales of these products will begin early in May in Tupelo, Miss., first municipality to contract for TVA power. About the same time sales will begin also in areas served by the operating companies of the Commonwealth and Southern Corporation, which has an appliance agreement with the Authority.

"We shall retain rigid control of the use of this emblem [fol. 3646] on appliances," Mr. Lilienthal said. "It can be used only on appliances manufactured to EHFA quality and price specifications, and only on those appliances when they are sold in areas served at TVA rates or at rates which the Authority considers low enough to make use of this equipment feasible to families of low or moderate income."

The emblem will be used throughout the power department of the Tennessee Valley Authority, Mr. Lilienthal said. Eventually it will be placed as an identifying mark on all equipment of this branch of the Authority.

[fol. 3647] COMPLAINANTS' EXHIBIT No. 834 (Excluded)

TVA Press Release of April 22, 1934

Address of David E. Lilienthal Before the Tennessee Valley Institute of the University of Chattanooga, Chattanooga, Tennessee, 8:00 P. M., April 21, 1934

The Future of Industry in the Tennessee Valley Region

It is my firm conviction that the Tennessee Valley region is to be the scene of an expansion of industry which in the course of the coming decade will change the economic life [fol. 3648] of the South. If this industrial development is controlled in the interest of the entire community and fitted into a national program, it will stimulate and regenerate the industrial life of all America. We in the Tennessee Valley area, in a very real sense, face a new frontier—an industrial frontier. There lies before us an opportunity for industrial leadership, calling for the courage, the energy and the self-discipline of the pioneers on the Western frontier of a century ago.

It is my purpose this evening to lay before you and my other neighbors in the Tennessee Valley, facts and reasons which have led me to the conclusion that we are about to witness in this area a period of industrial expansion unprecedented in its magnitude and opportunities.

I should like first of all to enumerate those factors in the economic situation of this great region upon the foundation of which a period of industrial development will arise. I shall then discuss each of these factors more in detail.

First. We can have in this region low-cost electric power in almost unlimited quantities.

Second. This is an area of natural resources almost unequalled in their variety and richness, not the least of which [fol. 3649] is a climate most favorable to health and well-being and the successful pursuit of agriculture.

Third. Is the great potentiality of this area as to economical transportation—water, rail and highway.

Fourth, and perhaps most important of all: In creating the Tennessee Valley Authority the President and Congress have made it possible for this area to develop its natural resources, its power and its transportation in accordance

with an intergrated and orderly plan. Under such a plan the short-sightedness and greed of individuals and single communities can be controlled, and the interests of the people as a whole kept paramount. Such an integrating and unifying force in the development of industrial resources is unique in our nation's history.

I turn first to the reason which I have suggested as insuring a period of great industrial expansion for the South —the availability of cheap electric power.

The TVA has under way, as you know, a comprehensive program for the development of the power resource of the Tennessee River and its tributaries. No more ambitious program of hydro-electric development has ever been actually undertaken in this country. Aided by an exhaustive [fol. 3650] survey prepared by the corps of Engineers of the United States Army under the direction of Colonel Harold C. Fiske, the Authority is constructing what probably will be the most efficient system for the utilization of the water resources of a vast area.

As you know, we have started with the nucleus of Wilson Dam at Muscle Shoals. Within two years two more great dams will be completed—one, the Norris Dam on the headwaters of the Clinch River near Knoxville; the other, the Joe Wheeler Dam just above the Wilson Dam in Northern Alabama. Four other major dams of various types will probably be approved for early construction. A large staff is now planning the dam-building program for the next decade.

Everything considered, the electricity produced in this vast public hydro-electric system will be as cheap as power can be produced in any part of the United States, and much cheaper than in many sections. One reason for this is the efficiency which arises from integrated control of an entire watershed under single public ownership and administration. That ownership and control is one which is dominated by one purpose and one purpose only—service to the whole people to whom these streams belong. By the use of storage reservoirs and central control, all the vast economies [fol. 3651] of large-scale production will be utilized, and the Tennessee River and its tributaries will be made to yield their great potential wealth into the hands of the people of the Tennessee Valley. The presence of coal in great quan-

tities for standby and auxiliary steam plants will tend to keep the cost of electricity below that possible in areas having favorable hydro-electric power but in which coal is costly.

Perhaps the most important factor in insuring a low cost for hydro-electric power in this region is the fact that the distribution of this power to the factories and homes and farms, for the most part, will be in the hands of public agencies. Industries seeking to use large blocks of hydro-electric power in the Tennessee Valley will not be forced to support dizzy towers of inflated capitalization. They will not have to pay for the financial misdeeds of the builders of utility pyramids. Under public distribution of power with centralized accounting, control and supervision in the hands of a regional authority, there will be the greatest incentive to economy and managerial efficiency. Each community will try to make its record better than that of its neighboring community.

Furthermore, since the operations are public operations, they will be subject to that constant stream of public [fol. 3652] criticism which, while at times unpleasant to those who are thin-skinned, will insure the most careful scrutiny of operations. This perennial scrutiny of the work of public servants will certainly do more to protect the consumer against inefficiency and excessive rates than the sympathetic wrist-tapping which goes under the name of public utility regulation in so many states.

It is unnecessary to demonstrate to this audience the importance of low industrial power rates in the development of an industrial program. Since the first month of operations in Tupelo under the TVA schedule of rates put into effect in that Mississippi municipality, we have made comparisons of bills paid by certain industries. These comparisons show in a striking way the results of low-cost power in bringing down operating expenses. I have here a statement of the Reed Brothers Incorporated, power bill for January, 1934, and March 1934. The January billing was under the old rate; the March billing was under the new TVA rate. This statement shows that Reed Brothers in January paid $210.25, while in March under the new schedule they paid $145.38. This meant a reduction of $64.87 in the power bill, or reduction of 30.8%, the amount of power consumed in-

creased 55.2%. I have here the billings of the McLeran Ice [fol. 3653] Cream Company for January and March, 1934 power. Under the old rate, this company's billing was $92.19, while under the new rate the billing was $56.23, or a reduction of $35.96, which amounted to 39%. In March the power consumption was 26.9% greater than the January consumption, yet the cash paid for the power was 39% less.

Perhaps the major industry in Tupelo is cotton milling. I have here a statement of the Tupelo Cotton Mill's bills for January and for March this year. In January, under the old rate, the Tupelo Cotton Mill paid $3,181.33, while for the month of March, under the new TVA rate, the billing was $1,896.40, or a decrease of $1,284.93. While the bill for March power used by this mill was 40.4% less, the mill, in the same period consumed 26% more power.

The significance of such figures in textile manufacturing is clear. According to the Textile World, the power costs in Southern textile mills operating under code requirements range from about 10% to 15% of all manufacturing costs, including plant overhead, but excluding cost of raw materials, depreciation charges and federal taxes. With this in mind it is easily seen what an important cost factor power rates can be in the South.

[fol. 3654] It is true that in some other industries the cost of power represents a smaller portion of the total cost of operation, but there are many industries, including those especially adapted to the resources of the Valley, such as electrochemical and light metal industries, in which power is a dominant cost factor. It is inevitable that industry will turn to this region as the Tennessee River yields to this program for the development of low-cost power.

Nor is this all. I am advised that there are many lines of industry which cannot now profitably operate because of high power rates; these will find that they can operate and successfully function in this area. To my desk at Knoxville there has come in recent months an impressive number of inquiries from industrialists in various fields, requesting specific information concerning TVA power rates, and asking advice respecting locations for industrial enterprises requiring large quantities of power. As our program pro-

gresses and the country hears not only of what you and I here in this region plan to do but what we are actually doing, these inquiries will increase and will be translated into actual operations and actual payrolls. • • •

The ways in which the TVA can function in carrying [fol. 3655] forward this program of industrial expansion are many. In some capacities it will act as a proprietor, such as in the case of its electric operations. In others, it will furnish the disinterested technical advice of engineers, accountants and business men. In still other capacities, it will seek to smooth out those jealousies and rivalries between cities which lead to destructive animosities and prevent healthy industrial development. In stimulating and aiding the readjustment of agriculture the Authority will be exercising a function which will make for a sounder industrial future. Through the nation-wide publicity given the Authority's operations, the advantages of the region will receive the widest attention of business men the country over.

I am very definitely of the opinion that it is the Authority's duty to encourage and stimulate the growth of large-scale industry in the Tennessee Valley area. We are making provision for one of the largest hydro-electric developments in the world, with a potential three million horse power available. We are expending, and expect to expend, millions upon millions of dollars in construction activities, all looking toward the development of more and more power. Although we are bending every effort to greatly increase [fol. 3656] the use of electricity in the home and on the farm, it is obvious that only a large-scale industrial expansion will absorb the great pool of power which is thus being created. As we lay our plans for developing this cheap power in great quantities, it seems to me to be mandatory that we also lay plans for utilizing it in a industrial expansion program.

There is nothing inconsistent in urging the development of large-scale industry and at the same time promoting, as we are, a program of small-scale industry in connection with agriculture. There is no conflict in these two aspects of a single program. The two develop side by side. This is not the appropriate occasion to discuss in detail the particular kinds of industries and the special types of operation

which I believe should characterize this industrial expansion nor to indicate the hopeful prospects already near at hand, for decentralization of great industrial operations. The point I should like to make now is to repeat my conviction that it is the Authority's duty as well as its privilege to encourage the growth of large-scale industry.

This program shou' l be based squarely upon the obvious economic benefits which industry will enjoy in the area. It should be based upon the factors of cheap hydro-electric [fol. 3657] power and an abundance of mineral and other natural resources. It will be a sad day for Southern industry if the presence of a new factory here means merely the creation of an industrial graveyard in New England, or some other section. What I see for this area is an economically sound growth of commerce and manufacturing, which will fit itself into a national economy. It seems to me that it would be no less than fatal and destructive to the entire program if industry were to come to the Valley on any other basis than the natural advantages of the region. The South has ample inducement to offer on strictly business merits of the advantages found here. I believe that we all recognize that the South today needs no false lures to win the industrial development which should naturally be here.

I view the whole question of proper exploitation of the mineral resources of the Tennessee Valley as pertinent to this new industrial program. Two phases of this matter deserve attention.

First, in the development of mineral resources during the past decade science has been giving increasingly greater attention to the chemical development of minerals as opposed to purely mechanical processes. As a result of this we may, [fol. 3658] therefore, expect our own developments to lead us into the creation of new products and into the use of new raw materials.

Second, through the ability of the Tennessee Valley Authority to supply low-cost electric energy and the presence of low-cost energy from other sources, we are not merely supplying a cheaper source of mechanical power, but we are making possible the development of electro-chemical and electro-metallur-ical industries which heretofore have been impossible of profitable operation owing to the high cost of electric energy employed in the process.

COMPLAINANTS' EXHIBIT No. 834 (Excluded)

Those two considerations open up entirely new fields for the consideration of industrialists and chemists in the future development of the mineral resources of the Valley.

[fol. 3659] COMPLAINANTS' EXHIBIT No. 835 (Excluded)

TVA Press Release of April 22, 1934

The Electric Home and Farm Authority, appliance subsidiary of the Tennessee Valley Authority, will occupy the ground floor of the James Building, Eighth and Broadway, Chattanooga, Tenn., David E. Lilienthal, president of the corporation, announced Saturday. Central offices of EHFA will be situated at Chattanooga.

Temporarily, Mr. Lilienthal said, EHFA administrative offices will be in the new Federal Building at Chattanooga. The ground floor of the James Building will be occupied entirely by a permanent display of electric appliances, Mr. Lilienthal explained.

Later on, it is expected that the administrative offices will be moved to the James Building from the Federal Building. The display room in the James Building is expected to be ready in about 30 days.

EHFA will also occupy the first floor of the old post-office building at Chattanooga, in which it will maintain its mailing department and a photographic department.

The display of appliances in the James Building will [fol. 3660] be one of the most comprehensive in the country. All types of equipment will be represented, including the special lines of low-cost refrigerators, ranges, water heaters, portable motors and pump motors, which are to carry the distinguishing mark of the Authority.

Design of the display floor is being carried out under the direction of R. A. Wank, chief architect of the Tennessee Valley Authority.

[fol. 3661] COMPLAINANTS' EXHIBIT No. 836 (Excluded)

TVA Press Release of April 23, 1934

David E. Lilienthal, director of the Tennessee Valley Authority, today announced that the Authority had entered

into a contract with Young and Rubicam, Inc., a leading advertising agency of New York.

It is believed that this is the first time a department of the federal government has retained an advertising and merchandising agency for consulting services.

Mr. Lilienthal said that the agency will assist TVA in planning a campaign to promote the greater use of electricity in the home and on the farm. The contract is for a period of four months.

Young and Rubicam, Inc., is the agency which designed the emblem which Electric Home and Farm Authority will use in its program to promote the use of electrical appliances. The agency will cooperate with EHFA generally.

"The Authority has retained the consulting and technical services of Young and Rubicam to aid the power development of its own territory and to assist in our appliance program carried on under EHFA.

"Consultant and technical services of Young and Rubicam will be used by TVA in perfecting its plan for the marketing of power and to assist the Authority in effecting the [fol. 3662] most efficient ways for increasing the consumption of power by the Authority's customers.

"The agency will aid the Authority in formulating a general long-time plan for the program of increasing the use of appliances."

Mr. Lilienthal said that at the end of the four months period, Young and Rubicam is to submit to the Authority a plan for its promotional work, which will include a coordination of efforts of manufacturers, dealers and utilities. The contract provides for a broad cooperation between the Tennessee Valley Authority, EHFA and Young and Rubicam.

Negotiations for the contract were carried on by Mr. Lilienthal, George D. Munger and William B. Phillips for EHFA and by S. S. Larmon, C. L. Whittier and Donald Payne, for the agency.

Executives of Young and Rubicam, accompanied by stagg artists and merchandising specialists for the agency, have been in Knoxville for several days working on plans with TVA and EHFA officials.

[fol. 3663] COMPLAINANTS' EXHIBIT No. 837 (Excluded)

TVA Press Release of April 25, 1934

Electric Home Specialists.

That's the new name for the Electric Home and Farm Authority's corps of appliance demonstrators.

Guy Thaxton, the Authority's district manager in Northern Mississippi, contributed the idea at a school for the workers in Knoxville.

The Electric home specialists will not be salesmen. Rather, they will serve as instructors in the use of approved electrical appliances, and as counsellors in the application of electricity to the home and farm.

They will work first at Tupelo, where the first showing of appliances carrying the TVA emblem will begin early in May.

[fol. 3664] COMPLAINANTS' EXHIBIT No. 838 (Excluded)

TVA Press Release of April 25, 1934

Electricity's promise to the housewife is to be portrayed in an "electrical home" by the Electric Home and Farm Authority.

The home will be built at Wilson Dam, Ala., President David E. Lilienthal announced yesterday.

The Electric Home and Farm Authority and its parent, the Tennessee Valley Authority, will cooperate in building it.

It will be a typical three bedroom home—heated electrically. The same system will condition its air in winter, cool it in summer.

The kitchen will be electrical. A range, refrigerator, water heater—all bearing the upright arm and power symbol of TVA approval—will be on view there. An electrical dishwasher will be there, too, with lesser kitchen appliances.

In the basement there will be a powered laundry—washing, ironing to be done electrically.

Thousands of tourists will see the permanent display. The house will be designed as a national center for visual demonstration of the electrical idea.

Parts of the basement and attic will be set aside for display of equipment not installed in the home. An auditorium annex will be built for movies, lectures and a resting place for visitors.

[fol. 3665] COMPLAINANTS' EXHIBIT No. 839 (Excluded)

TVA Press Release of April 25, 1934

Address of David E. Lilienthal, Director and General Counsel of the Tennessee Valley Authority, Before the League of Women Voters, Boston, Massachusetts, Evening of April 24, 1934

It is a matter of particular gratification to me to have the opportunity to speak to this great League on the subject of electricity, for you have a two-fold interest in this whole question. As a group of women united to take part in the political life of the city, state, and nation, you have an immediate and direct interest in the community control of public utilities. As women of America, individually, you are the most important of all users of electricity—the users of electricity in the home.

This League for years has been distinguished by its alert and effective interest in public utilities and their regulation. Your organization has been singled out by more than one writer as being unique among associations of women—because you have demonstrated an independence of thought [fol. 3666] and action. Dr. Ernest Gruening, in his book, The Public Pays, makes special mention of this League as being on- of the few women's organizations which remained free of utility influence during the great propaganda campaign of the '20's.

Not only has this League demonstrated an active interest in the field of public utilities generally, but you also have played an important part in the development with which I am now associated—I speak of Muscle Shoals and the Tennessee Valley program. There can be no question but that without the support of organizations of your prestige, Senator George Norris might have fallen short of victory in his decade-long fight to retain the great hydro-electric properties at Muscle Shoals for the use of all the people.

It is, therefore, particularly fitting that a year after the passage of the Tennessee Valley Authority Act, we should be making a report to you of the progress of that program which the League of Women Voters so ably championed.

The power program of the Authority is an important part of its present plans and also of its long-range regional program. The starting point in any discussion of this power

policy and program must be this: that the distribution of electricity is not like the ordinary private business. By its very nature, the generation and distribution of power, [fol. 3667] whether by private or public agencies, is a public business, for in our present-day community life we are all utterly dependent upon that service.

The Authority is charged with the duty of carrying out a national power policy, and the safeguarding of the public interest in the country's greatest resource. This program profoundly affects the future development of our country's commerce, its industry, and the well-being of all its people. It is not a policy that has been formulated over night. It has been sponsored by the President; it has been thoroughly debated in the Congress. The power program of the Authority is an integral part of a larger policy for the economic development of the United States.

In order to comprehend fully the reasons for the power program set out in the Tennessee Valley Authority Act, it is necessary to recall what has been happening in the United States during the past ten years. It is necessary to understand that the people back home have become thoroughly aroused; that they are determined that the disgraceful looting of the public business of power shall not be repeated. You are all familiar with the sordid story. I need not recall to your minds the quarter of a million dollars which that late resident of Greece, Mr. Samuel Insull, paid to the [fol. 3668] chairman of the State Commission which was supposed to be regulating his Illinois utilities. It was probably no surprise to you when you learned that a Pennsylvania public utility paid the hospital bills of the Chairman of the Pennsylvania Public Service Commission. Those of you who observed the political methods of many utilities during the past ten years were shocked but not surprised at the recent disclosures concerning Chairman Thayer of the Public Service Committee of the New York Senate.

The deepest resentment over the mis-management of the power business has been among the ranks of the small investor. Much of the capital by which the great financial giants have carried on their operations has come from the savings of men and women of modest means. The widow with her small insurance fund, for example, was assured by the stock salesman that public regulation would protect

her against wildcat financial operations, that the public utility industry was in the hands of men who regarded themselves, in effect, as trustees of a great public business. And when the small investors learned the real facts, their resentment has been greater even than that of the consumer.

Nor have the people back home forgotten the story which was revealed by the Federal Trade Commission in its investigation of the propaganda activities of the electric in- [fol. 3669] dustry. There has never been a bolder attempt to buy the public opinion of the people of the United States. That widespread scheme of capturing the sources of public information would have destroyed the American system of democracy.

But the most serious indictment of the public utility industry is that it has not devoted itself effectively to its primary function of making electricity available at low cost to the American home. The best evidence of this situation is the simple fact that after fifty years the average use of electricity in the homes of this country is not more than 50 kilowatt hours a month. This question concerns your League, not only as an organization for civic activity, but as a group of individual women responsible for the home.

Now this is what had been going on throughout the United States—financial excesses, political corruption, an enforced frugality in the use of a great natural resource. In many states it had become perfectly obvious that the regulators were not regulating the utilities, but that in effect the utilities were regulating the regulators. In other states the regu latory commissions were doing an honest and sincere job, but were rendered ineffective by the interminable procedure of regulation. And so to supplement and reinforce regula- [fol. 3670] tion, Congress passed the Tennessee Valley Authority Act. This act is not an assault upon private ownership and management of public utilities; but it is a determined attack on private mis-management of the public business of power at the expense of the people back home—housewives and investors alike.

The first duty of the Tennessee Valley Authority in its power program is to set up what the President has called "yardstick" by which to measure the fairness of electric rates. It has an additional function. It is a reminder that unless that business is carried on by private corporations

with a due sense of responsibility to the paramount public interest, that the public, at any time may assume the function of providing itself with the necessity of community life.

What the Tennessee Valley Authority is required to do in its power program is to set up an area for power operations. This part of its undertaking I can best describe by taking a specific case. The Authority has entered into a contract with the City of Tupelo, in Northeastern Mississippi, the first agreement for the sale of power from Muscle Shoals to any municipality. I would like to outline to you some of the terms of that contract, which are standard with all communities served by the Authority.

[fol. 3671] Under the contract the Authority agrees to supply power at wholesale, which the City of Tupelo then distributes through its publicly-owned electric distribution system. The cost of the power to the City of Tupelo represents a saving to the municipality of 60% of the cost of equivalent power under its previous service by a private power company.

Almost as important as the price of current which the City will pay, are the relationships set out in the contract. The City agrees to administer the electric utility as a separate unit, and not to merge the utility's funds or accounts with those of the municipality. This is a safe-guard against political interference in the administration of the utility plant. The City further agrees to keep its accounts according to a uniform system, so as to reveal all operations of the plant. This is a safe-guard against unsound practices and an incentive to improve methods. These accounts will be regularly audited by agents of the Valley Authority.

The municipality agrees to apply sound business principles to the use of its electric revenues. Revenues will be first applied to operating expenses, including taxes, and then to payment of interest on bonds applicable to the electric system, and toward the retirement of those bonds. A [fol. 3672] reasonable reserve is to be set up for new construction and contingencies. Taxes are to be paid by the municipal utility at rates equivalent to the taxes which would be levied against a privately-owned utility. Then the taxpayers' general fund will receive a return on the municipality's equity of 6% a year. After these items have been

provided for out of the revenues, the City agrees to apply the surplus to further reductions in rates to consumers, on a nondiscriminatory basis.

It will be apparent to you that the City of Tupelo proposes to require the consumers of power to pay all of the costs of the electricity which is furnished to them. Instead of the taxpayers subsidizing this enterprise, they are going to benefit in two ways. First, they are going to receive taxes from the publicly-owned utility, and second, they are going to receive a return on their equity which will go toward the relief of taxes.

As consumers, the residents of Tupelo will be afforded a much wider use of electricity than they have found possible under the higher rates in effect before the City was served by TVA power. An average home, using electricity for lighting, refrigeration, a vacuum cleaner, irons, and other [fol. 3673] electric appliances, will consume about 70 kilowatt hours a month. At Tupelo, the cost of this service would be $1.90. For a home that uses an electric range in addition to a variety of other appliances the consumption would be about 250 kilowatt hours a month. At Tupelo, the householder would pay $5.00 for this service.

So much for the first objectives of the Tennessee Valley Authority—the regulatory, public control purposes of this national power policy. We come then to the second objective, of at least equal significance.

The power program of Congress and the President has as its major objective a constantly wider use of electricity. The fundamental problem of the Tennessee Valley Authority, of the electric industry, of the Federal Government, is to devise economic ways and means to make electricity generally available, of promoting the widest possible use of power in the home, on the farm and in the factory. I have referred to the fact that at the present time the average monthly use of electricity for domestic purposes is about 50 kilowatt hours. That figure is a challenge to the electric industry and to the people of the country. We know that the figure of 50 kilowatt hours a month can be increased several times, for in some sections of our country and in our neighbor country of Canada that very thing has been accomplished.

[fol. 3674] Here, then, is the crux of the power problem in the United States today: The people need and want elec-

tricity. We have an almost unlimited source of supply. The problem is how to put this electricity into the homes, the farms and the factories of the United States.

It has been long recognized that there are two barriers to the fullest use of electricity. The first has been the barrier of high rates. The second has been the barrier of high-cost electric using appliances. We are now undertaking in the Tennessee Valley area a plan which may offer the means of breaking down this second barrier.

The utilities' position has been that until the use of electricity is greatly increased, rates cannot be drastically decreased. They urge, moreover, that until electric-using equipment is brought down to lower price levels, no great increase of domestic consumption is possible. Appliance manufacturers have contended, on the other hand, that unless electric rates come down, volume production of equipment is impossible, and without this volume production, the cost of appliances cannot be substantially reduced.

Electric utilities, manufacturers of appliances and the consumers have all suffered in this closed circle. Here was [fol. 3675] an opportunity for government represented by the Tennessee Valley Authority, to step in as a stimulator and coordinator—helping not only the manufacturers and utilities, but making possible to the family of low or average income a wide use of electricity. The Electric Home and Farm Authority, created by order of President Roosevelt, is the agency which will assume this role. Conferences have been held with the electric manufacturers of the country. It has been decided that Electric Home and Farm Authority could make the attack on high-cost appliances in five ways:

First, by assisting in financing the consumer in purchasing efficient electrical equipment for home and farm at low prices.

Second, by obtaining reductions in electric rates by agreement with the utilities, publicly and privately owned, so as to make use of this equipment possible for the average householder and farmer.

Third, by engaging in educational work and research to lower still further the cost of electric equipment and to make it better adopted to the needs of the average home and farm.

Fourth, by encouraging the production of new designs. This has already resulted in the creation of a combined range and refrigerator, and other totally new designs are [fol. 3676] soon to appear.

Fifth, by protecting the consumer against poor appliances, by setting up specifications and testing laboratories.

Through the active cooperation of about fifteen manufacturers, EHFA is prepared to launch its electric equipment program next month. The first items offered will be electric ranges, refrigerators, water heaters, a portable farm motor and an electric water pump. All of these appliances have been built by the manufacturers to meet price and quality specifications of the Authority: The prices are from 25% to 35% lower than those now prevailing for equivalent equipment; the financing costs are far below present charges for this service.

In order to identify this line of appliances, each item will carry the emblem of the power department of TVA, so that the purchaser knows then he sees this emblem on an appliance that it is a part of the program. Sales of these appliances, through the regular dealer outlets, will be made first in those Valley sections served by TVA power, and in the territories served by privately-owned public utilities which are under agreement with Electric Home and Farm Authority. This program begins early next [fol. 3677] month in four Southeastern states, and will probably be expanded.

What is going to be the effect of the Authority's power program on the investor in soundly financed public utility securities? This is an acute and difficult question which I have no desire to evade.

The Authority must carry out the national policy entrusted to it. It must acquire a market for its power. It must work toward a wider use of electricity. None of these objectives will result in the predicted calamities to the industry and its bona fide investors. The Authority early adopted a policy of buying, at fair prices, the property of private utilities in the area selected for its "yardstick" operations rather than to duplicate facilities and engage in destructive competition. The policy was given concrete expression in a comprehensive contract entered into on

January 4 of this year with the major operating companies of the Southeast embraced in the Commonwealth and Southern system. In order to avoid competition between the City of Knoxville and the Tennessee Public Service Company operating in that city, and a duplication of physical facilities, the Authority has offered to buy that Company's property useful for electric operations at a price which will protect every dollar of presently useful investment. You can see, therefore, that if there is a genuine [fol. 3678] desire to work with this project, and not to obstruct or destroy it, ways and means can be found for the electric industry and for the Government to work without friction in expanding the use of electricity for the benefit of all of our people.

This, then, the *the* national power program which the Tennessee Valley Authority is carrying forward. I believe you will agree with me that it is a constructive program, that its sole object is to benefit and to protect the consumer of electricity and to make for a constantly wider use of electricity by the housewives of America.

One might suppose that such a program would be safe from selfish attack. That is not the case. There has been launched a concerted and apparently well-financed plan to destroy this entire project. As representatives of one of the most directly interested groups in the United States, it is appropriate that I should submit to you the facts representing this conspiracy to destroy the President's program in the Tennessee Valley and in other parts of the country.

According to reports in the New York Journal of Commerce, the American Federation of Utility Investors, Incorporated, had its genesis early this year in a committee formed after the annual meeting of one of the largest util- [fol. 3679] ity holding companies. A report of this meeting in the New York Journal of Commerce, in its issue of January 11, stated that it was proposed that "the industry adopt an aggressive policy and arouse the stockholders to the fact that their interest was being jeopardized". The Journal proceeds—"It was suggested that it would be better for stockholders to make the move rather than utilities themselves". One of the great difficulties, to quote again from the Journal, "surrounding the formation of the stockholders committee was the securing of sufficient funds

for expenses. Suggestions had been made that the utilities contribute. This, however, met with little approval, for it was felt that the movement would then be labeled as coming from the companies. Large investors, institutions, banks and insurance companies were approached with the result that the association has made subscription voluntary, in the amounts of one dollar or more a year from all members."

With this "independent" beginning, then, the Federation was organized. As the Journal said in this same account of January 11, "The American Federation of Utility Investors was formed by prominent men not identified with the utility companies, with headquarters in Chicago. It was felt by some that the movement originating in the [fol. 3680] Middlewest rather than in New York would immediately eliminate any feeling that it was being engineered by interests centered in the Metropolitan area."

So we see that this organization, if we are to believe the New York Journal of Commerce, from the very outset laid its plans to deceive the public of its true origin. To disguise its origin and alliance with the financial world of New York, it was decided that the Federation should have its headquarters in Chicago. The irony of protecting the Federation's fair name by moving it to Chicago, of all places, is almost overwhelming. According to a writer in the Chicago Tribune's financial department, the Federation of Utility Investors is circularizing utility investors with the aid of some of the largest utility holding companies, which he names.

The purpose of this movement is evident. In an attempt to save holding company capital superstructures, much of which never did have sound business justification; some holding companies, disguised in the robes of the widows and orphans, are ready to pit the securities owners against the consumers. Twenty million American homes are to be denied the full benefits of a great national resource in order that inflated stock may pay out. On such an issue there [fol. 3681] can be only one result. The tide of public opinion will continue to run against an industrial leadership which lends itself to such a scheme. The American people will never submit to a program of this sort.

COMPLAINANTS' EXHIBIT No. 839 (Excluded)

Private ownership of public utilities can survive and flourish, only if a new leadership takes the helm of the public utilities industry, a statesman-like leadership of moderation. There are many men in the industry, as I well know, who have the insight and the hard-heartedness to appreciate this fact, but they are sadly in the minority.

Among the changes the times demand of a new leadership, permit me to suggest four which seem to me of immediate and pressing importance.

First. The new leadership should demand a real housecleaning in the industry. No more change of names will suffice. The Insulls have fled the scene, but the practitioners of their business and political methods are still high in the councils of the industry.

Second. The public utility industry must cease to oppose every reasonable effort to strengthen regulations. The action of the utilities of New York State in opposing and almost successfully opposing, Governor Lehman's moderate program for the strengthening of public regulation, was an amazing performance.

[fol. 3682] Third. The public utility industry, like other conservatively operated businesses should write off or write down that portion of its capital structure which does not represent value. The policy of retiring capital obligations rather than continually refunding should be adopted. The uniformed investors who are misled should be advised of the facts.

Fourth. There should be a whole-hearted recognition of the right of the people to serve themselves with electricity if at any time they are dissatisfied with service through a private agency. The recognition of this right carries with it an implied duty to refrain from interfering with the free exercise by the people of their right to choose this course. Such an attitude may be represented by a quotation from the president of one of the large holding companies. Referring to his previous opposition to Government operation of Muscle Shoals, he said: "However, the President and the Congress of the United States declared that the policy of the Federal Government should be otherwise. Under the

COMPLAINANTS' EXHIBIT No. 839 (Excluded)

circumstances, we felt that policy and a due regard and respect for the judgment of those to whom the welfare of the nation had been committed, compelled us to permit the declared policy of the Federal Government to prevail."
[fol. 3683] These are the essentials of a new policy which the electric industry must pursue before it will be restored to a sound business basis and to public esteem.

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[fol. 3684] COMPLAINANTS' EXHIBIT N) (Excluded)

TVA Press Release of April 25, 1934

"Catch"

John Zwinak spun an artist's ruler toward his friend Gene Davis, saw it caught and clutched by taut arm and hand.

So came to Zwinak the idea for the Electric Home and Farm Authority's appliance emblem—a flashing symbol of power, held by the hand of man, over the legend, "TVA Electricity For All."

Zwinak is a commercial artist on the staff of Young and Rubicam, Inc., New York agency working with the Electric Home and Farm Authority.

Once the idea was his, Zwinak reduced it to finished design, submitted it to Young and Rubican and to the Authority.

After Acceptance—Patent

The Electric Home and Farm Authority and its parent, the Tennessee Valley Authority, wanted assurance of absolute control over the emblem's use.

They called upon the Department of Justice, the Patent Office and the Library of Congress.

All cooperated. The TVA emblem followed the Blue Eagle on a record trip through the patent maze.

The patent makes certain that the emblem may be used [fol. 3685] only as the Authority permits. Its appearance on an appliance means:

(1) The appliance has been accepted by the Tennessee Valley Authority for financing by its subsidiary development agency, the Electric Home and Farm Authority.

COMPLAINANTS' EXHIBIT No. 840 (Excluded)

(2) It has been built to specifications assuring high quality at a minimum price.

(3) It is for sale in a locality served at TVA-approved power rates—rates cut to meet the Tennessee Valley Authority's standards of fair service and fair cost.

[fol. 3686] COMPLAINANTS' EXHIBIT No. 841 (Excluded)

TVA Press Release of April 26, 1934

Permanent displays of electrical equipment will be set up by the Electric Home and Farm Authority at Tupelo, Miss., Wilson Dam, Ala., Chattanooga and Knoxville.

President David E. Lilienthal announced the plans today.

Tupelo's display early in May will launch the first sales of equipment approved by the Tennessee Valley Authority.

The Wilson Dam exhibit will be an electrified home, an electrical center for the thousands of visitors to the dam and power house there.

Chattanooga's display will be in the James Building and will be made a center of electrical demonstration for the Chattanooga territory.

The Knoxville show room in the Arnstein Building will include an indoor reproduction of one of the houses built at Norris, the Tennessee Valley Authority's village near the dam.

A Norris house also will be built into the Chattanooga [fol. 3687] show room.

All the displays will be complete showings of equipment accepted by the Tennessee Valley Authority and by the Electric Home and Farm Authority, and stamped with the TVA emblem of low cost, high quality and cheap current—an upright arm and hand, holding a zigzag symbol of power.

The Chattanooga, Knoxville and Tupelo show rooms will exhibit some electrical wonders not ordinarily used in the home. There will be an "electric eye"—a photo-electric cell that translates light or heat into electrical energy, and finds a multitude of strange uses.

At Tupelo, the first equipment offered for sale with TVA approval will be shown with a general line of home and farm appliances.

COMPLAINANTS' EXHIBIT No. 841 (Excluded)

The Wilson Dam house will be a three bedroom house, electrified from basement to attic.

An electrical air conditioner will cool it in summer, heat it in winter. Electric range, refrigerator, dishwasher, water heater and smaller kitchen appliances will be there for cook and housewife.

Laundry equipment will be electrical. There will be other electrical aids for housekeeper or maid. In addition, the [fol. 3688] house will have an auditorium annex. Tourists may go there to rest, and to see and hear the electrical idea demonstrated.

Movies will show how electricity may be used in home, factory or on the farm.

Trained electric home specialists will tell how to get the most from home appliances.

Tupelo's display first will be in downtown quarters obtained for the sales demonstrations. The display will be made permanent later.

[fol. 3689] COMPLAINANTS' EXHIBIT No. 842 (Excluded)

TVA Press Release of May 16, 1934

Address by Arthur E. Morgan, Before The Lower Tennessee Valley Association, Murray, Kentucky, May 16, 1934

We are looking forward to the day when every hamlet will have its own power supply, at such a low rate that a very small factory can plug into the wall and go to work. We want power because power takes the drudgery out of [fol. 3690] life and makes industry possible. As you go over these hills in Tennessee, you often see an old mill race that leads half a mile to an old mill, which developed four or five horsepower. A lot of work had been done for so little power. Today you can buy a motor for $150 which will do that much work. I believe that one of the reasons why small industries have died out is that power was so expensive that it could be bought only by big units. If cheap electrical power had been available a hundred years ago, I doubt if the big units ever would have secured the hold on industry which they have.

COMPLAINANTS' EXHIBIT No. 842 (Excluded)

For about ten years there was a fight to prevent the power which could be generated in the Tennessee Valley at Muscle Shoals from being used for the people. Twice Congress passed bills providing for that power to serve the people. Twice they were vetoed. The third time the bill was passed as part of the Tennessee Valley Authority Act, it was sponsored by the President and supported by him.

I am not at all certain that the United States Government should make all the power to be made. I am not certain but what private utility companies are good things. I think I should be averse to having the Government take over all the [fol. 3691] power at the present time. I believe this reflects the President's attitude.

About a year and a half ago the President in speaking on the subject of power made this remark: "I believe we need a yardstick for power." What we pay for power represents not only the cost of the power itself, but sometimes it includes also the cost of watered stock. I might add that we sometimes pay for the cost of buying favorable decisions from public utility commissions. An example of that was seen in the case of Insull, who gave, off-hand, a present of a quarter million dollars to the judge who was deciding his case. The President said, "Let us eliminate such items. Let the Government make power and distribute it and sell it, and find out how much it actually does cost." I think the private utility companies should be enthusiastic about such a program. They know that they can develop power cheaper and they should welcome an opportunity to prove it finally.

The Tennessee Valley Authority expects their hearty cooperation.

We are trying to set up an accounting system so that everything will be open and above board. All charges are included—depreciation, maintenance, taxes—to give us a fair and honest comparison between public and private op- [fol. 3692] eration of utilities. The communities to which we sell power are required to do business in the same open way. Several months ago we made a contract with the city of Tupelo, Mississippi. For some months it has bought power from the Tennessee Valley Authority. It is now paying a little less than half what it was paying formerly. It distributes that power to its customers at a little less than half what they were paying formerly. Since the price of

power has come down, the use of it has gone up. People can now afford to use more. And I am happy to say that up to the present, the increase in the use of power has been enough that the city of Tupelo is paying all of its charges, its depreciation, its interest, its maintenance, its taxes, and is saving a few thousand dollars a month besides. The rate for power in Tupelo is three cents per kilowatt for the first fifty kilowatts. For the next 100 kilowatts, the rate is two cents. For the next 200, it is one cent. After that the rate is slightly less than one-half cent per kilowatt. At those rates Tupelo is making money selling power which it is buying from the Tennessee Valley Authority at about four mills. We believe that if we can distribute power to small communities at a price which people can afford, so that power will be no longer a luxury, the use of it will increase [fol. 3693] tremendously. We believe that there is now an under-consumption of power, due largely to excessively high rates.

The city of Tacoma, Washington, has owned its own power plant for forty years and has paid for it from charges made for electricity. The plant is completely paid for except for improvements made in the last five years or so. Its rates are about the same as those which the city of Tupelo is charging: three cents for the first 100 kilowatts and two cents for the next 200, and then one cent. At those rates the city of Tacoma has built a great power plant, paid for it, and the people are using two or three times as much power as is used in the city of Knoxville, a city of about the same size, where the cost is twice as great. We hope soon to serve Knoxville with our power and expect the use of power to increase as a result of the lower rates which will be charged.

In the Tennessee River Area, the river drains about 40,000 square miles. There are thousands of miles of water courses. The fall from the high power plants in the mountains to the Ohio River is over 2,000 feet.

There are two kinds of power plants possible in the Tennessee Valley. One is what is called a run-of-the-river [fol. 3694] plant, one in which there can be very little storage. The water must be used as it comes down the river. The plant at Muscle Shoals is of this kind. When the river is low and little water runs through, there is little power de-

veloped. When the river is high and there is a great deal of water running through, there is a great deal of power. Last summer during the dry months the river was so low at Muscle Shoals that we could get only 25,000 kilowatts, about 35,000 horsepower. In a wet winter, we can develop as high as 600,000 kilowatts—nearly twenty-five times as much. The variation from high to low is too great.

Operation of the Muscle Shoals plant alone would not be profitable. The cost of making the power is too much. Power is valuable only when it is dependable. Dependable power, or prime power as it is called, is worth five or ten times as much as secondary power. No one would care to buy power from a firm which should say, "You may have the power in the winter, but not in the summer and fall." Power is valuable chiefly when it is available the year round.

At the headwaters of the river, there is a different situation. We are building the Norris Dam on the Clinch River. [fol. 3695] There is great storage space behind the dam. The dam will be 253 feet high and the reservoir will store almost a whole year's flow of the river. By using that dam and its storage reservoir together with the dam below, we have a very different picture. For example, Muscle Shoals ran down to 25,000 kilowatts last summer. If Norris Dam had been operating with it, we should have saved the water at Norris during the wet season when there was plenty of water in the Tennessee; then in the dry season, when the Tennessee was low, we should have released the water at Norris and let it run down the river to Muscle Shoals. We could have raised the 25,000 kilowatts to about 100,000 kilowatts last summer, making four times as much power because of the water let down from Norris Dam. We could use the whole supply stored at Norris Dam at Muscle Shoals in the months the water is low, making power both at Norris Dam and as the water goes down the river again at Muscle Shoals, and at any other dams which may be placed down the river.

Now suppose there are eight dams on the river. At every one of these, the water from Norris Dam will make power again. It is this joint operation that makes it worthwhile to build the dams. Any one might be too expensive alone. The [fol. 3696] power generated at Norris alone would not be worthwhile but when the water can be used eight times

more, it becomes a profitable development. There is room for about a dozen large dams on the headwaters of the Tennessee, dams that will store vast amounts of water. If we can build these dams to store the water, we can almost even out the flow of the river, making every dam on the Lower Tennessee worth three, four or five times as much at it would be worth if it had the natural flow of the river only.

The Tennessee River System, therefore, should be developed as a whole, under one management. Suppose the dams were built under different managements. For example, the Aluminum Company of America has a dam on the headwaters of the Tennessee. It uses its water when it needs power to run its plant. It may use the water in winter, the wet season, when there is already enough in the river, and shut it off in summer when the water is most needed below. If that dam were a part of one unified system, that water would be used when it was most necessary, taking the river system as a whole. The upper plant would be more valuable because its power could be used when it was most necessary; the lower plant would be more valuable because it could be supplied with water when it most needed it. The two plants operated together will be worth perhaps [fol. 3697] three times as much as they would be worth if operated separately.

It would hardly be fair for the Government to go to the expense of building these great dams up on the headwaters, then to get no benefit from them at the dams down river. There must be unified control. In the midsummer, then the Tennessee River is low, little power at the Aurora Dam, for instance, in Southwestern Kentucky, could be developed. At another time of the year, when the Ohio River flooded, the water from it will back up to Aurora Dam and there will be little fall there to develop power. Thus, both in high water season and in low water season, Aurora Dam would be unprofitable alone. But it will be tied to other dams, with transmission lines to carry current. In the low water of summer, the dam will be supplied with water by the storage dams up river. In the high water of spring, it will be supplied with power by transmission lines from the up-river plants with which the Ohio does not interfere. Thus, in both high and low water seasons, the Aurora Dam

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will be worth more by operating it with the other dams than if it were run alone.

For this it is necessary to have government control. If the dams were privately owned, no one could compel the owners below to buy power from those above. No one could [fol. 3698] say, "We are going to let water down, and your charge will be so much." The only way for the full development of the river system is to operate the whole as a single organized unit with unified control. With transmission lines connecting these dams, we will have a system of far greater value to the community than if the dams were operated independently of each other. Every dam built on the headwaters will be partly paid for by the dam down the river, which will furnish a market for the stored water. * * *

Some time ago I talked to a group of our foremen. They know that no private company is making money out of this job. They know that there will be no dividends—that we are making power so that people may buy it cheaper. The men feel this too; they are being treated well, paid well, and they will deliver the goods and see the President through. That kind of spirit will build dams and power plants, and will build a country with a prosperity which will be permanent.

[fol. 3699] COMPLAINANTS' EXHIBIT No. 843 (Excluded)

TVA Press Release of May 17, 1934

The Tennessee Valley Authority and the Investor

Remarks of David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Before the National Association of Mutual Savings Banks, New York, May 17, 1934—Hotel Waldorf Astoria

The protection of the investor is a matter of immediate concern to your national Government. As you know, the President, on several occasions, has expressed his views upon this subject. Under his leadership legislation has been enacted, and other legislation is pending, designed to protect the investor. The credit agencies of your Government have fought a gallant battle for the institutional investors. Other federal departments have been working to the same end.

COMPLAINANTS' EXHIBIT No. 843 (Excluded)

In common with these national agencies, the Tennessee Valley Authority, within the sphere of its own operations, is likewise committed to a policy of protection and of fair play for the investor. You know, I believe, in a general way at least, that the duties of the Tennessee Valley Authority [fol. 3700] encompass a wide field in the planned development in seven states of an entire river watershed. It is particularly in connection with the power program of the Authority that the problem of justice to the investor arises.

In discussing the power policies and plans of the Tennessee Valley Authority, it seems to me important that we first consider the position of the institutional investors in the electric industry as a whole.

The savings banks, the insurance companies and fiduciary institutions of various kinds supply a major portion of the capital for this extensive industry. This capital is secured at a very low interest rate. The senior securities of well-financed operating utilities yield a rate of return comparable with that of municipal bonds. These senior issues have been generally regarded as attractive by investment bankers and have been widely recommended for bank and trust fund portfolies. But in the face of the fact that these institutional investors have supplied billions of capital to the electric utilities at a low return, the voice of the senior security holder has rarely been heard in the management of public utilities properties. The fate of billions of dollars of senior securities is determined by the policies of a small [fol. 3701] management group holding but a negligible fraction of the common stock, and with little of their own money at stake. I need not go into the legal and financial reasons for this state of affairs. For our purposes the fact is the important thing.

The almost insatiable need for new capital in this great business of electricity you have supplied, in major part—you of the savings banks, the insurance companies, the trust funds. The fate of your billions of conservative capital has been put into the hands of a managerial minority. Have they justified your trust and confidence? We all know that some have, and their record is a matter of pride to business men everywhere. But these bright spots are not typical. The record of these management groups as a whole is not creditable.

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The record shows that important common stock management groups have in effect been steadily confiscating senior security values. Your investment has been sapped in a variety of ways. One of these I can illustrate by reference to certain prosaic documents I hold in my hand. These pamphlets are the annual reports of the directors of two outstanding electric operating properties—Commonwealth Edison Company and Public Service Company of Northern [fol. 3702] Illinois, for the years 1932 and 1933. These properties operate in one of the richest territories in the country and under most favorable conditions. I have no doubt that there is hardly a savings bank represented here whose depositors have not contributed heavily to the senior capital of these excellent businesses.

Turning first to the consolidated surplus account *fo* the Commonwealth Edison, on page 19, we find that the directors of this company in a single year found it necessary to write off over $45,000,000 against surplus, reducing the surplus from $53,500,000 to $6,900,000. Some of the items in this write-off against surplus deserve your attention. In the first place we find a so-called investment reserve of $30,000,000 set up. It appeared that the management of this company through a non-utility investment subsidiary had been making enormous outlays in all manner of enterprises, from truck factories to suburban real estate, investments which everyone here would agree no conservatively operated quasi-governmental business should have considered. The reserve was to absorb the losses of those ventured. Even that investment reserve was found inadequate, for in the 1933 report we find an additional charge of $7,000,000 against surplus to care for shrinkage in value of the so- [fol. 3703] called investments of the subsidiary. Some of the other items in this surplus account are interesting. Here is an item of $3,750,000 for "losses in connection with transactions in company's re-acquired stock." This company, through its subsidiary, was engaged in the practice of buying the company's stock in the open market, for purposes which do not stand very close scrutiny, when taken in connection with the management's intensive stock selling campaign among customers and helpless employees. Then there is an item of $1,665,000 for "advances and loans of

stock to officers and employees and to individuals connected with affiliated companies."

Let us turn now to the annual report of the Public Service Company of Northern Illinois. Here we find that in 1932 and 1933 the management wrote off a total of $18,500,000 to take care of the shrinkage in value of securities in all manner of outside enterprises, similar to those of Commonwealth Edison. Charges against the reserve included a half million dollars in advances and loans to officers and employees and to individuals connected with affiliated companies, and $1,730,000 in connection with losses in stock market operations involving the company's own securities. [fol. 3704] I need hardly point out that I am not criticising the write-offs put into effect by new management, but rather the financial policies extending over a period of years which made that action necessary.

These reports tell a story of confiscation of values of senior securities. Furthermore, the effect of this management policy has been to make rate reductions much more difficult for these companies, and to that extent has made the general public relations of these companies less favorable. All of this reacts adversely to the holders of bonds.

I wish these were the only instances in which senior security values have been confiscated by management policies. You and I know that the instances are legion. Another common method of confiscating senior security values has been through the abuse of the management and engineering fee. By this device the common stockholders of an operating company were able to draw off not only a generous dividend on their stock holdings, but additional compensation for alleged services. Grossly inadequate provision for depreciation, resulting in over-statement of income, followed by an excessive payment of dividends, frequently out of capital, has been another method whereby many an unfaithful or speculating management has [fol. 3705] siphoned out the assets of operating companies while your senior securities suffered. The records contain instance after instance of such confiscation of values.

Some of the more flagrant abuses in the industry have recently been revealed to the investing public through the instrumentality of federal agenies. These revelations have aroused general public condemnation. From certain quar-

ters purporting to be independent, but actually associated with management groups we are told that the industry's ills arise from the various activities of the Federal Government and of regulatory commissions. An honest, dispassionate analysis fails to sustain this charge. Where investigations of utility affairs disclose illegal and unsound practices the Government has not hesitated in making such disclosures known to the consuming and investing public. Nothing less than this would discharge your government's duty to protect the investor. The preservation of investment values demands that corporate structures be soundly established, that abuses be revealed, and that physical and financial operations be correctly reported to the public.

The electric industry has grown at a rapid rate and is destined to continue to grow. Further growth will require [fol. 3706] fresh capital. Fresh capital will be forthcoming from the public only to the extent that it is convinced that the industry is managed in accordance with high standards. If the private utilities are unable or unwilling to clean the slate, they will find it very difficult to convince investors to risk further capital in this essential business. In the national Government's attempt to curb holding company abuses, to assure honesty of accounting, to simplify corporate structures, and to achieve security in fact for investors the Government is working in the long-range interest of all. If the industry, or any of the groups which have an interest in it, oppose this constructive program, it may find itself in a position where it will be difficult to secure fresh capital for the expansion which lies ahead.

By 1933 the management of some of our major electric utilities had become a national scandal. It was inevitable that President Roosevelt and the Congress should squarely face this situation. It was inevitable that they should see that regulation alone was inadequate to fully protect either the consumer or the investor. It was plain to all that regulation needed strengthening and needed supplementing.

Neither the industry nor the investors took effective action to meet this situation. The President and Congress, [fol. 3707] in setting up the Tennessee Valley Authority, were merely responding to an overwhelming public sentiment. The public, investors and consumers alike, demanded an experiment on a broad scale, of public electric operation.

COMPLAINANTS' EXHIBIT No. 843 (Excluded)

This development was designed to serve as one means of seeking to prevent a continuation of financial and operating practices which had brought discredit on the entire industry, sound and unsound managements alike.

As institutional investors, you will be interested principally in those plans and policies of the Authority which most directly affect the investment quality of the securities of the electric industry.

The Authority is under duty to acquire a market for its power. It is authorized to compete with existing utilities, and for this purpose is expressly empowered to erect duplicate facilities. But no competing facilities have been constructed, and I am authorized to say that under its present Board none will be constructed, until every reasonable alternative has been exhausted. The Authority, in public and in private, has urged this same principle of reasonableness upon municipalities in its area.

Last August the Authority made the following declaration of policy:

[fol. 3708] "Every effort will be made by the Authority to avoid the construction of duplicate physical facilities, or wasteful competitive practices. Accordingly, where existing lines of privately-owned utilities are required to accomplish the Authority's objectives, as outlined above, a genuine effort will be made to purchase such facilities from the private utilities on an equitable basis."

This policy the Authority is determined to carry into effect. On January 4, 1934, after months of negotiation a contract was entered into between the Tennessee Valley Authority and the four major operating companies of the Southeast, members of the Commonwealth and Southern system. Under this contract the Authority agreed to refrain from competing with the Commonwealth and Southern companies in certain areas, and the companies agreed to sell their properties in these areas at a price reached by negotiations. A complete interchange arrangement was effected which ties these two systems together as two private utilities would be tied together. The contract calls for cooperation between the parties in working out a program to further increase the use of domestic electricity. This contract is concrete evidence of the Authority's desire to avoid con-

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[fol. 3709] structing duplicating facilities or to engage in destructive territorial competition.

To avoid duplication of facilities, to avoid territorial competition, to buy property at fair prices, are cardinal policies of the Tennessee Valley Authority. Our adherence to these policies should reassure you of the Authority's determination to respect prudent investment in useful property.

But more important still to you as institutional investors in this great industry is the program under way to increase the use of electricity for domestic, rural and industrial purposes. This project of the Authority, created by order of the President of the United States, and backed by a million dollars of capital and ten million dollars of credit, is being launched next week throughout the Valley. This undertaking holds great promise for the stabilization of earnings for this whole industry. For obviously if the experiment is as successful in the Tennessee Valley as experienced private utility operators predict, then it can be adapted to other sections of the country.

By direction of the President the Authority has established an agency known as the Electric Home and Farm Authority. This corporation will make possible the sale [fol. 3710] of low cost appliances to a large portion of the population which hitherto could not afford complete electric service in the home. These appliances of course, are made by leading manufacturers and sold through the regular dealer outlets. The EHFA is extending these load-building facilities, not only in the territory of its own operations, but also to the territory served by the extensive Commonwealth and Southern system and other privately-owned utilities which desire to cooperate. The Authority is interested not merely in the expansion of its own electric sales; it is interested in increasing the consumption of electricity throughout the South, in disregard of public or private ownership. We are entering upon a program of technological research which may yield important results in uses of electricity for both domestic and industrial purposes. This program will result in expansion of output and in stabilization of the industry as a whole. It cannot therefore fail to be of interest to you as investors.

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Public policy and business policy point to the utility industry as a principal repository of the conservatively invested funds of the country. The industry has all the characteristics which should commend it to the conservative [fol. 3711] investor. It is public in its nature, even enjoying the power which only the sovereign state enjoys—the power of condemnation. It has stability. In spite of the financial mayhem committed upon it, its earnings record through the depression is remarkable. It furnishes an essential commodity. It enjoys almost complete protection against territorial competition. It is a matter of national importance that an industry so intimately related to the public welfare should be so operated as to make it a safe repository for the funds of great institutions, such as your Mutual Savings Banks.

There is no basis for the hysterical cries of those who see, or pretend to see disaster ahead for the electric industry. Can it be that they are deliberately trying to depress the prices of sound senior securities, so that they can be bought in at hysteria prices? This may be a subject which would merit investigation by public agencies, and perhaps by senior security investors, such as the Association of Mutual Savings Banks.

We have been given a national power policy to execute in the Tennessee Valley. It is intended to serve as a demonstration and an experiment. It answers an overwhelming public demand, after a decade of experience injurious [fol. 3712] to both investors and consumers. Under this new policy prudent investment in useful property will not only be respected but protected. We believe that this limited operation of a public power system will set up a precedent of trusteeship in this business which will have a sound effect upon the financial policies of private utilities, and will work to the advantage of the institutional investor in this great industry.

[fol. 3713] COMPLAINANTS' EXHIBIT No. 844 (Excluded)

TVA Press Release of May 18, 1934

Address by Dr. Arthur E. Morgan Delivered to the Civic Clubs of Huntsville, Alabama, May 18, 1934

People of Northern Alabama: • • •

Let me give another example of what planning could do. The Tennessee River is one of the great power possibilities of eastern United States. Only west of the Rockies or along the St. Lawrence are there any sites superior to it. It is possible to develop several million horsepower of energy on the Tennessee River. The development of that power will depend to a considerable extent upon the planning of it. If the various power projects are developed independently of each other, the development will be only a fraction of what it will be if a single unified plan can be carried through. Let me give an example. The Muscle Shoals Dam down here is a great piece of masonry. Only three or four dams in the world have as much concrete in them as the Wilson Dam at Muscle Shoals. That dam, taken by itself, is not a good investment. It is not a good investment because it is on a river that fluctuates very much between low water and high water. Last summer during the low water season, there was only water enough in the Tennessee River at Wilson Dam to develop about 25,000 kilowatts. In some wet winters we have had enough water to develop 600,000 kilowatts or twenty-five times as much. That is the extreme fluctuation of the river.

There is no storage to speak of at Wilson Dam. You [fol. 3714] must take the water as it comes, and taken alone it is not a good investment. Power is good only if it is reasonably continuous. This is not exactly true, but roughly, valuable power is what is called dependable power or prime power. If a man wishes to buy power to run his factory, he doesn't want to buy power which he can have only certain months of the year, but he wants power that is dependable throughout the year. Therefore, prime power is worth five times as much, perhaps, as secondary power which comes only during the wet season. That is why Muscle Shoals alone is not a good investment. We have another dam we are building on the Clinch River—Norris Dam. Taken by itself, that dam is not a good investment. There is

a great storage behind it, about enough capacity to store a year's rainfall on the river. But it is expensive to build that dam. Speaking from memory, as I recall, it will cost about $240 per kilowatt to develop that power, taking it by itself, as against perhaps $80 per kilowatt to build a steam plant. So Norris Dam alone could not be compete with steam plants. But when you take Norris Dam above and Wilson Dam below and make one operating unit, you have a different situation. During perhaps nine months in the year (I speak generally because years are not alike) there is an abundant [fol. 3715] flow at Wilson Dam, enough to develop possibly 200,000 kilowatts. Then for a period in the late summer and fall, the river runs very low. Now suppose at Norris Dam, instead of taking the water as it comes, we saved it during high water when there is an abundance. Then, along in August, when the Tennessee River is low, let the water out at Norris, put it through the plant at Norris and make current there when it is most needed. But not only that—the water will go on down to Muscle Shoals and make power over again. You may use the entire year's flow in three months and that is enough to fill in the gap at the low water time, so that at Muscle Shoals you have three or four times as much dependable power as you would without Norris. Together they are profitable; alone they are not.

It is not only Wilson Dam that Norris will help. There is already a dam at Hale's Bar, owned privately. The building of Norris Dam will make it worth three times as much (speaking in rough figures—I would like to have my figures checked) because of the regulating influence of the reservoir above. Private capital built that lower dam and under present condition private capital would have a gift of, say, 300 per cent at government expense. Then the water [fol. 3716] will come to Wheeler Dam and make it worth two or three times as much.

There is room for possibly eight dams on the river, and the water from Norris, if properly handled, will multiply by about three (speaking roughly) the value of them all. When you take that into account, you find what a profitable development you have in the Norris Dam. But that is not the only up-river dam. On the Holston, the French Broad, the Hiawassee, the Little Tennessee, there are great storage

possibilities. If we took advantage of all, we could even smooth out the flow and get almost a uniform power load throughout the year. When there is a great deal of rain, and the smaller tributaries of the Tennessee are full of water, the reservoirs will be shut down, and during dry season, the water will be let out. I believe it is safe to say that if the Tennessee River can be developed as a single unified development under one ownership and one control, hydro-electric power may cost not more than half as much as if it were developed in independent units. Now someone may say that this could be worked out by private ownership—that the private companies could agree about trading their power. That is no answer. Take the Norris Dam, for instance. It would not pay to build it in the hope that some-
[fol. 3717] body might wish to buy its power in the future. It is not justified unless you can count on a market. That is true for other up-river dams. Suppose that they are owned privately and a factory on the Norris Dam is making some large product. The factory gets orders and runs when it gets orders. It may run in winter when there is plenty of water and shut down in summer when the lower plants need the water. You can only develop the full possibilities of the up-river dams by knowing you can get the water paid for at other dams down river. Therefore, the very building of the dams must be by some coordinated power. On one of the branches of the Little Tennessee, there is a dam owned by the Aluminum Company of America. That dam stores water and uses it when it has business for their industry. Now they let the water out when they need it not when we need it at Muscle Shoals. They are working for the Aluminum Company of America, so they regulate the power to suit themselves and not to suit the dams down stream. I believe that the way to get maximum value is to operate under unified ownership and control.

The cost of hydro-electric power is more important than you may think. With recent developments of steam generating plants, steam power is competing with water power. A good many power men will tell you the day of water power [fol. 3718] is passed,—that from now on steam plants will be built. If they must go back to operating unorganized, uncoordinated plants that may be true. But if we can carry this through as a single organized development, then we

can make this power cheap enough so that I believe we can very well compete with steam power, and it may be that the industries of the Tennessee Valley in the future will depend upon whether this is developed in a unified way or whether it is developed in isolated and non-cooperating units. We are building with a view to the future.

Let me go into the matter of water power. It is probable that for a long time to come a very considerable part of the electric power of America will be generated by steam. There are not enough power plants to go around, and their situations are not right. We must depend upon steam plants. Coordination is not so necessary in steam plants—it is desirable, but not so necessary. The President has expressed himself on the electric power issue. He has said very clearly that he is not in favor of having the U. S. Government generate and sell all the power in the country. He said he believes it is wholesome for our country to have private ownership of utilities to a considerable degree, but [fol. 3719] he believes that private ownership has not always exercised a spirit of responsibility to the public. We cannot tell just when that spirit of responsibility is being exercised and when it is not. The affairs of private utilities companies are not given freely to the public. Only now and then does a window open and do we get a look inside. In the case of the Insull utilities, you know the mess that was there; what a horrible mess and jumble of over-capitalization it was—holding companies of holding companies piled ten deep. You know how the underlying securities had been taken for holding companies to gamble with their own securities. An infernal mess it was.

It should not be said that the Insull companies were representative of the utilities of the U. S. I do know, however, that I have talked with Mr. Insull and that two years ago, he spoke with righteous indignation of the abuses. He spoke of the crying conditions in the handling of utilities, of the need for conscientious good judgment. I have discussed the subject with him and heard these expressions of righteousness from his own lips. One of my associates—I do not mean one of the directors of the TVA but another associate—was engaged for a time as an accountant, auditing the books of one of the large utilities. He gave up the [fol. 3720] job because he did not care to be in such a busi-

ness. He expressed his personal opinion that there is at least one other large organization in America which would compare in its management with the Insull companies. I am not certain but what there are others that would look somewhat the same if all the light were let in.

There are different kinds of management. Some of the companies are run with honesty and could show all their affairs to the public. In our own dealings, we have found decided differences of openness and fairness. There are some companies with which we could deal as with business men, with nothing to hide. Some are not open and above board. The President feels that in some way we should have an opportunity to know what power actually does cost. He has thought it would be a good thing to have a yardstick for power. One of his purposes in recommending the establishment of the Tennessee Valley Authority was to create a power yardstick. If the government can have a power project comparable in size to other power projects and can keep their accounts open and above board where everyone can see them, with *a* standard accounting methods and everything taken into consideration, we can begin to find out, first, whether the government can handle business [fol. 3721] efficiently; and second, if it can, what is a fair price for power?

We can argue about this for a long while. Perhaps a case will help us to settle the question. So we are in the power business. We have Muscle Shoals and Wilson Dam in operation. We are building two more dams—Norris and Joe Wheeler. We are already selling power to some extent, and I may say that in working with the power organizations in this region, we have found them cooperative. We have found a willingness to work along with us that has not been evident in certain other areas. Mr. Lilienthal has mentioned from time to time his pleasant experience in cooperating with the utilities in this region. We feel that we have been treated with fairness in agreeing with them. They may not want us in the power business, but since we are in it, we have found cooperation. We are selling power wholesale where we can. We have contracts with a number of communities to furnish power for them to retail. It takes quite a while to overcome all the obstacles when we try to work out such a contract. You have heard

COMPLAINANTS' EXHIBIT No. 844 (Excluded)

of our contract with the city of Tupelo, Mississippi, the first contract we made. Under our power contract with Tupelo, we sell them power for a little less than half what [fol. 3722] they were paying formerly. The city is retailing that power to its customers for a little less than half what the customers were paying formerly. The rates at which Tupelo sells power are about like this: 3 cents for the first 50 kilowatt hours; 2 cents for the next — kilowatt hours; 1 cent for the next 200 and after that the rate is 4 mills. (I am speaking from memory. This is in Mr. Lilienthal's field; he directs power development of the program; Dr. H. A. Morgan directs the fertilizer and agricultural program; and I am charged with the building of the dams and the general engineering projects, also the general supervision of the staff.) So the average cost for domestic use would get down as low as ¾ cent if a person would use about a thousand kilowatts.

It has been said that we have left the city of Tupelo to hold the bag—that we are selling the power at a reasonable wholesale price, but that the city will lose out in retailing it. We do not believe this is the case. Up to the present the city of Tupelo is keeping books as we have required. We have required the books to be kept in a certain way, using certain funds for operation, setting aside funds for amortization, for paying off the bond issue. Certain funds are set aside for depreciation, for surplus; and when these are taken care of, funds are set aside for taxes so that the [fol. 3723] plant will be paying regular taxes. All these things have been done. Last month, I think, for the month, the city had a margin of about 3,000, and this is a town of about 10,000 people.

[fol. 3724] COMPLAINANTS' EXHIBIT No. 845 (Excluded)

TVA Press Release of May 18, 1934.

The First Year of the TVA

(A Summary of Activities by the Tennessee Valley Authority From May 18, 1933, the Date of the Signing of the Tennessee Valley Authority Act, to May 18, 1934)

The close of the first year of the Tennessee Valley Authority sees Wilson Dam in "yardstick" operation, an ex-

tensive electrification program launched in Mississippi, Alabama and Tennessee; the Norris and Wheeler dams one-fourth completed and four additional dams projected; a $7,000,000 transmission line under way to further link these new sources of power; a demonstration fertilizer plant nearly completed at Muscle Shoals, and the great Tennessee River basin under the unified and planned control that President Roosevelt had in mind in creating the TVA.

Begun four months after the TVA directors held their initial meeting, the $34,000,000 Norris Dam, on the Clinch River near Knoxville, is now two months ahead of schedule. This great storage dam will be 253 feet high and 1,800 feet long, and impound 3,600,000 acre-feet of water with a shore of 800 miles. The $20,000,000 Wheeler Dam, 15½ miles [fol. 3725] above Wilson Dam in Alabama, will raise a 50-foot barrier 6,000 feet across the Tennessee River, backing its waters for a distance of 80 miles. Not authorized until October 13, 1933, Wheeler Dam operations proceeded so rapidly under the TVA organization, which by that time had been perfected, that unwatering the first cofferdam began exactly eight weeks from the day the first timber was driven. These dams will regulate the flow of water on the upper Tennessee and thereby increase the prime power of Wilson Dam, besides aiding navigation and flood control.

As a part of the development program for the entire river system, the Authority is surveying and doing other work preliminary to constructing run-of-the-river dams at Aurora, on the Tennessee-Kentucky border some 44 miles above the point where the Tennessee joins the Ohio, and at Pickwick Landing, in southeastern Tennessee near the Mississippi-Alabama line; a storage dam on the Hiwassee River, which empties into the Tennessee above Chattanooga, and supplemental impounding barrier somewhere on the French Broad River in the mountains of northeastern Tennessee.

Besides adopting a power policy and establishing rate schedules, the Authority has put into effect rules and regula- [fol. 3726] tions governing sale of its power. On October 27, 1933, it signed its first power contract with Tupelo, Mississippi. Since then it has entered into contracts to serve 11 other municipalities—Knoxville and Pulaski, Tenn.; Amory and Corinth, Miss., and Muscle Shoals, Florence, Athens, Sheffield, Tuscumbia, Decatur and Russellville, Ala.

COMPLAINANTS' EXHIBIT No. 845 (Excluded)

After three months of negotiations, the Authority acquired extensive private facilities in Mississippi, Alabama and Tennessee for initial distribution of Muscle Shoals power to as many as possible of the more than 200 municipalities which have applied for such service to date; has induced privately-owned utilities elsewhere in the area to make substantial rate reductions, and in northeastern Mississippi is embarked on the Government's first rural electrification program.

In popularizing the use of electricity, the TVA is aided by the Electric Home and Farm Authority, a supplemental corporation created by Executive Order of December 19, 1933. In cooperation with manufacturers and retailers, the EHFA on May 1, made low-cost electrical appliances available on long-term credit to Valley residents.

[fol. 3727] COMPLAINANTS' EXHIBIT No. 846 (Excluded)

TVA Press Release of May 21, 1934

Text of Addresses Delivered by Directors of the Tennessee Valley Authority over NBC Stations on May 21, 1934

Another issue is unified river control. The Tennessee River can be made to yield millions of horsepower, but if the various power plants are the unrelated work of "rugged individualism", there will be an enormous waste of power. For instance, if the power plants at Norris Dam and at Muscle Shoals are operated together, they will be worth more than twice as much as though they should be operated separately. The Tennessee River developed and operated as a unit can produce hydro-electric power at half the cost of unorganized development, with valuable by-products in flood control and navigation. Our nation must not suffer the waste which lack of planning of this great river system would cause.

At present two great dams are being built as part of this unified program. In the construction of the Norris Dam on Clinch River, and of the Wheeler Dam above Muscle Shoals on the Tennessee River, very rapid progress at very low cost is demonstrating that the Government can work with efficiency and economy. My fellow director, Mr. Lilien-

COMPLAINANTS' EXHIBIT No. 846 (Excluded)

[fol. 3728] thal, will discuss the power program of the Tennessee Valley Authority. • • •

By David E. Lilienthal:

Almost all of you who are listening in on this program of the NBC tonight have electricity in your homes. But the average household makes only a very limited use of electricity. The full benefits of electricity are enjoyed only by a few.

Electricity can relieve the women in twenty million American homes of much of the drudgery of housework. Electricity can make the home more comfortable and convenient. It is part of the job of the TVA to make electricity more widely available, to work out means whereby its full benefits may be enjoyed in the home of modest income. In the few remaining moments of this program, I want to tell you what we are doing toward this end in the Tennessee Valley.

Three barriers have stood in the way of a wider enjoyment of the benefits of electricity. First, the rates for service have been too high. The second obstacle has been the price of electricity-using equipment, such as ranges, refrigerators, water heaters, and other large appliances. And the third barrier has been a lack of knowledge of the mani- [fol. 3729] fold benefits of the electric home, and an understanding of all the ways in which electricity could be the servant of the average household.

The Tennessee Valley Authority is hard at work on a program to remove these three barriers to a wider use of electricity in the average home—the barrier of high rates, of high appliance costs, of inadequate knowledge of the uses of electricity. This program I can best describe by telling you of a concrete situation.

Down in northeastern Mississippi there is a remarkable little city of some 7500 people which will go down in history as the place where the average man and woman first really made full use of electricity. Tonight in the city of Tupelo these people are using current from Muscle Shoals supplied to them through the city's own electric distribution system. The TVA rates in effect in that city represent a reduction of sixty per cent. In April the homes of this town used fifteen per cent more; the stores used twenty three per cent more; the average use was thirty-five per cent more than a year ago.

COMPLAINANTS' EXHIBIT No. 846 (Excluded)

The people of Tupelo are demonstrating the TVA's point that really low rates will produce a tremendous increase in use, and is therefore not only socially desirable but also good business.

[fol. 3730] But unless these people in Tupelo who have a moderate income can buy electric appliances, the low rates will benefit them only in a limited way. Lower prices for standard quality electric home equipment are being worked out through an agency of the TVA established by order of the President. It is known as the Electric Home and Farm Authority.

With the cooperation of the leading electrical manufacturers of the country, the dealers, and the electric utilities, this agency has made it possible for housewives to own electric ranges, refrigerators, and water heaters at prices from twenty-five to thirty-five per cent lower than those heretofore prevailing. The increased volume of sales will result in a fair profit to the manufacturers and retailers, and a great benefit to the consumer as well.

The third point in the program—more complete knowledge of the uses of electricity—is being carried out in Tupelo this week, in the form of demonstrations in the best use of this great national resource. The home economics departments of the city, state and national governments are cooperating with TVA in aiding the housewife to learn what electricity can do to make her work less of a burden and her home more comfortable.

[fol. 3731] COMPLAINANTS' EXHIBIT No. 847 (Excluded)

TVA Press Release of January 22, 1935

Tennessee Valley Authority, Knoxville, Tenn.

What TVA Means to the Retailer

Advance Text, Remarks of David E. Lilienthal, Director, Tennessee Valley Authority, Before a General Session of the National Retail Dry Goods Association Annual Convention, January 22, 1936, 10:30 A. M., Hotel Pennsylvania, New York. * * *

One purpose of our sales is, of course, to help liquidate the investment which the Federal government has made in

COMPLAINANTS' EXHIBIT No. 847 (Excluded)

dams and other structures. But in addition, Congress specifically instructed TVA, in selling this power, to encourage increased use especially for domestic and farm purposes. This, we felt, could be done in only one way—by breaking the old stale-mate of high rates and low consumption and starting off with genuinely low rates, rates so low that they would bring about the increased use and lowered unit costs needed for successful operation.

To this end, our contracts with municipalities and co-[fol. 3732] operative associations contain not only a schedule of wholesale rates, but also the rates which the retailers agree will be charged the householder. These are often called TVA yardstick rates. These rates are low, though still not as low as we hope they may yet become. • • •

The publicity accompanying the launching of the TVA program aroused public demand for electric service. The Electric Home and Farm Authority, now on a national basis, assisted by providing lowered prices and easier finance terms for major electric equipment.

Similarly with electricity, the yardstick rates were designed to be low enough to produce volume, and they have done the job. Their influence is felt all over the country. • • •

[fol. 3733] COMPLAINANTS' EXHIBIT No. 848 (Excluded)

TVA Press Release of December 30, 1935

Advance Text, Remarks of David E. Lilienthal, Director, Tennessee Valley Authority, at the Annual Meeting of the American Historical Association and the American Political Science Association, Chattanooga, Tennessee, December 29, 8.00 P. M. • • •

In other words, the first duty of the TVA Board with respect to the surplus of power not used for government purposes is to sell that power, and use the revenues to help pay the operating costs and repay the investment in the project.

The Board has a duty to secure revenues. But in securing those revenues, the widest possible use of electricity, particularly in homes and on farms, is specifically laid down

as a policy to guide the Authority. Though the project must plan to support itself, the national policy is clearly one of maximum use, consistent with reasonable costs, not maximum financial returns. Some of the statutory language is unusually interesting and worthy of your study:

"The policy is further declared to be that the projects [fol. 3734] herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity."

In an interesting provision which I quote from Section 10, the statute expressly recognizes and emphasizes the deep social implications of electricity:

"That the Board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region." • • •

The component costs of producing and distributing electricity were to be recorded in such a way that they would [fol. 3735] form a useful and challenging basis of comparison—a yardstick of comparison—with costs in private and public operations in various parts of the country. In using such a yardstick of costs, due weight must, of course, be given to the underlying variables which affect every fair comparison of costs and rates.

But the yardstick is by no means a yardstick of costs alone. What TVA is doing on several fronts, pursuant to statute, furnishes equally useful yardsticks: for example,

yardstick of mass consumption (about which I shall speak in detail in a moment); a yardstick to determine whether good wages and superior working conditions will result in low unit costs in construction; the extent to which electricity on the farm can be so used to increase the farmer's income; a yardstick for the integrated control of waters throughout an entire major watershed. • • •

In the contracts with municipalities for sale of bulk power not only the wholesale rate but also the rates the city will charge the ultimate consumer that are usually referred to as TVA yardstick rates.

I am not going to take you into an involved and lengthy discourse on the theory of price and cost in the field of electricity. But one principle of pricing must be clearly [fol. 3736] recognized, or the entire social significance of the yardstick is lost: the rate charged for electricity, within wide limits, determines the cost. No yardstick rate for domestic electricity, at least in my opinion, is worth serious consideration unless it is based on this principle.

But how to get wide use and in turn low costs? The answer of the TVA yardstick is: Low rates; genuinely low rates. Low rates will bring increased use, and increased use results in low costs. There are limits, but they are far off.

Some critics of this yardstick principle say: We want to charge low rates, but we can't lower rates further until we can cut our costs, and we can't cut costs unless people buy more electricity. Your yardstick rates would probably work if people used twice as much electricity as they do, but until they do, such rates are impossible.

And with a few exceptions that is the answer, too of the rate regulatory commission. With an eye fixed by the law on present costs based on present consumption of electricity, the Commission says:

"We can't order genuinely low rates because the lower rates would be below the cost of distribution. When people use more electricity, such rates would be feasible." In other words, in the regulation of rates under the fair value [fol. 3737] theory, plainly the cart is before the horse. • • •

COMPLAINANTS' EXHIBIT No. 848 (Excluded)

I do not want to minimize the difficulties or over-simplify the problem. The orgy of utility financial malpractice has left the operating managements with a legacy of crushing capital structures. To ask a utility management carrying such a load to take a step involving even a few months' reduction of revenue is expecting a good deal. Nor is this all. The sedative of tradition and the deep, dark mystery with which rate experts have surrounded their cult are not conducive to an original re-examination of electric rates.

The difficulties are great, I grant, but the — stake is great—nothing less than the electrification of America. • • •

[fol. 3738] COMPLAINANTS' EXHIBIT No. 849 (Excluded)

TVA Press Release of April 10, 1936

• • • Financed by the PWA, Okolona, Mississippi, will complete approximately 40 miles of rural lines, some time in June, adding about 150 rural customers to its system. Okolona announced some time ago that it intends to electrify every farm home within 20 miles of that city. • • •

[fol. 3739] COMPLAINANTS' EXHIBIT No. 850 (Excluded)

TVA Press Release of April 13, 1936

Adamsville, Tenn., April 13.—Fifty-six miles of rural electric distribution lines operated in McNairy and Hardin counties, Tennessee, by the Alcorn County Electric Power Association of Mississippi, will be transferred on Tuesday, April 21, to the newly formed Pickwick electric membership corporation, it was learned here today. Assurance was given that there will be no interruption to service.

[fol. 3740] COMPLAINANTS' EXHIBIT No. 851 (Excluded)

TVA Press Release—Undated

Jackson, Tenn.—The Pickwick Electric Membership Corporation, recently established to distribute TVA power in rural areas, will put 70 miles of rural electrification lines in operation in Chester, Hardin and McNairy Counties, in west Tennessee, on April 21st, it was announced by E. R. Wall, TVA division engineer for West Tennessee. These lines will serve approximately 450 customers.

The lines were built for the corporation by the Tennessee Valley Authority and will bring electricity into areas which have never before had electric service.

In addition to these lines, the Pickwick Electric Membership Corporation has taken over 56 miles of rural distribution lines in McNairy and Hardin Counties from the Alcorn County Electric Power Association of Mississippi. These lines form part of the corporation's present rural network.

[fol. 3741] COMPLAINANTS' EXHIBIT No. 852 (Excluded)

TVA Press Release of July 23, 1936

The Aluminum Company of America today became the first contractor of industrial power generated at Norris Dam with the signing of a contract between the company and the Tennessee Valley Authority, it was announced at TVA offices here.

The contract was executed as TVA began first preliminary tests on the huge Norris generating units.

In addition to the purchase of industrial power, the contract provides that the Company will supply power to TVA for full construction requirements at Fowler Bend Dam, to be built by TVA on the Hiwassee River. The Authority will reimburse the Company for construction power by supplying an equal amount of power transmitted from Norris Dam to Alcoa, where the Aluminum Company plant is located.

Two transmission lines will be required. A 154,000-volt line will be constructed between Norris Dam and the company's plant at Alcoa, near Maryville, Tenn. A second line will carry power from Santeetlah Dam owned by the Aluminum Company to Fowler Bend damsite. Both lines

COMPLAINANTS' EXHIBIT No. 852 (Excluded)

[fol. 3742] are to be constructed by TVA, and each will be about 35 miles in length.

The contract calls for the purchase by the Aluminum Company of Norris Dam power in blocks not to exceed 20,000 kilowatts demand. Terms of the agreement dispose of a class of power which municipalities and other public agencies could not use, it was explained, since it will be available only after all other requirements have been met.

The contract describes this class of power as the Authority's "Surplus over navigation and flood control requirements and other loads and commitments."

The rate for power purchased by the Company is the regular TVA rate for transmitted secondary power.

June 1, 1937, is given as the date for initial power delivery to the Company. The contract will be in force for a period of four to six years, depending upon the construction time for Fowler Bend Dam. January 1, 1937, is given as the date for initial delivery of power to the Authority at Fowler Bend.

[fol. 3743] COMPLAINANTS' EXHIBIT No. 853 (Excluded)

TVA Press Release of August 7, 1936

David E. Lilienthal, director of the Tennessee Valley Authority, has been called to Washington to attend a meeting on August 12, of the Executive Committee of the American National Committee of the Third World Power Conference, of which he is a member. The World Power Conferences, which will bring to the United States engineers of importance from many countries, will meet in Washington September 7-12.

Concurrently will be held the Second Congress of the International Commission on Large Dams of the World Power Conference.

The purpose of the Conference, generally, is to consider how the sources of heat and power may be adjusted nationally and internationally. Harold L. Ickes, Secretary of the Interior, is chairman of the American National Committee.

While in the United States, the distinguished engineers will take advantage of an opportunity to study American dams and utility systems. Four separate groups are sched-

COMPLAINANTS' EXHIBIT No. 853 (Excluded)

uled to visit the Tennessee Valley to study work of the Tennessee Valley Authority. The first group will make its [fol. 3744] visit on September 2, 3, 4; the second on September 14, 15, 16; the third on September 21, 22, 23; the final one early in October, probably on October 3, 4, 5.

Three tours have been planned for the visitors in the Valley. One will take them to Norris Dam and the town of Norris; another will show them the construction activities at the Chickamauga Dam, near Chattanooga; the final one will be to the Muscle Shoals area, for a study of Wilson Dam and the TVA Fertilizer works.

[fol. 3745] COMPLAINANTS' EXHIBIT No. 854 (Excluded)

TVA Press Release of August 19, 1936

The Tennessee Valley Authority today announced the execution of an electric power contract with the Volunteer Portland Cement Company of Knoxville, Tennessee. Date of initial delivery of power is fixed at April 15, 1937.

The contract provides for purchase by the company of a maximum of 3000 KW. "firm or continuous power," for a period of ten (10) years. The Authority will deliver power at the Company's plant, situated in Knox County, near Knoxville, over a transmission line to be constructed by the Authority from Norris Dam.

[fol. 3746] COMPLAINANTS' EXHIBIT No. 855 (Excluded)

TVA Press Release of August 28, 1936

Cullman, Ala.—In cooperation with local electric appliance dealers, the Cullman County Electric Membership Corporation will sponsor a three day Electric Fair in this city beginning September 17th.

The fair will feature dealers' displays of equipment showing the many uses of electricity on the farm, both in the home and for general farm use, such as pumping water, grinding feed, heating hot beds, etc.

Cooking schools will be held during the fair, at which prizes, donated by the dealers, will be awarded. Prelim-

COMPLAINANTS' EXHIBIT No. 855 (Excluded)

inary to the fair, the corporation will hold a series of cooking schools in each of the fifteen rural communities in Cullman County, in which its network extends.

The Corporation's system of approximately 133 miles of rural electrification lines, built in conjunction with the Rural Electrification Administration and the Tennessee Valley Authority, is rapidly nearing completion, and a part of the network is already in operation. Approximately 690 [fol. 3747] farmers and consumers living in small villages have contracted with the corporation for power service. The farm communities which the corporation will serve include Fairview, Welti, Berlin, West Point, Guthrie Store, Longview, Headrick, Ebenezer, Simco, Baileyton, Crane Hill, Logan, Cataco, Jones Chapel, and Trimble. The corporation buys its power from the Tennessee Valley Authority and distributes it to consumers at TVA resale rates.

[fol. 3748] COMPLAINANTS' EXHIBIT No. 856 (Excluded)

TVA Press Release of September 19, 1936

The Tennessee Valley Authority has authorized a rural electrification project in four Mississippi counties—Clay, Oktibbeha, Noxubee and Lowndes—it was announced today. Points to be served will include the Mississippi State College at Starkville.

Approximately 200 miles of rural lines will be needed to serve 800 farms in the four counties. At the present time these farms do not have electric service.

The project will be submitted to the Rural Electrification Administration at Washington for approval of a loan to finance construction. Power is to be supplied from a 44,000 volt line connecting with the TVA srbstation at Okolona, Miss.

Sent for release to Saturday morning Papers, September 19, 1936.

Sent to: Roy Hutchins, Associated Press.
United Press.
Knoxville Journal, City Editor.
Johnny Moutoux, News-Sentinel.
Also wire sent to Hugh Warner, TVA, Tupelo.

[fol. 3749] COMPLAINANTS' EXHIBIT No. 857 (Excluded)

TVA Press Release of October 1, 1936

Power from the second generator at Norris Dam was turned into the Tennessee Valley Authority's 220-mile Norris-Wilson Dam transmission line Wednesday at about 2 p. m., C. L. Karr, head of the Division of Power Operations, announced today.

The two generators, first of which went into operation about August 6, were adding 46,000 kilowatts to the 110,000 generated by the six out of eight generators in operation at Wilson Dam, making a total of 156,000 kilowatts.

All available water was being used, the operations department reported, none being spilled through the sluiceways at either dam. The water level at Norris Dam was approximately at the point dictated for the date by the rule curve for operation of the dam.

October 1, 1936.

[fol. 3750] COMPLAINANTS' EXHIBIT No. 858 (Excluded)

TVA Press Release of October 12, 1936

The Tennessee Valley Authority announced today that the City of Athens, Alabama, the first city in Alabama to contract for TVA power, has also become the first to sponsor a county-wide rural network to bring TVA power to the surrounding farm areas.

Arrangements have just been completed, the announcement states, whereby Athens will acquire from TVA all of the Authority's rural lines in Limestone County, and, in addition, construct some 65 miles of new lines with funds borrowed from the Rural Electrification Administration. The result will be a combined rural system radiating out of Athens and serving a total of 649 farm customers on 135 miles of line.

Transfer of the TVA lines to Athens will be made on October 31, and arrangements for construction of the new REA lines will be undertaken immediately. The rural customers will receive power at the standard TVA resale rates, plus an amortization fee of 1 cent per kilowatt hour up to the first 100 kilowatt hours per month, which will be used to retire the cost of the lines.

COMPLAINANTS' EXHIBIT No. 858 (Excluded)

The City of Athens first began to receive TVA power for its municipal electric system on June 1, 1934, and since that time its electrical development under TVA rates has [fol. 3751] attracted nation-wide interest. Between June, 1934, and September, 1936, consumption of electricity doubled, and average home use increased threefold, from 51 kwh. to 151 kwh. On September 1, 1936, 78% of the city's customers had electric refrigerators, 35 per cent electric ranges, and 14 per cent electric water heaters.

During the period of TVA power service, the number of customers increased from 692 to 1,032. Addition of the rural system will bring the total to nearly 1,700.

The plan for extension of rural lines by municipal electric systems has been put into practice by a number of cities distributing TVA power. Within the past year, extensive rural systems were constructed by the cities of Dayton and Pulaski, Tennessee, and New Albany, Mississippi. An REA grant for 70-mile rural network has recently been received by the city of Holly Springs, Mississippi, and the cities of Bolivar, Milan, and Somerville, Tennessee, are all proceeding with surveys for rural lines radiating out of their municipal systems.

In a message to Mayor R. H. Richardson, Jr., of Athens, [fol. 3752] David E. Lilienthal, Director of the TVA congratulated the city on its action and stated:

"The program adopted by your city administration is one which should be of genuine value both to the city and the surrounding area. Our experience has shown that the greatest benefits of electric service may be obtained when town and country unite in a plan of economical distribution. The city of Athens has already demonstrated its leadership in electrical development within the city limits and we are glad now to see the city take the lead in a far-reaching program of rural electrification."

[fol. 3753] COMPLAINANTS' EXHIBIT No. 859 (Excluded)

TVA Press Release of October 17, 1936

Talk Before the Public Ownership League of America, Springfield, Illinois, October 16, 1936, by William I. Nichols, Director Division of Electrical Development

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COMPLAINANTS' EXHIBIT No. 859 (Excluded)

I can testify to you here tonight that this is the spirit in which the TVA is being administered—that this is the point of view of the hundreds of engineers and chemists and foresters and all the rest who are now gathered together in the Tennessee Valley from every state in the Union. They regard their program as a testing ground for the nation and their work is dedicated to the service of all the people. If by experiment in the Tennessee Valley it is possible to develop a set of simplified promotional electric rates, then it is to be expected that these rates will be applied elsewhere—and this has, in fact, been done with savings of tens of millions of dollars to consumers in all parts of the country. If by experiment in the Valley it is possible to develop improved and simplified standards for rural line construction, it is possible for them then to be adopted in other areas—and this also has been done, speeding forward the [fol. 3754] national movement for rural electrification. If by experiment in the Valley, it is possible to develop an improved phosphate concentrate, and better crop management, to save and enrich the soil, then these things also can be adopted elsewhere. Even where the TVA has made mistakes—and like every agency, public or private it has made mistakes—even then the country profits, in a sense, for this experience may eliminate similar and perhaps more costly mistakes elsewhere.

• • • • • • • •

Clearly the execution of such a program for an entire region—affecting portions of seven states, 40,000 square miles, and over two and one-half million inhabitants—is an enormous job and a complex job. Today, after little more than three years the Authority is employing over fifteen thousand men and women. In addition to Wilson Dam, it has completed two other great dams, Wheeler Dam and Norris Dam, and is operating an extensive transmission system. Four additional dams are under construction. One of the nitrate plants is now engaged in the experimental produc- [fol. 3755] tion of fertilizer for testing on demonstration farms, but not for sale. The work of reforestation, soil erosion control and rural electrification is moving forward over a wide front.

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COMPLAINANTS' EXHIBIT No. 859 (Excluded)

Out of these two has come also the third idea, which is this—that in the development of water control, water power, belonging to the people should be enlisted and marshalled in the service of the people.

[fol. 3756] COMPLAINANTS' EXHIBIT No. 860 (Excluded)

TVA Press Release of November 16, 1936

The TVA And Cities, by Arthur E. Morgan, Before Annual Meeting of United States Conference of Mayors, Mayflower Hotel, Washington, D. C., November 16, 1936

There is a steadily growing movement toward public ownership of electric power distribution. In the past 30 years the private power industry has organized large areas into integrated systems. As compared with having each small town or city operate a separate power distribution service, this organization of large distribution systems has great economies. Even if a dependable source of power is insured, it is not economical for each municipality to maintain its own research and mechanical staff, its own experts and its own adequate managing personnel. In the transition from private to public ownership of power distribution it is very important that the operating economies of the private industries shall not be lost. It is important that areas taken over from private to public ownership shall be of such size and of such characteristics that economy of organization and operation can be preserved. This will [fol. 3757] mean that single cities and towns, especially those of moderate size, cannot economically act alone. Efficient distribution areas should be organized, which commonly may include several cities and towns, and considerable rural area. For electrical distribution a city is not as a rule a normal unit.

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Electric power distribution by public ownership must be seen as a regional rather than as a municipal matter.

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COMPLAINANTS' EXHIBIT No. 860 (Excluded)

A system of large dams will create a very large supply of power. Such a power system is a complicated technical development, yet for the farmer who is relieved from pumping water for his stock, for the housewife who can wash and cook and sweep and preserve her food electrically, it means a great lessening of burdens and a simplification of living. As part of a multi-purpose development, power can be secured more cheaply than if the construction should serve power alone.

The unified control of the Tennessee River is the greatest project of its kind the modern world has known. It requires the storing of vast volumes of water during flood sea- [fol. 3758] sons, and the planned use of that storage during low water periods. It demands complex adjustments between up-river and down-river power plants, between navigation, flood control and power.

[fol. 3759] COMPLAINANTS' EXHIBIT No. 861 (Excluded)

TVA Press Release of March 23, 1937

An Economic Plan Versus Economic Planning in the TVA

Address by Dr. Arthur E. Morgan at the Annual Conference of Schoolmen's Week at the University of Minnesota, Tuesday, March 23 at 9:45 A. M.

Then, also, the Tennessee River has large possibilities for hydroelectric power. It is not only desirable but necessary to combine power development with flood control and navigation. The damsites which are most suitable for power development also are necessary and the only good ones available for navigation and flood control. It is cheaper to secure those three objects together than to work them out separately.

Even considered as a power project alone the unified control of the Tennessee River transcends private initiative. If different private companies should build independent projects on different parts of the river system there would be a lack of that integration which makes for the most economical power development.

COMPLAINANTS' EXHIBIT No. 861 (Excluded)

The Wilson Dam at Muscle Shoals on the Tennessee River [fol. 3760] is a "run of the river" plant. That is, there is very little storage above the dam, only enough to regulate the river for a day at a time. The flow of the Tennessee River varies greatly between high and low water. In high water periods there is enough water supply to generate more than half a million kilowatts of electric energy. During very dry seasons less than a tenth as much power can be developed. Now, as most of you know, it is only continuous power, or prime power as it is called, which has a high market value. Power which is available for only six or eight months in the year is worth but a fraction as much. Because the continuous power it will supply is so small, the Wilson Dam taken by itself is not highly profitable as a power development.

Hundreds of miles upstream on the Clinch River, a branch of the Tennessee, the TVA has built the Norris Dam and power plant, which is of a very different character. This dam forms one of the world's largest reservoirs, which will store almost a year's flow of the river above. During the winter and spring, when there is enough or too much water in the river below, the Norris Dam is closed and the water [fol. 3761] stored. Then during the dry season it is used to make power when power is most valuable, and when the Wilson Dam has the lowest supply. But that is not all. The water which passes through the Norris Dam power plants flows down river to Wilson Dam and about doubles the low water supply there. There are eight present and prospective dams in the TVA program on the Tennessee River below the Norris Dam, and the water released from the Norris Dam in very low water will about double the power at each of the dams below. The Norris Dam taken by itself would not be a highly profitable power development, but when we consider how it can be regulated to about double the prime power supply at eight other dams downstream, we can see the value of a single integrated power system for the entire river.

There are other benefits of an integrated system. For instance, the Chickamauga Dam, now being built by the TVA on the Tennessee River, is primarily for navigation, but will develop power as well. It differs from Wilson Dam below in that it has a relatively low head, about 50

COMPLAINANTS' EXHIBIT No. 861 (Excluded)

feet at ordinary river stages. In flood season it is almost drowned out and will produce no power, while in very [fol. 3762] dry seasons it also could by itself produce little power. Wilson Dam below is a high dam. Not only is its power not reduced during floods, but those floods supply water for a very large increase in the amount of power which can be generated. Therefore, in high water seasons when the Chickamauga Dam is drowned out and can supply no power, the Wilson Dam has an abundant supply, while in very low water when Chickamauga Dam would have little power, the Norris Dam will turn down water and double its power output. Thus these three dams which taken separately would not be highly profitable investments for power, when they are operated together as a single system, will develop more than twice as much prime power as the sum of the three operated separately. That is only the simple beginning of a great system of interrelated dams on the Tennessee River and its tributaries. Taken all together and owned and operated as a single system, a great variety of economies can be secured, and the combined value is far greater than though the different units should be owned and operated separately.

[fol. 3763] COMPLAINANTS' EXHIBIT No. 862 (Excluded)

TVA Press Release of November 28, 1935

Tennessee Valley Authority, Knoxville, Tennessee

The Tennessee Valley Authority today made public a statement of David E. Lilienthal, Director in charge of electricity operations, addressed to E. O. McLean, Chairman of the Bedford County (Tennessee) Rural Electrification Committee, in answer to the following telegram from Mr. McLean:

"THE FARMERS OF BEDFORD COUNTY HAVE PUT FORTH MUCH EFFORT TO ORGANIZE AND BUILD A COOPERATIVE RURAL DISTRIBUTION SYSTEM AND PURCHASE POWER FROM THE TVA STOP MANY OF US ARE FEARFUL THAT THE BUILDING OF SPITE LINES BY THE TENNESSEE ELECTRIC POWER COMPANY MAY CAUSE THE

COMPLAINANTS' EXHIBIT No. 862 (Excluded)

TVA TO ABANDON OR WITHDRAW THEIR COOPERATION WITH THE BEDFORD COUNTY PROJECT STOP PLEASE ADVISE US THE AUTHORITYS ATTITUDE IN THIS MATTER."

E. O. McLean, Chairman Rural Electrification Committee.

[fol. 3764] Mr. Lilienthal's answer follows:

I have your telegram requesting a statement of the Authority's position and policy in its rural elect-fication program. Let me emphatically assure you, on behalf of the Tennessee Valley Authority, that any commitments we have made as to cooperation in the farm electrification program you and your neighbors have set up will be carried out in every detail. The directors of the Authority and our staff in the field who have been working with farmer organizations have recognized that within the past few weeks there has arisen a situation which threatens to destroy the farmers' plans and projects, to which you and your neighbors of Tennessee and Alabama have given so much in time and energy.

You recognize, as we have recognized, that the construction of what you term "spite lines" may destroy your own organizations for county-wide programs of farm electrification. Let me say to you and to every other farmers' organization similarly situated that the Tennessee Valley Authority, as an agency of the United States Government, will stand by you and your neighbors to the limit, to protect your farmers' organizations from destruction by unfair tactics.

Congress, in creating the Tennessee Valley Authority, [fol. 3765] clearly defined the manner in which the Authority was to make use of the surplus electric power produced as a by-product at its navigation and flood control dams in the Tennessee River basin. To carry out this mandate of Congress and of the Administration, the Authority is required to give preference to state, counties, municipalities and to cooperative associations and non-profit organizations formed by people in rural areas.

The very nature of the Authority's entire program makes it of first importance that this surplus electricity be made available to all. In carrying out this policy in actual prac-

tice, special consideration has been given to the needs of rural areas. This policy and practice have been accepted with overwhelming approval by both town and country everywhere electricity has been made available. And as a result of this emphasis in the Authority's program, the whole question of rural electrification in the Valley has received remarkable stimulus. In those sections where TVA service is an immediate possibility, or where availability of power is likely in the near future, farm and town groups have organized themselves into associations and cooperatives to carry out their part of the electrification program. [fol. 3766] These groups have undertaken to survey their own lines, to perfect their own organizations, and to initiate negotiations with the Authority for electricity.

This movement has been participated in by the state legislatures, by the creation of state Rural Electrification Administrations, by the cooperation of Farm Bureaus, county courts, county agents and other agricultural agencies of the Valley.

TVA, as a public agency, has been requested to cooperate with these self-organized farm groups in rural electrification plans. In this work the Authority has maintained its policy of avoiding any duplication of service or any paralleling of existing lines. On this working basis the Authority has entered many rural areas and is now serving with electricity cooperative or town and country organizations in both Tennessee and Mississippi. In no instance heretofore has the Authority or a cooperative association constructed lines except to serve customers not previously served by any power company.

The urgency and necessity for determined steps toward rural electrification is apparent. Only a beginning has been made. We have just scratched the surface on this job. What you and your neighbors throughout the Valley are doing has grown out of the determination of the people [fol. 3767] of the Valley to obtain for this area the benefits of cheap electricity. It is a movement which has come from the people themselves, working through their own organizations.

Before the farmers' organizations and TVA started action to get power to farmers who have been denied it all these years, the private power companies had taken little

or no interest in these unserved rural areas. This orderly and successful drive for farm electrification is now threatened by certain hastily undertaken activities of a small number of private power companies. Perhaps this can be best illustrated by relating what has happened and what is happening in Dayton and in Rhea County in Tennessee.

The City of Dayton signed a power contract with the Authority September 12, 1934, and service was supplied beginning February 1, 1935. As a result of this contract there was an immediate interest in the possibility of line extensions from Dayton to adjacent rural areas in Rhea County. During the latter part of March a mass meeting of the farmers was held in Dayton at which time the City and the Authority were requested by the farmers to undertake rural service in Rhea County. On Monday, April 1, 1935, the Rhea County Squires met and prepared a resolution which [fol. 3768] formally expressed the desire of the rural residents relative to obtaining rural electrification and cooperating with the Authority to this end. Preliminary surveys were begun with a view of working up a rural electrification project for the county and these were presented to the Rural Electrification Administration with a formal letter of application on May 31, 1935. Due to the enthusiasm in the County it was found necessary to enlarge the scope of the electrification and a new survey was made. This was presented to the REA on October 2, 1935, with a request for additional funds. On October 17, 1935, news releases stated that the REA had tentatively approved the loan to the City of Dayton. On October 30, 1935, approximately thirteen days after the announcement of the loan and six days before the final approval that REA money was available, certain Tennessee Electric Power Company crews entered Rhea County and began construction along routes which had been previously surveyed for the rural electrification project of Dayton.

The Authority is now constructing for Dayton the lines originally laid out in the rural electrification project for Rhea County. If the Power Company pursues its present practice, there therefore will result a certain amount of [fol. 3769] line duplication in this County. The Authority is not going to break faith with the farmers with whom commitments for this service had been made. The Author-

ity's policy against duplication of facilities cannot be used to defeat the plans of the farmers' themselves who were unserved when their plans were made.

One of the fundamental principles of the Authority's policy in rural electrification is that lines be built and operated on a sound business basis. Sound public policy requires that lines shall include those closely-built sections which are profitable, as well as those more scattered sections where revenues are lower and costs per farmer somewhat higher. If the profitable sections of the area are taken away from the farmers' association by the private power companies the farmers in the rest of the area are left out in the cold and the whole object of widespread electrification defeated. If the power company had been able to take short pieces of these Rhea County lines, many miles would have been left without service and with no possibility of service in the future. Perhaps this is why you have called these power company over-night lines "spite lines."

What has been happening in Rhea County is not an iso- [fol. 3770] lated instance. It is cited in detail merely to point out the issues involved. Similar occurrences have taken place and are taking place in many parts of the Valley.

In general, there are three circumstances which should be given particular attention at this time.

First, is the long period of neglect of rural electrification by private power companies. It is only recently that companies in this region have taken any genuine interest in the field of general or widespread farm electrification. Their efforts have been restricted almost entirely to the construction of certain profitable lines near large load centers or concentrated areas of population. Even in this restricted program of rural line construction, the customers themselves were forced to pay a heavy price as their share in this construction.

Second, is the strange coincidence that the power companies are interested almost exclusively in these rural areas where TVA power is immediately or imminently available. A general rural electrification program of private power companies is, of course, to be applauded. But the present activities are not general and the program could hardly be

called one of widespread rural electrification. It seems a [fol. 3771] remarkable accident that the greatest activity of the private power companies has been in sections where some steps toward obtaining TVA power had been taken, and that this action in many instances has resulted in the construction of power company lines along exactly the same routes as laid out by cooperative farmer organizations to be supplied with power from the Tennessee River dams.

Third, is the fact that the power companies appear to be undertaking, not a general rural electrification program, but what will, in many places, amount virtually to a blocking of general rural electrification. This has been pointed out in the Rhea County instance. It is true elsewhere. The construction of a few miles of rural line, and the serving of a few farms at strategic points, can wreck the chances for ever having a soundly operated system of rural lines serving both sparsely and thickly populated sections throughout a county or area.

In viewing the whole question of rural electrification, it should be borne in mind that this problem reaches across the entire Tennessee Valley—across, indeed, the entire South. There is more rural electrification to be done in this territory than any one agency, any one company or a [fol. 3772] group of companies can do this year, or in the next three or four years. The field for rural electrification is almost unlimited. To get the job properly done will tax the abilities and capacities of every party concerned.

It is inescapable in the very nature of the situation that there will be farm electrification by cooperative groups, by municipally owned electric systems, by county associations and by private power companies.

Electricity is coming to the farms of the Tennessee Valley. Its coming is as inevitable as the coming of the day when the menace of destructive floods in the Valley will be a fear of the past. But this electrification of Valley farms, the bringing of electricity to rural communities, can be obstructed, can be made costly in labor and in money, can be delayed beyond all need for delay unless the farmers, the towns, the private companies and the public agencies find some just and reasonable basis for harmonious cooperation.

COMPLAINANTS' EXHIBIT No. 862 (Excluded)

In conclusion, in reply to your direct inquiry let me say this to the farmers of Bedford County and other counties where farmers have organized their own cooperative electric system: TVA has no intention of abandoning or with-[fol. 3773] drawing their cooperation with these projects. Furthermore, the Tennessee Valley Authority will stand shoulder to shoulder with the farmers' organizations in their efforts to secure electricity for the largest possible number of farmers.

Thank you for wiring me, and be assured that we are all deeply interested in the work you are doing.

David E. Lilienthal.

[fol. 3774] COMPLAINANTS' EXHIBIT No. 863 (Excluded)

TVA Press Release of May 30, 1934

Address of Dr. Arthur E. Morgan, Delivered Before the Central States Forestry Congress May 30, 1934

President Roosevelt was determined that the hydroelectric project at Muscle Shoals reach fruition; that it should be supported by additional developments. He was interested that the fertilizer project should go ahead, but all that might have been carried through as the sole purpose and intent of the legislation. The President, however, did not rest there. In his message to Congress forecasting the bill for the Tennessee Valley Authority, he said that the great development at Muscle Shoals was only a minor part, that he looked forward to a project for bringing industrial and social order out of the haphazard growth that had characterized our national life and that he hoped this region might be a case in which methods and policies might develop, with the prospect that if they should develop soundly and successfully here, these same policies might have wider application in other parts of the country.

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[fol. 3775] The Tennessee Valley Authority Act defines two or three very specific purposes and gives quite definite instructions for their fulfillment. One of these is the dis-

COMPLAINANTS' EXHIBIT No. 863 (Excluded)

tribution and sale of electric power. It is the opinion of President Roosevelt, I believe, that it probably would not be wise for the public to generate all the power in the United States. Within the last two years he has expressed himself to that effect. He believes, however, that the public utility business, so far as power is concerned, has not always been wisely handled; that there has been mismanagement; that there has been over-capitalization; that there has been undue political influence. There have been a good many methods that ought to be eliminated from large-scale industries in the United States. He has suggested that there be set up what he called a "yardstick" for power, an example of public ownership in generation, transmission, and distribution, where all the factors could be in evidence, where there could be complete and unquestionable fair analysis and records so that the public might discover, perchance, what is actually the necessary cost of power, and whether the public in reality can handle projects as effec- [fol. 3776] tively as private industry.

The Tennessee Valley Authority has made contracts for supplying a number of communities with electric current. Only one such contract is in actual operation as yet. One or two more will be in operation within a month, and about a dozen more contracts have been made which will go into operation as soon as legal processes can be completed. It was the attitude of the President, and it is the attitude of the Board of Directors of the Tennessee Valley Authority, that existing investments in electric power utilities should not be unnecessarily disturbed; that existing values should be recognized. And so it has been the policy of the Tennessee Valley Authority in acquiring an area in which to use this "yardstick", so far as possible, to come to amicable settlement with those who at present occupy the area.

We have, up to date, purchased considerable area and considerable plant and equipment from one of the large power organizations of the country. We are now distributing that power. The one municipality which so far has been using Tennessee Valley Authority power is the City of Tupelo, Mississippi. We have established rates there that are somewhat less than half of the rates formerly paid.

. . . . . .

COMPLAINANTS' EXHIBIT No. 863 (Excluded)

[fol. 3777] I am going to make one other observation with reference to power. The same law which proposed the generation and sale of power at Muscle Shoals by the Government, authorized the construction of the Cove Creek or Norris Dam on the Clinch River. Some of you visited that yesterday. The Wilson Dam power plant at Muscle Shoals taken by itself alone is not a profitable investment. It is not profitable alone for the reason that there is very little storage in the river above, and while in high water there is a very great supply of power, when the river is low that power drops off. Last summer it dropped down to less than 35,000 kw. capacity for the entire plant. In our wet winters it goes up to more than 500,000, a range of 1 to 24. Now you all know the value of power is the value of what we call "Prime Power", or that which is dependable. The power that is available for only part of the year has relatively little value, and for that reason the Muscle Shoals plant, taken by itself, is not a profitable investment.

On the Clinch River at Norris Dam we have another power project of a very different sort. There we have one of the greatest storage reservoirs in the world coming into being [fol. 3778] with a storage capacity of 3,000,000 acre feet. We can store the average year's flow of the river above that power plant, a drainage area of 2,000 or 3,000 square miles. But the Norris Dam power plant taken by itself would not be profitable. It cost about $250 per installed horsepower, and that is too much to pay for power. Neither one of these plants taken alone is a good investment, but taking the two together you have a very different situation. At Muscle Shoals the power available drops down very low for, say, three months in the year. After eight or nine months of reletively high water, we may have a dry spell in August, September, October,—when the river so nearly runs dry. With Norris Dam constructed it will be possible to store up water in Norris Reservoir throughout most of the year, then when the river below is very low, to generate power at Norris Dam at the time power is most needed. When that water has passed by Norris Dam, it will flow down to Wilson Dam at Muscle Shoals and go through that power plant also. We may use the entire year's flow of the river, possibly, in two or three months by letting it out just when needed. In that

COMPLAINANTS' EXHIBIT No. 863 (Excluded)

way we can raise the prime or dependable power at Muscle [fol. 3779] Shoals from say 25,000 or 35,000 kw. to 150,000 or 200,000 kw. This represents the value Norris Dam can add to Muscle Shoals. Not only to Muscle Shoals, but the same is true with every plant down the river below Norris Dam. There is room down the river for about eight power plants.

That same necessity for coordinating development extends throughout the Tennessee River system. Ultimately, it will be possible to develop four million hp. from the Tennessee River system. Possibly half of that will be along the main river; possibly the other half will be on the headwaters; but the reason such a large amount can be developed is that we can develop the headwaters and lower plants as one unit. By doing that, we can possibly cut in two the cost of producing hydroelectric power. And so we hold that the development of the water power of the Tennessee River ought to be a single integrated project and not a series of unrelated projects.

The Norris Dam is being built for power development, but that is not an end in itself. We do not develop power just so that there can be power development. We develop power to contribute to the well-being of the people in this [fol. 3780] region. It is only a mean- to an end. The object of building a dam is to provide power; the object of providing power is to raise economic and social conditions of a region.

* * * * * * *

It would please me very much to see industry growing up here, owned at home. We see public utilities with ownership a thousand miles away. We see the employees here getting their monthly salaries; we see the users of these utilities getting their monthly bills; and all the cream of profits goes hundreds of miles away. It seems to me that the absentee ownership investment ought to be getting a decent rate of interest and fair compensation so far as management is concerned, but otherwise the fruits of production ought to be staying in their own region, and there ought not to be a bleeding of one region to keep another, as has been the situation here.

[fol. 3781] COMPLAINANTS' EXHIBIT No. 864 (Excluded)

TVA Press Release of June 1, ——

The Tennessee Valley Authority Friday paid to the Mississippi Power Company the sum of $850,743 for the acquisition of the company's properties in nine counties in Mississippi. The counties are: Pontotoc, Lee, Itawamba, Union, Bonton, Tippah, Prentiss, Tishomingo and Alcorn.

The properties acquired by the Authority are those which have been under option since January. In the intervening weeks examination of titles and other legal work necessary has been carried on under the direction of J. C. Swidler, TVA power attorney, assisted by W. G. Roberds, attorney of West Point.

Assuming the ownership of the facilities in the nine counties conforms with the policy of the directors of the Authority, as announced by David E. Lilienthal, director in charge of power.

"The Authority is under duty to acquire a market for its power," he said. "It is authorized to compete with existing utilities, and for this purpose is expressly empowered to erect duplicate facilities. But no competing facilities have been constructed, and I am authorized to say that under the present Board none will be constructed, until every reasonable alternative has been exhausted."

Mr. Lilienthal said that the Authority will use the acquired facilities at the earliest possible moment.

[fol. 3782] COMPLAINANTS' EXHIBIT No. 865 (Excluded)

TVA Press Release of June 3, 1934

Residents of Corinth and Alcorn County, Mississippi, will receive an electric rate reduction averaging approximately 40 per cent and be enabled to acquire a debt-free electric distribution system in from eight to ten years under terms of a contract announced today between the Tennessee Valley Authority and the Alcorn County Electric Power Association.

Effective immediately, the contract places the Alcorn County Electric Power Association in business with a system purchased for $114,632.60, serving the entire county,

including the city of Corinth. There is a provision for construction of new rural electrification lines by the Tennessee Valley Authority up to 100 miles of lines. These may be taken over by the Association in the same manner as the present property is being acquired, at a total cost not to exceed $125,000. The power association is a non-profit corporation, incorporated under Mississippi laws.

Rates charged for city residential and rural service will be the same. They will equal rates now in effect at Tupelo, Miss. Installment payment made by members will pay for purchase of the system.

[fol. 3783] The property transferred to the association is a part of the city and rural lines acquired by the Tennessee Valley Authority from the Mississippi Power Co., privately owned utility which previously served this territory.

"This contract is a remarkable demonstration of cooperation between townspeople and farmers in Alcorn County," David E. Lilienthal, Tennessee Valley Authority director in charge of power, said today in announcing the contract. "It is concrete evidence of the mutual interests of town and county."

The association will receive power from the Tennessee Valley Authority, delivery being made at the Corinth substation.

As explained by Mr. Lilienthal, the Alcorn County plan will function as follows:

Purchase of the electric distribution system in Corinth and the county will be made by the Alcorn County Electric Power Association. All residents of the county are eligible to membership.

The association will pay city, county, state and federal taxes the same as any other private corporation. Purchase will be made without issuance of bonds.

[fol. 3784] Members of the association will pay installments according to benefits received from the Association—approximately according to the amount of electricity used by the member each month. These payments will be used for the sole purpose of clearing the system of all debt.

The association will sell memberships at $100, payable either $80 in cash, or $10 down, plus one cent per kilowatt hour for each kilowatt hour up to 100 kwh. a month, with a minimum monthly membership charge of 25 cents.

COMPLAINANTS' EXHIBIT No. 865 (Excluded)

Under this schedule, the user of 25 kilowatt hours in a month would pay a minimum bill of 75 cents, as at Tupelo, plus 25 cents membership installment. A user of 50 kwh. would pay $1.50 for current and a 50 cent installment.

For 100 kwh., the member would pay $2.50 for current and a $1 installment. Users of 200 kwh. would pay $4.50 for electricity and a $1.00 installment.

These membership payments are turned over by the association to the Tennessee Valley Authority in payment for the system.

"The residents of Corinth and Alcorn County recognize [fol. 3785] the importance of owning their own plant," Mr. Lilienthal said. "They further recognize the advantages of making the system pay itself out of debt so that debt charges will not be paid indefinitely.

"While the Tennessee Valley Authority is wiping out the debt charges on its Muscle Shoals properties, these people will be doing the same thing with their distribution system.

"The plan might be described in this manner:

"Everybody in Alcorn County pays the Tupelo rate—that's the rent on the house. But the people want to own the house, so all of them are going to chip in and wipe out the mortgage. In spite of low rates, the system will soon be paid for, and then the only expense will be bare cost of wholesale power, operation and repair.

"Each member will pay installments approximately according to the benefits in electricity he received. Under the present rates a surplus will be created. At the end of the purchase period, the installments will no longer be necessary and the surplus can be used in reducing rates further and members can begin paying themselves back the member-[fol. 3786] ship capital they have invested."

The contract pledges that the Authority "will, by every means within its power, seek to further the economic welfare" of Alcorn County "by fostering and promoting the increased use of electricity.

Management of the association will be in the hands of members, with supervision by the Authority.

Present electric customers who do not choose to join the association may continue to be served at the old Mississippi Power Co., rates.

COMPLAINANTS' EXHIBIT No. 865 (Excluded)

Revenues of the association must be distributed as follows:

First, to pay all operating costs, including taxes and maintenance.

Second, to establish a reasonable reserve for new construction and other contingencies.

Third, to clear the system of all debt, thus eliminating cost of debt.

Fourth, after indebtedness is wiped out, membership installments are to be reduced or eliminated.

Fifth, after these fees are eliminated, surplus earnings are to be devoted to further rate reductions and to repay members their original membership investment.

[fol. 3787] The following table shows a comparison between present rates and rates under the Alcorn Power Association plan using TVA power:

No. of kwh. Consumed	Cost at Alcorn Membership Rates	Cost at Present Corinth Rates	Savings
25	$1.00	1.85	$.85
30	1.20	2.40	1.20
40	1.60	2.68	1.08
50	2.00	3.50	1.50
60	2.30	3.80	1.50
70	2.60	4.10	1.50
80	2.90	4.40	1.50
90	3.20	4.70	1.50
100	3.50	5.00	1.50
150	4.50	6.50	2.00
200	5.50	8.00	2.50
290	6.40	10.25	3.85

Savings for users in the rural sections will be substantially greater than those in Corinth.

Signing of the contract between the power association and the Tennessee Valley Authority followed acquisition by the TVA of the facilities of the Mississippi Power Co. in nine northeastern Mississippi counties on June 1, for the sum of $850,743.00.

[fol. 3788] COMPLAINANTS' EXHIBIT No. 866 (Excluded)

TVA Press Release of June 12, 1934

Washington, June 12.—Combining electric range and refrigerator, a new kitchen unit designed for the TVA electrification program was accepted this afternoon by Director David E. Lilienthal at the Bureau of Home Economics laboratory, after formal inspection in which he was joined by representative Government officials, electrical manufacturers and dealers, and others interested.

Dual labor-saving services are contained in a compact space-saving unit which may be readily installed in the home. This latest product of the General Electric Company is made particularly for Electric Home and Farm Authority financing of consumer-purchase in parts of Alabama, Georgia, Tennessee and Mississippi where power rates are sufficiently low to encourage the tie-up. The unit, to be handled by regular dealer outlets, will retail at $—.

The General Electric Company is one of 24 concerns manufacturing some 50 electric ranges, refrigerators and water-heaters which have received the EHFA stamp of approval for marketing in the Tennessee Valley.

"The product typifies the spirit and the cooperation of the electric manufacturers," declared Mr. Lilienthal in ac-
[fol. 3789] cepting the pioneer model. "It is the answer to our request for cheap yet practical appliances to enable people of modest means to enjoy the advantages of electricity and at the same time utilize the energy to be created not only in the Tennessee Valley but in other parts of the country where gigantic waterpower developments are under way or projected. The combination of low cost current and appliances, we think, will open up new markets for manufacturers, and retailers, and benefit the utilities as a whole."

[fol. 3790] COMPLAINANTS' EXHIBIT No. 867 (Excluded)

TVA Press Release of June 13, 1934

Details of the Tennessee Valley Authority's efforts to protect the electric investor against the inevitable losses of competition are revealed in the attached exchange of correspondence between Director David E. Lilienthal, in charge of the TVA power program, and C. E. Groesbeck, Chairman

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

of the Board of the Electric Bond and Share Company, of New York.

Knoxville, Tennessee, May 28, 1934.

Mr. C. E. Groesbeck, Tennessee Public Service Company, [fol. 3791] 2 Rector Street, New York, New York.

DEAR MR. GROESBECK:

On November 25, 1933, the people of Knoxville voted to acquire or construct an electric distribution system. Thereafter the City entered into a contract with the Tennessee Valley Authority for the purchase of power at wholesale to supply such a distribution system. On March 3, 1934, representatives of the City of Knoxville offered to buy the distribution facilities of the Tennessee Public Service Company within the City of Knoxville. That offer was rejected by you. You pointed out that the Company should not be asked to sell its Knoxville properties without also selling the fringe properties and transmission lines outside Knoxville. These outside properties obviously the city could not buy.

In order to carry out the mandate of the electorate the city has proceeded with plans for the construction of an electric distribution system in Knoxville, to be supplied with power from the Tennessee Valley Authority. The plant will compete with the distribution system of the Tennessee Public Service Company in Knoxville.

Such duplication of facilities and territorial competition [fol. 3792] in the area of its operations the Tennessee Valley Authority has consistently sought to avoid wherever there was a reasonable alternative. Accordingly, the Board authorized me to indicate the Authority's willingness to purchase the electric facilities of the Tennessee Public Service Company, both inside and outside of Knoxville, such facilities to be thereafter sold back to the various municipalities in the Company's territory. These negotiations have been going on for three months, and have absorbed a large part of your time and mine. The Authority has had the assistance of our technical staff and, at the direction of the President, of an accounting investigation conducted by the Federal Trade Commission. Because the City of Knoxville is about to let contracts for the construction of the first

section of the proposed distribution system, it is essential that the negotiations between Tennessee Valley Authority and Tennessee Public Service Company looking toward purchase be brought to a conclusion.

On behalf of the Board, I have heretofore made you certain definite proposals for the purchase of electric property of the Tennessee Public Service Company. None of these offers has been acceptable to you. This letter constitutes a [fol. 3793] final offer. In order to do everything within reason to prevent a competitive situation in Knoxville and protect bona fide investors in useful property, the Authority's offer embraces not merely the Knoxville property but also all of the Tennessee Public Service Company's electric properties which are for sale; it also provides a means of putting the Company's street railway property on an earnings basis, in lieu of a continued deficit as in the past.

The Authority hereby offers to enter into a contract with the Tennessee Public Service Company, the details and phraseology to be agreed upon later, for the purchase of all of the electric transmission and distribution property of the Company, including substation facilities and real estate appurtenant thereto, office buildings and electrical supplies and equipment, but excluding the Company's 110 KV. transmission line extending from Waterville to Kingsport. This latter line you have indicated is not for sale. The Company is to retain generating facilities and real estate in connection therewith.

The Authority will pay $5,250,000 for the property in question, payable, at the option of the Authority, in cash upon delivery, or with not less than $1,500,000 cash and the balance payable over a period of not over five years. [fol. 3794] The Authority will pay 6% interest upon unpaid balances, but shall have the right to accelerate the payment of such balances.

As a part of the contract the Authority will agree to give its assistance in improving the revenues of the Company's local transportation system in and adjoining Knoxville, by undertaking to secure the active cooperation of the city of Knoxville in a joint program of ride-building. An increase in net income of $12,000 per year is estimated to result from such program. It will further use its best

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

efforts to induce the City to relieve the company of its present obligations to maintain and repair its track zone, with a saving to the Company estimated by your Manager of $35,000 per year. The Council Committee on Power, the Mayor and the City Manager have already expressed their intention of supporting these measures in the event of the sale of the electric properties. Furthermore, I am advised that if the street railway property, now running a deficit of $40,000 a year after depreciation, is written down from $4,000,000 to $3,000,000, that there will be an additional saving in the way of reduced taxes of about $22,000 a year, and there will be an additional saving in depreciation expense of $30,000 a year.

[fol. 3795] The Authority will establish an exchange point with the Company at Waterville, Tennessee, utilizing the Company's substation facilities at that point for the purpose, and will enter into an interchange agreement which will provide for mutual stand-by service at such point. The Authority will agree to transmit for the Company, at Waterville to an agreed point in Knoxville, such power as the Company may need for the operation of its transportation system, without charge for the transmission, but with a reasonable allowance for line losses. Should the Company prefer, the Authority is willing to supply its energy requirements for transportation purposes at the Authority's standard rates, representing an annual saving to the railway of about $10,000 under present costs.

I take it it is not appropriate that in this letter I go into the details of the basis for the foregoing offer which we have discussed in such detail. The essential facts are as follows.

The undepreciated rate base of the Whole Company as fixed by the Tennessee Railroad and Utilities Commission is approximately	$12,000,000
[fol. 3796] The transportation properties are in the rate base at	4,000,000
This leaves a balance for electric properties of	$8,000,000
You retain the Waterville-Kingsport transmission line (a self-supporting unit) which is in the rate base at	1,300,000
Leaving a balance of electric property of	$6,700,000

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

You have on your books a minimum of property not used or usable, plus superseded property of	700,000
Leaving a total for electric properties of	$6,000,000
You have on hand cash and cash items of $1,700,000 of which there is available for these purposes not less than	$1,200,000
Leaving a balance of	$4,800,000
Against which you have our offer of	$5,250,000

Or we can state the proposition in another way: We are offering to buy all your electric property which you are in a position to sell at a price which covers the very maximum of the value on which you have been earning a return, [fol. 3797] which rate base has been accepted by the Company and has been the basis of its operations. The Company is left with a transmission line which is self-supporting under a guaranteed income provided by contract between the Carolina and Appalachian Companies. As to the street railway, we are proposing a plan in cooperation with the City which, for the first time in many years, will take that property out of the red and give it substantial earnings. At the present time it is subsidized by electric users, contrary to law.

Looking at the matter from the point of view of your capitalization, we have this situation: You have a total capitalization of $17,780,000; $7,780,000 in bonds, $5,000,000 in preferred stock, 85% of which is held by National Power and Light Company, and $5,000,000 in common stock, all of which is held by National Power and Light Company.

According to the report to the President of the United States of the Federal Trade Commission's accountants, the difference between your capitalization and the rate base is accounted for by certain write-ups effected at the time of the re-organization of this Company late in 1930. This [fol. 3798] report indicates that as between October 30, 1930, and the following day, November 1, 1930, without any addition to property, the assets were written up $4,560,442.34. This write-up, together with other appreciation of property at the time of the re-organization, totals $4,945,117.78. With the elimination of this write-up by writing off

the common stock of $5,000,000, there is close agreement between your capitalization and the rate base of $12,000,000. Inasmuch as the Tennessee Valley Authority's offer of $5,250,000 is a fair one as measured by the rate base of $12,000,000, it is also, therefore, a fair one as measured by the capitalization after write-ups have been eliminated, i. e., about $12,000,000.

This offer is contingent on the ability of the Authority to negotiate a satisfactory contract with the City of Knoxville whereby the City engages to acquire the distribution system within its corporate limits.

The City of Knoxville, as you know, is engaged in the preliminary work of constructing its own distribution system. The City has advised that by June 15 it will be required to make extensive commitments to contractors which will preclude the possibility of purchasing the existing plant. [fol. 3799] In view of the public demand in Knoxville for a publicly-operated electric system, it is imperative that this matter be disposed of promptly. The offer made in this letter will, therefore, expire on June 14, 1934.

The right of the people of Knoxville to serve themselves with electricity, and to become part of the President's "yardstick area" is surely not open to doubt. The foregoing proposal gives effect to that right, and yet protects the electric investor against the inevitable losses of competition.

Very truly yours, Tennessee Valley Authority, by
David E. Lilienthal, Director and General Counsel.

DEL.JH.

National Power & Light Company,
Two Rector Street,
New York

June 8, 1934.

Mr. David E. Lilienthal, Director and General Counsel,
Tennessee Valley Authority, Knoxville, Tennessee.

[fol. 3800] DEAR MR. LILIENTHAL:

This will acknowledge receipt of your letter of May 28th in reference to the purchase by you of certain property now owned by the Tennessee Public Service Company. The de-

lay in answering is due to the fact that it did not reach my office until May 31st and the week-end prevented us from holding a meeting of the Board of Directors of National Power & Light Company until Monday of this week. This Company has a large investment in the Tennessee Company. We wished also to give your letter the deliberation it deserves because the acquisition which you propose that the Federal government should make may well be, and perhaps must be, a precedent for the future, and precedents should be as carefully established as they are likely to be regarded.

At the outset permit me to state that we appreciate the spirit of cooperation with which you have approached this difficult problem. As I have many times said to you, we are desirous of cooperating with the Government's Tennessee Valley Experiment to the greatest possible extent but in so doing we must perform the duty with which we are charged in protecting the large number of investors who have actually invested their money in the securities of the Ten- [fol. 3801] nessee Company all of which securities were issued with the approval of duly constituted and lawful authority.

We freely admit the right of the people of Knoxville to serve themselves with electricity and to become part of the President's "yard-stick area." However, consideration should be given to the following facts regarding the Tennessee Public Service Company and those who have their money invested in its property. The Tennessee Company owns and operates electric distribution properties and a street railway system in Knoxville, electric distribution properties serving some twenty-four communities and a considerable number of rural customers elsewhere in Eastern Tennessee and an extensive transmission system for supplying hydro-electric power to these properties. All of these properties comprise a single corporate and physical entity. All have been financed through one capital structure and all are subject to the same mortgage. The property is operated as a unit and in order to fulfill the obligations to the public to render dual electric and transportation service these properties can best be operated jointly, whether [fol. 3802] such operation be under governmental or private auspices. The transportation business in Knoxville in itself

is not self-supporting nor is the electric business by itself in some of the small communities and rural districts.

The Company is a going concern with a long and successful history behind it. It is rendering the best service to its customers at reasonable rates approved by the State Commission and is paying its bond interest and earning a return for its stockholders. Except for the situation which has arisen through the activities of the Tennessee Valley Authority in the territory, supplemented by the agreement of the Public Works Administration (another agency of the Federal Government) to provide the City of Knoxville with $2,600,000 ($600,000 by way of gift and $2,000,000 on loan at 4% interest) with which to build a competing electric distribution system in Knoxville, there is every reason to believe that the Company could and would continue to live and prosper. Large amounts of money have been invested by a great number of people in this Company in reliance upon the protection of the laws of the United States and the State of Tennessee. There is every reason to believe that the street railway situation could be worked out over a reason-
[fol. 3803] able period of time to the satisfaction of all concerned and that these security holders would continue to receive a fair return upon their investments were it not for the activities of the Tennessee Valley Authority and the competition made possible through Federal funds. The Company is not a willing seller and it seems to us that if the Federal government desires to change the sotuation and that the electricity served in the territory by governmental agencies it should in all fairness return to these investors the money which they have invested. Under the extraordinary circumstances surrounding this case we have not at any time suggested that you do more than provide for the bonds and preferred stock of the company.

You have offered to purchase for $5,250,000 a large part of the Company's electric property. This offer, entirely aside from its adequacy, will not pay off the bonds. Your counsel, as well as our own, agree that this must be done before the properties you desire to purchase can be released from the lien of the two mortgages. Until these properties are so released we are at a loss to understand how we are in a position to sell them to you. Even if the price were fair
[fol. 3804] and it were possible to accomplish the release

from the liens of the mortgages, the Company would be deprived of its best properties and would be left with property which even with your helpful suggestions as to relief as to the railway, we feel will be unprofitable.

We appreciate and our security holders must likewise appreciate the situation in which they are placed and that they are faced either with ruinous competition made possible by agencies of the Federal government or with selling at such price as you may offer. Under the constraint of these circumstances we repeat again that in a desire to cooperate to the greatest extent possible with the Government's Tennessee Valley program we are prepared to evacuate the territory served by this Company, so that you may conduct your experiment unhampered by competition, provided our security holders are dealt with fairly.

We know it is the desire of yourself and the Federal government to deal with those security holders fairly and justly, but we think the offer you have made does not accomplish this end as it will not even pay off the bonds much less allow anything for the preferred stock.

[fol. 3805] There are some points in your letter of May 28th that should be clarified.

First. We think that it should be recorded that the construction of the proposed competing system in Knoxville is made possible only by the grant to the City of Public Works Administration funds to the extent of $2,600,000, of which $600,000 is an outright gift and $2,000,000 a 4% loan, and also that the offer of the City to buy the Company's local distribution system was not in cash but in bonds which at the time were quoted in a very limited market at about 75% of par. This offer was impossible of acceptance because it would take for an inadequate price the principal source of the Company's revenue and leave it with its unremunerative property.

Second. There seems to be a misunderstanding as to the Company's 110 kv. transmission line extending from Waterville to Kingsport. We offered to sell you all of the property of the Company or all of the stock of the Company owned by National Power & Light Compan . We are willing to sell you this transmission line along with the other property you indicate.

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

Third. We think our security holders should know some-
[fol. 3806] thing of the permanency of the street railway arrangements you suggest and what is meant by your offer to put it on an earnings basis, that is, will it merely pay operating expenses and no more or on what investment will it earn interest. For how long will the City agree to the reduced taxes of $22,000 a year and to relief from repair to track zone? They should likewise be informed of the length of time the Authority is willing to transmit power for the operation of the Railway system, and if the Company accepts your offer also to supply such power, for how long a time and on what terms the Authority will supply it.

Fourth. We notice that at your option you can pay us in cash either at one time or in deferred payments. As you are somewhat familiar with our mortage problems we assume you intend that the mortgages will remain a lien on the property until the final payment is made. However, I think our security holders should be definitely informed as to this and as to how you propose to take title and operate these properties until final payment.

Fifth. Our computation of the electric rate base is different from that contained in your letter and is as follows:

[fol. 3807] The rate base of the whole Company at December 31, 1933, exclusive of $500,000 working capital was $12,123,576

Deducting the transportation properties which are in this rate base at 4,042,606

Leaves a balance for electric properties 8,080,970

To this should be added the electrical supplies and equipment on hand covered in your offer and not included in any of the figures above of approximately 100,000

Total of 8,180,970

Less the amount of miscellaneous property included in the electric rate base excluded from your offer 700,000

Leaving a total of 7,480,970

If the Waterville-Kingsport transmission line is retained (although we again renew our offer to sell) it is in the rate base at 1,292,334

Leaving a balance of 6,188,636

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

Against which we have your offer of..... 5,250,000
Or less than the rate base of the property which you propose to buy by..... 938,636

[fol. 3808] From the foregoing it will be seen that your offer for the property you desire to acquire is almost $1,000,000 less than the rate base and does not give the company an excess of $450,000 as computed by you.

We do not understand why in your computation you deduct the $1,200,000 cash from the rate base since this money has no relation to the property included in the rate base nor does any of it represent or stand in lieu of any of the property included in the rate base.

Sixth. You state that the Waterville-Kingsport line is self-supporting. The contract which makes this so expires on December 31, 1938.

Seventh. The transportation system is necessary to the city of Knoxville. In the public interest it can best be operated jointly with the electric property whether such joint operation be conducted under governmental or private auspices. The Tennessee Commission and the Company have in the past deemed it in the public interest to treat the electric and street railway properties together, this policy having been pursued in cases affecting other companies. This had been done by this company pursuant to the wholesome policy of the Commission and, we are advised [fol. 3809] by counsel, is not in any sense illegal or contrary to law as suggested in your letter.

Eight-. You make reference to the capitalization of the Company and to a recent investigation by the Federal Trade Commission and in this connection you refer to "certain write-ups." At the time of the re-organization in 1930 the plant accounts were restated to reflect the values determined by an independent valuation engineer, which values were substantially in agreement with a detailed inventory and appraisal made in 1920 by engineers for the State Commission and the Company, plus actual cash expenditures for improvements and betterments from then until the date of re-organization. Also National Power & Light Company, at the time of the re-organization, put $1,000,000 in cash

into the Company, in addition to its large investment already made so that at the date to which you refer the capitalization was in accord with the value of the assets. The facts as to capitalization have been before the Authority since the early stages of our negotiations. The re-statement of plant accounts (so-called "write-ups") at the time of re-organization was entirely justified and proper and furthermore it has no bearing on and is not pertinent either directly or collaterally to the negotiations now at hand since [fol. 3810] at no time have we ever suggested anything more than that the investors in the bonds and preferred stock be taken care of.

Ninth. We think the security holders should be informed as to what provision is to be made for cancellation of contracts, leases, and all other items that must be settled on account of the closing down of the Company's electric business, and the disposition of property jointly used by the electric and transportation departments some part of which is included in the rate base of the transportation properties. Among these contracts is a power contract with the Carolina Power & Light Company under which the Tennessee Company will be required to pay an amount equal to the two-year minimum in order to effect the cancellation of this contract. This minimum is $534,000 for each year, less such power as the Company may require during the year for the operation of its remaining properties. If the Tennessee Company avails itself of the offer of the Authority to sell its power for railway purposes, the Tennessee Company would be obligated to pay the Carolina Company the full specified two-years minimum. This payment is required by [fol. 3811] the terms of the contract and does not cover the loss to be sustained by the Carolina Company through the permanent severance of this business.

* * * * * * *

If the holders of the bonds or the preferred stock of the Tennessee Company are to be confronted with the necessity of accepting less than the amount of their investments or with facing destructive competition, then there would seem to us to be open for consideration the following alternative lines of procedure.

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

I

Tennessee Public Service Company might take the necessary corporate action as rapidly as possible, which should not require more than about two weeks, to give you an option for a reasonable period to acquire all of its electric properties, including the Waterville-Kingsport line, (with some reasonable reservation for the transmission of power over it), the power house and material and supplies having a rate base of $8,180,970, in return for disposal by you of all of the Company's bonded indebtedness of $7,780,000 principal amount. Without exceeding the redemption price of the bonds you would obtain complete and practically immediate control of the situation (you in the meantime to cause [fol. 3812] that status quo as respects competition and preparation for competition to be preserved.) In carrying out the program we think it would be unnecessary for the Authority to take ownership of the bonds.

While the stockholders of the Company (after discharging the obligation to Carolina Power & Light Company under the existing power contract) would be left with only a small part in value of their actual investment, nevertheless in order to avoid the consequence of competition with which the security holders are threatened, we would propose to the stockholders that they approve the transfer to you of the properties upon cancellation through your efforts and at your expense of all bonded indebtedness. The responsibility for dealing with the bondholders shall be solely yours.

II

If the foregoing is unacceptable to you, then we suggest, in view of the precedent to be established here, its far reaching effect on security holders generally and the difference between us, both as to figures and basic principles involved, that, with the approval of our security holders, the whole matter be submitted to arbitration—you to appoint one arbi- [fol. 3813] trator, we to appoint one and the third to be appointed by the Chief Justice of the United States.

If our security holders are to be confronted with accepting the $5,250,000 which you propose, or with facing destructive competition, then we believe that the problem must be taken

directly to the security holders, as obviously the Board of Directors of the Company could not, even if it were so disposed, give away any of the assets of the Company.

It is, we believe, the opinion of your counsel, as well as our own counsel, that the properties which you propose to purchase cannot be released from the mortgage liens, except by complete discharge of the two mortgages. Since the amount you offer is not sufficient to discharge the bonded indebtedness of the Company, the desired properties could not be sold to the Company's bondholders' committee. While such an organization could probably be started reasonably promptly it would require some time and expense to comply with the Federal Securities Act, to procure the necessary deposits of bonds and to get the necessary binding acceptance from the bondholders.

[fol. 3814] The stockholders would also have to be dealt with. If any proposition were submitted to them which would leave little or nothing for their investment, there is considerable question as to whether or not those who might be asked to vote stocks held by corporations, trust estates, institutions, etc. could legally vote in favor of the proposition and there is the practical question as to whether or not individual stockholders could be induced to vote their stock for a proposition which would in effect wipe out its value. So far as the National Power & Light Company is concerned, the legal question presented might be met by acting upon a vote of instructions from the stock of the National Company held by the public. Whatever the detailed procedure might be, it would be of course necessary to have action by the stockholders of Tennessee Public Service Company and it would be essential to work out some plan which could, as a legal and practical matter, get the necessary stockholders' approval.

We realize that this situation presents a perplexing problem to you as well as to ourselves and we sincerely hope that the suggestions herein may form the basis for a solution of the situation which will not entail too heavy a sacrifice [fol. 3815] on the part of the security holders.

Yours very truly, (Signed) C. E. Groesbeck.

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

June 12, 1934.

Mr. C. E. Groesbeck, Chairman, Board of Directors, Electric Bond and Share Company, 2 Rector Street, New York, New York.

DEAR MR. GROESBECK:

This will acknowledge receipt of your letter of June 8 replying to the Authority's letter of May 28 wherein an offer was made for the purchase of properties of the Tennessee Public Service Company.

The attitude expressed in the early pages of your letter toward the agencies of the public which are involved in this situation disturbs me a great deal for it may be a greater barrier to an agreement than the controversies respecting dollars and cents. You refer to the activities of the Tennessee Valley Authority in the area and to the loan and grant to the City of Knoxville by the Public Works Administration very much as if these two agencies were outside interests plotting the destruction of your business. [fol. 3816] You seem to forget that both the Tennessee Valley Authority and the Public Works Administration are instrumentalities of the people of the United States; that their activities which you thus decry are in execution of policies of the entire nation formulated under the constitution by the President and the Congress.

To my mind it seems clear that the public interest must come ahead of every other interest of whatever kind or character. Fairness to private investors is, however, an essential of sound public policy and our offer is based on this promise. Anxious as I am to keep these negotiations strictly on the plane of facts and figures I can not pass over the statements in your letter which depart from this basic principle without recording my earnest and vigorous disagreement. You offer to sell the Waterville-Kingsport 110 kv. transmission line. The Authority is willing to include this line in its offer at the cost to you of $1,292,000. This is on the understanding, however, that the contract for the use of this line by your affiliate, Carolina Power and Light Company, whereby Tennessee Public Service is compensated for the use of the line, shall be assigned to the Authority for the balance of its term on the same terms and

conditions. This makes our offering price $5,250,000 plus [fol. 3817] $1,300, for this line or a grand total of $6,550,-000.

In round numbers with your cash on hand of $1,700,000 you will have cash of $8,250,000, enough to pay off all the bonds at par with a substantial balance for stockholders, of cash and of operating property. This remaining property under our plan will be on a basis of net earnings after expenses and depreciation.

You and I have spent many days in the past three months during which you have been most patient and courteous discussing what would be an adequate price for these properties. It would be pointless for me to record here our reasons for believing the Authority's offer as here supplemented a reasonable one or to answer in detail each of the many points raised in your letter of June 8. I should emphasize, however, that the rate base of the total property $12,000,000, discussed in our letters is undepreciated. The fact is, of course, that the property has depreciated since the items were installed and is worth less than when new. The accrued depreciation on the property as a whole is not far from twenty per cent which on the rate base figure of $12,000,000 means that $2,500,000 is to be deducted in de-[fol. 3818] termining present value. I need not here make similar computations as to electric property only, nor on different conditions per cent. The point is that our offer on a property basis is fair to the company.

The Board disagrees with your conclusions as to the relation of the street railway and electric businesses. I have gone over this with you and your associates at such length that I see no point in again setting out our reasons. The fact that your Company has not in past years made provisions for the foreseeable obsole-cence and ultimate retirement of this property out of current operations as other utilities all over the country have done offers no reason why the Federal Treasury should now accept the responsibility to bail out this white elephant. The offer of the City to abate the Company's track zone maintenance and repair obligations and the suggestion toward lessening the tax burden I understand from representatives of the city are to be permanent. The Authority's offer respecting power supply is for any reasonable period you may suggest,

COMPLAINANTS' EXHIBIT No. 867 (Excluded)

not to exceed ten years. The rates are the Authority's standard wholesale rates to industrial customers, copy of which your Mr. Root has in his files.

[fol. 3819] You have correctly pointed out that the method of payment set out in our letter of May 28 introduces some complications. On tender of conveyance satisfactory to our counsel the Authority is ready to pay the entire purchase price in cash. If expected appropriations are made available this letter supplements the Authority's offer of May 28 and is extended on the same conditions as are set out in that letter, except that the date of expiration of the offer is extended to include June 20, a week from your receipt of this offer.

The Tennessee Valley Authority has entered into these negotiations in an effort to find a peaceable and constructive way of carrying out a public purpose, a national policy declared by the people of the country through their President and their Congress.. We trust that your letter setting up as it does an unacceptable proposal and an unacceptable principle does not mean that these efforts toward peace be abandoned.

Very truly yours, Tennessee Valley Authority, by David E. Lilienthal, Director and General Counsel.

[fol. 3820] COMPLAINANTS' EXHIBIT No. 868 (Excluded)

TVA Press Release of June 22, 1934

Jackson, Tenn.—June 22—The Tennessee Valley Authority not only is working toward a better balanced economic life for the Tennessee area, but it is as well pointing the way toward a better balanced economic life for the nation, David E. Lilienthal, Director in charge of power for the TVA told a mass meeting of civic leaders from several West Tennessee cities here today.

"The Tennessee Valley project translates into concrete form a vision of President Roosevelt," he said. "The project was born in his mind, and it is being carried forward under his guidance. It is part of a program for national development. It is not a local project. Its implications extend to the outermost reaches of this country.

COMPLAINANTS' EXHIBIT No. 868 (Excluded)

It is this objective that justifies the huge expenditure of Federal funds in one section of the County."

Creation of the Authority, he said, is a great tribute to the South, but he added that at the same time it is a challenge to the South.

"It is a challenge," he said, "because it calls for the highest degree of leadership among the men and women of this area.

"I am not an alarmist, but I want to warn you that [fol. 3821] powerful forces are at work to deprive the South of the greatest opportunity which ever came to any people. A year ago the disciples of greed and blindness that brought this country to the verge of a collapse had hurried into the storm cellars, whimpering and crying for help.

"Now that a courageous leadership has enabled the country to weather the storm, these selfish and ignorant forces are coming out of the storm cellars and once more getting in their deadly work.

"The people of the country must choose whether to follow the leadership of the President or the leadership of the selfish and blind that brought us so close to destruction.

"The first great test is in your hands here in the Tennessee Valley. Under the cover of various disguises, powerful forces are at work to destroy the long-time objectives of the Tennessee Valley Authority. In order to fill their own pockets, these powerful groups are ready at any cost to destroy the Tennessee Valley Authority's program and to keep the President's objectives from being fulfilled.

"Whether the people will win or the disciples of selfishness and blindness will win depends on you. There is no force, [fol. 3822] however powerful, however subtle, however firmly entrenched, which can withstand the force of a united public opinion."

Urging his audience to refuse to listen to the voices of "those of little vision and of selfish purpose," Mr. Lilienthal said the program would succeed "only if you of the Valley treat this as a national program".

Mr. Lilienthal laid emphasis on the point that the Authority's program is not a local project.

"Its implications extend to the outermost reaches of this country."

COMPLAINANTS' EXHIBIT No. 868 (Excluded)

He said that program for a better balanced economic life must begin with the fundamental proposition that the purchasing power of the average man and woman must be increased and must be stabilized.

"This is the cardinal point in the work of the Tennessee Valley Authority which underlies all of its activities," he said. "This is no over-night job. We are here at grips with the most desperate problem of modern life, a problem [fol. 3823] which has swept away the democratic form of government in most of the countries abroad. But in our own country, fortunately for the American people, this struggle to increase and stabilize the income of the average man and woman will be carried on, as the President has said, under the principle of 'self-help and self-control'.

"Increasing and stabilizing the purchasing power of the people involves at least two points; first, the income which the people now have must be made to go as far as possible; and second, there must be new sources of income.

"The electric program of the Tennessee Valley Authority has particular reference to increasing the available income of our people through making the consumer's dollar go further, both in securing for him more electrical energy for his dollar through lower rates, and by making possible the purchasing of electric appliances at lower costs. The Authority's program of working with the people of the area in developing large-scale and small-scale industry is designed to produce additional sources of income."

[fol. 3824] COMPLAINANTS' EXHIBIT No. 869 (Excluded)

TVA Press Release of June 23, 1934

David E. Lilienthal issued the following statement today concerning the electric distribution systems in northern Alabama:

"After further negotiations the TVA today received a revised offer for the sale to the TVA of the electric distribution properties of the Alabama Power Company in North Alabama.

COMPLAINANTS' EXHIBIT No. 869 (Excluded)

"The price fixed is one with which the Authority is in substantial, though not entire, agreement, provided the final figure is likewise agreeable to the municipalities involved, inasmuch as the plans contemplate resale of these properties to the communities.

"The Authority will confer with them at an early date to learn whether such a program is acceptable to them, or whether they prefer to press their applications for loans from PWA with which to construct new plants.

"The Authority believes that the purchase at a fair price will be in the public interest, as it will eliminate the delay involved in completing new distribution systems, and will avoid substantial losses to investors arising out of competition."

[fol. 3825] COMPLAINANTS' EXHIBIT No. 870 (Excluded)

TVA Press Release of July 1, 1934

Surveys are under way to determine the most feasible sites for additional dams on the Tennessee River and tributaries, Arthur E. Morgan, Chairman of the TVA, announced today. The surveys and studies are being made under the direction of Carl A. Bock, assistant chief engineer.

"Contrary to widespread opinion," Mr. Bock said, "definite sites for additional dams have not been located. Before this can be done many time-consuming operations are inevitable.

"First, it must be determined where additional dams would be of most value in a progressive, integrated development of the entire Tennessee River watershed, having in mind the well-being of all citizens.

"These studies require time. A detailed topographic survey which enables engineers to compute the length and height of the dam, the cubic yards of earthwork and concrete involved, best arrangement of power house, spillway and other auxiliary structures, and other problems must be worked out. Of vital importance is the nature and condition of the foundation, and it must be thoroughly explored; perhaps more than anything it influences the cost of the [fol. 3826] dam. This usually takes several months. Frequently dams are located in such inaccessible places that

COMPLAINANTS' EXHIBIT No. 870 (Excluded)

special highways must be built to handle the enormous amount of materials. A study of the flow of the river, of the capacity of the reservoir and of the cost estimates on each of the sites that appear most favorable, must be made. And finally, after the exact location is decided designers and draftsmen must make the actual working plans. More than a thousand drawings had to be made before work on Norris Dam could start."

Mr. Bock said that residents of the Valley should regard the Authority's power development as a single unit, rather than as the creation of a number of individual power dams. "It's an error of judgment for the people living near the upper tributaries, for instance, to believe that a storage reservoir there is for the particular benefit of persons living elsewhere in the Valley," he said. "We are not proposing to build seven or eight separate power dams, operated individually for the benefit of the immediate vicinity. All dams, wherever located, will be linked by transmission [fol. 3827] lines and will thus form a single system. Regard the whole project as 'one huge dam,' if you wish to put it that way. No matter in which section of the Valley the electricity is generated, it will be available to all sections. But each of these individual dams, under construction, or in contemplation, is needed to create this unified, integrated system.

[fol. 3828] COMPLAINANTS' EXHIBIT No. 871 (Excluded)

TVA Press Release of July 6, 1934

David E. Lilienthal, Director of the Tennessee Valley Authority in charge of power, today announced the submission of a plan to the communities of north Alabama which will make cheap power available immediately in this area. The cities involved are Courtland, Decatur, Falkville, Hartselle, Moulton, Red Bay, Russellville, Town Creek, Cherokee, Leighton, Tuscumbia, Sheffield, and Florence.

These communities have attempted, without success, to purchase existing Alabama Power Company facilities. The announcement of the Authority stated that TVA has secured

an option on such facilities at fair prices and that, under the proposed plan, these facilities would be taken over immediately by TVA, which would re-sell them to the various municipalities when the facilities have been improved and expanded and the municipalities were in a position to take them over. The details of the plan are as follows:

1. The TVA will buy the distribution systems in these cities from the Alabama Power Company and will then proceed to rehabilitate the properties and to add thereto a number of farmers' lines.

2. TVA will then operate these systems directly for a [fo]. 3829] limited period, selling cheap Muscle Shoals power to the consumers in this territory.

3. When the systems have been improved and expanded and the municipalities are in a position to take them over, TVA will transfer these systems to the municipalities which will pay for them out of surplus plan earnings, without the necessity of making a cash outlay or pledging their credit. Until the systems have been completely paid for by the municipalities, the rates to be charged will be the regular TVA rates plus a 10 per cent surcharge. By means of this surcharge, it is contemplated that the systems will be completely free of debt, interest and amortization in ten years or less. After providing for all costs and obligations, the balance of the earnings in this area, during the period of direct operation, will be used for reducing the purchase price to municipalities.

4. TVA and its subsidiary, Electric Home and Farm Authority, will engage in an intensive program of domestic, industrial and commercial load building in this territory, utilizing EHFA facilities, making available low priced electric appliances to consumers upon the EHFA long term financing plan.

[fol. 3830] COMPLAINANTS' EXHIBIT No. 872 (Excluded)

TVA Press Release of July 14, 1934

Carl A. Bock, assistant chief engineer of the Tennessee Valley Authority, today made the following announcement concerning a dam on the French Broad River near Asheville, N. C.:

"The Tennessee Valley Authority has been importuned by many people to prepare designs for a water power dam and regulating reservoir on the French Broad just above Asheville. The topography of this site affords a natural reservoir basin which, considered for its physical aspects alone, is one of the best of such sites in the Tennessee Valley. However, the preliminary data available at the present time regarding this proposed project appear to indicate that the cost of water power produced there would be so much greater than the cost of similar power produced at other locations, that we are forced to the conclusion that the construction of a dam at this site is not economically justified at the present time."

[fol. 3831] COMPLAINANTS' EXHIBIT No. 873 (Excluded)

TVA Press Release of July 15, 1934

Athens, Ala.—July 15—Consumers of electricity in Athens, Alabama, received greatly reduced bills for the month of June, the first bills to be figured at the now low TVA rates. In all cases consumers found substantial reductions ranging from 40 to 70 per cent on their electric bills. The contract between the City of Athens and the Tennessee Valley Authority became operative on June 1, 1934. Before that time the City was buying power from the Alabama Power Company, and was then charging for electricity at rates much higher than the present TVA rates.

[fol. 3832] COMPLAINANTS' EXHIBIT No. 874 (Excluded)

TVA Press Release of July 15, 1934

The Tennessee Valley Authority will furnish low cost TVA power to the 13 cities and towns of northern Alabama

COMPLAINANTS' EXHIBIT No. 874 (Excluded)

which have requested service under a plan recently announced by the Authority.

David E. Lilienthal, TVA director in charge of power, announced today that the Authority's option on the properties now owned by the Alabama Power Company would be exercised.

"All of the thirteen cities and towns in North Alabama have now formally requested the Tennessee Valley Authority to put into effect the plan recently laid before them," Mr. Lilienthal said.

"The Authority will, therefore, proceed to exercise its option to purchase transmission and distribution facilities in North Alabama. Thereupon a petition will be filed with the Alabama Public Service Commission requesting its approval of the transfer of these distribution facilities from the power company to the TVA. Such approval is necessary before a transfer can be effected. With such approval [fol. 3833] of the Commission, and a transfer of title, Muscle Shoals power will be available to homes, farms, and industries in these six counties without further delay.

"The Electric Division has already completed its plans for the substantial rehabilitation and extension work which is part of the plan. The long effort of the people of these communities to obtain the benefits of Muscle Shoals power at low rates is about to be realized.

"The prompt action of the municipalities of North Alabama in cooperating with the Tennessee Valley Authority in this matter is further evidence that the people of Alabama are solidly behind the President's program."

The municipalities soon to be served with TVA power are: Courtland, Decatur, Falkville, Hartselle, Moulton, Red Bay, Russellville, Town Creek, Cherokee, Leighton, Tuscumbia, Sheffield, and Florence.

[fol. 3834] COMPLAINANTS' EXHIBIT No. 875 (Excluded)

TVA Press Release of July 17, 1934

After continuous negotiations extending over a period of several months, an agreement has been reached between the Tennessee Valley Authority and the National Power and Light Company, owners of the Tennessee Public Serv-

ice Company, whereby the company's electric property in eastern Tennessee is to be sold to the Tennessee Valley Authority. Consummation of the arrangement is contingent upon approval by the City Council of Knoxville of a plan whereby the Knox County distribution facilities thus acquired by the TVA will be sold to and operated by the City of Knoxville. The transaction is also contingent upon willingness of bondholders to turn in their bonds at the issue price of 96½. The major facts concerning the arrangement between TVA and National Power and Light Company, owners of Tennessee Public Service Company, are as follows as explained by Director David E. Lilienthal, who conducted the negotiations for TVA:

[fol. 3835] 1. The Tennessee Public Service Company will transfer to TVA all of its electric distribution and transmission facilities in East Tennessee, except the transmission line between Waterville and Kingsport, at a price of $6,088,000. This price coincides with the rate base of the property as determined by the Tennessee Railroad and Utilities Commission, less $700,000 deducted for property no longer used and useful, principally the steam generating plant located in Knoxville.

2. The Tennessee Public Service Company will arrange for a tie-in for the interchange of power between the facilities to be acquired from TPS, and Carolina Company, also a National Power and Light Company. This interchange arrangement will insure TVA against any possibility of service interruptions due to storms or other causes and will permit both TVA and Carolina Company to make the fullest and most economical utilization of their power. In consideration of these interchange provisions, the Tennessee Valley Authority will assume the obligations and receive the benefits of an interchange contract between the Carolina Company and the Tennessee Public Service Company which has two years still to run.

3. By the purchase of the TPS property, competition between the TPS and the City of Knoxville will be elimi-
[fol. 3836] nated, and instead, the TVA and the City of Knoxville will acquire a going concern with more than 25,000 customers, together with a personnel trained and

experienced in the operation of this plant. The plans of the TVA do not call for any change in operating personnel except after study and recommendation by the TVA Personnel Division.

4. The TVA policy will continue to be to confine itself primarily to generation and transmission, with local public agencies handling the distribution of electricity. The operation of the distribution facilities by TVA is specifically intended to be temporary, pending transfer to local public agencies. This purchase of distribution facilities is to prevent disastrous losses to investors in TPS arising out of the fact that the City of Knoxville itself was not in position to purchase the company as a whole.

5. The street railway property of TPS will continue to be operated by the company. TVA will undertake to secure the cooperation of the city in an effort to improve the earnings of the street railway company, reduce its expenses, and relieve it of its present obligations to maintain and repair the paving in the track zone.

"I am delighted over the successful outcome of this [fol. 3837] protracted and difficult negotiation," said Mr. Lilienthal. "The result is one which, in the judgment of the Board of Directors, has a sound business basis, permits very substantial savings to consumer immediately, and at the same time does justice to the investor and protects his investment from the impairment and possible destruction arising from competition.

"The contract between the City of Knoxville and the Public Works Administration, whereby PWA has loaned funds for the construction of a competing plant, will, I am advised, be continued in effect until the transaction between TVA and TPS has been consummated. Such consummation depends upon approval by the City Council of Knoxville, and upon the willingness of bondholders to turn in their bonds at the issuing price of 96½, within three weeks. If by August 8th, the company has not been able to get the bonds in at this price, there is no deal, and the City will then proceed to make an award for a new plant, bids on which are to be opened today. I anticipate no such contingency, as the price is eminently fair to the bond-

holders, and has the approval of a committee of conservative institutional holders of these bonds."

Meeting with the Power Committee of the City of [fol. 3838] Knoxville Council today, Mr. Lilienthal explained the plans for operation of the system and acquisition of property by the various governmental units.

The system purchased from TPS supplies electric service to the City of Knoxville to the fifteen communities in Knox County, including Fountain City, and to twelve communities in eastern Tennessee outside of Knox County, including Newport and Jefferson City, he explained. This area has a population in excess of 133,000.

"The plan will result in substantial rate reductions, which will be made at an early date, and will enable the City of Knoxville and neighboring communities to acquire their distribution plants without the necessity of the issuance of bonds or other certificates of debt," Mr. Lilienthal said. "It will preserve without material change the revenues now derived by municipalities from taxes on electric system operations.

"Upon the satisfactory conclusion of pending negotiations, all of the transmission and distribution properties, except the transmission line between Waterville and Kingsport, of the Tennessee Public Service Company will be purchased by the Tennessee Valley Authority for the sum of $6,088,000. For a short interim period these properties [fol. 3839] will be retained and directly operated by the TVA. During this time, the Authority will complete such engineering improvements and changes as are required to put the system into excellent operating condition and will engage in an intensive program of load development under the EHFA program of making available low cost electric appliances. At the end of this interim period, the distribution properties will be turned over to the various municipal and county units in the area which will assume responsibility for distribution operations."

Based upon the present purchase price, transmission properties in the area are valued at $1,509,515 or 24.79 per cent of the total investment, Mr. Lilienthal pointed out. These properties will be permanently retained by the TVA for its wholesale power operations. Upon the same basis, the distribution properties included in the purchase are

valued at $4,578,485, or 75.21 per cent of the total, this sum representing the electric distribution systems which will be ultimately transferred to local operating units. The distribution facilities in Knox County, including the City of Knoxville, are valued at $4,229,625, or 69.48 per cent of the total purchase price.

[fol. 3840] Low TVA rates will immediately be put into effect upon transfer of the properties from TPS to TVA. These new rates will be the standard rates plus a ten per cent surcharge. By means of this surcharge, cost of the system will be amortized. The surcharge will be the same throughout the area, but it may be necessary to maintain the surcharge for a longer period in the area outside of Knox County. It is estimated that the system in Knox County will be completely free of debt, interest, and amortization in from ten to twelve years; the period outside of Knoxville may run from twelve to fifteen years.

During this period of direct TVA operation, the property in the entire area will be treated as a single unit, and the sums available from revenues, after deducting all operating costs, will be used to reduce the price at which the properties will be purchased by local operating units.

Mr. Lilienthal announced the appointment of Lovick P. Miles of Memphis and Judge D. C. Webb of Knoxville, member of the firm of Green, Webb and Bass, as special counsel for the TVA in the TPS acquisition negotiations.

Mr. Miles will devote his special attention to the prep-
[fol. 3841] aration of the various contracts incident to the purchase of the property from the Tennessee Public Service Company. Judge Webb will act as special counsel on title matters. Judge Webb's firm was previously employed to check titles on the property in East Tennessee to be acquired from the Tennessee Electric Power Company under the Commonwealth and Southern contract.

[fol. 3842] COMPLAINANTS' EXHIBIT No. 876 (Excluded)

TVA Press Release of July 18, 1934

The acquisition of electric properties by the Tennessee Valley Authority in the Knoxville area will result in very

substantial savings to consumers in the near future. The new rates to be put into effect will be the standard Tennessee Valley Authority rates plus a 10 per cent surcharge for retiring the investment.

For the entire area, the grand total revenues for the year 1933 were $2,212,343 for consumption of 71,584,000 kilowatt hours. Under the new rates, the bill for the same consumption would be $1,331,365. This reduction in rates will yield to the community an annual saving of $880,978, or 39.8 per cent. The saving for Knox County is estimated at $803,000 per year and for the area outside of Knox County $77,000 per year.

For the entire area, residential consumers will save $374,000, or 50.4 per cent. Commercial users will save $253,000, or 38½ per cent, and industrial users will save $199,000 or 30.6 per cent. Sales to municipalities for street lighting and other purposes in Knox County for 1933 [fol. 3843] amounted to $151,263. For the same consumption the new TVA rates would cost $98,900, or a saving of $52,300 per year.

As compared with the lowest possible rate now available on the TPS lines, a residential user having lights and small electrical appliances would save 81 cents per month, or 38 per cent. A residence user having a refrigerator and electric range, would pay $6.95 under TPS promotional rates, and $5.83 under TVA rate, including 10 per cent surcharge, and would save $1.12 per month. A residence customer with a fully electrified home, including a refrigerator and electric range, water heater, lights, and small appliances, would pay $8.45 under the TPS promotional rate as against $7.15 under TVA rates and would save $1.30 per month.

Commercial users, such as cafes, stores, professional businesses, etc., showed savings running from $1.00 to $15.00 per month, representing reduction from present rates of from 30 to 60 per cent.

Industrial users show savings ranging from 35 to 50 per cent, which will result in immediate expansion in the industrial uses of electricity.

One industrial user with a demand of 50 kilowatts pays $3,288 per year under TPS rates. Under the TVA rates, [fol. 3844] his bill would be $1,980, or a reduction of $1,308.

COMPLAINANTS' EXHIBIT No. 876 (Excluded)

Another industrial user with a demand of 150 kilowatts would save $3,500 per year or 41 per cent. A very large user with a demand of 500 kilowatts and a fairly high load factor would pay an annual bill under TPS rates of $33,180 as against a TVA bill of $17,292. Under the new rates, this consumer will save $15,888 per year, or 47.9 per cent.

Further comparisons showing the marked reductions in rates that will soon be available are shown on the attached tables.

[fol. 3845] COMPLAINANTS' EXHIBIT No. 877 (Excluded)

TVA Press Release of July 18, 1934

"The TVA has been at work seeking to develop new uses for coal, so that the mining area can prosper with the rest of the region, Chairman Morgan said. "In some cases the existence of cheap power leads to a demand for more coal. For instance, the Authority has been negotiating with a large chemical industry which must have very cheap electric power, and also large amounts of cheap coal for chemical processes. The locality which seemed more promising is near a coal mine and also where TVA cheap power is available."

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"There is no question but that in the years to come coal will be so valuable for use in chemical, metal and other manufacturing processes that it will seem a waste and misuse to use our coal resources for power where water power is available. It is the business of the Tennessee Valley Authority to try to combine both these values—to get the undoubted economics and values of water power, and also to work vigorously to develop new and additional uses for coal so that it will be used in constantly larger quantities.

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[fol. 3846] A region which has both coal and water power is very fortunate. The combination of the two make possible the development of industries that could not thrive so well with either one alone. Such a development of the highest use of the whole resources is a part of economic planning.

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[fol. 3847] COMPLAINANTS' EXHIBIT No. 878 (Excluded)

TVA Press Release of July 27, 1934

The Tennessee Valley Authority today approved the contract covering purchase of the Tennessee Public Service Company properties in Knoxville, and East Tennessee, David E. Lilienthal, Director in charge of power, announced. The contract, drawn in a series of conferences at Asheville, North Carolina has been signed by officers of the Power Company. It does not include the Knoxville Street Railway system.

Actual transfer of the properties is contingent upon bondholders turning in their bonds at the issued price of 96½ before August 21, 1934. Each party to the contract also has a right to cancel its obligations if litigation or other contingency arises which in the judgment of either party will unduly delay completion of the purchase.

"This provision protects the city of Knoxville against extended delay in receiving benefits of TVA electricity for which its citizens voted", Mr. Lilienthal explained. "The City has opened bids for construction of its own system with which to distribute TVA electricity. If there is unreasonable delay in closing the sale, TVA will rescind the con-
[fol. 3848] tract and the city can immediately construct a competing system."

Mr. Lilienthal explained that TVA has arranged with the Guaranty Trust Company of New York, whereby bondholders desiring to deposit their bonds under the agreement with TPS may deliver those bonds to the Guaranty Trust Company as the agent of TVA and receive in return TVA certificates of deposit. This certificate of deposit will entitle the bondholder to receive $965 for each bond turned in, (that is, 96½) together with accrued interest, if the deal goes through; if it does not go through, he is entitled to receive his bond back at the expiration of the period. Formal announcement of this deposit agreement plan will be made in a few days as soon as the necessary details have been worked—

The contract approved today embodies the general agreement between TVA and the electric company as announced on July 17th, with adjustments for contracts held by the Tennessee Public Service and real estate in which Knoxville Street Railway Company held a joint interest with the

electric division of the company. These adjustments are, as explained by Mr. Lilienthal:

[fol. 3849] (1) Tennessee Public Service Company has a power contract with Carolina Company whereby it is obligated to purchase all of its power requirements from Carolina Company at a rate very much in excess of the rate at which TVA sells power at wholesale to municipalities. This contract terminates June 4th, 1936. As a part of the purchase plan, TVA is assuming this contract with the Carolina Company, but the contract has been substantially modified. Instead of being obligated to take and pay for all of its power requirements, TVA's obligations are limited to a demand of 20,500 kw., and a consumption of 19,320,000 kwh. quarterly, with TVA free to use any other source of supply for its excess requirements. Instead of purchasing power at the former high rates, TVA will purchase at its standard wholesale rate, except that the billing period will be three months instead of one month, thus giving the TVA the benefit of lower brackets for a large amount of power. TVA will make a lump sum payment of $150,800 when it takes over the TPS properties and thereafter will pay quarterly for the power it takes under the contract.

(2) Under the contract TVA will transmit the Knoxville [fol. 3850] Street Railway's power requirements from the Carolina Company to the Street Railway sub-station until June 4, 1936, after which date the Street Railway's requirements will be purchased from the Authority at its regular rates.

(3) TVA agrees to pay $6,088,636 for the electric properties of TPS. In addition TVA is paying $102,000 for the purchase of the street railway's interest in certain properties which had heretofore been jointly used and owned by the street railway and the Electric Divisions of TPS. For this sum TVA eliminates the Street Railway's interest in the Washington sub-station and Steam Plant, the General Office on Gay Street, the General Storehouse and certain other joint properties in Knoxville.

(4) TVA agrees to pay for all net capital additions made between the present time and the date when TVA

takes over the properties but TPS agrees not to make any such additions or extensions exceeding $200.00 in value without the written consent of TVA.

(5) TPS agrees that until TVA takes the properties over, TPS will make all current repairs and replacements on the property just as though no change in ownership were contemplated.

[fol. 3851] "Upon the satisfactory conclusion of the negotiations, all of the TPS transmission and distribution properties, except the transmission line between Waterville and Kingsport, will be purchased by the Tennessee Valley Authority," Mr. Lilienthal said. "For a short interim period these properties will be retained and directly operated by the TVA. During this time, the Authority will complete such engineering improvements and changes as are required to put the system into excellent operating condition and will engage in an intensive program of load development under the EHFA program of making available low cost electric appliances at the end of this interim period, the distribution properties will be turned over to the various municipal and county units in the area which will assume responsibility for distribution operations.

"Low TVA rates will immediately be put into effect upon transfer of the properties from TPS to TVA. These new rates will be the standard TVA rates plus a 10 per cent surcharge. The surcharge will be the same throughout the area. It is estimated that the system in Knox County will be completely free of debt, interest, and amortization in from ten to twelve years; the period outside of Knoxville may run from 12 to 15 years."

[fol. 3852] COMPLAINANTS' EXHIBIT No. 879 (Excluded)

TVA Press Release of August 1, 1934

An Address by John B. Blandford, Jr., Tennessee Valley Authority, Coordinator. Presented July 31, over NBC Radio Hookup as One of the "You and Your Government" Series on a New Deal in Government, under Sponsorship of the Committee on Civic Education by Radio of the National Advisory Council on Radio in Education, and the American Political Science Association

The Tennessee Valley Program

One year ago, the three directors of the Tennessee Valley Authority held their first meeting in a hotel in Washington. Today, these directors in their offices in the Tennessee Valley look back upon more than a hundred similar meetings, and the activity and accomplishment of nearly 10,000 fellow workers.

Wilson Dam is turning out TVA kilowatts. The thirty-four million dollar storage dam on the Clinch River, near Knoxville, Tennessee, has received its first batch of concrete. The more-than-a-mile-long run-of-the-river dam on the Tennessee River, twenty miles above Wilson Dam, is excavating in its second coffer-dam. Both projects—Norris and Wheeler—are now one-fourth completed. Preliminary surveys are fixing the sites and determining the dimensions [fol. 3853] of future dams.

A power policy has been formulated. The content of the "yardstick" has been defined. Wholesale and resale rates have been fixed. The nucleus of a TVA power system has been established through the purchase of transmission and distribution facilities. A transmission line to connect Wilson, Wheeler and Norris dams is under construction. One hundred miles of rural transmission lines have been pushed out into new territory. Arrangements have been made to serve more than fifty municipalities at greatly reduced rates, and private power companies have been stimulated to substantial rate reductions in other parts of the valley.

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* * * In a substantial way, this program has helped in the unemployment emergency. But the Authority is

not an emergency agency, nor exclusively a construction or operating organization. Underneath this surface picture is something more fundamental. Man power is transforming steel, cement, electric wire and phosphate into dams, kilowatt hours, and fertilizer. * * *

* * * The housing of workers is an opportunity for constructive personnel programs, and a demonstration in town planning and electrification of the home. A dam is [fol. 3854] not an isolated structure or operating unit, but part of a unified development of a water system with power produced at half the cost of unorganized development and with valuable by-products in flood control and navigation. A dam is the occasion for the planning of a region and a series of dams is an integral part of the planning of a valley.

Director David E. Lilienthal is buying power systems at fair prices and building lines where they do not now exist. He is accounting for his operations with full consideration for interest, depreciation, amortization and taxes, and thereby, establishing a "yardstick" for the nation. But more than this, he is looking into the average home and seeing a very limited use of electricity, and realizing that the full benefits of electricity are enjoyed by the few. Electricity can relieve the women in 20,000,000 American homes of much of the drudgery of housework and holds much hope for the rehabilitation of the rural areas.

But rates for service have been too high. The TVA rates are removing this obstacle. In Tupelo, the first city to utilize Muscle Shoals power, rates have been reduced [fol. 3855] sixty per cent, and the average use is more than fifty per cent greater than a year ago.

Electric appliance prices have been beyond the reach of many householders. The Electrical Home and Farm Authority, an agency of the TVA, was organized to meet this problem. With the cooperation of leading electrical manufacturers, dealers and the electric utilities, this agency has made it possible for housewives to obtain through regular dealer channels electric ranges, refrigerators and water heaters at prices from 25 to 35 per cent lower than those heretofore prevailing. The increased volume of sales is resulting in a fair profit to the manufacturer and retailers and is proving a great benefit to the consumer.

COMPLAINANTS' EXHIBIT No. 879 (Excluded)

Rounding out this program is an effort to spread the knowledge of all the ways in which electricity may be used.

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The Tennessee Valley Authority is a new and significant piece of governmental machinery. It has all the powers of government to enable it to do a unique job in regional planning, and it has the flexibility of a private corporation [fol. 3856] and freedom from red tape to do an efficient job of business operation. It ties together the facilities and special knowledge of Valley agencies, and the resources of all Federal departments. More than that, it ties together the experiences and aspirations of the Valley and the Nation. For in the final analysis, the program has national implications. Methods successfully worked out in the Tennessee Valley should have nation-wide application.

[fol. 3857] COMPLAINANTS' EXHIBIT No. 880 (Excluded)

TVA Press Release of August 7, 1934

The Tennessee Valley Authority announced today that it was sending David E. Lilienthal, director in charge of its electric program, and Llewellyn Evans, chief electrical engineer, to England to study the "grid" system of transmission and distribution as developed there.

They will sail on the U. S. Line Manhattan on August 15 and will be gone one month.

The trip is the result of the Authority's effort to formulate the best procedure and policy for the allocation and distribution of future large blocks of power to be available. Purchase of the Knoxville system and distribution of TVA power in East Tennessee will exhaust the capacity of Wilson Dam until completion of Norris Dam. Mr. Lilienthal has been studying the problem from the point of view of recommending a course of action and policy, but before the Board made any decision regarding the allocation of future blocks of power to municipal and other applicants, it desired to study at first hand important world projects that parallel the Authority's problems.

"The nearest analogy to the situation in the Tennessee Valley," Mr. Lilienthal said today, "is the Central Elec-

tricity Board of Great Britain, now in its seventh year. [fol. 3858] "The so-called British Grid System represents the practical, forthright English approach to a problem of seeing that electricity is widely available for domestic and industrial use. Under the British Grid System, they have a combination of publicly-owned and privately-owned enterprises with the national Government owning all transmission lines and making arrangements with public and private enterprises so as to unify the power supply and thus utilize it in the most efficient way.

"As in the Tennessee Valley, decentralization of industry is one of the principal objectives and actual results have already appeared in this direction. In its governmental status and financial operations, the Central Electricity Board is closely comparable to the TVA. The Board is an independent agency, standing on its own, with a separate budget, separate issuance of securities, and is free from usual governmental procedure."

The trip to Europe also has a direct connection with Mr. Lilienthal's position on the newly created National Power Policy Committee. Chairman Ickes of the Committee has assigned him the problems of unification of power supply and the relations between public and private electric systems. In both of those the English Board has had years of [fol. 3859] practical experience.

Conferences have been arranged for Mr. Lilienthal and Mr. Evans with Sir Andrew R. Duncan, Chairman of the Central Electricity Board, and with Sir John Snell, G. B. E., chairman of the Electricity Commission of London.

The TVA officials also will visit Ireland to study the Shannon River Hydro-Electric development. This development has made progress with respect to rural electrification in a country where electricity had been heretofore very little used among farmers.

Inspection of the Shannon district will come first; the officials then will proceed to Dublin for a conference with Dr. F. S. Rishworth, chief engineer of the development. Following that they will go to London for ten days of conferences and inspections of the British Grid.

Following his return on September 14, Mr. Lilienthal will prepare a report of his findings both for the TVA directors and for the National Power Policy Committee.

[fol. 3860] COMPLAINANTS' EXHIBIT No. 881 (Excluded)

TVA Press Release of August 27, 1934

A total of 189 cities and towns, 24 counties, and 37 individual business firms have made inquiries or applications for Tennessee Valley Authority power.

Applications of the individual firms were made confidentially to the Authority and accordingly their identity is not disclosed.

The counties applying or inquiring are interested in furthering the Authority's program of intensive rural electrification.

The complete list of applicants, other than private firms, follows:

O—indicates official application.
I—indicates individuals.

Alabama	Alabama	Mississippi	Tennessee
O Cordova	Madison	O Fulton	O Memphis
O Mobile	Jasper	I Hillsboro	O Jellico
I Birmingham	Guntersville	O Tupelo	O Lawrenceburg
O Dalton	Falkville	O Winona	I Dyersburg
I Detroit	Danville	I Philadelphia	IO Lebanon
O Pritchard	Alabama City	I New Albany	O Pulaski
O Homewood	Geiger	O Oxford	O Bean Station

[fol. 3861]

Alabama (Cont'd)	Mississippi	Mississippi	Tennessee
I Tuscaloosa		O Pace	O Saltillo
O Elkmont		I Mendenhall	O Union City
O Florence		I Water Valley	O Etowah
I Tuscumbia		Batesville	IO Nashville
I Lexington		Carthage	I Kelso
O Sheffield	O Quitman	Coldwater	O Dayton
O Muscle Shoals City	O Shelby	Columbia	O Clinton
I Cullman	O Starkville	Crystal Springs	O Knoxville
O Decatur	I Guntown	Duck Hill	I Rogersville
I Cottonton	I McComb	Greenwood	O Dickerson
O Athens	I Laurel	Grenada	O Sweetwater
O Hartselle	O Lexington	Hattiesburg	I Humbolt
I Gadsden	O Jackson	Hazlehurst	O White Pine
I Arab	I Indianola	Holly Springs	O Parsons
I Anniston	O Hernando	Naulka	O Ripley
I Talladega	O Hickory Flat	Pittsboro	O Savannah
I Hamilton	I Clarksdale	Itta Bena	I Southside
Bessemer	O Aberdeen	Mantee	I Soddy
Pinson	O Amory	Meridian	O Chattanooga
Russellville	O West Point	Morehead	I Tullahoma
Meridianville	O Corintb	Myrtle	O Winchester

Complainants' Exhibit No. 881 (Excluded)

[fol. 3862]

Tennessee

O Newport
O Sunbright
I McKinnon
O Moscow
I Mountpleasant
O Lenoir City
O Johnson City
O Jefferson City
I Henderson
O Rockwood
O Fayetteville
I Dunlap
O Decaturville
I Daysville
I Clifton
O Culleoka
O Big Sandy
O Ardmore
O Elizabethton
O Greeneville
O Jackson
Franklin
Morristown
Athens
Cookeville

Louisiana

I Tallulah
I New Orleans

Illinois

I West Frankfort

Oklahoma

I Tulsa

Kentucky

I Hazard
O Scottsville
O Maysville
O Russell
O Middlesboro
Bowling Green

[fol. 3863]

Decatur
Fountain City
Leoma
Murfreesboro
Powell Station
Shelbyville
Somerville
Tennessee City
Scotts Hill

O Somerset

North Carolina

I Candler
I Shelby
O Weaverville
O Asheville

South Carolina

I Columbia
I Anderson
I Greenville
O Spartanburg

Arkansas

I Stuttgart
Blytheville
Osceola

Georgia

I Rome
O Monroe
I Calhoun
O LaFayette
O Dalton
O Atlanta
O Marietta
I Sandersville
I Rossville
I Ringgold
I Hiwassee
Acworth
Cartersville
Ft. Benning

Florida

I St. Augustine
O Bradenton
I Miami

Virginia

I Marion
O Galax
I Danville
I Abingdon
Appalachia
O Dungannon
O E. Radford
I Crewe

Ohio

O Cincinnati
I Akron

Missouri

I St. Louis

Applications for Rural Electrification

Alabama (Counties)

Colbert
Lamar
Lawrence
Limestone

Georgia

Walker

Kentucky

Harlan

Mississippi

Alcorn
Coahoma
Corinth
Tishomingo

Tennessee

Anderson
Chester
Claiborne
Davidson
Franklin
Giles
Houston
Jefferson
Lawrence
Madison
Meigs
Montgomery
Warren
Wayne

[fol. 3864] COMPLAINANTS' EXHIBIT No. 882 (Excluded)

TVA Press Release of October 1, 1934

The relation of power development in the Tennessee Valley to the St. Lawrence waterway project will be studied by trustees of the Power Authority of the State of New York in a personal visit to the Valley October 5th to 8th. This was made known by Chairman Frank P. Walsh of the New York authority in a letter to Director David E. Lilienthal of the Tennessee Valley Authority in accepting the TVA's invitation to inspect progress of the work on the Tennessee River basin project.

Fellow trustees who will accompany Chairman Walsh to the Valley are James C. Bonbright, Professor of finance at Columbia University; Fred J. Freestone, chairman of the executive committee of the National Grange; George S. Reed, New York lawyer, and Leland Olds, secretary of the board. Said Chairman Walsh in his letter to Director [fol. 3865] Lilienthal:

"The Power Authority is charged with the development of a project affecting the entire northeastern section of the country, which may be regarded as your undertaking as a part of the President's broad plan for establishing the country on a more permanent basis of national well-being and prosperity.

"Your Authority's achievements in showing the way to lower electric rates and larger domestic and rural use of electricity have already been remarkable, especially in view of the shortness of the time since you undertook the work. Your plans for establishing a more stable relationship between agriculture and industry are also noteworthy.

"The Trustees of the Power Authority feel sure that the opportunity for direct personal conference with the members of your Board and for inspection of the work which you have so well under way will prove invaluable to them in making plans for utilizing the great hydro-electric power resources of the St. Lawrence to bring lower electric rates and greater prosperity to the region the project will serve."

"The Tennessee Valley Authority board of directors and the staff executives as well *will* would derive real benefit out of such visit, during which we could exchange ideas and get your reaction to many of the problems of the TVA,"

COMPLAINANTS' EXHIBIT No. 882 (Excluded)

[fol. 3866] declared Director Lilienthal in his letter of invitation, adding; "I believe you would find the work interesting and useful to you in carrying out the great project which has been entrusted to you."

Members of the Power Authority of the State of New York have expressed a deep interest in the TVA system of rural electrification, whereby farm residents receive the same low rate that those in the cities obtain. This TVA project is working exceedingly well in northeastern Mississippi. Another subject in which the New York body evinces keen interest is decentralization of industry. The TVA has made extensive research in this field.

Results obtained by the TVA in the cost of distribution of electricity will be made available to the New York visitors. Such costs have occasioned much study in the Empire State.

Conferences will be held with the TVA board of directors and a visit made to Norris Dam. An airplane flight over the basin area to Muscle Shoals will be included in the program to permit inspection of the Wilson Dam power plant and the construction work on Wheeler Dam.

[fol. 3867] COMPLAINANTS' EXHIBIT No. 883 (Excluded)

TVA Press Release of October 2, 1934

Text of an Address Delivered Before the Technical Club of Madison, Milwaukee Engineering Club and Other Groups, at Madison, Wisconsin, Monday Evening, October 1, 1934, by Arthur E. Morgan, Chairman of the Board, Tennessee Valley Authority.

The drainage area of the Tennessee River is about four-fifths as large as Wisconsin, and has about the same density of population The Tennessee Valley Authority Act provides that the work of the Authority shall be in this drainage area and in adjoining areas in which the same issues and problems exist. So we are dealing with an area somewhat larger than Wisconsin.

The lands drained by the Tennessee River have a much greater range of physical, social and economic character-

istics than does Wisconsin. At the headwaters of the river in North Carolina and Tennessee, there are mountain valleys three thousand feet above sea level; while low water at the mouth of the river is only about three hundred feet above sea level. With more than two thousand feet of fall in its streams, and with a rainfall about double that of [fol. 3868] Wisconsin, the possibilities for water power development are very great.

* * * * * * *

In three respects the Tennessee Valley Authority law is specific and definite. The power development at Muscle Shoals, lying idle for years through the obstruction of private power companies, must be put to work. The private power companies had been using this great plant as a standby plant, letting the power run to waste when they had plenty of their own, and using it as an emergency supply when they were short. Such use of power should bring the very highest wholesale price, yet they were paying for it less than a fifth of a cent per kilowatt hour, and were retailing it at three cities within ten miles at more than thirty times as much. In this way the private power companies were receiving a subsidy of millions of dollars from the Government. No wonder they were deeply grieved and shocked at the proposal to discontinue the arrangement.

The Tennessee Valley Authority Act directed the Authority to operate this plant, to build transmission lines, and to sell the power. The Authority has adopted a comprehensive power policy. To make a fair comparison between public and private operation, it is essential that the area served [fol. 3869] shall be comparable to that of a well-proportioned private utility system. It must sell electric power in this territory or give up its entire power program, and give up any opportunity to compare the effectiveness of public and private operation.

The Authority has determined, if possible, to buy existing facilities at fair prices, and though hundreds of communities have asked for its service, and a considerable number have voted to buy power from the Authority, yet not a single competitive line has been built. Negotiations with

private companies have been entered into in good faith, and contracts have been made for the purchase of transmission and distribution facilities. In case of the purchase of the Knoxville power system, some very unfair and misleading criticism has been leveled at the Authority. The critics have not told the public that the utility company involved, at one stroke of the pen, increased its capitalization from $12,000,000 to $17,000,000 without adding one cent to its actual properties. Neither did these critics disclose the fact that the utility company had been using high power rates to pay eight per cent dividends on an almost obsolete street car system which was not even paying its operating expenses. Over half the capitalization of the company was made up of water and of a non-pro- [fol. 3870] ductive street car system. The price offered by the Tennessee Valley Authority and accepted by the company is full payment of all the actual useful investment.

The Authority holds that power use would greatly increase if rates were lower. The community which has been served longest by the Tennessee Valley Authority is Tupelo, Mississippi. The Authority is selling power at wholesale to this city at about half the former rates. The city, in turn, is retailing the power at about half the old rates. Domestic consumers now pay three cents for the first fifty kilowatt hours, two cents for the next hundred kilowatt hours, one cent for the next two hundred, and four-tenths of a cent for everything thereafter. Under these new rates, the use of power has doubled in less than a year, and is still increasing. The city is meeting all charges for operation, maintenance, depreciation, repayment of capital and taxes, and is building up a substantial reserve. The Authority holds that there is no over-production of electric power, but rather a great under consumption, which can be overcome by lower rates and by lower prices on electrical equipment. The Authority is undertaking to conduct its power business as a self-sustaining project which will [fol. 3871] amortize its capital and pay its full share of taxes.

To promote the wider use of electric equipment the Authority organized the Electric Home and Farm Authority in order to make available low priced electric appliances. When manufacturers will reduce the price of appliances

and power companies will reduce the price of power, the Electric Home and Farm Authority will help finance sales. Under this program the price of appliances is being greatly reduced, and the sales greatly stimulated. These appliances are handled through the regular retail outlets.

Not all interests approve the electric program of the Authority. The coal interests and the ice interests have united in legal suits in Federal and State courts in an effort to block the program. The coal men fear water power will infringe on the use of coal, and the ice men fear the increase of electric refrigeration.

The electric power program is being directed by Mr. Lilienthal, formerly of the Wisconsin Utilities Commission.

A second specific provision of the Tennessee Valley Authority Act provides for the construction of additional dams and for the increase of power resources. Two great [fol. 3872] dams are now under construction—Norris Dam on Clinch River and Wheeler Dam on the Tennessee River. * * *

Below the Norris Dam there will be about ten dams on the main Tennessee River. The Tennessee varies greatly in flow between dry summers and wet winters, and the Norris Dam will so regulate the flow as to more than double the prime power at each of these dams.

By developing the water power of the Tennessee River as a single great coordinated system, storing water in a series of headwater dams during the rainy season and releasing it to the dams down below during the dry season, power can be developed at far less expense than by independent projects, and at the same time the interests of flood control and navigation can be promoted. Only the Government can properly carry on so far-flung an undertaking.

Private companies are saying that water power cannot compete with coal and that there is a great over-production of power; yet at this moment well financed private interests are spending substantial sums for new water power plants in this area, in an effort to circumvent the TVA and to keep the power possibilities for themselves. Their actions speak louder than words. It falls to my lot to have charge of the development of this power, navigation, and flood control development.

[fol. 3873] COMPLAINANTS' EXHIBIT No. 884 (Excluded)

TVA Press Release of October 6, 1934

Statement Filed by the Tennessee Valley Authority With the Alabama Public Service Commission

Knoxville, Tennessee, October 6, 1934.

Alabama Public Service Commission, Montgomery, Alabama.

GENTLEMEN:

In re Alabama Power Company, Petitioner, Docket 6636

The Authority has given most careful consideration to its position in the above entitled matter, and herewith informally submits its views to your commission.

Let us first summarize the facts, and state the issue.

The Alabama Power Company, a privately owned corporation operating for profit, has contracted to sell to the Tennessee Valley Authority, a governmental agency of the [fol. 3874] people of the United States, two groups of properties. The price in each case was reached after extended negotiation. Your Commission has already determined that the sale of the first group, which included transmission and distribution properties, is consistent with the public interest. This determination was made upon the facts submitted to you by the petitioning Alabama Power Company, and a brief statement by counsel for TVA. While the order of approval, based upon the finding of public interest, has been remanded by the Circuit Court, the Court's decision simply held that the notice was inadequate, and did not raise the issue which we are here discussing.

The question as to the second group of properties is the same as in the first; namely, whether it is consistent with the public interest that the Alabama Power Company sell certain of its properties. The two petitions are identical in principle; the distribution properties involved in the second petition are served from the transmission lines involved in the first, and all of these properties make but a single operating unit. In deciding the question of public interest on the first petition the Commission virtually considered all of these properties as a unit, although the order of approval was, of course, limited to the properties described in the peti-

[fol. 3875] tion. Notwithstanding the substantial identity of the two petitions, in the second case, Docket 6-36, your Commission, in a series of communications to the Tennessee Valley Authority, and, as we are advised, in statements made in the record of the proceeding, has taken the position that it cannot determine whether the sale to the Tennessee Valley Authority is consistent with the public interest upon the same kind of showing as was made by the Power Company petitioner in the case of the first group of properties. It appears that your Commission has concluded that a showing by the Alabama Power Company with respect to this sale is inadequate as a basis for a finding by your Commission, although we are advised that the Commission has not yet heard the Power Company's testimony, and therefore presumably does not know the scope and nature of that testimony.

In the second group of properties, as distinguished from the first, the Tennessee Valley Authority, at the insistence of your Commission, has filed an elaborate statement of facts, in response to a questionnaire by the Commission's Chief Engineer. Your position is that neither a showing [fol. 3876] by the Alabama Power Company (which was regarded as adequate in the first group of properties) nor the elaborate statement of facts informally filed with you by the Authority is deemed adequate by your Commission to enable it to determine whether the public interest will permit an agency of the United States government to operate in the State of Alabama. In your communication of September 21 you state, among other things, that it will be necessary that there appear before your Commission as witnesses some seven executives, officers and staff members of TVA to testify regarding the proposed sale of property. You state further that you desire the submission to you of the "final report" upon which the rates to be charged by the transferred properties were based, the supporting data pertaining to said report, and the individuals who were responsible for the report and the supporting data.

Your Commission would obviously not require testimony concerning the basis of Tennessee Valley Authority's rates if it did not consider that your Commission has jurisdiction

to disapprove this sale because in your opinion these rates are not proper rates.

[fol. 3877] Your Commission would certainly not demand testimony unless it felt that that testimony was pertinent to a discharge of its duties. If your Commission did not consider that it had jurisdiction to refuse to permit TVA rates to be charged in the State of Alabama, it would surely not call for evidence respecting the basis of those rates.

Calling for this testimony would give the intervening petitioners (and their allies) a further opportunity to stir up ill will in other sections against the South and against the Authority's program, to permit them to use the Commission's hearing room as a sounding board for propaganda against the President's program in Alabama, or to permit a "fishing expedition" which might assist the intervenors in the litigation now pending in several courts. The Authority believes that the Alabama Public Service Commission would not lend itself to such subversion of its functions. The Authority believes that the Commission's reason for calling for this testimony is its conviction that, having this testimony, it has jurisdiction to impose its views as to rates upon an agency of the United States: and this presents a fundamental issue of far-reaching implications which must be faced.

[fol. 3878] In a recent decision your Commission held that the Tennessee Valley Authority, as to its operations within the State of Alabama, is in a position of any public utility operated for profit, and therefore subject to comprehensive regulation by your body. The assumption that your Commission has jurisdiction to hold that the rates to be charged by the Tennessee Valley Authority are too low, and that therefore you may effectively bar the Tennessee Valley Authority from operations within the State of Alabama, is an inextricable part of your conclusion that the TVA is a public utility subject to regulation by your Commission. With all respect, the Tennessee Valley Authority disagrees with this conclusion, not merely as a matter of law, but as a matter of the basic policies of the program of the President and the Congress.

And since your Commission cannot directly determine the rates and rate policies of this national agency, it should not

try to do this indirectly, by calling for testimony concerning matters clearly beyond your control. To illustrate why Tennessee Valley Authority objects to the line of inquiry you propose to follow if our witnesses appear, let us take [fol. 3879] a few concrete situations. Let us suppose that the Commission, after reviewing the evidence which it has called for from the Authority, should decide that the Authority's rates were too high or too low, and should approve the sale on condition that the Authority increase or reduce these rates. Or suppose that the Commission should similarly hold that TVA rates for farm use should not be substantially as low as in towns, despite the mandate of Congress expressed in the Tennessee Valley Authority Act concerning rural electrification and agricultural development. The policies as to rates which govern the Tennessee Valley Authority are those derived from the Act of Congress. For the directors of the Authority to permit these policies to be changed or effected by the orders of your Commission would be a violation of our oath of office. In matters of rates, as in all other matters, the Authority cannot have two sources of authority.

Or suppose that your Commission, after a study of the Authority's books, records and accounting methods, which are covered in your letter of September 21, should come to the conclusion that our books and records were not kept in accordance with the Commission's standards and that, for [fol. 3880] purposes of uniformity or otherwise, it should condition its order of approval on our adoption of the Commission's standard accounting classifications. The Tennessee Valley Authority Act specifically provides that the Comptroller General of the United States shall audit our books and records and report to Congress. The Authority would here again be faced with a conflict of authority between your Commission and the Congress of the United States.

In view of your extended opinion of July 14, holding that the Authority is a mere public utility and as such subject to your control in every particular, there is considerable reason for believing that we must give serious consideration to the possibility that through this very proceeding, involving merely the transfer and sale of property, you will

seek, by the attachment of conditions, to exercise jurisdiction over all the Authority's operation in Alabama. Your action in calling our rate policies into question certainly gives support to this belief.

The Tennessee Valley Authority is at this moment and has for some weeks been ready to the last detail to take over and operate the properties now owned by the Alabama [fol. 3881] Power Company involved in these proceedings. Its Board of Directors has appropriated approximately one million dollars to be expended immediately in the rehabilitation and extension of these properties. The Authority has set aside substantial sums for the construction of a network of lines to farms not now served. The Authority has a considerable staff of technical experts at work on plans designed to stimulate industrial development throughout Alabama. A new construction project which will put thousands of men at work in Alabama within a few weeks, and which will continue for several years is ready for final approval of this Board. The Authority has plans well under way, and has expended substantial sums, looking toward small-scale industry in conjunction with agriculture within the State of Alabama. Certain communities in Alabama have officially expressed their desires with respect to this program, and have approved the TVA plans. The people in the affected area are cooperating, through their own agencies, in this program in a spirit which is most heartening. A delay of even a few weeks in moving forward with this program at this critical time in the history of the South we feel would be most unfortunate. But the Tennessee Valley [fol. 3882] Authority can not begin this complete program in the State of Alabama if it must do so at the sacrifice of a fundamental principle, the principle that this is a national project; that it is subject only to a single authority; the will of the people of the entire country.

The Authority has already submitted to you a statement giving in considerable detail particulars on the following matters, among others:

1. The Authority's wholesale and resale rates;

2. The Authority's form of power contract with municipalities;

3. The Authority's rules and regulations;

4. The Authority's plans for the ultimate disposition of the properties;

5. The Authority's plans for rehabilitation of the existing facilities;

6. The Authority's plans for the construction of additional rural extensions;

7. A comparison of existing rates with the rates which will be charged by the Authority upon approval of the petition.

8. An allocation of the purchase price among the various distribution systems.

You have asked, in your letter of September 29, "if the [fol. 3883] Authority may be expected by the Commission to aid in the hearing" of these causes, "and if so, to what extent you propose to aid in the hearing of these causes. • • •" The following specific suggestions are offered for your consideration, and we believe indicate a method whereby both your responsibility and our responsibility may be satisfied:

1. Under an agreement that jurisdiction will not be conferred thereby, the Authority will have present at the scheduled hearings, the witnesses requested by you, or any others you may designate.

2. The appropriate witnesses will, if the Commission desires, verify the extended information contained in the statement filed by the Authority the contents of which are listed above, and will testify, if the Commission so desires, on the technical and financial resources of the Authority.

3. The Authority will have counsel present who will seek to aid the Commission with respect to legal questions involved in the petition.

4. This participation would be conditioned upon the understanding that all matters pertaining to rates and rate policies, and accounting are for the sole determination of [fol. 3884] Congress and its agents, and, therefore, not a

proper subject for examination or cross-examination in these proceedings. It is a matter of public record, which can be filed with you, that these same rates and rate policies have successfully worked out in practice under closely comparable conditions in a substantial area in Northeast Mississippi and in the City of Athens, Alabama.

We suggest that the foregoing plan provides a means whereby your Commission can secure the fullest information, and yet not involve the proceedings in matters over which your Commission has no direct Jurisdiction, and should not seek to exercise indirect control.

We have sought to approach this matter throughout in a spirit of cooperation, in an effort to find some reasonable means whereby your wishes can be complied with which at the same time will permit us to meet our responsibilities as we see them.

We await your views on this matter in the hope that the foregoing suggestions will be acceptable to you and will permit these proceedings to be concluded at an early date.

[fol. 3885] Very truly yours, Tennessee Valley Authority, —— ——, Chairman; —— ——, Director; —— ——, Director.

[fol. 3886] COMPLAINANTS' EXHIBIT No. 885 (Excluded)

TVA Press Release of October 8, 1934

Muscle Shoals power was supplied to a system of approximately seventy miles of rural electrification lines in Lauderdale County, Ala., yesterday when Fred J. Freestone, trustee of the Power Authority of the State of New York, and a prominent farmer in central New York, threw the switch at a rural substation about two miles northeast of the Wilson Dam, which connects this system with the generators at the Wilson Dam power plant.

This system comprises a rural electrification project, which is wholly owned by the Tennessee Valley Authority and which serves a territory which never before has been supplied with electric power. Along the lines are ap-

COMPLAINANTS' EXHIBIT No. 885 (Excluded)

proximately 300 farms and 100 residences in small communities, which have indicated that they wish to receive service from these lines.

Included in the territory are the towns of Waterloo, St. Florian, Oakland, Wright, Gravelly Springs, Center High and Green Hill. One line extends out some distance along the Florence-Savannah Road.

The opening of these lines for service is in accord with the plan outlined last July by David E. Lilienthal, director of the Tennessee Valley Authority in charge of power [fol. 3887] development, for the electrification of north Alabama. Under that plan the systems which would be taken over from the Alabama Power Co., and the new lines and extensions which the Tennessee Valley Authority would construct, would be operated by the Tennessee Valley Authority until such times as the municipalities concerned could take them over. Meanwhile, in addition to the regular TVA resale rates for power, customers would pay a surcharge of ten per cent, which in turn would be applied against the cost of the systems to the municipalities.

The energizing of this rural system was a feature of the visit of the Chairman and Trustees of the New York Power Authority to the Tennessee Valley Authority's projects at Muscle Shoals. • • •

The members of the New York Power Authority are touring the Tennessee Valley with the view of studying the TVA's policies and achievements in bringing about lower electric rates and larger domestic and rural use of electricity; the effect of public distribution within cities and villages upon the cost of electricity to small consumers in the surrounding rural areas; extension of rural distribution lines; decentralization of industry; and agricultural problems and the realation of public electricity to those problems.

[fol. 3888] COMPLAINANTS' EXHIBIT No. 886 (Excluded)

TVA Press Release of October 9, 1934

Statement by David E. Lilienthal, Director of The Tennessee Valley Authority in Charge of Power, Upon the Conclusion of Visit to Tennessee Valley of the Trustees of the New York Power Authority

I was particularly struck in talking with Chairman Walsh and his fellow Trustees these past few days, by the similarity of the problems and of the point of view of these two Authorities in their job of developing abundant electricity and distributing it at the lowest possible rates. For one thing, we seemed agreed that electricity, if people are permitted to use it as liberally as they should and can, will largely influence the economic and social life of the country in the coming decade. Then too, as trustees of public property of great value, our New York colleagues and ourselves are both under a duty to consider ahead of any other consideration the good of the entire community in the development of great natural resources. In the St. Lawrence "yardstick" area and in the Tennessee Valley "Yardstick" area, we are both working toward the same end; To find economic ways and means for an ever wider use of electricity in homes, on farms and in industry.

[fol. 3889] COMPLAINANTS' EXHIBIT No. 887 (Excluded)

TVA Press Release of October 22, 1934

An Address Delivered Before a Joint Meeting of the National Conference on City Planning and American Civic Association, October 22, 1934 at St. Louis, Mo.

"Large Scale Regional Development" by E. S. Draper, Director of Land Planning and Housing, Tennessee Valley Authority

In the planning of a large region, which is the subject of this discussion and one which means the cutting across political lines, county and state, there is bound to be a lack of political implementation using the term in its right sense, on account of the fact that the American political

system has constitutionally given the rights of administration in a large measure to the agencies of town, city, county and state. • • •

I would question whether any such regional agency could be successful, unless its set-up was such that an integral part of its activities were intimately and actively associated with the social and economic development of the region. • • •

[fol. 3890] I believe the most successful method is the basis on which the Tennessee Valley Authority has been set up, whereby the whole program grows out of the development of natural resources for which it has the funds and the authority and is able to cut through state lines in proceeding with such developments.

The planning of a large region cutting across state lines in seven states in the geographic region of the Tennessee River watershed involves more than the 42,000 square miles within the Valley. Fortunately the Act gives the right to plan beyond the geographic boundaries in such instances as the welfare of the region itself is affected.

In connection with power, I interpret that to mean that wherever power can be transmitted from generating plants along the Tennessee River or its tributaries and the distance to which that power can be effectively transmitted, therein lies the area or region within the influence of our planning activity. It would certainly seem short sighted to send power from Muscle Shoals to Birmingham, Alabama, from Pickwick Dam to Little Rock, Arkansas, from Aurora Dam to St. Louis or Terre Haute, or from Norris Dam to [fol. 3891] Asheville or Cincinnati, without giving consideration to the relationship of such power transmission to the country transversed by the lines and the effects in the way of industrial activity, population changes and transportation and communication adjustments.

So, any regional program must contemplate effects outside of the region itself as a part of its planning procedure. I would question the chances for success of TVA if it did not have as a part of its program the development of great dams and reservoirs for flood control, navigation and electric power. It is hard to imagine a more compelling relationship to the lives and activity of the people than that which may result from providing greatly increased electric

power, the use of which will change and alter the daily habits of millions of people. * * *

In the TVA we have an agency in which planning goes hand in hand with the basic development or extraction of natural resources. During the seventeen months that I have been connected with this undertaking I have had a gradually increasing respect for the power which planning [fol. 3892] may be able to exert in such a situation and the opportunity which exists for implementation.

I believe that there is a definite place in American planning for nonpartisan governmental agencies concerned with the planning of large regions and cutting through state lines. I feel that the planning work of such agencies should be related to a basic governmental program, and, if so related, the planning results from the work of such an agency can be made more effective and more beneficial than planning that is not so much implemented for its execution.

In England the effect of power transmission through the so-called grid system, whereby the distribution lines are under the control of the government whether the power generating plants are private or public, has brought the planners to the realization that this is perhaps the most important development necessitating regional rather than local planning that has ever come about in this country. The question uppermost in the minds of English planners today seems to be: How can we tie together the work of many local [fol. 3893] planning agencies so that the regions which have been established for power distribution can be made truly effective from a planning standpoint, if power is to be the motivating force of a new area of civilization, as many thoughtful men predict? Then it should and must be guided by the best planning thought, cutting across State lines and relating to great regions.

To achieve the ultimate of the TVA Act, we must seek not solely the production of cheap power, or low cost fertilizer or any of the other desirable results of our varied program, but through wise Planning to ensure these instruments of a better regional economy reaching into the lives of all the people in such a way as to benefit all who live in the region and those outside within the scope of influence.

COMPLAINANTS' EXHIBIT No. 888 (Excluded)

[fol. 3894] COMPLAINANTS' EXHIBIT No. 888 (Excluded)

TVA Press Release of November 7, 1934

Norris Dam, the Tennessee Valley Authority's first major project in its Valley program, is one year old today. * * *

A Power policy has been formulated and the power "yardstick" defined. Wholesale and resale rates have been fixed, and arrangements have been made to serve more than 50 municipalities at greatly reduced rates. The nucleus of a TVA power system has been established through the purchase of transmission and distribution facilities. More than a hundred miles of rural transmission lines have already been pushed out into territory hitherto not served with electric power. Wilson Dam itself is turning out TVA kilowatts at rates that take electricity out of the luxury class of commodity. It is estimated that great savings will be made annually by consumers served by other power utilities in the Valley states through substantial rate reductions. Further, the Electric Home and Farm Authority has been set up by the TVA as an agency that is making it possible for housewives to obtain through regular dealer channels electric ranges, refrigerators, and water heaters [fol. 3895] at prices from 25 to 35 per cent lower than those heretofore prevailing. The EHFA is cooperating with manufacturers and utilities to encourage the wider use of electricity in homes and on farms.

And the work of the Tennessee Valley Authority has really just started.

[fol. 3896] COMPLAINANTS' EXHIBIT No. 889 (Excluded)

TVA Press Release of October 26, 1934

Attacks by the coal industry on the Tennessee Valley development and other Federal hydro-electric projects were yesterday met with a proposal by the Tennessee Valley Authority that the industry and the TVA mutually arrange an unbiased investigation of the respective costs of water power and coal energy.

In a personal appearance before the Bituminous Coal Research Division of the National Coal Association, in con-

vention at Washington, TVA Chairman Arthur E. Morgan reiterated the Authority's desire to cooperate with the industry in developing new uses for coal, including a smokeless fuel, adding:

"The coal industry has seen fit to oppose the plans of the Tennessee Valley Authority on several counts. First, that electric power generated by water power will use less labor than power generated by steam through the use of coal. The coal industry and the electric power industry can not claim that inefficient methods should continue in order to provide labor. The coal industry has done its utmost to improve mining methods by the introduction of labor-saving machinery. As a result, many thousands of coal miners have been thrown out of work. This policy of eliminating [fol. 3897] labor as far as possible is a settled policy of the coal industry within itself, and the coal industry can not object if the general public adopts the policy of the most economical and efficient methods of meeting its power needs.

"Moreover, during the present period of unemployment, the building of Norris Dam and Wheeler Dam is giving employment to nearly 10,000 men, and until these dams are completed they are actually increasing the demand for coal. Moreover, low-priced power will so stimulate the manufacture of electrical appliances in all parts of America, and will so increase the use of electric power that employment will be substantially increased in the total, even in coal mining areas, with benefits far more widely distributed. The Tennessee Valley Authority has vigorously pursued the policy of endeavoring to stimulate self-sustaining employment in this region, and to insure that the total result of its activities shall be fewer unemployed persons and fewer persons dependent on Government appropriations.

"The National Coal Association also claims that electricity developed from coal is cheaper than electricity developed from water power. We have two comments to make on this [fol. 3898] claim. First, the private utility companies have no predilection for either coal or water power; yet their development has been very largely in water power, and today practically all the power being used in the Tennessee Valley area is water power. Practically all steam plants are idle.

COMPLAINANTS' EXHIBIT No. 889 (Excluded)

"The Tennessee Valley Authority would propose to the Coal industry that instead of a campaign of denunciation, the Tennessee Valley Authority and the coal industry unite in selecting a body of competent, disinterested investigators to make an impartial investigation covering the following points:

"1. The cost of electric power generated by the Wilson, Norris and Wheeler dams, with such standby steam plants or such additional water storage as may be economical. In this estimate, the war-time development at Muscle Shoals would be appraised at a fair present value and not at the total investment made under war-time conditions for military purposes.

"2. The actual cost of coal as mined within reasonable transmission distance of these dams, including indirect tax subsidies, if any, to the coal industry in the form of relief of underpaid or destitute mine workers and other forms of subsidy. This investigation should include the [fol. 3899] total actual cost of coal, including its social costs, due to anti-social working and living conditions, if any, within coal mining communities, and what the total cost would be if the coal miners were self-sustaining.

"3. The extent to which steam plants are paying less than the market prices for coal by means of buying "distressed" coal.

"4. The actual cost at present of generating power in the actual steam plants within transmission distance of the three dams mentioned; also what the cost would be of abandoning the present steam plants: paying off capitalization, and building new and modern steam plants in accordance with the best modern practice.

"5. The cost of meeting additional requirements for power in this region by the construction of additional steam plants of modern design; and the comparison of this cost with the cost of hydro-electric power generated at the three dams mentioned."

Chairman Morgan declared that the TVA has carried on research for more than a year in an endeavor to pro-

COMPLAINANTS' EXHIBIT No. 889 (Excluded)

mote the welfare of the coal industry as part of the Tennessee Valley Authority program.

[fol. 3900] COMPLAINANTS' EXHIBIT No. 890 (Excluded)

TVA Press Release of November 19, 1934

The TVA Directors today concluded an arrangement with the Southern Industries and Utilities Company, for the evaluation of this company's property on the lower Tennessee near what is known as the Aurora Landing dam site. The valuation is to be made by the Federal Power Commission, before whom the Southern Industries and Utilities Company has pending an application for license to construct a power dam and which has heretofore been granted a preliminary permit. TVA will acquire the company's property on the basis of this valuation, which is to represent actual legitimate costs as determinable under the Federal Water Power Act.

Carl A. Bock, Assistant Chief Engineer, says TVA has since its organization steadily been pushing investigations on the lower Tennessee toward the development of a suitable project which will provide the greatest economic value to the Valley, and these plans are more comprehensive and more advanced than the plans heretofore made by any other agency.

[fol. 3901] On account of the very large problems, the large cost, and the important considerations involved in the treatment of the lower river, plans must be worked out with unusual care in order to avoid large waste through hasty or ill-considered construction. Surveys and investigations are progressing as rapidly as possible, but it will require some time to develop final plans.

Some years ago Southern Industries and Utilities Company, a Maryland Corporation, procured a preliminary permit from the Federal Power Commission to engage in work preliminary to the construction of a dam. Two months after the creation of the TVA the company applied to the Commission for a license. The Authority entered a protest to the granting of this license, taking the position that the proposal interfered with the unified development

of the river for the best public interest. The company relied for the major portion of its financing on an appropriation from the Federal Congress, on account of the Government's interest in navigation. This appropriation had not been secured and the whole proposal was left in an indefinite state.

In the meantime the publicity given to the company's proposal had caused the general public impression that [fol. 3902] final plans and appropriations had been completed and that construction could start at once. This is not the case, and the present action of the TVA Board is intended to clarify the status of the project in the public mind, as well as to permit the Federal Power Commission to dispose of the application for license which is still pending before it. TVA recognizes only the right of the company to compensation for property, but does not recognize any promotional costs or so-called water rights in the situation. The pending application of the company for a license created a special situation which needed clarification.

[fol. 3903] COMPLAINANTS' EXHIBIT No. 891 (Excluded)

TVA Press Release of December 17, 1934

Address Delivered by Dr. Arthur E. Morgan at the Wharton School, University of Pennsylvania, Philadelphia, on December 17, 1934

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Certain other phases of the program are in full glare of publicity and of controversy, notably the issue of electric power. The TVA inherited this issue with Muscle Shoals, but it is not an unwelcome inheritance. In the new adjustment of agriculture and industry which must be a feature of wholesome economy in this region, and in a higher level of domestic economy, abundant and cheap electric power will be a most potent factor.

We believe that when the TVA was organized and its power policy was established, the prevailing rates for domestic power were about twice as high as were necessary

to meet all proper charges on necessary and reasonable investment. The power companies of the region headed up in a few great holding companies in New York. In recent years, electric power has been one of the richest sources of corporate income, and the powers that be are loath to see this domain infringed upon. The TVA holds that the advantages of electric power, beyond proper cost of fi- [fol. 3904] nancing and operation, should accrue to the people of the region where the power is generated and used. For a generation our railroads were stakes in a game played by high finance, rather than primarily a service to the people. Electric power should not repeat that history. With the coming of the TVA and of the present national administration and certain new state administrations, the power companies have made sudden and great reductions in rates. The following sentence is quoted from a recent advertisement of the Georgia Power Company:

"Minimum bill customers will continue to pay $1.00 a month. But the dollar now will buy 15 kilowatt hours, instead of 5 as was the case under the old rates. That's a reduction in price of electricity to such customers from 20 cents to approximately 6½ cents a kilowatt hour." Those are the words of the company. They describe an extreme case. For the average household the cut in residential rates was about 35 per cent. In the opinion of the TVA these rates are still too high, and are still placing the Tennessee Valley under unnecessary tribute.

But there is another reason why the public should be [fol. 3905] interested in the generation and distribution of surplus electric power. The Tennessee is a great river system, draining more than 40,000 square miles. It has great power possibilities, which can be developed along with flood control and navigation. If power developments on the Tennessee are by unrelated projects there will be great loss of economy and efficiency. Power plants on the main river have great capacity during high water, but lack storage possibilities for regulating the river. On the up-river branches there is great storage capacity. By uniting this entire river system into a single integrated system, to provide navigation flood control and power, electric power can be produced far more cheaply. This is planning

COMPLAINANTS' EXHIBIT No. 891 (Excluded)

and integration on a far greater scale than has heretofore been accomplished. Treated as a unit, the four great dams built or under construction by the TVA can bring about a far higher quality of navigation, and can produce power at a much lower cost than the most modern steam plant. Moreover, all the processes of construction and operation of the TVA water power system are with well-paid labor under modern wholesome working conditions, in striking [fol. 3906] contrast to conditions in much of the coal industry. It would seem a pity for the country to suffer the essential social loss which would come from unintegrated, haphazard development. * * *

Briefly, the power policy of the TVA is as follows:

The business of supplying power is not a private business, but concerns the public interest. It cannot be carried on effectively except by the exercise of governmental functions, such as the right to take private property for public use, and the right to maintain monopolies. The public may exercise these rights directly through the government, or may grant them to semi-private agencies. It is for the people to decide which course shall be taken.

Congress has established the policy of public generation and sale of surplus power in the Tennessee Valley region. Unless this act should be found unconstitutional, it constitutes a formulation of public policy. The TVA is authorized to acquire existing properties or to construct competing facilities. Many cities in the region have formally requested the TVA to supply them with power. To date, [fol. 3907] not a single mile of competing line has been built, though it may become necessary to do so if a policy of continual obstruction is continued. It has been the policy of the TVA to buy existing properties at a fair price rather than to build competing properties. It has offered to pay the fair actual value of such properties but has refused to pay for inflated capitalization. Where capital inflation has been extreme, there may be a marked difference between what the TVA will offer, and the total capitilization. It is the policy of the TVA, in calculating the cost of power, to include every legitimate cost including operation, depreciation interest, taxes, and amortization. Taxes are estimated to equal those paid by the private utilities. It is interesting to note that most private utilities do not

COMPLAINANTS' EXHIBIT No. 891 (Excluded)

provide for amortization. The program of legal entanglements being thrown about the power program of the TVA—There were several actions pending when I received the last returns—may serve to delay effective action and for a time support the claim that the government cannot be effective in business. The loss caused to the TVA and to the public by these obstructive actions may run into millions of dollars.

[fol. 3908] It is the aim of the Tennessee Valley Authority to develop the water resources of the Tennessee River system by a single coordinated system, and to sell its surplus electricity to municipalities and other users at rates that would pay all legitimate costs, including taxes. We believe that there is no over-production of power, and that lower rates will lead to such great increases that new facilities will very soon be necessary. Where TVA rates have been in effect, the use of power has doubled in less than a year.

[fol. 3909] COMPLAINANTS' EXHIBIT No. 892 (Excluded)

TVA Press Release of November 5, 1934

Address in Philadelphia, Pa., Given by Dr. Arthur E. Morgan, Before the Democratic Womens Luncheon Club, November 5, 1934

That was largely the burden of the President's mind in establishing the Tennessee Valley Authority. In the minds of Congress, another thought was dominant. During the World War, a great power plant was built on the Tennessee River at Muscle Shoals, the Wilson Dam and power plant. Twice, Congress had passed bills providing for government ownership and operation of that power plant. Twice such bills had been vetoed, by Coolidge and by Hoover. The temper of the American people was fairly well made up on that point.

In his campaign speeches, President Roosevelt expressed himself this way. He said he did not approve the taking over of the power resources of America by the government. He said he did approve, however, of a limited number of

projects which he called yardsticks of government owner-
[fol. 3910] ship and operation, where it might be possible to make a fair comparison of government ownership and operation and of private ownership and operation.

The Tennessee River is an excellent case, for two or three reasons. First, the government already owned a great power plant there. Then there is another reason that is even more compelling. The Tennessee River has a drainage area of 42,000 square miles, just about the size of the State of Ohio. If the power on that river is developed independently a project here and a project there, probably a third of its potentialities would be lost.

Let me illustrate. The Wilson Dam at Muscle Shoals has only a relatively small capacity for prime power, as they call it, that is, dependable power the year round, because the river varies greatly in its flow. A year ago last summer, during a dry season, there was only water enough in the river to produce 25,000 kilowatts of energy. A year or two before, in the winter time, there was water enough to produce 600,000 kilowatts of energy, a range of about twenty-five to one. On the other hand, up on one of the branch streams we are building the Norris Dam and reservoir, a reservoir larger than any now existing in the United
[fol. 3911] States, big enough to hold the entire flow of the river above for a year at a time. The Norris Dam, taken by itself, might not be profitable, because if you spread that flow throughout the whole year, the energy might not be worth the cost. But suppose you take the Norris Dam and the Wilson Dam at Muscle Shoals together, what do you get? For about eight or nine months in the year, there is an abundant flow in the Tennessee River, and then for two or three months there is a low flow. Now, if you use the up river power plant to store water when there is abundance below, and to let it out during the one or two or three months when there is low water below, you can bring up the flow in the lower river so that instead of having 25,000 kilowatts capacity, it will have 150,000 kilowatts capacity. You can fill up those low periods, and you can make the Wilson Dam worth very much more than it would be worth alone. So that neither of these projects is fully valuable by itself, but taken together, they produce some of the cheapest hydro-electric power in America.

Those are just two cases. Below Norris Dam there are places for about eight or ten power plants along the Tennessee River. There is very little storage at any of those. [fol. 3912] By building the Norris Dam up river, you can more than double the value of each of the eight or ten down river. By building additional dams up river, you can further increase the value of every one down river. Taken independently, those power plants are of doubtful merit. Taken together, they produce one of the most economical power developments on the American continent.

Now, there is a place where the facts of the case indicate the need of social and economic planning. • • •

This principle of a yardstick of a comparison, has been established by Congress. If we are to have a case of public ownership and operation, it must be somewhere, it can't be up in the air. Now, while those who are interested in preventing the government from having such a case, were preventing the use of Wilson Dam at Muscle Shoals, they were surrounding that area with their private transmission lines. They were putting in their investments in that area, and they were selling securities to widows and orphans in that region. I recently saw about one hundred and fifty letters that had been written to the President, protesting against the government development of this power, and it happened that a large part of those were from widows and [fol. 3913] orphans. Whether there was an effort to sell them for publicity purposes, I don't know, but perhaps a car- catalogue is kept of widow and orphan investors which can be used at the right moment.

Now, if we are going to have a case of public ownership, it must be somewhere; we must take an area. That area must be on a large enough scale to be comparable with other power developments. It can't be a little corner that is too small to be efficient. A natural unit of production is the Tennessee River watershed. Nature has made that a unit. The natural unit of consumption is an area that would use that power.

The policy of the Tennessee Valley Authority is this: to develop power as cheaply as it can be actually developed, paying good wages and meeting all actual costs, and to purchase from the private companies an area large enough to

distribute that power. The law provides that we can build competing lines against private companies. • • •

We believe the power companies are in their own light in keeping their rates so high that the public can not make use of power. So we have set a price for power which we believe will pay all the proper costs—taxes, amortization, inter-
[fol. 3914] est—all proper costs, but no more.

Now we have taken over a few towns. There is a campaign put on by those who try to prevent us from establishing a yardstick, that is obstructing the program. I believe it would be a fairer deal if they would cooperate with us and say, "You take that property, buy it from us at a fair price, and see which is better." It seems to me that if the private utilities are so certain that they are more competent, more efficient, they would welcome a chance to have a comparison. So we have invited them to cooperate with us. We would like to have them be acquainted with our books and our records in every way to see just how it turns out when you have this comparison.

At Tupelo, Mississippi, we have been furnishing power for about eight or nine months at about half the rate charged before. During that time, the use of power in that town has more than doubled. Those people are buying electric appliances. In those eight or nine months, they have bought more appliances than they had bought in all the history of the town before. Other towns are following, and the factory towns of the North are prospering by making the equipment that is being sold.

I believe that the power policy of the Tennessee Valley
[fol. 3915] Authority is a sound policy, that it will reflect to the advantage of the private utilities and of the public utilities. One of the large private utilities that we are competing with has lowered its rates, not as much as ours, but about 30%. The increase of power sold has been so great that its income was greater than it was before it lowered rates. • • •

At the same time, we have been developing an electric utility system. Just as there is difference in State administrations, some good and some bad. In utility administration there has been a watering of stock, there has been a corrupting of legislators, there has been a corrupting of public utility administrators. Sometimes the lid blows

COMPLAINANTS' EXHIBIT No. 892 (Excluded)

off as it did in the Insull case. I doubt whether the Insull system was the only great national system run in an unsound manner. * * *

We have been buying certain utility properties in the Tennessee Valley. A great deal has been said about our purchase of the Knoxville system. There are certain things that are not advertised to the public. For instance, at a time when the Tennessee Public Service Company, owning the Knoxville system, had a capitalization of $12,000,000, its [fol. 3916] directors sat down one day and wrote $4,500,000 of water into that capitalization, added approximately 30% to its capitalization over night, without adding one cent to its valuation. We are refusing to buy that water in buying that property.

Again, that company owns a street car system in Knoxville. Those of you who know public utilities know that a street car system in a town of 100,000 isn't always worth a great deal. That street car system has not been paying its actual monthly running expenses, to say nothing about interest on bonds, or dividends on stock. Yet the people have been charged enough for electric light to pay interest on the actual investment, interest on all this water, and interest on the street car system.

Now, prudent financial management would have stopped paying dividends on that street car system and would have begun to amortize the capital, knowing it was a dying system. That was not done. In buying these systems, we have tried to offer a fair, honest price for the actual values, that much and no more, and I believe those facts ought to be brought out in public discussion.

[fol. 3917] COMPLAINANTS' EXHIBIT No. 893 (Excluded)

TVA Press Release of January 16, 1935

The Tennessee Valley Authority announced today that its Birmingham office will be opened Friday, January 18. The office, which occupies the first floor of the building at 1916 First Avenue, will be under the supervision of Mrs. Pattie R. Jacobs of Birmingham, who recently left NRA to accept this position with the Authority.

COMPLAINANTS' EXHIBIT No. 893 (Excluded)

It was announced at the same time that Miss Willie L. Byrd, also of Birmingham, has been employed as secretary to Mrs. Jacobs. Mrs. Jacobs will also be assisted by Claude Manning of the TVA.

The first floor of the building has been remodeled and an educational exhibit installed. In addition to having a regular staff of three, the office will serve TVA officials when in the Birmingham district.

The Authority now employs more than 6,400 persons in Alabama and its purchases in that state to date have totaled $1,250,000. For the construction of Pickwick Landing Dam, the Authority will expend approximately $1,000,000 in the Birmingham district for cement alone.

The educational exhibit in the fore part of the office consists of charts, maps and photographs which give a graphic explanation of many phases of TVA activities.

[fol. 3918] COMPLAINANTS' EXHIBIT No. 894 (Excluded)

TVA Press Release of May 13, 1935

Confidential Advance of Talk by Chairman Arthur E. Morgan, to be Given Before the Rotary Club of Columbus, Ohio, at Noon, Monday, May 13, 1935. For Release After 12 Noon, Monday

A private company could not afford to build Norris Dam, for it is not worth while of itself; the investment is too great for the power developed. It is profitable only because it will about double the prime power of all the dams down river. If these developments were in the hands of half a dozen companies, there would be no assurance to the company owning the Norris Dam and power plant that it would sell water it had stored. Owners of power plants down river could say "we do not need your stored water today," and would not use it except at unprofitable low prices. For years private industry had opportunity to build Norris Dam, and did not dare build it because there would be no assurance of cooperation with developments below. There is room ultimately for half a dozen or more great dams on the headwaters. These upriver dams need not only to be harmonized

COMPLAINANTS' EXHIBIT No. 894 (Excluded)

[fol. 3919] in their operation with the dams down river, but also with each other. A storm may fill one reservoir, while another is nearly empty. Only a single coordinated program can give full value at lowest cost. • • •

We are working on distribution of electric power. You have recently seen advertisements by the private power companies to the effect that the American people spend only one per cent of their income for electricity. That is a situation to be ashamed of, not to boast about. Americans should spend more than five per cent of their income for electric power. They would if it were cheap enough. At the Norris Dam we built one hundred and fifty houses properly equipped for electrical appliances, and we sell power at the low rates we think reasonable. Most of these are workmen's houses. We find the use of electric current in these small houses is about twenty times the average for American homes which are electrified. There is no surplus of electric power in America, only under-consumption. With reasonable rates, home use would double, and double again, and now industrial uses would add to our industries and to our prosperity. The Federal Power Commission reports a pending power shortage.

[fol. 3920] In my opinion, at the time the TVA was organized in 1933, of all the money paid for domestic power in America, only about half was a reasonable charge, and about half was unfair tribute taken from the people over and above a fair charge. Is it surprising that the little handful of men in control do not want to give up that source of financial power? Few Oriental monarchs ever had such tribute pouring in upon them. Since the organization of the TVA, power rates have been sharply reduced. In Cincinnati the reduction was more than a third. The president of the Commonwealth & Southern Corporation, which controls much of the South, testified before a committee of Congress that the TVA had forced their reductions. Before the same committee, the vice-president of the same organization testified that the TVA had nothing to do with it—that they would have reduced rates anyway. In our opinion there is still room for further reductions.

[fol. 3921] COMPLAINANTS' EXHIBIT No. 895 (Excluded)

TVA Press Release of July 31, 1935

Dr. Arthur E. Morgan's Talk

Chattanooga Flood Protection District Commission, et al., at Chamber of Commerce on July 31, 1935

One of the first things that confronted us at the formation of the Tennessee Valley Authority was the flood problems in Chattanooga. We have had that in mind and have been working with it ever since. Your problem here is not one that is going to be solved over night. Information necessary to determine upon a definite program doesn't as yet exist. We have some of it, we are getting more of it, but with such information as we have nobody can say "This is a program to be followed." Before a program can be adopted, there is necessary a large amount of information and an exactness of information that is gradually being developed.

I have been interested in flood control now for something [fol. 3922] over thirty years, and necessarily have been very much interested in estimates as to what kinds of floods, what size of floods, what frequency of floods should be taken into account. It may not do much good to prepare against floods, if the floods you are preparing against are going to be greatly exceeded. Sometimes work that is being done may be a menace instead of a help if it is inadequate.

In Europe, floods have been recorded over such long periods that people have been somewhat adjusted to their recurrence. Even there, they have floods that cost a good many millions of dollars. This country has been built up rapidly. Most of our development has come between flood periods and there are cities in America that have never experienced floods of anything like the maximum that is bound to strike them some day.

In 1921, when the great flood occurred in Pueblo, Colorado, New York City papers asked me as to the full significance that flood had for the rest of the country. I remarked that I could indicate at least one city in New York that was just waiting for its disastrous flood. I got a telegram next day from a certain city in that state. The editors wanted to know if I meant their city. It happened that they had de- [fol. 3923] veloped a flood program of their own and had

built some local works. The works they had constructed were inadequate and they had a feeling of security whereas there was no security at all. A few weeks ago, there was a large flood in northern New York. If that flood had shifted its location one hundred miles, that city would have been very greatly damaged. That New York State city is waiting for its castastrophe.

At Dayton, Ohio, in about 1909, they had a flood, a serious one, which did a good deal of damage. The people got together to work out a flood control plan. They got some "level-headed" engineers who weren't going to be spectacular about the job. They recommended "A good sensible degree of flood control," issued bonds to secure that flood control, let contracts, and started to work. A few weeks after they started to work, a flood came along two and a half times the size they planned against, and destroyed a hundred million dollars worth of property and drowned hundreds of people.

When one makes a study of flood possibilities and determines what degree of flooding can occur, it is then necessary to face the facts so that we shall know whether we can get full security, and that we are not assuming that we [fol. 3924] have something when we do not have it. I think that is one of the first necessities in handling flood control. I think that is necessary here in Chattanooga.

You have a very serious flood control problem. Your region has not been settled long enough to discover what the maximum flood possibilities are. My engineering firm, during the past twenty-five years, has tried to exhaust all available records concerning flood possibilities. We have searched every scrap of record we could find in this country, Europe and Asia. What is the biggest flood of the last ten years? Fifty years? One hundred years or two hundred years? We have gradually formed in our minds a judgment as to what is likely to be the biggest in fifty years, and what the biggest in one hundred years. We feel that we have probably as good judgment as can be arrived at because we have spent much time and effort. Surprisingly, there is but a limited amount to be learned by studying the records of storms over a great deal of this country. The records do not run back very far. Of course, in almost any country some of the people soon begin to make measure-

ments on floods, but in recently settled countries it is difficult to get any good record that runs back very far. Even [fol. 3925] in the long-settled European countries, it is hard to find a river channel that has not changed its shape and size, one that has not changed its location from time to time, or along which the timber has not been cut, etc. It is hard to get a permanently definite shaped channel in which there has been recorded the height of water during floods over a long period, so that an engineer can determine how much water flowed in the channel.

In the case of the Tiber river at Rome, there has been so much filling of land, so much change in the shape and size of the channel, that stage records for two thousand years back don't mean much now. The same is true of many other streams. Some have been so changed by filling in banks, by building walls, and filling low lands, that you can't state what the flow was even though there are records of stage heights. One river on which there is a good permanent channel is the Danube in Austria. There, the channel is very definitely defined in a solid rock gorge. It happens to be in that natural channel that one of these old feudal barons built a castle in the narrow gorge. They were the forerunners of the present day monopolists. They blocked off the mountain highway and charged toll to everyone who [fol. 3926] passed by. These men made marks in the rocks indicating stages of water during floods a thousand years back, and we can get records of stages and records of quantities of water flowing, and frequency of occurrences. Here and there we find places where we can get such definite records. In this case on the Danube, we find that the greatest flood of nine hundred years was about fifty per cent greater than any other flood that occurred in that period. It occurred in the year 1055. Thus, it may be quite possible that a flood double the magnitude of any of record over a comparatively short period of years can occur. We have found a few cases like that.

We have gone over all the storm records of this country to get probable flood magnitudes. For instance, when the flood occurred in Dayton in 1913, it was twice as big as any that had occurred in one hundred twenty-five years, which was as far back as the records went. That is how a really great flood compares with a moderately great flood.

COMPLAINANTS' EXHIBIT No. 895 (Excluded)

Records aren't long enough to justify a definite judgment, but from our very general study for the past twenty-five or thirty years, and from our judgment, we believe that here in Chattanooga it is not only probable but it is almost certain that you can have floods during long intervals [fol. 3927] much greater than any floods you have ever had in your recorded history of the city. That fact has a bearing on flood control in this way. The biggest flood you have record of is that of 1867. Chattanooga was then a town of five thousand people. You wouldn't have drowned more than five thousand people whatever flood you had.

Suppose you go ahead and protect your city against floods by means of levees that are just about safe for the greatest flood of record. For a period of years you may develop undisturbed. You feel safe. You build your houses and factories in the low areas. Then suppose you have a flood ten feet higher than that for which you have provided. Your protection is overtopped and broken and the conditions are much worse that if you had no protection at all. When it does break, the water doesn't rise gradually—a few inches at a time—but comes in as a great wave and is extremely destructive. If you are to protect yourselves by levees you don't want any inadequate job done, you want protection against the ultimate floods.

If you happen to be in a place where you can improve the condition of a large channel the situation is different. Suppose you protect yourself by channel enlargement against an 1867 flood, and then a greater one occurs. In [fol. 3928] that case the channel enlargement would give partial protection. Whether it pays to have partial protection on the cost and on what happens if a greater flood than that provided for does occur.

I have handled flood control problems in a good many cities. It doesn't pay to pay for complete protection in some cases if an unusually great flood which may occur at infrequent intervals will cause only a moderate increase in flood damage. In such instances, it may be wiser to have protection from moderate floods or fairly big floods and stand the extra loss at long intervals. On the other hand, it is a serious matter to only get partial protection if you must depend on levees where a failure would be a complete failure and the catastrophe overwhelming. You don't want

anything to do with that type of protection unless you go all the way and make yourselves safe.

At Chattanooga, the chances for channel improvement seem to be very slight. The cost of widening this river through your city would be practically prohibitive. I think you can dismiss that prospect. You may improve somewhat by trimming up the banks, clearing trees, bettering the alignment, removing sand bars, etc. You might add ten [fol. 3929] per cent to the channel capacity in that way, and reduce the height of levees a few feet.

Generally speaking, there are two primary methods of protection available to you against main river floods: One is by levees that will keep the river out and the other by building reservoirs to hold back the water up river. These two seem to be the only proper approaches to protection from the main river. As to Chattanooga Creek, you have another problem. It may be possible to enclose that or to separate it by levees, but for main river it seems to rest primarily on levees or walls—about the same thing—and reservoirs. Chances for Chattanooga to protect itself entirely by local protection works are not good for the larger part of the town. It might be conceivable to protect much flooded area in the valley of Chattanooga Creek and some up the river without reservoirs. That would be an expensive undertaking. As to the up river parts of the city, it is a question whether the lay of the land is such as you can feasibly do the job independent of the storage above.

On the other hand, I think it is a fairly safe statement to say that there probably will not be enough dams built [fol. 3930] at any time in the near future to control Chattanooga floods. If we should build all the dams that have been suggested upstream, we might have all the storage necessary, and that might solve the flood problem in Chattanooga. The building of all of those dams is not to be expected within fifty or one hundred years. We expect that a few of the main ones may be built and these should cut the flood stages down to a point where you could supplement their action with local work, and the combined protection of dams and local protection works would make you safe. I suspect that is the most feasible way to handle the situation. Get all the storage you can above and supplement

with your own works. The two methods together will give protection.

The building of the Norris Dam will cut off about one-seventh of your flood possibilities. The Fowler Bend Dam on the Hiwassee River will cut off about half as much as Norris Dam. But you would need five times as much reservoir storage to complete the job. If a large storage dam could be built on the French Broad and another on the Holston, and if the proposed development on the Little Tennessee should be carried through, then I think the problem would be brought down to where you could handle it yourselves within reasonable limits of cost.

[fol. 3931] Consider now the dams on the main river. They will help in moderate floods; in great floods they do not mean very much. The Chickamauga dam, for instance, will help in more moderate floods. In times of great flood, Chickamauga will amount to very little in control of floods here.

With storage reservoirs on the main tributaries, Chickamauga would then add to protection. Without those storage reservoirs, Chickamauga will help with the moderate floods, but in the greatest floods it will be of no advantage at all. You can't count on Chickamauga Dam plus levees to do the job. You must rely on upstream reservoirs.

The situation in Chattanooga is one of the most serious in the country from the point of view of flood danger. It isn't very popular to say that, but it is a public duty to direct attention to the conditions, so that you may not discover it all at once with a great loss of life and tremendous loss of property.

As to what the proper program should be for Chattanooga in relation to floods, I think your first necessity is that of knowing the facts. We don't, today, know what the possibilities are. Suitable designs cannot be made without [fol. 3932] reliable surveys and information. There have been surveys—limited surveys—but at no time has there been a collection of information that is adequate for handling the problem.

There are such problems as that of enlarging the gorge below Chattanooga. That is an intriguing possibility, but the cost has never been determined. Whether it would be possible to lower the flood stage through the city three or

four feet by that method, or whether the cost of widening and deepening the river for a number of miles is entirely too great; we do not know, as to the cost of diverting Chattanooga Creek in an effective manner and the cost of pumping the water from the local areas during floods. I think that problem has had no more than a good guess. As to the cost of moving railroad yards above the mouth of Chattanooga Creek or possibly combining all railroad yards in the present flooded lands, I think there has not been adequate information assembled.

The first necessity is to get information thoroughly developed so that the possibilities will be fully known, and danger of flood frequency can be known as well as can be estimated, and the effects of the reservoir construction should be fully understood, and then I think probably a program as to how to handle the situation can be worked out.

[fol. 3933] In the meantime, a program of how to handle a flood before you have your full protection should be worked out so that you have a definite plan of campaign in case of flood. What you would do first on the approach of a flood, how you would give warnings, how you get people out of the low lands, just how to handle the situation point by point. With reference to individual industries, each should be informed regarding what danger it is in. It should be possible to work out methods of handling the individual industries in time of flood. It is possible to have a program worked out so that with flood warnings given, industries in the flood area could get perishable goods upstairs out of reach of the water. In some cases it may be possible to build water-tight walls around buildings and so greatly reduce probable damages.

The possibility of damage and loss of life in your poor residence districts in these floods is very great. I have seen whole blocks of houses in other cities piled up and jammed together until they caught fire and burned. Experiences like that are tragic. And you are all ready for such experience here. You have hundreds of houses on flood land here that would be entirely covered by any great flood rise.

[fol. 3934] In handling Tennessee River as a whole—while Chattanooga is the largest city on the river, it is

COMPLAINANTS' EXHIBIT No. 895 (Excluded)

still a small element in the whole pattern of the valley, and I am inclined to think that flood control for Chattanooga must be an incident in the main program of navigation, flood control, and power.

I can't see a way out for Chattanooga acting by itself alone. It seems to me you are in the same boat with the whole Tennessee Valley, and that your salvation lies in the continued development of the TVA program, especially as to those storage dams above you. I think one is speaking for the interests of Chattanooga when he speaks for those projects up river. They are essential to your safety and their construction is your first reliance.

[fol. 3935] COMPLAINANTS' EXHIBIT No. 896 (Excluded)

TVA Press Release of September 22, 1935

Fayetteville, Tenn.—Fayetteville and Lincoln County are looking forward to entertaining Mrs. Franklin D. Roosevelt, Secretary of State Cordell Hull, Speaker Joseph W. Byrnes of the House of Representatives, the Directors of the Tennessee Valley Authority and a long list of notables at a large celebration, which the citizens of Fayetteville and Lincoln County are sponsoring on October — when the first segment of the new TVA rural electrification * * * in Lincoln County will be put into service and taken over from TVA by the newly formed Lincoln County Electric Membership Association.

The electrification network in Lincoln County comprising the first TVA rural electrification project to be put into operation in Tennessee. When completed, it will consist of approximately miles of rural lines serving the communities of Camargo, Moline, Blanche, Elora, Kelso, Coldwater, McBurg, Boons Hill, Lincoln, Flintville, Belleville, Howell Hill, Taft, Cyruston, Cash Point, Bellview, Frankewing, Mimosa, Kirkland, Liberty, Brighton, Yukon, Pearl City and Egam. All of these communities will be represented in the celebration. Other rural systems now [fol. 3936] being projected in Tennessee are Rhea, McMinn, Meigs, Giles, Harden and Haywood Counties. * * *

Invitations have been sent to Governor Hill McAllister of Tennessee; Governor Bibb Graves of Alabama; Senators

COMPLAINANTS' EXHIBIT No. 896 (Excluded)

Kenneth McKellar and Nathan L. Bachman of Tenn. Congressman J. Ridl Mitchell and the entire Tennessee Congressional delegation; O. C. Van Cleve, Tennessee Commissioner of agriculture; L. R. Neal of the Tennessee agricultural experiment station at Columbia; J. Frank Porter of the Farm Bureau of Tennessee; the members of the Tennessee Rural Electrification Board and State Planning Board; Mayor Hila E. Howse of Nashville; Mayor Watkins Overton of Memphis; Mayor Ed. Bass of Chattanooga; James G. Stahlman, publisher of the Nashville Banner, George Fort Milton, editor of the Chattanooga News; Julian Harris, editor of the Chattanooga Times; Marshall McNeill, editor of the Knoxville News Sentinel; Lit Purdue, publisher of the Nashville Tennessean; Edward J. Meeman, editor of the Memphis Press-Scimitar; George Morris, assistant publisher of the Memphis Commercial Appeal.

The mayors of cities in middle Tennessee and North Alabama have been invited to attend and to appoint delegations to represent their cities at the celebration. The Ten- [fol. 3937] nessee cities include Lewisburg, Pulaski, Winchester, Columbia, Lawrenceburg, Murfreesboro, Dickson, Franklin, Shelbyville, Lynchburg, Elkton, Manchester, McMinnville and Mount Pleasant. The Alabama cities include Scotsboro, Huntsville, Athens, Guntersville, Decatur, Hartselle and Ardmore.

[fol. 3938] COMPLAINANTS' EXHIBIT No. 897 (Excluded)

TVA Press Release of October 1, 1935

Bringing Electricity to the Farm

Advance Text—Excerpts of Speech by David E. Lilienthal, Director, Tennessee Valley Authority, at Celebration Upon Opening of Farm Lines of Lincoln County, Tennessee) Electric Membership Association, Fayetteville, Tennessee, October 1, 1935

Above all else, the American people today demand action of their government. Talking and discussing and planning are necessary, but what the country wants is action—and

plenty of it. To me, TVA is the New Deal in action. This [fol. 3939] celebration today is part of that action.

Two years ago TVA had a mere handful of employees. A big job had been handed to it. It had to lay plans. It had to build up an organization. It had to take all the steps that are preliminary to action. Those plans and preliminary steps were taken and action began almost at once. Today, as you know, only two years after the very beginning up on the Clinch River, TVA has moved a mountainside into a canyon and is ninety per cent completed with the construction of Norris Dam. More than 900,000 cubic yards of concrete have already been placed. Today, less than two years after TVA began work at Wheeler, that dam is also within a relatively few months of completion, stretching a mile across the Tennessee River. Pickwick Landing Dam is well under way, with thousands of men working night and day to rush that job along. After lying idle for twelve years, electricity from Wilson Dam is now bringing comforts to the homes of thousands of our neighbors. A fertilizer plant has been built and is producing, and that fertilizer is being applied on demonstration farms in more than eighty counties throughout the length and breadth of this area. That is action—the kind of action the American people expect and have a right to demand of their government.

[fol. 3940] There is the same demand for action to bring electricity to the farm. We have talked about the electrification of farms in this country for a good many years. You have heard a great deal about it. It has been discussed. Hopes have been expressed. Plans have been laid. There has been talk and talk and talk. What the farmers now need in order to get electricity is some action—sensible and intelligent action—but action, not more talk and more promises. We are in the action stage here today. This occasion today celebrates action about farm electricity. Today a ten year old youngster has thrown a switch, and electricity is at the service of many of your neighbors. More action is right ahead. By the first of January your Association will have 110 miles of lines in Lincoln County, with 1100 farm homes being served. As you know, the same thing is happening elsewhere where the farmers, the townspeople, and TVA together have tackled this prob-

lem of bringing electricity to the farmer and his family.

Up to the present, electricity has been denied the farmers of the Tennessee Valley area. After all these years of talk, and in spite of the great need and insistent demand, only two farms have electricity out of every hundred in the Ten- [fol. 3941] nessee Valley Area. Ninety-eight farms out of every hundred are still without it. These are the facts. We can deplore it; we can listen to the reasons and the alibis time without end. But the stubborn fact remains that at this late day ninety-eight farmers and their families out of a hundred are still without electricity in this area. That situation is going to change. It must change. It will change, if that group of selfish interests that have steadily bled the farmers for a generation doesn't block the way. TVA and the farmers and townspeople, working together, are going to see to that. It won't be changed by mere talk, but by action—the kind of action that you and TVA have taken in Lincoln County in recent months.

What is going on in Lincoln County is going on in other parts of the Tennessee Valley area. You know, for example, about the Alcorn County Electric Power Association in northeastern Mississippi. There the city of Corinth and the farms and villages throughout the county are working the problem out on a countywide basis. Down there they have recognized what you recognize here, and what I believe will soon be generally recognized—that to really do this job of farm electrification adequately, the town and the country must join hands. County after County in [fol. 3942] Mississippi and in Tennessee have already followed this principle of the town and the country going together to see to it that electricity is cheap and abundant all over the country. They realize, and I can't emphasize this too much, that for farmers to get electricity widely, the town must cooperate with the country. That is a sound business proposition. It is sound public policy. That's just what they've done in seven Mississippi counties served by TVA; town and country have joined a single association and are pulling together. The plan works. In Alcorn County they cut rates 50%. Yet at the end of the first year the Association had 37¢ of every dollar they took in, as net profit. And remember; that profit stayed in the local community. It wasn't drained out of the county by

outsiders. It meant more money in circulation right there at home.

It won't be many years until those folks in the county-wide associations will own their own electric systems free of the last cent of debt. For example, Alcorn County paid $51,000 off on their initial debt of $114,000 (almost half) in a little more than a year. When the debt is all paid off then rates can be cut even lower, for there won't be interest and amortization to take care of. Their plans are working [fol. 3943] out successfully because they are based on these three sound principles of business:

1. Low rates and plentiful use of power;

2. Town and country together;

3. Keep the profits at home, with consumers as business partners.

You are making history here today. What you are doing here in Lincoln County I believe will spread all over this Valley. Farmers, I believe, realize that farm life cannot take its rightful place in the life of the whole community so long as it continues to be true, as it is in the Tennessee Valley area, that only two farms out of a hundred have electricity. The farmers and their families are headed for action and are going to get it, the town and the country working together and the TVA cooperating with both. They are getting ready for action, and plenty of it, in your neighboring community, Giles County. Pulaski is the town and Giles County is the farm — community working together to get rural electricity throughout that County. The same thing is going on at Dayton and its farm neighborhood. So with West Tennessee, where we look forward to the cooperation of the towns in that area in getting electricity to farmers through perhaps twenty-five counties.

[fol. 3944] TVA has an ample source of electricity from the Tennessee River. That electricity belongs to all of us. Transmission lines are being built. The townspeiple want to cooperate. Your Senators and Congressmen have put their shoulders to the wheel. The State has cooperated through the Acts of the Legislature, through the Tennessee

COMPLAINANTS' EXHIBIT No. 897 (Excluded)

Rural Electrification Administration, and the help of your far-sighted Governor. The farmers and their representatives and agencies are working together. With cooperation as the formula, we will have more action like that in Lincoln County, like the action in the many counties in Mississippi, like the action in Giles County and in Rhea County. And I don't hesitate to predict that the time is soon at hand when the disgrace, for it is nothing less than a disgrace, of having only two farms in the Tennessee Valley out of a hundred electrified, will be a thing of the past.

[fol. 3945] COMPLAINANTS' EXHIBIT No. 898 (Excluded)

TVA Press Release of October 21, 1935

Tupelo, Miss., Oct. 21.—The sixth cooperative electric power association supplying TVA power to small towns and rural areas was formally launched here today with the signing of a contract between the TVA and the Tombigbee Electric Power Association, which will take over and operate the present TVA lines in Lee and Itawamba Counties, Mississippi, beginning November 1, 1935.

The property transferred is valued at more than $350,000 and will, at the outset, supply electric service at TVA rates to 1,742 customers, located in the communities of Guntown, Saltillo, Sherman, Verona, East Tupelo, Shannon, Nettleton, Fulton, and a series of rural lines. The Tombigbee Association is the first TVA cooperative association to undertake to serve the whole of two counties. The main office will be located in Tupelo, county seat of Lee County, and a collection and service office will also be located in Fulton, county seat of Itawamba County. The Executive Committee of the new association is as follows:

[fol. 3946]

President	Keith Barnett, Nettleton
1st Vice-Pres.	Rex Reed, Tupelo, R. F. D.
2nd Vice-Pres.	G. T. Mitchell, Guntown
Treasurer	V. S. Whiteside, Tupelo, R. F. D.
	A. J. Mattox, Fulton

COMPLAINANTS' EXHIBIT No. 898 (Excluded)

The Tombigbee Electric Power Association is the sixth non-profit cooperative association now engaged in the distribution of TVA power. The first of these associations was the Alcorn County Electric Power Association, which began operations on June 1, 1934. Since then similar associations have gone into operation in Pontotoc, Prentiss, and Tishomingo Counties, Mississippi, and Lincoln County, Tennessee. Other associations have been organized and are now planning construction of lines in Rhea and Meigs Counties, Tennessee, Monroe County, Mississippi, and other areas in the Tennessee Valley.

[fol. 3947] COMPLAINANTS' EXHIBIT No. 899 (Excluded)

TVA Press Release of October 24, 1935

Power Shortage and Business Recovery

Excerpts from Address of David E. Lilienthal, Delivered at Eight-County Mass Meeting at Dickson, Tennessee, on October 24, 1935

This is an unusually interesting gathering. For here in this enterprising city farmers from a half dozen counties in the trade area of Dickson have come together with the residents of your city. You are drawn together by your interest in the greatest force of modern times: Electricity. This meeting is itself a demonstration in concrete form that town and country are bound together in ties of mutual interest, and that when they cooperate, that cooperation benefits both the farmer and his neighbor in the city.

First of all I want to talk to you of a subject that is of interest to those of you, particularly the business men, who live in Dickson and other towns and cities. And then let [fol. 3948] me describe what is going on in this Valley in the job of getting electricity to the farmers who have for so long been denied its benefits. Those two phases of electricity—in the town and the country—are part of a single picture—they fit together.

Within the past twelve months the United States has gone a long way toward recovery and prosperity. This

COMPLAINANTS' EXHIBIT No. 899 (Excluded)

movement has been notable and marked in the Tennessee Valley region. The full recovery of the country and its onward stride toward a new level of prosperity for all depends in large measure upon an adequate, abundant, and cheap source of electrical power.

What is true of the United States as a whole is true also of individual communities. A town or city which has an abundant and cheap source of electricity has a great opportunity and advantage in the march toward recovery. A community which is not assured of an almost unlimited supply of cheap electricity may be under a genuine handicap. Throughout the country you will find business men who are thinking of the progress of their city, and city officials who are thinking of industrial payrolls and property values for their cities are equally determined [fol. 3949] that their town or their city shall have an abundant supply of cheap electricity, for the expansion of industry that lies ahead for the country and for our region.

A shortage of power would be nothing less than a calamity. A power shortage would put hobbles on business, retard recovery, destroy returned confidence. And yet that is what the Tennessee Valley region might be facing next summer if Norris Dam were not ahead of schedule, and ready to store water next February. The business men of the Tennessee Valley region can give the order "Full speed ahead" secure in the knowledge that there will be an adequate supply available for the period of renewed activity which lies ahead.

When TVA was planning the installation of power generating facilities in the navigation and flood control dams at Norris and Wheeler, you heard a good deal of criticism from certain quarters. The utilities said: "There is a huge surplus of electricity in this area now; don't add to this surplus." But you don't hear much about this "power surplus" in recent months and weeks—and you probably won't hear much about it, because the "huge surplus" of dependable power just doesn't exist. Lower rates and industrial recovery have brought consumption of electricity [fol. 3950] throughout the country and in this area to a new all-time peak. For example, production of power in this region in July was 21% higher than in July a year ago. Domestic use has made sensational gains. New uses

for industrial power are appearing. Old steam plants that have not been operated for a long time have been pressed into service. If Norris Dam had been completed last winter all the extra power its stored water would produce would be valuable and have a ready sale, and at the same time water levels for navigation would be improved.

This has been a very dry year. That is no justification for a power shortage. Factories have to have power in dry seasons as well as normal ones; homes and farms need electricity regardless of rainfall. The dry years come and must be planned for. An adequate supply of electricity must take dry years into account, and emergencies of all kinds require an adequate reserve.

We are just entering the power age. No man can see what lies ahead. The use of power has increased by leaps and bounds right through the depression. The "saturation point" in electric use is hardly fixed until it has been far exceeded. What low rates will do has already been demonstrated in your neighbor cities using TVA electricity. [fol. 3951] Under low TVA rates the people of Alcorn County, Mississippi, used three times as much electricity as they had under high rates, all in the course of a single year. Comparable results in even shorter periods have been experienced elsewhere in Pulaski and Dayton, Tennessee, in Athens, Alabama, and in other towns. The private utilities have also had a remarkable growth in use. And we are only at the beginning. A power plant adequate today may be wholly inadequate a year hence, as the people really put the force of electricity to work for them.

If every individual town and city had to build a generating plant large enough to care for all the future growth required by industrial expansion and increased home and farm use, it might well tax the resources of that town; but when a number of towns are connected together with high transmission lines to a large potential source of power supply produced at very low cost, the communities that are so served have a great advantage in cost and in assurance of supply.

I suppose it was considerations of this kind that were in the minds of your city officials when they conferred with the Tennessee Valley Authority more than a year ago seeking a source of power supply from the Tennessee Valley

COMPLAINANTS' EXHIBIT No. 899 (Excluded)

[fol. 3952] Authority. I have been told that when your municipal electric plant was constructed it was adequate for the needs of your city, but as the city has grown, as the use of electricity expanded, that plant has gradually become inadequate. To replace or add to this plant would involve the city in a large capital expenditure. But the Tennessee Valley Authority has under construction certain dams which will make the Tennessee River navigable and aid in the prevention of floods, and at the same time and with the same structures, be capable of producing large quantities of cheap hydroelectricity. These structures in the Tennessee River make possible a supply of power from which all the various communities of the Tennessee Valley region within transmision distance may draw. And remember this: The potential power in the Tennessee River belongs to you. That power is ready to work for you and your fellow citizens throughout this region.

The directors of TVA have been gratified to find throughout this Valley that the people of the towns have been intensely interested in cooperating to get electricity to the farmers of their trade area. Dozens of business men and city officials have talked to me on this subject. With few [fol. 3953] exceptions they have taken the same position: They realize that the town is the key to the problem of getting electricity to the farmer. And throughout this Valley the town and the country are cooperating. It is not something in the future. It is here. The plan is at work. It benefits the town by developing its trade area, by improving its relations with its farm neighbors and customers, and by giving the farmer additional means of increasing his income. And it benefits the farming communities, relieving the farmer of much of the drudgery of the farm and giving him a tool by which he can increase his income and make farm life more attractive and satisfying.

[fol. 3954] COMPLAINANTS' EXHIBIT No. 900 (Excluded)

TVA Press Release of November 2, 1935

Completion of the first steps in negotiations for the TVA transmission loop in West Tennessee was announced last night by David E. Lilienthal, director and general counsel. Mr. Lilienthal reviewed details of the proposed $1,000,000, transmission line uniting 8 municipal light and power plants in West Tennessee, Bolivar, Somerville, Trenton, Milan, Covington, Dyersburg, Jackson, and Union City. He said the plan, which was drafted at the request of the West Tennessee Mayors Association, had now been submitted to the Mayors of all 8 cities.

"To explain details of the plan and to cooperate in working out individual contracts adaptable to special conditions of each city," Mr. Lilienthal said, "Representatives of the Authority have been stationed in Jackson for the past few weeks and have held meetings with city officials and groups of citizens in all cities.

"Rural meetings have also been held in each of the counties affected to obtain preliminary information so that rural lines may be constructed just as soon as the cities take [fol. 3955] action and thus make sources of TVA power available in their trade areas.

"Several of the cities have already signed contracts for TVA power and in the other cities committees have been appointed or consultants engaged to study the matter further and, when ready, to consult with the Authority.

"Definite action in the construction of the loop must now await the outcome of these studies and action by the remaining municipalities. This will necessarily take some time. However, our engineers are already at work on plans for supplying service to municipalities and rural areas immediately adjacent, so that construction may be rushed forward without delay when a decision is reached by the municipalities concerned."

[fol. 3956] COMPLAINANTS' EXHIBIT No. 901 (Excluded)

TVA Press Release of November 26, 1935

The Work of The Tennessee Valley Authority

Advance Text of Remarks of David E. Lilienthal, Director and General Counsel, Tennessee Valley Authority, Before a Meeting at Louisville, Kentucky, under the Auspices of the City of Louisville, November 25, 1935, at 8:00 P. M., held at the Auditorium

Kentucky is one of the states most directly affected by the work of the Tennessee Valley Authority. The headwaters of the river rise near your borders, and it is in this state, at Paducah, that the Tennessee River joins the Ohio. One of the principal dams of the Tennessee Valley Authority now nearing completion is only twenty-five miles from the soil of your state. And it is in Kentucky that TVA for some time has been exploring foundations for a huge dam on the lower river. But most important of all, Kentucky, by geography, soil, climate, culture, and history, is natural kin to that vast area in which President Roosevelt and Congress have set up the country's first program of region-wide development.

Close as TVA is to you of Kentucky, it is quite likely that most of you have no more than a fragmentary picture of this project, gathered from newspaper accounts or perhaps from a visit to one of the construction sites. I am therefore particularly pleased at this opportunity to describe the project as a whole, to attempt to tell you the [fol. 3957] objectives of the TVA as laid down by Congress and the action the Authority has taken in its two and a half years of life to translate those objectives into actual accomplishment.

The TVA is something new in American government, but the problems it was directed to work out are by no means new. Nor are those problems peculiar to one section of the country; they are critical national problems, concerned with the basic resources upon which the well-being of the entire country depends: (1) the control and use of our water; (2) the preservation of our land—our soil; and (3) the more widespread use of our chief source of energy—electricity.

The background, the setting of TVA's activities with respect to land, water resources, and electricity are well-known

to all of you; for Kentucky is one of the seven states of the Tennessee Valley. The other states forming part of the Tennessee Valley, as you probably recall, are North Carolina, Virginia, Tennessee, Alabama, Georgia, and Mississippi. In this great drainage basin are more than twenty million acres of land of every kind and description; the highest mountains in the United States east of the Rockies: rolling country; flat lowlands; forests; every kind of land [fol. 3958] from the richest to the poorest. Most of you have traveled through the region by automobile and know how varied a region it is: cotton, tobacco, corn, cattle, mining, manufacture of every description. I hope you will keep this picture of the Tennessee Valley area in mind while we are discussing the job the President and Congress turned over to the TVA and what we have been trying to do to meet these obligations. • • •

"I spoke earlier of three national issues TVA was concerned with: (1) the control and utilization of water resources on a regional basis; (2) stopping our waste of soil; and (3) a wider use of electricity, our major source of energy in the home and the factory.

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Mr. Lilienthal explained how the construction of dams by the TVA for navigation and flood control necessarily resulted in the creation of water power by the same structure that provides for navigation and flood control.

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Shall this vast power in the water of a public stream be wasted, or shall it be used to relieve men and women of drudgery, give them comforts and conveniences, and turn the wheels of industry? To ask the question is to answer it. [fol. 3959] The thought of wasting a great source of energy is against every American tradition. And so President Roosevelt and Congress have provided that the power in the Tennessee River shall no longer run unused to the sea, but that power shall be put to work.

The production of power by these navigation and flood control dams furnishes the answer, in part, to the question: "How is this vast project to be paid for?" By selling the power the Federal Government will receive a cash return

which will not only make the electricity program self-supporting, but in the course of years will repay the investment in the navigation and flood control works.

TVA at present has only one dam in operation, that is at Muscle Shoals. From this dam the Authority has realized operating revenues totaling $1,850,000. In the last four months alone, power of a value of $452,000 was produced and used. The TVA has signed contracts for the sale of the entire output of Wilson Dam, though most of this revenue cannot be received until pending litigation is decided.

You are familiar with the fact that contracts with TVA contain a schedule of electricity rates which are often described as "yardstick" rates. In creating TVA, Congress in effect declared it to be the Government's policy to dis- [fol. 3960] tribute the surplus power, necessarily created by navigation and flood control dams, at the lowest possible rates and in such a manner as to encourage increased domestic and rural use of electricity. A number of electric cooperative associations have been formed in the area of the Authority's operations. These organizations and a number of municipalities purchase power from TVA at wholesale and distribute to ultimate consumers. The experience of these distributors of TVA power has been a remarkable demonstration of the effect of reduced electric rates on the extent to which people will put electricity to work for them. The so-called TVA rates for home use begin at 3¢ per kilowatt hour and with greater use decrease to as low as 4 mills per kilowatt hour. A householder having lights, an electric refrigerator, washing machine, vacuum sweeper, toaster, and iron, and doing all cooking by electricity, pays about $5.00 a month where these rates are in effect. Establishment of these rates by the wholesale customers of TVA effected an initial rate cut of 50% and yielded an average saving to users of approximately 2¢ for every kilowatt hour used. • • •

We are in a new age, the age of electricity. No man today can foresee what electricity holds for us a decade hence. [fol. 3961] And yet the American people are being barred from the full benefits *fo* the era of electricity by rates that prevent a full use of this servant of men. I believe the people of the country are going to demand an end of high rates and low use of electricity. Low rates are financially sound;

COMPLAINANTS' EXHIBIT No. 901 (Excluded)

they are necessary to our national well-being; they mean an electrified America.

We have been asked many times whether TVA electricity will be available in Kentucky. The answer is yes. The TVA law requires the Authority to provide for an equitable distribution of the power among the states, municipalities, and other agencies within reasonable transmission distance of the dams. Norris Dam is within transmission distance of Kentucky, of course, being only twenty-five miles from the state line.

A great backlog of cheap power at Kentucky's door, supplementing its present sources of supply, is a great asset to the whole state. The power resources of the country are today undergoing a strain to meet the needs. This is due to a number of factors: the resumption of industrial activity, the effect of low rates in increasing use, the discovery of new uses for power, the needs of widespread farm electrification just ahead. In some parts of the country a power [fol. 3962] shortage is something to give real concern. That would be a calamity, and block business recovery. Whatever may be true elsewhere, the early completion of Norris and Wheeler Dams by the TVA will prevent a shortage in this area. The people of the Tennessee Valley can proceed with their plans for industrial expansion and rural electrification secure in an adequate supply of cheap electricity.

[fol. 3963] COMPLAINANTS' EXHIBIT No. 902 (Excluded)

TVA Press Release of July 29, 1936

Address Before TVA Employees, by Arthur E. Morgan, First Methodist Church, Knoxville, Tennessee, July 29, 1936

There are many ways in which we may work in this region toward a better ordered social and economic life, such as the President has so often expressed as his idea of the proper work of the TVA. Sometimes those results can be secured by simply furnishing an opportunity, sometimes by a little benevolent despotism. The Tennessee Valley Authority has used both. For instance, there is our training program. We might have compelled workmen to take those courses. We might have said, you are perfectly free to work for the

COMPLAINANTS' EXHIBIT No. 902 (Excluded)

TVA or not as you choose, but if you choose to work for us you must take part in our training program. We did not do that. We simply offered the opportunities. We did not require workmen to accept them, and we did not offer any additional security to those who did so. That is an example of assistance without any compulsion.

In other fields, however, it sometimes occurs that it seems better for us to impose our judgment upon the localities, [fol. 3964] to use a certain amount of benevolent despotism, to say from the outside that we have better judgment and greater experience and that we should dictate what the course should be. Sometimes one way seems better and sometimes the other. For instance, we might leave the determination of electric power rates to the communities. However, we have a picture of what would be a good policy for the communities, and so we ask the individual communities to defer to the TVA judgment; we want to say not only what we shall be paid for current but what it shall be sold for to each person in the community. In that case it is not enough to simply present an opportunity, we specifically dictate for the good of the community. Sometimes we must work by the free choice of methods as in our training program. Sometimes we work by benevolent dictation as in our power rates. We will find that the TVA is too complex, to- varied a job to set any hard and fast method. We must feel our way and work by rule of reasonableness rather than by rule of government.

[fol. 3965] COMPLAINANTS' EXHIBIT No. 903 FOR IDENTIFICATION

This exhibit is the same as Defendants' Exhibit 60 which is an original exhibit.

[fol. 3966] COMPLAINANTS' EXHIBIT No. 904

Chart entitled "Figure 3—Capacity Curve for Norris Reservoir With Controlling Elevations" taken from an article by James S. Bowman in "Civil Engineering", April 1935.

(Original Exhibit)

(Here follows one photolithograph, side folio 3966a)

COMPLAINANTS' EXHIBIT NO. 904

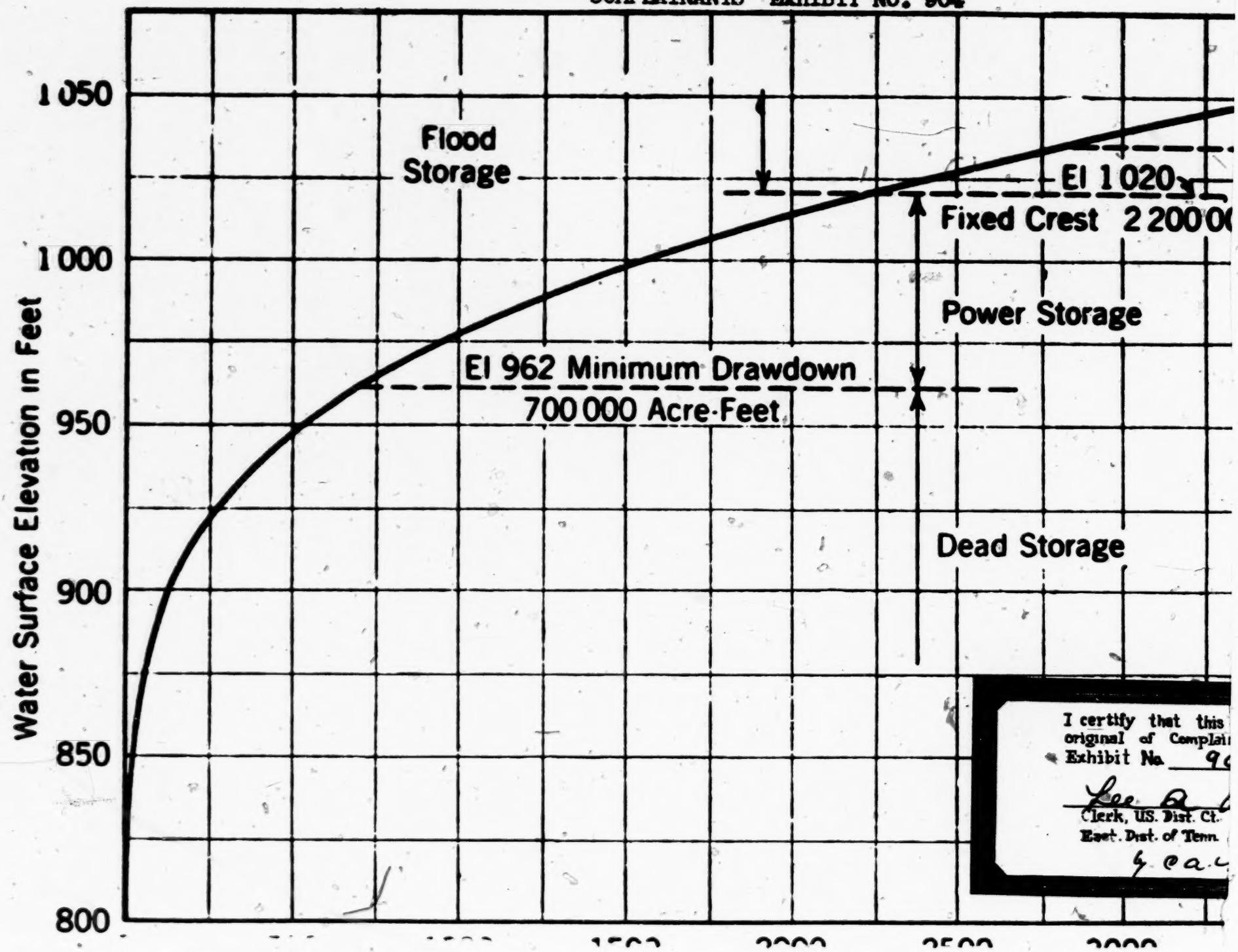

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Exhibit No. 9

Clerk, US. Dist. Ct.
East. Dist. of Tenn.

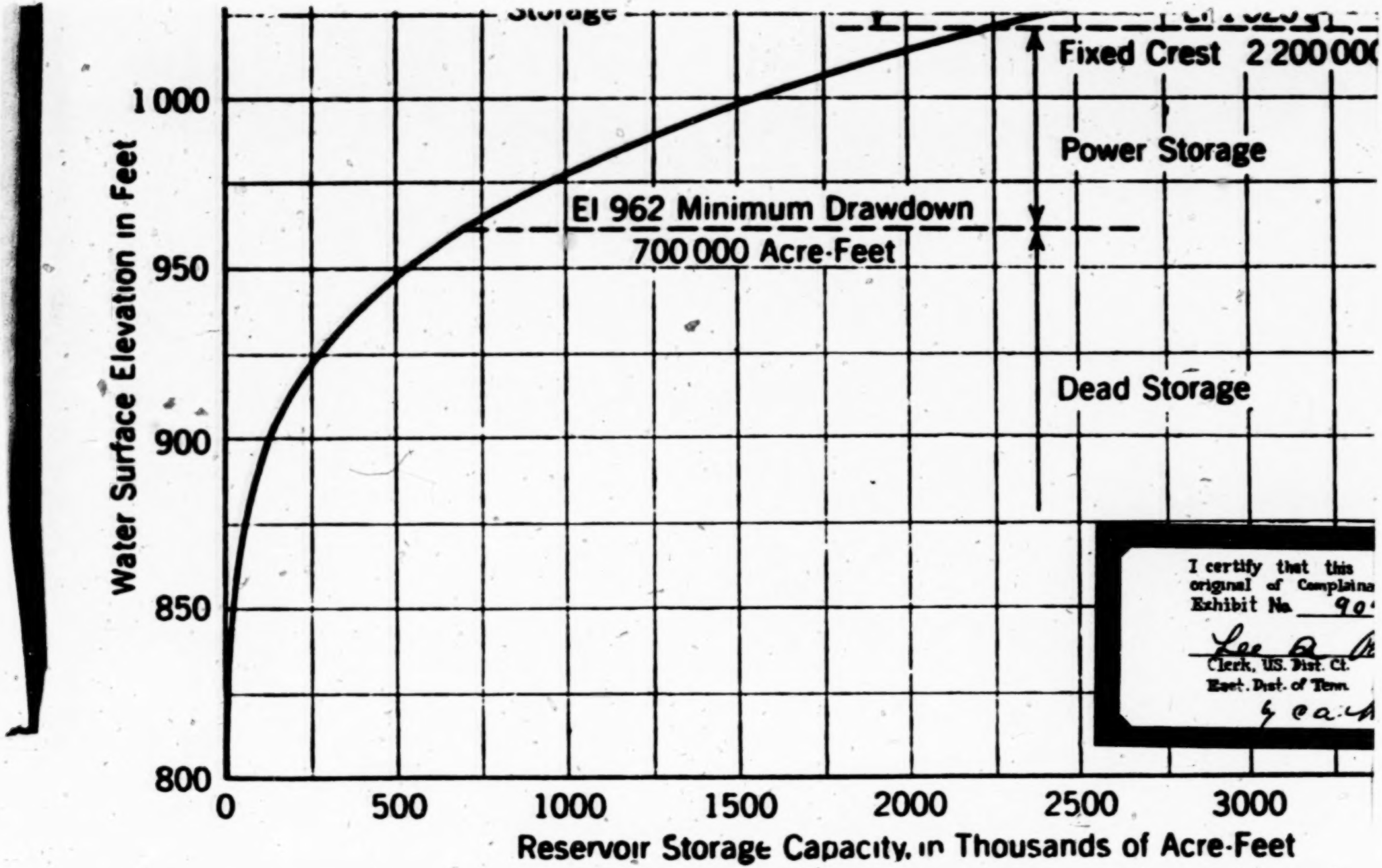
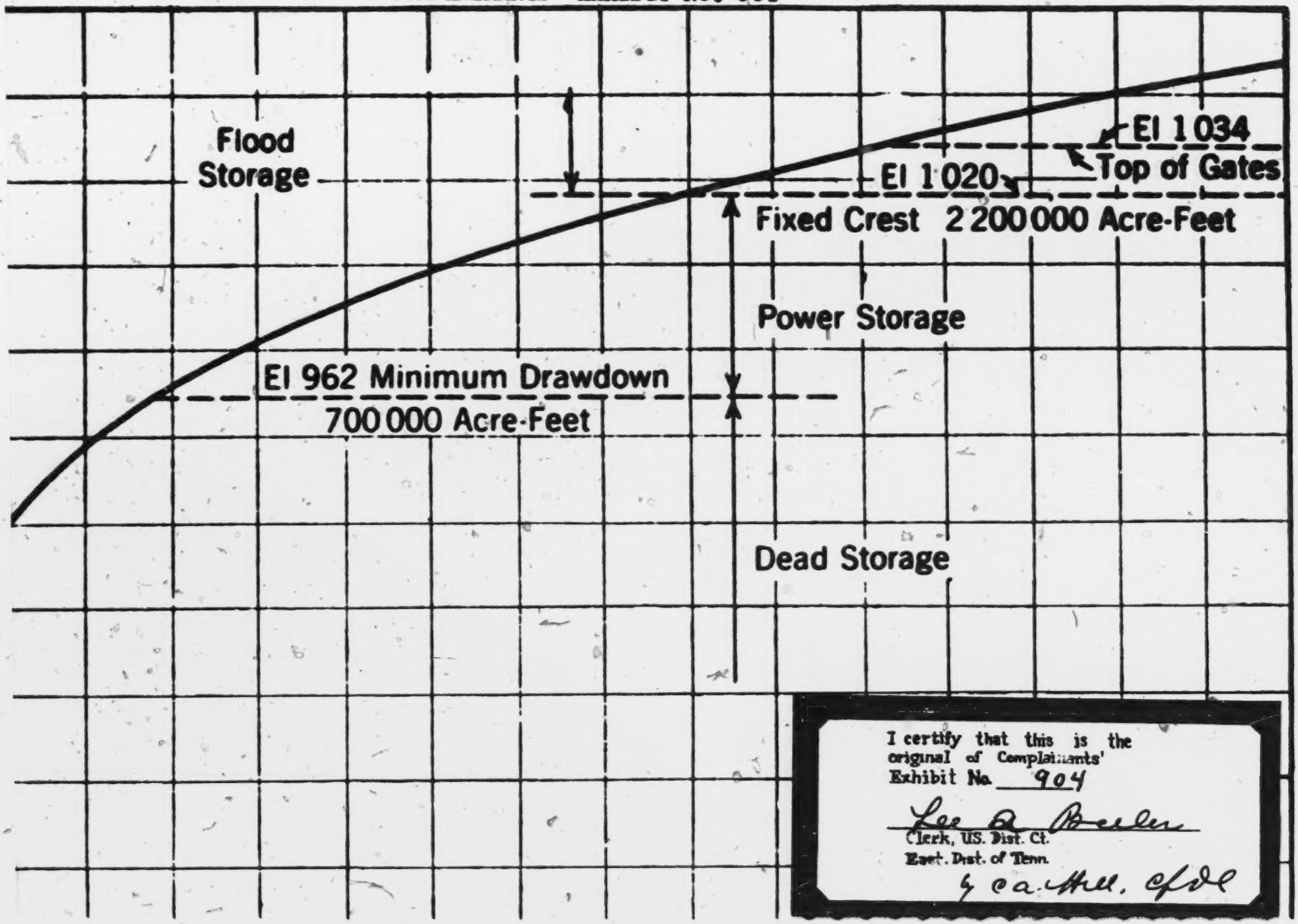


FIG. 3. CAPACITY CURVE FOR NORRIS RESERVOIR WITH LING ELEVATIONS

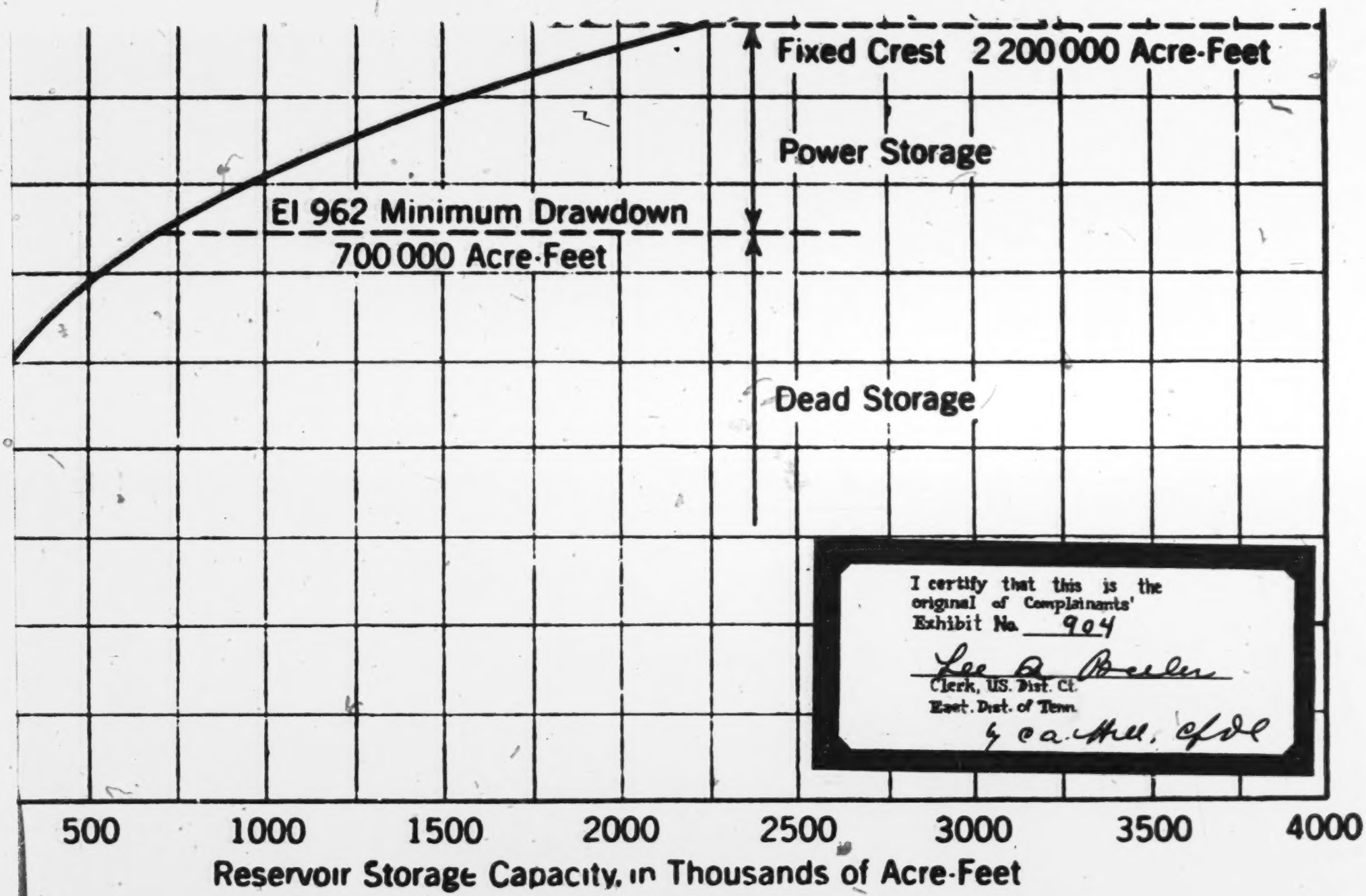
Taken from article "A Complicated Problem of Regulation" by James S. Bowman in Civil Engineering for April, 1935, offered as part of cross examination of James S. Bowman.

COMPLAINANTS' EXHIBIT NO. 904



I certify that this is the original of Complainants' Exhibit No. 904

Lee R. Beeler
Clerk, US. Dist. Ct.
East. Dist. of Tenn.
by C.A. Hill, Dpty



APACITY CURVE FOR NORRIS RESERVOIR WITH CONTROL-LING ELEVATIONS

3966-A

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il, 1935, offered as part
tion of James S. Bowman.

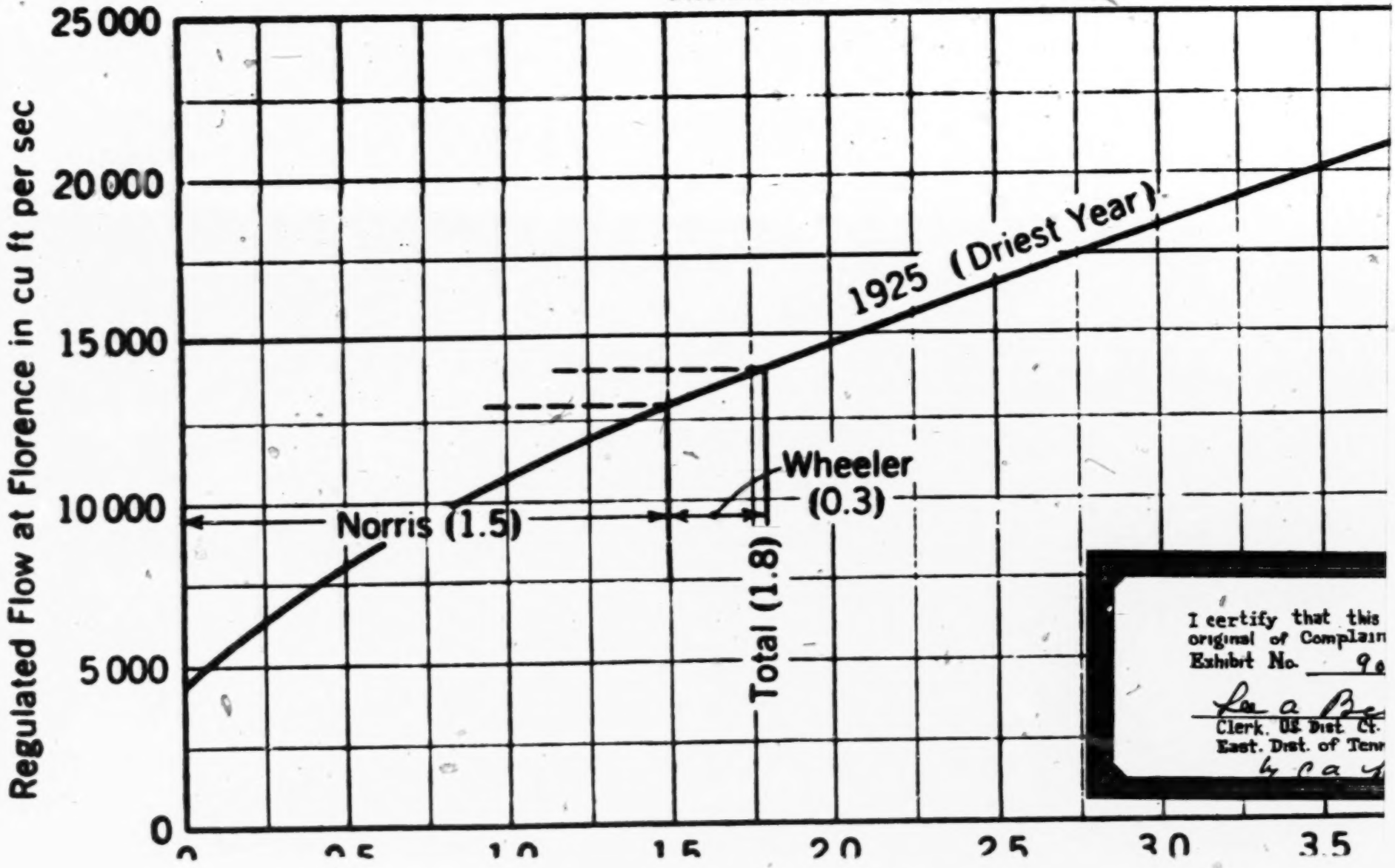
COMPLAINANTS' EXHIBIT No. 905

Chart entitled "Figure 2—Storage Required for Various Regulated Flows at Florence, Alabama" taken from an article by James S. Bowman in "Civil Engineering", April 1935.

(Original Exhibit)

(Here follows one photolithograph, side folio 3966b)

COMPLAINANTS' EXHIBIT NO. 905



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COMPLAINANTS' EXHIBIT NO. 905

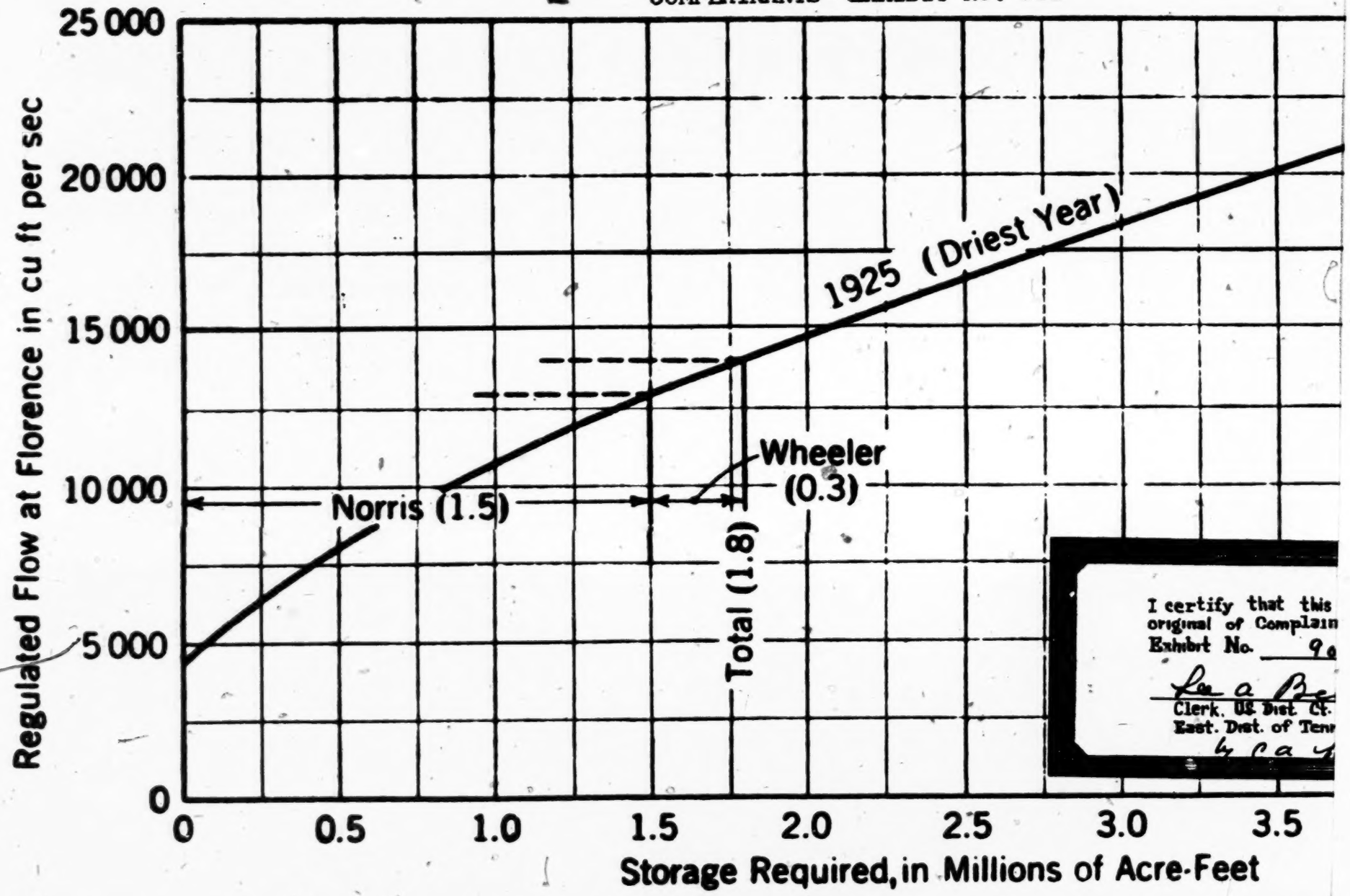
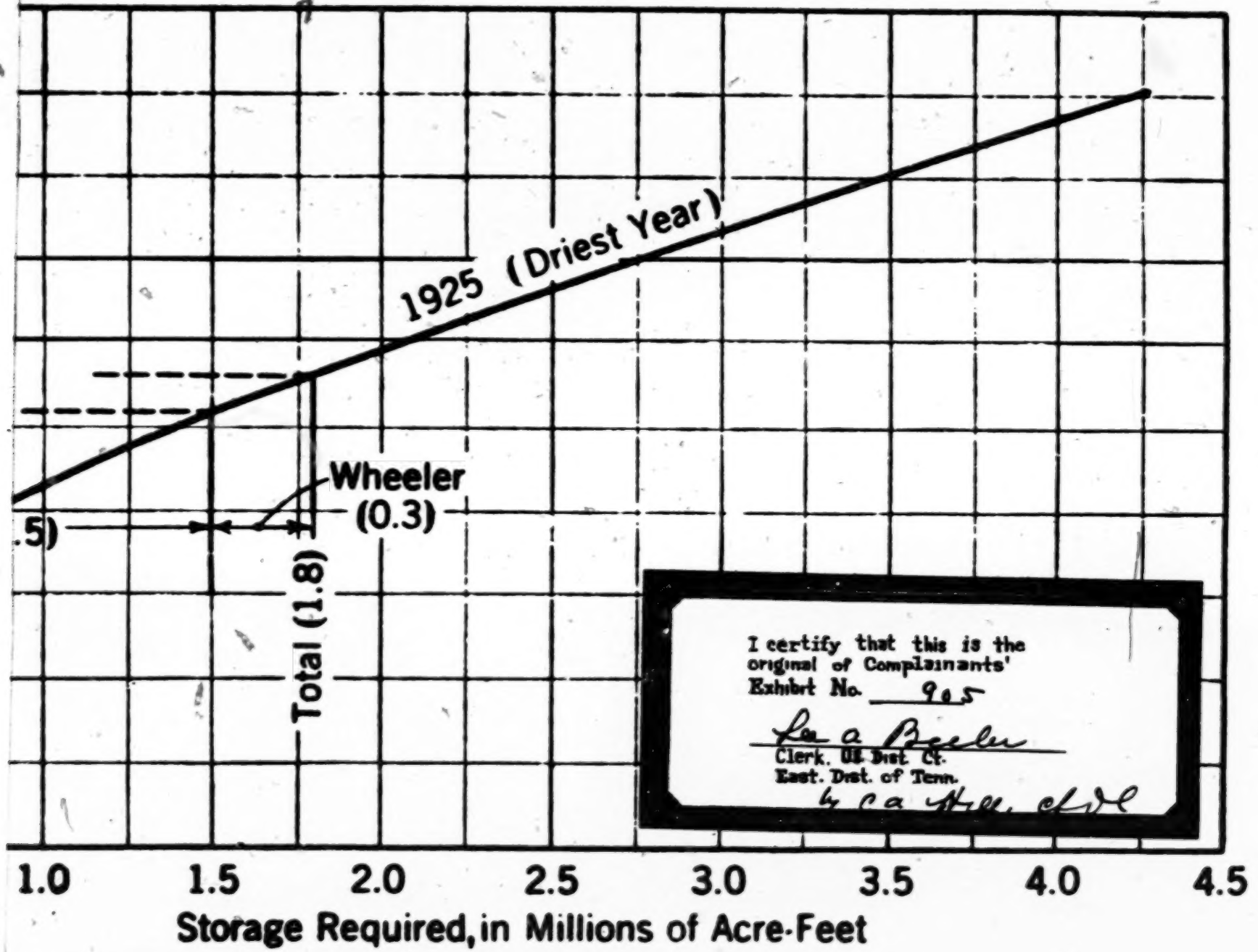


FIG. 2. STORAGE REQUIRED FOR VARIOUS REGULATED FLORENCE, ALA.

Taken from article "A Complicated Problem of Regulation" by James S. Bowman in Civil Engineering for April, 1935, offered as part of cross examination of James S. Bowman.

3966-B

COMPLAINANTS' EXHIBIT NO. 905



REQUIRED FOR VARIOUS REGULATED FLOWS AT FLORENCE, ALA.

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3966-B

COMPLAINANTS' EXHIBIT No. 906 (Excluded)

(Omitted)

[fol. 3967] COMPLAINANTS' EXHIBIT No. 907 (Excluded)

Chart

(Original Exhibit)

[fol. 3968] COMPLAINANTS' EXHIBIT No. 908

Resolution of the Board of Directors of TVA, dated July 1, 1936

After examining the provisions of Water Control Bulletins No. 1 and No. 2, submitted by the Hydroelectric Committee, and finding them satisfactory, the Board ordered a true copy of each bulletin filed with the Authority's records as Exhibit 7-1-36e, and then issued the following instructions which are to govern the preparation of subsequent bulletins and the administration of the provisions of all water control bulletins hereafter approved by the Board:

The rest of this exhibit is the same as paragraphs numbered 1, 2 and 3 of Complainants' Exhibit No. 923 and, for brevity, is here omitted.

[fol. 3969] COMPLAINANTS' EXHIBIT No. 909

Chart from page 515 of Complainants' Exhibit No. 115

(Original Exhibit)

[fol. 3970] COMPLAINANTS' EXHIBIT No. 910 FOR IDENTIFICATION

Daily Reports of Releases of Water at Norris Dam

(Omitted)

[fol. 3971] COMPLAINANTS' EXHIBIT 910-A

TVA Water Control Bulletin, Dated December 19, 1936

The Water Control Committee advises that at each flood this winter, Wheeler Reservoir will be filled to elevation 556. The reservoir will be operated for the control of floods at Pickwick and other critical points below Wilson Dam so far as possible, with the incidental benefits in the way of regulation of flood flows in the Mississippi River. To accomplish this, the operation will follow a schedule approximately as follows:

After the passage of each flood the reservoir will be slowly drawn down at about the rate of 2 feet per week until it reaches level 553, where it will be held until the approach of the next flood. Just before the occurrence of a flood the reservoir will be drawn down as much more as seems necessary, but not below 550. Then during the flood it will be filled up to 556, at such a time as to be of most benefit to Pickwick.

(Here follows one photolithograph, side folio 3972)

COMPLAINANTS' EXHIBIT NO. 910-B

TENNESSEE VALLEY AUTHORITY
ENGINEERING DATA DIVISION
Knoxville, Tennessee
February 9, 1937.

RIVER STAGES AND RAINFALL
Readings are 7:00 A.M. C.S.T., except as noted

STATION	Miles Above Mouth	Flood or Bankfull Stage	Discharge cfs	Stage	Elevation	Change 24 hrs.	Rainfall 24 hrs.	Weather
TENNESSEE RIVER								
1 Knoxville	648	20	37,400	8.5r	806.1	+3.6	1.84	Raining
2 Loudon	592	22	43,000	8.9r	735.1	+1.1	1.42	Cloudy
3 Kingston	568	26	—	13.5r	713.5	+3.8	3.31	Cloudy
4 Breedenton	523	20	84,400	14.8r	680.0	+3.8	2.91	Raining
5 Chickamauga Damb	471	660	75,100		641.4	+1.8	1.24	Raining
6 Chattanooga	464	30	—	16.7r	637.5	+1.2	1.06	Raining
7 Hales Bar Reservoir	431	50	—	42.85	631.45	+0.35	—	—
Hales Bar Tailwater		30	72,000	13.6	602.2	+0.7	—	—
8 Guntersville	358	25	86,500#	17.3r	563.6	+1.9	2.85	Cloudy
9 Guntersville Damb	349	565	—		561.10	+1.95	1.95	Cloudy
10 Decatur U.S.G.S.	305	20	—	15.6	549.9	+0.3	2.34	Cloudy
11 Wheeler Reservoirb	275	555	124,400		547.00	-0.25	1.53	Cloudy
12 Wilson Reservoirb	259	505	124,700		506.13	+0.01	—	—
13 Florence	257	18	140,700	13.4r	414.5	+4.0	2.06	Cloudy
14 Pickwick Dam	207	385	123,000#		372.8	-3.0	.84	Cloudy
15 Johnsonville	96	31	—	30.9f	351.7	-0.6	.43	—
HOLSTON RIVER	652							
16 Gate City (N. Fork)	151	7	3,880	5.6r	1203.4	+1.6	—	
17 Kingsport (S. Fork)	148	8	7,940	4.4r	1193.2	+0.3	1.40	Raining
18 Rogersville	104	14	17,500	7.0r	1060.9	+2.2	1.40	Raining
FRENCH BROAD RIVER	652							
19 Embreeville (Nolichucky)	89	8	2,140	2.5s	1521.9	0	.59	Raining
20 Asheville	147	6		—			.29	Raining
21 Newport	78	6	4,820	3.6r	1016.5	+0.1	1.00	Raining
22 Dandridge	45	12	14,900	4.7r	907.5	+0.4	1.30	Raining
LITTLE TENNESSEE RIVER	601							
23 Bryson (Tuckaseegee)	97	9	3,760	3.0r	1719.8	+0.5	.95	Raining
24 McGhee	19	20	12,600	8.5r	768.6	+0.8	1.69	Raining
CLINCH RIVER	568							
25 Cleveland	272	6	2,100	4.9r	1604.9	+1.5	1.32	Raining
26 Tazewell	152	14	—	14.4r	1027.0	—	2.00	Raining
27 Arthur (Powell R.)	154	15	[illegible]					

TENNESSEE RIVER									
1	Knoxville	648	20	37,400	8.5r	806.1	+3.6	1.84	Raining
2	Loudon	592	22	43,000	8.9r	735.1	+1.1	1.42	Cloudy
3	Kingston	568	26	—	13.5r	713.5	+3.8	3.31	Cloudy
4	Breedenton	523	20	86,400	14.8r	680.0	+3.8	2.91	Raining
5	Chickamauga Damb	471	660	75,100		641.4	+1.8	1.24	Raining
6	Chattanooga	464	30	—	16.7r	637.5	+1.2	1.06	Raining
7	Hales Bar Reservoir	431	50	—	42.85	631.45	+0.35	—	—
	Hales Bar Tailwater		30	72,000	13.6	602.2	+0.7	—	—
8	Guntersville	358	25	86,500#	17.3r	563.6	+1.9	2.85	Cloudy
9	Guntersville Damb	349	565	—		561.10	+1.95	1.95	Cloudy
10	Decatur U.S.G.S.	305	20	—	15.8	549.9	+0.3	2.24	Cloudy
11	Wheeler Reservoir[b]	275	555	124,400		547.00	-0.25	1.53	Cloudy
12	Wilson Reservoir[b]	259	505	124,700		506.13	+0.01	—	—
13	Florence	257	18	140,700	13.4r	414.6	+4.0	2.05	Cloudy
14	Pickwick Dam	207	385	123,000#		372.8	-3.0	.84	Cloudy
15	Johnsonville	96	31	—	30.9f	351.7	-0.6	.43	—
HOLSTON RIVER		652							
16	Gate City (N. Fork)	151	7	3,880	5.6r	1203.4	+1.6	—	
17	Kingsport (S. Fork)	148	8	7,940	4.4r	1193.2	+0.3	1.40	Raining
18	Rogersville	104	14	17,500	7.0r	1060.9	+2.2	1.40	Raining
FRENCH BROAD RIVER		652							
19	Embreeville (Nolichucky)	89	8	2,140	2.8c	1521.9	0	.89	Raining
20	Asheville	147	6		—			.29	Raining
21	Newport	78	6	4,820	3.6r	1016.5	+0.1	1.00	Raining
22	Dandridge	45	12	14,900	4.7r	907.5	+0.4	1.30	Raining
LITTLE TENNESSEE RIVER		601							
23	Bryson (Tuckaseegee)	97	9	3,780	3.0r	1719.8	+0.5	.95	Raining
24	McGhee[a]	19	20	12,600	8.5r	768.6	+0.8	1.69	Raining
CLINCH RIVER		568							
25	Cleveland	272	6	2,100	4.9r	1504.9	+1.5	1.32	Raining
26	Tazewell[a]	152	14	—	14.4r	1027.0	—	2.00	Raining
27	Arthur (Powell R.)[a]	154	15	8,900	10.9r	1065.7	+7.0	2.00	Cloudy
28	Norris Reservoir[b]	80	1020	(2,318,000 Ac.-ft)		1027.54	-0.16	2.66	Cloudy
	Norris Tailwater[b] Below Dam		836	25,000#	12.96		+2.86	—	—
HIWASSEE RIVER		500							
29	Murphy	97	10	3,220	4.4r	1515.0	+1.4	1.67	Raining
30	Charleston	19	22	10,200#	9.7r	675.2	+3.4	1.57	Raining
ELK RIVER		285							
31	Prospect	42	22	18,000	20.8r	583.7	+14.9	2.42	Cloudy
TENNESSEE RIVER									
	Scottsboro	386	40	78,500	11.2r	580.0	+1.9	1.87	P Cloudy
	Savannah	190	39	134,400	25.4f	366.8	-3.8	.60	Cloudy

REMARKS: Norris release for February 8 was 24,000 dsf

3972

a 6:00 A.M. b 8:00 A.M. *Inflow #Estimated

3930

[fol. 3973] COMPLAINANTS' EXHIBIT No. 911 FOR IDENTIFICATION

Daily Reports of Releases of Water at Norris Dam

(Omitted)

[fol. 3974] COMPLAINANTS' EXHIBIT No. 912

Defendants' Exhibit No. 29 in the case of Tennessee Valley Authority, et al., v. Ashwander, et al.

(Original Exhibit)

[fol. 3975] COMPLAINANTS' EXHIBIT No. 913

Plate 19 from Part 2 of House Document 328

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 914

Defendants' Exhibit No. 30 in Ashwander et al. v. Tennessee Valley Authority et al.

(Original Exhibit)

COMPLAINANTS' EXHIBIT No. 915

Defendants' Exhibit No. 31 in Ashwander et al. v. Tennessee Valley Authority et al.

(Original Exhibit)

[fol. 3976] COMPLAINANTS' EXHIBIT No. 916

Discharge Below Norris Dam Taken from T.V.A. Operating Reports
1936

Date August	Discharge c.f.s.	Date September	Discharge c.f.s.	Date October	Discharge c.f.s.
6	1,900	1	3,000	1	1,970
7	1,830	2	3,970	2	3,100
8	1,760	3	5,080	3	2,050
Sun. 9	.....	4	5,400	Sun. 4	.....
10	1,680	5	20		
11	1,230	Sun. 6	.....		
12	210	Labor Day 7	.....		
13	200	8	3,930		
14	40	9	3,850		
15	3,170	10	3,950		
Sun. 16	.....	11	3,980		
17	2,370	12	5,100		
18	3,630	Sun. 13	.....		
19	3,680	14	5,200		
20	3,680	15	5,420		
21	3,530	16	5,140		
22	3,750	17	5,180		
Sun. 23	.....	18	5,380		
24	3,550	19	5,380		
25	5,350	Sun. 20	.....		
26	5,450	21	5,300		
27	6,200	22	6,500		
28	7,000	23	6,500		
29	6,300	24	5,500		
Sun. 30	.....	25	4,180		
31	3,820	26	4,140		
		Sun. 27	.....		
		28	5,300		
		29	5,340		
		30	4,360		

[fol. 3977] COMPLAINANTS' EXHIBIT No. 917

Existing and Proposed Low Dam Projects—Tennessee River

No.	Name of Project	Miles from Ohio R.	Lift Feet	Pool Elev. Feet	Composition of Dam
(Pool No. 52, Ohio R.)				302.0	
1	Reynolds Dam...	37.6	20.0	322.0	1500′ (a); 1000′ (b); 5300′ (c)
2	Suck Bar.....	105.2	23.0	345.0	1500′ (a); 500′ (b); 6400′ (c)
3	Wolf Island.....	191.7	16.0	361.0	1000′ (a); 1200′ (b); 2400′ (c)
4	Parkers Landing.	219.75	33.0	394.0	1100′ (a); 3000′ (c)
5	Hd. Colbert Shoals.....	234.83	14.0	408.0	2650′ (a); 3400′ (c)
6	Lock & Dam No. 1 (1).....	256.9	9.6	417.6	Constructed—
7	Wilson Dam (2)..	259.4	87.5	505.1	Constructed—
8	Wheeler Dam....	274.9	30.9	536.0	5820′ (a)
9	Milton Bluff.....	288.0	8.0	544.0	3750′ (a); 5380′ (c)
10	Triana.....	320.8	16.0	560.0	1500′ (a); 8400′ (c)
11	Buck Island.....	362.6	25.0	585.0	1500′ (a); 2900′ (c)
12	Widows Bar.....	407.6	9.0	594.0	1340′ (a); 3600′ (c)
13	Hales Bar (3)....	431.1	35.2	629.2	Constructed—
14	Sherman Hill....	468.6	13.8	643.0	1300′ (a); 8000′ (b); 1500′ (c)
15	U. S. Quarry....	485.25	21.0	664.0	1300′ (a); 5400′ (c)
16	Kelly Shoals.....	510.8	19.0	683.0	1200′ (a); 1500′ (b); 1800′ (c)
17	White Creek.....	543.3	32.0	715.0	1400′ (a); 1400′ (c)
18	Seven Islands....	574.8	31.0	746.0	1700′ (a); 2800′ (c)
19	Bussell Shoals...	603.6	32.0	778.0	30–30′ x 14′ Stoney Gates; 750′ (c)
20	Georges Branch..	630.3	28.0	806.0	15–60′ x 20′ Tainter Gates; 700′ (c)

(1) Constructed, to be raised.
(2) Double lift, constructed.
(3) Single lift, constructed 60′ x 360′ Locks above Wilson Dam; 110′ x 600′ Locks below Wilson Dam.

Notations for Composition of Dams:

(a) Fixed Concrete Overflow Dam.
(b) Overflow Earth Dam Heavily Riprapped.
(c) Non-Overflow Earth Dam Riprapped.

COMPLAINANTS' EXHIBIT NO. 918

DIVISION OF ELECTRICAL DEVELOPMENT
DEPARTMENT OF ELECTRICITY
TENNESSEE VALLEY AUTHORITY

Chattanooga, Tennessee
January 1, 1936

RURAL ELECTRIFICATION SURVEY

Neighborhood Plan

Instructions to County Chairmen

GENERAL

The following pages outline a suggested "Neighborhood Plan" for conducting rural electrification surveys. It is intended that the plan shall be simple, clear cut and practical, so that interested local groups such as the Farm Bureaus may conduct their own surveys, and thus save considerable time and expense in finding out if rural lines are practical in their area.

This plan is not arbitrary or final. Minor changes may be made to fit local conditions. Therefore, before starting the survey it is desirable for the local Chairman or Committee to arrange a meeting with the nearest representative of the TVA's Department of Electricity. (His name and address can be obtained by writing to the Division of Electrical Development, Old Post Office, Chattanoog, Tenn.). He will then be able to answer questions, and assist with plans for your survey.

SURVEY MATERIAL

It is first suggested that you read carefully the material contained in this Manual.

As explained in the "Information Sheet" (Sheet 2), the main emphasis of the plan is on the profitable use of electricity by the consumer. Naturally rural lines cannot be built unless there is enough business or revenue to make the line self-supporting. But instead of the "old-fashioned" methods of obtaining enough revenue through high rates or heavy line charges, or through cash contributions to the cost of the lines, this plan seeks to solve the problem in a way that will give the customer maximum profit and pleasure from

Instructions to County Chairmen

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SURVEY MATERIAL

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As explained in the "Information Sheet" (Sheet 2), the main emphasis of the plan is on the profitable use of electricity by the consumer. Naturally rural lines cannot be built unless there is enough business or revenue to make the line self-supporting. But instead of the "old-fashioned" methods of obtaining enough revenue through high rates or heavy line charges, or through cash contributions to the cost of the lines, this plan seeks to solve the problem in a way that will give the customer maximum profit and pleasure from his electric service. Rates are low. There are no line charges. The farmer is not asked to buy any stock or to make any cash contributions for poles or lines or transformers.

Instead of all these outlays, the farmer is asked only to share in the program by agreeing to install such electric equipment on his own farm as he needs and can afford. Thus his money stays at home and works for him on his farm.

By experience, the average electric use (in kilowatt hours) of most types of equipment is pretty well known (see Information Sheet, page 1), and so, after the farmers have indicated (on Sheet 3) what equipment they agree to buy, it is possible to estimate the use of this equipment, add up the total for any given extension, and see if the revenue from this much use will be enough to justify the cost of the line.

There is no fixed rule as to what is "enough business." This will vary, depending on the cost of the line and other factors. However, experience in other communities in the Tennessee Valley has shown that lines are generally feasible when customers agree to install enough equipment to use an average of 662 kilowatt hours per month per mile of line; and where surveys reach this total, it has in most cases been possible to arrange for construction of the lines either through TVA or the Rural Electrification Administration. In over 20 counties of Tennessee, Alabama, and Mississippi rural lines have been built or are under construction to serve farmers and in most cases they have been surveyed by this Neighborhood Plan, using the objective of 662 kilowatt hours per month per mile of line. It is generally agreed that this plan is more practical and workable than any other previously attempted. But it should be pointed out that its success must always depend on two things: 1. An active and enthusiastic committee of volunteer canvassers; 2. An understanding, by the farmers, of the many profitable uses of electricity on the farm.

The last point is the most important. Many farmers still think of electricity as "lights and radio." If this is all they use, then no project can ever be successful. The main job of the committee and canvassers is an educational job, explaining the many money-making and money-saving uses of electricity on the farm, so that the farmers will gladly sign up for enough equipment to reach the objective.

the revenue from this much use will be enough to justify the cost of the line.

There is no fixed rule as to what is "enough business." This will vary, depending on the cost of the line and other factors. However, experience in other communities in the Tennessee Valley has shown that lines are generally feasible when customers agree to install enough equipment to use an average of 662 kilowatt hours per month per mile of line; and where surveys reach this total, it has in most cases been possible to arrange for construction of the lines either through TVA or the Rural Electrification Administration. In over 20 counties of Tennessee, Alabama, and Mississippi rural lines have been built or are under construction to serve farmers and in most cases they have been surveyed by this Neighborhood Plan, using the objective of 662 kilowatt hours per month per mile of line. It is generally agreed that this plan is more practical and workable than any other previously attempted. But it should be pointed out that its success must always depend on two things: 1. An active and enthusiastic committee of volunteer canvassers; 2. An understanding, by the farmers, of the many profitable uses of electricity on the farm.

The last point is the most important. Many farmers still think of electricity as "lights and radio." If this is all they use, then no project can ever be successful. The main job of the committee and canvassers is an educational job, explaining the many money-making and money-saving uses of electricity on the farm, so that the farmers will gladly sign up for enough equipment to reach the objective.

PROCEDURE

In preparing for a survey the following supplies are required:

1. One large County Map
2. One Chairman's Manual.
3. One Information Sheet per customer (Sheet 2).
4. One Customer's Application Agreement per customer (Sheet 3).
5. One Canvasser's Mileage Sheet per 8 customers (Sheet 4).

The county map must be obtained locally. Samples of other forms are attached, and additional copies may be obtained by application to the address given on the preceding page. In estimating the number required, the following considerations should be kept in mind: (1)

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for extensions to ar as immediately adjacent to existing rural lines furnishing TVA power, any number of applicants may be considered provided the proposed extensions meets the necessary requirements per mile of line; (2) in areas calling for the formation of a separate county power association, it is wise to plan for at least 400 or 500 customers along not more than 70 or 80 miles of line.

In organizing the survey, it is first recommended that the Canvassers or Committee Members be called together by the Chairman, and that a TVA representative be present to answer questions and explain details. The areas to be surveyed should then be blocked out, and one area assigned to each Canvasser, who should be given an adequate supply of Information Sheets (Sheet 2), Customer Application Agreements (Sheet3) and Canvasser's Mileage Sheets (Sheet 4). Full instructions should be given and a definite date set, at which time Canvassers should report back and turn in the completed Agreements to the Chairman. Than call in the TVA representative to determine feasibility of the project. Where feasible projedts have been prepared, he can then outline the necessary legal, financial and engineering steps which must be taken for final action.

Notes: For the sake of brevity, this review omits discussion of several details which are apt to vary in different areas. These should be discussed with the TVA representative and carefully explained to the Canvassers, covering particularly the following matters:

1. Proposed seurce of energy supply.
2. Proposed method of organization.
3. Policy on computing customer tap lines over 200 feet in length.
4. Policy on surveying areas served in part by existing lines.

Emphasis must be placed on the need for thorough instruction on the uses of electricity. Canvassers should be grounded on all the facts contained in the Information Sheet and instructed to review these sheets with each customer. Much help can be obtained from local electrical dealers and contractors who will be glad to display equipment and discuss cost of house wiring and appliances, and from the County Agents, Home Agents, and others who can discuss the uses and applications of electric service at their regular meetings or classes. A two-reel TVA moving picture on "Electricity on the Farm" is now available for such meetings and other material may also be obtained on request.

COMPLAINANTS' EXHIBIT No. 918

TVA 189 DE RURAL ELECTRIFICATION SURVEY Sheet 3
No. ____

Neighborhood Plan

Customer's Application Agreement

(To be filled out in duplicate, one copy for Canvasser; carbon copy to be left with Customer)

To: _____ Date: _____

I hereby agree properly to wire my premises and to use TVA power thereon. I also agree to make valid contracts for the purchase of the following electrical appliances:

	Appliance	Est. KWH per mo.	Other Appliances*	Est. KWH* per mo.
____	Lts. & Small Appl.	30	_____	_____
____	Refrigerator	50	_____	_____
____	Range	150	_____	_____
____	Water Pump	50	_____	_____
____	Water Heater	200	_____	_____

I understand that this agreement is conditioned on the availability of electric services at my premises, and I shall be under no obligation for wiring or the purchase of appliances unless and until such service becomes available.

Signed: _____

Address: _____

Telephone: _____

*NOTE: See page 1 of Information Sheet for a list of other farm appliances, together with information about prices, operating costs and time purchase plans.

COMPLAINANTS' EXHIBIT No. 918

TVA 231 DE

Sheet 4

RURAL ELECTRIFICATION SURVEY

Neighborhood Plan

Canvasser's Mileage Sheet

This sheet is to be filled out by each Canvasser while he is travelling his route. This must be done to assist the engineers in laying out the line for construction.

How to Proceed: Start at bottom of the sheet and work up. Enter speedometer reading for "Starting Point" in Column 4. Then enter every home, giving mileage in Column 4, and posting name of resident to right or left, according to their location along the road. List all residents, but enter Application Numbers only for those who have actually signed Sheet 3. For each resident indicate the approximate distance from the center of the road in yards.

Yds. from Road	App. No.	Customers on LEFT (List signers & non-signers)	Speedometer Reading	Customers on RIGHT (List signers & non-signers)	App. No.	Yds. from Road

tion.

How to Proceed: Start at bottom of the sheet and work up. Enter speedometer reading for "Starting Point" in Column 4. Then enter every home, giving mileage in Column 4, and posting name of resident to right or left, according to their location along the road. List all residents, but enter Application Numbers only for those who have actually signed Sheet 3. For each resident indicate the approximate distance from the center of the road in yards.

Yds. from Road	App. No.	Customers on LEFT (List signers & non-signers)	Speedometer Reading	Customers on RIGHT (List signers & non-signers)	App. No.	Yds. from Road

Speedometer at Starting Point:

Starting Point:

Canvasser _____ Date _____

Address _____ Telephone _____

Start Here

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8888

COMPLAINANTS' EXHIBIT No. 918

TVA 190 DE

Sheet 5

RURAL ELECTRIFICATION SURVEY

Neighborhood Plan

Summary Sheet

(Note: This sheet is included for information only. Unless otherwise stated, it will be filled out by the TVA Commercial Checker from the information in Sheets 3 and 4)

Projected Primary Extension _____ County

From: _____

To: _____

Description: _____

Canvasser: _____

Address: _____ Telephone _____

Date of Original Request: _____, 193__

Approx. Miles of Line: _____ KWH Reqd. _____

App. No.	Name	Rate	L. 30	Ref. 50	R. 150	W.H. 200	P. 50	Other*	Total

Projected Primary Extension _____ County

From: _____

To: _____

Description: _____

Canvasser: _____

Address: _____ Telephone _____

Date of Original Request: _____, 193__

_____

Approx. Miles of Line: _____ KWH Reqd. _____

App. No.	Name	Rate	L. 30	Ref. 50	R. 150	W.H. 200	P. 50	Other*	Total

Totals - Forward

NOTE: Column headings indicate: L - Lights; Ref. - Refrigerator; R - Range; W.H. - Water Heater; P - Water Pump.

Mark thus: ✓ indicates apoliance agreed upon.
X indicates contingent contracts reported.
*For Details of "Other" Equipment, see Customer Application Agreement (Sheet 3)

Sheet ____ of __

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COMPLAINANTS' EXHIBIT No. 918

RURAL ELECTRIFICATION SURVEY

Neighborhood Plan

Customer's Notice Form

After the Customer's Application Agreements (Sheet 3) have been received and tabulated on the Summary Sheet (Sheet 5) the TVA representative will then be able to advise you whether or not the project can be approved for construction. If approved, (see form below) notice should then be sent to all customers advising them of this decision and instructing them to complete valid contracts for wiring and the purchase of appliances, as agreed upon.

If desired, standard contract forms may be obtained from the TVA, or electrical dealers may use their own forms. In any event, however, the contracts should contain the following provision: "This contract is conditioned on the availability of electric service at my premises at _____ and I shall be under no obligation for wiring or the purchase of appliances unless and until such service becomes available."

Following is the suggested notice to be sent to customers after the Committee has finished its survey and completed negotiations for financing and constructing of lines:

_____, Tenn. _____, 193

Dear Sir:

We note with very much interest your willingness to cooperate with the _____ County Power Association and your neighbors in the extension of rural power lines in _____ County. We have checked your petition and are pleased to advise that this line will be constructed when you and the other residents in this district complete contracts for house wiring and appliances as mentioned in your agreement of _____, 193____.

After the Customer's Application Agreements (Sheet 3) have been received and tabulated on the Summary Sheet (Sheet 5) the TVA representative will then be able to advise you whether or not the project can be approved for construction. If approved, (see form below) notice should then be sent to all customers advising them of this decision and instructing them to complete valid contracts for wiring and the purchase of appliances, as agreed upon.

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Following is the suggested notice to be sent to customers after the Committee has finished its survey and completed negotiations for financing and constructing of lines:

_____, Tenn. _____, 193

Dear Sir:

We note with very much interest your willingness to cooperate with the _____ County Power Association and your neighbors in the extension of rural power lines in _____ County. We have checked your petition and are pleased to advise that this line will be constructed when you and the other residents in this district complete contracts for house wiring and appliances as mentioned in your agreement of _____, 193___.

If the line extension is not made your contracts with dealers and wiring contractors will not be binding. *

Assuring you of our cooperation, we are,

_____ COUNTY POWER ASSOCIATION

*NOTE: Equipment to be purchased under your agreement is as follows:

_____ _____

_____ _____

COMPLAINANTS' EXHIBIT No. 918

EASEMENT

FOR AND IN CONSIDERATION of the mutual advantage to be derived from the construction of a Rural Distribution Line, and other good and valuable considerations, receipt of which is hereby acknowledged, the undersigned, _____ _____ _____ hereby grant unto the _____ a permanent easement and right of way through my or our property for the purpose of entering, erecting, maintaining, and operating a Rural Distribution Line, including all other distribution structures upon, under, across the following described land, lying in the _____ Civil District, _____ County, _____, more particularly described as follows to-wit:

TO HAVE AND TO HOLD the said easement and right of way to the said _____, its successors and assigns.

IN WITNESS OF all of which _____ have hereunto subscribed _____ name on this the _____ day of _____, 193___,

_____

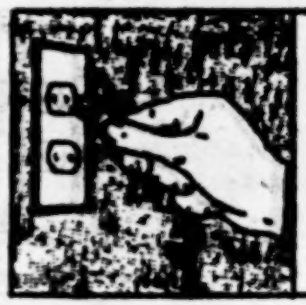
_____

STATE OF _____)
) ss:
COUNTY OF _____)

Personally appeared before me, _____ a Notary Public, in and for said County and State, _____ the within named bargainer___, with whom I am personally acquainted and

or $15.00 to the cost of three-wire service as soon as the range or water heater is actually installed. Thus, if you are planning a range or water heater, it will be cheaper to start off with three-wire service.

5. Wiring must conform to the standards and specifications of the National Board of Fire Underwriters, or such equivalent standards as may be set by your Municipality or Association. The service entrance, or place where the wires enter the house, must be made according to TVA specifications, available from your Municipality or Association.



When you wire, have plenty of these "convenience outlets" for your appliances.

* * * * *

Finance Plans:

In planning your house wiring and purchase of equipment, you can be greatly assisted by the finance plans which help you pay off this expense in small amounts over a period of years. In some cases these payments are made monthly, in others seasonally at the time of your crop returns.

Your local Committee or County Agent can give full details about the finance plans which are available in your community. Principal agencies are as follows:

1. Electric Home and Farm Authority (EHFA). This agency has approved a number of electric appliances for financing (FHA). In this case money may be borrowed from a local bank, like any other loan, except that terms and rates are more liberal than ever before. FHA loans, up to $2,000, may be obtained for all major electric equipment, and also to cover cost of wiring, plumbing, sinks, bathrooms, etc., and other modernization, such as built-in kitchen cabinets. There is no down payment (except on refrigerator, washing machine and ironer), loans may extend up to three years, and repayments may be made monthly or seasonally. See your local banker for details.

3. Production Credit Corporations. These are maintained in many areas and are often willing to assist in financing loans for wiring and equipment for farm users. Terms are generally similar to those for FHA. Full details may be obtained from the local County Agent or Farm Bureau.

4. Private Agencies. In addition to the above plans, there are a number of liberal finance plans maintained by private finance companies. Full details may be obtained from local dealers and mail order houses. However, customers should always check up to obtain the best terms and interest rates.

To see how these plans make it possible to spread out the cost of appliances, note the following examples, at EHFA rates:

Appliance	Cash Price	Minimum Down Payment	Minimum Monthly Payment
1. Refrigerator	$ 79.50	$3.50	$2.54
2. Range	74.50	3.50	2.38
3. Water Heater	60.00	3.00	2.27
4. Range and Refrigerator	154.00	5.00	3.83
5. All Three	214.00	6.00	5.30

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by acknowledged, the undersigned, _____

_____

hereby grant unto the _____ a permanent easement and right of way through my or our property for the purpose of entering, erecting, maintaining, and operating a Rural Distribution Line, including all other distribution structures upon, under, across the following described land, lying in the _____ Civil District, _____ County, _____, more particularly described as follows to-wit:

TO HAVE AND TO HOLD the said easement and right of way to the said _____, its successors and assigns.

IN WITNESS OF all of which _____ have hereunto subscribed _____ name on this the _____ day of _____, 193___,

_____

_____

STATE OF _____)
) ss:
COUNTY OF _____)

Personally appeared before me, _____
a Notary Public, in and for said County and State, _____

_____

the within named bargainer___, with whom I am personally acquainted and who acknowledged that_____ executed the within instrument for the purpose therein contained.

Witness my hand and seal of office in _____, this the _____ day of _____, 193___.

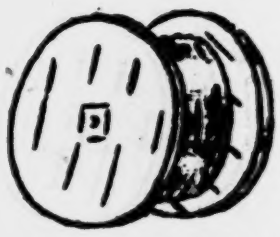
_____
Notary Public

My commission expires _____.

RURAL ELECTRIFICATION SURVEY

Neighborhood Plan

Information Sheet



Farm Uses of Electricity:

There are several hundred practical uses for electricity on the farm, and many of these will help to make money or save money on the farm. A few of the main farm and home uses are indicated below, with estimates of the amount of power they will use and approximate cost of equipment. These estimates, of course, represent averages only. The actual cost and operating expense will vary more or less depending on the size and type of equipment.

NAME OF EQUIPMENT	ENERGY CONSUMPTION	APPROXIMATE COST
Dairy Equipment		
Bottle Washer	1/3 KWH per 1,000 bottles	$7.50 to $60
Cream Separator	1/2 KWH per 1,000 lbs. milk	$50 to $150
Milking Machine	60 KWH per mo. per 25 cows	$30 up
Sterilizer	6 KWH per day per 25 cows	$150 up
Water Heater	10 KWH per day per 25 cows	$46.50 to $68.25*
Dairy Refrigeration	1 KWH per day per 10 gals.	$240 to $675
Churn	2 KWH per 100 lbs. milk	$20 to $75
Poultry Equipment		
Incubator	1/4 KWH per chick hatched	$10 up
Brooder	1/2 to 1 KWH per chick (season)	$6.50 up
Poultry Lights	20 KWH per year per 100 birds	$4.50 up per 100 birds
Meal and Feed		
Ensilage Cutter	1 KWH per ton	$50 to $400
Meal and Feed Grinder	1/2 KWH per bushel	$8 up
Sausage Grinder	1/2 KWH per 100 lbs. meat	$4 to $10
Hay Baler	2 KWH per ton	$300 to $600
Miscellaneous		
Large Meat Box Refrigerator	240 KWH per mo.	$400 to $1,000
Electric Hotbeds	1/2 to 1 KWH per day per sq.yd.	$10 to $20 per 6'x12' bed
Irrigation	2 KWH per acre inch per 10 ft. lift	$10 up per acre
Farm Motors	1 KWH per H.P. per hr.	$6 to $270
Household		

First	50 KWH	@ 3¢
Next	150 "	@ 2¢
Next	200 "	@ 1¢
Next	1000 "	@ 0.4¢
All over	1400 "	@ 0.75¢

Minimum residential bill is $0.75 per month and entitles the customer to use 25 KWH per month.

This rate is subject to an amortization charge of one cent (1¢) per KWH for the first 100 KWH used per month, such charge to be not less than $0.25 nor more than $1.00 per customer per month. This charge is kept separate and used to pay off the cost of the lines. When lines are paid for, the charge is eliminated.

churches, schools, grist mills, garages, tourist camps, hotels, signs, cold storage plants and small factories up to 10 h.p.

First	250 KWH	@ 3¢
Next	750 "	@ 2¢
Next	1000 "	@ 1¢
Excess over	2000 "	@ 0.8¢

Minimum commercial bill is $1.00 and entitles the customer to use 33 KWH per month.

This rate is subject to a developmental surcharge of 10% of net monthly bills, and to an amortization charge of one cent (1¢) per KWH for the first 100 KWH used per month, such charge to be not less than $0.25 nor more than $1.00 per customer per month.

Operating Costs:

Kilowatt hours are the unit of measure for electricity just as gallons are the unit for water or bushels are the unit for wheat. The table on page 1 shows about how many of these kilowatt-hour units are used by the different appliances. Table A above shows how much electricity costs per unit. With this information it is now easy for you to check off the equipment you want and figure just what will be the monthly operating cost of your equipment as shown in the examples below. In figuring the cost of power to you, be sure to compare the cost with what you are now spending in labor or cash for your present form of cooking, refrigeration, water pumping, etc.

HOW TO FIGURE OPERATING COSTS

Appliance	KWH Used Per Mo.	Electric Bill	Amortization Charge	Total
Lights and Small Appliances (Fan, Iron, Radio, etc.)	30 KWH	$ .90	$ .30	$1.20
Lights and Refrigerator	80 "	2.10	.80	2.90
Lights and Pump	80 "	2.10	.80	2.90
Lights, Refrigerator and Pump	130 "	3.10	1.00	4.10
Lights, Refrigerator, Pump, and Range	280 "	5.30	1.00	6.30
Lights, Refrigerator, Pump, Range and Water Heater	480 "	6.82	1.00	7.82

For further information, write
TVA, Division of Electrical Development, Old Post Office, Chattanooga, Tennessee

cal uses for electricity on the farm, and many of these will help to make money or save money on the farm. A few of the main farm and home uses are indicated below, with estimates of the approximate cost of equipment. These estimates, of course, represent averages only. The actual cost and operating expense will vary more or less depending on the size and type of equipment.

NAME OF EQUIPMENT	ENERGY CONSUMPTION	APPROXIMATE COST
Dairy Equipment		
Bottle Washer	1/3 KWH per 1,000 bottles	$7.50 to $80
Cream Separator	1/2 KWH per 1,000 lbs. milk	$50 to $150
Milking Machine	60 KWH per mo. per 25 cows	$30 up
Sterilizer	6 KWH per day per 25 cows	$150 up
Water Heater	10 KWH per day per 25 cows	$46.50 to $68.25*
Dairy Refrigeration	1 KWH per day per 10 gals.	$240 to $675
Churn	2 KWH per 100 lbs. milk	$20 to $75
Poultry Equipment		
Incubator	1/4 KWH per chick hatched	$10 up
Brooder	1/2 to 1 KWH per chick (season)	$6.50 up
Poultry Lights	20 KWH per year per 100 birds	$4.50 up per 100 birds
Meal and Feed		
Ensilage Cutter	1 KWH per ton	$50 to $400
Meal and Feed Grinder	1/2 KWH per bushel	$8 up
Sausage Grinder	1/2 KWH per 100 lbs. meat	$4 to $10
Hay Baler	2 KWH per ton	$300 to $600
Miscellaneous		
Large Meat Box Refrigerator	240 KWH per mo.	$400 to $1,000
Electric Hotbeds	1/2 to 1 KWH per day per sq.yd.	$10 to $20 per 6'x12' bed
Irrigation	2 KWH per acre inch per 10 ft. lift	$10 up per acre
Farm Motors	1 KWH per H.P. per hr.	$6 to $270
Household		
Room Lights	5 KWH per room per mo.	$15 per room
Radio	10 KWH per mo.	$10 up
Washing Machine	2 KWH per mo.	$40 up
Electric Iron	6 KWH per mo.	$1 up
Electric Fan	2 KWH per mo.	$1 up
Hot Plate	20 KWH per unit	$1 up
Sewing Machine	6 KWH per mo.	$50 up
Vacuum Cleaner	6 KWH per mo.	$20 to $75
Refrigerator	50 KWH per mo.	$72.50 to $79.50*
Range	150 KWH per mo.	$62.85 to $77.75*
Water Pump--Deep Well	50 KWH per mo.	$84.25 to $140*
Water Pump--Shallow Well	50 KWH per mo.	$52.50 to $68.25*
Air Heater	50 KWH per KW per mo.	$8 up
Water Heater	200 KWH per mo.	$46 up

*Prices for EHFA "approved" models.

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How The Survey Works:

This survey plan has been developed because it offers an easy, rapid way for farmers to survey their own rural electric lines and arrange for construction.

Due to various government agencies, it is now easier to develop rural electrification projects than ever before.

Through the Tennessee Valley Authority (TVA) or the Rural Electrification Administration (REA), your association or municipality can obtain funds for line construction without any financial liability to you either as a taxpayer or a customer.

Through other agencies (described on next page) it is possible to obtain loans for house wiring and the purchase of appliances on easier and more liberal terms than ever before.

But in spite of these great advantages, there still remain certain problems, and you must understand these thoroughly if your project is to be successful.

First of all, rural lines must be self-supporting. That means that each line must have a certain amount of business before the Government can afford to advance the money to build it.

The Government does not ask customers to put up large sums of money for line construction (that was the old method of rural electrification). It does not ask you to pay any heavy "line charges" or "monthly guarantees" or to assume any financial liability for the operation of the system.

On the other hand, it does ask you and your neighbors to see that there is enough business to make it possible for your line to pay its own way, gradually over a period of years.

liberal than any other plan previously developed. Instead of spending money for poles and transformers, the money you spend goes into labor-saving equipment for your own farm. If this equipment is selected wisely, it will, in many cases, help to make enough money, or save enough, to take care of the cost of electricity on the farm. This is especially true in view of the low TVA rates, and the low finance terms which now exist for the purchase of equipment.

Below will be found answers to some of the questions that will occur in planning for electric service on the farm.

* * * * * *

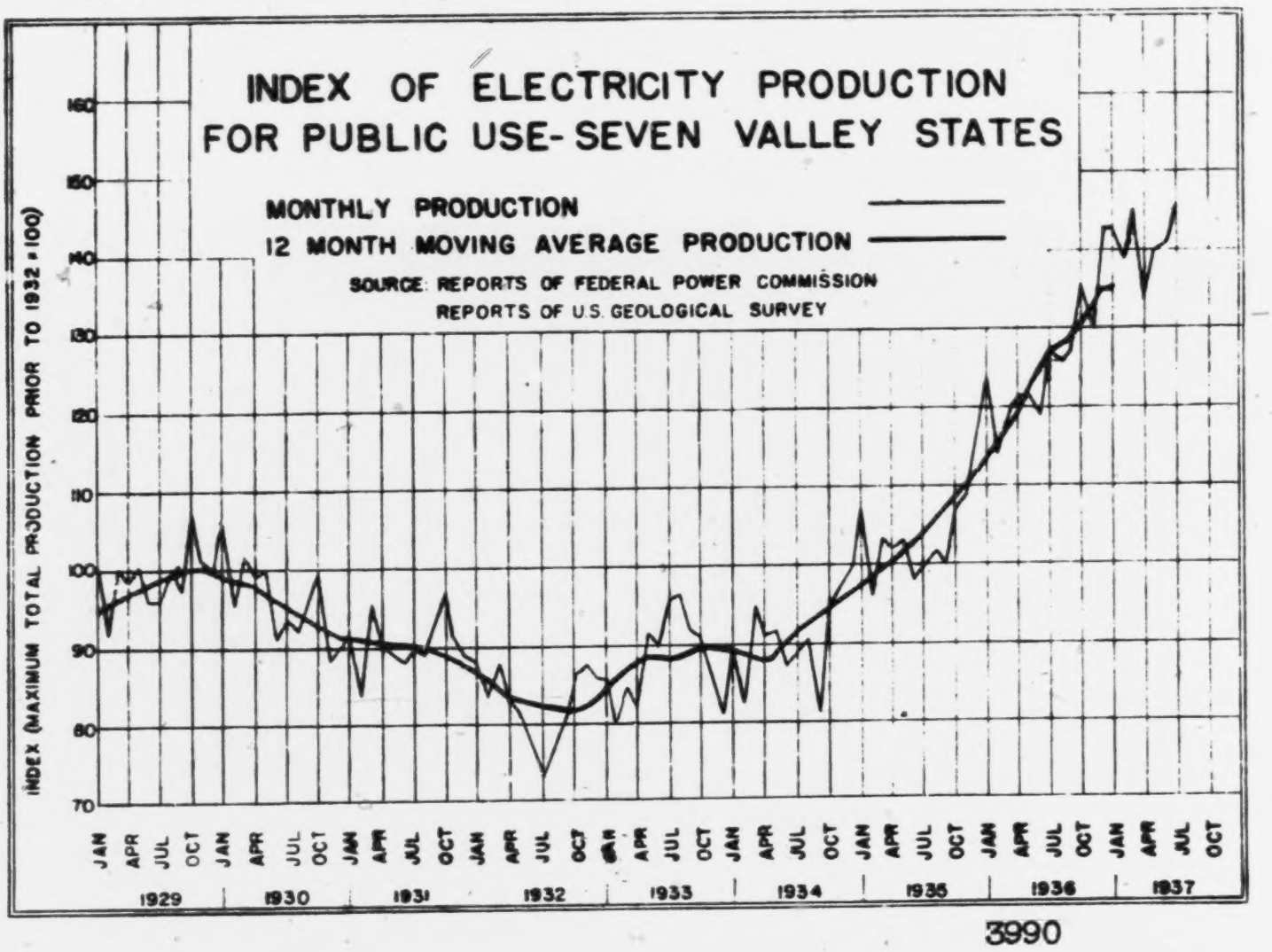
Cost of House Wiring:

If your home is already wired for Delco lights, the wiring will normally be satisfactory, requiring only the addition of a service entrance switch and connections, costing between $5.00 and $15.00.

If your home is not wired, this can be done by a reliable local electrician. In addition to the entrance switch ($5.00 to $15.00), wiring usually costs $2.00 to $3.00 per outlet. (Each switch, convenience outlet, or light receptacle counts as one outlet.) In planning your wiring remember these points:

1. Specify adequate wire to supply your equipment. (No wire lighter than #12 gauge for 110 volt circuits.)
2. Provide enough convenience outlets or wall plugs for all the equipment you will want to use.
3. Avoid "drop cords" and unshaded light bulbs which cause

Area	PRODUCTION DURING MONTH Total Thousands KWH	Per Cent Hydro	Per Cent Fuel	AVERAGE DAILY PRODUCTION Thousands KWH	Change From Prev. Month	Change From Prev. Year	PRODUCTION 12 MONTHS TO DATE Thousands KWH	Chge.fr. Prev.Yr.
Alabama	235,674	63%	37%	7,602	-2.4%	-3.3%	2,858,505	20.9%
Georgia	129,055	59	41	4,163	-8.7	12.4	1,629,662	11.7
Kentucky	90,698	45	55	2,926	5.7	27.7	858,256	13.3
Mississippi	6,791	0	100	219	25.9	10.5	72,941	20.6
North Carolina	277,760	67	33	8,960	-1.4	20.8	3,084,385	15.3
Tennessee	163,188	52	48	5,264	7.6	43.6	1,690,983	29.9
Virginia	148,867	14	86	4,802	-0.7	8.2	1,711,467	21.1
Valley States - TOTAL	1,052,033	53%	47%	33,936	-0.5%	14.7%	11,906,199	17.5%
United States less Valley States	9,573,953	31	69	308,837	-0.8	9.4	106,087,801	9.5
United States - TOTAL	10,625,986	33%	67%	342,773	-0.8%	9.9%	117,994,000	10.3%



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Authority (TVA) or the Rural Electrification Administration (REA), your association or municipality can obtain funds for line construction without any financial liability to you either as a taxpayer or a customer.

Through other agencies (described on next page) it is possible to obtain loans for house wiring and the purchase of appliances on easier and more liberal terms than ever before.

But in spite of these great advantages, there still remain certain problems, and you must understand these thoroughly if your project is to be successful.

First of all, rural lines must be self-supporting. That means that each line must have a certain amount of business before the Government can afford to advance the money to build it.

The Government does not ask customers to put up large sums of money for line construction (that was the old method of rural electrification). It does not ask you to pay any heavy "line charges" or "monthly guarantees" or to assume any financial liability for the operation of the system.

On the other hand, it does ask you and your neighbors to see that there is enough business to make it possible for your line to pay its own way, gradually over a period of years.

What is "enough business"? There is no ready-made answer. But as a general rule, other communities have found that it is practical to build rural lines at low TVA rates when the customers install enough equipment to use an average of 662 kilowatt hours per month per mile of line. Thus, if there were four customers, each would agree to install equipment which would use 165 kilowatt hours per month.

This is the customers' obligation under the plan, and authorities have agreed that it is more practical and rates, and the low finance terms which now exist for the purchase of equipment.

Below will be found answers to some of the questions that will occur in planning for electric service on the farm.

* * * * * *

Cost of House Wiring:

If your home is already wired for Delco lights, the wiring will normally be satisfactory, requiring only the addition of a service entrance switch and connections, costing between $5.00 and $15.00.

If your home is not wired, this can be done by a reliable local electrician. In addition to the entrance switch ($5.00 to $15.00), wiring usually costs $2.00 to $3.00 per outlet. (Each switch, convenience outlet, or light receptacle counts as one outlet.) In planning your wiring remember these points:

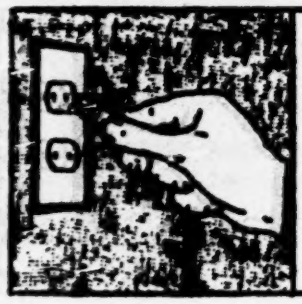
1. Specify adequate wire to supply your equipment. (No wire lighter than #12 gauge for 110 volt circuits.)

2. Provide enough convenience outlets or wall plugs for all the equipment you will want to use.

3. Avoid "drop cords" and unshaded light bulbs which cause glare and eye strain. Shaded lights are best. Inexpensive "kitchen units" are available with enclosed globe and a cord which combines a switch and outlet for your iron, percolator, etc., thereby eliminating wiring cost for a convenience outlet.

4. Consider right at the start the wisdom of installing "three-wire" service (suitable for range, water heater, air heater, etc.) rather than "two-wire" service (suitable for lights and small appliances only). Two-wire service entrances are a little cheaper. On the other hand, they give you less service. Also, in most cases, the local county power association makes a contribution of $15.00 to the cost of three-wire service as soon as the range or water heater is actually installed. Thus, if you are planning a range or water heater, it will be cheaper to start off with three-wire service.

5. Wiring must conform to the standards and specifications of the National Board of Fire Underwriters, or such equivalent standards as may be set by your Municipality or Association. The service entrance, or place where the wires enter the house, must be made according to TVA specifications, available from your Municipality or Association.



When you wire, have plenty of these "convenience outlets" for your appliances.

* * * * *

Finance Plans:

In planning your house wiring and purchase of equipment, you can be greatly assisted by the finance plans which help you pay off this expense in small amounts over a period of years. In some cases these payments are made monthly, in others seasonally at the time of your including: range, refrigerator, water heater, pump, motor, dairy cooler, cream separator, vacuum cleaner, washer, and kitchen heater. Models may be bought from approved local dealers with a small down payment, and small monthly payments on your electric bill, which may extend for as much as 48 months where two or more major items are purchased.

2. Federal Housing Administration (FHA). In this case money may be borrowed from a local bank, like any other loan, except that terms and rates are more liberal than ever before. FHA loans, up to $2,000, may be obtained for all major electric equipment, and also to cover cost of wiring, plumbing, sinks, bathrooms, etc., and other modernization, such as built-in kitchen cabinets. There is no down payment (except on refrigerator, washing machine and ironer), loans may extend up to three years, and repayments may be made monthly or seasonally. See your local banker for details.

3. Production Credit Corporations. These are maintained in many areas and are often willing to assist in financing loans for wiring and equipment for farm users. Terms are generally similar to those for FHA. Full details may be obtained from the local County Agent or Farm Bureau.

4. Private Agencies. In addition to the above plans, there are a number of liberal finance plans maintained by private finance companies. Full details may be obtained from local dealers and mail order houses. However, customers should always check up to obtain the best terms and interest rates.

To see how these plans make it possible to spread out the cost of appliances, note the following examples, at EHFA rates:

Appliance	Cash Price	Minimum Down Payment	Minimum Monthly Payment

TVA Rates:

All customers should be familiar with TVA rates schedules so that they can take full advantage of the economies offered.

Following are the schedules for Residential and Commercial Users:

Table A **RESIDENTIAL RATES**

	For Homes and Farms	
First	50 KWH	@ 3¢
Next	150 "	@ 2¢
Next	200 "	@ 1¢
Next	1000 "	@ 0.4¢
All over	1400 "	@ 0.75¢

Minimum residential bill is $0.75 per month and entitles the customer to use 25 KWH per month.

This rate is subject to an amortization charge of one cent (1¢) per KWH for the first 100 KWH used per month, such charge to be not less than $0.25 nor more than $1.00 per customer per month. This charge is kept separate and used to pay off the cost of the lines. When lines are paid for, the charge is eliminated.

Table B **COMMERCIAL RATES**

For all stores, filling stations, churches, schools, grist mills, dairies, tourist camps, hotels, signs, cold storage plants and small factories up to 10 h.p.

First	250 KWH	@ 3¢
Next	750 "	@ 2¢
Next	1000 "	@ 1¢
Excess over	2000 "	@ 0.8¢

Minimum commercial bill is $1.00 and entitles the customer to use 33 KWH per month.

This rate is subject to a developmental surcharge of 10% of net monthly bills, and to an amortization charge of one cent (1¢) per KWH for the first 100 KWH used per month, such charge to be not less than $0.25 nor more than $1.00 per customer per month.

Operating Costs:

Kilowatt hours are the unit of measure for electricity just as gallons are the unit for water or bushels are the unit for wheat. The table on page 1 shows about how many of these kilowatt-hour units are used by the different appliances. Table A above shows how much electricity costs per unit. With this information it is now easy for you to check off the equipment you want and figure just what will be the monthly operating cost of your equipment as shown in the examples below. In figuring the cost of power to you, be sure to compare the cost with what you are now spending in labor or cash for your present form of cooking, refrigeration, water pumping, etc.

COMPLAINANTS' EXHIBIT NO. 919

Tennessee Valley Authority
Department of Operations

Monthly Report No. 30
Issued Sept. 15, 1937

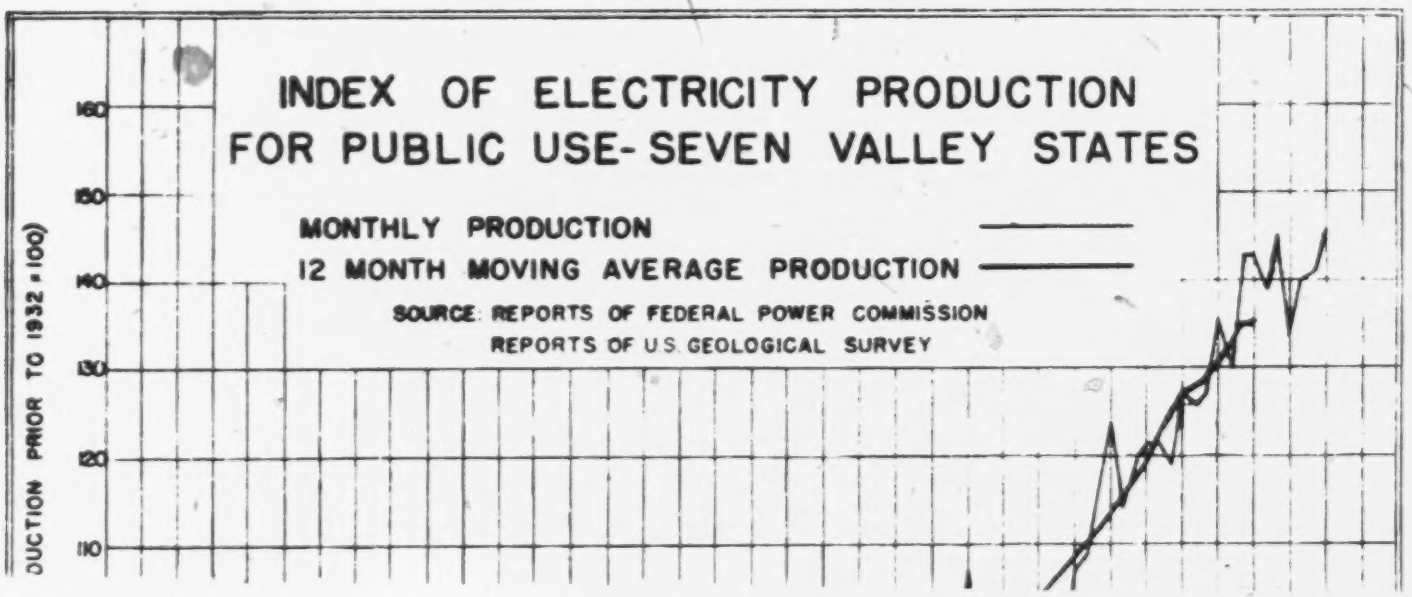
PRODUCTION OF ELECTRICITY FOR PUBLIC USE

IN THE TENNESSEE VALLEY STATES AND IN THE NATION

MONTH OF JULY, 1937 - PRELIMINARY REPORT

Production in Thousands of Kilowatt Hours

Area	PRODUCTION DURING MONTH			AVERAGE DAILY PRODUCTION			PRODUCTION 12 MONTHS TO DATE	
	Total Thousands KWH	Per Cent Hydro	Per Cent Fuel	Thousands KWH	Change From Prev. Month	Change From Prev. Year	Thousands KWH	Chge.fr. Prev.Yr.
Alabama	235,674	63%	37%	7,602	-2.4%	-3.3%	2,858,505	20.9%
Georgia	129,055	59	41	4,163	-8.7	12.4	1,629,632	11.7
Kentucky	90,698	45	55	2,926	5.7	27.7	858,256	13.3
Mississippi	6,791	0	100	219	25.9	10.5	72,941	20.6
North Carolina	277,760	67	33	8,960	-1.4	20.8	3,084,385	15.3
Tennessee	163,188	52	48	5,264	7.6	43.6	1,690,983	29.9
Virginia	148,867	14	86	4,802	-0.7	8.2	1,711,467	21.1
Valley States - TOTAL	1,052,033	53%	47%	33,936	-0.5%	14.7%	11,906,199	17.5%
United States less Valley States	9,573,953	31	69	308,837	-0.8	9.4	106,087,801	9.5
United States - TOTAL	10,625,986	33%	67%	342,773	-0.8%	9.9%	117,994,000	10.3%



COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

AUGUST - 1937
WHOLESALE PURCHASES BY
MUNICIPALITIES & COOPERATIVES

Monthly Report No. 30
Issued Sept. 15, 1937

CONTRACTOR	KW DEMAND Month	KW DEMAND Mo. of Prev. Yr.	KW DEMAND Max. 12 Mos.	ENERGY — KWH Month	ENERGY — KWH Chge. Yr. Prev. Yr.	ENERGY — KWH 12 Mos. To Date	WHOLESALE BILL--DOLLARS Month	WHOLESALE BILL--DOLLARS Chge. Yr. Prev. Yr.	WHOLESALE BILL--DOLLARS 12 Mos. To Date	MILLS PER KWH Month	LOAD FACTOR Month
Municipalities											
Amory, Miss.	440	368	440	183,200	26%	1,761,600	$ 1,031	20%	$10,719	5.63	56%
Athens, Ala.	1,096	693	1,096	390,800	56	4,102,860	2,194	51	23,130	5.61	48
Bolivar, Tenn.	195	123	195	83,600	82	714,700	500	70	4,615	5.99	58
Dayton, Tenn.	408	392	408	170,400	12	1,767,200	964	7	10,516	5.66	56
Dickson, Tenn.	512	400	512	182,400	12	2,024,800	1,100	17	11,973	6.03	48
Florence, Ala.	2,556	2,048	2,556	1,070,400	25	11,598,241	4,604	22	51,573	4.30	56
Holly Springs, Miss.	264	232	344	114,400	27	1,297,600	669	18	8,028	5.84	58
Jackson, Tenn.	282	306	402	97,800	-26	1,481,400	645	-15	8,904	6.60	47
Milan, Tenn.	328	248	368	145,600	36	1,493,600	817	28	8,967	5.61	60
Muscle Shoals City, Ala.	78	66	144	31,200	15	459,514	188	15	2,736	6.04	54
New Albany, Miss.	801	653	801	303,890	28	3,265,342	1,720	24	18,256	5.66	51
Okolona, Miss.	606	564	624	209,100	60	1,833,445	1,266	27	11,297	6.05	46
Pulaski, Tenn.	816	696	816	304,000	17	3,104,000	1,733	16	18,180	5.70	50
Sheffield, Ala.	434	33	434	157,000	—	544,380	941	—	3,632	6.00	49
Somerville, Tenn.	141	99	177	63,900	95	612,600	374	70	3,940	5.85	61
Tupelo, Miss.	1,824	2,004	2,520	752,800	-12	10,479,100	3,726	-10	51,654	4.95	55
Tuscumbia, Ala.	680	—	680	244,000	—	—	1,286	—	—	5.27	48
Cooperatives											
Alcorn Co. EPA	1,622	1,399	2,132	659,800	14	8,561,200	3,321	14	42,447	5.03	55
Cullman Co. EMC	174	—	180	56,100	—	478,451	381	—	3,473	6.79	43
Duck River EMC	218	—	218	59,195	—	—	429	—	—	7.25	37
Gibson Co. EMC	446	72	454	134,360	—	871,020	898	—	6,697	6.68	40
Meigs Co. EMC	150	40	150	54,650	—	375,735	350	—	2,621	6.40	49
Middle Tenn. EMC	192	—	192	74,700	—	—	466	—	—	6.23	52
Monroe Co. EPA	340	240	500	80,800	64	932,200	628	52	7,914	7.77	32
No. Georgia EMC	360	60	360	122,400	—	931,035	787	—	6,399	6.43	46
Pickwick EMC	246	—	363	76,600	—	825,900	525	—	5,795	6.85	42
Pontotoc EPA	782	500	798	204,950	29	2,108,300	1,410	38	13,021	6.88	35
Prentiss Co. EPA	714	660	762	246,000	16	2,616,000	1,468	11	16,031	5.97	46
Southwest Tenn. EMC	246	—	246	59,400	—	—	456	—	—	7.68	33
Tishomingo Co. EPA	358	410	547	149,160	12	1,536,650	854	- 1	9,511	5.72	56
Tombigbee EPA	1,208	562	1,712	306,000	16	3,357,900	2,094	54	20,519	6.84	34
MUNICIPALITIES	—	—	—	4,504,490	29	—	23,758	28	—	5.27	—
COOPERATIVES	—	—	—	2,284,115	60	—	14,067	73	—	6.16	—
TOTAL	—	—	—	6,788,605	38%	—	$37,825	41%	—	5.57	—
ALABAMA DIVISION	—	—	—	1,949,500	—	—	9,594	—	—	4.92	—
MISSISSIPPI DIVISION	—	—	—	3,210,100	—	—	18,187	—	—	5.67	—
MIDDLE TENNESSEE DIVISION	—	—	—	967,745	—	—	5,829	—	—	6.02	—
WEST TENNESSEE DIVISION	—	—	—	661,260	—	—	4,215	—	—	6.37	—

DATA NOT FOR PUBLICATION

COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

DISTRIBUTION OF ELECTRICITY
UNDER TVA RESALE RATES
AUGUST - 1937

Monthly Report No. 30
Issued Sept. 15, 1937

	TOTAL EXCL. GOVERNMENT RESERVATIONS				TOTAL OPERATIONS			
Number of Customers	Month	Chge. fr. Prev. Yr.	12 Months to Date	Chge. fr. Prev. Yr.	Month	Chge. fr. Prev. Yr.	12 Months to Date	Chge. fr. Prev. Yr.
Residential	26,247	55%	22,233 (Av)	95%	27,500	53%	23,368 (Av)	89%
Commercial	6,486	31	5,889 (Av)	67	6,619	22	6,002 (Av)	67
Industrial	104	39	--	--	110	33	--	--
Total	32,837	49%	--	--	34,229	48%	--	--
Kilowatt Hours								
Residential	2,790,352	69%	26,216,833	99%	3,055,378	62%	32,253,150	73%
Commercial	1,549,519	35	16,028,157	82	1,638,489	34	17,206,707	74
Industrial	2,365,408	21	30,106,156	123	2,453,458	19	31,281,424	111
Municipal	441,846	34	4,452,790	67	619,095	21	7,278,217	31
Total	7,147,125	40%	76,803,936	101%	7,766,420	37%	88,019,498	80%
Revenue								
Residential	$ 58,256	65%	$ 537,159	98%	$ 62,900	61%	$ 600,516	83%
Commercial	38,481	35	396,947	75	39,948	35	413,138	71
Industrial	22,220	25	295,476	101	23,153	23	307,468	91
Municipal	6,169	28	64,061	53	7,662	24	84,402	34
Total	$ 125,126	45%	$1,292,643	88%	$ 133,663	43%	$1,405,524	77%
Averages								
Residential								
KWH per Customer	106	9%	1,179	2%	111	6%	1,380	-8%
Revenue per KWH	2.09¢	-2	2.05¢	-1	2.06¢	-1	1.86¢	5
Revenue per Customer	$2.22	7	$24.16	1	$2.29	6	$25.70	-3
Commercial								
KWH per Customer	239	4	2,722	7	266	10	2,867	4
Revenue per KWH	2.48¢	0	2.47¢	-4	2.44¢	1	2.40¢	-2
Revenue per Customer	$5.93	3	$67.24	5	$6.48	10	$68.83	3
Industrial								
Revenue per KWH	.94¢	3	.98¢	-10	.94¢	-3	.98¢	-9
Municipal								
Revenue per KWH	1.40¢	-4	1.44¢	-8	1.24¢	2	1.16¢	3
Total - All Classes								
Revenue per KWH	1.75¢	3	1.68¢	-7	1.72¢	4	1.60¢	-1

DATA NOT FOR PUBLICATION

1

COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

AUGUST - 1937

Monthly Report No. 30
Issued Sept. 15, 1937

RESIDENTIAL APPLIANCE STATISTICS

Municipalities	TOTAL APPLIANCE SALES Aug.-37	July-37	Aug.-36	AV. SALES PER CUSTOMER Aug.-37	July-37	Aug.-36	UNITS SOLD - AUGUST, 1937 Ref.	Ranges	Water Htrs.	Pump	Space Htrs.	Wash.	Iron. Mch.	Misc.	EST. KWH ADDED	PER CENT SATURATION SEPT. 1, 1937 Ref.	Range	W.H.
Amory, Miss.	$ 2,200	$ 1,921	$ 4,980	$ 3.17	$ 2.83	$ 7.88	7	-	1	1	-	-	-	14	663	76%	5%	3%
Athens, Ala.	1,157	6,061	1,571	0.92	4.84	2.07	2	-	-	-	-	4	-	21	150	72	31	12
Bolivar, Tenn.	1,100	4,210	1,035	4.93	18.96	4.91	3	1	2	-	-	-	-	1	822	44	11	9
Dayton, Tenn.	4,406	3,583	761	6.65	5.46	1.19	8	7	3	1	-	7	-	67	2,403	42	23	5
Dickson, Tenn.	2,198	3,664	3,170	3.21	5.48	5.32	2	1	2	-	-	6	1	24	843	53	22	8
Florence, Ala.	7,387	7,395	26,813	3.69	3.70	14.68	22	4	1	-	4	3	-	70	2,526	68	32	10
Holly Springs, Miss.	1,414	2,400	1,274	3.15	5.44	3.44	3	2	2	-	-	-	-	7	984	54	12	12
Milan, Tenn.	2,302	1,856	2,820	4.44	3.58	6.59	8	2	-	-	-	-	-	10	720	35	11	3
Muscle Shoals City, Ala.	329	1,155	284	2.91	10.60	2.99	2	-	1	-	-	-	-	-	360	75	44	44
New Albany, Miss.	2,441	4,137	2,880	2.02	3.45	2.70	7	-	1	-	-	-	-	48	706	69	20	6
Okolona, Miss.	1,648	2,530	1,005	2.88	4.41	2.63	4	1	-	1	-	4	-	8	399	59	21	5
Pulaski, Tenn.	2,749	1,335	4,787	3.57	1.76	7.17	9	3	6	-	-	-	-	26	2,512	50	30	12
Sheffield, Ala.	7,544	3,091	--	4.15	*	--	25	9	3	-	-	4	-	29	3,446	*	*	*
Somerville, Tenn.	948	561	1,337	5.45	3.15	9.48	3	1	-	-	-	-	-	13	326	58	16	10
Tupelo, Miss.	3,026	8,016	6,994	2.04	5.44	5.70	13	2	-	-	2	-	-	30	1,080	86	25	8
Tuscumbia, Ala.	3,749	3,220	--	4.64	3.99	--	10	7	4	-	-	-	-	8	2,606	43	28	10
Cooperatives																		
Alcorn Co., Miss.	8,227	9,620	7,523	4.31	5.07	4.59	18	18	4	-	-	9	1	26	4,723	76	36	12
Cullman Corp., Ala.	782	1,554	--	0.88	1.75	--	3	-	-	1	-	3	1	-	194	27	3	1
Duck River Corp., Tenn.	11,936	4,432	3,138x	23.87	8.94	11.50x	44	22	6	10	-	6	-	18	7,358	52	22	4
Gibson Corp., Tenn.	1,344	5,823	--	1.52	6.65	--	2	3	1	2	-	1	-	4	870	41	23	6
Meigs Corp., Tenn.	8,599	4,591	2,685	15.19	8.47	24.63	13	6	2	4	-	10	-	180	2,550	31	11	3
Middle Tenn. Corp., Tenn.	1,022	3,080	--	1.65	4.98	--	2	-	-	6	-	1	-	8	268	43	21	7
Monroe Co., Miss.	373	872	1,579	1.26	2.94	6.93	1	1	1	-	-	-	-	-	460	61	9	2
No. Georgia Corp., Ga.	9,698	7,856	--	6.82	5.58	--	27	8	2	6	-	16	-	17	3,286	28	7	1
Pickwick Corp., Tenn.	1,112	2,484	1,162x	1.84	4.10	2.71x	4	1	-	-	-	3	-	1	358	48	10	2
Pontotoc Assn., Miss.	3,629	3,347	1,801	4.62	4.31	2.69	7	8	4	1	-	2	-	53	2,725	61	17	8
Prentiss Co., Miss.	4,701	4,062	2,363	6.62	5.76	3.78	12	10	1	-	-	3	1	36	2,451	80	36	12
Southwest Tenn. Corp., Tenn.	36,735	20,463	--	109.33	86.67	--	97	56	26	17	-	4	-	91	20,625	50	22	10
Tishomingo Co., Miss.	1,606	1,882	1,872	2.96	3.62	4.12	5	2	1	-	-	2	-	15	844	50	15	10
Tombigbee Assn., Miss.	3,875	5,653	3,753	1.96	2.86	2.35	10	2	2	2	-	7	1	16	1,429	55	14	2
Direct Operations																		
Alabama Power District	9,151	3,672	2,916	21.18	9.51	5.96	27	8	3	5	-	17	-	12	3,513	**	**	**
Colbert Co., Ala.	2,084	1,315	2,797	4.81	2.86	15.28	2	5	1	1	-	6	3	9	1,204	**	**	**
Lauderdale Co., Ala.	3,716	4,414	6,164	3.96	4.79	9.68	6	5	2	7	5	2	-	6	2,426	**	**	**
Lincoln Corp., Tenn.	1,825	2,841	1,249	3.17	4.99	3.34	7	3	2	1	-	3	-	1	1,353	47	13	5
TOTALS																		
MUNICIPALITIES	44,698	55,135	59,711	3.77	4.78	6.60	128	40	26	3	6	28	1	376	20,546	64%	24%	9%
COOPERATIVES	93,638	75,709	21,566	7.77	6.39	3.89	245	137	50	49	-	67	4	465	48,141	51	18	6
DIRECT OPERATIONS	16,776	12,242	17,426	7.05	5.24	7.29	42	21	8	14	5	28	3	28	8,496	--	--	--
TOTAL	$155,012	$143,086	$98,703	$ 5.91	$ 5.56	$ 5.81	415	198	84	66	11	123	8	859	77,183	==	==	==
ALABAMA	35,899	31,877	40,544	5.07	4.67	10.01	99	38	15	14	9	39	4	155	16,425	--	--	--
MISSISSIPPI	33,139	44,440	36,015	3.12	4.22	4.05	87	46	17	5	2	27	3	253	16,464	--	--	--
TENNESSEE	85,974	66,769	22,144	10.36	7.99	5.47	229	114	52	47	-	57	1	461	44,294	--	--	--

x Formerly direct operations.
* Not included because majority of customers not connected.
** Unavailable pending survey.

DATA NOT FOR PUBLICATION

3993

COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

ACTUAL AND PROJECTED TVA SERVICE AREAS

AUGUST - 1937

Monthly Report No. 30
Issued Sept. 15, 1937

ACTUAL

Municipalities	No. of Custs. Total	No. of Custs. Incr. fr. Prev. Mo.	Est. Miles Rural Line	Date of Initial TVA Service
Muscle Shoals City, Ala.	136	4	-	Oct. 14, 1933
Tupelo, Miss.	1,931	11	-	Feb. 7, 1934
Athens, Ala.	1,681	13	119	June 1, 1934
Amory, Miss.	900	18	4	Sept. 2, 1934
New Albany, Miss.	1,545	11	70	Nov. 12, 1934
Pulaski, Tenn.	1,035	11	28	Jan. 4, 1935
Dayton, Tenn.	846	8	35	Feb. 1, 1935
Okolona, Miss.	745	4	65	July 14, 1935
Sheffield, Ala.	320	197	-	Mar. 16, 1936
Dickson, Tenn.	838	16	-	May 12, 1936
Holly Springs, Miss.	642	9	-	May 15, 1936
Florence, Ala.	2,583	- 7	-	July 15, 1936
Milan, Tenn.	684	- 9	-	July 16, 1936
Jackson, Tenn.	*	0	-	July 18, 1936
Bolivar, Tenn.	318	4	-	July 20, 1936
Somerville, Tenn.	264	0	-	July 25, 1936
Tuscumbia, Ala.	992	19	-	April 1, 1937
Cooperatives				
Alcorn Co., Miss.	2,418	16	69	June 1, 1934
Pontotoc Assn., Miss.	1,049	10	63	June 1, 1934
Prentiss Co., Miss.	963	12	41	June 1, 1934
Tishomingo Co., Miss.	761	33	3	June 1, 1934
Tombigbee Assn., Miss.	2,392	6	235	June 1, 1934
Monroe Co., Miss.	381	8	65	Feb. 15, 1936
Pickwick Corp., Tenn.	736	6	97	Apr. 21, 1936
Duck River Corp., Tenn.	546	7	192	May 27, 1936
No. Georgia Corp., Ga.	1,565	24	406	July 14, 1936
Meigs Corp., Tenn.	651	26	187	Aug. 6, 1936
Cullman Corp., Ala.	995	10	162	Aug. 8, 1936
Gibson Corp., Tenn.	1,020	13	242	Aug. 13, 1936
Middle Tenn. Corp., Tenn.	691	5	248	Dec. 10, 1936
Southwest Tenn. Corp., Tenn.	379	121	230	July 1, 1937
Temporary Direct Operations				
Lauderdale Co., Ala.	1,128	16	155	Oct. 20, 1934
Colbert Co., Ala.	514	-28	135	Dec. 4, 1934
Lincoln Corp., Tenn.	679	8	164	Oct. 1, 1935
Alabama Power District	509	49	96	May 1, 1936
TOTALS				
MUNICIPALITIES	15,460	309	321	
COOPERATIVES	14,547	297	2,240	
TEMPORARY DIRECT	2,830	45	550	
GOVERNMENT RESERVATIONS	1,392	9	72	
TOTAL	34,229	660	3,183	

PROJECTED

Municipalities	Approx. Number Custs.	Est. Miles Rural Line	Tentative Date of Init. Service
Holly Springs, Miss. (rural ext.)	270	60	As completed
Cooperatives			
Duck River Corp., Tenn.	720	196	As completed
Pontotoc Assn., Miss.	30	4	As completed
Southwest Tenn. Corp., Tenn.	147	59	As completed
Temporary Direct Operations			
Alabama Power District	477	97	As completed
Colbert Co., Ala.	5	1	As completed
TOTALS			
MUNICIPALITIES	270	60	
COOPERATIVES	897	259	
TEMPORARY DIRECT	482	98	
TOTAL	1,649	417	

*Municipal use only.

DATA NOT FOR PUBLICATION

COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

AUGUST - 1937

Monthly Report No. 30
Issued Sept. 15, 1937

COMMERCIAL STATISTICS

Municipalities	Months of TVA Service	Number of Com. Custs. Aug. - 1937	% Min. Bills	Average Total Bill Aug. - 1937	KWH PER CUSTOMER Aug. 1937	Aug. 1936	12 Mos. to Date	Total Appliance Sales to Com. Custs.
Amory, Miss.	36	206	29	$ 8.22	324	245	2,861	$ 1,000
Athens, Ala.	39	418	29	5.06	197	258	2,709	--
Bolivar, Tenn.	13	94	39	5.95	206	171	2,056	--
Dayton, Tenn.	31	175	38	5.88	213	194	2,476	--
Dickson, Tenn.	15	152	23	7.75	310	303	3,643	--
Florence, Ala.	13	567	22	8.07	355	204	3,927	--
Holly Springs, Miss.	15	193	40	5.30	156	150	1,999	1,850
Milan, Tenn.	13	164	24	7.31	256	204	2,493	--
Muscle Shoals City, Ala.	47	23	22	6.04	196	142	1,852	--
New Albany, Miss.	33	338	29	5.93	217	214	2,422	1,955
Okolona, Miss.	25	166	30	7.44	274	271	2,807	249
Pulaski, Tenn.	32	257	37	7.28	293	257	3,276	500
Sheffield, Ala.	18	136	22	8.04	328	--	--	385
Somerville, Tenn.	13	89	38	7.16	181	175	2,187	--
Tupelo, Miss.	43	439	19	9.40	511	511	5,665	819
Tuscumbia, Ala.	5	162	28	7.66	271	--	--	85
Cooperatives								
Alcorn Co., Miss.	39	503	24	7.28	315	281	3,400	2,505
Cullman Corp., Ala.	13	104	48	3.02	65	11	573	--
Duck River Corp., Tenn.	14	46	46	3.03	69	92	874	100
Gibson Corp., Tenn.	12	133	46	3.55	87	--	860	--
Meigs Corp., Tenn.	13	84	48	4.47	141	48	958	--
Middle Tenn. Corp., Tenn.	9	70	47	3.53	101	--	--	--
Monroe Co., Miss.	18	78	35	5.29	188	130	1,450	--
No. Georgia Corp., Ga.	13	144	51	3.26	87	--	939	1,130
Pickwick Corp., Tenn.	16	132	35	5.11	149	192	1,598	--
Pontotoc Assn., Miss.	39	262	30	6.02	195	169	1,994	--
Prentiss Co., Miss.	39	240	29	7.24	245	212	2,485	--
Southwest Tenn. Corp., Tenn.	2	42	54	2.85	61	--	--	--
Tishomingo Co., Miss.	39	216	34	5.79	186	168	2,055	--
Tombigbee Assn., Miss.	39	410	39	4.19	109	96	1,245	3,139
Direct Operations								
Alabama Power District	16	72	40	5.66	192	129	1,722	--
Colbert Co., Ala.	30	78	45	3.78	100	174	1,113	--
Lauderdale Co., Ala.	34	189	36	4.60	118	114	1,313	58
Lincoln Corp., Tenn.	22	103	59	3.24	74	67	820	2,777
TOTALS								
MUNICIPALITIES	--	3,579	28	7.19	294	263	--	6,843
COOPERATIVES	--	2,464	36	5.34	180	187	--	6,874
DIRECT OPERATIONS	--	442	44	4.27	117	130	--	2,835
GOVERNMENT RESERVATIONS	--	133	33	11.03	669	912	--	--
TOTAL EXCL. GOV. RESERVATIONS	--	6,485	32	6.29	239	223	--	16,552
TOTAL TVA TERRITORY	--	6,618	32	6.38	247	235	--	--

DATA NOT FOR PUBLICATION

COMPLAINANTS' EXHIBIT No. 919

Tennessee Valley Authority
Department of Operations

AUGUST - 1937

Monthly Report No. 30
Issued Sept. 15, 1937

RESIDENTIAL STATISTICS

Municipalities	NUMBER OF CUSTOMERS: Total Res.	% Farm	% N-F	% Urban	% Min. Bills	Average Total Bill Aug. - 1937	KWH PER CUSTOMER: August - 1937 Farm	N-F	Urban	Total	Aug.-36 Total	12 Mos. To Date	Median Aug.-37
Amory, Miss.	693	8	10	82	16	$2.28	113	87	100	100	87	975	78
Athens, Ala.	1,261	22	12	66	24	2.81	87	171	165	149	156	1,676	66
Bolivar, Tenn.	223	--	100	--	41	2.48	--	88	--	88	45	749	40
Dayton, Tenn.	663	21	79	--	42	1.91	57	89	--	83	73	914	31
Dickson, Tenn.	684	1	--	99	27	2.29	166	--	111	111	85	1,194	58
Florence, Ala.	2,002	--	3	97	15	2.80	--	180	144	145	71*	1,578	83
Holly Springs, Miss.	449	8	92	--	31	2.87	55	111	--	107	68	1,331	51
Milan, Tenn.	519	10	3	87	48	2.18	55	158	72	72	41	720	28
Muscle Shoals City, Ala.	113	23	77	--	15	3.59	116	210	--	188	161	3,017	96
New Albany, Miss.	1,206	26	25	49	25	2.48	65	98	131	106	95	1,084	65
Okolona, Miss.	572	37	63	--	23	3.16	95	139	--	123	112	1,266	79
Pulaski, Tenn.	770	11	1	88	27	2.57	113	187	128	127	119	1,473	62
Sheffield, Ala.	182	--	--	100	25	2.29	--	--	124	124	--	--	70
Somerville, Tenn.	174	4	96	--	29	2.91	119	100	--	101	54	1,086	53
Tupelo, Miss.	1,484	5	10	85	17	2.72	194	135	137	140	142	1,849	86
Tuscumbia, Ala.	829	--	--	100	16	2.80	--	--	147	147	--	--	91
Cooperatives													
Alcorn Co., Miss.	1,907	14	20	66	21	3.44	76	94	185	151	145	1,699	77
Cullman Corp., Ala.	891	100	--	--	50	1.69	42	--	--	42	9x	393	27
Duck River Corp., Tenn.	500	100	--	--	36	2.37	76	--	--	76	66	791	44
Gibson Corp., Tenn.	886	74	26	--	28	2.90	112	92	--	107	--	994	61
Meigs Corp., Tenn.	566	92	8	--	48	1.83	51	94	--	55	33#	526	25
Middle Tenn. Corp., Tenn.	621	100	--	--	35	2.46	81	--	--	81	--	--	47
Monroe Co., Miss.	295	80	20	--	36	2.31	64	84	--	68	53	652	53
No. Georgia Corp., Ga.	1,421	91	9	--	48	1.84	52	86	--	55	47	537	28
Pickwick Corp., Tenn.	604	38	62	--	32	2.32	47	83	--	70	82	720	52
Pontotoc Assn., Miss.	786	27	73	--	31	2.77	71	115	--	104	97	1,051	58
Prentiss Co., Miss.	710	25	75	--	22	3.33	116	148	--	140	127	1,436	72
Southwest Tenn. Corp., Tenn.	336	78	22	--	38	2.34	82	56	--	77	--	--	32
Tishomingo Co., Miss.	542	23	77	--	30	3.03	98	134	--	126	104	1,402	66
Tombigbee Assn., Miss.	1,980	49	51	--	35	2.59	70	98	--	84	78	905	45
Direct Operations													
Alabama Power District	432	47	53	--	29	2.66	80	120	--	101	110	1,071	51
Colbert Co., Ala.	433	64	36	--	31	2.74	122	70	--	103	104	1,123	54
Lauderdale Co., Ala.	939	42	58	--	35	2.60	84	80	--	82	89	890	51
Lincoln Corp., Tenn.	575	96	4	--	40	2.18	65	31	--	64	53	684	39
TOTALS													
MUNICIPALITIES	11,824	11	21	68	24	2.62	88	116	133	124	97	--	68
COOPERATIVES	12,044	58	32	10	34	2.59	69	108	185	93	104	--	46
DIRECT OPERATIONS	2,379	60	40	--	34	2.60	83	86	--	86	85	--	48
GOVERNMENT RESERVATIONS	1,253	19	81	--	18	3.71	52	250	--	212	229	--	--
TOTAL EXCL. GOV. RES.	26,247	37	28	35	29	2.60	73	108	140	106	97	--	55
TOTAL TVA TERRITORY	27,500	36	30	34	29	2.65	73	125	140	111	105	--	--

* Only 17 days service.
x Only 13 days service.
Only 20 days service.

DATA NOT FOR PUBLICATION

3996

[fol. 3997] COMPLAINANTS' EXHIBIT No. 920

Farm Census Data for Alabama

As of Jan. 1, 1935

County	Number of Farms	Land in Farms, Acres	Value of Farms (Lands and Buildings) Total	Average per Farm	Average per Acre
Colbert	2726	219,825	$6,815,160	$2,500	$31.00
Franklin	3741	297,693	4,716,201	1,261	15.84
Lauderdale	5170	367,941	9,595,729	1,856	26.08
Lawrence	4855	305,705	8,003,756	1,649	26.18
Limestone	6266	338,151	12,449,028	1,987	36.81
Morgan	4912	332,425	8,839,360	1,800	26.59
Total	27670	1,861,740	$50,419,234	$1,820	$27.00
Less ½ of Franklin County	1870	148,847	2,358,101	1,261	15.84
Total ceded area	25800	1,712,893	$48,061,133	$1,860	$28.18
The State	273455	11,660,828	$368,219,654	$1,347	$18.73

Note: The above figures taken from U. S. Census Report entitled "Alabama Statistics by Counties."

(Here follows 1 photolithograph, side folio 3998)

COMPLAINANTS' EXHIBIT NO. 921

General Electric
Rural Electrification Section
Schenectady, N. Y.

FARM SERVICE

Number and Percentage of Farms Receiving Electric Service

(Electric Light and Power Industry) (100% of Industry)

AS OF JUNE 30, 1937

	Farms Having Occupied Dwellings (A)	Farms Having Electric Service (C)	Increase First 6 Months 1937 (D)	Per Cent Electrification C/A
United States	6,502,280	1,138,335	119,342	17.5
Maine	40,852	18,594	468	45.5
New Hampshire	17,477	11,456	17	65.5
Vermont	26,179	8,762	466	33.5
Massachusetts	33,453	21,258	376	63.5
Rhode Island	4,125	3,738	−33	90.6
Connecticut	30,048	19,340	834	64.4
New York	170,766	83,567	8,085	48.9
New Jersey	29,329	17,858	1,394	60.9
Pennsylvania	188,688	80,035	7,884	42.4
Ohio	246,592	87,818	13,729	35.6
Indiana	195,637	48,345	5,424	24.7
Illinois	227,138	45,004	4,908	19.8
Michigan	191,185	74,273	11,259	38.8
Wisconsin	196,501	50,057	7,434	25.5
Minnesota	197,710	16,047	2,572	8.1
Iowa	215,714	37,622	2,845	17.4
Missouri	269,556	23,256	1,161	8.6
North Dakota	77,822	2,390	42	3.1
South Dakota	79,986	3,245	165	4.1
Nebraska	130,567	11,329	2,774	8.7
Kansas	164,128	17,364	854	10.6
Delaware	10,312	2,651	262	25.7
Maryland	43,318	14,444	813	33.3
District of Columbia	82	61	0	74.4
Virginia	187,875	21,262	2,060	11.3
West Virginia	101,006	9,720	2,451	9.6
North Carolina	282,253	29,546	6,539	10.5
South Carolina	156,092	13,921	2,235	8.9
Georgia	241,142	15,505	4,826	6.4
Florida	60,063	7,603	715	12.7
Kentucky	260,401	10,157	394	3.9
Tennessee	250,612	21,540	5,302	8.6
Alabama	260,323	17,994	3,795	6.9
Mississippi	297,441	6,369	554	2.1
Arkansas	245,296	5,965	387	2.4
Louisiana	165,558	7,243	462	4.4
Oklahoma	203,703	6,451	461	3.2
Texas	466,894	27,418	4,876	5.9
Montana	47,204	3,703	91	7.8
Idaho	43,037	20,555	1,679	47.8

	(A)	(C)	(D)	C/A
United States	6,502,280	1,138,335	119,342	17.5
Maine	40,852	18,594	468	45.5
New Hampshire	17,477	11,456	17	65.5
Vermont	26,179	8,762	466	33.5
Massachusetts	33,453	21,258	376	63.5
Rhode Island	4,125	3,738	−33	90.6
Connecticut	30,048	19,340	834	64.4
New York	170,766	83,567	8,085	48.9
New Jersey	29,329	17,858	1,394	60.9
Pennsylvania	188,688	80,035	7,884	42.4
Ohio	246,592	87,818	13,729	35.6
Indiana	195,637	48,345	5,424	24.7
Illinois	227,138	45,004	4,908	19.8
Michigan	191,185	74,273	11,259	38.8
Wisconsin	196,501	50,057	7,434	25.5
Minnesota	197,710	16,047	2,572	8.1
Iowa	215,714	37,622	2,845	17.4
Missouri	269,556	23,256	1,161	8.6
North Dakota	77,822	2,390	42	3.1
South Dakota	79,986	3,245	165	4.1
Nebraska	130,567	11,329	2,774	8.7
Kansas	164,128	17,364	854	10.6
Delaware	10,312	2,651	262	25.7
Maryland	43,318	14,444	813	33.3
District of Columbia	82	61	0	74.4
Virginia	187,875	21,262	2,060	11.3
West Virginia	101,006	9,720	2,451	9.6
North Carolina	282,253	29,546	6,539	10.5
South Carolina	156,092	13,921	2,235	8.9
Georgia	241,142	15,505	4,826	6.4
Florida	60,063	7,603	715	12.7
Kentucky	260,401	10,157	394	3.9
Tennessee	250,612	21,540	5,302	8.6
Alabama	260,323	17,994	3,795	6.9
Mississippi	297,441	6,369	554	2.1
Arkansas	245,296	5,965	387	2.4
Louisiana	165,558	7,243	462	4.4
Oklahoma	203,703	6,451	461	3.2
Texas	466,894	27,418	4,876	5.9
Montana	47,204	3,703	91	7.8
Idaho	43,037	20,555	1,679	47.8
Wyoming	16,963	1,547	14	9.1
Colorado	61,653	9,264	559	15.0
New Mexico	38,881	2,071	71	5.3
Arizona	18,344	6,475	66	35.3
Utah	27,362	14,365	826	52.5
Nevada	3,432	1,271	0	37.0
Washington	82,379	45,685	3,537	55.5
Oregon	62,332	26,916	1,063	43.2
California	134,859	107,275	2,646	79.5

Statistical Department
EDISON ELECTRIC INSTITUTE
August 23, 1937

39-54A

[fol. 3999] COMPLAINANTS' EXHIBIT No. 922 FOR IDENTIFICATION

(Omitted)

[fol. 4000] COMPLAINANTS' EXHIBIT No. 923

Water Control Bulletin Number 1

June 30th, 1936

Reservoirs of the Authority are to be operated: First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Requirements for the control of malaria and the temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dams shall be converted into electricity as is feasible.

Water Control Operations

The Board of Directors on June 30, 1936, adopted Bulletin Number 1 and approved Bulletin Number 2, as recommended by the Hydro-electric Committee, and established the following procedure with reference to the preparation of subsequent bulletins and the administration of the requirements of these bulletins:

1. A committee on Water Control Operations is created consisting of the Chief Water Control Planning Engineer and the Chief Electrical Engineer. This Committee shall prepare general regulations as to the control of water through the operation of reservoirs. In formulating these regulations the Committee shall confer with the Chief Construction Engineer, the Chief Medical Officer, the General Solicitor and the Superintendent of Power Operations or their representatives. The regulations shall be transmitted to the office of the General Manager in the form of bulletins for submission to the Board of Directors and for general distribution after approval by the Board.

2. The Superintendent of Power Operations shall be responsible for the day to day operation of the gates within the limits of and consistent with the requirements estab-

lished by the regulatory bulletins of the Committee. He shall fix the responsibility for load dispatching and gate operation at each dam. On dams under construction a representative of the construction organization shall be designated to operate the gates.

3. The Engineering Data Division shall maintain current records of rainfall, runoff and river flow, furnish daily reports and predictions, and designate a representative who will maintain daily contact with the Chief Load Dispatcher at Wilson Dam for the exchange of information.

[fol. 4001] Water Control Bulletin Number 2

June 30, 1936

Confirming direction of June 18, 1936, which was responsive to recommendations for increasing navigable depths in the lower river, until further notice water shall be released from Norris Reservoir so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 c. f. s.

Variations in the daily peek discharges at Wilson Dam should not be so large that minimum flow at the Florence gage will ever be less than 13,000 c. f. s. The regulation of the water level in the Wilson pool should be accomplished by varying the discharge at the Wheeler Dam. The water level above the Wheeler Dam should be varied so as to iron out, as far as possible, any fluctuations in the amount of water flowing into the Wheeler Reservoir.

Water Control Bulletin Number 3

October 24, 1936

The Committee on Water Control Operations, having conferred with the several departments and divisions of the Authority interested in or concerned with the filling of Wheeler Reservoir, and with the District Engineer, U. S. A., Nashville, Tennessee District, has formulated and hereby announces the following regulations for the filling of Wheeler Reservoir.

Wheeler Reservoir will be filled so as to reach elevation 540 at the dam by, but not before, midnight, October 28, 1936. This elevation will not be exceeded without further

notice from the Committee. As water becomes available during the next two months, after Wheeler Pool has filled to elevation 540 at the dam, the filling operation will be continued until normal pool level 555 has been reached. This filling operation between elevations 540 and 555, will be supervised by the Committee after due consideration of all factors involved in the best interest of the Authority.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors, October 24, 1936.

[fol. 4002] Water Control Bulletin Number 4

March 10, 1937

The Committee on Water Control Operations has formulated the following general principles of control of Norris Reservoir for the spring runoff period of 1937 until April 1.

To provide the maximum amount of flood control, Norris Reservoir shall be drawn down to elevation 1010 by March 17, and then held approximately at that level until April 1. In case of heavy storms on the Tennessee water-shed, the outflow from the reservoir shall be controlled to limit the flow at Chattanooga to approximately 140,000 second feet, if possible. Storage accumulated above elevation 1010 by the withholding of flood flows shall be released as soon as possible at a rate not exceeding 30,000 second feet. Changes in rate of outflow shall be made in increments of not more than 5000 second feet every six hours.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors, March 12, 1937.

Water Control Bulletin Number 5

April 1, 1937

The Committee on Water Control Operations has formulated the following general principles for the control of Norris Reservoir during April and May, 1937.

COMPLAINANTS' EXHIBIT No. 923

To provide the maximum quantity of water in Norris Reservoir for release during the summer and fall for navigation requirements on the Tennessee River below Florence, Alabama, Norris Reservoir shall be gradually filled during April and May to reach elevation 1020 by June 1. In case of heavy storms in the Tennessee Basin, the outflow shall be controlled to limit the flow at Chattanooga to approximately 140,000 second feet, if possible. Normally changes in rate of outflow shall be made in increments not [fol. 4003] exceeding 2,500 second feet so that the total change will not exceed 5,000 second feet in twelve hours. In special cases, changes may be made in increments of not more than 5,000 second feet in six hours.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors, March 31, 1937.

Water Control Bulletin Number 6

April 1, 1937

The Committee on Water Control Operations has formulated the following general principles for the control of Wheeler and Wilson Reservoirs to May 1, 1937.

For malaria control purposes, Wheeler Reservoir shall be gradually filled to elevation 556 by April 10 and held approximately at that level until May 1. Wilson Reservoir shall be held at approximately elevation 505.8 until May 1. In case of heavy storms in the Tennessee Basin, these reservoirs shall be controlled to limit the flood flow at Florence to approximately 200,000 second feet, if possible. During this period of operation a discharge of not less than 20,000 second feet shall be maintained at Florence for navigation.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors, March 31, 1937.

COMPLAINANTS' EXHIBIT No. 923

[fol. 4004] Water Control Bulletin Number 7.

April 30, 1937

The Committee on Water Control Operations has furmulated the following general principles for the control of Norris, Wheeler, and Wilson Reservoirs to October 1, 1937.

For Navigation purposes, water shall be released from Norris, Wheeler, and Wilson Reservoirs so as to maintain an average discharge of 17,000 second feet at Florence.

For malaria control purposes, Wheeler Reservoir shall be gradually drawn down, beginning May 1 *, from elevation 556 to elevation 553 by October 1 *. The rate of drawdown shall be about 0.3 ft. during May; about 0.8 ft. per month during June, July and August; and about 0.3 ft. during September. This schedule shall be subject to interruption when necessary, by regulation for floods, navigation, or construction operations; provided, upon completion of each such operation, the drawdown shall be resumed.

For malaria control purposes, Wilson Reservoir shall be drawn down about 0.6 ft. per month during June, July, and August, and 0.4 ft. during September, beginning at elevation 505.8.

Accompanying the drawdown, the reservoir shall be fluctuated weekly. The amount of the fluctuation shall be:

1. 1 ft. fluctuation for May, June, July, and August, provided the river flow is sufficient to refill the reservoir within the period.

2. During September the weekly fluctuation will gradually be reduced to reach 0.5 ft. by October 1.

For the protection of construction operations, in case of heavy storms, these reservoirs shall, if possible, be controlled as follows:

(a) The flood flow at Pickwick shall be limited to approximately 100,000 second feet.

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* The initial and final days of the malaria season shall be determined by the time when water temperatures are favorable for breeding mosquitoes, on written advice from Dr. Bishop.

(b) The water surface of Wheeler Reservoir at Guntersville Dam shall be kept under elevation 560.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

[fol. 4005] Approved by the Board of Directors, May 5, 1937.

Water Control Bulletin Number 8

May 21, 1937

The Committee on Water Control Operations has formulated the following general principles for the control of Norris Reservoir until about October 1, 1937.

As soon as Norris Reservoir has been filled to elevation 1020, the water will be allowed to spill over the dam, provided that sufficient releases will be made to prevent the reservoir level exceeding elevation 1021.

For malaria control purposes, after June 15 the reservoir level will be gradually drawn down at a rate of not less than 0.6 foot per month, provided that in case it should be necessary in storing flood water to raise the level, the gradual drawdown will then be resumed.

When releases are required for maintaining navigation below Florence, Norris Reservoir will be controlled as provided in Water Control Bulletin Number 7, dated April 30, 1937. At other times a small release (in the order of 200 second feet) will be maintained throughout the low flow season for purposes of sanitation in the Clinch River.

In case of heavy storms in the Tennessee Basin, Norris outflow will be controlled to limit the flow at Chattanooga to approximately 55,000 second feet until about June 15 and thereafter to limit the stage at Guntersville Dam to elevation 560, if possible.

Committee on Water Control Operations, Sherman M. Woodward, Chief Water Control Planning Engineer. Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors June 3, 1937.

COMPLAINANTS' EXHIBIT No. 923

[fol. 4006] Water Control Bulletin Number 9

June 28, 1937

The Committee on Water Control Operations has outlined the following special water control operation of Wheeler and Wilson Reservoirs.

In order to facilitate certain work at Wheeler Dam requiring lower stages in Wheeler and Wilson Reservoirs and to aid the construction forces in making closure of the third stage cofferdam at Pickwick Landing Dam, the following water control operation will be performed:

Beginning about July 1, Wheeler Reservoir shall be gradually drawn down so as to reach elevation 548 or 549 by July 17, Florence discharge during this period being regulated at not in excess of about 30,000 c. f. s. Wilson Reservoir shall also be drawn down to elevation 503 by July 17. The refilling of Wheeler and Wilson Reservoirs shall be done in such manner as to regulate the flow at Pickwick Landing Dam at not in excess of 8,000 c. f. s. beginning July 19 and continuing for an estimated period of from 7 to 10 days, or until the 3rd stage cofferdam closure has been completed.

Upon completion of this special operation, the operation of these reservoirs shall be resumed under Water Control Bulletin No. 7, dated April 30, 1937.

Committee on Water Control Operations, (S.) Sherman M. Woodward, Chief Water Control Planning Engineer. (S.) Llewellyn Evans, Chief Electrical Engineer.

Approved by the Board of Directors July 2, 1937.

[fol. 4007] COMPLAINANTS' EXHIBIT No. 924

Water Control Memorandum No. 1

The Health and Safety Department wants to have the Wheeler Pool raised to Elevation 551 as soon as convenient. To obtain this result we think that a uniform release from Norris of 6,000 c. f. s. may well be maintained and that as

soon as the Golden Eagle is out of the way the release at Wilson may be reduced slightly below 17,000 c. f. s., but not to less than about 16,200 c. f. s. As soon as the Wheeler Pool reaches the level of Elevation 551, the regular schedule of drawdown for malaria control should be resumed.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 2

The Health and Safety Department desires, for malaria control purposes, a somewhat rapid fluctuation of about 0.5 foot in Wheeler Reservoir as soon as practicable between the levels of about 551 and 551.5.

To conserve as much water as possible, this operation may be performed by reducing Norris release to about 4,000 c. f. s. on July 29; by saving water in Wheeler Reservoir during the drawdown fluctuation of Wilson Reservoir on August 3; and by drawing Wheeler Reservoir down by about 0.5 foot during the 3-day period, August 4, 5, and 6, after which the regular schedule of drawdown for Wheeler Reservoir may be resumed. About August 1, Norris release should be increased to about 6,000 c. f. s. in order to maintain the navigation release required at Florence.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 3

After an inspection of the Wheeler Reservoir area by the Health and Safety Department, it has been found desirable, for malaria control purposes, to draw Wheeler Reservoir down 1.0 foot to Elevation 550.3 as soon as practicable instead of 0.5 foot as stated in Water Control Memorandum No. 2, dated July 29, 1937.

To best serve the purpose, the drawdown should begin this date (August 3, 1937) and be completed as soon as practicable without adversely affecting Pickwick Landing Dam through excessive Wilson releases. This may be accomplished by extending the drawdown of one foot over a 3-day period, after which the regular schedule of drawdown stated in Water Control Bulletin No. 7 may be resumed.

(Signed) Robert A. Monroe for Sherman M. Woodward.

COMPLAINANTS' EXHIBIT No. 924

[fol. 4008] Water Control Memorandum No. 4

In view of the continued heavy rainfall over a considerable part of the basin, it appears advisable to make preparations for protecting Pickwick Dam in case a considerable flood should develop.

To avoid filling Wheeler Reservoir prematurely, and to provide additional storage space if possible, Wilson release should be increased to 30,000 c. f. s. as rapidly as the operation can be safely executed, and maintained at that release until a change becomes advisable.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 5

Indications are that Wheeler Reservoir inflows will decrease sufficiently within the next few days to warrant the reduction of Wilson Dam release to about 17,000 c. f. s.

The present 30,000 c. f. s. release at Wilson Dam, discussed in Water Control Memorandum No. 4, should be continued until Wheeler Reservoir is lowered to about elevation 549.6, after which the regular scheduled drawdown for malaria control stated in Water Control Bulletin No. 7 may be resumed, with such minor fluctuations as are desirable for operating purposes.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 6

Existing flows in the upper Tennessee River indicate that Wheeler inflows will require some regulation for the protection of Pickwick Landing construction.

Wilson releases should be regulated to pass about the flow of the river until Florence discharge reaches 25,000 c. f. s. This discharge should be continued until Wheeler Reservoir is again lowered to follow the scheduled drawdown from elevation 549.6 set forth in Water Control Bulletin No. 7, after which a minimum discharge of 17,000 c. f. s. may be maintained at Florence.

(Signed) Sherman M. Woodward.

[fol. 4009] Water Control Memorandum No. 7

The continuance of the wet season through much of the summer has resulted in abnormally low demands for water

releases for navigation from Norris Reservoir and consequently in a higher reservoir level at present than would normally prevail. It seems apparent that all water now stored in Norris from the last flood season will not be required for maintaining navigation on the Tennessee River during the remainder of the low flow period. It is believed desirable to draw the reservoir down to about elevation 980 by December 15, 1937 so that adequate storage space will be available during the next flood season.

In order to accomplish this purpose, the release from Norris Reservoir should be gradually increased to about 7,000 c. f. s. and maintained at that rate except in case of flood when it may be found necessary temporarily to reduce or discontinue the release. At present, regulated flows at Chickamauga Dam should not exceed 45,000 c. f. s.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 8

The Health and Safety Department is agreeable to discontinuing during the remaining few days in September the drawdown of Wheeler Pool for malaria control purposes, and to raising that pool to not higher than elevation 550.2 at the dam.

Conforming with the above, all water in excess of that needed for navigation below Florence (17,000 c. f. s. Florence discharge) may be stored in Wheeler Reservoir, provided the pool elevation at the dam is not raised above 550.2 for the present.

It is no longer necessary to regulate flows at Pickwick Landing Dam to 30,000 c. f. s. or less as construction operations will now permit flows up to 100,000 c. f. s. or more, if necessary.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 9

The Design Department and the Department of Operations report that it is necessary during the present month to make certain inspections, repairs, and tests of the turbines at Norris Dam and that at certain times during the progress of this work it will be necessary that Norris re- [fol. 4010] lease be discontinued or held at a very low rate.

In order that water may be available for maintaining a discharge at Florence of about 17,000 c. f. s. for navigation, it is essential that, in the absence of increased natural flows, water be released from Norris and stored in Wheeler Reservoir for this purpose.

To accomplish this purpose, the release from Norris Reservoir should be gradually increased, beginning at midnight Sunday, October 3, 1937, to about 15,000 c. f. s. and maintained at that rate until about 100,000 acre-feet have been stored in Wheeler Reservoir or until further notice. Meanwhile, if natural flows should increase sufficiently, Wheeler reservoir may be filled to, but not above, elevation 554. The exact date for reducing release for execution of the work at Norris will be determined later.

Temporary recorders have been installed at Clinton and Edgemoor for the purpose of obtaining data on wave travel. For this reason it is particularly desirable that the 15,000 c. f. s. release be held as steady as practicable during the first four days of the period.

(Signed) Sherman M. Woodward.

Water Control Memorandum No. 10

Confirming telephone conversation with the Chief System Operator, Wilson Dam, on October 3, 4, and 5, the release from Norris Reservoir will not be increased to about 15,000 c. f. s. as provided in Paragraph 3 of Water Control Memorandum No. 9, but instead will be reduced to about 4,000 c. f. s. and held steady at that rate until the weather becomes settled, or until further notice. This change was necessitated by the heavy rainfall over the Basin during the past few days subsequent to issuance of Water Control Memorandum No. 9.

The surplus water above 17,000 c. f. s. required for navigation at Florence may be temporarily stored in Wheeler Reservoir for subsequent release for navigation purposes when Norris release has been discontinued, provided that Wheeler Reservoir should not be filled above Elevation 554 until the present rebrushing operations in that reservoir have been completed.

The Director of Health has advised by memorandum that the fluctuation of Wilson Reservoir for malaria control

purposes may be discontinued upon completion of the present operation, October 7, 1937. Accordingly, this reservoir may be raised to Elevation 505.8 after that date.

(Signed) Sherman M. Woodward.

[fol. 4011] Water Control Memorandum No. 11

Referring to Water Control Memorandum No. 10, rainfall in the basin having subsided and the weather appearing more settled, the release from Norris Reservoir may now be gradually increased to a maximum of 15,000 c. f. s. in order to lower Norris Reservoir to a suitable elevation for certain inspections, repairs, and tests of the turbines at the dam during the last half of October. It is essential for the above work that Norris Reservoir elevation be between 991 and 1006.

In drawing Norris Reservoir down as above, releases should not be made which will raise the stage on the Chickamauga tailwater gage above elevation 637, which represents a discharge of about 50,000 c. f. s. In the event of heavy rainfall above Chattanooga, sufficient to produce a stage above 637, the release at Norris should be reduced promptly or discontinued if necessary to regulate the river at Chickamauga as above.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 12

The Sanitation Section of the Health and Safety Department is continuing rebrushing operations in the Wheeler Reservoir until about October 15 and desires that the reservoir not be allowed to fill above elevation 553 before that date.

Norris Reservoir release should be gradually reduced to about 1500 c. f. s. by 6 A. M. October 11 to provide a tailwater elevation suitable for certain turbine inspections and repairs by the Operating Department. During the period that this work is in progress, it is desirable that releases be maintained at as large a volume as the work permits.

Tests on Norris turbines are planned to begin on October 18, and it is desired that the reservoir be between elevations 991 and 1006 for this purpose. During the period that tests

are in progress, such releases should be made as are consistent with and necessary for the turbine tests, provided that the changes and volumes of releases are not detrimental to other interests.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

[fol. 4012] Water Control Memorandum No. 13

Tests on Norris turbines are planned to begin on October 19 and releases will probably be too small to provide 17,000 c. f. s. inflow into Wheeler. During this period the 17,000 c. f. s. discharge at Florence for navigation purposes should be maintained by releases from Wheeler and Wilson reservoirs when it is necessary to supplement the inflow.

As it is desired to lower Norris reservoir to about elevation 980 by December 15, 1937, to provide storage space for flood control and also to hold reservoir stages between elevations 991 and 1006 (preferably at about 1,000) for turbine tests, Norris releases should be maintained at as large a volume as the turbine tests permit, limiting releases to a maximum of about 10,000 c. f. s. in order to avoid excessive damage to crops on the Clinch River below the dam. At the same time, Chickamauga Dam lower gage should be held at not higher than elevation 637.

Norris turbine tests should be expedited as much as possible as higher Tennessee River flows may be expected at any time and special river regulation will shortly be necessary for construction, both of which will interfere with lowering Norris reservoir.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 14

The Construction Department desires that, if practicable, flows at Pickwick Landing Dam be regulated so as not to exceed 25,000 c. f. s. during the period November 3 to November 23, 1937. This is essential in order that spillway openings in the dam may be closed. It also desires that, beginning about November 15, Wheeler Pool be filled to

elevation 555 or 556 to aid the third stage cofferdam closure at Guntersville Dam about December 1st.

In order to accomplish the above, Wheeler Reservoir should be gradually drawn down to elevation 550 by November 1 to provide storage space for regulating the flow at Pickwick Landing Dam. This will also facilitate certain construction work at Decatur. It is estimated that, under present flow conditions, a steady flow of about 33,000 c. f. s. at Florence will lower the reservoir to elevation 550 by the date desired. Changed flow conditions will require changes in Florence discharge.

About November 15, or as soon as the water control operation for Pickwick Landing Dam will permit, Wheeler Reservoir should be raised as fast as inflows will permit to about elevation 555 or 556 and then held steady during the closure of cofferdam at Guntersville.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

[fol. 4013] Water Control Memorandum No. 15

Since the issuance of Water Control Memorandum No. 14, rainfall in the Tennessee Basin above Wheeler Reservoir has increased stream flow considerably. As a result of this, it appears desirable to provide additional storage space in Wheeler Reservoir for use in regulating flows at Pickwick Landing Dam during the closing of spillway openings in the dam between November 3 and November 23, 1937.

To accomplish this purpose, Wheeler Reservoir should be gradually drawn down to about elevation 549, one foot lower than previously proposed, by November 1st. It is estimated that under present flow conditions, a steady flow of about 55,000 c. f. s. at Florence will lower the reservoir as above. Changes in flow conditions will require corresponding changes in Florence discharge.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 16

The correct date of Water Control Memorandum No. 15 is October 27, 1937, and not October 19, 1937, as shown on the copies distributed.

It is desirable to draw Norris Reservoir down to about elevation 960 by January 1, 1938, to provide storage space for flood control during the winter and spring flood season. To accomplish this, the release from the reservoir should be increased to about 15,000 c. f. s. and maintained at that rate except in case of flood, or other need for stream flow regulation downstream, when it may be essential temporarily to reduce or discontinue the release. Regulated flows at Chickamauga Dam should not exceed 637 on the down stream gage until the completion of work in the second stage cofferdam in the near future.

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

[fol. 4014] Water Control Memorandum No. 17

With the completion of spillway closures, Pickwick Landing Dam is in condition for stages to the top of the cofferdam at elevation 390. Flows at Pickwick Landing Dam should be regulated so as not to exceed 230,000 c. f. s.

The Construction Department desires that Wheeler Reservoir be raised to about elevation 555 or 556 and held steady during the closure of the third stage cofferdam at Guntersville Dam which should be completed about December 1. Wheeler Reservoir should be raised to about elevation 555 as fast as inflow in excess of 17,000 c. f. s. permits and held steady unless stream flows develop which require regulation for the protection of Pickwick Landing Dam. In case heavy rainfall occurs, Wheeler Reservoir should be lowered in advance of the peak flow to provide storage space for regulating the flow at Pickwick Landing Dam.

(Signed) Robert A. Monroe, for Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 18

As construction of the third stage cofferdam at Guntersville Dam is in progress, Wheeler Reservoir should be raised to about elevation 556 as fast as inflow permits and held

steady at that elevation unless stream flows develop which require regulation for the protection of Pickwick Landing Dam. In case that heavy rainfall occurs, Wheeler Reservoir should be lowered in advance of the flood peak to provide storage space for regulating the flow at Pickwick Landing Dam so as not to exceed 160,000 c. f. s.

Flow at Florence should be maintained at 19,000 c. f. s. between 7 a. m. and 4 p. m. on Wednesday, Friday, and Saturday of this week as an aid to dredging by the U. S. Engineers. At other hours the flow may be reduced to 17,000 c. f. s. Should inflows fall below 17,000 c. f. s., the deficiency should be supplied from Wilson Reservoir, holding Wheeler Reservoir steady at elevation 556.

In order to reduce stream flow as an aid to Guntersville Dam cofferdam closure, Norris release should be reduced, beginning about noon November 25, to about 2,000 c. f. s. Unless stream flow conditions require a change, it is contemplated that the 2,000 c. f. s. release will be held until about December 4, except as required for power production and plant testing. This reduction in release will also provide farmers on Clinch River bottomland and islands an opportunity to harvest crops.

(Signed) Robert A. Monroe, for Sherman M. Woodward.

Recommended (Signed) J. H. Wilkinson.

[fol. 4015] Water Control Memorandum No. 19

In order to provide water in excess of the present flow of the Tennessee River to raise Hales Bar Pool as an aid to navigation Norris release should be increased to 4,000 c. f. s. beginning about 5 p. m. Thursday, December 2, and continued at about that rate until enough water is released to fill the pool, after which the release should be reduced to about 2,000 c. f. s. except as required for power production and plant testing.

It is contemplated that Hales Bar Dam will continue to pass the present flow of the river and store the 2,000 c. f. s. increase in Norris release as arranged by Mr. C. L. Karr. The flow at Guntersville Dam should not exceed the present flow of the river during cofferdam closure.

Wheeler Reservoir should be held at about elevation 556 except in case of heavy rainfall. Should heavy rainfall occur, the reservoir should be lowered in advance of the flood peaks to provide storage space for regulating the flow at Pickwick Landing Dam so as not to exceed 160,000 c. f. s.

Flow at Florence should be maintained at a minimum of 17,000 c. f. s., supplying any deficiency in inflow from Wilson Reservoir.

(Signed) Robert A. Monroe, for Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 20

Referring to last paragraph of Water Control Memorandum No. 18, the Guntersville Dam cofferdam has now been closed and the drawdown of Norris Reservoir to elevation 960 to provide storage space for flood control should be resumed. Also, Wheeler Reservoir should be drawn down to elevation 550, in order to provide first, storage space for regulating flows for Pickwick Landing Dam construction operations, second, a suitable stage at Wheeler Lock to permit the U. S. Engineers to construct a concrete retaining wall, and third, additional depths below Wilson Dam to aid the U. S. Engineers in removing stone dikes before the Pickwick Pool is raised.

To accomplish the above, Norris release should be gradually increased, beginning today, to 15,000 c. f. s. and maintained at that rate until the reservoir is lowered to elevation 960, except in case of floods. Regulated flows at Chickamauga Dam should not exceed a maximum elevation of 640 on the tailwater gage (about 69,000 c. f. s.) and it is desirable that, if practicable, the flows at that point should be held below elevation 637 on the tailwater gage (about 50,000 c. f. s.).

[fol. 4016] Water Control Memorandum No. 20

Wheeler Reservoir should be lowered, beginning Monday, December 13, 1937, by gradually increasing the release to about 50,000 c. f. s. and maintaining that rate until the reservoir reaches elevation 550, after which the reservoir should

be held at elevation 550, passing the flow of the river, except in case of floods. In case of floods, Pickwick Landing Dam flows should be regulated so as not to exceed headwater elevation 390 (about 160,000 c. f. s.) until December 15. After December 15 flows at Pickwick Landing Dam should be regulated so as not to exceed tailwater elevation 372 (about 115,000 c. f. s.).

(Signed) Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

Water Control Memorandum No. 21

In view of the present unsettled weather conditions and the possibility of rain throughout the basin, it is desirable that the flood storage space above elevation 550 in Wheeler Reservoir be made available for the protection of Pickwick Landing Dam as soon as practicable.

To accomplish this the release at Wheeler Dam should be gradually increased to about 65,000 c. f. s. and maintained at about that rate until the reservoir reaches elevation 550, after which the reservoir should be held steady passing the flow of the river, except in case of floods. In case of floods, Pickwick Landing Dam flows should be regulated so as not to exceed tailwater elevation 372, at which the discharge is about 115,000 c. f. s.

(Signed) Robert A. Monroe, for Sherman M. Woodward.

Recommended (Signed) Nicholls W. Bowden.

[fol. 4017] Water Control Memorandum No. 22

In view of the present continued unsettled weather conditions, it is desirable that the flood storage space above elevation 547 in Wheeler Reservoir and above elevation 503 in Wilson Reservoir be made available for the protection of Pickwick Landing Dam as soon as practicable.

To accomplish the above, the release at Wheeler Dam should be gradually increased to about 66,000 c. f. s. and the release at Wilson Dam should be gradually increased to about 70,000 c. f. s. and maintained at about these rates until Wheeler Reservoir is lowered to elevation 547 and Wilson Reservoir is lowered to about elevation 503. After being

COMPLAINANTS' EXHIBIT No. 924

lowered to these elevations, both reservoirs should be held steady, passing the flow of the river, except in case of floods. In case of floods, Pickwick Landing Dam flows should be regulated so as not to exceed tail-water elevation 372, at which stage the discharge is about 115,000 c. f. s.

Beginning about 6 P. M. today Norris release should be gradually reduced to about 5000 c. f. s. After this reduction is accomplished, the release should be maintained at about 5000 c. f. s.

(Signed) Sherman M. Woodward.

Recommended (Signed) J. H. Wilkinson, for Nicholls W. Bowden.

Water Control Memorandum No. 23

The unsettled weather conditions indicate that rain may continue for several days. In order to lower Wheeler and Wilson Reservoirs, the discharge at Wheeler should be gradually increased to 75,000 c. f. s. and at Wilson to 80,000 c. f. s.

(Signed) Sherman M. Woodward.

Recommended (Signed) J. H. Wilkinson, for Nicholls W. Bowden.

[fol. 4018] Water Control Memorandum No. 24

The present releases at Wilson and Wheeler Dams should be continued until Wilson Reservoir is lowered to elevation 503 and Wheeler Reservoir is lowered to elevation 550. Both reservoirs should then be held steady except in case of floods requiring regulation.

(Signed) Sherman M. Woodward.

Recommended (Signed) J. H. Wilkinson.

[fol. 4019] COMPLAINANTS' EXHIBIT No. 925

Map Entitled "Tennessee River Plan and Profile, Existing and Proposed High Dams"

(Original Exhibit)

(Here follow two photolithographs, side folios 4020 and 4021)

TENNESSEE VALLEY AUTHORITY

TABULATION OF

PRINCIPAL FEATURES OF PRESENT AND PROPOSED

DAM AND RESERVOIR PROJECTS

September 29, 1937

Projects	Miles from Mouth of River	Length of Dam (Feet)	Maximum Lock Lift (Feet)	Length of Reservoir (Miles)	Normal Area of Reservoir (Acres)	Total Volume of Reservoir (Acre-feet)
Main River Projects, Existing or Under Construction						
Gilbertsville	22.5	8,600	68	184.2	160,000	4,850,000
Pickwick	206.7	7,715	61	52.7	41,600	1,032,000
Wilson	259.4	4,860	90	15.5	16,100	611,000
Wheeler	274.9	6,502	53	74.1	64,300	1,100,000
Guntersville	349.0	3,950	45	82.1	63,300	951,000
Hales Bar	431.1	2,500	40	39.9	6,500	100,000
Chickamauga	471.0	5,679	53	58.9	32,000	639,000
Total						9,283,000
Main River Projects, Proposed and Under Investigation						
Watts Bar	529.9	2,900	71	72.4	42,600	1,188,000
Coulter Shoals	602.3	2,070	71	53.5	11,900	334,000
Total						1,522,000
Tributary Projects, Existing or Under Construction						
Norris	79.8(3)	1,860	None	72.0	34,200	2,567,000
Hiwassee	75.8(3)	1,250	None	22.0	6,200	439,000
Total						3,006,000
Tributary Projects, Proposed, Not Under Investigation						
Fontana	60.8(3)	1,700	None	30.0	9,200	1,500,000
Grand Total						15,311,000

In the initial stage, power installation is included at Pickwick, Wilson, Wheeler, Guntersville, Chickamauga, Nor

TABULATION OF

PRINCIPAL FEATURES OF PRESENT AND PROPOSED DAM AND RESERVOIR PROJECTS

September 29, 1937

Projects	Miles from Mouth of River	Length of Dam (Feet)	Maximum Lock Lift (Feet)	Length of Reservoir (Miles)	Normal Area of Reservoir (Acres)	Total Volume of Reservoir (Acre-feet)
Main River Projects, Existing or Under Construction						
Gilbertsville	22.5	8,600	68	184.2	160,000	4,850,000
Pickwick	206.7	7,715	61	52.7	41,600	1,032,000
Wilson	259.4	4,860	90	15.5	16,100	611,000
Wheeler	274.9	6,502	53	74.1	64,300	1,100,000
Guntersville	349.0	3,950	45	82.1	63,300	951,000
Hales Bar	431.1	2,500	40	39.9	6,500	100,000
Chickamauga	471.0	5,679	53	58.9	32,000	639,000
Total						9,283,000
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Watts Bar	529.9	2,900	71	72.4	42,600	1,188,000
Coulter Shoals	602.3	2,070	71	53.5	11,900	334,000
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Existing or Tributary Projects, Under Construction						
Norris	79.8(3)	1,860	None	72.0	34,200	2,567,000
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Total						3,006,000
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Fontana	60.8(3)	1,700	None	30.0	9,200	1,500,000
Grand Total						15,311,000

In the initial stage, power installation is included at Pickwick, Wilson, Wheeler, Guntersville, Chickamauga, H

(1) Includes cost of lock ($1,939,693), built by Corps of Engineers, U. S. Army.

(2) Includes highways, Town of Norris, forest lands, etc.

(3) Hiwassee Dam is on the Hiwassee River, which enters the Tennessee River at Mile 500.5; Norris Dam is on th River, which enters the Tennessee River at Mile 567.7; and the proposed Fontana Dam is on the Little Tenn River, which enters the Tennessee River at Mile 601.3.

(4) Appraised valuation as of July 1, 1933. (Original cost was $46,950,718 including $359,593, maintenance d

(5) Includes $500,000 for raising Wilson Dam and Lock Dam No. 1, and installation of additional generating un Estimates for River Channel Improvement are included in the cost estimates as follows: Pickwick, $1,500,000; Wheeler, $130,000; Guntersville, $1,156,000; Chickamauga, $3,870,000; Watts Bar, $5

COMPLAINANTS' EXHIBIT NO. 926 (EXCLUDED)

PROPOSED

Total Volume of Reservoir (Acre-feet)	Controlled Storage (Acre-feet)	Initial Power Installation (Kilowatts)	Ultimate Power Installation Provided for (Kilowatts)	Estimated Cost Initial Stage	Estimated Cost Ultimate Stage
4,850,000	3,700,000	None	192,000	$ 95,000,000	$112,000,000
1,032,000	416,000	72,000	216,000	33,219,279	42,451,279
611,000	43,000	184,000	444,000	31,300,000(4)	42,300,000(5)
1,100,000	350,000	128,000	256,000	36,849,403(1)	44,449,403(1)
951,000	242,000	72,000	96,000	36,334,780	38,414,780
100,000	-	-	-	-	-
639,000	325,000	81,000	108,000	43,227,903	45,500,903
9,283,000	5,076,000	537,000	1,312,000	$275,831,305	$325,116,305
1,188,000	246,000	None	150,000	$ 29,200,000	$ 39,800,000
334,000	107,000	None	60,000	25,000,000	30,000,000
1,522,000	353,000	None	210,000	$ 54,200,000	$ 69,800,000
2,567,000	2,020,000	100,000	100,000	$ 36,361,738(3)	$ 36,361,738(2)
439,000	365,000	60,000	120,000	21,529,579	23,029,579
3,006,000	2,385,000	160,000	220,000	$ 57,891,317	$ 59,391,317
1,500,000	920,000	None	180,000	$ 40,000,000	$ 51,000,000
15,311,000	8,734,000	697,000	1,922,000	$427,922,622	$505,307,622

Chickamauga, Norris, and Hiwassee.

PROPOSED

Total Volume of Reservoir (Acre-feet)	Controlled Storage (Acre-feet)	Initial Power Installation (Kilowatts)	Ultimate Power Installation Provided for (Kilowatts)	Estimated Cost Initial Stage	Estimated Cost Ultimate Stage
4,850,000	3,700,000	None	192,000	$ 95,000,000	$112,000,000
1,032,000	416,000	72,000	216,000	33,219,279	42,451,279
611,000	43,000	184,000	414,000	31,300,000(4)	42,300,000(5)
1,100,000	350,000	128,000	256,000	36,819,403(1)	44,119,403(1)
951,000	242,000	72,000	96,000	36,334,720	38,414,720
100,000	-	-	-	-	-
639,000	325,000	81,000	108,000	43,127,903	45,500,903
9,283,000	5,076,000	537,000	1,312,000	$275,831,305	$325,116,305
1,188,000	246,000	None	150,000	$ 29,200,000	$ 39,800,000
334,000	107,000	None	60,000	25,000,000	30,000,000
1,522,000	353,000	None	210,000	$ 54,200,000	$ 69,800,000
2,567,000	2,020,000	100,000	100,000	$ 36,361,738(3)	$ 36,361,738(2)
439,000	365,000	60,000	120,000	21,529,579	23,029,579
3,006,000	2,385,000	160,000	220,000	$ 57,891,317	$ 59,391,317
1,500,000	920,000	None	180,000	$ 40,000,000	$ 51,000,000
15,311,000	8,734,000	697,000	1,922,000	$427,922,622	$505,307,622

Chickamauga, Norris, and Hiwassee.

s Dam is on the Clinch
e Little Tennessee

maintenance during cessation of work in construction period)
generating units.

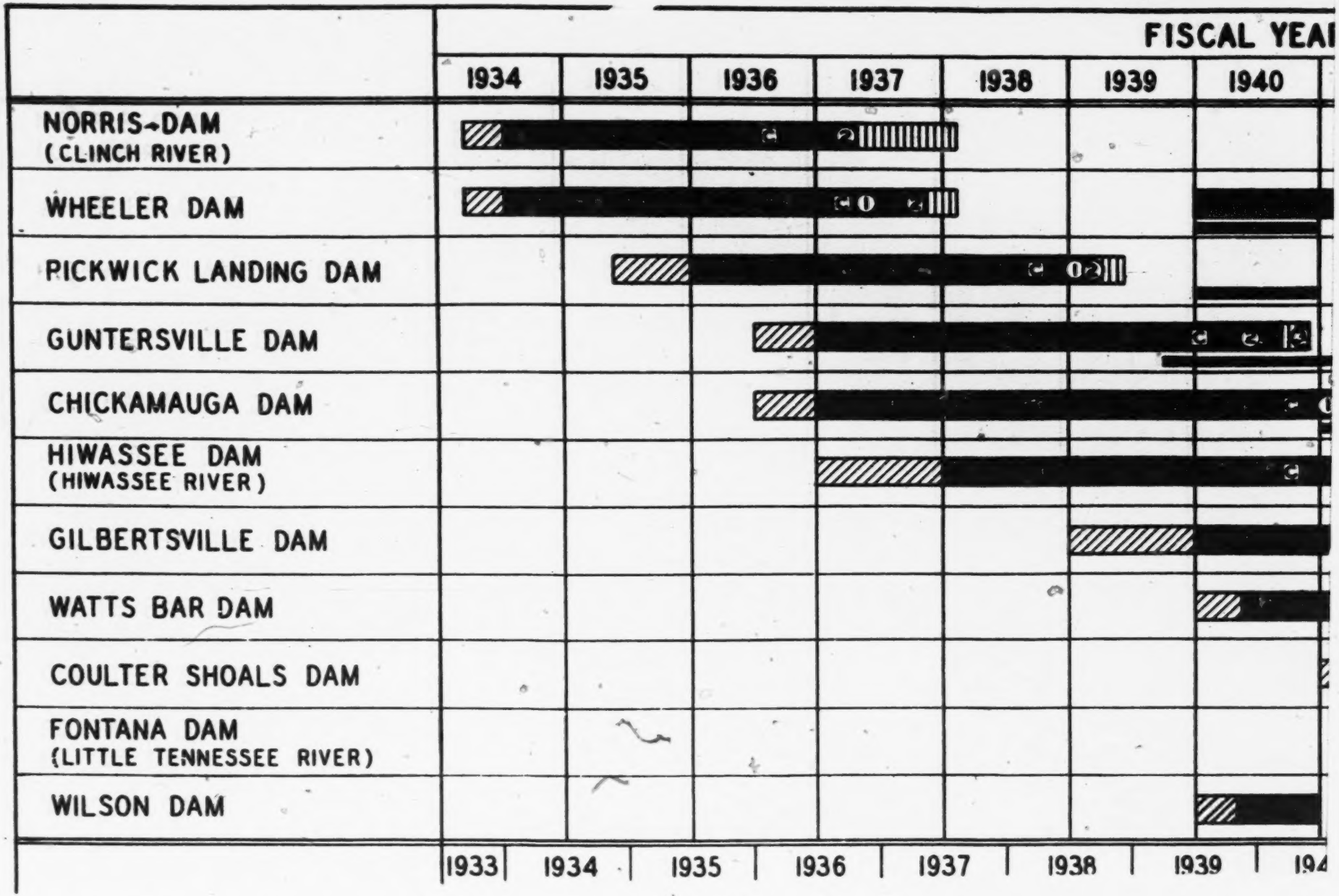
Watts Bar, $562,000; Coulter Shoals, $960,000.

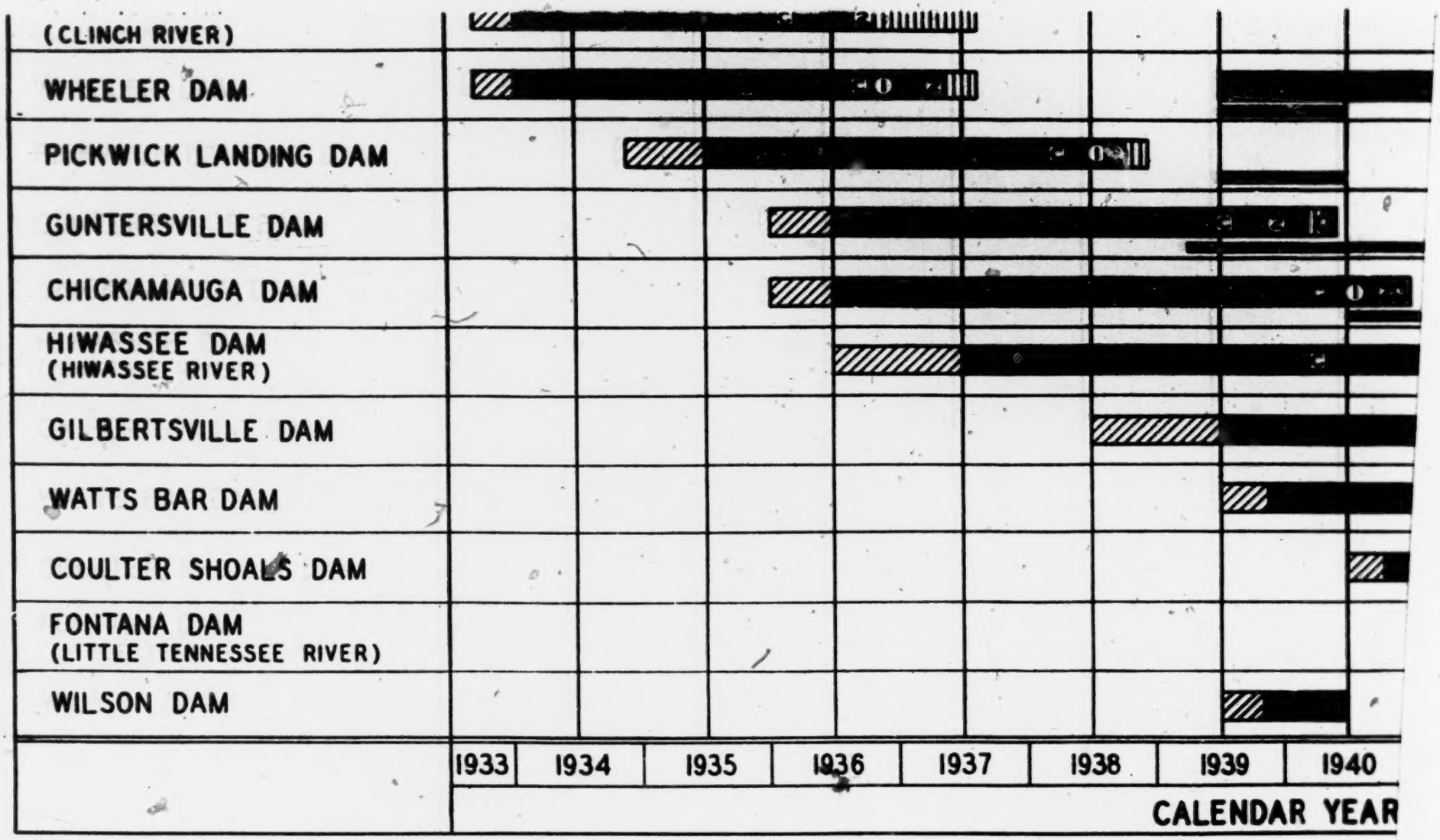
COMPLAINANTS' EXHIBIT NO. 927
FOR IDENTIFICATION

COMPLAINANTS' EXHIBIT No927

TENNESSEE VALLEY AUTHORITY

PROPOSED PROGRAM OF DAM CONSTI





LEGEND

- Closure Date
- Indicates number of Power Units in Operation
- Preliminary Construction Work
- Construction Period
- Completion of Incidental Work
- River Channel Improvement

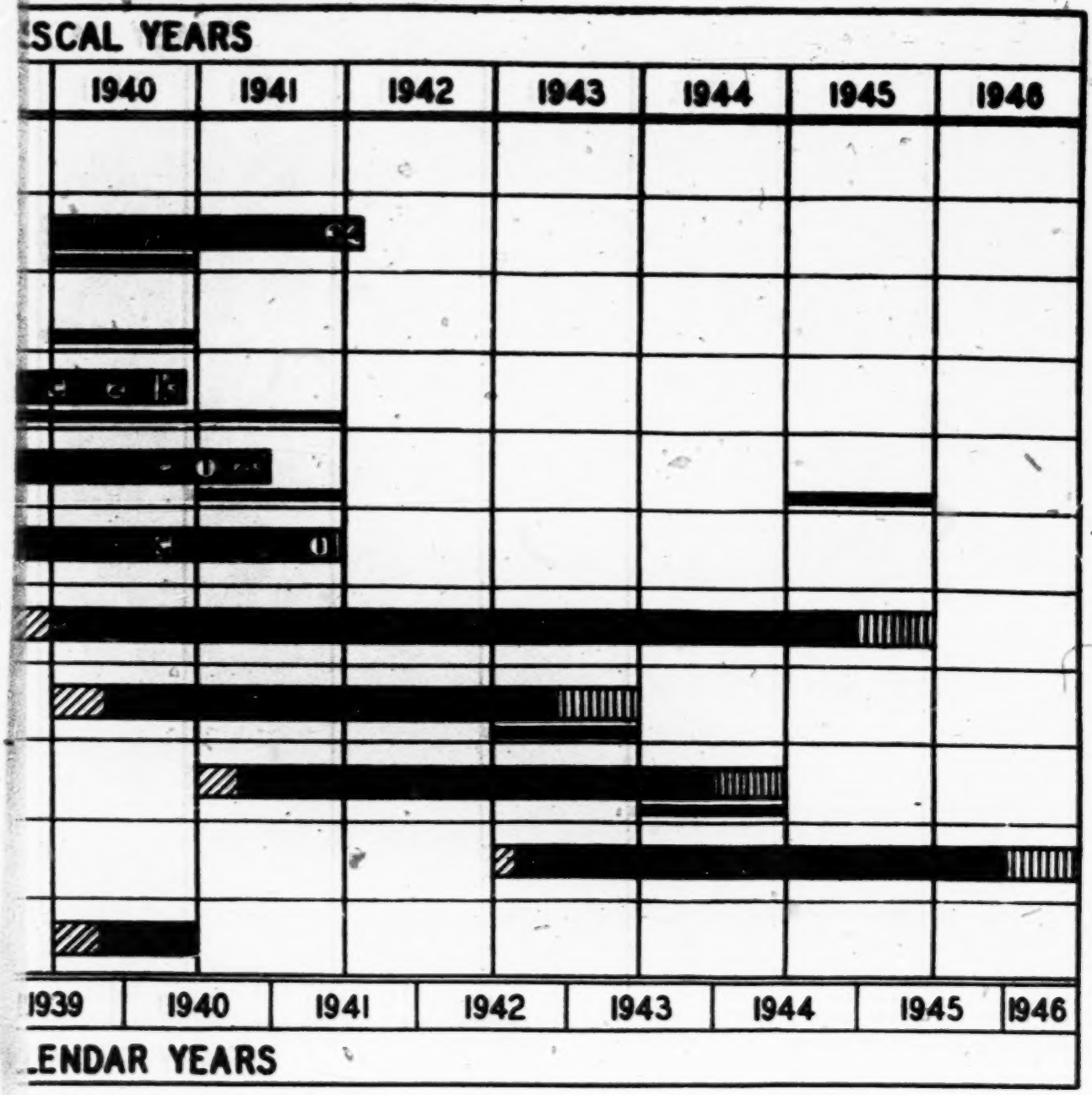
The following power installations

	Units	Total kw.
Wilson	- 8 -	184,000
Norris	- 2 -	100,000
Wheeler	- 4 -	128,000
Pickwick	- 2 -	72,000
Guntersville	- 3 -	72,000
Chickamauga	- 3 -	81,000
Hiwassee	- 1 -	60,000

NO. 927
ION

ORITY

M CONSTRUCTION



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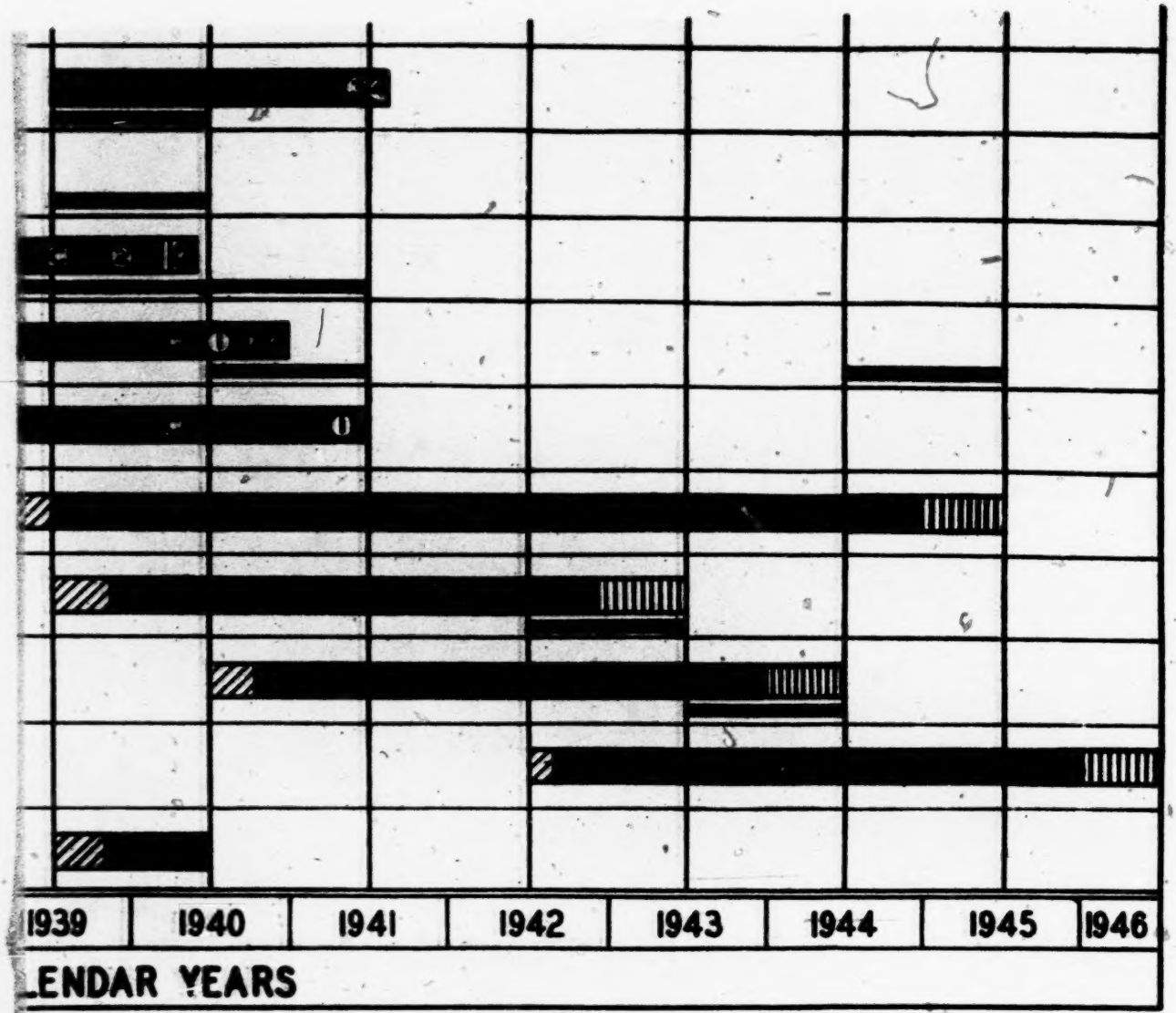


ver installations are included in the above program ——

Units		Total kw.	
8	-	184,000	(Installed prior to creation of T.V.A.)
2	-	100,000	
4	-	128,000	
2	-	72,000	
3	-	72,000	
3	-	81,000	
1	-	60,000	

GENERAL OFFICE ENGINEER - NOV. 28, 1937

O-EA-O-11836R

[fol. 4022] COMPLAINANTS' EXHIBIT 928

Power Contract Between Tennessee Valley Authority and City of Florence, Alabama

This Agreement, made and entered into this 12th day of March, 1934, pursuant to the Tennessee Valley Authority Act of 1933, between the Tennessee Valley Authority, hereinafter called "Authority", a corporation created by and acting under said Act, and the City of Florence, a municipal corporation duly organized, created and existing under and by virtue of the laws of the State of Alabama, hereinafter called "Contractor",

Whereas Authority, by Section 10 of said Act, is authorized to sell the surplus power generated by it and not used in its operation, and is directed to give preference to States, Counties, Municipalities and cooperative organizations of citizens or farmers not organized or doing business for profit; and

Whereas, by Section 11 of said Act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, the electors of the Contractor have by referendum authorized Contractor to acquire by construction or purchase a municipal electric distribution system, and Contractor intends, with all possible diligence and expedition, to acquire by construction or purchase and to operate such a system; and

Whereas, Contractor desires to purchase power from Authority for municipal purposes and for resale and proposes to make the necessary appropriations in payment therefor; and

[fol. 4023] Whereas, Contractor has by ordinance of its council duly authorized the making of this contract, and Authority, by its by-laws and resolutions, has likewise so authorized;

Now Therefore, for and in consideration of the mutual covenants herein contained, the parties hereto mutually covenant and agree as follows:

1. Term of Contract.—This contract shall become effective upon the execution hereof, and shall continue in effect for thirty years; Provided, however, that all obligations of

the parties hereto with regard to the rendition of service and payment therefor shall begin at such time (hereinafter designated "date of initial delivery") as Contractor shall have acquired its distribution system, or any part thereof, and shall be in physical position to take such service for its said system or part thereof. All service and payment periods hereinafter referred to shall be computed (as) from the date of initial delivery.

2. Acquisition of Plant.—Contractor agrees to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system for the City of Florence with the utmost expedition, and to do all acts and things which it may legally do, which may be necessary or helpful in effectuating such acquisition. Authority agrees, upon request of Contractor, to render to Contractor without compensation such accounting, legal and engineering assistance looking to the acquisition of said system as Authority may deem helpful or advisable.

3. Power Supply.—Authority will, from the date of initial delivery to the expiration hereof, supply electrical energy to Contractor for municipal purposes and for re-sale. Contractor agrees to purchase from Authority, and Authority agrees to supply, the entire power requirements of Con- [fol. 4024] tractor. Said energy will be delivered in the form of three phase, alternating current at approximately 60 cycles per second and approximately 4,000 volts, or at such voltage as the parties may from time agree. The maximum amount of electricity (called "reserve power"), which Authority agrees to supply within the first two year period is 7,500 kw., but thereafter Contractor shall have the right to increase such maximum demand as herein specified, and Authority shall deliver the same to Contractor. After two years from the date of initial delivery, as Contractor foresees the necessity for more than 7,500 kw. Contractor shall make written demand upon Authority for an increase of reserve power. Such increase shall take effect nine months after date of demand if the amount demanded be less than 5,000 kw. twelve months after date of demand if the amount demanded be over 5,000 kw., and not over 10,000 kw., and two years after date of demand if the amount demanded be in excess of 10,000 kw.

4. Conditions of Use and Service.—(a) Point of Delivery: The energy to be supplied Contractor hereunder shall be delivered at the outgoing side of main switch or switches on the low tension side of the main step-down transformers of the substation to be owned and operated by the Authority, and to be located on Lot 170 in the City of Florence, Lauderdale County, Alabama, said lot fronting on Sweetwater and Chestnut Streeets in said City, or at such other point as Authority may select which will not occasion greater costs to Contractor.

(b) Grant of Franchise to Authority.—Contractor agrees to grant Authority a franchise, extending to the date of termination of this contract, in a form acceptable to Authority, for the use of the streets and alleys of Contractor for the construction of poles and lines serving Contractor's substation or substations and/or areas outside the corporate limits of Contractor.

[fol. 4025] (c) Joint Use of Poles.—Authority agrees to permit Contractor, subject to such reasonable conditions as Authority may prescribe in the interest of safety and the prevention of electrical interference, to permit Contractor to use Authority's poles within Contractor's corporate limits, within the terms of this contract, for local distribution wires.

(d) Use of Substation Facilities.—Authority agrees, during the term of this contract, to permit Contractor the exclusive use of the 2300 volt portion of the Florence Central Substation, beginning at the load side of Authority's metering apparatus, located on Lot 170 in the City of Florence, together with all equipment and appurtenances. Contractor undertakes, at its own expense, to operate, maintain and repair, and to extend or alter as the situation may require, such substation facilities as are granted for the use of Contractor, and to save Authority harmless with respect thereto. Contractor shall be responsible for any damage to such facilities from any cause whatsoever. Contractor agrees to pay Authority for such use the sum of Twelve Thousand ($12,000) Dollars, at the rate of Two Hundred ($200) Dollars monthly beginning two years after the date of initial delivery. All facilities which Contractor

may install shall be considered personalty and at the expiration of this contract, Contractor may remove all facilities which it has purchased and installed without expense to Authority.

Authority will from time to time as it contemplates a change in the physical characteristics of the supply system, notify Contractor of the resulting short-circuit characteristics, so that Contractor may govern its use of the aforesaid equipment accordingly. It is understood and agreed that Authority has an option to purchase said Florence Central Substation, and that the covenants of this sub-article are conditioned on the exercise of such option. The obli- [fol. 4026] gation of this Subsection shall not bind the general credit or revenue of Contractor but is payable only from revenues of Contractor's electric system. In event of default in Contractor's obligations hereunder Authority may by written notice terminate Contractor's right to the use of the substation facilities above described and Authority may retain all payments theretofore made for such use as liquidated damages.

5. Schedule of Rates.—Attached hereto, and hereby made a part hereof by reference, the same as though physically incorporated herein, is a "Schedule of Rates and Charges". Contractor agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A, entitled "Tennessee Valley Authority Wholesale Power Rates".

6. Resale Rates.—In order to carry out the obligations of Authority with respect to the promotion of a wider use of electricity throughout the area in which it operates, Contractor agrees to charge all of its consumers the rates prescribed for the several classes of consumers in Schedule B, entitled "Tennessee Valley Authority Resale Rates", and not to depart therefrom except with the written consent of Authority, Authority may from time to time prescribe additional resale schedules for special classes of customers or special uses of electricity, and Contractor agrees to be bound thereby. If it should appear that the rates provided for in said schedule with the surcharges provided for therein do not under economical and efficient management by Contractor produce revenues sufficient to maintain the system on a self-supporting and financially sound basis, then upon

application by Contractor, Authority shall consent to such changes in rates as will provide for such increased revenues as will place the system upon a self-supporting and financially sound basis when operated under economical and efficient management.

[fol. 4027] 7. Rules and Regulations of Authority.—Attached hereto, and hereby made a part hereof by reference, the same as though physically incorporated herein, is a schedule entitled "Schedule of Rules and Regulations", and it is understood that the several provisions of said schedule, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract, and that their violation by Contractor renders this contract voidable at the option of Authority, unless such violations are cured upon reasonable notice.

The Schedule of Rules and Regulations is standard and of uniform applicability to all municipal customers of Authority, and the Contractor hereby agrees to be bound during the term hereof, by any future additions or amendments of such Schedule of Rules and Regulations prescribed after conference with representatives of Contractor, the same as though such additions or amendments were incorporated herein. If there should be any conflict between any Rules or Regulations prescribed pursuant to this and the following article, and the terms of this contract, the contract shall control.

8. Rules and Regulations of Contractor.—In the interest of uniformity, and for the protection of both Contractor and Authority, Contractor agrees to adopt and enforce such rules and regulations for the sale of electricity to the public as Authority may, after conference with representatives of Contractor, from time to time prescribe during the term of this contract for uniform application to all of the municipal customers of Authority deemed to have similar characteristics.

9. Declaration of Policy.—This contract is entered into in a spirit of cooperation and with the desire on the part of Authority and Contractor so to administer the relationship established by this contract as to operate to the benefit of Contractor and its residents and of the residents of the

COMPLAINANTS' EXHIBIT 928

[fol. 4028] Tennessee Valley. In furtherance of this cooperative relationship Authority will, by every means within its power, seek to further the economic welfare of Contractor by fostering and promoting the increased use of electricity within Contractor's corporate limits, and by such other means as are provided by law. Contractor agrees to cooperate with Authority in such program within Contractor's area of operation and to work with Authority in furthering the economic well-being of the entire Tennessee Valley. This contract shall be construed and administered in accordance with this statement of policy.

10. Contract Not Transferable.—Neither this contract nor any interest therein shall be transferable or assignable by Contractor to any other party without the consent of Authority, other than by involuntary transfer or assignment pursuant to proceedings brought by a governmental agency to enforce the payment or satisfaction of an indebtedness arising out of money borrowed by Contractor to finance the purchase or construction of its electric distribution plant and/or equipment.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested by their duly authorized officers, the day and year first above written.

Tennessee Valley Authority, by Arthur Morgan, Chairman, Board of Directors. (Swidler.)

Attest: C. A. Bock, Secretary (Acting).

City of Florence, by Lee Glenn, President of the Board of Commissioners, and ex officio Mayor.

Attest: S. B. Howard, City Clerk.

Approved as to form and correctness, as adopted by the Commission of the City of Florence, Ala.

W. H. Mitchell, City Attorney.

[fol. 4029] COMPLAINANTS' EXHIBIT No. 929

Power Contract Between TVA and the City of Tuscumbia, Alabama, Dated March 14, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between

COMPLAINANTS' EXHIBIT No. 929

TVA and Athens, Alabama (Complainants' Exhibit No. 117) except:

1. It shall continue in effect for thirty years.

2. The contract, in Section 2 thereof, provides:

"Contractor agrees to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system for the City of Tuscumbia with the utmost expedition, and to do all acts and things which it may legally do, which may be necessary or helpful in effectuating such acquisition. Authority agrees, upon request of Contractor, to render to Contractor without compensation such accounting, legal and engineering assistance looking to the acquisition of said system as Authority may deem helpful or advisable."

3. The maximum amount of electricity which TVA agrees to supply within the first two year period is 3000 kw.

4. The point of delivery shall be at a point to be designated by TVA at or near the western boundary of Nitrate Plant No. 2.

[fol. 4030] COMPLAINANTS' EXHIBIT No. 930

Power Contract Between TVA and the City of Sheffield, Alabama, Dated March 14, 1934

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as the contract between TVA and Athens, Alabama (Complainants' Exhibit No. 117) except:

1. It shall continue in effect for thirty years.

2. The contract, in Section 2 thereof, provides:

"Contractor agrees to use all reasonable diligence in acquiring by construction or purchase a municipal distribution system for the City of Sheffield with the utmost expedition, and to do all acts and things which it may legally do, which may be necessary or helpful in effectuating such acquisition. Authority agrees, upon request of Contractor, to render to Contractor without compensation such account-

COMPLAINANTS' EXHIBIT No. 930

ing, legal and engineering assistance looking to the acquisition of said system as Authority may deem helpful or advisable."

3. The maximum amount of electricity which TVA agrees to supply within the first two year period is 4500 kw.

4. The point of delivery shall be at a point to be designated by TVA at or near the western boundary of Nitrate Plant No. 2.

[fol. 4031] COMPLAINANTS' EXHIBIT No. 931

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following, to wit:

Copy of report of United States Department of the Interior, Bureau of Reclamation, entitled "Economic Height of Norris Dam" by E. B. Debler, Hydraulic Engineer, dated November 1, 1933,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, Clerk, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

(Here follows one photolithograph, side folio 4032)

COMPLAINANTS' EXHIBIT NO. 932

COMPARATIVE LOCKAGE TIMES PER LOCK
(No allowance for Open River Navigation)

Based partly on witness Barker's total time for single passage through low lift lock of 31 minutes and through high lift lock of 39 minutes. (Transcript 4669).

A tow consisting of 8 barges and 1 towboat is assumed. To carry 250 to 300 carloads (Transcript 3311) the barges would approximate 175' long by 26' wide, carrying about 800 tons each or a total of 6,400 tons. Four of these barges can enter a lock 60' x 360' at one time as their outside dimensions will be 52' x 350'. In locking, four barges could go through in the first section, four in the second, and the towboat in the third. With a lock 110' x 600', the entire fleet could go through in one operation, as the outside dimensions would not be over 92' x 525'.

Operation	LOCKING TIMES - MINUTES TVA LOCKS 60' x 360'	TVA LOCKS 110' x 600'	LOW DAM LOCKS 110' x 600'
Slow down	10	10	10
Stop, tie up, break tow	5		
First Section - enter lock, close lower gates	5	5	4
Fill lock	9	9	3
Open gates, leave lock	5	-	

low lift lock of 31 minutes and through high lift lock of 39 minutes. (Transcript 4669).

A tow consisting of 8 barges and 1 towboat is assumed. To carry 250 to 300 carloads (Transcript 3311) the barges would approximate 175' long by 26' wide, carrying about 800 tons each or a total of 6,400 tons. Four of these barges can enter a lock 60' x 360' at one time as their outside dimensions will be 52' x 350'. In locking, four barges could go through in the first section, four in the second, and the towboat in the third. With a lock 110' x 600', the entire fleet could go through in one operation, as the outside dimensions would not be over 92' x 525'.

	LOCKING TIMES - MINUTES		
	TVA LOCKS		LOW DAM LOCKS
Operation	60' x 360'	110' x 600'	110' x 600'
Slow down	10	10	10
Stop, tie up, break tow	5		
First Section - enter lock, close lower gates	5	5	4
Fill lock	9	9	3
Open gates - Leave lock	5	5	4
Close upper gates - empty lock	12		
Open lower gates	3		
Section Section - enter lock, close lower gates	5		
Fill lock - open upper gates - leave lock	14		
Close upper gates - empty lock	12		
Open lower gates	3		
Towboat - enter lock, close lower gates	5		
Fill lock - open upper gates - leave lock	13		
Make up tow	5		
Get under way	10	10	10
TOTAL TIME - MINUTES	116	39	31

[fol. 4033] COMPLAINANTS' EXHIBIT No. 933

Diagram entitled "Coal Transfer and Transit Facilities —Section and Elevation Through Transit Bin and Non-Overflow Section—Norris Project".

(Original Exhibit)

[fol. 4034]

COMPLAINANTS' EXHIBIT No. 934

Alabama Power Company

Gross Hydro Plant Generation —Kwh.
1932–1936

	Lay Dam	Mitchell Dam	Jordan Dam	Martin Dam	Upper Tallassee	Thurlow Dam	Total Hydro Plant Generation
1932	274,939,800	233,115,400	338,890,000	225,889,800	40,556,400	61,860,335	1,175,251,735
1933	210,961,000	211,610,000	334,334,000	322,338,000	127,080,000	177,677,420	1,384,000,420
1934	304,467,000	300,168,000	486,357,000	213,714,000	92,629,000	146,665,897	1,544,000,897
1935	324,855,000	260,835,000	476,923,000	290,430,000	127,347,000	207,452,007	1,687,842,007
1936	303,285,000	272,082,000	441,466,000	332,290,000	139,743,000	206,010,379	1,694,876,379
Total 5 Yrs	1,418,507,800	1,277,810,400	2,077,970,000	1,384,661,800	527,355,400	799,666,038	7,485,971,438

(Here follows 1 photolithograph, side folio 4035)

4035

COMPARATIVE LOCKAGE TIMES - TENNESSEE RIVER

(From Paducah, Ky. to Knoxville, excluding Lock No. 1, Florence Canal, Wilson Lock and Pool, Hale's Bar Lock and Pool; common to both projects)

POOL SECTION	LOW DAM PLAN (1) Number of Locks	Theoretical Locking Time - Minutes (3)	Average Duration of Open River Navigation -%	Av. Net Locking Time - Minutes	TVA PLAN (2) Locking Time - Minutes Hale's Bar Lock Size Tow (4)	8 Barge Tow (5)
Gilbertsville	4	124	58.0	52.0	39	39
Pickwick	3	93	13.0	81.0	39	39
Wheeler	4	124	10.0	111.6	39	116
Guntersville	4	124	33.75	82.1	39	116
Chickamauga	4	124	22.0	96.7	39	116
Watt's Bar	7	217	21.7	170.0	39	116
Coulter Shoals	6	186	17.0	154.4	39	116
Total Time - Minutes				747.8	273	658
Total Time - Hours				12.46	4.55	10.96

Notes:

1. Low Dam Plan as authorized by River and Harbor Act of July 3, 1930.
2. Tennessee Valley Authority Unified Plan as reported to Congress March 31, 1936.
3. Number of locks multiplied into 31 minutes - Witness Barker's low lift locking time. This is for single lockage and will apply to either size tow herein considered.
4. Time based on witness Barker's high lift locking time - 39 minutes; tow assumed to be of a size to pass through Hale's Bar Lock without breaking.
5. Time based on previous exhibit entitled "Comparative Lockage Times per Look" - 8 barge tow.

COMPLAINANTS' EXHIBIT NO. 935

[fol. 4036] COMPLAINANTS' EXHIBIT No. 936 (Excluded)

House Document 306, 74th Congress, 1st Session

(Original Exhibit)

(Here follow four photolithographs, side folios 4037-4040)

COMPLAINANTS' EXHIBIT NO. 937 (EXCLUDED)

PROPOSED SUBSCRIBERS--HIGH-WAY # 15.

RENEGAR STATION to KELSO.

J. J. Meyers	$3.00
Byrd Douglas	6.00
J. M. Shelton	5.00
A. Tayler	5.00
G. G. Hopkins	5.00
R. F. Gray	2.00
A. L. Norman	2.00
Gray & Norman	2.00
W. T. Benson	2.00
T. S. Winford	2.00
Kelso Mert. Co.	1.50
Jno. P. Cowley Jr.	5.00
Cowley Store	2.00
J. B. Thompson	1.00
W. L. Loyd	1.00
Peoples Bank	2.00
M. R. Crabtree	1.50
Jno Pigg	1.00
W. V. Howard	1.00
Howard Service	10.00
C. D. Cowley	2.00
C. H. Campbell	2.00
Mrs Zora Fry	1.00
Church	2.00
School	2.00
R. D. Cowley	2.00

Highway

.3 Solomon 1.00

Provided (Cow) 1.00

78
4
82
1.10
$0.50

W D B Smith 4.00

$81.00

4 Cowley 1.00

[illegible]	[illegible]
A. Taylor	5.00
O. G. Hopkins	5.00
R. F. Gray	2.00
L. Norman	2.00
Gray & Norman	2.00
W. T. Benson	2.00
T. J. Winford	2.00
Kelso Mert. Co.	1.50
Jno. P. Cowley Jr.	5.00
Cowley Store	2.00
J. D. Thompson	1.00
W. L. Loyd	1.00
Peoples Bank	2.00
M. D. Crabtree	1.50
Jno Pigg	1.00
W. V. Howard	1.00
Howard Service	10.00
G. D. Cowley	2.00
G. H. Campbell	2.00
Mrs Zora Fry	1.00
Church	2.00
School	2.00
R. D. Cowley	2.00

3 Stamon 1.00

1 Rainwater (Cash) 1.00

78
4
82
1.50
80.50

1 D B Smith 4.00
$81.00

4 Cowley 1.00

Six or eight good prospects for refrigerators.

Other good prospects in Kelso and along highway.

Distance from Fayetteville to Kelso by Highway 15 according to State-Highway Department.....6.31 Miles.
From Fayetteville to Renegar station (T. P.L.Co.)2.14
From Renegar Station to Kelso..... 4.17

Highway 15 is a Federal Aid project, having right-of-way 80 Ft. Being practically a streight line from Renegar Station to Kelso. No timber to obstruct, very little guying, no right-of-way to secure, Probably not over six or eight holes in rock on the entire line.

4037

COMPLAINANTS' EXHIBIT No. 937 (Excluded)

Flintville Supplementary List

	Res.
Yost Mulligan	$1.25
John Evans -	1.25
C. P. Church	1.25
M. E. Church	1.25

Raymond Snow 1.25
6.25

16
38
59 Customers

6.25
49.25
23.75
79.25

60 customers
@ 60¢ per month

COMPLAINANTS' EXHIBIT No. 937 (Excluded)

J. H. MILNER & SON

GENERAL MERCHANDISE

LADIES' & GENTS' READY-TO-WEAR
WHOLESALE PRODUCE

Flintville, Tenn.

List

J H Milner & Son ✓	5-00
Frank Adams ✓	2 50
A J Bryant ✓	2 50
Mrs Fannie Luttrell ✓	1 50
F M Copeland ✓	1 25
M F Carney ✓	2 75
J M Cunningham ✓	1 75
J R Mason ✓	1 25
F Copeland ✓	3 25
Jno Whitworth ✓	5 00
R O Armstrong ✓	1 26
J F. Copeland ✓	1 25
Copeland Bros Garage ✓	3 00
M A Styles ✓	1 25
M Ella Styles ✓	1 25
M Anna Spinn ✓	1 25
" Micky ✓	5-00
" [illegible] ✓	1 25

(22)

Frank Adams	[illegible]
A J Bryant	2 50
Mrs I Bonnie Luttrell	1 50
I M Copeland	1 25
M I Carney	2 75
J M Cunningham	1 75
J R Mason	1 25
I Copeland	1 25
Jim Whitworth	3 25
R O Armstrong	5 00
J I. Copeland	1 25
Copeland Bros Garage	1 25
M A Styles	3 00
M Ella Styles	1 25
M Anna Lynn	1 25
" Micks	1 25
A A Holmes	5 00
M M Pylant	1 25
E P Stephenson	2 00
Horace Counts	1 25
E O. Hudson	2 50
	99.75

22

4039

1986

COMPLAINANTS' EXHIBIT No. 937 (Excluded)

J. H. MILNER & SON

GENERAL MERCHANDISE

LADIES' & GENTS' READY-TO-WEAR
WHOLESALE PRODUCE

Flintville, Tenn.

List

Hill Luttrell	1 25
Jno. Brown	5 00
M J & Boden	1 25
Lewis Drugstore	1 25
Baptist Church	1 25
H A Dunham	1 25
J M Allen	1 25
G C Shroder	1 25
W R Taylor	1 25
Ben Copeland	1 25
School	1 25
Fred Rowe	1 25
W K Foster	1 25
A N Young	1 25
Owen Hudson	1 25
	16 75

Hall Luttrell ✓		1.25
Jno. Brown ✓		5.00
M J. & Braden ✓		1.25
Levin Drugstore		1.25
Baptist Church		1.25
H A Dunham		1.25
J M Allen		1.25
B C Shroder		1.25
W R Taylor		1.25
Ben Copeland		1.25
School		1.25
Fred Rowe		1.25
W K Foster	(16)	1.25
A N Towry		1.25
Owen Hudson		1.25
J M Campbell		1.25
		43.75
		47.25
		73.00

22
16
38

4040

7

[fol. 4041] COMPLAINANTS' EXHIBIT No. 938 (Excluded)

June 2, 1932.

Memorandum Covering Proposed Electric Service to Elora, Tennessee, Flintville, Tennessee, U. S. Fish Hatchery in Warren Hollow, Kelso, Tennessee

Property of J. J. Moyers on New Highway #15 (Near Fayetteville), Property of Tom Bagley on New Highway #15 (Near Fayetteville)

A considerable amount of investigation and preliminary work has been done in connection with proposed electric service to Elora from Huntland and since this subject has been under discussion for a period of one and one-half years, it might be well to review the matter from the beginning.

History:

In December 1930 two estimates were prepared covering the construction of 6.3 miles of 11,000 volt line from Huntland to Elora with a distribution system for approximately 74 customers in Elora. One estimate, amounting to $10,270, covered a single phase line with distribution and the other, amounting to $13,930, covered a three phase line with distribution. The reason for two estimates being, that if the cotton gin load could be secured in Elora, a three phase line would be needed. In March 1931 the above estimates were revised in detail with resulting amounts of $11,130 and $14,050 respectively.

In July 1931 it was thought that possibly Elora might be served to better advantage by a line out of Fayetteville inasmuch as the communities of Kelso and Flintville could be served along the way. A survey was then made and alignment plotted for a route from Fayetteville via new highway #15, Flintville and Elora to Huntland. Also plane table surveys were made of Kelso, Flintville and Elora. The attached sketch shows the relative location of these towns.

Sufficient revenue, however, could not be obtained to justify building extensions to these communities so the matter was dropped for the time being.

COMPLAINANTS' EXHIBIT No. 938 (Excluded)

In February of this year the question was again reopened due to a petition being received from parties at Fayetteville asking for electric service for the farmers along new highway #15, for the new U. S. Government Fish Hatchery in Warren Hollow and for the communities of Kelso and Flintville.

Correspondence following this petition indicates that one J. J. Moyers is taking the lead in the matter and inspection of the highway maps indicates that he together with Mr. Tom Bagley own over a mile frontage on new highway #15 about 3 miles out from Fayetteville. Since this is a new highway there are very few houses near it. Under date of February 24, 1932, Mr. Moyers wrote a letter to Hon. Ewin L. Davis at Washington about the matter, the closing paraagraph of which reads as follows:

[fol. 4042] "I am asking that for the benefit of the Fish Hatchery and the farmers from Fayetteville to Kelso along Route #15 that you use your influence with the Tennessee Power Company in the manner you see fit."

Under date of April 4, 1932, Mr. Moyers wrote Mr. Bunn, local manager at Fayetteville, again expressing his desire for electric service.

Present Status:

The writer has discussed the proposition of service to this territory with Messrs. Parks and Watson and their distribution engineers and has also gone over the whole matter in the field. It is believed that the following represents the combined views of all on the subject.

Considering the number of miles of line to be built, the character of load to be served and the relative small number of customers this territory is rather lean. For this reason no general comprehensive plan for service to this section is warranted at this time and any extensions should be made on an individual basis. Our views on the prospective loads are as follows:

Elora (74 Prospective Customers):

This town located 6.7 miles from Huntland and 18.7 miles from Fayetteville, along the surveyed route, is the best prospect in the entire section, nevertheless it would be hard

to justify an extension even to it at the present time. In December 1930 when the proposition was most active, a guaranteed revenue of about $81.00 per month was secured, the estimated construction cost at that time being $10,270. Using our most economical rural construction we could probably serve them today for aroung $8,000, which on the 2% minimum plan would call for a guaranteed revenue of $160.00 per month. Elora located near the Alabama line depends on cotton for her income and under present economic conditions it is doubtful that the residents would be able to guarantee twice the revenue they did in 1930. We expect to keep working on the proposition though and sooner or later it may materialize. The logical method of serving Elora is with 11 kv. from Huntland.

Flintville (54 Prospective Customers):

Service to this town which is located about half way between Huntland and Fayetteville depends on our making the extension from Huntland to Elora. We could then build up the highway at 11 kv. from Elora and serve Flintville at about the same guarantee per customer as required in Elora.

U. S. Government Fish Hatchery:

Correspondence with Mr. Henry O'Malley, U. S. Commissioner of Fisheries indicates that their requirements will be relatively small. A copy of his letter to Mr. Shultz on the matter is attached. The cost of serving this load at present with a special line would be prohibitive. In the event, however, that we should get service into Flintville it might be possible to work out a satisfactory proposition with the Fish Hatchery at that time.

[fol. 4043] Kelso (20 Prospective Customers):

Kelso with 20 prospective customers could be most economically served from the end of the Joe Smith line, however, in view of the future possibilities along highway #15 from Fayetteville it might be more practical to use the latter route though longer. A minimum of $3500 would be required to serve Kelso which on the 2% plan would amount to a guarantee of $70.00 per month of $3.50 per customer. It

would not be possible to secure such a guarantee at this time.

J. J. Moyer & Tom Bagley Property:

These properties could be most economically served by an extension down new highway #15 which would tap off of the present Fayetteville-Mulberry line. As shown the Fish Hatchery and load would have little bearing on reducing the cost of the extension desired by Mr. Moyer. If these gentlemen with their neighboring property owners can secure sufficient guarantee to cover the construction of 3.2 miles of 2300 volt line it would be an easy matter to serve them.

In this event we might be able to extend the line on down to Kelso which would be about the limit for 2300 volt transmission.

Conclusions:

1. The prospects of securing profitable business in this territory at the present time are not very good but we expect to keep on working on it.

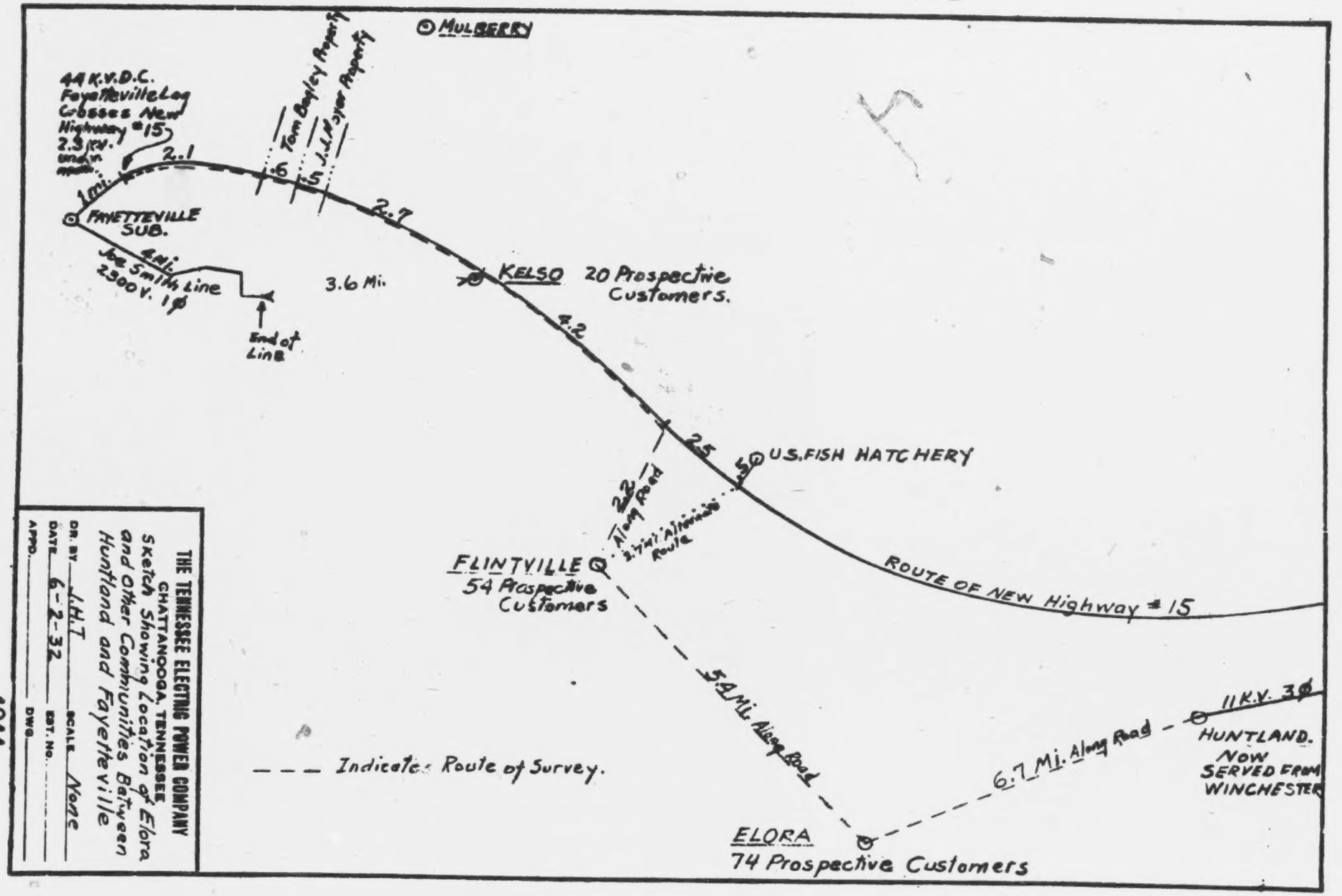
2. Elora is the best prospect of all and the Cumberland District will continue their efforts to serve them.

3. Service to the Fish Hatchery without special financial arrangements is prohibitive until service is made available at Flintville.

4. Service to properties of Messrs. J. J. Moyers and Tom Bagley depends on their ability to finance the proposition and the fact that Kelso and the Fish Hatchery are potential customers does not make proposed service to their properties any more attractive.

5. If Messrs. Moyer and Bagley feel that a proposition could be worked out with them and the farmers along Route #15 whereby they would guarantee sufficient revenue to construct a line we will be glad to work with them and prepare estimates to serve such customers as are interested. Our survey made in July 1931 shows no houses along new highway #15 between Fayetteville and Kelso a distance of nearly 6 miles. The properties of Messrs. Moyers and Bagley are located in this section.

(Here follows one photolithograph, side folio 4044)


MULBERRY
44 K.V.D.C.
Fayetteville Log
Crosses New
Highway #15
2.3 K.V.
Line
Tom Bagley Property
J.J. Myers Property
2.1
.6
.5
1 mi.
FAYETTEVILLE
SUB.
2.7
4 Mi.
Joe Smith Line
2300 V. 1ø
End of
Line
3.6 Mi.
KELSO
20 Prospective
Customers.
2.2
2.5
.5
U.S. FISH HATCHERY
2.2
Along Road
2.3 Mi. Alternate
Route
FLINTVILLE
54 Prospective
Customers
ROUTE OF NEW Highway # 15
5.4 Mi. Along Road
11 K.V. 3ø
6.7 Mi. Along Road
HUNTLAND.
NOW
SERVED FROM
WINCHESTER
ELORA
74 Prospective Customers
Indicates Route of Survey.
THE TENNESSEE ELECTRIC POWER COMPANY
CHATTANOOGA, TENNESSEE
Sketch Showing Location of Elora
and Other Communities Between
Huntland and Fayetteville
DR. BY J.H.T. SCALE None
DATE 6-2-32 EST. NO.
APPD. DWG.

4044

COMPLAINANTS' EXHIBIT No. 939 (Excluded)

[fol. 4045] COMPLAINANTS' EXHIBIT No. 939 (Excluded)

Letterhead of Railroad and Public Utilities Commission of the State of Tennessee

November 10, 1932.

Mr. Joe C. Guild, Jr., V. P. & Gen. Mgr., The Tennessee Electric Power Company, Chattanooga, Tennessee.

DEAR MR. GUILD:

I am enclosing copy of report made by Mr. Beatty, Assistant Engineer of the Commission, relative to estimated cost of proposed extensions at Mulberry and Fayetteville, Tennessee.

I understand that the Company has made an investigation of the proposed extensions and refer you to your letter of September 2, 1932 addressed to Mr. John B. Southall, Supt. of Construction for the Government Bureau of Fisheries, Fayetteville, Tennessee. We wish that you would have this extension investigated again and take up with Mr. Moyers of Fayetteville the requirements necessary to secure the extension. You will find in Mr. Beatty's report to me his estimate of the cost of making the necessary installation to render the service. We trust that sufficient business may be secured to justify this extension.

Yours very truly, (Signed) Malcolm R. Williams, Engineer.

MRW/b.

[fol. 4046] Letterhead of Railroad and Public Utilities Commission of the State of Tennessee

Memphis, Tennessee,
September 27, 1932.

Mr. M. R. Williams, Engineer, Railroad and Public Utilities Commission, Nashville, Tennessee.

Rural Extension, Fayetteville, Tennessee

DEAR MR. WILLIAMS:

In accordance with your instructions, I was in Fayetteville on the 16th and accompanied by Mr. Moyers of that

City, Mr. Southall with the Gov. Bureau of Fisheries and Mr. Bunn of the Tennessee Electric Power Co. made investigations regarding the feasibility of extending the Power Company's lines East on Highway #15 approximately 12 miles to serve the Fish Hatchery and also the towns, Kelso and Flintville, along the way.

It is my understanding that the Power Company's Engineers have made some previous estimate for the building od a 11000 volt line through Kelso to the Hatchery but not including Flintville. My estimate is based on extending a single phase 2300 volt line from a point approx. two miles East of Fayetteville, known as Renegar Station, through Kelso to the Gov. Hatchery and also a tap off this line approx. two miles in length to reach Flintville. This estimate covers complete cost of distribution systems in both Flintville and Kelso and amounts to a total of $11,689.84 made up as follows:

to and including Kelso	$4,527.92
add to include Flintville	5,424.53
" " " Gov. Hatchery	1,737.39
making a total of	$11,689.84

The attached sheets will show what the Proposed Subscribers have signified thier willingness to pay. You will note Kelso has subscribed $83.00, Flintville, though there are some errors in th-r set up $72.50 and it is my understanding the Hatcheries will use about $30.00 worth of energy making a total of $185.50 which, on the 2% basis, falls short of the required amount by approximately $50.00.

I was informed, while in Fayetteville, that the Power Co. proposes to make further investigation regarding this matter and it may be that the probable future business will be sufficient to justify.

Respectfully submitted, Charlie Beatty, Assistant Engineer.

[fol. 4047] COMPLAINANTS' EXHIBIT No. 940 (Excluded)

Memorandum as to the Feasibility of Extending a 2300 Volt Single Phase Line from Fayetteville to Serve the Communities of Kelso, Flintville and the U. S. Government Fish Hatchery

1. As shown on the attached sketch it is approximately 13.3 miles from the Fayetteville substation to Flintville along a practical distribution line route.

2. 2300 volt single phase transmission for this distance is considered very uneconomical and impractical by distribution engineers.

3. With a single phase #4 copper 2300 volt line, calculations show that with the present load at Mulberry and estimated loads taken on at Kelso, Flintville and Fish Hatchery a regulation of 30% and a voltage of 94 would result at Flintville. This type of service would be useless.

4. With a single phase #4 copper 2300 volt line extended to Flintville and with estimated loads taken on at Kelso and the Fish Hatchery, it would only be possible to deliver 2 Kva. to Flintville with a satisfactory voltage regulation (11.4%). This would mean that one small electric stove would load the line to capacity.

5. The economical voltage to supply this load is 11,000 volts. This voltage is not now available at Fayetteville and the cost of the necessary substation changes together with the cost of an 11 kv. line would make the extension to Flintville prohibitive.

The sketch is the same as that contained in Complainants' Exhibit No. 938.

COMPLAINANTS' EXHIBIT No. 941

Floods Which Have Occurred Between Apr. 15 & Nov. 30 on Rivers In and Near Tennessee River Basin During the Period of Stream Flow Records

River	Station	Reference	Drainage Area Sq. Mi.	Flood Stage Ft.	High Flood			
					Stage Ft.	Discharge C. F. S.	Discharge per Sq. Mi. C. F. S.	Date
Mississippi	Cape Girardeau, Mo	H-8	712,155	30	42.5	Maximum		7- 4-1844
Ohio	Cairo, Ill.	G-7	203,943	40	56.4	Max. before 1937		4-20-1927
New	Eggleston, Va	A-180	2,945		39.5	Max. 152,000	51.6	7-16-1916
New	Eggleston, Va	A-180	2,945		31.1	109,000	37.0	10-27-1918
Kanawha	Kanawha Falls, W. Va	A-183	8,367		37.8	Max. 270,000	32.3	9-14-1878
Kanawha	Kanawha Falls, W. Va	A-183	8,367		34.5	242,000	28.9	5-23-1901
Cumberland	Nashville, Tenn	A-198	12,860		51.4	165,000	12.8	4-18-1865
Cumberland	Nashville, Tenn	A-198	12,860		49.6	154,000	12.0	4-17-1874
French Broad	Dandridge, Tenn	H-8	4,450	12	28.0	Maximum		5-21-1901
Tennessee	Knoxville, Tenn	A-202	8,990		34.8	188,000	20.9	5-23-1901
Little Tennessee	McGhee, Tenn	A-214	2,470		22.2	70,000	28.4	11-19-1906
Cape Fear	Fayetteville, N. C.	B-86	4,290		68.0	Max. 133,000	31.0	8-20-1908
Cape Fear	Fayetteville, N. C.	E-70	4,290		63.4	107,000	24.9	9-21-1928
Cape Fear	Fayetteville, N. C.	B-86	4,290		63.43	110,000	25.6	10- 4-1929
Yadkin	Salisbury, N. C.	A-155	3,400		23.8	Max. 121,000	35.6	7-18-1916
Yadkin	Salisbury, N. C.	A-155	3,400		16.9	80,000	23.5	7-20-1919
Peedee	Cheraw, S. C.	G-3	7,432	30	47.2	Maximum		8-27-1908
Peedee	Rockingham, N. C.	C-106	6,910		24.38	Max. 212,000	30.7	9-19-1928
Peedee	Rockingham, N. C.	D-100	6,910		20.53	165,000	23.9	10- 3-1929
Catawba	Catawba, S. C.	G-3	3,502	11	40.4	Maximum		7-17-1916
Wateree	Camden, S. C.	B-108	5,010	23	38.4			8- -1908
Wateree	Camden, S. C.	B-108	5,010	23	40.4	Maximum		7-18-1916
Wateree	Camden, S. C.	B-108	5,010		36.2	199,000	39.8	10- 3-1929

Broad	Richtex, S. C.	E-95	4,800		30.0	222,000	46.2	8-17-1928
Broad	Richtex, S. C.	B-114	4,800		30.7	Max. 228,000	47.5	10- 3-1929
[fol. 4049]								
Congaree	Columbia, S. C.	G-3	7,807	19	39.8	Maximum		8-27-1908
Santee	Ferguson, S. C.	B-109	14,800		24.5	Max. 368,000	24.9	7-22-1916
Santee	Ferguson, S. C.	F-67	14,800		20.6	251,000	17.0	8-22-1928
Santee	Ferguson, S. C.	D-108	14,800		21.04	263,000	17.8	10- 7-1929
Savannah	Augusta, Ga.	F-80	7,304		38.7	310,000	42.5	9-11-1888
Savannah	Augusta, Ga.	H-4	7,304		38.8			8-27-1908
Savannah	Augusta, Ga.	D-130	7,304		45.1	Max. 350,000	48.0	10- 3-1929
Coosa	Childersburg, Ala.	B-188	8,390			121,000	14.4	7-11-1916
Black Warrior	Tuscaloosa, Ala.	B-203	4,830		67.7	Max. 215,000	44.5	4-18-1900
Black Warrior	Tuscaloosa, Ala.	D-234	4,830		65.1	166,000	34.4	11-15-1929

References: (A) Geological Survey Water Supply Paper 771, "Floods in the United States."

Following Geological Survey Water Supply Papers, "Surface Water Supply of the United States, South Atlantic Slope and Eastern Gulf of Mexico Basins":

(B) W. S. Paper 757 Year 1934
(C) " " " 712 " 1931
(D) " " " 697 " 1930
(E) " " " 682 " 1929
(F) " " " 662 " 1928
(G) "Daily River Stages"—U. S. Weather Bureau, Volume XXXIII Year 1935.
(H) " " " " " " " " XXIII " 1925

Figure with a reference refers to page of the reference.

[fol. 4050] COMPLAINANTS' EXHIBIT No. 942

Table of weekly loads of complainant companies for 1937

Weekly Loads of Complainant Companies

For Year 1937

Carolina Power & Light Company
Memphis Power & Light Company
Tennessee Public Service Company
Holston River Electric Company
Appalachian Electric Company
Kentucky Tennessee Light & Power Co.
Kentucky & West Virginia Power Co.
Kingsport Utilities
East Tennessee Power & Light Co.
Tennessee Eastern Electric Co.
Alabama Power Company
West Tennessee Power & Light Co.
Birmingham Electric Company
Mississippi Power Company
The Tennessee Electric Power Co.
Southern Tennessee Power Company
Franklin Power & Light Company
Mississippi Power & Light Company

Week of Year	Month	Millions kwhrs	Week of Year	Month	Millions kwhrs
1	Jan.	128.43	27	July	118.64
2		129.98	28		129.49
3		130.11	29		130.32
4		126.86	30		129.85
5		122.51	31		130.49
6	Feb.	126.37	32	Aug.	128.59
7		127.12	33		129.94
8		128.17	34		130.25
9		128.73	35		129.54
10	Mar.	128.75	36	Sept.	124.30
11		129.77	37		131.13
12		129.93	38		130.80
13		126.53	39		132.98
14	Apr.	124.62	40		133.50
15		125.06	41	Oct.	132.03
16		125.13	42		129.44
17		126.22	43		129.02
18		126.19	44		126.71
19	May	127.64	45	Nov.	123.66
20		126.99	46		123.34
21		127.69	47		117.58
22		127.37	48		117.84
23	June	127.80	49	Dec.	122.81
24		128.45	50		124.77
25		129.48	51		121.12
26		129.04	52		104.79
		Grand Total for Year 1937.....			6,597.87

The chart accompanying the above table is an original exhibit.

[fol. 4051] COMPLAINANTS' EXHIBIT No. 943

The Charter of Incorporation of Lee County Electric Power Association

1. The corporate title of said company is: Lee County Electric Power Association.

2. The names of the incorporators are: Gene Watson, Postoffice, Guntown, Miss.; S. P. Evans, Postoffice, Tupelo, Miss.; J. C. Partlow, Postoffice, Plantersville, Miss.; Keith

Barnett, Postoffice, Shannon, Miss.; Lee Riley, Postoffice, Saltillo, Miss.; A. L. Burdine, Postoffice, Verona, Miss; Byron Long, Postoffice, Tupelo, Miss.; G. W. Ruff, Tupelo, Miss.; A. L. Gregory, Saltillo, Miss.; N. B. Buchanan, Tupelo, Miss.; J. G. Underwood, Guntown.

3. The domicile is at Tupelo, Mississippi.

4. Amount of capital stock and particulars as to class or classes thereof: This corporation is organized without capital stock and is to issue no shares and is not to engage in business for profit, but shall function as a civic improvement company or association.

This corporation shall not be required to make publication of its charter, shall issue no shares of stock, and shall divide no dividend or profit among its members. Expulsion shall be the only remedy for non-payment of dues and each member shall have the right to one vote in the election of all officers. The loss of membership by death or otherwise terminates all interest of such member in the corporate assets, and there shall be no individual liability against members for corporate debts, but the entire corporate property shall be liable for claims of creditors.

5. Number of shares for each class and par value thereof: None.

6. The period of existence (not to exceed fifty years) is Fifty years.

7. The purpose for which it is created: The purpose or object of this corporation shall be the following:

Section 1. To construct, purchase, add to, maintain, conduct and operate electric light and power distributing systems for the purpose of furnishing light and power service to the members of this corporation at cost and without profit.

Section 2. To acquire, erect, maintain and operate poles, wires, lines, conduits, transformers, lamps, motors, dynamos, and all other appurtenances necessary for distributing electricity for aforesaid purposes.

COMPLAINANTS' EXHIBIT No. 943

[fol. 4052] Section 3. To purchase such electricity from others for its own use and for the purpose of distributing the same to its members, only, at cost without profit.

Section 4. To acquire real or personal property, by purchase or otherwise, and to hold, sell, mortgage, or otherwise dispose of the same, to borrow money on bonds, notes or otherwise, for corporate uses, to acquire privileges and franchises, and to sell those now owned or hereinafter to be owned and generally to perform anything which may be necessary for the promotion of the objects hereinbefore stated.

Section 5. To apply for, and obtain, any franchise necessary for carrying out and making effective these Articles of Incorporation.

Section 6. To adopt by-laws, and to amend or repeal same.

Section 7. To promote the construction of electric power lines to the various communities of Lee County for the purpose of securing and distributing electric power from the Tennessee Valley Authority or others, to promote the use of electric power in every way possible and to cooperate with the Tennessee Vally Authority to this end.

The rights and powers that may be exercised by this corporation, in addition to the foregoing, are those conferred by Chapter 24, Code of Mississippi of 1906, and House Bill No. 655, Laws of Mississippi of 1928, and Chapter 100, Code of Mississippi of 1930.

8. Number of shares of each class to be subscribed and paid for before the corporation may begin business. None.

Byron Long, Tupelo, Miss.; Keith Barnett, Shannon, Miss.; S. P. Evans, Tupelo, Miss.; Gene Watson, Guntown, Miss.; A. L. Gregory, M. D., Saltillo, Miss.; Jno. G. Underwood, Guntown, Miss.; J. C. Partlow, Plantersville, Lee Riley, Saltillo, Miss.; Geo. W. Ruff, Tupelo, Miss.; A. L. Burdine, Verona, Miss.; N. B. Buchanan, Tupelo, Miss.; Incorporators.

COMPLAINANTS' EXHIBIT No. 943

Acknowledgment

STATE OF MISSISSIPPI,
County of Lee:

This day personally appeared before me, the undersigned authority Byron Long, Keith Barnett, S. P. Evans, Gene Watson, A. L. Gregory, M. D., Jno. G. Underwood, Joe Partlow, Lee Riley, Geo. W. Ruff, A. L. Burdine, N. B. Buchanan, incorporators of the corporation known as the Lee County Electric Power Association, who acknowledged that they signed and executed the above and foregoing articles of incorporation as their act and deed on this the 8th day of Jan., 1934.

G. W. Ballard, Ci. Clerk, by, Chas. Patrick, D. C.

[fol. 4053] Amendment to Charter of Incorporation of Lee County Electric Power Association

Under and by virtue of resolution passed by the stockholders, incorporators and members of the Lee County Electric Power Association of Tupelo, Lee County, Mississippi, on the 24th day of July, 1935, authorizing the same, the charter of incorporation of the Lee County Electric Power Association, which said corporation is domiciled at Tupelo in Lee County, Mississippi and which was incorporated on the 26th day of February, 1934, and the charter of which is recorded in book 33-34, pages 526 and 527 of the records of incorporations in the office of the Secretary of State, Jackson, Mississippi, is hereby amended so as to change the name of said corporation from that of "Lee County Electric Power Association" to "Tombigbee Electric Power Association."

Section seven (7) of said charter is amended to read as follows:

7. The purpose for which it is created:

The purpose or object of this organization shall be the following:

Section 1. To construct, purchase, add to, maintain, conduct and operate electric light and power distributing systems for the purpose of furnishing light and power service

to the members of this corporation at cost and without profit.

Section 2. To acquire, erect, maintain and operate poles, wires, lines, conduits, transformers, meters, lamps, motors, dynamoes, and all other appurtenances necessary for distributing electricity for aforesaid purpose.

Section 3. To purchase electricity and electrical appliances from others for its own use and for the purpose of distributing same to its members only at cost without profit.

Section 4. To acquire real or personal property by purchase or otherwise, and to hold, sell, mortgage, or otherwise dispose of the same, to borrow money on bonds, notes or otherwise, for corporate uses, to acquire privileges and franchises and to sell those now owned or hereafter to be owned and generally to perform anything which may be necessary for the promotion of the objects hereinbefore stated.

Section 5. To apply for, and obtain, any franchise necessary for carrying out and making effective these Articles of Incorporation.

Section 6. To adopt by-laws, and to amend or repeal same.

[fol. 4054] Section 7. To promote the construction of electric power lines to the various communities in Lee and Itawamba counties and vicinities for the purpose of securing and distributing electric power from the Tennessee Valley Authority or others and to promote the use of electric power in every possible way throughout the said area and to cooperate with the Tennessee Valley Authority to this end.

Keith Barnett, President. W. C. Inzer, Secretary.

STATE OF MISSISSIPPI,
County of Lee:

This day personally appeared before the undersigned Keith Barnett, President and W. C. Inzer, Secretary of the Corporation known as Lee County Electric Power Association, who acknowledged that they signed and executed the above and foregoing amendment to the charter of said corporation on the day and date therein set forth.

Witness my signature and seal this the 29th day of July, 1935.

W. H. Patton, Notary Public (Seal.)

[fol. 4055] COMPLAINANTS' EXHIBIT No. 944

Certificate of Incorporation, issued by the State of Mississippi to Alcorn County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 945

Certificate of Incorporation, issued by the State of Mississippi to Monroe County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 946

Certificate of Incorporation, issued by the State of Mississippi to Pontotoc County Electric Power Association.

(Omitted)

[fol. 4056] COMPLAINANTS' EXHIBIT No. 947

Certificate of Incorporation, issued by the State of Mississippi to Prentiss County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 948

Certificate of Incorporation, issued by the State of Mississippi to Tishomingo County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 949-50

Certificate of Incorporation, issued by the State of Mississippi to Four County Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 951

Certificate of Incorporation, issued by the State of Mississippi to Tippah Electric Power Association.

(Omitted)

[fol. 4057] COMPLAINANTS' EXHIBIT No. 952

Certificate of Incorporation, issued by the State of Mississippi to Tippah Electric Power Association.

(Omitted)

COMPLAINANTS' EXHIBIT No. 953

Certificate of Incorporation, issued by the State of Missippi to Northeast Mississippi Electric Power Association.

(Omitted)

[fol. 4058] COMPLAINANTS' EXHIBIT No. 954

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following, to wit:

Navigation, flood control and hydro-electric program summary on pp. 7 and 8, including justification of estimates, the plan and profile exhibit on p. 9, the principal features exhibit on p. 10, the channel depth exhibit on p. 11, power demand and capacity exhibit on p. 14, proposed program of dam construction on p. 15, the structures and improvement detail for Gilbertsville Dam and Reservoir on p. 30, structures and improvement detail for electrical plant and

COMPLAINANTS' EXHIBIT No. 954

equipment on p. 31 and transmission and distribution exhibit on p. 32 of TVA detailed statement of budget estimates for the fiscal year ending June 30, 1939, submitted to Congress in December, 1937,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, Clerk, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 4059] COMPLAINANTS' EXHIBIT No. 955

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following, to wit:

Tennessee Valley Authority's detailed statement of budget estimates for the fiscal year ending June 30, 1939, submitted to Congress in December, 1937, containing pages 1 to 47, both inclusive,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1937.

—— ——, Clerk, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 4060] COMPLAINANTS' EXHIBIT No. 956

Subpoena Duces Tecum

The President of the United States to Tennessee Valley Authority, Greeting:

You are hereby commanded to appear before the District Court for the Eastern District of Tennessee, Northern Division, in the courtroom of the Federal Building at Chattanooga, Tennessee, on the — day of ——, 1937, at — o'clock A. M., and bring with you the following, to wit:

1. Minutes of the Board of Directors of Tennessee Valley Authority approving recommendations or reports relating to methods of operating Norris or Wheeler Dams or any other dams embraced in the Unified Plan now under construction or recommended for construction by the Authority or establishing rule curves for the filling or lowering of the reservoirs at any of said dams or relating to water control thereat, and any corporate minutes directing the means and manner of water control at any of said dams from July 1, 1935, to date.

2. Minutes of any meetings of the Board of Directors of Tennessee Valley Authority prescribing levels at any of the reservoirs at dams constructed under the Unified Plan reported to Congress March 31, 1936, other than such minutes as are already in evidence,

and fail not under penalty of law.

Witness the Honorable Judge of the United States District Court for the Eastern District of Tennessee, this — day of ——, 1938.

—— ——, Clerk, by —— ——.

Let this writ issue. —— ——, Presiding Judge.

[fol. 4061] COMPLAINANTS' EXHIBIT No. 957

Resolutions by the Board of Directors of TVA Approving Water Control Bulletins Nos. 3, 4, 5, 6, 7 and 8

October 26, 1936:

255-4. The Board of Directors unanimously ratified and confirmed the informal action taken October 24, 1936, ap-

proving Water Control Bulletin #3, a true copy of which, labeled Exhibit 10-26-36b, is filed with the records of the Authority.

March 12, 1937:

275-3. The Board unanimously approved Water Control Bulletin #4, a true copy of which, labeled Exhibit 3-12-37b, was ordered filed with the records of the Authority.

March 31, 1937:

279-3. The Board unanimously approved Water Control Bulletins #5 and #6, true copies of which, labeled Exhibit 3-31-37a, were ordered filed with the Authority's records.

Minutes of May 5, 1937:

282-35. The Board unanimously approved Water Control Bulletin #7 and ordered a true copy filed with the records of the Authority as Exhibit 5-5-37z.

[fol. 4062] Minutes of June 3, 1937:

285-26. The Board unanimously approved Water Control Bulletin #8, a true copy of which, labeled Exhibit 6-3-37s, is filed with the records of the Authority.

CLERK'S COPY.

Vol. VII

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

vs.

TENNESSEE VALLEY AUTHORITY, ARTHUR E. MORGAN, HARCOURT A. MORGAN AND DAVID E. LILIENTHAL

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

FILED APRIL 18, 1938.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1938

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THE TENNESSEE ELECTRIC POWER COMPANY, ET AL., APPELLANTS,

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APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE

VOLUME VII.

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., MAY 9, 1938.

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Appendix "I"—Excerpts read into record by defendants from Complainants' Exhibit No. 365..... 4435 4345
Appendix "J"—Excerpts read into record by defendants from Complainants' Exhibit No. 366..... 4439 4348

Record from D. C. U. S., Eastern District of Tennessee—Continued.
Statement of evidence—Continued.
Original Exhibits contained in volume entitled "Reproductions of Certain Original Exhibits submitted by Appellants":

Appellants' Exhibits:

7	199	336	487
12	205	342	488
27	206	343	489
29	207	344	490
33	208	345	491
37	209	346	492
41	210	350	493
45	266	351	494
49	320	352	495
54	321	354	496
74	326	357	907
82	327	358	909
89	329	359	912
98	330	361	913
101	332	362	914
105c	332a	372	915
105d	333a	409	925
182	334	410	933
183	335a	411	942
184			

Appellees' Exhibits:

55	57	60	63
56	58	61	64
	59	62	

Original exhibits contained in volume entitled "Reproductions of certain Original Exhibits", submitted by Appellees:

Appellees' Exhibits:

36	81	96	121
37	83	97	122
38	86	98	123
40	87	104	124
44	89	109	125
49	90	110	130
50	91	116	132
66	92	118	136-a
72	93	119	136-b
73	95	120	137
			138

Stipulation as to statement of evidence 4442 4350
Order approving statement of evidence 4443 4350
Praecipe for transcript of record 4444 4351
Clerk's certificate ..... (omitted in printing) .. 4450
Statement of points to be relied upon 4451 4356
Stipulation as to printing record 4454 4357

[fol. 4063] DEFENDANTS' EXHIBIT No. 1

Common Stock Dividends Paid by the Tennessee Electric Power Company for Four Years, Ending 1936

Year	Rate Per Share	Total
1933	.75	$318,750
1934	.50	212,500
1935	.40	170,000
1936	.50	212,500
1937	None	None
		$913,750

[fol. 4064] DEFENDANTS' EXHIBIT No. 2

Stipulation No. 11

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, that the tables of operating statistics attached hereto correctly state the facts set forth therein.

Each of the parties specifically reserves the right to object to the introduction of any of the facts stipulated above on the ground of materiality or relevance.

Baker, Hostetler, Sidlo & Patterson, Frantz, McConnell & Seymour, Trabue, Hume & Armistead, Charles M. Seymour, Solicitors for Complainants.
John Lord O'Brien, Solicitors for Defendants.

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(Here follow two pasters, side folio 4065 and 4066)

DEFENDANTS' EXHIBIT No. 2

[fol. 4065]

Alabama Power Company

Electric Revenue and Expense

1927–1936

	1927	1928	1929	1930	1931	1932	1933	
Electric Revenue:								
Residential	$2,078,875.17	$2,419,490.65	$2,273,413.65	$2,558,395.95	$2,743,335.55	$2,705,720.90	$2,474,421.66	$
Rural	341.90	42,774.03	133,781.46	336,109.42	371,733.02	372,278.34	351,786.55	
Commercial	2,988,923.50	3,066,342.79	3,147,187.16	2,837,317.29	2,786,054.14	2,504,887.03	2,331,921.19	
Industrial	6,257,479.17	6,525,393.93	6,817,624.24	6,658,142.98	6,641,479.13	5,951,308.41	6,145,091.31	
Street Lighting	242,238.15	283,622.34	318,423.25	328,057.62	341,859.31	333,781.06	317,000.75	
Sub-Total	11,567,857.89	12,337,623.74	12,690,429.76	12,718,023.26	12,884,461.15	11,867,975.74	11,620,221.46	1
Other Utilities	4,319,911.53	3,975,010.92	4,664,923.58	4,296,805.68	3,988,332.22	3,077,550.79	3,133,706.17	
Total	15,887,769.42	16,315,634.66	17,355,353.34	17,014,828.94	16,872,793.37	14,945,526.53	14,753,927.63	1
Miscellaneous Revenue	312,491.52†	351,886.16†	78,301.13	242,688.51	269,688.94	227,791.25	350,110.95	
Total Electric Revenue	$15,575,277.90	$15,963,748.50	$17,433,654.47	$17,257,517.45	$17,142,482.31	$15,173,317.78	$15,104,038.58	$1
Electric Operating Expense:								
Production	$3,349,683.71	$1,888,405.93	$1,529,215.59	$1,876,344.08	$1,859,684.64	$1,066,494.65	$1,010,826.68	$
Transmission	414,984.16	374,525.68	331,381.17	333,696.40	597,685.87	447,878.51	450,068.03	
Distribution	635,177.90	698,902.79	717,236.77	710,550.95	494,428.80	470,838.81	470,930.68	
Utilization	109,413.04	116,715.14	129,287.11	96,148.65	133,709.79	140,547.56	128,217.19	
Commercial	206,249.40	228,708.40	265,284.43	299,915.06	279,122.48	247,170.27	234,815.67	
New Business	55,569.86	60,524.40	251,077.49	174,978.66	366,492.72	309,526.75	343,657.63	
General	1,185,909.71	1,184,855.79	1,310,172.89	1,505,383.61	1,382,592.73	1,451,315.99	1,256,881.31	
Uncollectible Bills	45,780.70	120,979.30	87,238.98	88,782.28	51,350.02	47,260.06	77,500.00	
Taxes	988,107.39	1,288,416.08	1,602,381.16	1,922,714.59	1,960,543.04	1,929,986.43	2,100,803.76	
Total Operating Expense	$6,990,875.87	$5,962,033.51	$6,223,275.59	$7,008,514.28	$7,125,610.09	$6,111,019.03	$6,073,700.95	$
Electric Gross Income	$8,584,402.03	$10,001,714.99	$12,210,378.88	$10,249,003.17	$10,016,872.22	$9,062,298.75	$9,030,337.63	$

ECM:H
11-9-37

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DEFENDANTS' EXHIBIT NO. 2

Alabama Power Company

Electric Revenue and Expense

1927–1936

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
.....	$2,078,875.17	$2,419,490.65	$2,273,413.65	$2,558,395.95	$2,743,335.55	$2,705,720.90	$2,474,421.66	$2,454,631.62	$2,740,918.57	$2,980,605.11
.....	341.90	42,774.03	133,781.46	336,109.42	371,733.02	372,278.34	351,786.55	406,232.78	478,384.65	623,796.32
.....	2,988,923.50	3,066,342.79	3,147,187.16	2,837,317.29	2,786,054.14	2,504,887.03	2,331,921.19	2,370,218.63	2,539,191.32	2,808,940.65
.....	6,257,479.17	6,525,393.93	6,817,624.24	6,658,142.98	6,641,479.13	5,951,308.41	6,145,091.31	5,939,221.84	6,396,252.07	7,405,938.05
.....	242,238.15	283,622.34	318,423.25	328,057.62	341,859.31	333,781.06	317,000.75	309,193.44	307,982.73	305,100.49
.....	11,567,857.89	12,337,623.74	12,690,429.76	12,718,023.26	12,884,461.15	11,867,975.74	11,620,221.46	11,479,498.31	12,462,729.34	14,124,380.62
.....	4,319,911.53	3,978,010.92	4,664,923.58	4,296,805.68	3,988,332.22	3,077,550.79	3,133,706.17	3,113,411.17	3,486,463.15	3,793,825.64
.....	15,887,769.42	16,315,634.66	17,355,353.34	17,014,828.94	16,872,793.37	14,945,526.53	14,753,927.63	14,592,909.48	15,949,192.49	17,918,206.26
.....	312,491.52†	351,886.16†	78,301.13	242,688.51	269,688.94	227,791.25	350,110.95	402,120.55	415,664.54	412,102.47
.....	$15,575,277.90	$15,963,748.50	$17,433,654.47	$17,257,517.45	$17,142,482.31	$15,173,317.78	$15,104,038.58	$14,995,030.03	$16,364,857.03	$18,330,308.73
.....	$3,349,683.71	$1,888,405.93	$1,529,215.59	$1,876,344.08	$1,859,684.64	$1,066,494.65	$1,010,826.68	$1,010,273.52	$1,227,786.35	$1,769,806.27
.....	414,984.16	374,525.68	331,381.17	333,696.40	597,685.87	447,878.51	450,068.03	477,516.54	496,876.93	553,101.46
.....	635,177.90	698,902.79	717,236.77	710,550.95	494,428.80	470,838.81	470,930.68	507,778.29	594,124.47	635,175.30
.....	109,413.04	116,715.14	129,287.11	96,148.65	133,709.79	140,547.56	128,217.19	170,156.12	161,010.88	169,965.22
.....	206,249.40	228,708.40	265,284.43	299,915.06	279,722.48	247,170.27	234,815.67	250,864.11	269,338.63	291,741.86
.....	55,569.86	60,524.40	251,077.49	174,978.66	366,492.72	309,526.75	343,657.63	464,596.42	540,934.74	648,184.25
.....	1,185,909.71	1,184,855.79	1,310,172.89	1,505,383.61	1,382,592.73	1,451,315.99	1,256,881.31	1,212,653.16	1,424,508.63	1,561,111.85
.....	45,780.70	120,979.30	87,238.98	88,782.28	51,350.02	47,260.06	77,500.00	78,000.00	72,000.00	72,000.00
.....	988,107.39	1,288,416.08	1,602,381.16	1,922,714.59	1,960,543.04	1,929,986.43	2,100,803.76	2,187,841.38	2,393,392.05	2,619,823.47
.....	$6,990,875.87	$5,962,033.51	$6,223,275.59	$7,008,514.28	$7,125,610.09	$6,111,019.03	$6,073,700.95	$6,359,679.54	$7,179,972.63	$8,320,909.68
.....	$8,584,402.03	$10,001,714.99	$12,210,378.88	$10,249,003.17	$10,016,872.22	$9,062,298.75	$9,030,337.63	$8,635,350.49	$9,184,884.40	$10,009,399.05

Defendants' Exhibit No. 2

[fol. 4066]

Alabama Power Company

Energy Sales, Output and Active Meters

1927–1936

	1927	1928	1929	1930	1931	1932	1933	
Energy Sales								
Residential	27,505,138	33,247,802	40,856,914	50,642,059	56,457,693	56,434,357	53,513,196	(
Rural	2,457	415,140	1,529,399	4,836,741	5,785,858	5,957,136	5,846,997	
Commercial	65,577,853	58,903,274	64,738,641	69,157,122	66,779,781	58,599,282	54,820,235	(
Industrial	651,751,082	647,391,200	668,854,417	638,150,060	669,736,166	649,725,214	714,147,613	6
Street Lighting	4,20,630	5,611,740	5,694,368	6,388,605	6,781,762	6,670,012	6,272,888	
Sub-Total	749,157,160	745,569,156	781,673,739	769,174,587	805,541,260	777,386,001	834,600,929	8
Other Utilities	723,697,267	602,438,379	652,047,341	727,601,927	684,979,843	387,122,111	536,534,804	5
Total	1,472,854,427	1,348,007,535	1,433,721,080	1,496,776,514	1,490,521,103	1,164,508,112	1,371,135,733	1,4
Company Use	27,495,169	21,521,634	22,575,732	27,653,810	33,024,756	24,778,970	22,967,032	
Lost & Unaccounted for	258,793,523	216,648,384	258,953,310	258,905,958	243,991,900	229,784,164	218,959,817	2
Exchange & Storage	.....	.....	.....	.....	.....	134,538,400	137,462,110	1
Total Output	1,759,143,119	1,586,177,553	1,715,250,122	1,783,336,282	1,767,537,759	1,553,609,646	1,750,524,692	1,8
System Peak—Total	343,180	331,200	370,000	412,800	402,810	389,120	390,720	
System Peak—In Alabama	226,900	245,580	260,746	268,774	264,477	254,372	253,300	
Customers Active Meters (End of Period):								
Residential	65,530	69,883	73,373	74,928	73,199	68,883	69,368	
Rural	75	1,532	2,735	6,133	6,212	5,728	7,308	
Commercial	22,290	23,777	26,337	25,978	24,462	22,987	22,187	
Industrial	463	558	700	773	632	537	650	
Street Lighting	375	493	512	199	170	164	145	
Sub-Total	88,733	96,243	103,657	108,011	104,675	98,299	99,658	
Other Utilities	15	18	17	51	51	51	51	
Total	88,748	96,261	103,674	108,062	104,726	98,350	99,709	

DEFENDANTS' EXHIBIT No. 2

Alabama Power Company

Energy Sales, Output and Active Meters

1927–1936

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
.....	27,505,138	33,247,802	40,856,914	50,642,059	56,457,693	56,434,357	53,513,196	63,952,314	77,332,982	93,203,970
.....	2,457	415,140	1,529,399	4,836,741	5,785,858	5,957,136	5,846,997	7,807,202	10,646,127	14,933,997
.....	65,577,853	58,903,274	64,738,641	69,157,122	66,779,781	58,599,282	54,820,235	61,053,892	70,857,562	82,326,224
.....	651,751,082	647,391,200	668,854,417	638,150,060	669,736,166	649,725,214	714,147,613	685,162,160	764,492,181	948,565,825
.....	4,20,630	5,611,740	5,694,368	6,388,605	6,781,762	6,670,012	6,272,888	6,174,174	6,295,323	6,237,739
.....	749,157,160	745,569,156	781,673,739	769,174,587	805,541,260	777,386,001	834,600,929	824,149,742	929,624,175	1,145,267,755
.....	723,697,267	602,438,379	652,047,341	727,601,927	684,979,843	387,122,111	536,534,804	578,473,106	749,239,514	743,409,805
.....	1,472,854,427	1,348,007,535	1,433,721,080	1,496,776,514	1,490,521,103	1,164,508,112	1,371,135,733	1,402,622,848	1,678,863,689	1,888,677,560
.....	27,495,169	21,521,634	22,575,732	27,653,810	33,024,756	24,778,970	22,967,032	23,884,897	26,527,630	30,930,782
.....	258,793,523	216,648,384	258,953,310	258,905,958	243,991,900	229,784,164	218,959,817	241,994,206	267,057,986	314,777,994
.....	.....	.....	.....	.....	.....	134,538,400	137,462,110	156,655,494	77,184,551	193,457,782
.....	1,759,143,119	1,586,177,553	1,715,250,122	1,783,336,282	1,767,537,759	1,553,609,646	1,750,524,692	1,825,157,445	2,049,633,856	1,427,304,118
.....	343,180	331,200	370,000	412,800	402,810	389,120	390,720	391,340	408,120	491,900
.....	226,900	245,580	260,746	268,774	264,477	254,372	253,300	288,080	293,800	337,510
.....	65,530	69,883	73,373	74,928	73,199	68,883	69,368	75,416	79,882	83,514
.....	75	1,532	2,735	6,133	6,212	5,728	7,308	8,441	10,088	15,562
.....	22,290	23,777	26,337	25,978	24,462	22,987	22,187	22,991	23,350	23,823
.....	463	558	700	773	632	537	650	663	688	665
.....	375	493	512	199	170	164	145	139	129	123
.....	88,733	96,243	103,657	108,011	104,675	98,299	99,658	107,650	114,137	123,687
.....	15	18	17	51	51	51	51	49	50	52
.....	88,748	96,261	103,674	108,062	104,726	98,350	99,709	107,699	114,187	123,739

DEFENDANTS' EXHIBIT No. 2

[fol. 4067] Alabama Power Company

Electric Revenue and Expense

9 Months Ending September 30, 1937

Electric Revenue:	
Residential	$2,443,249.84
Rural	638,465.24
Commercial	2,202,629.76
Industrial	5,776,695.39
Street Lighting	227,780.18
Sub-Total	11,288,820.41
Other Utilities	3,175,394.19
Total	14,464,214.60
Miscellaneous Revenue	442,109.76
Total Electric Revenue	14,906,324.36
Electric Operating Expense:	
Production	1,270,906.75
Transmission	358,839.80
Distribution	828,794.61
Utilization	—
Commercial	293,211.18
New Business	571,635.60
General	1,019,692.85
Uncollectible Bills	36,000.00
Taxes	2,189,733.05
Total Operating Expense	6,568,813.84
Electric Gross Income	$8,337,510.52

DEFENDANTS' EXHIBIT No. 2

[fol. 4068] Alabama Power Company

Energy Sales, Output and Active Meters

9 Months Ending September 30, 1937

Energy Sales:	
Residential	81,381,177
Rural	14,871,488
Commercial	69,615,915
Industrial	743,070,937
Street Lighting	5,272,433
Sub-Total	914,211,950
Other Utilities	675,516,940
Total	1,589,728,890
Company Use	27,048,647
Lost & Unaccounted for	240,580,459
Exchange & Storage	128,216,587
Total Output	1,985,574,583
System Peak-Total	505,900
System Peak-In Alabama	343,520
Customers Active Meters (End of Period):	
Residential	88,334
Rural	21,245
Commercial	24,276
Industrial	745
Street Lighting	105
Sub-Total	134,705
Other Utilities	54
Total	134,759

(Here follow two pasters, side folios 4069 and 4070)

DEFENDANTS' EXHIBIT

[fol. 4069]

Birmingham Electric Compa

	12 Mos. Ending July 1937				
	Amount	Pct. increase or decrease*	1936	1935	1934
M. K.w.h. Sold:					
Residential	41,204	21.38	36,874	30,599	26,127
Commercial	51,938	17.50	47,996	40,731	36,303
Industrial	126,834	25.59	116,429	84,780	82,832
Farm	172	1.18	170	161	157
Street Ltg	2,911	2.07	2,870	2,839	2,719
Other Govt. & Mun	3,844	3.25	3,775	3,631	3,150
Sub Total	226,903	22.07	208,114	162,741	151,288
Other Utilities Interchange Interdepartmental	34,019	8.47†	35,645	36,712	36,930
Grand Total	260,922	16.98	243,759	199,453	188,218
Number of Customers:					
Residential	58,783	8.89	56,149	51,306	50,879
Commercial	8,160	3.92	8,023	7,802	7,728
Industrial	440	16.71	398	344	333
Farm	30	6.25†	27	27	19
Street Ltg	6	.....	6	6	6
Other Govt. & Mun	373	7.49	368	351	313
Grand Total	67,792	8.30	64,971	59,836	59,278
Company Uses	1,795	8.66	1,756	1,483	1,332
Lost & Unaccounted for M. K.w.h.	34,948	7.43	34,042	29,888	25,610
Total Output M. K.w.h	297,665	15.72	279,557	230,824	215,160
System Peak Demand—K.w.—Gross	56,198	12.67	52,588	45,712	42,310
Net	56,198	12.67	52,588	45,712	42,310

* Per cent increase or decrease represents increase or decrease over 12 Months Ending July 31, 1936.
† Red in copy.

BIT No. 2

Company

	1933	1932	1931	1930	1929	1928	1927
27	21,760	24,032					
33	33,750	37,024					
32	74,084	70,074		Not Available According to Present Classification			
37	187	187					
9	1,904	2,716					
50	2,753	3,009					
38	134,438	137,042	186,236	205,095	211,962	215,002	202,467
50	33,270	34,674	37,808	43,072	46,548	48,330	47,971
38	167,708	171,716	224,044	248,167	258,510	263,332	250,438
79	48,448	43,511					
28	7,058	6,954					
33	926	322		Not Available According to Present Classification			
9	31	37					
6	6	6					
3	275	250					
78	56,744	51,080	57,535	59,105	65,223	64,507	58,855
32	1,122	1,088	1,112	951	1,271	1,336	1,211
0	27,182	25,478	27,067	28,320	33,376	34,167	37,424
30	196,012	198,282	252,223	277,438	293,157	298,835	289,073
10	37,983	41,200	47,200	52,430	54,820	53,720	53,811
10	37,983	41,200	47,200	52,430	54,820	53,720	53,811

6.

4010B

DEFENDANTS' EXHIBIT No. 2

[fol. 4070]

Birmingham Electric Company

	12 Mos. Ending July 1937											
	Amount	Pct. increase or decrease*	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927
Operating Revenues:												
Residential	1,611,491	7.99	1,545,486	1,451,375	1,364,453	1,288,233	1,539,834					
Commercial	1,527,542	12.07	1,439,268	1,300,834	1,204,909	1,137,241	1,319,362					
Industrial	1,364,268	19.79	1,251,911	1,013,991	986,364	893,273	953,191		Not Available According to Present Classification			
Farm	5,480	4.43†	5,784	5,265	5,302	6,270	6,469					
Street Lighting	105,986	1.11	104,465	103,985	115,343	138,777	173,224					
Other Govt. & Mun	102,715	3.70	99,781	100,532	90,602	80,654	86,552					
Sub Total	4,717,482	12.22	4,446,695	3,975,982	3,766,973	3,544,448	4,078,632	4,845,137	5,183,973	5,148,507	4,945,902	4,435,842
Other Utilities												
Interchange												
Interdepartmental Sales	157,420	5.51†	155,617	178,215	180,947	190,237	241,518	243,456	274,114	288,039	297,667	**
*** Misc. Revenues	46,778	.....	13,214†	23,727	20,113	5,795	18,760†	17,401	4,918†	17,579	33,428	4,685
Sub Total	204,198	23.72	142,403	201,942	201,060	196,032	222,758	260,857	269,196	305,618	331,095	4,685
Grand Total	4,921,680	12.65	4,589,098	4,177,924	3,968,033	3,740,480	4,301,390	5,105,994	5,453,169	5,454,125	5,276,997	4,440,527
Operating Expenses:												
Production	1,674,952	14.12	1,557,315	1,407,620	1,333,429	1,248,399	1,385,303	1,620,028	1,765,230	1,815,239	1,833,666	1,488,899
Transmission	15,748	3.61	16,650	14,465	14,059	14,103	14,573	16,010	17,839	18,775	18,631	22,790
Distribution	263,152	12.00	193,773	181,203	173,220	130,370	135,317	139,886	152,304	162,661	165,186	171,203
Utilization			51,606	48,902	49,569	39,685	42,705	43,657	49,705	48,248	41,805	36,926
Commercial	186,325	7.36	179,219	175,810	180,700	164,120	170,048	186,827	212,477	223,357	176,605	138,276
New Business	242,132	14.95	219,300	205,199	184,671	82,271	75,835	114,193	167,229	106,991	58,772	39,880
General	352,564	1.92	359,911	337,199	335,255	350,346	321,081	347,661	349,599	262,764	330,030	304,650
Taxes	631,669	17.01	549,019	526,996	517,785	510,749	491,197	553,718	593,174	593,192	375,819	397,327
Total	3,366,542	12.67	3,126,793	2,897,394	2,788,698	2,540,043	2,636,059	3,021,980	3,307,557	3,231,227	3,000,514	2,599,951
Net Operating Rev.	1,555,138	12.61	1,462,305	1,280,530	1,179,335	1,200,437	1,665,331	2,084,014	2,145,612	2,222,898	2,276,483	1,840,576

* Per cent increase or decrease represents increase or decrease over 12 Months Ending July 31, 1936.

** Interdepartmental sales handled as operating expense elimination prior to 1928.

*** Merchandise and Jobbing Net included prior to January 1, 1937. Forfeited Discounts included since January 1, 1937; prior to that date included in classes of revenue on apportionment basis.

† Red in copy.

Defendants' Exhibit No. 2

[fol. 4071] Kentucky-Tennessee Light & Power Company

Operating Revenue	1934	1936
Domestic	$208,178.22	$303,811.89
Commercial	152,368.14	228,362.65
Power	106,084.22	155,131.46
Electric companies—non-affiliated	6,454.65	8,477.88
Street Lighting	21,566.16	24,503.05
Miscellaneous municipalities	20,860.43	27,733.79
Total from Energy Sales	515,511.82	748,020.72
Miscellaneous Elec. Rev	1,747.62	15,895.15
Total Operating Revenue	517,259.44	763,915.87
Operating Expenses:		
Production	165,065.91	244,116.62
Transmission	15,462.52	20,416.95
Distribution	41,705.44	62,212.51
Utilization	4,561.27	6,563.21
Commercial	33,532.30	43,254.42
New Business	23,749.84	59,499.14
General	76,972.04	122,875.73
Total	361,049.32	558,938.58
Net Operating Revenue	156,210.12	204,977.29
K.w.h. Sold—Total	11,266,500	18,242,943
K.w.h. Output	14,807,774	23,248,730

Note: 1936 data from Company's report, no photostatic copy available.

4013

Defendants' Exhibit No. 2

[fol. 4072]

Memphis Power & Light Company

Electric	1930	1931	1932	1933	1934	1935	1936	1937**
Operating Revenues:								
Residential	$1,483,195.03	$1,501,870.48	$1,470,824.76	$1,270,956.82	$1,250,229.63	$1,369,055.23	$1,512,210.83	$1,608,723.22
Commercial	2,158,360.96	2,036,372.60	1,854,665.23	1,675,569.58	1,680,811.25	1,810,111.39	2,001,865.16	2,126,038.91
Industrial	728,045.36	682,254.33	581,855.10	543,363.12	648,642.00	640,294.54	728,324.93	856,895.39
Farm	16,795.90	13,956.87	13,287.29	11,082.71	11,504.53	11,885.65	30,920.19	42,350.29
Government & Municipal	274,785.69	328,906.37	320,666.73	289,251.04	291,209.68	304,991.60	314,664.47	331,836.95
Public Utilities	217,297.18	216,407.83	200,871.41	189,375.25	185,748.92	180,644.61	180,608.44	254,838.26
Sub-total	4,878,480.12	4,779,768.48	4,442,170.52	3,979,598.52	4,068,146.01	4,316,983.02	4,768,594.02	5,220,683.02
Interchange	86,052.04	71,299.94	60,588.85	54,771.29	55,383.92	57,254.28	79,398.31	15,518.52
Interdepartmental	25,859.28	25,404.20	25,640.80	25,304.52	25,270.02	26,115.44	.....	.....
Total Energy Sales	4,990,391.44	4,876,472.62	4,528,400.17	4,059,674.33	4,148,799.95	4,400,352.74	4,847,992.33	5,236,201.54
Miscellaneous Revenues	5,831.13	8,300.88	7,668.24	6,616.94	7,552.63	11,143.79	8,008.03	36,556.25
Merchandise & Jobbing—Net	35,217.43†	14,795.23†	15,696.33†	11,952.85	9,396.54	3,737.83	12,611.28	4,288.07
Total Operating Revenues	$4,961,005.14	$4,869,978.27	$4,520,372.08	$4,078,244.12	$4,165,749.12	$4,415,234.36	$4,868,611.64	$5,277,045.86
Operating Expenses:								
Production & Transmission	$816,161.01	$819,681.25	$817,829.07	$722,595.87	$691,933.33	$690,429.75	$768,298.77	$831,200.17
Distribution	365,707.33	297,397.38	247,149.08	195,623.15	209,396.30	236,785.35	260,282.56	310,863.16
Utilization	99,009.71	92,797.00	107,745.56	104,876.22	103,706.30	109,753.10	108,944.88	99,746.00
Customers	147,885.34	165,138.74	157,373.17	164,209.31	146,879.54	135,609.30	141,900.97	141,075.86
New Business	66,697.86	97,263.27	90,125.78	89,707.98	144,496.27	147,877.50	181,329.63	177,491.26
General	363,573.73	384,360.68	358,094.85	321,789.84	362,355.35	368,594.63	421,870.11	408,801.52
Total Operating Expenses	1,859,034.98	1,856,638.32	1,778,317.51	1,598,802.37	1,659,767.09	1,689,049.63	1,882,626.92	1,969,177 97
Net Operating Revenue	3,101,970.16	3,013,339.95	2,742,054.57	2,479,441.75	2,506,982.03	2,726,184.73	2,985,984.72	3,307,867.89
Taxes	583,051.62	601,490.29	559,812.55	515,119.71	619,065.93	692,065.54	799,988.33	989,112.64
Gross Operating Income	$2,518,918.54	$2,411,849.66	$2,182,242.02	$1,964,322.04	$1,887,916.10	$2,034,119.19	$2,185,996.39	$2,318,755.25
Average No. of Customers:								
Residential		38,036	37,187	36,493	40,350	41,977	43,452	44,958
Commcreial		9,319	9,179	9,168	8,981	8,996	9,201	9,359
Industrial		185	189	190	154	135	133	142
Farm		335	347	353	369	377	762	1,019
Government & Municipal		110	154	142	243	289	297	318
Public Utilities		3	3	3	3	3	2	4
Interchange		2	2	2	2	2	2	
Total Customers		47,990	47,061	46,351	50,102	51,779	53,849	55,800
Total K.w.h. Sold:								
Residential	21,969,960	22,585,254	22,993,638	22,114*	24,714*	27,773*	31,317*	33,936*
Commercial	49,973,194	47,419,691	43,639,111	40,842	44,861	48,777	55,044	58,621
Industrial	43,939,731	42,280,839	34,520,348	34,369	44,752	43,438	51,783	61,841
Farm	228,652	216,232	215,203	199	244	261	696	938
Government & Municipal	7,404,718	8,708,119	8,817,305	8,256	7,648	8,029	8,485	9,421
Public Utility	32,442,704	29,236,573	26,915,072	25,250	27,995	28,028	28,371	44,181
Interchange	13,699,440	14,812,920	11,331,720	9,641	11,059	12,142	18,071	3,448
Interdepartmental	1,191,188	1,275,035	1,221,314	1,190	1,234	1,374		
Total K.w.h. Sold	170,849,586	166,534,713	149,653,711	141,861	162,507	169,822	193,767	212,386
Aver. Consumption per Res. Customer	573.01	593.7	618.3	.606	.612	.662	.721	.755
Aver. Consumption per Farm Customer	699.24	645.4	620.1					

* M K.w.h.
** 12 months ending July.
† Red in copy.

Defendants' Exhibit No. 2

[fol. 4073]

Tennessee Public Service Company

	1930	1931	1932	1933	1934	1935	1936	12 Months through July 1937
Operating Revenues:								
Residential	$180,065.63	$807,337.90	$790,734.85	$711,219.74	$701,043.88	$724,781.93	$842,081.22	$912,380.58
Commercial	174,501.69	773,855.57	708,325.18	656,651.74	628,824.99	647,195.19	721,082.75	779,453.71
Industrial	190,780.15	874,968.05	709,247.83	651,293.60	630,614.02	689,093.65	817,366.38	912,116.27
Farm	8,646.76	34,449.81	36,993.30	31,934.70	24,466.46	23,011.39	42,068.05	51,344.78
Government & Municipal	35,622.51	155,831.75	158,793.72	161,242.87	173,354.90	182,794.23	200,769.24	206,964.05
Public Utilities	.....	.....	.....	15,829.30	17,843.24	18,897.23	20,911.76	22,702.96
Sub-Total	589,616.74	2,646,443.08	2,404,094.88	2,228,171.95	2,176,147.49	2,285,773.62	2,644,279.40	2,884,962.35
Interchange	10,545.00	13,178.77	15,208.97	.....	.....	.....	.....	.....
Interdepartmental	10,772.69	53,471.83	47,364.21	42,927.67	43,943.49	37,671.10	34,997.19	33,254.82
Total Energy Sales	610,934.43	2,713,093.68	2,466,668.06	2,271,099.62	2,220,090.98	2,323,444.72	2,679,276.59	2,918,217.17
Miscellaneous Revenues	16,284.17	43,990.16	20,351.50	20,448.37	14,847.49	15,145.70	17,356.23	18,522.51
Merchandise & Jobbing—Net	2,845.11†	16,293.00†	13,086.01†	3,642.62†	4,019.54†	2,605.97	3,056.15	1,913.41
Total	624,373.49	2,740,790.84	2,473,933.55	2,287,905.37	2,230,918.93	2,341,196.39	2,699,688.97	2,938,653.09
Operating Expenses:								
Production & Transmission	146,968.47	727,885.29	627,694.14	611,213.78	630,442.98	698,304.43	826,249.43	929,486.38
Distribution	35,390.78	127,713.33	122,423.94	135,738.52	108,604.82	122,964.29	138,813.76	132,835.19
Utilization	5,144.54	23,913.44	24,210.14	24,873.87	23,770.12	25,332.62	24,950.63	25,922.65
Customers	21,772.51	80,457.29	81,749.18	90,698.40	100,087.35	92,545.27	92,544.83	92,897.14
New Business	7,257.14	43,205.77	52,272.70	52,219.03	47,006.17	91,492.74	135,961.32	129,263.91
General	40,706.41	193,845.35	185,723.88	205,576.62	288,321.19	266,810.32	288,052.85	272,733.89
Total	257,239.85	1,197,020.47	1,094,073.98	1,120,320.22	1,198,232.63	1,297,449.67	1,506,572.82	1,583,139.16
Net Revenue from Operation before Taxes	367,133.64	1,543,770.37	1,379,859.57	1,167,585.15	1,032,686.30	1,043,746.72	1,193,116.15	1,355,513.93
Taxes	.....	269,010.79	214,096.45	229,417.04	313,889.13	331,113.30	363,815.03	421,154.77
Net Revenue from Operation	$367,133.64	$1,274,759.58	$1,165,763.12	$938,168.11	$718,797.17	$712,633.42	$829,301.12	$934,359.16
Average No. of Customers:								
Residential	21,303	21,269	20,726	19,989	21,767	22,953	24,707	25,974
Commercial	3,428	3,436	3,349	3,260	3,343	3,479	3,605	3,711
Industrial	261	259	244	215	220	231	304	353
Farm	384	471	503	480	456	513	1,021	1,275
Government & Municipal	165	158	170	183	197	216	242	252
Public Utilities	.....	.....	.....	1	1	1	1	1
Interchange	2	1	1	.....	.....	.....	.....	.....
Total	25,543	25,594	24,993	24,128	25,984	27,393	29,880	31,566
Total K.w.h. Sold:								
Residential	2,551,239	11,693,766	11,748,567	11,409,000	13,550,000	16,887,000	21,159,000	23,660,000
Commercial	3,131,038	15,343,092	14,160,338	13,105,000	15,306,000	18,546,000	22,600,000	25,563,000
Industrial	12,447,191	60,971,960	44,283,375	43,270,000	43,593,000	50,948,000	61,843,000	72,736,000
Farm	128,336	577,568	634,841	563,000	545,000	651,000	1,214,000	1,528,000
Government & Muncipal	790,748	2,911,455	3,122,210	3,237,000	4,093,000	4,787,000	5,423,000	5,503,000
Public Utilities	.....	.....	.....	1,223,000	1,424,000	1,530,000	1,731,000	1,910,000
Interchange	694,500	957,877	1,160,897	.....	.....	.....	.....	.....
Interdepartmental	1,600,853	8,090,444	7,070,747	6,341,000	6,804,000	6,108,000	5,762,000	5,582,000
Total	21,343,905	100,546,162	82,180,975	79,148,000	85,315,000	99,457,000	119,732,000	136,482,000

Note: Tennessee Public Service Company acquired Knoxville Power and Light Company as of November 1, 1930.
† Red in copy.

[fol. 4074]

Defendants' Exhibit No. 2

Mississippi Power Company

Comparative Income Statement

	7 Months Ended July 1937		1936		1935		1934		1933		1932		
	Amount	% Inc.	Amount	% Inc. over 1935	Amount	% Inc. over 1934	Amount	% Inc. over 1933	Amount	% Inc. over 1932	Amount	% Inc. over 1931	Amo
Operating Revenue—Electric:													
Residential	630,675.50	15.80	983,853.34	12.27	876,294.06	7.87	812,390.86	6.26†	866,632.14	8.50†	947,147.64	5.41†	1,001,3
Rural	.....	.....	.....	.....	.....	.....	48,094.99	11.08†	54,086.14	15.75†	64,192.82	9.20†	70.6
Commercial	767,151.40	11.68	1,231,524.40	9.08	1,129,032.53	4.59	1,079,452.01	5.30	1,025,024.11	8.01†	1,114,312.59	12.20†	1,269.2
Industrial (Note D)	360,170.83	25.90	656,248.40	12.67	445,899.92	1.07	441,193.63	11.51†	498,606.54	5.73†	528,924.63	8.50†	578.0
Street Lighting	83,314.71	2.16	140,475.58	3.82	134,014.49	1.09	132,568.63	6.80†	142,239.16	19.54†	176,794.18	16.55†	211.8
Sub-Total	1,841,312.44	15.14	2,921,101.72	12.99	2,585,241.00	2.85	2,513,700.12	2.82	2,586,588.09	8.64†	2,831,371.86	9.55†	3,131.1
Other Utilities	30,925.88	4.16	58,364.23	3.67	56,299.28	5.43	53,402.26	21.32†	67,874.40	5.38†	71,729.93	11.73†	81.2
Misc'l. Electric Revenue	35,638.05	35.30†	79,976.23	1.53†	94,609.13	36.50	69,315.65	25.19	55,366.05	93.99	28,540.03	20.36†	35.8
Total Electric Revenue	1,907,876.37	13.30	3,059,442.18	11.82	2,736,149.41	3.78	2,636,418.03	2.71†	2,709,828.54	7.57†	2,931,641.82	9.75†	3,248.2
Operating Expenses—Electric:													
Generation	113,252.38	15.04	169,147.08	18.71	142,483.42	.54	141,716.55	3.54†	146,921.45	13.73†	170,293.66	439.85	31.5
Purchased Energy	359,316.41	10.05	573,578.32	9.09	525,775.07	4.20	504,575.56	6.32†	538,633.93	2.99†	555,209.07	30.34†	796.9
Transmission	35,440.38	17.16	60,745.52	7.73	56,388.92	3.18†	58,238.80	13.93†	67,662.51	4.85†	71,112.07	19.89†	88.7
Production & Trans.—General (Note A)	.....	100.00†	6,726.19	6.24	6,331.17	17.26	5,399.08	241.43	1,581.28	38.24†	2,560.67	20.82†	3.2
Total Production & Transm.	508,009.17	10.64	810,197.11	10.84	730,978.58	2.96	709,929.99	5.94†	754,798.17	5.55†	799,175.47	13.18†	920.5
Distribution	149,351.91	59.14	170,196.27	1.38	167,887.27	2.40†	172,019.31	6.18†	182,352.63	4.45†	191,898.79	7.75	178.1
Utilization	.....	100.00†	58,669.55	5.21	55,766.55	8.30	51,490.78	4.70	49,178.07	8.48†	53,739.37	.23†	53.8
Commercial (Note B)	87,304.34	127.63	69,240.90	7.36	64,493.44	6.23	60,709.70	6.13†	64,673.67	25.54†	86,853.24	28.77†	121.9
New Business	64,538.58	25.65	105,875.41	44.61	73,213.35	39.22	52,582.12	5.58	49,803.33	4.12	47,830.85	30.50†	68.8
General	159,546.45	21.29†	353,227.87	5.32†	373,072.02	5.27	354,398.51	6.26	333,519.23	4.88†	350,626.86	3.50†	363.3
Taxes—Elec. (Note C)	228,981.89	15.74	396,473.72	19.55	331,652.98	2.99†	341,859.91	3.48	330,353.52	3.44	318,979.95	11.25	286.7
Total Oper. Expenses & Taxes	1,197,732.34	11.22	1,963,880.83	9.28	1,797,064.19	3.10	1,742,990.32	1.28†	1,765,678.62	4.51†	1,849,104.53	7.24†	1,993.3
Electric Gross Income	710,144.03	1.70	1,095,561.35	16.66	939,085.22	5.11	893,427.71	5.37†	944,149.92	12.78†	1,082,537.29	13.74†	1,254.9

Note A—Less Expense Transferred to Bus & Railway Departments.
Note B—Commercial Expense in 1937 is named Customers Accounting and does not include same expenses as in prior years.
Note C—Part of Taxes in 1937 distributed to functional accounts.
Note D—Prior to 1930 Industrial Revenue was included with Commercial.

† Red in copy.

IBIT No. 2

Company

e Statement

1932		1931		1930		1929		1928		1927	
% Inc. over 1932	Amount	% Inc. over 1931	Amount	% Inc. over 1930	Amount	% Inc. over 1929	Amount	% Inc. over 1928	Amount	% Inc. over 1927	Amount	% Inc. over 1926
8.50†	947,147.64	5.41†	1,001,342.09	2.71	974,961.70	9.56	889,877.25	20.46	738,755.24	23.13	599,995.30	26.06
15.75†	64,192.82	9.20†	70,698.09	18.32	59,775.99	47.64	40,482.60	189.25	13,995.41	4,853.98	282.51	100.00
8.01†	1,114,312.59	12.20†	1,269,229.94	7.37†	1,370,248.13	33.94†	2,074,193.44	21.66	1,704,825.50	22.19	1,395,208.75	23.33
5.73†	528,924.63	8.50†	578,057.51	7.43†	624,434.01	100.00	.....	.....	.....	.....	.....	.....
19.54†	176,794.18	16.55†	211,847.31	1.83†	215,805.94	.73	214,239.56	17.27	182,696.33	26.61	144,288.91	18.40
8.64†	2,831,371.86	9.55†	3,131,171.94	3.51†	3,245,225.77	.82	3,218,792.85	21.91	2,640,272.48	23.39	2,139,775.47	23.75
5.38†	71,729.93	11.73†	81,264.95	11.65†	91,979.80	80.18	51,049.08	15.90	44,047.13	11.21	39,609.04	1,485.20
93.99	28,540.03	20.36†	35,836.50	12.42†	40,917.19	523.88	6,558.48	32.04†	9,651.53	28.44	7,512,75	404.14†
7 57†	2,931,641.82	9.75†	3,248,273.39	3.84†	3,378,122.76	3.10	3,276,400.41	21.62	2,693,971.14	23.19	2,186,897.26	26.48
13.73†	170,293.66	439.85	31,544.01	61.58†	82,103.33	24.59†	108,884.29	24.75†	144,688.63	35.05†	222,768.44	38.72†
2.99†	555,209.07	30.34†	796,976.95	.75	791,066.91	4.45	757,396.26	27.98	591,829.10	31.28	450,799.45	195.09
4.85†	71,112.07	19.89†	88,766.83	12.97†	101,993.31	.91†	102,926.22	9.16	94,288.64	73.05	54,486.60	91.90
38.24†	2,560.67	20.82†	3,233.95	142.41	7,625.20†	54.80	16,872.98†	13.89	19,594.34†	15.98†	7,542.76†	37.62
5.55†	799,175.47	13.18†	920,521.74	4.86†	967,538.35	1.60	952,333.79	17.40	811,212.03	12.58	720,511.73	35.28
4.45†	191,898.79	7.75	178,130.17	28.25	138,783.71	2.58	138,292.74	16.51	116,125.81	22.64	94,696.32	22.94
8.48†	53,739.37	.23†	53,863.99	151.41	21,424.25	54.99†	47,594.52	19.89	39,698.25	15.82	34,274.88	41.71
25.54†	86,853.24	28.77†	121,935.16	7.75†	132,177.32	15.38	114,552.62	24.51	92,006.85	28.64	71,523.31	37.93
4.12	47,830.85	30.50†	68,819.85	111.63	32,518.69	47.40	22,060.64	54.99	14,233.22	48.90	9,559.06	3.27
4.88†	350,626.86	3.50†	363,362.23	14.42†	424,597.58	28.08	331,514.31	35.75	244,211.28	8.69	224,675.71	10.52
3.44	318,979.95	11.25	286,710.14	32.10†	422,295.77	31.88	320,207.57	70.32	187,997.73	21.90	154,217.25	1.83
4.51†	1,849,104.53	7.24†	1,993,343.28	6.82†	2,139,335.67	11.22	1,923,556.19	27.77	1,505,485.17	14.97	1,309,448.26	25.84
12.78†	1,082,537.29	13.74†	1,254,930.11	1.30	1,238,787.09	8.43†	1,352,844.22	13.83	1,188,485.97	35.45	877,449.00	27.44

Defendants' Exhibit No. 2

[fol. 4075]

Mississippi Power Company

Operating Statistics

	7 Months Ending July 1937		1936		1935		1934		1933		1932	
	Amount	% Inc. over 7 Mo. 1936	Amount	% Inc. over 1935	Amount	% Inc. over 1934	Amount	% Inc. over 1933	Amount	% Inc. over 1932	Amount	% Inc. over 1931
Number of Customers:												
Residential	29,667	9.16	27,715	7.77	25,716	.73†	25,906	2.20	25,348	4.15†	26,445	5.35
Rural	.....	.....	.....	.....	.....	.....	.....	100.00†	988	8.77†	1,083	9.30
Commercial	9,048	5.87	8,705	7.05	8,132	.18†	8,147	.24†	8,167	.70	8,110	5.75
Industrial (Note A)	97	12.79	92	.....	92	23.97†	121	15.97†	144	1.37†	146	.....
Street Lighting	121	2.42†	124	.81	123	5.38†	130	7.80†	141	4.73†	148	.....
Sub Total	38,935	8.35	36,636	7.55	34,063	.70†	34,304	1.39†	34,788	3.18†	35,932	5.52
Other Utilities	29	3.33†	30	6.25†	32	.....	32	5.88†	34	6.25	32	10.34
Total	38,962	8.34	36,668	7.54	34,095	.70†	34,336	1.40†	34,822	3.18†	35,964	5.51
M KWH Sold:												
Residential	13,826	21.15	21,004	24.78	16,833	9.44	15,381	9.29	14,073	3.66†	15,262	5.12
Rural	.....	.....	.....	.....	.....	.....	.....	100.00†	725	17.61†	880	2.98
Commercial	19,264	20.97	29,711	18.23	25,129	9.63	22,922	8.54	21,119	3.61†	21,910	13.10
Industrials (Note A)	44,248	24.74	64,216	31.36	48,884	15.75	42,234	3.95	40,628	9.27	37,182	18.05
Street Lighting	1,446	9.46	2,322	5.98	2,191	.83	2,173	5.64†	2,303	20.94	2,913	11.65
Sub Total	78,784	22.85	117,253	26.03	93,037	12.49	82,710	4.90	78,848	.90	78,147	14.01
Other Utilities	2,289	10.47	3,908	12.78	3,465	15.15	3,009	9.94†	3,341	5.91†	3,551	9.96
Grand Total	81,073	22.46	121,161	25.55	96,502	12.58	85,719	4.29	82,189	.60	81,698	13.84
Co. Use & Transferred to Other Oper.	582	31.38	839	22.30	686	11.60†	776	34.07†	1,177	9.88†	1,306	7.31
Lost & Unaccounted for M KWH	16,236	7.89	26,141	12.92	23,149	10.54	20,941	1.39	20,653	.33†	20,722	7.07
Total Output M KWH	97,891	19.83	148,141	23.11	120,337	12.01	107,436	3.28	104,019	.28	103,726	12.49
System Peak Demand KW Gross	30,698	8.48	32,581	12.07	29,071	15.22	25,230	13.99	22,134	8.16†	24,100	5.52
System Peak Demand KW Net	30,688	17.19	29,455	11.69	26,373	14.62	23,010	4.46	22,027	8.19†	23,993	5.94

Note A—Prior to 1930 Industrial Customers & Sale of KWH was included with Commercial.

† Red in copy.

HIBIT No. 2

r Company

tatistics

1932		1931		1930		1929		1928		1927	
% Inc. over 1932	Amount	% Inc. over 1931	Amount	% Inc. over 1930	Amount	% Inc. over 1929	Amount	% Inc. over 1928	Amount	% Inc. over 1927	Amount	% Inc. over 1926
4.15†	26,445	5.35†	27,939	.30†	28,023	4.14	26,909	12.78	23,860	19.90	19,900	23.20
8.77†	1,083	9.30†	1,194	7.57	1,110	38.75	800	197.40	269	417.31	52	100.00
.70	8,110	5.75†	8,605	.26	8,583	.01†	8,584	24.82	6,877	24.45	5,482	47.48
1.37†	146	.....	146	28.07	114	100.00	.....	.....	.....	.....	.....	.....
4.73†	148	.....	148	.68	147	1.38	145	145.76	59	68.57	35	52.17
3.18†	35,932	5.52†	38,032	.14	37,977	4.28	36,438	17.30	31,065	21.97	25,469	28.04
6.25	32	10.34	29	70.59	17	466.67	3	.....	3	.....	3	200.00
3.18†	35,964	5.51†	38,061	.18	37,994	4.26	36,441	17.29	31,068	21.97	25,472	28.05
3.66†	15,262	5.12†	16,086	9.62	14,674	26.46	11,604	28.32	9,043	27.89	7,071	88.06
17.61†	880	2.98†	907	27.75	710	97.77	359	189.52	124	4,003.00	3	100.00
3.61†	21,910	13.19†	25,213	3.53†	26,135	64.89†	74,430	30.53	57,020	26.65	45,020	64.88
9.27	37,182	18.05†	45,372	6.19	42,729	100.00	.....	.....	.....	.....	.....	.....
20.94	2,913	11.65†	3,297	2.57†	3,384	8.36†	3,123	23.78	2,523	17.62	2,145	7.09
.90	78,147	14.01†	90,875	3.70	87,632	2.10†	89,516	30.28	68,710	26.68	54,239	64.02
5.91†	3,551	9.96†	3,944	19.15†	4,878	74.78	2,791	23.17	2,266	13.58	1,995	633.46
.60	81,698	13.84†	94,819	2.50	92,510	.22	92,307	30.05	70,976	26.22	56,234	68.67
9.88†	1,306	7.31†	1,409	1.47†	1,430	31.15†	2,077	2.42	2,028	46.70†	3,805	11.49
.33†	20,722	7.07†	22,298	2.78	21,695	5.86	20,494	9.65	18,691	21.37	15,400	42.78
.28	103,726	12.49†	118,526	2.50	115,635	.66	114,878	25.28	91,695	21.55	75,439	58.69
8.16†	24,100	5.52†	25,508	8.61†	27,912	.....	Not Available		Not Available		Not Available	
8.19†	23,993	5.94†	15,508	8.61†	27,912	.....	Not Available		Not Available		Not Available	

4017

Defendants' Exhibit No. 2

(fol 4076)

Mississippi Power & Light Company

	12 Mos. ending August, 1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927
Operating Revenues—Electric:											
Residential	$1,368,366	$1,204,422	$1,052,474	$1,064,692	$1,004,883	$1,055,553	$1,101,602	$1,049,445	$874,788	$666,072	$516,538
Commercial	1,322,637	1,196,227	1,042,909	1,082,139	998,060	1,104,314	1,275,050	1,382,003	971,238	838,560	727,373
Industrial	1,393,598	1,224,344	1,023,062	989,756	907,672	921,543	1,020,278	995,745	1,130,311	771,047	579,879
Farm	148,712	137,820	71,508	64,581	66,111	75,221	84,513	108,883	.....	.....	.....
Gov't. & Municipal	464,428	442,337	432,632	414,866	402,390	410,733	454,478	474,549	315,894	286,050	262,644
Sub-Total	4,697,741	4,205,150	3,622,585	3,616,033	3,379,115	3,567,364	3,935,921	4,101,626	3,292,231	2,561,730	2,086,434
Other Utilities	6,093	6,175	9,309	9,880	9,816	9,442	10,499	7,685	52,181	61,849	30,818
Interchange	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miscellaneous	24,523	20,203	28,210	26,157	13,630	16,806†	36,882	61,161	51,868	49,953	55,148
Grand Total	4,728,357	4,231,528	3,660,104	3,652,070	3,402,561	3,560,000	3,983,302	4,079,472	3,396,280	2,673,532	2,172,400
Operating Expenses—Electric:											
Production	1,228,113	1,101,619	919,156	831,138	770,638	816,746	949,860	987,351	829,372	664,584	545,363
Transmission	86,786	90,434	73,537	75,105	69,946	69,839	85,982	120,955	111,721	76,758	25,772
Distribution	257,309	203,459	154,977	145,034	114,755	103,800	142,454	164,552	134,898	98,386	93,016
Utilization	35,975	27,135	34,007	28,015	28,530	28,157	35,184	44,322	27,727	33,610	26,488
Commercial	126,167	115,099	97,675	94,067	124,776	167,076	143,890	131,091	100,325	69,424	59,005
New Business	205,402	252,927	209,764	142,198	84,151	81,576	110,254	76,033	41,621	22,167	20,130
General	427,446	398,478	406,615	398,554	372,528	329,033	345,910	424,801	399,795	369,210	335,379
Taxes	564,464	478,540	383,159	444,324	392,741	412,953	438,157	474,893	371,314	274,528	103,347
Total	2,931,662	2,667,691	2,278,890	2,158,435	1,958,065	2,009,180	2,251,691	2,423,998	2,016,774	1,608,667	1,208,500
Net Operating Revenue—Electric	1,796,695	1,563,837	1,381,214	1,493,635	1,444,496	1,550,820	1,731,611	1,655,474	1,379,506	1,064,865	963,900
Gross Operating Income (All Depts.)	$6,610,286	$5,941,216	$5,038,455	$4,812,938	$4,403,546	$4,591,181	$4,999,535	$5,066,573	$4,124,286	$3,218,871	$2,638,310

† Red in copy.

4018

Defendants' Exhibit No. 2

[fol. 4077]

Mississippi Power & Light Company

	12 Mos. ending August, 1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927
MKWH. Sold:											
Residential	24,580	21,336	18,062	15,619	14,065	15,236	16,276	14,963	10,735	7,205	4,677
Commercial	29,055	25,945	21,057	17,865	15,839	17,196	19,922	21,005	11,118	9,267	7,871
Industrial	96,811	87,673	71,926	62,394	52,601	50,625	55,759	48,601	36,908	22,532	16,693
Farm	4,000	3,686	1,777	1,360	1,263	1,512	1,627	2,071	.....	.....	.....
Gov't. & Municipal	18,097	16,574	16,170	14,730	14,383	14,031	13,579	13,903	9,973	9,374	8,298
Sub-Total	172,543	155,214	128,992	111,968	98,151	98,600	107,163	100,543	68,734	48,378	37,539
Other Utilities	240	215	279	272	250	228	223	166	5,857	6,733	3,134
Interchange	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miscellaneous	2,120	2,179	2,040	2,777	2,745	2,890	3,805	4,629	4,380	4,767	3,524
Grand Total	174,903	157,608	131,311	115,017	101,146	101,718	111,191	105,338	78,971	59,878	44,197
No. of customers at end of Yr.:											
Residential	34,733	32,508	28,224	27,261	27,292	24,682	25,681	25,790	25,352	19,931	15,933
Commercial	9,734	9,522	8,631	8,608	8,430	8,236	8,876	9,380	10,126	8,406	6,613
Industrial	1,049	1,186	816	806	804	816	834	796	1,828	1,433	991
Farm	1,625	1,264	1,131	822	859	905	1,026	1,117	.....	.....	.....
Gov't. & Municipal	820	891	874	849	809	782	757	749	197	210	155
Sub-Total	47,961	45,371	39,676	38,346	38,194	35,421	37,174	37,832	37,503	29,980	23,692
Other Utilities	2	2	2	3	2	2	2	2	1	1	1
Grand Total	47,963	45,373	39,678	38,349	38,196	35,423	37,176	37,834	37,504	29,981	23,693
Sold and Accounted for MKWH	175,740	158,340	131,926	115,503	101,523	102,151	111,836	105,942	79,392	59,917	44,197
Lost & Unaccounted for MKWH	38,425	38,304	32,539	31,865	31,145	30,076	34,597	32,846	24,357	17,582	11,210
Total Output MKWH	214,165	196,644	164,465	147,368	132,668	132,227	146,433	138,788	103,749	77,499	55,407
System Peak Demand–KW.–Gross											

4019

Defendants' Exhibit No. 2

[fol. 4078]

Tennessee Electric Power Company

	1930	1931	1932	1933	1934	1935	1936	12 Mos. to 7/31/37
Operating Revenues:								
Residential	$3,135,380.07	$3,274,979.71	$3,268,792.05	$3,044,131.30	$2,913,569.93	$3,422,441.49	$3,849,786.92	$4,174,022.19
Rural	.....	.....	.....	.....	.....	.....	.....	.....
Commercial Lt. & Pr.	3,052,589.92	3,003,637.07	2,670,156.49	2,530,856.22	2,540,786.56	2,728,666.55	3,081,033.90	3,274,634.35
Street Lighting	254,487.89	302,753.34	252,381.27	208,998.74	201,713.60	207,323.92	199,782.03	195,431.83
Industrial Power	4,137,013.64	3,641,840.62	2,974,281.91	3,077,153.76	3,563,931.82	3,877,241.53	4,424,145.06	4,742,795.37
Utility Corps.—Affiliated	50,354.27	231,409.00	15,000.00	15,302.40	208,825.60	149,370.20	63,251.70	47,986.74
Utility Corps.—Non-affiliated	705,054.38	257,358.18	91,728.02	82,327.82	91,460.00	128,262.22	212,218.86	212,229.77
Total Electric Sales	11,334,880.17	10,711,977.92	9,272,339.74	8,958,770.24	9,520,287.51	10,513,305.91	11,830,218.47	12,647,100.25
Miscellaneous Revenues	169,434.08	96,258.34	39,915.65	107,572.11	308,093.06	245,970.42	213,803.41	164,959.93
Total Electric Revenue	11,504,314.25	10,808,236.26	9,312,255.39	9,066,342.35	9,828,380.57	10,759,276.33	12,044,021.88	12,812,060.18
Operating Expenses:								
Production & Transmission	1,720,008.43	1,495,135.49	762,791.44	759,541.86	923,915.33	1,126,527.59	1,497,615.07	1,852,811.63
Distribution	471,549.03	448,458.39	389,862.80	374,660.16	514,584.56	596,995.94	760,918.79	*1,080,218.51
Utilization	146,971.22	133,692.08	128,576.39	145,678.31	186,593.80	187,954.34	184,755.25	.....
Commercial	306,836.77	282,107.18	248,935.82	235,242.24	248,567.04	280,311.12	293,804.44	378,117.37
New Business	240,684.81	241,657.06	210,675.25	284,840.96	536,200.76	681,961.02	779,496.50	706,071.07
General & Miscellaneous	834,560.30	582,321.52	683,880.71	661,765.83	765,776.44	860,937.63	933,839.61	924,577.15
Telephone Expense	2,703.77	2,530.42	.....	.....	.....	.....	.....	.....
Total Electric Expense	3,723,314.33	3,185,902.14	2,424,722.41	2,461,729.36	3,175,637.93	3,734,687.64	4,450,429.66	4,941,795.73
Net Operating Revenue	7,780,999.92	7,622,334.12	6,887,532.98	6,604,612.99	6,652,742.64	7,024,588.69	7,593,592.22	.....
Taxes	1,485,909.06	1,409,431.90	1,207,933.99	1,300,204.41	1,556,729.59	1,648,775.15	2,095,831.48	2,270,464.47
Gross Income	6,295,090.86	6,212,902.22	5,679,598.99	5,304,408.58	5,096,013.05	5,375,813.54	5,497,760.74	5,599,799.98
Number of Customers (Meters-Average No.):								
Residential	.....	91,730	90,180	86,214	91,156	97,694	104,870	110,596
Rural	.....	.....	.....	.....	.....	.....	.....	.....
Commercial Lt. & Pr.	.....	21,600	22,247	20,702	20,402	20,630	21,269	21,885
Street Lighting	.....	.....	.....	.....	90	.....	.....	.....
Industrial Power	.....	2,773	936	760	733	738	706	606
Utility Corps.—Affiliated	.....	.....	.....	.....	1	1	1	1
Utility Corps.—Non-Affiliated	.....	.....	.....	.....	5	8	10	10
Other Meters	.....	.....	103	96	.....	.....	.....	.....
Total	.....	116,103	113,466	107,772	112,387	119,071	126,856	133,098
KWH Sold:								
Residential	48,661,297	52,831,002	53,305,755	52,734,573	70,565,799	94,319,426	123,101,140	142,670,480
Commercial Lt. & Pr.	93,598,665	58,815,541	54,905,079	55,510,613	67,433,885	81,437,222	98,295,064	106,953,866
Street Lighting	3,829,959	6,422,952	4,389,793	3,503,152	3,811,185	4,721,814	4,021,370	3,785,976
Industrial Power	326,510,640	309,274,010	234,721,302	266,677,888	330,770,521	367,988,257	446,871,399	493,389,080
Utility Corps.—Affiliated	13,647,690	115,187,850	1,368,200	6,151,200	59,412,800	22,822,600	24,095,848	16,463,370
Utility Corps.—Non-Affiliated	98,948,454	43,306,883	13,946,685	6,692,200	7,313,841	10,448,100	30,844,005	30,282,500
Total	585,196,705	585,838,238	362,636,814	391,269,626	539,308,031	581,737,419	727,228,826	793,545,272

* Under classification of Accounts adopted by Federal Power Commission January 1, 1937, no group was provided for Utilization. In twelve (12) months, ending 7/31/37, Utilization is included under Distribution.

4020

Defendants' Exhibit No. 2

[fol. 4079]

West Tennessee Power and Light

	1928	1929	1930	1931	1932	1933	1934	1935	1936	*1937
Operating Revenues:										
Residential	$170,530.91	$192,330.16	$198,657.26	$212,562.83	$209,433.97	$184,326.55	$177,932.07	$195,359.65	$203,471.56	$196,878.51
Commercial	169,531.93	192,365.87	215,986.23	206,648.71	185,542.23	159,474.80	153,638.13	179,501.96	204,080.69	205,675.89
Industrial	160,146.75	182,145.26	138,667.96	119,299.26	121,256.74	125,592.11	125,244.72	135,280.58	151,981.51	161,802.52
Farm	.....	.....	13,015.56	14,524.86	14,953.04	13,337.59	12,406.56	13,758.49	14,793.22	20,131.99
Government & Municipal	21,792.28	26,538.33	33,334.66	36,724.56	32,332.34	30,818.43	31,721.72	34,663.43	36,859.57	36,510.49
Public Utilities	1,509.19	1,678.09	4,434.10	8,388.61	7,873.70	7,250.96	8,210.53	8,713.46	10,216.66	11,906.72
Subtotal	523,511.06	595,057.71	604,095.77	598,148.83	571,392.02	520,800.44	509,153.73	567,277.57	621,403.21	632,906.12
Interchange	1,054.98	36.35	125.22	143.18	5.99	1.91	4.84	2.99	.....	.....
Interdepartmental	18,980.49	23,344.62	20,589.47	15,431.68	14,305.49	13,144.91	13,733.35	13,452.09	13,745.18	13,292.56
Total	543,546.53	618,438.68	624,810.46	613,723.69	585,703.50	533,947.26	522,891.92	580,732.65	635,148.39	646,198.68
Misc. Revenues	1,495.06	1,035.58	2,259.31	2,546.22	2,384.32	2,701.14	2,539.20	2,640.88	2,716.32	2,966.23
Merchandise & Jobbing	820.21	697.53	2,154.45	#278.93	#1,246.65	1,532.53	2,730.04	3,868.89	1,095.51	**4,770.87
Total Operating Revenues	545,861.80	620,171.79	629,224.22	615,990.98	586,841.17	538,180.93	528,161.16	587,242.42	638,960.22	653,935.78
Operating Expenses:										
Production & Trans.	104,689.20	131,244.89	124,614.75	118,098.69	115,571.87	109,566.23	115,437.94	124,684.22	146,737.38	159,742.68
Distribution	14,888.26	14,549.39	14,033.64	14,889.51	18,357.04	18,863.73	16,633.38	18,094.09	23,996.28	25,908.54
Utilization	4,839.83	4,672.26	4,668.16	6,131.37	6,475.00	5,242.61	5,999.88	6,607.04	6,194.44	5,513.38
Customers	11,771.13	14,447.60	15,959.82	17,688.55	23,121.28	18,425.34	13,906.72	16,841.13	18,471.47	17,091.79
New Business	3,818.78	8,075.36	12,787.82	9,066.92	6,648.73	7,335.35	10,058.01	11,097.25	24,303.75	26,818.33
General	53,140.66	62,132.86	49,345.51	52,610.47	44,818.17	43,706.22	41,558.36	45,844.27	61,645.38	59,542.35
Total Operating Expenses	193,147.86	235,122.36	221,409.70	218,485.51	214,992.09	203,139.48	203,594.29	223,168.00	281,348.70	294,617.07
Net Operating Revenue	352,713.94	385,049.43	407,814.52	397,505.47	371,849.08	335,041.45	324,566.87	364,074.42	357,611.52	359,318.71
Taxes	53,944.30	58,032.48	59,840.39	62,979.52	43,223.05	52,766.70	60,353.91	72,090.71	84,961.83	100,815.92
Gross Operating Income	$298,769.64	$327,016.95	$347,974.13	$334,525.95	$328,626.03	$282,274.75	$264,212.96	$291,983.71	$272,649.69	$258,502.79
Aver. No. of Customers:										
Residential	.....	.....	.....	6,394.75	6,220.09	6,093.59	6,367.90	6,669.40	6,998.63	7,104.46
Commercial	.....	.....	.....	1,760.51	1,704.28	1,590.70	1,533.53	1,609.46	1,830.28	1,877.19
Industrial	.....	.....	.....	127.83	145.16	221.91	324.41	322.15	193.49	201.66
Farm	.....	.....	.....	377.33	375.81	390.56	406.32	414.64	438.63	606.46
Government & Municipal	.....	.....	.....	85.50	100.00	120.18	125.43	124.75	121.18	115.76
Public Utilities	.....	.....	.....	1.98	1.98	1.98	1.98	1.98	1.98	1.98
Interchange	.....	.....	.....	1.00	1.00	1.00	1.00	1.00	.84	.28
Total	.....	.....	.....	8,748.90	8,548.32	8,419.92	8,760.57	9,143.38	9,585.03	9,907.79
Total KWH. Sold:										
Residential	1,441,807	1,938,875	2,512,559	2,900,845	2,930,598	2,791,051	3,131,860	3,542,665	4,071,188	4,390,957
Commercial	1,555,272	1,982,435	3,116,833	3,176,330	2,863,953	2,539,688	2,787,476	3,311,083	4,194,822	4,680,794
Industrial	6,126,240	7,251,644	5,603,837	4,273,423	4,730,209	4,730,755	4,755,145	5,174,198	7,119,776	8,080,659
Farm	.....	.....	142,937	183,007	196,811	186,096	195,014	227,588	284,107	436,101
Government & Municipal	555,106	733,456	822,379	1,020,069	790,696	777,933	817,021	897,066	1,029,453	975,987
Public Utilities	31,948	44,700	235,980	418,390	354,450	320,740	388,406	472,180	598,340	757,750
Interchange	109,710	10,800	31,201	35,040	1,440	480	1,440	960	.....	.....
Interdepartmental	1,548,189	1,968,819	2,058,961	1,685,226	1,565,249	1,454,532	1,509,109	1,481,771	1,562,121	1,534,164
Total	11,368,272	13,930,729	14,524,687	13,692,330	13,433,406	12,801,275	13,585,471	15,107,511	18,859,807	20,856,412
Aver. KWH. sale per res. customer				453.63	471.15	458.00	491.82	531.18	581.71	618.06
" " " " com. "		per farm customer		485.01	523.70					

* Year ending July 1937.

** Forfeited discounts 1st 7 mos. of 1937 ..... $3,569.35
Merchandise & Jobbing net last 5 mos. of 1936 .... 1,201.52

$4,770.87

[fol. 4080] DEFENDANTS' EXHIBIT No. 3

Order by Railroad and Public Utilities Commission of the State of Tennessee, Dated May 18, 1937

Before the Railroad and Public Utilities Commission of the State of Tennessee

Nashville

May 18, 1937.

Docket No. 2030

In re West Tennessee Power and Light Company Application for Rural Line Extensions on Humboldt Road, Lower Brownsville Road and Old Pinson Road

Opinion and Order

This Commission on January 1, 1937, in Docket No. 2025, on its own initiative, issued an order requiring all public utility companies operating in the State of Tennessee to obtain approval of the Commission before beginning the construction of any line extension, the voltage of which is to be operated at or in excess of 4000 volts, or where the cost of such extension exceeds $5,000.00.

In compliance with this order the West Tennessee Power and Light Company, a privately owned utility operating in Madison County and several other West Tennessee counties, made application with the Railroad and Public Utilities Commission on January 11, 1937, for authorization to construct three rural extensions to its present rural lines. Each of these extensions was to be operated in excess of 4000 volts, though each was to be for a cost of less than $5,000.00.

We are setting out below the extensions in question:

Line No. 1:

A 13 kv. line from the end of the present line on the Humboldt Road, approximately five miles north of the City of Jackson to Fairview—Distance 4.1 miles—Number of prospective customers 12—

Estimated Annual Earnings	$360.00
Estimated Cost of Line	4,100.00

DEFENDANTS' EXHIBIT No. 3

[fol. 4081] Line No. 2:

A 7 kv. line from the end of the present line on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store—Distance 3.4 miles—Number of prospective customers 19—

Estimated Annual Earnings	$570.00
Estimated Cost of Line	3,400.00

Line No. 3:

A 13 kv. line on the Old Pinson Road, beginning at a point approximately 1,000 feet south of where the Old Pinson Road intersects the Harts Bridge Road, and running one mile south—Number of prospective customers 12—

Estimated Annual Earnings	$360.00
Estimated Cost of Line	1,000.00

This line is a branch off our Jackson-Henderson 13 kv. Transmission Line, which is located on private right-of-way, and parallels the Old Pinson Road.

The petition sets out that the above three lines had been planned and surveyed and the necessary material ordered prior to the issuance of the Commission's order on January 1, 1937.

Parties interested in the extension of rural lines were notified of the petition filed by the West Tennessee Power and Light Company, and the Southwest Tennessee Electric Membership Corporation, a corporation organized under the non-profit electric membership cooperative statutes of this State, filed a formal protest with the Commission opposing the granting of the authority requested by the West Tennessee Power & Light Company, and asked for an opportunity to be heard before the Commission in the matter.

Upon receipt of protest the matter was set for hearing before the Commission on February 3, 1937. This case was heard before the Commission on February 3, 1937, and at this hearing all interested parties were given an opportunity to present such evidence and information as they desired.

The West Tennessee Power & Light Company presented testimony showing that the West Tennessee Power & Light Company proposed to build three lines.

DEFENDANTS' EXHIBIT No. 3

1. Line No. 1 extends from the end of the present line on Humboldt Road approximately five miles north of the City of Jackson to Fairview, a distance of 4.1 miles. The company estimated that it would serve on this extension approximately twelve customers with an estimated annual earning of $360.00.

The estimated cost of constructing this line was placed at 1,100.00.

Representatives of the West Tennessee Power & Light Company testified that it was necessary that this line be constructed in order to insure excellence of service between Jackson and territory in the neighborhood of Fairview, since by the construction of this line the West Tennessee Power & Light Company would be in position to furnish service through Humboldt or through Jackson, and would be [fol. 4082] of advantage to the company in furnishing the best possible service to its customers.

2. Line No. 2 is the proposed line from the end of the present lines on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store, an approximate distance of 3.4 miles. The company estimated that it would serve approximately nineteen customers on this extension with an estimated annual earning of $570.00.

3. Line No. 3 is a proposed line beginning at approximately 1,000 feet south of where the old Pinson Road intersects the Harts Bridge Road, extending about one mile south. The Exhibit sets forth that there were twelve prospective customers with an estimated annual earning of $360.00.

It appears that the West Tennessee Power & Light Company does not have contracts with prospective customers but has completed surveys with reference to the three lines proposed and estimates that it will be able to serve twelve customers on each of two of the said lines and a few more than that on the third.

The Southwest Tennessee Electric Membership Corporation has proposed, according to evidence presented at the hearing, a development for rural electric service in Madison County since 1934. (This date should be 1935.)

DEFENDANTS' EXHIBIT No. 3

The Southwest Association is the successor of certain prior electric membership corporations projected for the same purpose, one of which was the Madison County Electric Membership Corporation. For reasons satisfactory to such associations, the project was finally united under one cooperative, that involved here, which proposes to serve rural users of electricity in Madison, Haywood and Tipton Counties.

It appears that the Southwest Association has signed contracts with over four hundred prospective customers for electric service. The Southwest Tennessee Electric Membership Corporation proposes to purchase electric energy for distribution in the territory in which it is planning to operate from the Tennessee Valley Authority at wholesale rates. The Cooperative proposes to serve more than four hundred customers in Madison County immediately, and desires to begin its construction activities within the next two or three months, and in fact some of the materials have been purchased and are ready for erection at this time. Over a period of one or two years the present cooperative association and its predecessors have been making surveys with reference to furnishing rural service in Madison County. These surveys were finally completed and when all requirements of the Rural Electrification Administration had been satisfactorily complied with, the grant of a loan was obtained from the REA for the construction of the project in the entire three counties which it proposes to serve.

The Cooperative insists that its contracts are signed with the various customers which the West Tennessee Power & Light Company expects, as a result of its survey, to furnish with electricity, and it is the contention of the Cooperative that each of the three lines proposed to be constructed by the West Tennessee Power & Light Company would seriously interfere with the entire project planned by it.

The three proposed lines of the West Tennessee Power & [fol. 4083] Light Company, as is clearly shown by maps of Madison County filed at the hearing, would parallel the proposed lines of the Southwest Tennessee Electric Membership Corporation. The officers of the Cooperative Association believe, rightly or wrongly, that these three proposed lines were located at key points and designed to draw out

of the cooperative project certain well-situated customers, and would have the effect, if not the purpose, of wrecking or seriously handicapping the construction of the project proposed by it and approved by the Rural Electrification Administration.

On the other hand, the company asserts that the construction of these rural lines, as proposed by it, is in good faith, and without any purpose or thought to hinder or oppose the cooperative, in pursuance to its long-range program of providing electric service to those economically prepared to receive same in Madison County.

In the many years that the Power Company has served Madison County, it has made electricity available to approximately five hundred rural customers. Most of these customers reside along the highways upon which the company's transmission lines run.

It is interesting to note that on the three specific projects that are before the Commission, the cooperative association proposes to serve nearly double the number of customers which are regarded as prospects by the power company. The power company also states that its experience in the past has been that the surveys it has made have proved to be accurate, and that the number of customers it estimates it can serve usually turns out to be the number actually served.

It appears, upon all the facts adduced at the hearing, that there is a grave probability that the authorization of the three proposed extensions of the West Tennessee Power and Light Company would seriously injure the program of the Southwest Tennessee Electric Membership Corporation. It would not only deprive this corporation of certain customers which it already has under contract, but in doing so it would increase the difficulty of extending service to other proposed customers who reside slightly further on and are proposed to be served by the cooperative, and would render the cost of furnishing service to certain groups uneconomical and prohibitive.

Under this showing it would appear that the greater good to the greater number would be best served by denying to the power company the authority to construct the lines petitioned for even though this denial may temporarily em-

barrass some of the prospective customers who would immediately obtain electric service otherwise.

This Commission does not have jurisdiction over any cooperative association. The problems arising from the entry of such associations into the utility field are of comparatively recent origin. However, the Public Service Commission of Wisconsin has been confronted with these problems and has taken appropriate action to solve them. While the opinion of this Commission, because of variances in the statutes of the two states, is in many respects not germane to the questions involved here, many of the principles there enunciated are pertinent to those issues. For its clear and distinct analysis of those problems arising from the extension of rural lines, wherein the cooperatives are brought in conflict with the utilities, we quote from the opinion of the Wisconsin Commission the following:

[fol. 4084] "We hold no brief for or against any agency in this competitive struggle. Our primary concern is in seeing that the maximum number of farmers get service at the lowest cost consistent with the requirements for adequate and continuous service. We feel that the agency which should serve, assuming minimum requirements of service standards, financial responsibility, etc., are met, is largely a matter of choice with the farmers themselves, as long as wasteful competition or duplication of facilities will not result. The Commission has steadfastly adhered to, and repeatedly expressed, this view, both formally and informally. To obtain this objective of an orderly development of rural electrification, some rules and procedure are necessary. Since this Commission is the only agency having any jurisdiction over any of these competing agencies, we have established and propose to continue certain rules which, within our legal powers are designed to promote orderly procedure and to prevent unregulated and wasteful competition * * * When the public utility statutes are read as a whole, they evidence a legislative policy of giving the Commission broad authority to regulate utilities so as to accomplish an orderly development of utility service, without wasteful territorial competition and duplication, except where no other remedy is feasible. These powers are additional to those involved in prescribing reasonable and non-

discriminatory rates, rules, and regulations and others functions associated therewith." In re: Extensions of Rural Lines of Electric Utilities, No. 2-U-965, Wis. P. S. C. Aug. 27, 1936.

The Wisconsin Commission further said, in denying the application of the Wisconsin Power & Light Company to extend its rural electric lines:

"The principal question presented by this application is whether the company should be authorized to extend its rural distribution system * * * when construction of cooperative electric lines is now under way in the area. This is the first time this question has come to us for decision, since the Richland County cooperative is the first in the state to get construction started. A brief statement of the law as the Commission understands it seems appropriate in connection with the consideration of this question. Section 196.49 of the Wisconsin Statutes, under which the Commission has jurisdiction over public utility extensions of plant, was enacted in 1931 and is clearly a restrictive law to prevent unwarranted expansion of utility facilities beyond service demands in the immediate future. At the time the law was enacted, it was assumed that indeterminate permits existed in towns as well as in cities and villages. The Wisconsin Supreme Court in 1932 held otherwise. In South Shore Utility Co. v. Railroad Commission, 207 Wis. 95, the state's highest court held that under existing statutes towns have no authority to grant exclusive permits or franchises to public utilities. Therefore rural territory is an open field so far as franchise rights are concerned. Section 196.49 (1) provides that a public utility on and after August [fol. 4085] 1, 1931, must secure a certificate of authority from the Commission before extending facilities or rendering service in a municipality where neither it or any other public utility was legally operating on that date. Section 196.49 (2) permits the Commission to issue a general order with which public utilities must comply before beginning 'construction, installation, or operation of any new plant, equipment, property or facility * * * extension * * * ' General Order 2-U-20 was issued under this subsection and has been used, together with territorial division agreements between utilities, to prevent the chaotic, waste-

ful, and unrestricted competition for rural territory that might otherwise have resulted from the South Shore decision. Section 196.49 (4) provides that the Commission in its general or special order may require that no new construction shall be begun until it has found that public convenience and necessity require it. * * * Commission is also given power to grant authority for only a portion of a project or to lay down terms and conditions that will insure that a project meets the requirements of this section of the law.

For more than a year the Federal Government, through the Rural Electrification Administration, has been offering to lend funds for building new rural lines. In this State a rural electrification coordination committee was formed to aid in promoting cooperative associations of farmers desiring to borrow funds for the construction of lines to serve themselves. * * * No single governmental body under present interpretations of the Statutes, as we understand the interpretations, has jurisdiction over both public utilities and cooperatives. The Schumacher case, 185 Wis. 303, is urged upon the Commission as a holding by the Wisconsin Supreme Court that cooperative associations which serve only their members are not public utilities which, under existing statutes would be subject to this Commission's jurisdiction. If such be the fact the Commission cannot enforce its orders upon cooperatives nor compel them to render service to members of the public who request service. The Commission is confronted with the question of deciding the extent to which the presence of cooperative facilities must be considered in determining whether public convenience and necessity require an extension of public utility facilities proposed to be made in an area. The Commission decided that the best way to promote orderly and economic development of rural electrification under provisions of a statute enacted long before REA-financed electric cooperatives had been conceived was to issue a general order applying solely to rural electric extensions by public utilities. This order is 2-U-965. * * * A procedure is there provided for equitable settlement of conflicts between public utilities and electric cooperatives seeking to operate in the same areas. The cooperative is given opportunity to object to a utility extension and to be heard in opposition before

the Commission; the utility may make limited extensions without specific authority for unlimited extensions in areas [fol. 4086] as to which agreements have been reached with cooperatives or where electrification by public utilities has reached a point of saturation that leaves no opportunity for the profitable establishment of a cooperative. * * * It is the Commission's duty under Section 196.49 to safeguard customers and investors of public utilities against excess facilities. * * * The field survey by our engineer indicates that this area is not capable of supporting two competing electric service agencies with any assurance that cost of service will be regained in revenues by the company and by the cooperative.

Members of the cooperative and customers of the company who do not live in this area probably will be adversely affected if duplicate facilities are permitted, since the extra cost will immediately or eventually be reflected in their rates. To authorize public utility service to this group of 23 (customers signed by company) might delay cooperative service to a much larger group of cooperative members in nearby areas, who have waited as long as have the 23 for electricity. We presume that those of the 23 who are not already members of the cooperative may become so and be assured service from the cooperative." In re: Application of Wisconsin Power and Light Co., No. CA-237, Wis. P. S. C., December 3, 1936.

The Commission is further of the opinion that the West Tennessee Power and Light Company, however, should be permitted at this time to construct Line No. 1, as set out in its petition, in order that continuous and satisfactory service to area now served might be insured, but that the West Tennessee Power and Light Company should not be permitted to serve customers off this new Line No. 1 since in doing so it might keep electric service from being extended by the Southwest Tennessee Electric Membership Corporation to serve a greater number of customers and a greater area, since said line would parallel for some distance the proposed line of the cooperative.

The Commission is further of the opinion that the material ordered by the West Tennessee Power & Light Company for construction of these proposed lines can be used

advantageously for the construction of other lines and improvement of its existing transmission and distribution systems, and will not result in a loss to the company because of refusal to this Commission to approve the specific projects in the application.

It is Therefore Ordered by the Commission:

That the petition of the West Tennessee Power & Light Company asking for approval of the Commission for the building of the following lines be denied:

[fol. 4087] Line No. 2—a 7 kv. line from the end of the present line on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store—Distance 3.4 miles.

Line No. 3—a 13 kv. line on the old Pinson Road, beginning at a point approximately 1,000 feet south of where the Old Pinson Road intersects the Harts Bridge Road, and running one mile south.

It is Further Ordered, That the West Tennessee Power & Light Company be hereby authorized to construct the following line for the purpose of improving its existing transmission and distribution systems with the provision that the West Tennessee Power & Light Company be denied permission to serve any customers off this connecting line without the specific approval of the Commission:

Line No. 1—a 13 kv. line from the end of the present line on the Humboldt Road, approximately five miles north of the City of Jackson to Fairview—Distance 4.1 miles.

It is Further Ordered, That the Commission retain jurisdiction in this cause and issue such further and future orders as it may deem necessary from time to time.

Porter Dunlap, Chairman; W. H. Turner, Commissioner; Leon Jourolmon, Jr., Commissioner.

I, Dorsey B. Thomas, Secretary of the Railroad and Public Utilities Commission of the State of Tennessee do hereby certify that the foregoing is a true and correct copy of order issued by the Commission in Docket No. 2030.

This 18 day of May, 1937.

(S.) Dorsey B. Thomas, Secretary. (Seal.)

CSR.

[fol. 4088] DEFENDANTS' EXHIBIT No. 4

Resolution by the Board of Commissioners of the City of Chattanooga, Dated October 24, 1933

Whereas, the City of Chattanooga, Tennessee desires to make formal application to the Tennessee Valley Authority for the furnishing of electrical current to said City and its inhabitants; and

Whereas, the City of Chattanooga does not own a distribution system and has no legislative authority to finance the construction or acquiring of a distribution system,

Now, Therefore, Be It Resolved by the Board of Commissioners of the City of Chattanooga, Tennessee that on behalf of said City application be and is hereby made to the Tennessee Valley Authority for the furnishing of electric current to the City of Chattanooga for the use of said City and its inhabitants. This application is on condition, however, that the said City obtains legislative authority to construct or acquire a distribution system, and obtains legislative authority to finance the construction or acquiring of a distribution system and, if after investigation it is found that the furnishing by the Tennessee Valley Authority of electric current is to the best interest of the City and its inhabitants.

[fol. 4089] DEFENDANTS' EXHIBIT No. 5

Letterhead of City of Chattanooga, Tennessee

October 3, 1933.

Tennessee Valley Authority, Attention Mr. David Lilienthal, Knoxville, Tenn.

MY DEAR MR. LILIENTHAL:

As you are perhaps aware, the City of Chattanooga at present has no authority that would enable us to finance a distributing plant; but it is our purpose if investigations show it to be profitable, to distribute power secured from the Tennessee Valley Authority.

The authority we need cannot be secured until another Session of the Legislature of Tennessee. Will you kindly inform me that if under these circumstances we should at

DEFENDANTS' EXHIBIT No. 5

this time make application for electric power for City of Chattanooga; it being understood that application is contingent upon investigations and securing authority heretofore referred to.

Assuring you of my very high regard, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

[fol. 4090] DEFENDANTS' EXHIBIT No. 6

Knoxville, Tennessee,
October 9, 1933.

Honorable E. D. Bass, Mayor of Chattanooga, Chattanooga, Tennessee.

MY DEAR MR. MAYOR:

I have your letter of October 3 asking me whether, in view of the lack of present legislative authority in the City of Chattanooga to finance a distribution system, the City should make application for power from the Tennessee Valley Authority "contingent upon investigations and securing authority" for such purposes.

I see no reason why the City of Chattanooga may not make a contingent application to the Tennessee Valley Authority. In point of fact, the only cities which are able to make a definite application are those which now own their distribution systems and are free to enter into contracts; such situations are not common. I think I should also point out that the number of applications or inquiries has grown so large that the matter of choice between the municipalities grows constantly more difficult.

In response to your inquiry, I hope you will understand that the question of whether the City of Chattanooga should or should not acquire its own distribution system is a matter of local policy to be determined wholly by the citizens of your City without any suggestion or influence whatever from the Tennessee Valley Authority. I hope that you will not regard my attempt to answer your question as in any wise a suggestion or recommendation favoring or disapproving this policy of the ownership of power facilities within your City.

DEFENDANTS' EXHIBIT No. 6

It was a pleasure to see you, and I look forward to other opportunities.

Sincerely yours, Tennessee Valley Authority, by David E. Lilienthal, Director and General Counsel.

DEL: JH.

[fol. 4091] DEFENDANTS' EXHIBIT No. 7

Letterhead of City of Chattanooga, Tennessee

Oct. 24, 1933.

Tennessee Valley Authority, Knoxville, Tenn.

Attn. Mr. David Lilienthal

MY DEAR MR. LILIENTHAL:

The City of Chattanooga is filing with the Tennessee Valley Authority today formal application for use of power for Chattanooga, based upon certain contingencies set out in application.

One of the first things we desire to do is to have a survey made of this city and locality with investigations and estimates as to cost of distributing plant and other matters connected therewith, in order that we might ascertain at what price this city could furnish power to consumers.

I have been informed that the Tennessee Valley Authority would make such survey and estimates for consumers asking for it, therefore may I ask you to advise me if this is correct, and if upon application the Tennessee Valley Authority would furnish the City of Chattanooga with this information.

Assuring you of my very high regard, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

[fol. 4092] DEFENDANTS' EXHIBIT No. 8

Letterhead of City of Chattanooga, Tennessee

March 19, 1934.

Tennessee Valley Authority, Attention Mr. David E. Lilienthal, Knoxville, Tenn.

MY DEAR MR. LILIENTHAL:

I am enclosing a copy of opinion furnished me by City Attorney J. W. Anderson referring to relation of contract entered into between the Tennessee Valley Authority and the Tennessee Electric Power Company in so far as said contract affects furnishing electrical energy to the City of Chattanooga by the Tennessee Valley Authority.

May I ask that you advise me, or have your attorney do so, if you concur with City Attorney Anderson's opinion in his construction of this contract with regard to the particular question of City of Chattanooga securing electrical energy from Tennessee Valley Authority. I would very much appreciate a reply at earliest possible moment.

For your information, city authorities of Chattanooga are preparing to employ engineers for the purpose of gathering such information as we will need in submitting the question of municipal ownership to the people. We expect to submit this question some time during the coming summer; and in securing the necessary data we shall avail ourselves of your kind offer contained in your letter of November 27, 1933 to me.

Assuring you of my very high regard, I am

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

EDB: WM.

[fol. 4093] DEFENDANTS' EXHIBIT No. 9

Letterhead of City of Chattanooga, Tennessee

March 26, 1934.

Mr. V. D. L. Robinson, Tennessee Valley Authority, Knoxville, Tenn.

BY DEAR MR. ROBINSON:

I would esteem it a very personal favor if it would be possible for you to see that I get a reply as soon as possible to my letter of March 19th to Mr. Lilienthal.

I know how very busy Mr. Lilienthal is, and how many inquiries he has, and if you can in any way expedite this matter I will appreciate it more than I can express.

Thanking you, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

[fol. 4094] DEFENDANTS' EXHIBIT No. 10

Resolution by the Council of the City of Knoxville, Adopted November 1, 1932

"Mayor O'Connor moved to direct the City Manager to make inquiry and study as to the cost of construction and operation of an electric power plant for the City of Knoxville. Carried."

[fol. 4095] DEFENDANTS' EXHIBIT No. 11

This exhibit is a part of Resolution No. 709 adopted by the Council of the City of Knoxville, Tennessee, on February 21, 1933. (Complainants' Exhibit No. 373.)

(Omitted).

[fol. 4096] DEFENDANTS' EXHIBIT No. 12

Minute Entry of the Council of the City of Knoxville, Dated July 11, 1933

"Councilman Smithson presented and read the following report of the Committee appointed to consider municipal power projects:

July 11, 1933.

To the Council of the City of Knoxville.

GENTLEMEN:

Your Committee appointed to consider municipal power projects, wish to recommend that the City Manager be instructed to make application for power and get all necessary information relative to the furtherance of this matter.

Respectively submitted, Charlton Karns, F. H. Snipes, W. S. Smithson.

Councilman Cockrum moved that the report be adopted and that the Mayor appoint a Committee to work with the City Manager. Carried. The following Committee was named by the Mayor: Councilmen Cockrum, Smithson and Karns."

[fol. 4097] DEFENDANTS' EXHIBIT No. 13

* * * * * * *

Chattanooga, Tenn.,
March 7, 1930.

Yates Bleachery Company (hereinafter called the Consumer) hereby makes application to The Tennessee Electric Power Company (hereinafter called the Company), to furnish to the Consumer for his sole and exclusive use at Flintstone, Georgia, electric energy required or used by the Consumer for 2300 volt, 60 cycle, 3-phase service * * * subject to the Companys' standard rates and rules and regulations as now or hereafter on file with the Railroad and Public Utilities Commission of the State of Tennessee from the date service begins under this application and thereafter until thirty (30) days written notice to discontinue

DEFENDANTS' EXHIBIT No. 13

shall have been given by either of the parties hereto to the other.

[fol. 4098] The Consumer agrees to pay monthly for all electric service furnished under this application at the rates specified in Schedule 1, Rate A of the Company's rates now or hereafter on file with the Railroad and Public Utilities Commission of the State of Tennessee.

The Demand contracted for is 30 kw.

The Consumer agrees to pay a minimum monthly charge of $—.

This application cannot be transferred or assigned by the Consumer.

All agreements, rules and regulations printed on this sheet shall be deemed a part hereof.

Yates Bleachery Co., by A. E. Yates, Prest.

The Tennessee Electric Power Company, by P. E. Shacklett, Asst. Mgr., Chattanooga District.

Rules and Regulations attached to the application are omitted.

[fol. 4099] DEFENDANTS' EXHIBIT No. 14

Letterhead of The Tennessee Electric Power Company, Chattanooga, Tennessee

April 13, 1937.

Yates Bleachery Company, Flintstone, Georgia.

GENTLEMEN:

In reference to the power contract signed today, April 13, 1937, we recognize and go on record as approving the use of lighting in connection with the plant, the use of light and power at the homes of Mr. A. E. Yates and Mr. T. A. Yates, officials of the Yates Bleachery Company, and the use of light and power at the company store as being "incidental to the business" of operating the bleachery.

Assuring you of our pleasure in welcoming you again as a customer, and pledging our facilities to make this contract one of mutual advantage, I am,

Yours very truly, E. D. Reed, Manager Chattanooga District.

EDR/G.

[fol. 4100] DEFENDANTS' EXHIBIT No. 15

The Tennessee Electric Power Company

Market Street at Sixth—Chattanooga

Power Service from May 15 to June 21, '37

This Bill Audited by —— ——.

Meter Readings—Showing Energy Used

Present Reading	9207	2450	
Previous Reading	9155	2433	
Difference	52	17	
Constant	300	300	
Total	15600 x	5100	20,700

270 Kva Demand @

270 x 50	13500	@	1½	$202.50
	7200	@	01	72.00
			Gross Net	$274.50
			Net Gross	288.22

Charge Power—Elec.
Yates Bleachery Co.
R13GA Flintstone
200 Ga
Co No. 45582

(Endorsed on Back) Received Jun. 30, 1937. Ans'd.

(Here follows one photolithograph, side folio 4101)

DEFENDANTS' EXHIBIT NO. 16

TABLE VII 5A - PROBABLE FUTURE WATER TRAFFIC - TENNESSEE RI

Commodity	Existing Traffic		Potential Port to Port Traffic		Probable Traffic First Period		Potential R Water Traf	
	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	A
Automobiles and Trucks			425	$ 201	425	$ 201	575	$
Tobacco, Household Goods, Misc.	110,081	$222,570	250,540	148,705	360,621	371,275	55,320	
Textiles, Crude Petroleum, Chemicals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	
Tobacco Refuse, Cotton, etc.			90,400	57,812	90,400	57,812	15,200	
Rails & Fastenings, Structural Steel, etc.	32,048	16,037	66,060	51,100	98,108	67,137	60,490	
Petroleum Products Castings, News Print, etc.			96,550	81,115	96,550	81,115	5,800	
Wheat and other Bulk Grain							234,150	3
Flour, Meal & Mill Products			38,355	35,663	38,355	35,663	98,150	1
Salt			850	566	850	566	50	
Logs, Post, Poles, Lumber	155,917	675,509	940,750	428,851	1,096,667	1,109,360	743,355	7
Brick, Tile			125,425	57,802	125,425	57,802	3,050	
Cement, Lime, Plaster	12,325	37,545	396,950	154,070	409,275	191,615	136,580	1
Clay, Stone, Sand, Gravel	1,438,455	1,095,220	724,640	294,841	2,173,095	1,378,061	189,565	2
Coal and Coke			118,000	24,414	118,000	24,414	569,583	1
TOTAL	1,748,824	2,044,861	2,907,370	1,367,472	4,656,194	3,412,283	2,315,240	

Petroleum, Chemicals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	
Tobacco Refuse, Cotton, etc.			90,400	57,812	90,400	57,812	13,200	
Rails & Fastenings, Structural Steel, etc.	32,048	16,037	66,060	51,100	98,108	67,137	60,480	
Petroleum Products Castings, News Print, etc.			96,550	81,115	96,550	81,115	5,800	
Wheat and other Bulk Grain							234,180	3
Flour, Meal & Mill Products			38,355	35,663	38,355	35,663	98,180	1
Salt			850	566	850	566	50	
Logs, Post, Poles, Lumber	155,917	675,509	940,750	433,851	1,096,667	1,109,360	743,355	7
Brick, Tile			125,425	57,802	125,425	57,802	3,050	
Cement, Lime, Plaster	12,323	37,545	396,980	154,070	409,273	191,615	136,580	1
Clay, Stone, Sand, Gravel	1,438,455	1,095,220	724,640	284,841	2,173,095	1,379,061	199,565	2
Coal and Coke			118,000	24,414	118,000	24,414	569,583	1
TOTAL	1,748,824	2,044,861	2,907,370	1,367,472	4,656,194	3,412,383	2,115,868	1,8

Item for Logs, Posts, Poles much too high as the general trend for traf
be an indefinite decrease. Total predicted above is 1.684.105 tons, s
It would be more nearly correct to allow only half of this traffic a
balance of this item transferred to Misc. to allow for new move
contingencies.

Another transfer to Misc. would be about 200,000 tons of traffic between Knoxville and Chattanooga which covers some of the duplications in H. Doc. 328, not corrected above. This would give about 1,000,000 tons for contingencies – O. K.

DEFENDANTS' EXHIBIT NO. 16

TABLE VII 5A - PROBABLE FUTURE WATER TRAFFIC - TENNESSEE RIVER

modity	Existing Traffic		Potential Port to Port Traffic		Probable Traffic First Period		Potential Rail - Water Traffic		Probable Traffic Later Years	
	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings
MERIES										
d Trucks			425	$ 201	425	$ 201	575	$ 698	1,000	$ 889
ceo, House- ld Goods, Misc.	110,081	$222,570	280,540	148,705	360,621	371,275	55,220	66,909	415,941	437,184
iles, Crude troleum, ndeals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	6,497	54,425	43,829
cco Refuse, tton, etc.			90,400	57,812	90,400	57,812	13,200	13,290	103,600	71,102
s & Fastenings, ructural Steel, c.	32,048	16,037	66,060	51,100	98,108	67,137	60,400	70,416	158,508	137,553
oleum Products stings, Sews int, etc.			96,580	81,115	96,580	81,115	5,800	5,866	102,380	86,981
t and other lk Grain							234,150	323,530	234,150	323,530
r, Meal & il Products			38,355 880	35,668 566	38,355 880	35,668 566	98,180 50	115,178 55	136,805 900	150,841 621
, Post, Poles, ber	155,917	675,509	940,750	488,851	1,096,667	1,109,360	743,355	733,063	1,860,022	1,842,423
k, Pile			125,425	57,802	125,425	57,802	3,050	3,199	128,475	61,001
it, Lime, ster	12,325	37,545	396,950	154,070	409,275	191,615	136,580	141,022	545,855	332,647
, Stone, nd, Gravel and Coke	1,438,455	1,093,220	734,640 118,000	204,861 24,414	2,173,095 118,000	1,378,061 24,414	189,565 569,583	220,980 112,464	2,362,660 687,583	1,599,011 136,878
	1,748,824	2,044,881	2,907,370	1,367,472	4,656,194	3,412,383	2,115,868	1,812,137	6,772,062	5,224,490

m for Logs, Posts, Poles much too high as the general trend for traffic in these items will e an indefinite decrease. Total predicted above is 1.684.105 tons, savings $1.166.194. would be more nearly correct to allow only half of this traffic and savings, and have the balance of this item transferred to Misc. to allow for new movements and oth...

osiles										
Trucks			425	$ 201	425	$ 201	575	$ 698	1,000	$ 869
co, House-										
d Goods, Misc.	110,081	$222,570	280,540	148,706	360,621	371,275	55,320	66,909	415,941	437,184
les, Crude										
roleum,										
nicals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	6,497	54,425	43,829
co Refuse,										
ten, etc.			90,400	57,812	90,400	57,812	15,200	13,290	105,600	71,102
& Fastenings,										
ctural Steel,										
,	32,048	16,037	66,060	51,100	98,108	67,137	60,490	70,416	158,598	137,553
leum Products										
tings, Stone										
nt, etc.			96,550	81,115	96,550	81,115	5,800	5,866	102,350	86,981
and other										
k Grain							234,180	325,530	234,180	325,530
Meal &										
l Products			38,355	35,663	38,355	35,663	98,180	115,178	136,805	150,841
			850	566	850	566	50	55	900	621
Post, Poles,										
ber	155,917	675,309	940,750	423,851	1,096,667	1,109,360	743,355	733,063	1,840,022	1,842,423
, Tile			125,425	57,802	125,425	57,802	3,050	3,199	128,475	61,001
t, Lime,										
ster	12,323	37,545	396,980	154,070	409,273	191,615	136,580	141,022	545,853	332,647
Stone,										
d, Gravel	1,438,455	1,095,220	734,640	294,841	2,173,095	1,378,061	189,565	220,980	2,362,660	1,599,011
and Coke			118,000	24,414	118,000	24,414	569,583	112,464	687,583	136,878
	1,748,824	2,044,881	2,907,570	1,367,472	4,656,194	3,412,383	2,115,868	1,812,137	6,772,062	5,224,490

m for Logs, Posts, Poles much too high as the general trend for traffic in these items will e an indefinite decrease. Total predicted above is 1.684.105 tons, savings $1,166.194. would be more nearly correct to allow only half of this traffic and savings, and have the balance of this item transferred to Misc. to allow for new movements and other contingencies.

other transfer to Misc. would be about 200,000 tons of ffic between Knoxville and Chattanooga which covers ne of the duplications in H. Doc. 328, not corrected above. would give about 1,000,000 tons for contingencies. - O. K.

[fol. 4102] DEFENDANTS' EXHIBIT No. 17

Waiver

To be attached to Loan Agreement dated April 2, 1934, between the City of Knoxville, Knox County, Tennessee, and the United States of America (Docket No. 3289 Electric Distribution system).

April 10, 1935.

Paragraph 2, Subdivision (f) of Part Two of said Agreement reads as follows:

"2 Preliminary Proceedings by Borrower. When the Agreement has been signed on behalf of the Borrower, the Borrower shall promptly: • • •

(f) Submit for approval a contract with the Tennessee Valley Authority stipulating that the said Authority will agree to furnish to the Borrower for a period of not less than twenty years, to a point or points adjacent to the limits of the City and previously agreed upon, and the Borrower to accept and pay for a supply of electric energy sufficient in quantity at all times to meet the demands of the [fol. 4103] residential, commercial, and industrial customers to be served by the System. This contract shall contain such other terms and conditions as may be necessary to insure to the Borrower an adequate supply of electric energy, to insure the charging of rates by the Borrower for resale of electric energy and to provide for the disposition of revenues derived from the operation of the System in a manner satisfactory to the administrator."

Paragraph 4, Subdivision (g) of Part Four of said Loan Agreement reads as follows:

"4. *Conditions Precedent to the Government's Obligations.*—The Government shall be under no obligation to pay for any of the Bonds or to make any grant: • • •

(g) *Tennessee Valley Authority Contract.*—If the Borrower shall fail to execute and furnish the Government with two certified copies of a contract between the Borrower and the Tennessee Valley Authority, as provided in Paragraph 2 (f) Part two hereof, such contract to be satisfactory to the Administrator as to form, sufficiency and substance; as to rates to be charged by the Borrower for resale of elec-

DEFENDANTS' EXHIBIT No. 17

trical energy; and as to disposition of revenues of the system;"

[fol. 4104] The provisions of Paragraph 2, Subdivision (f) of part Two and of Paragraph 4, Subdivision (g) of Part Four of said Loan Agreement are hereby waived.

Approved.

United States of America, by —— ——, Administrator.

[fol. 4105] DEFENDANTS' EXHIBIT No. 18

* * * * * * *

Superseding Loan and Grant Agreement Between the City of Knoxville, Tennessee, and the United States of America

(PWA Docket No. 3289)

Whereas, the United States of America and the City of Knoxville, Tennessee, entered into a loan and grant agreement dated as of April 2, 1934, and

Whereas, it is deemed to the mutual advantage of said parties to terminate said loan and grant agreement and to substitute in place thereof a new agreement:

Now, therefore, it is agreed, by and between said parties, that said loan and grant agreement dated as of April 2, 1934, be and the same is hereby terminated.

It is further agreed by and between said parties, that the following agreement be substituted in lieu thereof:

1. Loan and Grant.—The United States of America (herein called the "Government") will aid in financing the construction of an electric distribution system, including a central sub-station, secondary sub-stations, and street light-[fol. 4106] ing system on the main streets and boulevards (herein called the "Project"), by making loan and grant to the City of Knoxville, Tennessee, (herein called the "Applicant"), in an amount not exceeding in the aggregate the sum of $2,600,000.

2. Method of Making Loan.—The Government will purchase, at the principal amount thereof plus accrued interest, from the Applicant, obligations of the description set forth below (or such other description as shall be mutually satis-

factory) in the aggregate principal amount of $2,000,000, less $300,000 of such obligations which have already been purchased and delivered prior to March 26, 1935, and less such amount of such obligations, if any, as the Applicant may sell to purchasers other than the Government:

(a) Obligor.—City of Knoxville;
(b) Type.—Negotiable, general obligations, coupon bond;
(c) Denomination.—$1,000.
(d) Date.—March 1, 1934;
(e) Interest Rate and Interest Payment Dates.—4 per cent per annum, payable semi-annually on March 1 and September 1;
(f) Place of Payment.—At the Chase National Bank, City and State of New York;
(g) Registration Privileges.—Registerable at the option of the holder as to principal only;

Docket No. 3289

(h) Maturities.—Payable on March 1 in years and amounts as follows:

[fol. 4107]

Year	Amount
1937	$10,000
1938	15,000
1939	20,000
1940	25,000
1941	30,000
1942	35,000
1943	40,000
1944	45,000
1945	50,000
1946	75,000
1947	100,000
1948	150,000
1949	175,000
1950-1953 (both incl.)	200,000
1954	225,000
1955	205,000

(i) Security.—Payable as to both principal and interest from ad valorem taxes which may be levied without limit

as to rate or amount upon all the taxable property within the territorial limits of the Applicant.

3. Amount of Grant.—The Government will make a grant in an amount equal to 30 per centum of the cost of the labor and materials employed upon the project. The Government will make the grant either wholly by the payment of money, or partly by the payment of money and partly by the cancellation of obligations purchased pursuant to this agreement or interest coupons attached thereto, in aggregate amount equal to the amount of the grant less the amount paid in money. In no event shall the grant, whether made partly by payment of money and partly by cancellation, or wholly by payment of money be in excess of $600,000.

4. Conditions Precedent.—The Government will be under [fol. 4108] no obligation to take up and pay for any bonds which it herein agrees to purchase or to make any grant;

(a) Financial Condition.—If the financial condition of the Applicant shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government;

(b) Cost of Project.—If it appears that the Applicant will not be able to complete the Project described in this agreement for the sum allotted by the Government, or that the Applicant will not be able to obtain any funds which, in addition to such sum, shall be necessary to complete the Project;

5. Interest of Member of Congress.—No member of or Delegate to the Congress of the United States of America shall be admitted to any share or part of this agreement, or to any benefit to arise thereupon.

6. Bonus or Commission.—The Applicant shall not pay any bonus or commission for the purpose of obtaining an approval of the application.

7. Information.—The Applicant shall furnish the Government with reasonable information and data concerning the construction, cost, and progress of the work. Upon request the Applicant shall also furnish the Government, and any purchaser from the Government of at least 25 per

cent of the bonds, with adequate financial statements and other reasonable information and data relating to the Applicant.

[fol. 4109] 8. Bond Circular.—The Applicant shall furnish all such information in proper form for the preparation of a bond circular and shall take all such steps as the Government or any purchaser or purchasers from the Government of not less than 25 per cent of the bonds may reasonably require to aid in the sale by the Government or any such purchaser or purchasers of any or all of the bonds.

9. Insurance.—The applicant shall carry reasonable and adequate insurance upon the completed Project or any completed part thereof accepted by the Applicant or the system of which the Project is a part.

10. Name of Project.—The -p-llicant shall not name the Project for any living person.

11. Grant and Bond Payments.

(a) Payment for Bonds.—A requisition requesting the Government to take up and pay for bonds will be honored as soon as possible after such bonds are ready for delivery, if the bond transcript and other documents supporting such requisition are complete.

(b) Grant Payments.—From time to time after the execution of this Agreement the applicant may make a requisition or requisitions for payments on account of the grant. If such requisition is in proper form and is accompanied by a certificate of purposes showing in reasonable detail [fol. 4110] the purposes for which the funds will be used, the Government will make a payment or payments on account of the grant in an amount not to exceed 25 per cent of the previously estimated cost of labor and materials to be employed upon the Project.

(c) Final Grant Payment.—At any time after completing the Project, the Applicant may file a requisition requesting the remainder of the grant which, together with all previous payments on account of such grant, shall be an amount not in excess of 30 per cent of the actual cost of labor and materials employed upon the Project, and

not to exceed, in any event, the sum of $600,000. The final grant requisition will be honored if the documents necessary to support it are complete and work on the Project has been completed in accordance with the provisions of this agreement.

(d) Construction Account.—A separate account or accounts (herein collectively called the "Construction Account") shall be set up in a bank or banks which are members of the Federal Deposit Insurance Corporation and of the Federal Reserve System. The grant payments, the proceeds from the sale of the bonds (exclusive of accrued interest and an amount, if any, representing interest dur-
[fol. 4111] ing construction) and any other moneys which shall be required in addition to the foregoing to pay the cost of constructing the Project shall be deposited in the Construction Account, promptly upon the receipt thereof. All accrued interest paid by the Government at the time of delivery of the bonds shall be paid into a separate account (herein called the "Bond Fund"). Payments for the construction of the Project shall be made only from the Construction Account.

(e) Disbursement of Moneys in Construction Account.—Moneys in the Construction Account shall be expended only for such purposes as shall have been previously specified in the certificate of purposes filed with and accepted by the Government. All moneys remaining in the Construction Account after all costs incurred in connection with the Project have been paid shall either be used to purchase bonds, if any of the bonds are then held by the Government, or be transferred to the Bond Fund.

(f) Use of Moneys in Bond Fund.—Moneys in the Bond fund shall be expended solely for the purpose of paying interest on and principal of the bonds purchased pursuant to this agreement.

12. Construction of Project.—It is mutually agreed that the Project will be constructed in accordance with the following principles:

[fol. 4112] (a) That, in order to insure completion of the project within the funds available for the construction thereof, faithful performance of construction contracts will

be assured by requiring performance bonds written in an amount equal to 100% of the contract price by one or more corporate sureties financially able to assume the risk and that such bonds will be further conditioned upon the payment of all persons supplying labor and furnishing materials for the construction of the Project, unless it is required by the laws of Tennessee that protection for labor and materialmen be provided by a bond separate from the performance bond. In such latter case, a performance bond in an amount equal to 100% of the contract price supplemented by a separate labor and materialmen's bond in an amount not less than 50% of the contract price will be adequate.

(b) That, if the work on any proposed construction contract is hazardous, the contractor will be required to provide public liability insurance in amounts reasonably sufficient to protect the contractor.

(c) That minimum or other wage rates required to be predetermined by the law of Tennessee or local ordinance [fol. 4113] shall be predetermined by the Applicant in accordance therewith, and incorporated in the appropriate contract documents. In the absence of applicable law or ordinance, the Applicant shall predetermine minimum wage rates, in accordance with customary local rates, for all the trades and occupations to be employed on the Project, and incorporate them in the appropriate contract documents.

(d) That the work shall be commenced as quickly as possible after funds are made available and be continued to completion with all practicable dispatch in an efficient and economical manner.

(e) That all work to be performed under contracts to be let hereafter shall be performed in accordance with the provisions of the attached Exhibit A which is hereby made a part hereof; to insure this purpose appropriate provisions will be incorporated in all contracts (except subcontracts) for work to be performed at the site of the Project. (Exhibit A has been so worded that the provisions thereof may, if the Applicant desires, be inserted verbatim in such construction contract or contracts.) If any of the provisions [fol. 4114] contained in Paragraphs 5 to 16, inclusive, of

Exhibit A shall be held invalid, such invalidity shall not affect the validity and effectiveness of the other provisions of this agreement.

13. The Administrator shall have no rights or power of any kind with respect to the rates to be fixed or charged by the Project.

14. This agreement is made with the express understanding that neither the loan nor the grant herein described is conditioned upon compliance by the Applicant with any conditions not expressly set forth herein.

15. The parties hereto expressly agree that this entire contract is made subject to and shall be inoperative except to the extent that it is not in violation of the terms of the injunction granted March 26, 1935, and the decree entered by the Chancellor for Knox County, Tennessee on July 23, 1935, in the case of Tennessee Public Service Company vs. City of Knoxville and others and that to the extent that it is not in conformity with such decree it shall not become operative unless and until such decree is vacated or appropriately modified.

In Witness Whereof, the Applicant and the Government have respectively caused this Agreement to be duly executed as of February 20, 1936.

City of Knoxville, by —— ——, United States of America. Federal Emergency Administrator of Public Works, by —— ——, Assistant Administrator. (Seal.)

Attest: —— ——.

[fol. 4115] DEFENDANTS' EXHIBIT No. 19

Amendatory Loan Agreement, Dated as of May 27, 1935, Between the City of Decatur, Alabama (Herein Called the "Borrower"), and the United States of America (Herein Called the "Government")

(Docket No. 6587)

Whereas, the parties hereto entered into an Agreement dated December 6, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a resolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electrical distribution system, including the low side of the sub-station and equipment, and

Whereas, it is for the mutual benefit of both parties hereto to amend said Agreement dated December 6, 1934.

Now, Therefore, this Agreement witnesseth:

That, the said Agreement dated December 6, 1934, be and is hereby amended as follows:

By deleting from said Agreement paragraph 13 (g), Part One.

It is Hereby Mutually Understood and Agreed, except as herein above provided, that all of the terms and conditions of the Agreement dated December 6, 1934, shall apply and [fol. 4116] be considered a part of this Agreement.

In Witness Whereof, the City of Decatur, Alabama, and the United States of America, have respectively caused this Agreement to be duly executed as of the day and year first above written.

City of Decatur, Alabama, by James A. Nelson, Mayor. (Seal.)

Attest: By E. W. Collier, City Clerk.

United States of America, by Horatio B. Hackett, Assistant Federal Emergency Administrator of Public Works.

Docket No. 6587.

[fol. 4117] DEFENDANTS' EXHIBIT No. 20

Agreement Dated as of December 2, 1935, Termination the Loan and Grant Agreement Dated as of December 6, 1934, and the Amendatory Loan Agreement Dated as of May 27, 1935, Between the City of Decatur, Morgan County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 6, 1934, and

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of May 27, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreement,

Now, Therefore, it is Hereby Agreed by and between the City and the Government that said Loan and Grant Agreement dated as of December 6, 1934, and said Amendatory Loan Agreement dated as of May 27, 1935, be and the same hereby are terminated.

City of Decatur, by —— ——, Mayor. United States of America, Federal Emergency Administrator of Public Works, by —— ——, Assistant Administrator. (Seal.)

Attest: —— ——, City Clerk.

[fol. 4118] DEFENDANTS' EXHIBIT No. 21

* * * * * * *

Accepted by Applicant. Date: December 7, 1935.

Federal Emergency Administration of Public Works

Washington, D. C., December 4, 1935.

PWA Docket No. 6587

CITY OF DECATUR,
Morgan County, Alabama:

1. Offer.—The United States of America (herein called the "Government") hereby offers to aid in financing the

construction of an electrical distribution system, including the low side of the substation and equipment (herein called the "Project") by making a loan and grant to the City of Decatur, Alabama (herein called the "Applicant") in an amount not exceeding in the aggregate the sum of $350,000.

2. Method of Making Loan.—The Government will pur- [fol. 4119] chase from the Applicant, at the principal amount thereof plus accrued interest, obligations of the description set forth below (or such other description as shall be mutually satisfactory) in the aggregate principal amount of $268,000, less such amount of such obligations, if any, as the Applicant may sell the purchaser other than the Government:

(a) Obligor: City of Decatur;
(b) Type: Special obligation, serial, coupon bond;
(c) Denomination: $1,000;
(d) Date September 1, 1934;
(e) Interest rate and interest payment dates: Four per cent per annum, payable on March 1, 1935, and semi-annually thereafter on September 1 and March 1 in each year;
(f) Place of Payment: At the office of the City Treasurer, Decatur, Alabama, or, at the option of the holder, at a bank or trust company in the Borough of Manhattan, City and State of New York;
(g) Registration privileges: At the option of the holder, as to principal only;
(h) Maturities: On September 1 in years and amounts as follows:

1937-1940	$9,000
1941 and 1942	12,000
1943 and 1944	14,000
1945-1954 incl.	18,000

[fol. 4120] (i) Security: Payable solely from and secured only by a first pledge of the revenues derived from the operation of the Project, after provision only for the reasonable cost of operation and maintenance thereof.

3. Amount of Grant.—The Government will make a grant in an amount equal to 30 per centum of the cost of the labor and materials employed upon the Project. The Gov-

ernment will make the grant either wholly by the payment of money, or partly by the payment of money and partly by the cancellation of obligations purchased pursuant to this offer or interest coupons attached thereto, in aggregate amount equal to the amount of the grant less the amount in money. In no event shall the grant, whether made partly by payment or money and partly by cancellation, or wholly by payment of money, be in excess of $100,000.

4. Conditions Precedent.—The Government will be under no obligation to take up and pay for any bonds which it herein offers to purchase or to make any grant;

(a) Financial Condition.—If the financial condition of the Applicant shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government;

(b) Cost of Project.—If it appears that the Applicant will not be able to complete the Project described in this offer for the sum allotted by the Government, or that the [fol. 4121] Applicant will not be able to obtain any funds which, in addition to such sum, shall be necessary to complete the Project;

(c) Plans and Specifications and Certificate of Purposes.—If the Applicant shall not have filed with the Government plans and specifications for the Project accompanied by a certificate of purposes setting out in detail the amounts and purposes of the expenditures which the Applicant proposes to make in connection with the Project, and the Government shall not have accepted such plans and specifications and such certificate of purposes as showing that the Project will be constructed in such manner as to provide reasonable security for the loan to be made by the Government and to comply with Title II of the National Industrial Recovery Act in all other respects.

5. Interest of Member of Congress.—No member of or Delegate to the Congress of the United States of America shall be allowed to participate in the funds made available for the construction of the Project or to any benefit arising therefrom.

6. Bonus or Commission.—The Applicant shall not pay any bonus or commission for the purpose of obtaining an approval of the application.

7. Information.—The Applicant shall furnish the Government with reasonable information and data concerning the construction, cost, and progress of the work. Upon request the Applicant shall also furnish the Government, [fol. 4122] and any purchaser from the Government of at least 25 per cent of the bonds, with adequate financial statements and other reasonable information and data relating to the Applicant.

8. Bond Circular.—The Applicant shall furnish all such information in proper form for the preparation of a bond circular and shall take all such steps as the Government or any purchaser or purchasers from the Government of not less than 25 per cent of the bonds may reasonably require to aid in the sale by the Government or any such purchaser or purchasers of any or all of the bonds.

9. Insurance.—The Applicant shall carry reasonable and adequate insurance upon the completed Project or any completed part thereof accepted by the Applicant or the system of which the Project is a part.

10. Name of Project.—The Applicant shall not name the Project for any living person.

11. Grant and Bond Payments.

(a) Advance Grant.—Upon receipt of this offer, the Applicant may request an advance on account of the grant in an amount not exceeding 5 per cent of the estimated cost of labor and materials to be employed on the Project. This advance grant may be used for paying architectural, engineering, and planning fees, costs of surveys, borings and other preliminary investigations, cost of preparation of plans, specifications and other forms of proposed contract [fol. 4123] documents, and costs of advertisements for bids for contracts, and the printing of the bonds, but not in payment for the acquisition of lands, easements, or rights-of-way. The request for this advance shall be accompanied by a signed certificate of purposes in which shall appear in

reasonable detail the purposes for which such advance grant will be used.

(b) Payment for Bonds.—A requisition requesting the Government to take up and pay for bonds will be honored as soon as possible after such bonds are ready for delivery, if the bond transcript and other documents supporting such requisitions are complete.

(c) Intermediate Grant Requisitions.—Simultaneously with the delivery of and payment for the bonds by the Government, or, when bonds are taken up and paid for in more than one installment, simultaneously with the delivery of and payment for the final installment, if the Applicant has so requisitioned and if such requisition is accompanied by a signed certificate of purposes showing in reasonable detail the purposes for which the funds will be used, and that such funds will be used for items properly included as part of the cost of the Project, the Government will make a grant of an amount representing the difference between the advance grant and an amount equal to 15 per cent of said previously estimated cost of labor and materials to be employed upon the Project. When the Project shall be approximately 70 per cent completed the Applicant may file [fol. 4124] its requisition for an additional grant in an amount which, together with the amount previously paid on account of the grant, is equal to 30 per cent of the cost of labor and materials theretofore employed on the Project, but in no event in an amount exceeding the amount set forth in paragraph 3 hereof.

The intermediate grant requisitions will be honored if the documents necessary to support such requisitions are complete and work on the Project has progressed in accordance with the provisions of this offer relating thereto.

(d) Final Grant Payment.—At any time after completing the Project, the Applicant may file a requisition requesting the remainder of the grant which, together with all previous payments on account of such grant, shall be an amount not in excess of 30 per cent of the actual cost of labor and materials employed upon the Project, and not to exceed, in any event, the amount of the grant set forth in paragraph 3 hereof. The final grant requisition will be honored if the

documents necessary to support it are complete and work on the Project has been completed in accordance with the provisions of this offer relating thereto.

(e) Construction Account.—A separate account or accounts (herein collectively called the "Construction Account") shall be set up in a bank or banks which are members of the Federal Deposit Insurance Corporation and of the Federal Reserve System. The advance grant, the [fol. 4125] intermediate grants, the proceeds from the sale of the bonds (exclusive of accrued interest and an amount, if any, representing interest during construction), the final grant, and any other moneys which shall be required in addition to the foregoing, to pay the cost of constructing the Project shall be deposited in the Construction Account, promptly upon the receipt thereof. All accrued interest paid by the Government at the time of delivery of the bonds shall be paid into a separate account (herein called the "Bond Fund"). Payments for the construction of the Project shall be made only from the Construction Account.

(f) Disbursement of Moneys in Construction Account.—Moneys in the Construction Account shall be expended only for such purposes as shall have been previously specified in the certificate of purposes filed with and accepted by the Government. All moneys remaining in the Construction Account after all costs incurred in connection with the Project have been paid shall either be used to repurchase bonds, if any of the bonds are then held by the Government, or be transferred to the Bond Fund.

(g) Use of Moneys in Bond Fund.—Moneys in the Bond Fund shall be expended solely for the purpose of paying interest on and principal of bonds.

12. Construction of Project.—The following policies have been adopted by the Federal Emergency Administration of Public Works in order to effectuate the purposes of Title [fol. 4126] II of the National Industrial Recovery Act, and the making of the loan and grant herein set forth shall be subject to the condition that the Applicant, in the exer-

cise of its lawful discretion, shall adopt said policies and comply therewith in the construction of the Project:

(a) That if a project is to be constructed under contract, contracts should be awarded to the lowest responsible bidder pursuant to public advertisement and that every opportunity be given for free, open and competitive bidding for contracts for construction and contracts for the purchase of materials and equipment.

(b) That the use in the specifications or otherwise of the name of a proprietary product or the name of the manufacturer or vendor to define the material or product required, unless such name if followed by the term "or equal", is considered contrary to the policy of free, open and competitive bidding. Where such a specification is used in lieu of descriptive detail of substance and function, the term "or equal" is to be literally construed so that any material or article which will perform adequately the duties imposed by the general design will be considered satisfactory.

(c) That, in determining the lowest bidder for the supplying of materials and equipment, in the interest of standardization or ultimate economy, the contract may be awarded to other than the actual lowest bidder.

(d) That, in order to insure completion of a project [fol. 4127] within the funds available for the construction thereof, faithful performance of construction contracts will be assured by requiring performance bonds written in an amount equal to 100% of the contract price by — or more corporate sureties financially able to assume the risk and that such bonds will be further conditioned upon the payment of all persons supplying labor and furnishing materials for the construction of such project, except in cases in which it is required by the laws of Alabama that protection for labor and materialmen be provided by a bond separate from the performance bond. In such latter case, a performance bond in an amount equal to 100% of the contract price supplemented by a separate labor and materialmen's bond in an amount not less than 50% of the contract price will be adequate.

(e) That, if the work on any proposed construction contract is hazardous, the contractor will be required to provide public liability insurance and property damage insurance in amounts reasonably sufficient to protect the contractor and each subcontractor.

(f) That minimum or other wage rates required to be predetermined by the law of Alabama or local ordinance shall be predetermined by the applicant in accordance therewith, and incorporated in the appropriate contract documents. In the absence of applicable law or ordinance, the applicant shall predetermine minimum wage rates, in accordance with customary local rates, for all the trades and occupations to be employed on the project, and incorporate [fol. 4128] them in the appropriate contract documents.

(g) That the work shall be commenced as quickly as possible after funds are made available and be continued to completion with all practicable dispatch in an efficient and economical manner.

(h) That a project will be constructed in accordance with the provisions of the attached Exhibit A which is hereby made a part hereof; to insure this purpose appropriate provisions will be incorporated in all contracts (except subcontracts for work to be performed at the site of the project. (Exhibit A has been so worded that the provisions thereof, may, if the applicant so desires, be inserted verbatim in such construction contract or contracts.)

13. The Administrator and the Government shall have no rights or power of any kind with respect to the rates to be fixed or charged by the project, excepting only such rights as they may have as a holder of such bonds under the Constitution and laws of Alabama and the lawful proceedings of the Applicant, taken pursuant thereto, in authorizing the issuance of such bonds.

14. This offer is made with the express understanding that neither the loan nor the grant herein described is conditioned upon compliance by the Applicant with any conditions not expressly set forth herein. There are no other agreements or understandings between the Applicant and

the Government or any of its agencies in any way relating [fol. 4129] to said Project or to the financing or the construction thereof.

United States of America, Federal Emergency Administrator of Public Works, (Sgd.) By Horatio B. Hackett, Assistant Administrator.

[fol. 4130] DEFENDANTS' EXHIBIT No. 22

Amendatory Loan Agreement Dated as of March 26, 1935, Between the City of Tuscumbia, Alabama (Herein Called the "Borrower"), and the United States of America (Herein Called the "Government")

(Docket No. 3125)

Whereas, the parties entered hereto into an Agreement dated December 28, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a resolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electric transmission line and distribution system, and other necessary appurtenances thereto, and

Whereas, it is for the mutual benefit of both parties hereto to amend said agreement dated December 28, 1934.

Now, Therefore, this Agreement witnesseth:

That, the said Agreement dated December 28, 1934, be and is hereby amended as follows:

By deleting from said Agreement Paragraph 4 (f), Part One.

It is Hereby Mutually Understood and Agreed, except as herein above provided, that all of the terms and conditions of the Agreement dated December 28, 1934, shall apply and be considered a part of this Agreement.

In Witness Whereof, the City of Tuscumbia, Alabama, and the United States of America, have respectively caused

DEFENDANTS' EXHIBIT No. 22

[fol. 4131] this Agreement to be duly executed as of the day and year first above written.

City of Tuscumbia, Alabama, by W. L. Farr, Mayor.
United States of America, by Philip B. Fleming, Acting Deputy Federal Emergency Administrator of Public Works. (Seal.)

Attest: by I. L. Hay, City Clerk.

Docket No. 3125.

[fol. 4132] DEFENDANTS' EXHIBIT No. 23

Agreement dated as of December 2, 1935, Terminating the Loan and Grant Agreement Dated as of December 28, 1934, and the Amendatory Loan Agreement Dated as of March 26, 1935, Between the City of Tuscumbia, Colbert County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 28, 1934, and

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of March 26, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreement,

Now, Therefore, it is Hereby Agreed by and between the City and the Government that said Loan and Grant Agreement dated as of March 26, 1935, be and the same hereby are terminated.

City of Tuscumbia, Alabama, by W. L. Farr, Mayor.
United States of America, Federal Emergency Administrator of Public Works, by Horatio B. Hackett, Assistant Administrator. (Seal.)

Attest: I. L. Hay, City Clerk.

Docket No. 3125.

[fol. 4133] DEFENDANTS' EXHIBIT No. 24

Offer on December 4, 1935, by the Federal Emergency Administration of Public Works to make a loan and grant in the amount of $130,000 to the City of Tuscumbia, Alabama, for the construction of an electric transmission line and distribution system, accepted by said city on December 9, 1935.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Defendants' Exhibit No. 21.

[fol. 4134] DEFENDANTS' EXHIBIT No. 25

Amendatory Loan Agreement, Dated as of June 6, 1935, Between the City of Sheffield, Alabama (Herein Called the "Borrower") and the United States of America (Herein Called the "Government")

Whereas, the parties hereto entered into an Agreement dated December 28, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a Revolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electric transmission line and distribution system, and other necessary appurtenances thereto, and

Whereas, it is for the mutual benefit of both parties hereto to amend said Agreement dated December 28, 1934.

Now, Therefore, This Agreement Witnesseth:

That, the said Agreement dated December 28, 1934, be and is hereby amended as follows:

By striking out the date "June 1, 1934, in Paragraph 2 (e), Part One, of said Agreement and inserting in lieu thereof the date "April 1, 1935"; and

By striking out the words "At the rate of 4 per cent per annum, payable December 1, 1934, and semiannually thereafter on June 1 and December 1 in each year" in Paragraph [fol. 4135] 2(f), Part One, of said Agreement and inserting in lieu thereof the words "At the rate of 4 per cent per annum, payable October 1, 1935, and semiannually thereafter on April 1 and October 1 in each year"; and

By striking out the date "June 1" in Paragraph 2 (g), Part One, of said Agreement and inserting in lieu thereof the date "April 1"; and

DEFENDANTS' EXHIBIT No. 25

By striking out the maturities of the bonds in Paragraph 2 (g), Part One, of said Agreement and inserting in lieu thereof the following maturities:

Year	Amount	Year	Amount
1938	$10,000	1946	$11,000
1939	10,000	1947	12,000
1940	10,000	1948	12,000
1941	10,000	1949	12,000
1942	10,000	1950	12,000
1943	10,000	1951	12,000
1944	10,000	1952	12,000
1945	10,000	1953	12,000
		1954	12,000

It is Hereby Mutually Understood and Agreed except as hereinabove provided, that all of the terms and conditions of the Agreement dated December 28, 1934, shall apply and be considered a part of this Agreement.

In Witness Whereof, the City of Sheffield, Alabama, and the United States of America, have respectively caused this [fol. 4136] Agreement to be duly executed as of the day and year first above written.

City of Sheffield, Alabama, by W. H. Richeson, Chairman, Board of Commissioners. United States of America, by Harold L. Ickes, Federal Emergency Administrator of Public Works. (Seal.)

Attest: by Peter Schaut, City Clerk.

[fol. 4137] DEFENDANTS' EXHIBIT No. 26

Agreement Dated as of December 2, 1935, Terminating the Loan and Grant Agreement Dated as of December 28, 1934, the Amendatory Loan Agreement Dated as of April 6, 1935, and the Amendatory Loan Agreement Dated as of June 6, 1935, between the City of Sheffield, Colbert County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 28, 1934, and

DEFENDANTS' EXHIBIT 26

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of April 6, 1935, and

Whereas said Loan and Grant Agreement was further amended by an Amendatory Loan Agreement by and between the City and the Government dated as of June 6, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreements,

Now, Therefore, It is Hereby Agreed by and between the city and the Government that said Loan and Grant Agreement dated as of December 28, 1934, said Amendatory Loan Agreement dated as of April 6, 1935, and said Amendatory Loan Agreement dated as of June 6, 1935, be and the same hereby are terminated.

City of Sheffield, by —— ——, United States of America, Federal Emergency Administrator of Public Works, by —— ——, Assistant Administrator. (Seal.)

Attest: —— ——.

[fol. 4138] DEFENDANTS' EXHIBIT No. 27

Offer dated December 4, 1935, by the Federal Emergency Administration of Public Works to the City of Sheffield, Alabama, for a loan and grant in the amount of $230,000 for the construction of an electric transmission line and distribution system, accepted by said city on December 7, 1935.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Defendants' Exhibit No. 21.

[fol. 4139] DEFENDANTS' EXHIBIT No. 28

Resolution of the Board of Directors of TVA Adopted March 5, 1936

Whereas, Under date of July 26, 1934, the Authority entered into a contract with the Tennessee Public Service Company by the terms of which the Authority agreed to

DEFENDANTS' EXHIBIT No. 28

buy and the Company agreed to sell certain electric transmission and distribution properties located in Knox County, Tennessee, all of which is more particularly described in said contract, and

Whereas, By Section XIV of said contract, the parties agreed that unless a closing date on or before September 30, 1934, for the consummation of the purchase and sale of said properties was fixed, neither party should, after said date, be under any further obligation under said agreement except by mutual consent, and

Whereas, The Board of Directors is satisfied that it is not for the best interest of the Authority to purchase said property, or any part thereof, under the terms and conditions contained in said agreement. therefore

Be it Resolved, That the Authority hereby abandons and terminates any rights it may have to execute any part of said agreement, and that said agreement, insofar as it remains in effect, is hereby terminated and rescinded.

Further Resolved, That any offers or tenders made by the Authority for the properties referred to in said contract are hereby withdrawn and revoked.

[fol. 4140] DEFENDANTS' EXHIBIT No. 29

Resolution of the Board of Directors of TVA, Adopted October 4, 1935

Whereas, On August 25, 1933, the Board released a statement setting forth a policy with reference to the generation, transmission, and disposition of surplus power by the Authority, such policy being commonly known as the "Power Policy," and

Whereas, Recent amendments to the Tennessee Valley Authority Act of 1933, and legislation passed by the legislatures of the various states of the Tennessee Valley during the past two years affect the policy of the Authority with regard to the transmission and disposition of surplus power, and

Whereas, Two years of experience in administering that part of the Authority's general program relating to the disposition of surplus power has made it advisable to re-

DEFENDANTS' EXHIBIT No. 29

state the principles governing the administration of such program, therefore

Be it Resolved, That the statement released on August 25, 1933, heretofore described and commonly known as the "Power Policy," is hereby rescinded and withdrawn.

Further Resolved, That the Board of Directors hereby appoints and instructs the following committee to formulate and submit to the Board its recommendations for a Statement of Policy setting forth the principles applicable to the disposition of surplus power in the light of recent statutory changes and the Authority's administrative experience:

David E. Lilienthal, Chairman. Llewellyn Evans. Barton M. Jones. C. Neil Bass. Wm. J. Hayes.

[fol. 4141] DEFENDANTS' EXHIBIT No. 30

Chart Entitled "Gross Waterborne Commerce on Inland Waterways of the United States, 1919-1934"

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 31

Map entitled "Alluvial Valley of the Mississippi River".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 32

House Document 259, 74th Congress 1st Session.

(Original Exhibit)

[fol. 4142] DEFENDANTS' EXHIBIT No. 33 (Excluded)

Chart entitled "Hydrograph of Hudson River at Spier Falls Showing Effect of Sacandaga Reservoir In Reducing Flood of March 1936".

(Omitted)

DEFENDANTS' EXHIBIT No. 34 (Excluded)

Chart entitled "Hydrograph of Hudson River at Spier Falls Showing Sacandaga Reservoir Regulation For 1936."

(Omitted)

DEFENDANTS' EXHIBIT No. 35 (Excluded)

Chart entitled "Daily Water Surface Elevations—Sacandaga Reservoir".

(Omitted)

[fol. 4143] DEFENDANTS' EXHIBIT No. 36

Map entitled "Tennessee River Drainage Basin."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 37

Photograph of scale model of Chickamauga Dam.

(Original Exhibit)

[fol. 4144] DEFENDANTS' EXHIBIT No. 38

Chart entitled "Tennessee River Dams".

(Original Exhibit)

[fol. 4145] DEFENDANTS' EXHIBIT No. 39

Gilbertsville Project

(Tentative, Not Adopted)

1. Location	
Miles above mouth of river	22.7
2. Drainage area above dam, sq. mi.	40,000
3. Length of reservoir (navigation pool), miles	184
4. Elevation of top of gates	375
5. Volume of reservoir at top of gates, acre-feet	6,150,000
6. Navigation level	350
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	1,350,000
8. Depth of surcharge (line 4 minus line 6), feet	25
9. Controlled flood surcharge, acre-feet	4,600,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	330
11. Volume of reservoir below fixed spillway crest	356,000
12. Crest gates, length ft. by height ft.	24–40 x 45
13. Lock chamber clear dimension, feet	110 x 600
14. Number and capacity of units authorized	None.
15. Number of stalls provided for additional units	6–32,000 kw.
16. Approximate discharge capacity per unit, sec. ft.	9,000

[fol. 4146] DEFENDANTS' EXHIBIT No. 40

Chart entitled "Tennessee River Dams".

(Original Exhibit)

[fol. 4147] DEFENDANTS' EXHIBIT No. 41

Resolution of the Board of Directors of TVA, adopted July 20, 1937.

Resolved,

1. That there is hereby established a Water Control Planning Department.

2. Under the direction and general supervision of a Chief Water Control Planning Engineer responsible to the Chief Engineer, the Department shall perform the following duties:

a. Make engineering studies, investigations, surveys, maps, reports, and recommendations involving basic hydraulic, geologic, topographic, and cadastral data needed to determine the necessity and feasibility of projects required in the Authority's integrated program of river control. and to make these and other related data available as are required in the planning, location, design, construction and operation of dams, reservoirs, locks, powerhouses and other structures and physical facilities as are approved for such a program.

b. Prepare and issue instructions subject to review by the Chief Engineer governing the impounding and release of water at the various dams of the Authority to assure the maximum use of facilities and resources available for flood control, navigation and other purposes consistent with the requirements of the Tennessee Valley Authority Act and within the policies of the Board pursuant thereto; to define from time to time the extent to which water may be impounded and the stream flow limits within which impounded water may be used for the generation of electric power.

c. Coordinate and integrate its engineering planning activities with those of other Federal, state and local agencies engaged in similar work whenever feasible and consistent with economy of effort and the purposes of the Act.

d. Coordinate its studies, findings, reports and recommendations with the studies and recommendations and needs of other departments of the Authority to assure maximum attainment of the purposes of the Act and the policies of [fol. 4148] the Board in the development of a regional approach to the problems of water control on the rivers and on the land.

[fol. 4149] DEFENDANTS' EXHIBIT No. 42

Pickwick Project

1. Location	
Miles above mouth of river	206.7
2. Drainage area above dam, sq. mi.	32,870
3. Length of reservoir (navigation pool), miles	50.1
4. Elevation of top of gates	418
5. Volume of reservoir at top of gates, acre-feet	1,032,000
6. Navigation level	408
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	616,000
8. Depth of surcharge, ft. (line 4 minus line 6)	10
9. Controlled flood surcharge, acre-feet	416,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	378
11. Volume of reservoir below fixed spillway crest	60,000
12. Crest gates, length ft. by height ft.	22–40 x 40
13. Lock chamber clear dimension, feet	110 x 600
14. Number and capacity of units authorized	2–36,000 kw.
15. Number of stalls provided for additional units	4–36,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,600

[fol. 4150] DEFENDANTS' EXHIBIT No. 43

Wheeler Project

1. Location Miles above mouth of river	274.9
2. Drainage area above dam, sq. mi.	30,800
3. Length of reservoir (navigation pool), miles	74.1
4. Elevation of top of gates	556
5. Volume of reservoir at top of gates, acre-feet	1,030,000
6. Navigation level	548
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	590,000
8. Depth of surcharge, ft. (line 4 minus line 6)	8
9. Controlled flood surcharge, acre-feet	440,000
(Line 5 miuus line 7.)	
10. Elevation of fixed spillway crest	541
11. Volume of reservoir below fixed spillway crest	400,000
12. Crest gates, length ft. by height ft.	60–40 x 15
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	2–32,000 kw.
15. Number of stalls provided for additional units	6–32,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	9,500

[fol. 4151] DEFENDANTS' EXHIBIT No. 44

Chart entitled "Tennessee River Dams"

(Original Exhibit)

[fol. 4152] DEFENDANTS' EXHIBIT No. 45

Guntersville Project

1. Location	
Miles above mouth of river	349.0
2. Drainage area above dam, sq. mi.	24,300
3. Length of reservoir (navigation pool), miles	82.1
4. Elevation of top of gates	595
5. Volume of reservoir at top of gates, acre-feet	951,000
6. Navigation level	591
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	709,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	4
9. Controlled flood surcharge, acre-feet	242,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	555
11. Volume of reservoir below fixed spillway crest	15,000
12. Crest gates, length ft. by height ft.	18–40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	3–25,000 kw.
15. Number of stalls provided for additional units	1–25,000 kw.
16. Approximate discharge capacity per unit, sec. ft.	11,000

[fol. 4153] DEFENDANTS' EXHIBIT No. 45A

Guntersville Project

1. Location	
Miles above mouth of river	349.00
2. Drainage area above dam, sq. mi.	24,300
3. Length of reservoir (navigation pool), miles	82.1
4. Elevation of top of gates	595
5. Volume of reservoir at top of gates, acre-feet	951,000
6. Navigation level	591
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	709,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	4
9. Controlled flood surcharge, acre-feet	242,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	555
11. Volume of reservoir below fixed spillway crest	15,000
12. Crest gates, length ft. by height ft.	18–40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	3–24,000 kw.
15. Number of stalls provided for additional units	1–24,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,000

[fol. 4154] DEFENDANTS' EXHIBIT No. 46

Chickamauga Project

1. Location	
Miles above mouth of river	471.0
2. Drainage area above dam, sq. mi.	20,800
3. Length of reservoir (navigation pool), miles	58.9
4. Elevation of top of gates	685
5. Volume of reservoir at top of gates, acre-feet	639,000
6. Navigation level	673.5
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	314,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	11.5
9. Controlled flood surcharge, acre-feet	325,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	645
11. Volume of reservoir below fixed spillway crest	25,000
12. Crest gates, length ft. by height ft.	20–40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	3–25,000 kw.
15. Number of stalls provided for additional units	1–25,000 kw.
16. Approximate discharge capacity per unit, sec-ft.	11,000

[fol. 4155] DEFENDANTS' EXHIBIT No. 46A

Chickamauga Project

1. Location Miles above mouth of river	471.0
2. Drainage area above dam, sq. mi.	20,800
3. Length of reservoir (navigation pool), miles	58.9
4. Elevation of top of gates	685
5. Volume of reservoir at top of gates, acre-feet	639,000
6. Navigation level	673.5
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	314,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	11.5
9. Controlled flood surcharge, acre-feet	325,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	645
11. Volume of reservoir below fixed spillway crest	25,000
12. Crest gates, length ft. by height ft.	20–40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	3–27,000 kw.
15. Number of stalls provided for additional units	1–27,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,000

[fol. 4156] DEFENDANTS' EXHIBIT No. 47

Watts Bar Project

(Tentative)

1. Location	
Miles above mouth of river	529.9
2. Drainage area above dam, sq. mi.	17,460
3. Length of reservoir (navigation pool), miles	72.1
4. Elevation of top of gates	745
5. Volume of reservoir at top of gates, acre-feet	1,132,000
6. Navigation level	736
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	795,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	9
9. Controlled flood surcharge, acre-feet	337,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	720
11. Volume of reservoir below fixed spillway crest	365,000
12 Crest gates, length ft. by height ft.	21–40 x 25
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	None
15. Number of stalls provided for additional units	4–37,500 kw.
16. Approximate discharge capacity per unit, sec.-ft.	10,000

[fol. 4157] DEFENDANTS' EXHIBIT No. 48

Coulter Shoals Project

(Tentative.)

1. Location	
Miles above mouth of river	602.0
2. Drainage area above dam, sq. mi.	9,600
3. Length of reservoir (navigation pool), miles	50
4. Elevation of top of gates	815
5. Volume of reservoir at top of gates, acre-feet	370,000
6. Navigation level	805
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	230,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	10
9. Controlled flood surcharge, acre-feet	140,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	790'
11. Volume of reservoir below fixed spillway crest	100,000
12. Crest gates, length ft. by height ft.	20–40 x 25
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	None
15. Number of stalls provided for additional units	3–20,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	6,000

[fol. 4158] DEFENDANTS' EXHIBIT No. 49

Photograph of sections of Norris Dam.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 50

Chart entitled "Tributary Dams".

(Original Exhibit)

[fol. 4159] DEFENDANTS' EXHIBIT No. 51

Norris Project

1. Location	
Miles above mouth of Clinch	79.8
Miles above mouth of Tennessee	647.5
2. Drainage area, sq. mi.	2950
3. Elevation of top of gate	1034
4. Volume of reservoir at top of gates, acre feet	2,567,000
5. Elevation of fixed spillway crest	1020
6. Volume of reservoir at spillway crest, acre feet	2,047,000
7. Crest gates, length ft. by height ft.	3–100 x 14
8. Capacity of sluice ways, sec. ft. at elevation 1020	36,000
9. Number and capacity of units authorized	2–50,000kw.
10. Number of stalls provided for additional units	none
11. Approximate discharge capacity per unit, sec. ft.	4,300

[fol. 4160] DEFENDANTS' EXHIBIT No. 52

Hiwassee Project

1. Location	
Miles above mouth of Hiwassee	75.8
Miles above mouth of Tennessee	576.3
2. Drainage area, sq. mi.	977
3. Elevation of top of gates	1526.5
4. Volume of reservoir at top of gates, acre-ft.	435,000
5. Elevation of fixed spillway crest	1503.5
6. Volume of reservoir at spillway crest, acre-ft.	310,000
7. Crest gates, length, ft. by height, ft.	7–32 x 23

DEFENDANTS' EXHIBIT No. 52

Hiwassee Project—Continued

8. Capacity of sluiceways, sec.-ft., at elevation 1526	20,000
9. Number and capacity of units authorized	1–60,000 kw.
10. Number of stalls provided for additional units	1–60,000 kw.
11. Approximate discharge capacity per unit, sec.-ft.	4,000

[fol. 4161] DEFENDANTS' EXHIBIT No. 53

Volume of Main River Pools at Various Levels

The reference numbers (1) and (2) given in the tabulation refer to the following levels.

(1) Flat navigation pool level is the flat level throughout the pool which is required to furnish a depth of either 12 feet in the approach to the lock upstream or 11 feet over the lower lock sill.

(2) Normal pool level, as referred to by Tennessee Valley Authority is an arbitrary level generally defining the maximum level to which the pool will be raised during low water season, except for possibly a temporary rise of one foot above this caused by malaria control fluctuation.

Gilbertsville:	(1)	Elevation 354	Volume 2,000,000 acre feet
	(2)	" 357	" 2,450,000 " "
		" 359	" 2,750,000 " "
Pickwick:	(1)	Elevation 408	Volume 616,000 acre feet
	(2)	" 413	" 807,000 " "
Wheeler:	(1)	Elevation 550	Volume 750,000 acre feet
	(2)	" 555	" 1,030,000 " "
Guntersville:	(1)	Elevation 593	Volume 824,000 acre feet
	(2)	" 594	" 886,000 " "
Chickamauga:	(1)	Elevation 575	Volume 345,000 acre feet
	(2)	" 582	" 541,000 " "
Watts Bar:	(1)	Elevation 536	Volume 795,000 acre feet
	(2)	" 540	" 935,000 " "

[fol. 4162] DEFENDANTS' EXHIBIT No. 54

Volume of Main River Pools at Various Levels

The reference numbers (1) and (2) given in the tabulation refer to the following levels:

(1) Flat navigation pool level is the flat level throughout the pool which is required to furnish a depth of either 12 feet in the approach to the lock upstream or 11 feet over the lower lock sill.

(2) Normal pool level, as referred to by Tennessee Valley Authority is an arbitrary level generally defining the maximum level to which the pool will be raised during low water season, except for possibly a temporary rise of one foot above this caused by malaria control fluctuation.

Gilbertsville:				
	(1)	Elevation 354	Volume	2,000,000 acre feet
	(2)	" 357	"	2,450,000 " "
		" 359	"	2,750,000 " "
Pickwick:				
	(1)	Elevation 408	Volume	616,000 acre feet
	(2)	" 413	"	807,000 " "
Wheeler:				
	(1)	Elevation 550	Volume	750,000 acre feet
	(2)	" 555	"	1,030,000 " "
Guntersville:				
	(1)	Elevation 593	Volume	824,000 acre feet
	(2)	" 594	"	886,000 " "
Chickamauga:				
	(1)	Elevation 675	Volume	345,000 acre feet
	(2)	" 682	"	541,000 " "
Watts Bar:				
	(1)	Elevation 736	Volume	795,000 acre feet
	(2)	" 740	"	935,000 " "
Coulter Shoals: (elevations are tentative and volumes approximate pending completion of surveys).				
	(1)	Elevation 805	Volume	230,000 acre feet
	(2)	" 810	"	300,000 " "

[fol. 4163] DEFENDANTS' EXHIBIT No. 55

Map of Chickamauga Reservoir.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 56

Map of Watts Bar Reservoir and surrounding region.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 57

Progress Map of Coulter Shoals Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 58

Map of Norris Reservoir and surrounding region.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 59

Map of Hiwassee Reservoir.
(Original Exhibit)

[fol. 4164] DEFENDANTS' EXHIBIT No. 60

Preliminary map of Gilbertsville Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 61

Map of Pickwick Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 62

Map of Muscle Shoals area.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 63

Map of Wheeler Reservoir and surrounding region.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 64

Map of Guntersville Reservoir.

(Original Exhibit)

[fol. 4165] DEFENDANTS' EXHIBIT No. 65

Resolution of Board of Directors of Tennessee Valley Authority

July 1, 1936

226-6. After examining the provisions of Water Control Bulletins No. 1 and No. 2, submitted by the Hydroelectric Committee, and finding them satisfactory, the Board ordered a true copy of each bulletin filed with the Authority's records as Exhibit 7-1-36e, and then issued the following instructions which are to govern the preparation of subsequent bulletins and the administration of the provisions of all water control bulletins hereafter approved by the Board:

1. A Committee on Water Control Operations is created consisting of the Chief Water Control Planning Engineer and the Chief Electrical Engineer. This Committee shall prepare general regulations as to the control of water through the operation of reservoirs. In formulating these regulations, the Committee shall confer with the Chief Construction Engineer, the Chief Medical Officer, the General Solicitor, and the Superintendent of Power Operations, or their representatives. The regulations shall be transmitted to the office of the General Manager in the form of bulletins for submission to the Board of Directors and for general distribution after approval by the Board.

2. The Superintendent of Power Operations shall be responsible for the day to day operation of the gates within the limits of and consistent with the requirements established by the regulatory bulletins of the Committee. He shall fix the responsibility for load dispatching and gate operation at each dam. On dams under construction, a representative of the construction organization shall be designated to operate the gates.

3. The Engineering Data Division shall maintain current records of rainfall, runoff, and river flow, furnish daily

DEFENDANTS' EXHIBIT No. 65

reports and predictions, and designate a representative who will maintain daily contact with the Chief Load Dispatcher at Wilson Dam for the exchange of information.

Water Control Bulletin Number 1

June 30th, 1936

Reservoirs of the Authority are to be operated: First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Re- [fol. 4166] quirements for the control of malaria and the temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dams shall be converted into electricity as is feasible.

Water Control Bulletin Number 2

June 30, 1936

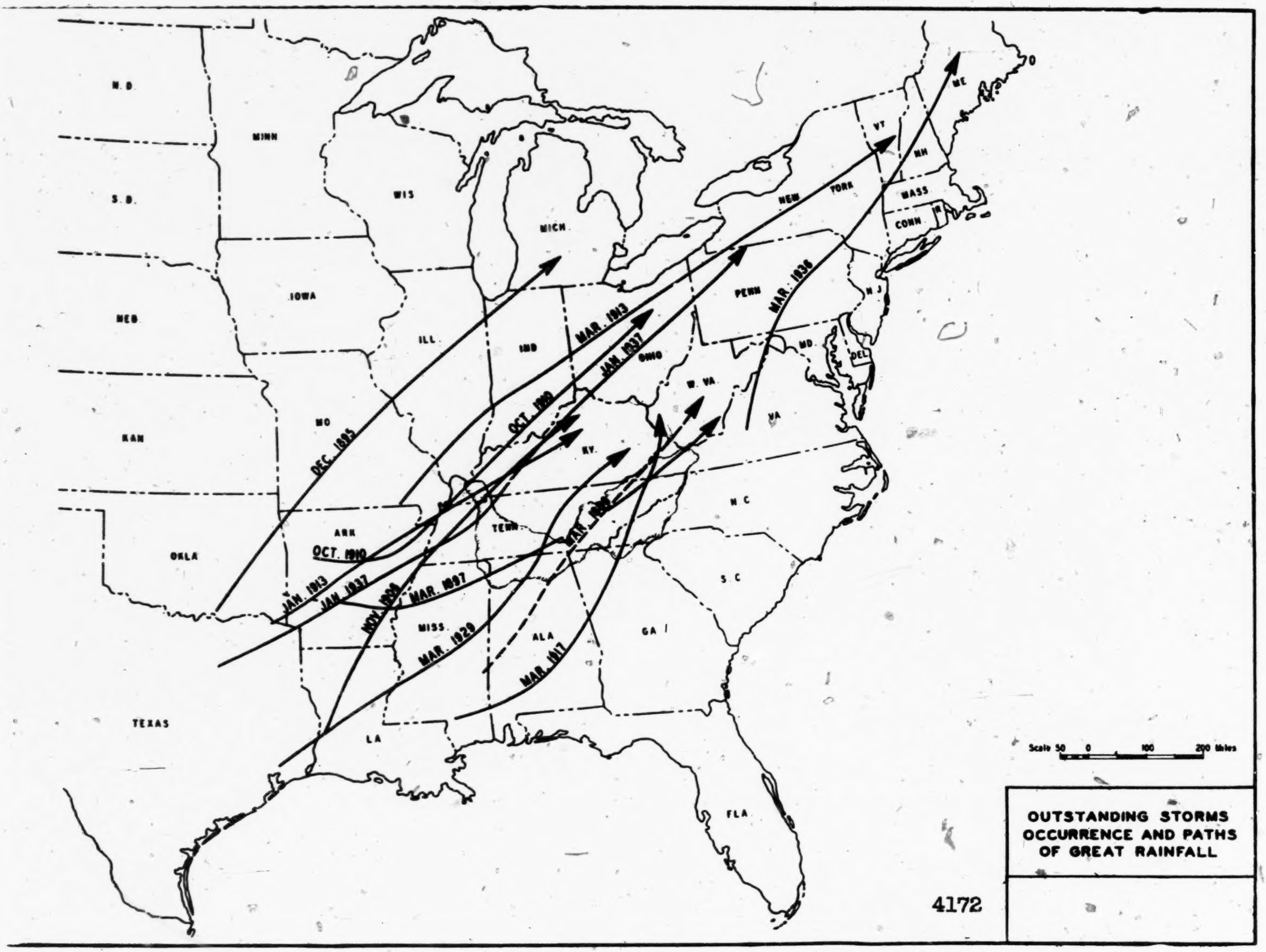
Confirming direction of June 18, 1936, which was responsive to recommendations for increasing navigable depths in the lower river, until further notice water shall be released from Norris Reservoir so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 c.f.s.

Variations in the daily peak discharges at Wilson Dam should not be so large that minimum flow at the Florence gage will ever be less than 13,000 c.f.s. The regulation of the water level in the Wilson pool should be accomplished by varying the discharge at the Wheeler Dam. The water level above the Wheeler Dam should be varied so as to iron out, as far as possible, any fluctuations in the amount of water flowing into the Wheeler Reservoir.

[fol. 4167] DEFENDANTS' EXHIBIT No. 66

Map entitled "Tennessee River Basin, Principal Rivers, Railroads and Highways."

(Original Exhibit)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OUTSTANDING STORMS
OCCURRENCE AND PATHS
OF GREAT RAINFALL
4172

DEFENDANTS' EXHIBIT No. 67

[fol. 4168] Rainfall and Run-off Data

Stream	Drainage Area Sq. Miles	Average Annual Rainfall Inches	Average Annual Run-Off Inches
Upper Tennessee River Basin:			
French Broad River	5,140	50.8	
Holston River	3,810	46.0	
Clinch River	4,400	49.6	
Little Tennessee River	2,650	62.5	
Hiwassee River	2,660	56.0	
Minor Tributaries and Local Area	2,740	52.0	
Total Above Chattanooga	21,400	51.9	24.34
Lower Tennessee River Basin:			
Elk River	2,330	53.5	
Duck River	3,560	52.5	
Minor Tributaries and Local Area	13,310	52.3	
Total Below Chattanooga	19,200	52.5	
Total Tennessee River	40,600	52.2	22.77
Mississippi River Basin:			
Ohio River including Tennessee River	203,900	44.3	18.28
Mississippi River Above Columbus, Ky., excluding arid portion of Missouri River	533,218	36.3	13.03

Relation of Tennessee River drainage area to Mississippi River drainage area (excluding arid portion of Missouri River basin)—7.6%.

Relation of Mean Annual run-off from Tennessee River basin to run-off from Mississippi River basin above Columbus, excluding arid portion of Missouri River basin—13.1%.

DEFENDANTS' EXHIBIT No. 68

[fol. 4169] Contribution of Clinch and Hiwassee Rivers to Tennessee River Floods at Chattanooga

Date	Tennessee River at Chattanooga Discharge cu. ft. per sec.	Tennessee River at Chattanooga Stage ft.	Clinch River at Clinton Discharge cu. ft. per sec.	Hiwassee River at Reliance Discharge cu. ft. per sec.
Apr. 3, 1886	391,000	52.2	91,000	no record
Mar. 2, 1890	294,000	42.6	39,000	no record
Mar. 11, 1891	264,000	35.9	34,000	no record
Apr. 5, 1896	276,000	40.5	76,800	no record
Feb. 9, 1899	261,000	38.6	46,700	no record
Mar. 22, 1899	274,000	40.2	24,000	no record
Jan. 2, 1902	279,000	40.8	54,000	11,380
Mar. 7, 1917	341,000	47.7	60,600	25,300
Feb. 1, 1918	289,000	42.7	54,400	14,900
Apr. 5, 1920	298,000	43.6	21,000	24,500
Dec. 31, 1932	240,000	37.6	20,600	20,100
Mar. 29, 1936	235,000	37.1	0*	15,300

* Clinch River flow above Norris Dam was stored in the reservoir throughout the flood period. Serious flood stages in 1937 were also prevented by the operation of Norris Dam.

The flow given for the Clinch and Hiwassee Rivers is the estimated flow from these streams reaching Chattanooga at the time of the crest.

Defendants' Exhibit No. 69

[fol. 4170]

Contributions of Tributaries to Major Mississippi River Floods

Year of flood—Discharge in cu. ft. per sec. and per cent of total

Tributary	1903	1912	1913	1916	1922	1927	1929	1937
Upper Mississippi River at Grafton, Ill	246,000 15.2%	263,000 13.6%	265,000 13.4%	339,000 21.3%	297,000 18.3%	286,000 16.2%	243,000 17.3%	160,000 7.9%
Missouri River at Herman, Missouri	175,000 10.8%	336,000 17.4%	59,000 3.0%	257,000 16.1%	310,000 19.1%	407,000 23.0%	316,000 22.4%	
Ohio River at Mouth	1,200,000 74.0%	1,178,000 60.9%	1,583,000 80.3%	834,000 52.3%	848,000 52.1%	940,000 53.3%	793,000 56.5%	1,850,000 92.1%
Local Area Below Tributaries	Negligible	157,000 8.1%	64,000 3.3%	165,000 10.3%	171,000 10.5%	132,000 7.5%	54,000 3.8%	Negligible
Mississippi River at Columbus, Ky. (Approx.)	1,621,000 100%	1,934,000 100%	1,971,000 100%	1,595,000 100%	1,626,000 100%	1,765,000 100%	1,406,000 100%	2,010,000 100%

The tributary flows are the approximate flows synchronizing with crest in the Mississippi River.

Defendants' Exhibit No. 70

[fol. 4171] **Contribution of the Tennessee River at the Crest of the More Recent Mississippi River Floods**

Floods	Mississippi River at Cairo	Tennessee River at Gilbertsville (1 day previous)
Date of Crest	Stage	Discharge cu. ft. per sec.
March 26, 1897	51.7*	475,000
April 6, 1912	53.9*	225,000
April 9, 1913	62.5*	195,000
February 4, 1916	53.2	140,000
March 26, 1922	53.6	220,000
April 20, 1927	58.5*	225,000
March 19, 1929	52.7	205,000
April 16, 1936	52.8	330,000
February 4, 1937	59.6*	240,000

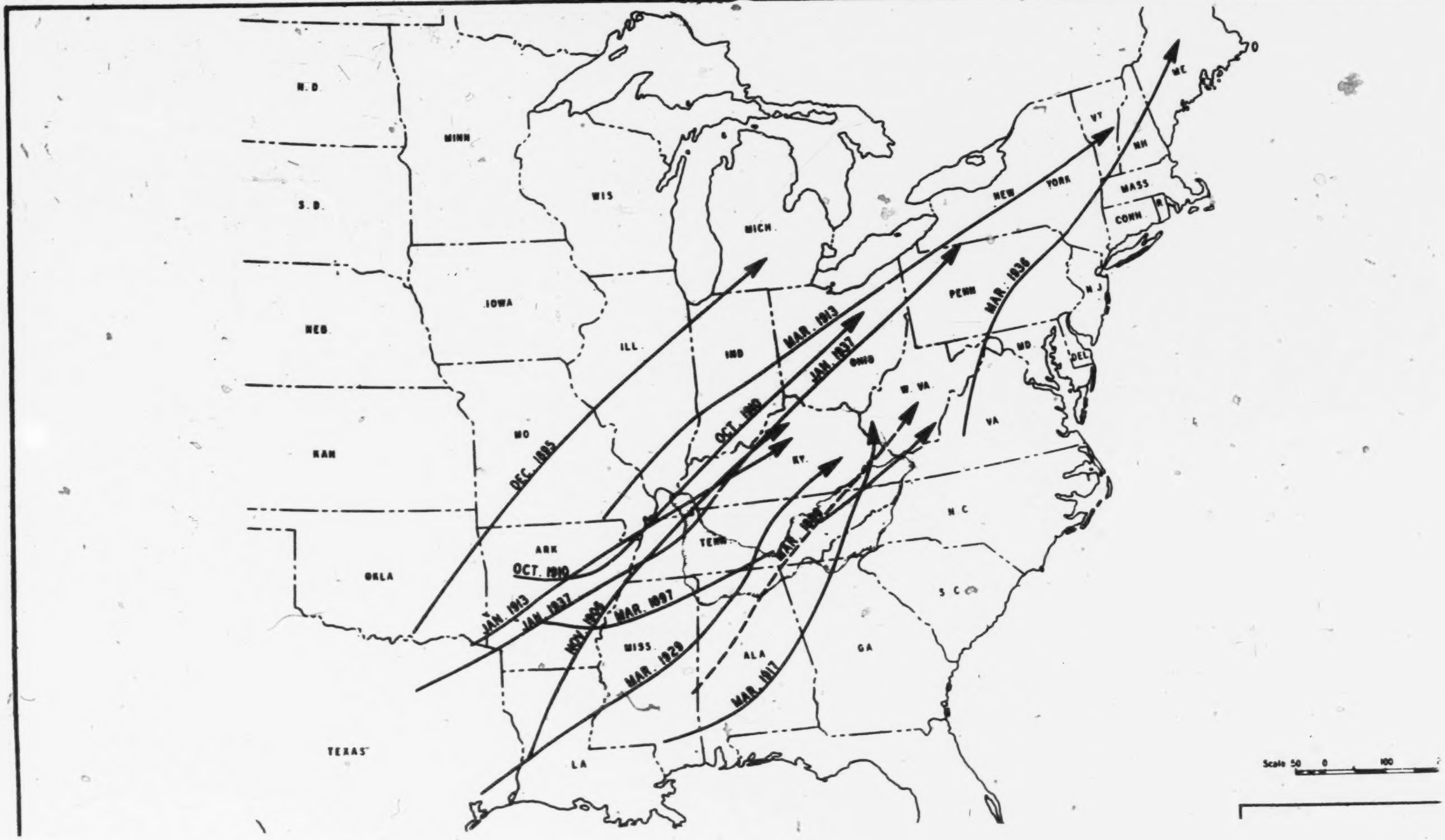
* Cairo is situated at the junction of the Ohio and Mississippi Rivers, 50 miles below the mouth of the Tennessee River.

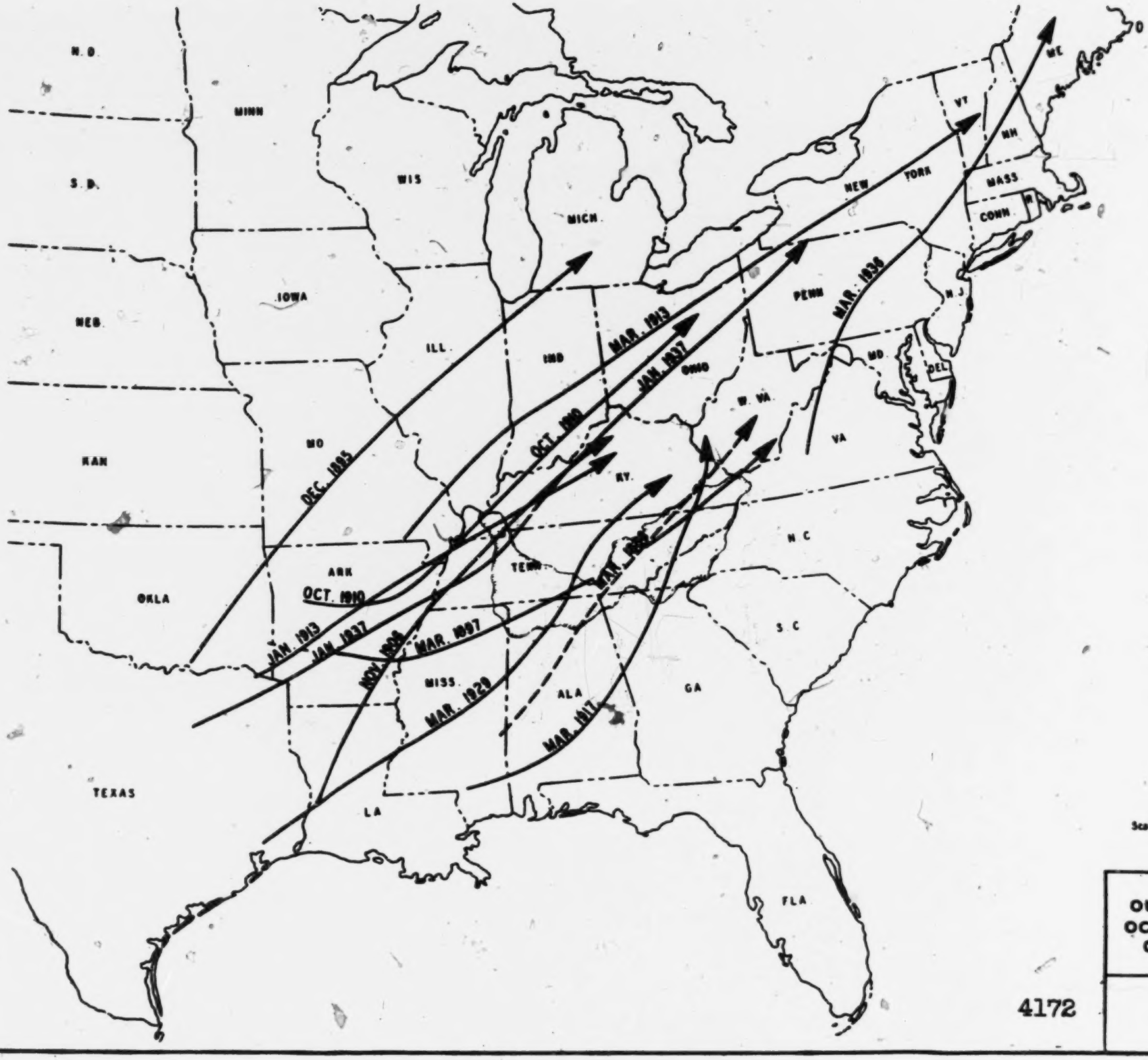
Note: The stages shown for the 1913 and 1927 floods are stages estimated by the Mississippi River Commission for the flood flow as if confined to the channel. The actual stages were lower because of breaks in the levees.

The stages in the 1897 and the 1912 floods would have been higher if the levees had not broken. The 1937 flood stage would have been higher if it had not been for the Birds Point-New Madrid floodway.

(Here follows 1 photolithograph, side folio 4172)

DEFENDANT'S EXHIBIT No. 71
Chart entitled "Outstanding Storms Occurrence and Paths of Great Rainfall"





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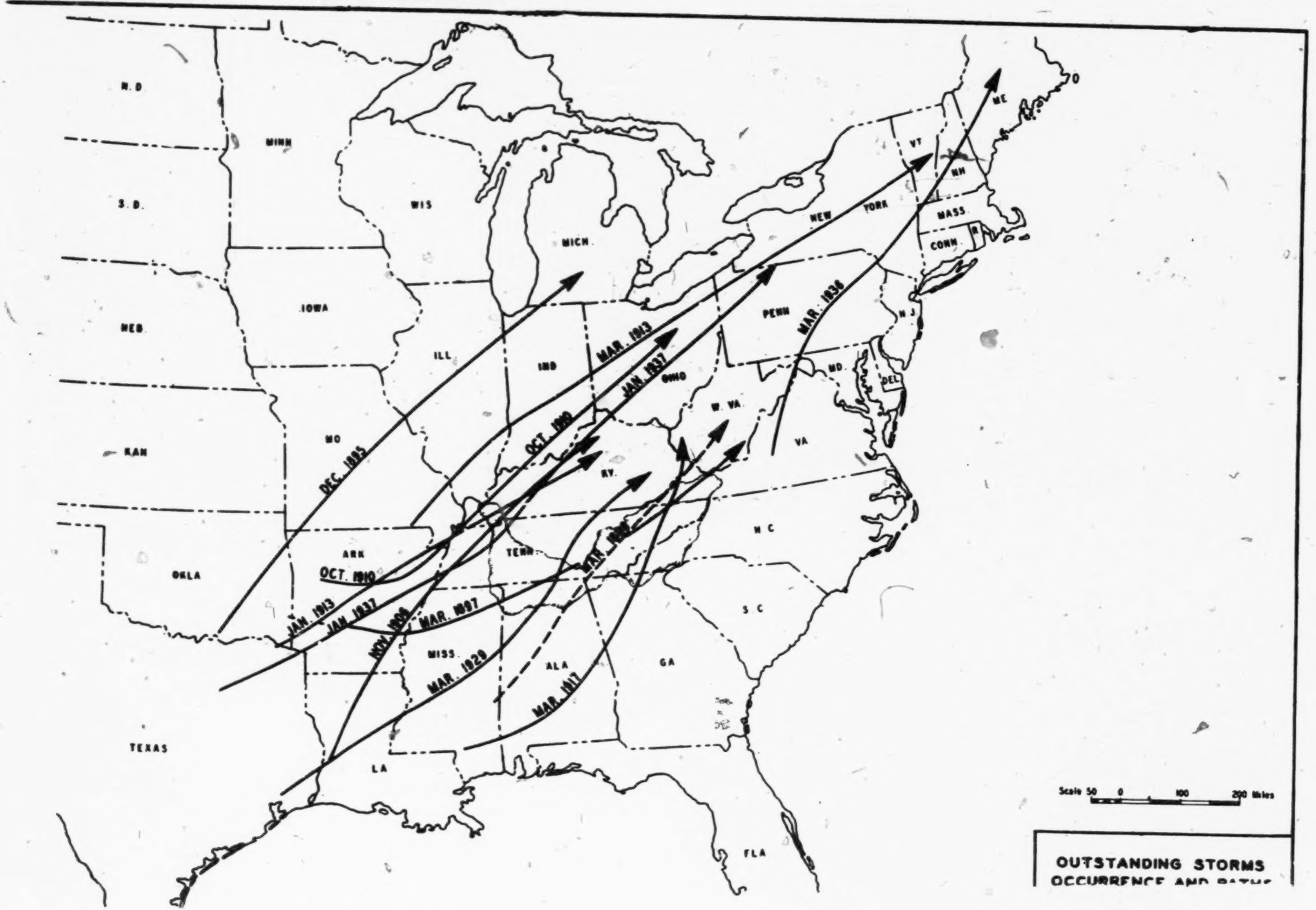
DEFENDANT'S EXHIBIT No. 71
Chart entitled "Outstanding Storms Occurrence and Paths of Great Rainfall"



DEFENDANTS' EXHIBIT No. 76

Photograph.

(Original Exhibit)

(Here follows Exhibit 76)

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[fol. 4174] DEFENDANTS' EXHIBIT No. 77

Photograph.

(Original Exhibit)

(Here follows Exhibit 77)

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DEFENDANTS' EXHIBIT No. 78

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DEFENDANTS' EXHIBIT No. 79

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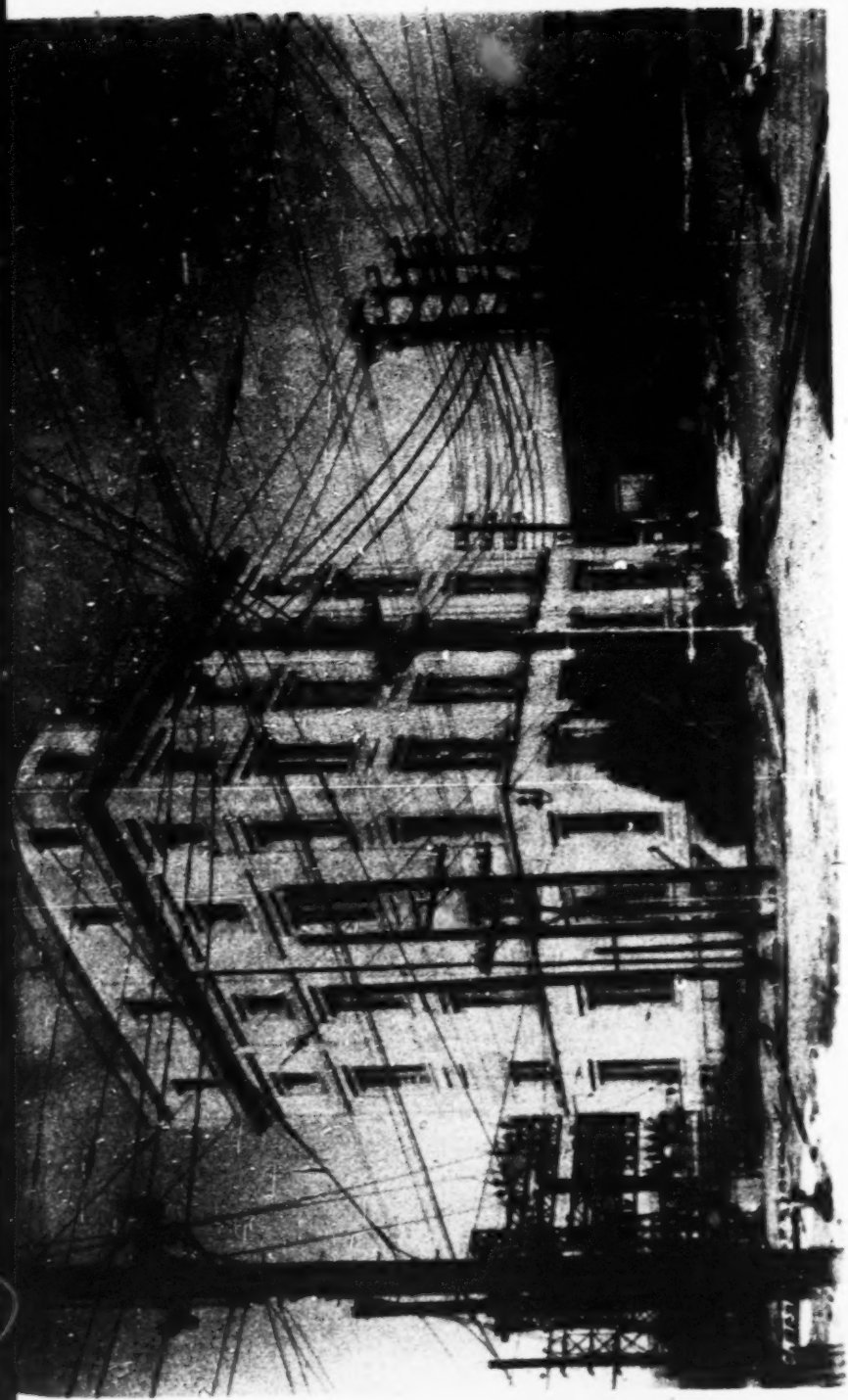

DEFENDANTS' EXHIBIT No. 80

Photograph.

(Original Exhibit)

(Here follows Exhibit 80)

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DEFENDANTS' EXHIBIT No. 81

Chart entitled "Floods—Chattanooga, Tennessee—Types of Property Affected—Five Foot Intervals of River Stage".

(Original Exhibit)

[fol. 4175] DEFENDANTS' EXHIBIT No. 82

Table Showing Estimates of Reductions in Peak Discharge and Reduction in Flood Crest at Chattanooga for Various Systems of Reservoirs

Peak Discharge

Year	1926*	1936*	1917*
Natural Discharge	252,000	275,000	332,000
Regulated Discharge with:			
Norris, Hiwassee Reservoirs	190,000	235,000	265,000
Norris, Hiwassee, Chickamauga Reservoirs	152,000	176,000	219,000
Norris, Hiwassee, Coulter Shoals, Watts Bar, Chickamauga Reservoirs	130,000	157,000	190,000

Note: Discharge is given in cubic feet per second.

Flood Crest

Note: Flood stage is 30 feet at Chattanooga.

Natural Stage	38.4 ft.	41.3 ft.	47.7 ft.
Norris, Hiwassee	32.0 "	37.1 "	40.3 "
Reduction from Peak	6.4 "	4.2 "	7.4 "
Norris, Hiwassee, Chickamauga	27.4 "	30.4 "	35.3 "
Reduction from Peak	11.0 "	10.9 "	12.4 "
Norris, Hiwassee, Coulter Shoals, Watts Bar, Chickamauga	24.6 "	28.0 "	32.0 "
Reduction from Peak	13.8 "	13.3 "	15.7 "

* In the years indicated there were substantial floods on the Tennessee River which are assumed as floods for estimating the effect of reservoirs. These floods are the larger floods since 1900, for which data is available. The 1917 flood has not been exceeded at Chattanooga within the past 50 years.

[fol. 4176] DEFENDANTS' EXHIBIT No. 83

Chart entitled "Volume in Peak of Mississippi River—Hydrograph 1929 Flood".

(Original Exhibit)

[fol. 4177] DEFENDANTS' EXHIBIT No. 84

Date of flood peaks at Johnsonville on the Tennessee River, Paducah on the Ohio River, and Cairo on the Mississippi River for past floods exceeding 50 feet at Cairo.

	Tennessee River at Johnsonville		Ohio River at Paducah		Mississippi River at Cairo	
Flood	Date	Peak	Date	Peak	Date	Peak
1882.....	Feb. 2	43.8	Feb. 26	59.95	Feb. 25	51.8
1883.....	Feb. 23	29.0	Feb. 25	50.7	Feb. 27	52.2
1884.....	Feb. 21	43.8*	Feb. 23	54.2	Feb. 22–24	51.8
1886.....	Apr. 15–16	42.1	Apr. 17	50.4	Apr. 19	51.0
1897.....	Mar. 24	48.0	Mar. 24–25	50.9	Mar. 25–26	51.6
1903.....	Mar. 11	33.7	Mar. 15–16	47.6	Mar. 15–17	50.6
1907.....	Jan. 27	14.5	Jan. 28	45.7	Jan. 27	50.3
1912.....	Apr. 6	35.4	Apr. 8–11	49.9	Apr. 6–7	54.0
1913.....	Mar. 29	33.3	Apr. 7	54.3	Apr. 7	54.3
1916.....	Jan. 28	25.0			Feb. 4	53.4
1920.....	Mar. 21–22	28.9	Mar. 28	45.3	Mar. 31	51.4
1922.....	Mar. 15	36.4	Mar. 24	48.85	Mar. 25–27	53.6
1922.....	Apr. 23	20.7	Apr. 26	44.0	Apr. 25	53.5
1927.....	Apr. 17	32.2	Apr. 18	47.2	Apr. 20	56.4
1929.....	Mar. 18	31.9	Mar. 15	45.0	Mar. 20	51.8
1929.....	Mar. 29	36.8	Apr. 3	43.8	Apr. 5	51.1
1933.....	Apr. 3	26.2	Apr. 3	47.3	Apr. 5	51.87
1933.....	May 15	27.1	May 24	43.7	May 21	51.82
1936.....	Apr. 12	31.6	Apr. 15–16	50.9	Apr. 16	52.8
1937.....	Jan. 25	41.0	Feb. 2	60.75	Feb. 4	59.6

* Estimated.

[fol. 4178] DEFENDANTS' EXHIBIT No. 85

Tennessee River Flow at Gilbertsville Dam Site
Flood of January-February 1937

Date 1937	Stage Ohio at Paducah	Inflow	Actual Flow	Difference	Inflow	Actual Flow	Difference	
		cubic feet per second						
Jan. 16	42.9	253,000	230,000	23,000				
17	43.2	280,000	249,000	31,000				
18	46.7	330,000	240,000	90,000				
19	46.2	363,000	252,000	111,000				
20	47.4	385,000	268,000	117,000				
21	49.9	398,000	279,000	119,000				
22	52.5	411,000	296,000	115,000				
23	54.4	421,000	315,000	106,000				
24	55.9	410,000	333,000	77,000				
25	57.4	396,000	338,000	58,000				
26	58.5	358,000	342,000	16,000				
27	58.9	336,000	330,000	6,000				
28	59.2				290,000	324,000	34,000	Tennes-
29	59.6				261,000	310,000	49,000	see
30	59.9				236,000	297,000	59,000	River
31	60.2				218,000	275,000	57,000	Crest
Feb. 1	60.5				180,000	260,000	80,000	
2	60.6		Ohio River Crest		156,000	245,000	89,000	
3	60.55				148,000	240,000	92,000	
4	60.4				146,000	235,000	89,000	
5	60.1				151,000	232,000	81,000	
6	59.7				161,000	230,000	69,000	
7	59.2				158,000	225,000	67,000	
8	58.6				151,000	214,000	63,000	
9	58.0				158,000	203,000	45,000	

The quantities in the last column represent the additions to the Ohio River crest from the release of Tennessee River valley storage.

WAB & RLM: GT—12-16-37

[fol. 4179] DEFENDANTS' EXHIBIT No. 86

Chart entitled "Effect of Natural Storage in Gilbertsville Reservoir Area in the Flood of 1937".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 87

Chart entitled "Elimination of Dead Storage".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 88 (Excluded)

Chart entitled "Divisions of Ohio River Drainage Basin Within Which Reservoirs Have Been Built Or Considered".

(Omitted)

DEFENDANTS' EXHIBIT No. 89

Chart entitled "Operation of Suggested Detaining Basin System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 90

Chart entitled "Comparison Between Norris Reservoir and Cove Creek Reservoir Suggested By Ford Kurtz".

(Original Exhibit)

[fol. 4180] DEFENDANTS' EXHIBIT No. 91

Map entitled "Alluvial Valley of Lower Mississippi River".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 92

Map entitled "Tennessee River Drainage Basin".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 93

Chart entitled "Profile of the Tennessee River Unimproved".

(Original Exhibit)

[fol. 4181] DEFENDANTS' EXHIBIT No. 94

Maximum and Minimum Rates of Stream Flow, Tennessee River

	Maximum	Minimum
Knoxville	290,000 c. f. s.	1,390 c. f. s.
Chattanooga	459,000 c. f. s.	3,300 c. f. s.
Florence	470,000 c. f. s.	4,000 c. f. s.
Johnsonville	480,000 c. f. s.	3,500 c. f. s.

[fol. 4182] DEFENDANTS' EXHIBIT No. 95

Chart entitled "Previous Projects Tennessee River Basin."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 96

Chart entitled "Commerce On Tennessee River."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 97

Map entitled "Existing And Proposed Channel Depths Before Tennessee Valley Authority Act."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 98

Map entitled "TVA Projects."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 99

Photograph.

(Original Exhibit)

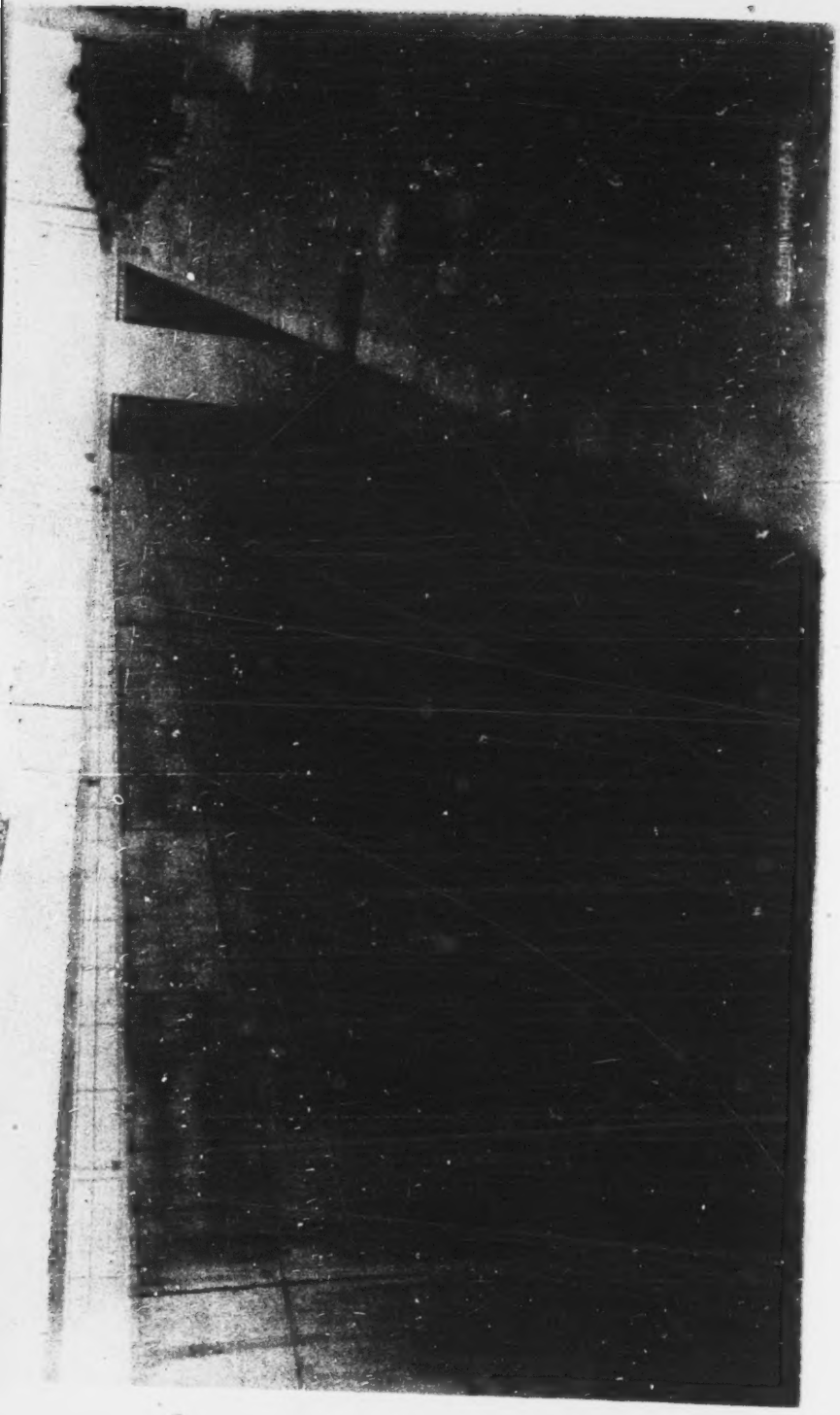
(Here follows Exhibit 99)

[fol. 4183] DEFENDANTS' EXHIBIT No. 100

Photograph.

(Original Exhibit)

(Here Follows Exhibit 100)



DEFENDANTS' EXHIBIT No. 101

Photograph.

(Original Exhibit)

(Here Follows Exhibit 101)

4106A

DEFENDANTS' EXHIBIT No. 102

Diagram entitled "Coal Transfer and Transit Facilities—Norris Project."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 103

Diagram entitled "Coal Transfer and Transit Facilities—Section and Elevation Through Transit Bin and Non-Overflow Section—Norris Project."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 104

Chart entitled "Comparison of High Dam and Low Dam Plans on Tennessee River."

(Original Exhibit)

[fol. 4184] DEFENDANTS' EXHIBIT No. 105

Time Saved in Lockages with TVA High-Dam Plan as Compared to a Low-Dam Plan, Assuming Same Size of Locks in Each Plan

Paducah, Ky., to Knoxville, Tenn., single lockages

Section of River	Time Consumed in Lockages		Saving due to High Dam Plan (Hours)
	Low Dam Plan (Hours)	High Dam Plan (Hours)	
Paducah, Ky. to Florence, Ala	3.62	1.30	2.32
Florence, Ala. to Chattanooga, Tenn	6.35	3.52	2.83
Chattanooga, Tenn. to Knoxville, Tenn	8.78	1.95	6.83
Total, Paducah, Ky. to Knoxville, Tenn	18.75	6.77	11.98

Paducah, Ky., to Knoxville, Tenn., single lockages below Florence, Ala., and double lockages above Florence, Ala.

Section of	Time Consumed in Lockages		Saving due to High Dam Plan (Hours)
	Low Dam Plan (Hours)	High Dam Plan (Hours)	
Paducah, Ky. to Florence, Ala	3.62	1.30	2.32
Florence, Ala. to Chattanooga, Tenn	13.12	7.42	5.70
Chattanooga, Tenn. to Knoxville, Tenn	18.42	4.45	13.97
Total, Paducah, Ky. to Knoxville, Tenn	35.16	13.17	21.99

[fol. 4185] DEFENDANTS' EXHIBIT No. 106

Graph entitled "Comparison of Velocities in High Dam and Low Dam Pools."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 107

Graph showing relation between horsepower and depth.

(Original Exhibit)

[fol. 4186] DEFENDANTS' EXHIBIT No. 108

Percentages of Channel Distances That Are Less Than 20 Feet in Depth in the High-Dam Pools

Pool	Length of pool (Miles)	Length of pool less than 20 feet in depth (miles)	Per Cent of pool length less than 20 feet in depth
No. 52	22.5	4.0	18
Gilbertsville	184.2	4.4	2
Pickwick	50.1	2.1	4
No. 1	2.5	2.5	100
Wilson	15.6	1.1	7
Wheeler	74.1	4.7	6
Guntersville	82.1	14.4	18
Hales Bar	39.9	9.3	23
Chickamauga	58.9	3.5	6
Watts Bar	73.4	2.4	3
Coulter Shoals	48.8	2.3	5

[fol. 4187] DEFENDANTS' EXHIBIT No. 109

Map entitled "Improvement on Tributaries Provided By High Dam Plan".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 110

Chart entitled "Comparison of Pool Fluctuations With High Dams and Low Dams".

(Original Exhibit)

[fol. 4188] DEFENDANTS' EXHIBIT No. 111

September 1, 1934.

District Engineer, U. S. Engineer Office, Nashville, Tennessee

DEAR SIR:

We would like to have the best information you are able to give us as to the number, size and arrangement of locks which will probably be required by the War Department for the middle and upper sections of the Tennessee River. At some of the damsites the space for structures is quite limited, and we are naturally anxious to plan for a lock layout which will ultimately require as little space as possible.

In this connection the following questions arise:

1. If one 360′ x 60′ lock is constructed initially, will the requirement be made that space be left for an additional 600′ x 110′ lock?

2. If one 600′ x 110′ lock is constructed initially, will the requirement be made that space be provided for the construction of an additional 360′ x 60′ lock, if and when required?

It is our thought that if by constructing the large lock initially we could avoid providing space for the additional smaller lock in the future, the construction cost would not be greatly increased, and at the same time we could obtain a much better arrangement of structures, as the space for the second lock, which would otherwise have to be bulkheaded, could be used permanently for spillway.

Of course, if the requirement is that only the smaller lock need be built initially, with no provision for an additional lock, the cost and space requirements would be even less, but we do not know whether this would meet what you consider the minimum provisions for navigation.

We would appreciate an answer to these questions as early as possible.

Thanking you, we are

Yours very truly, Jas. S. Bowman, Hydraulic Engineer.

JSB:mh.

[fol. 4189] DEFENDANTS' EXHIBIT No. 112

War Department,

Office of the Chief of Engineers, Washington

September 19, 1934.

Dr. Arthur Ernest Morgan, Chairman, Tennessee Valley Authority, Knoxville, Tennessee.

DEAR DR. MORGAN:

I am in receipt, by reference, of a letter from Mr. James S. Bowman, Hydraulic Engineer, Tennessee Valley Authority, to the District Engineer at Nashville, Tenn., dated September 1, 1934, asking as to the number, size and arrangement of locks required in the interests of navigation on the middle and upper sections of the Tennessee River, and pointing out the desire of the Authority to avoid leaving space for a second lock to be constructed at a later date.

The Tennessee River, for convenience in supervising navigation projects, has been divided into three parts, the Upper Tennessee, extending from the head of navigation to Chattanooga; the Middle Tennessee, extending from Chattanooga to Riverton; and the Lower Tennessee, extending from Riverton to the Mouth. The Department, after careful consideration, has adopted the following requirements for these sections, which are the minimum provisions necessary to meet the needs of navigation:

Upper Tennessee River:

The locks, 60 feet by 360 feet, to be constructed at the time the dams are constructed, with space enough for the construction of locks 110 feet by 600 feet.

Middle Tennessee River:

The locks, 60 feet by 360 feet, to be constructed at the time the dams are constructed with space enough for the construction of locks 110 feet by 600 feet.

Lower Tennessee River:

The locks, 110 feet by 600 feet, to be constructed at the time the dams are constructed with space left for the future construction of locks 60 feet by 360 feet.

DEFENDANTS' EXHIBIT No. 112

[fol. 4190] The provision of an auxiliary lock at a future date is essential to provide the means of maintaining uninterrupted navigation in case of accident to one lock and during periods when it will be necessary to have one lock out of commission for repair or overhaul. It is probably not necessary in every case to incur large initial expense in providing for the future locks but the arangements should not preclude their eventual installation. The District and Division Engineers will be glad to give their assistance in planning the most desirable layout at each site to provide for both the immediate and the prospective needs.

Very truly yours, (Signed) E. M. Markham, Major General, Chief of Engineers.

[fol. 4191] DEFENDANTS' EXHIBIT No. 113

Map entitled "Wheeler Reservoir and Surrounding Region".

(Original Exhibit)

(Here follows Exhibit 113)

[fol. 4192] DEFENDANTS' EXHIBIT No. 114

War Department,

United States Engineer Office,

Nashville, Tennessee

December 7, 1936.

No. 32

Notice to Navigation Interests, Tennessee River

1. The attached drawings show the normal limits of General Joe Wheeler Pool, Tennessee River, and the location of the channel which has been marked for navigation throughout this pool.

2. Notice is hereby given that the following aids to navigation have recently been installed in the above pool:

Lock A No. 286.2.—A red or nun buoy marking left side of navigation channel.

Lower Melton Bluff No. 286.7—A black or can buoy marking right side of navigation channel.

Upper Melton Bluff No. 287.2.—A black or can buoy marking right side of navigation channel.

Lower Browns Island No. 289.4.—A red or nun buoy marking left side of navigation channel.

Lower Willard Chute No. 290.4—A red or nun buoy marking left side of navigation channel.

Upper Willard Chute No. 291.9.—A red or nun buoy marking left side of navigation channel.

Head Browns Island No. 292.7—A black or can buoy marking right side of navigation channel.

Head Browns Island No. 293.2.—A red or nun buoy marking left side of navigation channel.

Lower Browns Ferry No. 294.1.—A black or can buoy marking right side of navigation channel.

Upper Browns Ferry No. 294.7.—A black or can buoy marking right side of navigation channel.

Beaverdam Slough No. 295.3.—A black or can buoy marking right side of navigation channel.

Opposite Fox Branch No. 296.6.—A block or can buoy marking right side of navigation channel.

Beaverdam Slough Light No. 297.2.—A light on pile cluster on right side of navigation channel, which shows one

white flash every two seconds, and double 6′ x 6′ diamond boards.

Foot Byrd Island No. 298.0.—A red or nun buoy marking left side of navigation channel.

Foot Byrd Island No. 298.2.—A black or can buoy marking right side of navigation channel.

[fol. 4193] Byrds Island No. 299.7.—A black or can buoy marking right side of navigation channel.

Head Byrds Island No. 300.1 (Nun).—A red or nun buoy marking left side of navigation channel.

Head Byrds Island No. 300.1 (Can).—A black or can buoy marking right side of navigation channel.

Heintz Bar No. 300.8.—A red or nun buoy marking left side of navigation channel.

Heintz Bar Light No. 301.4.—A light on pile cluster on right side of navigation channel which shows one white flash every two seconds, and double 6′ x 6′ diamond boards.

Heintz Bar No. 302.1.—A black or can buoy marking right side of navigation channel.

Lower Decatur No. 303.4 (Can).—A black or can buoy marking right side of navigation channel.

Lower Decatur No. 303.4 (Nun).—A red or nun buoy marking left side of navigation channel.

Flint River Towhead No. 339.1.—A horizontally striped red and black nun obstruction buoy marking Flint River Towhead which is submerged.

3. The normal level of General Joe Wheeler Pool will be Elevation 555.0 which is equivalent to a reading of 21.0 on the upper gage at Wheeler Lock, or 20.9 on the U. S. Weather Bureau gage at Keller Bridge, Decatur.

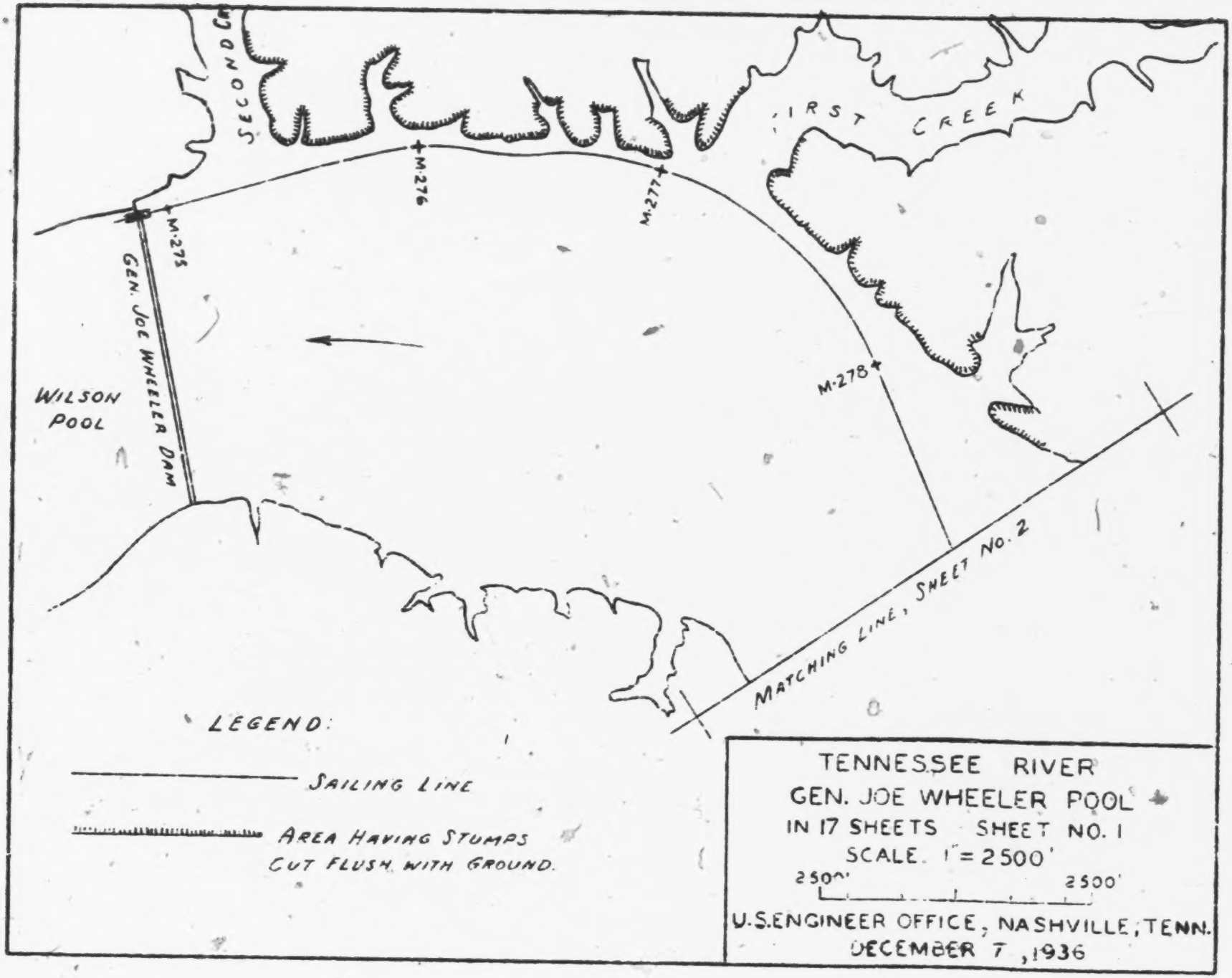
4. Numbers of aids in the above list are miles above the mouth of the river.

5. Navigators are warned to clear all buoys by at least 50 feet.

6. Additional copies of this list may be obtained from the U. S. Engineer Office, P. O. Box 1070, Nashville, Tennessee, upon application.

C. E. Perry, Lieut. Col., Corps of Engineers, District Engineer.

DEFENDANTS' EXHIBIT NO. 114



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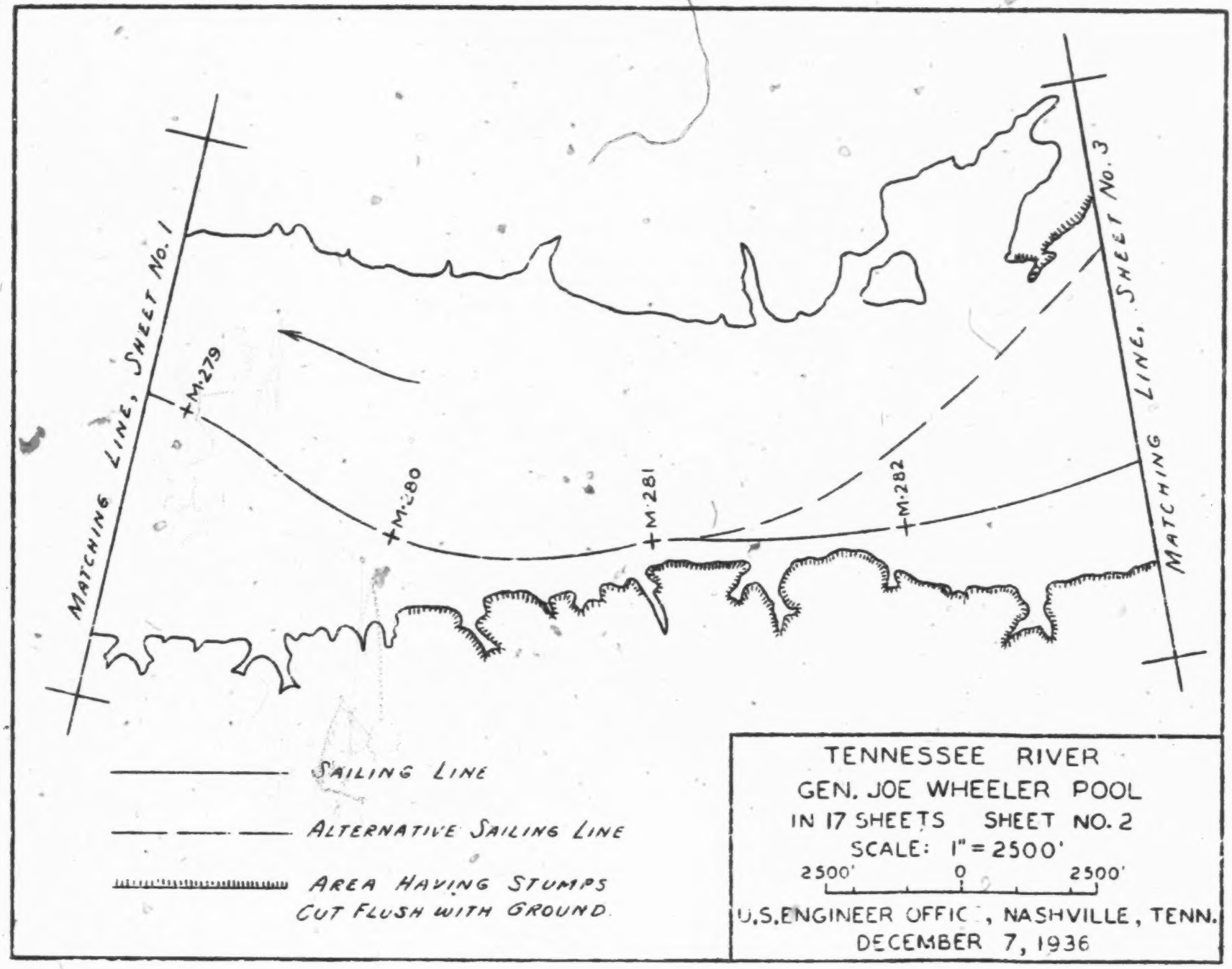

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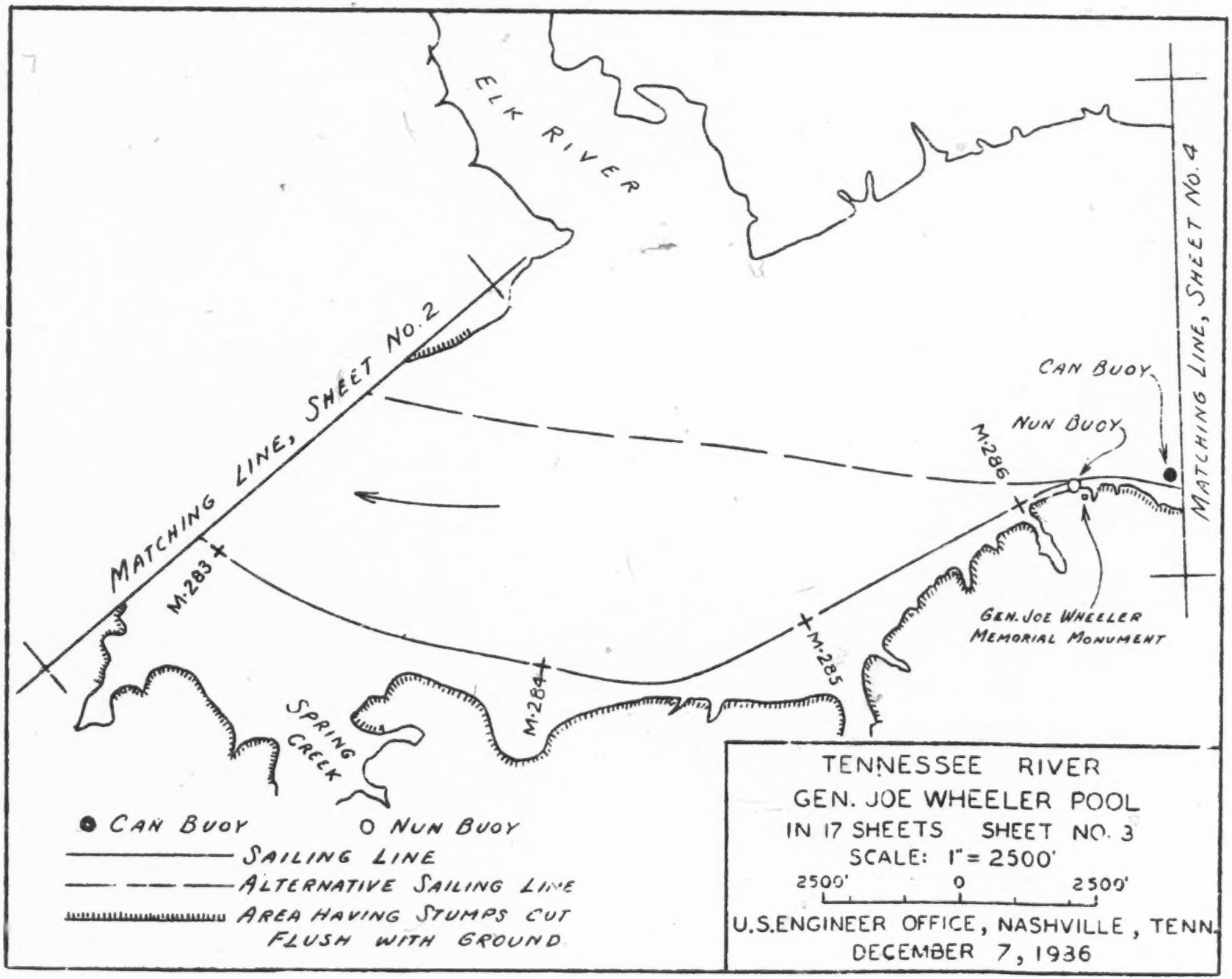

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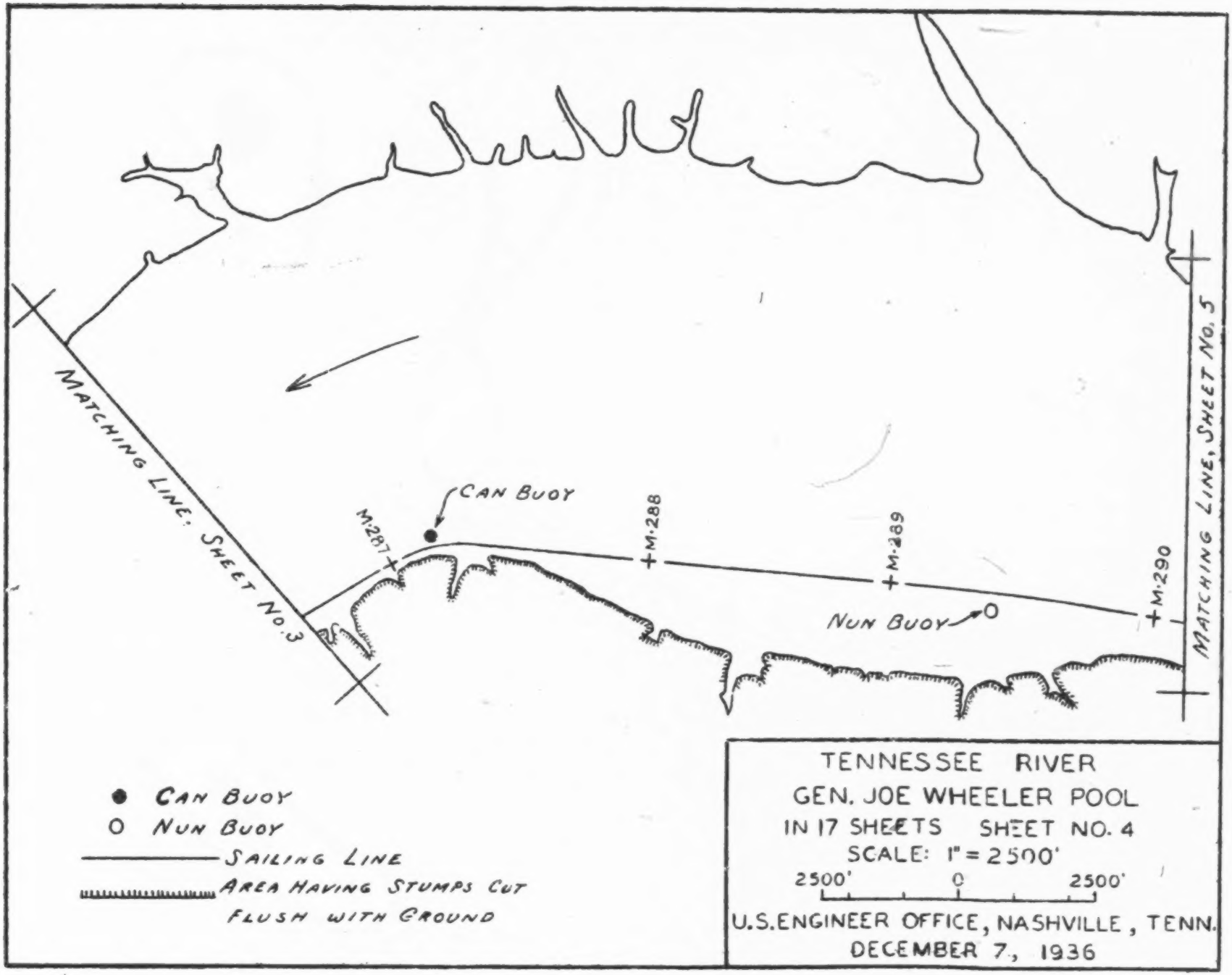

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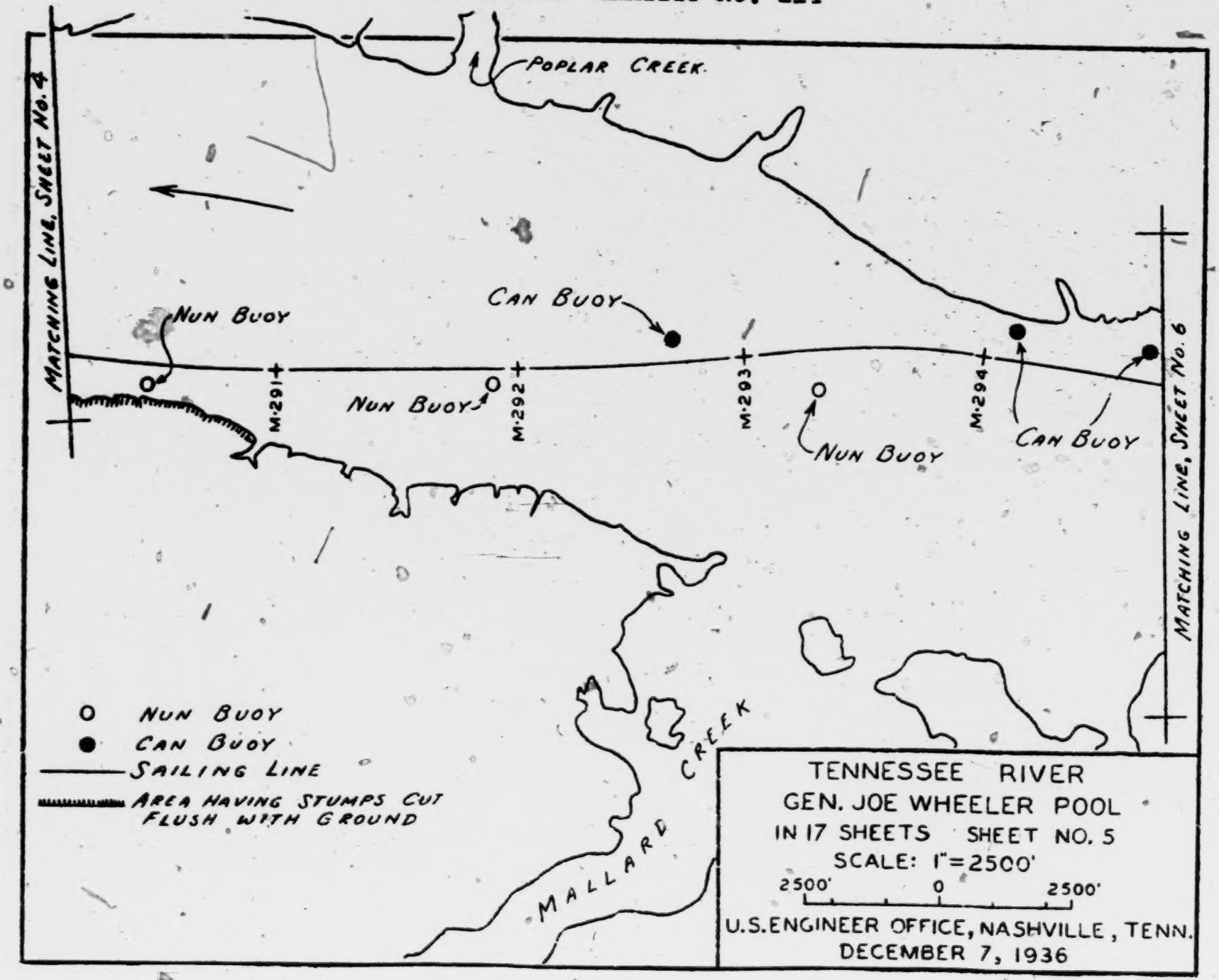

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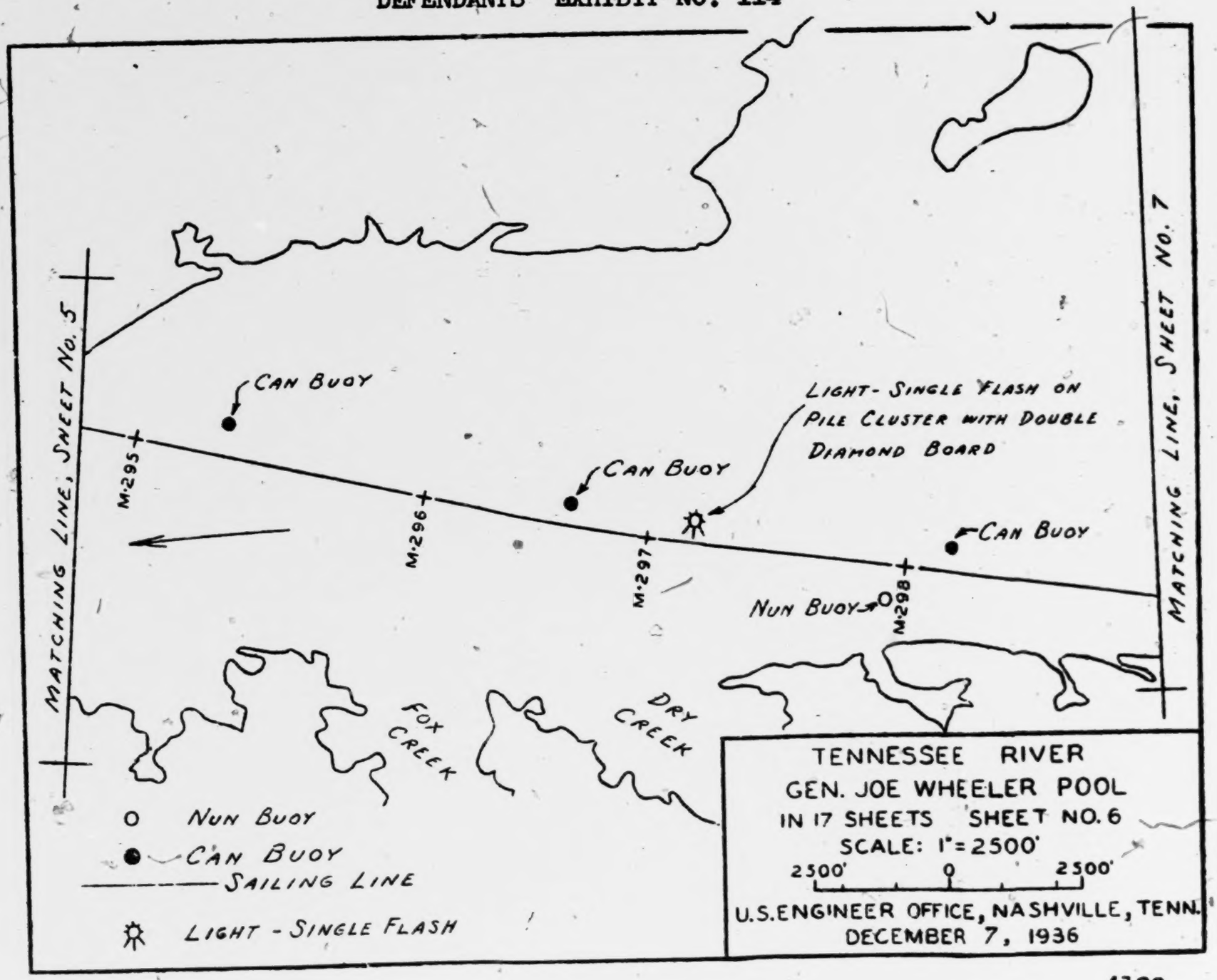

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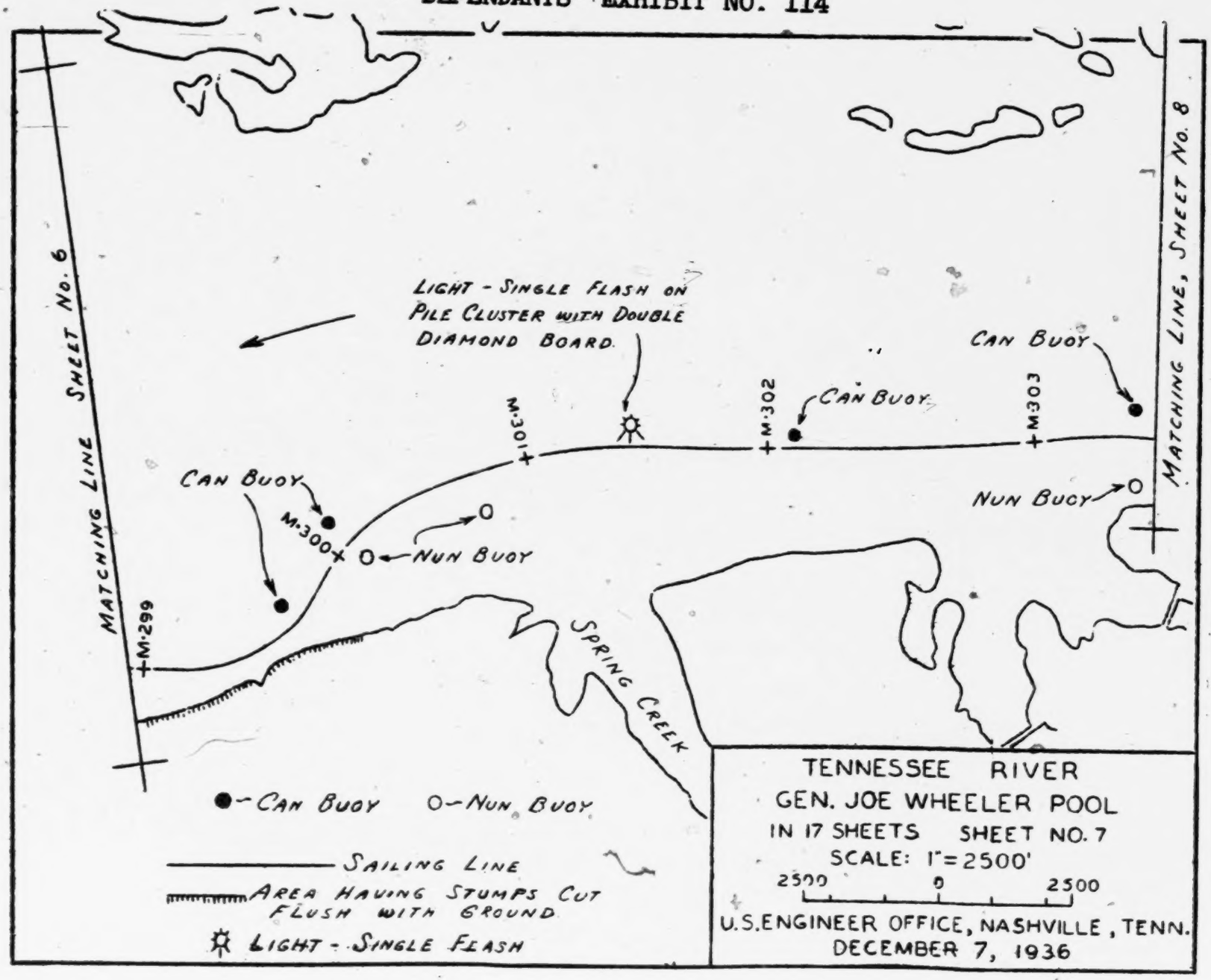

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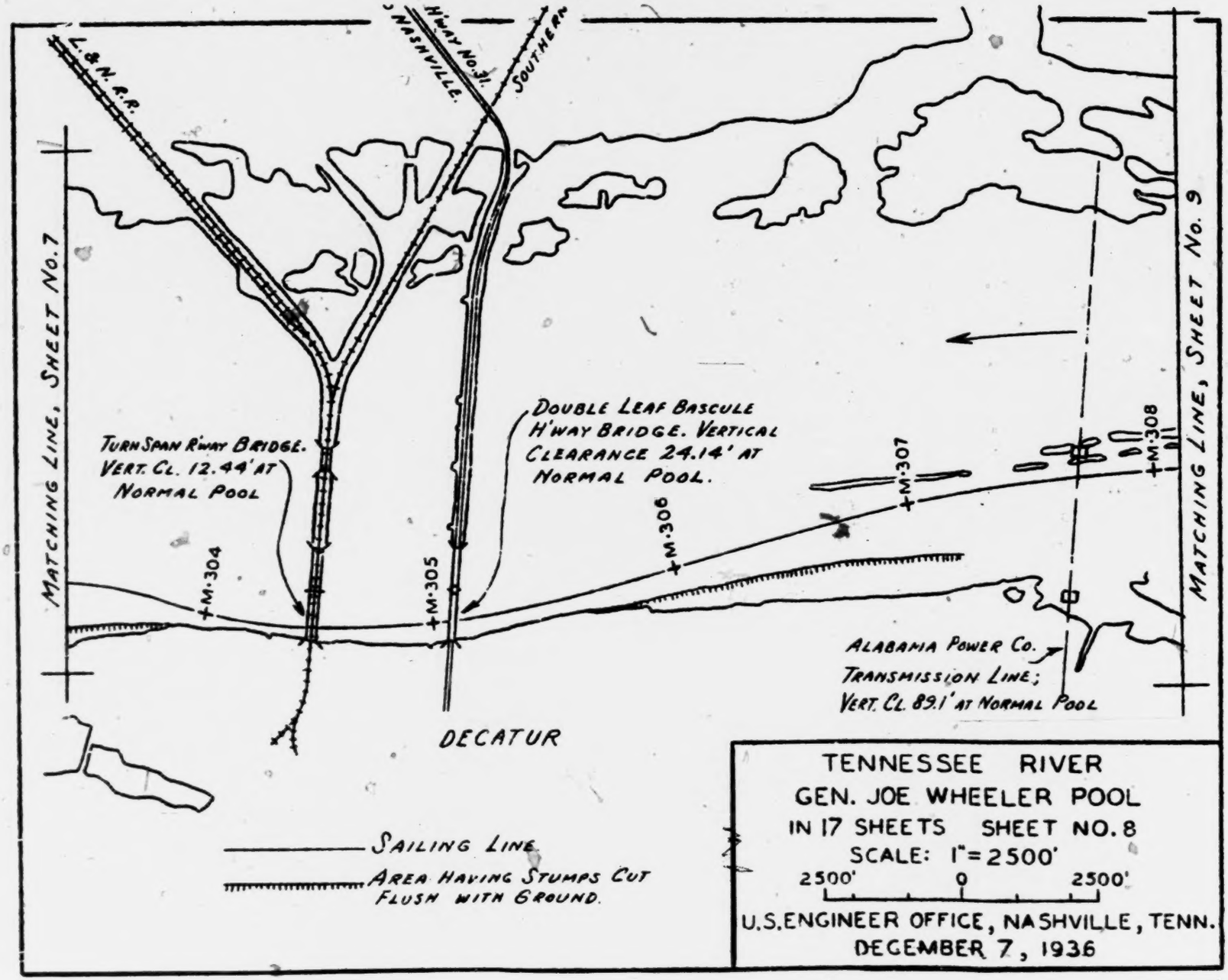

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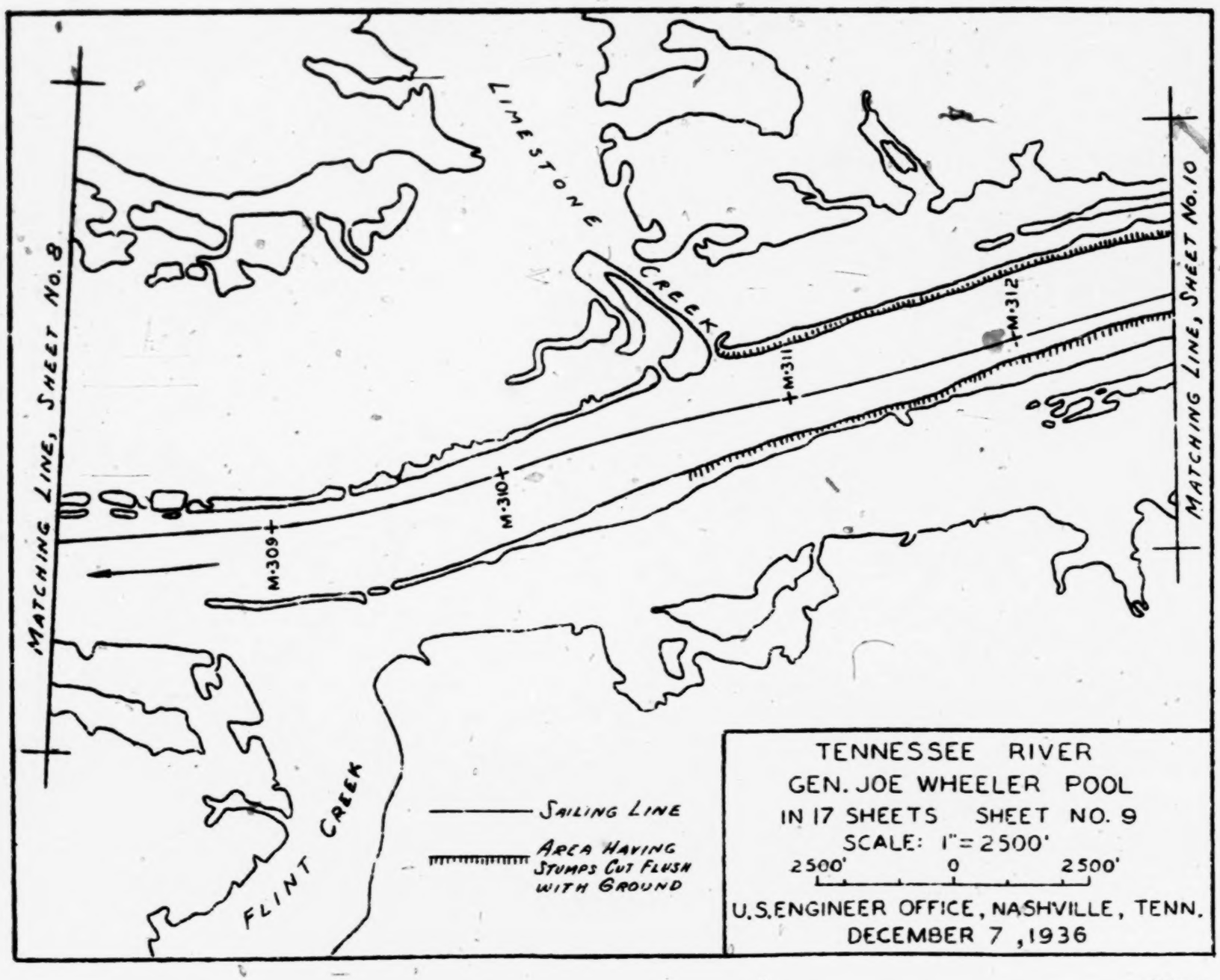

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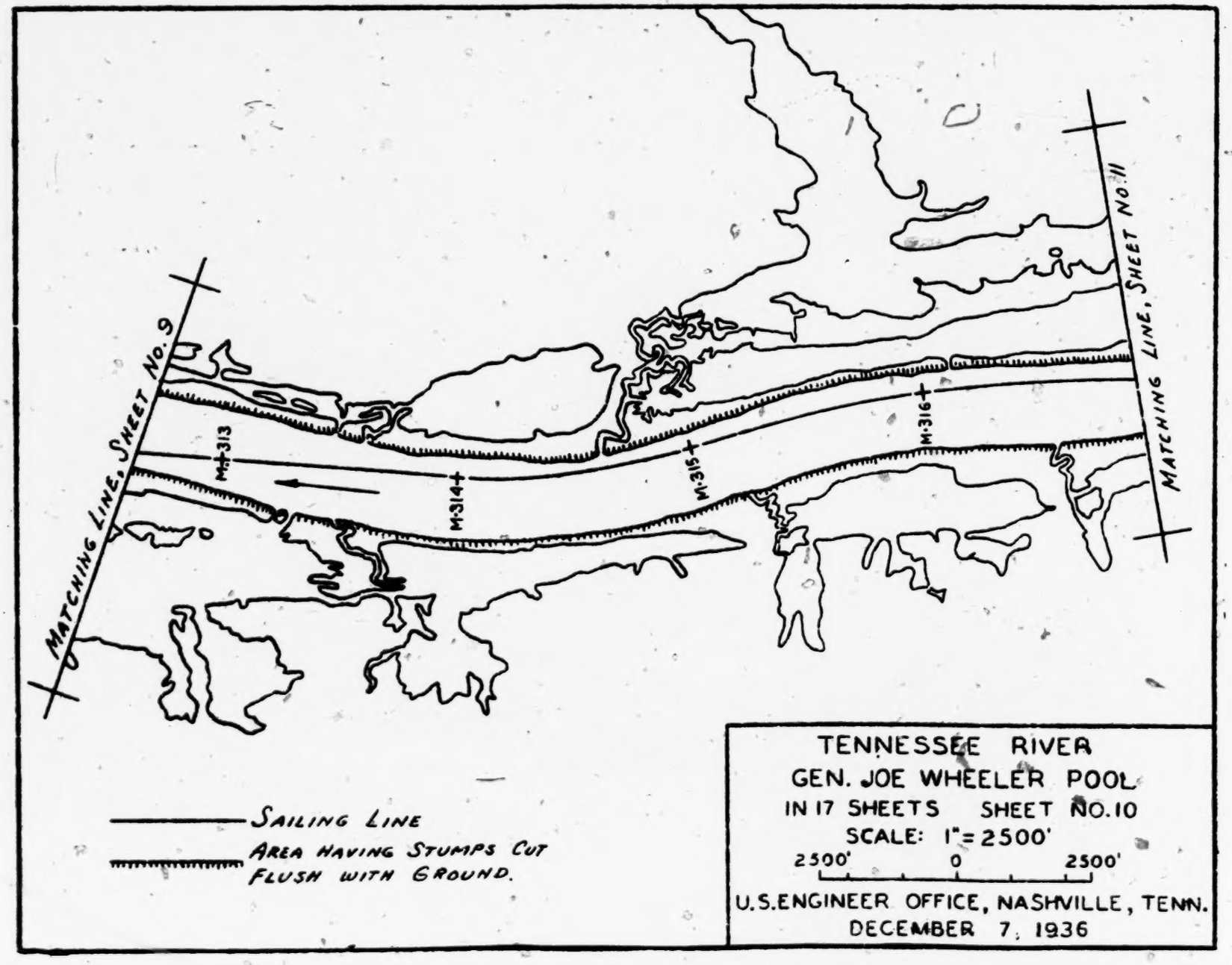

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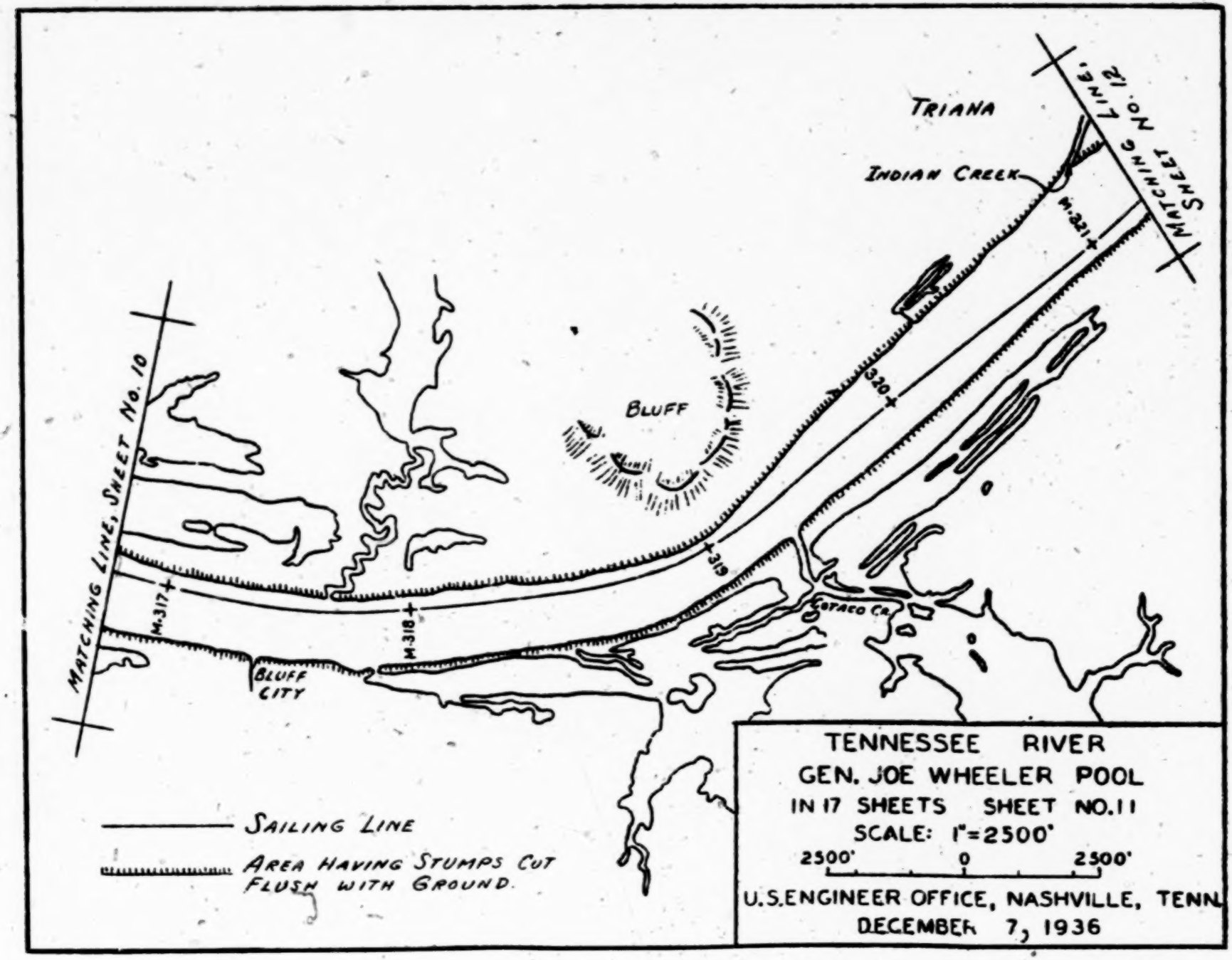

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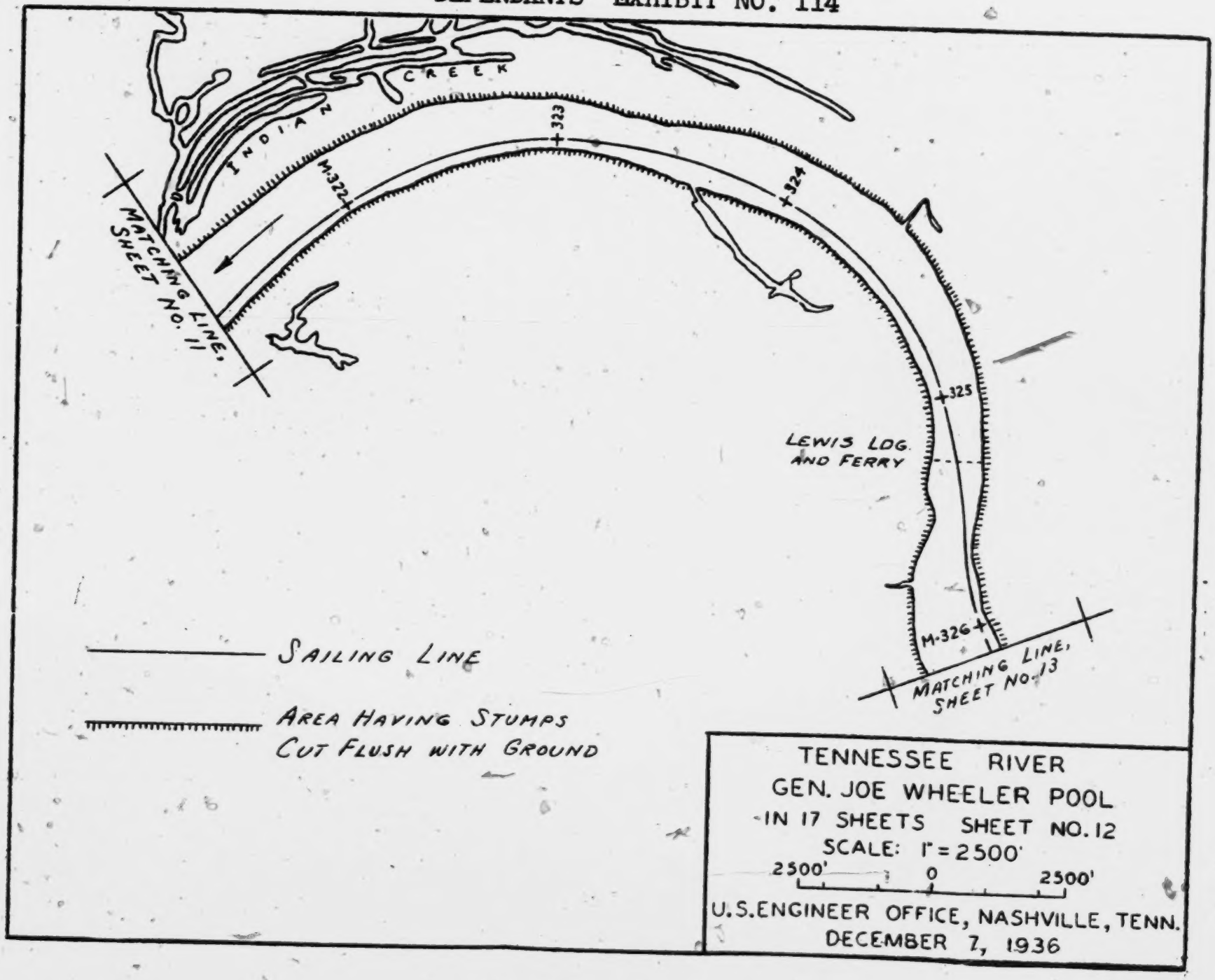

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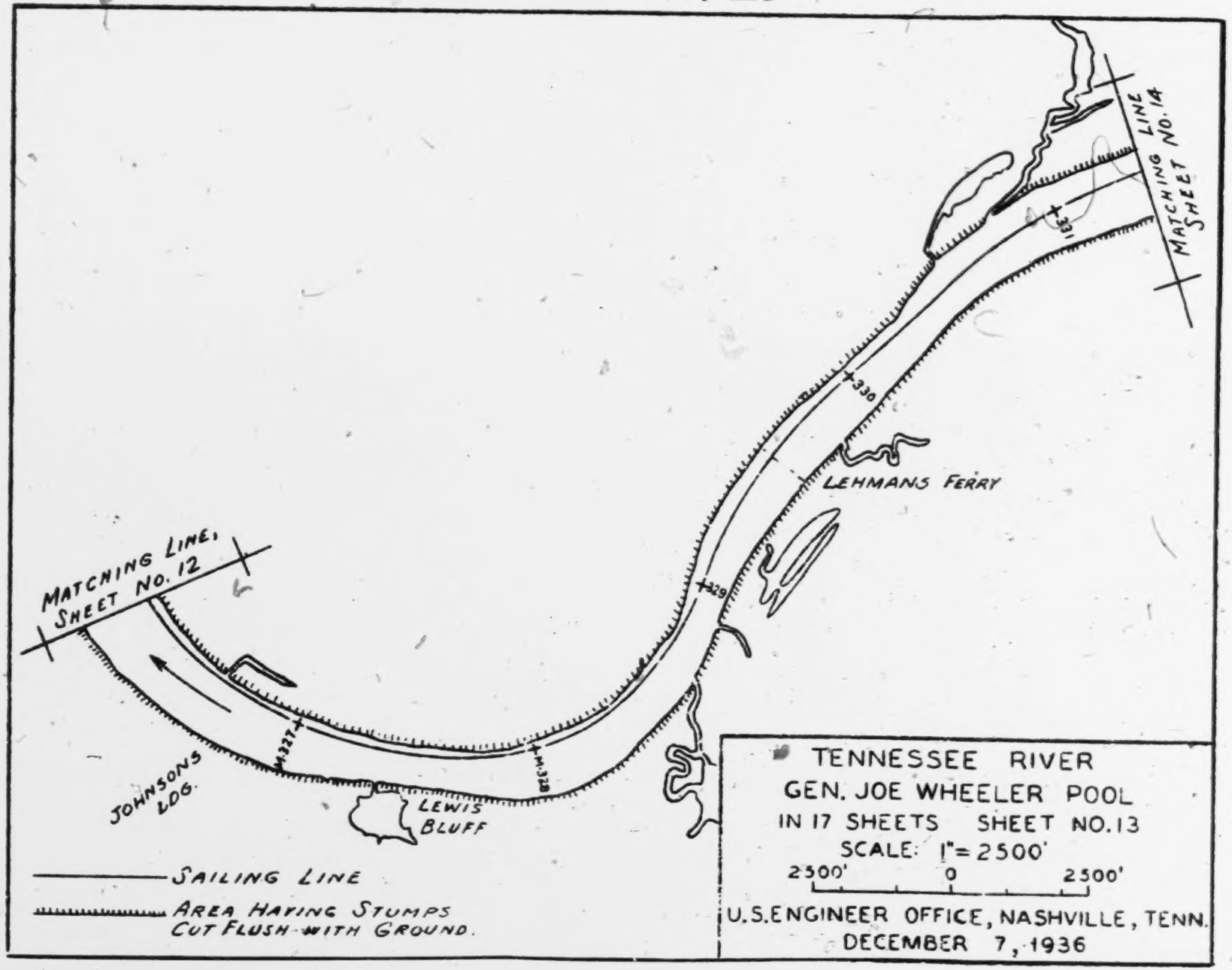

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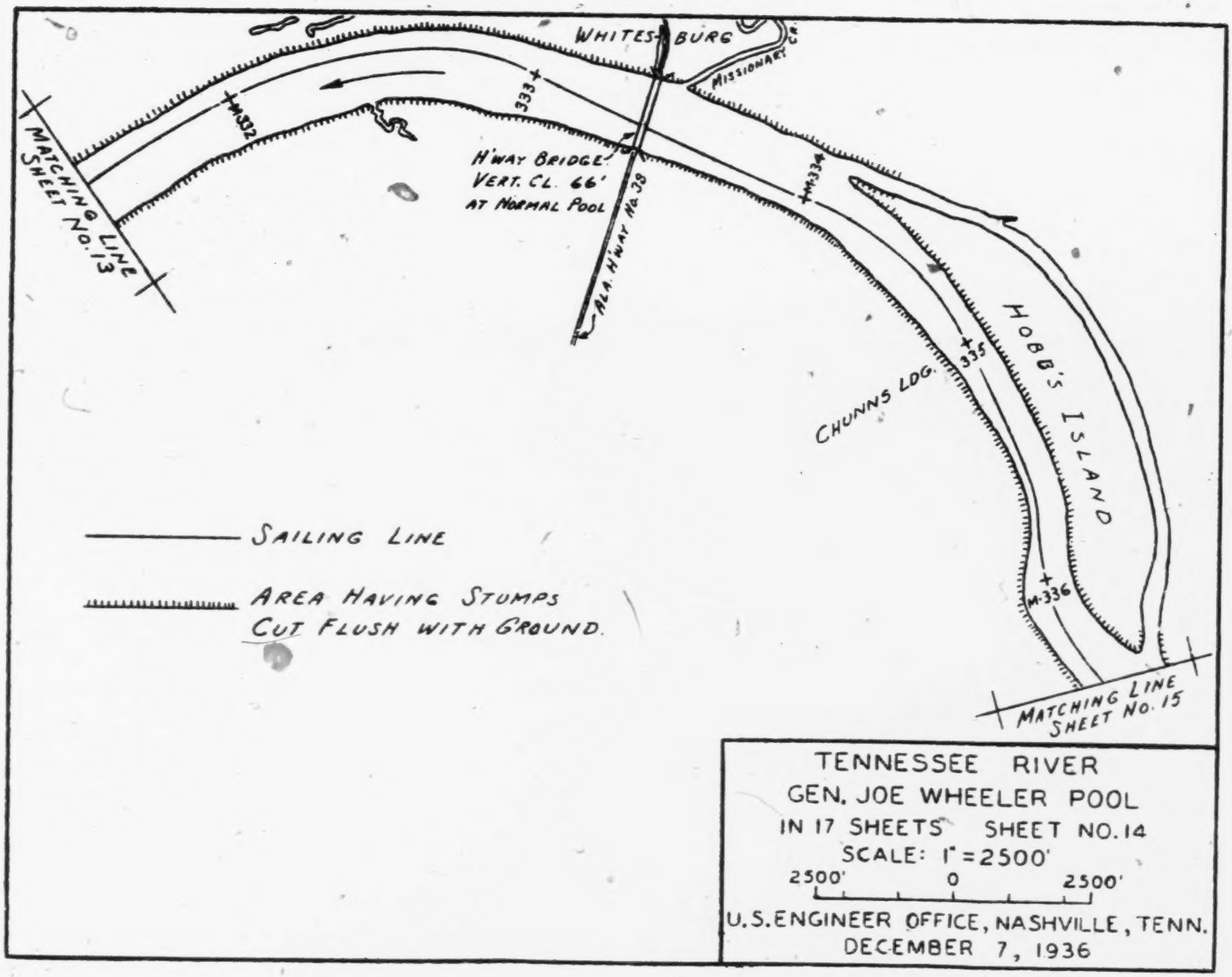

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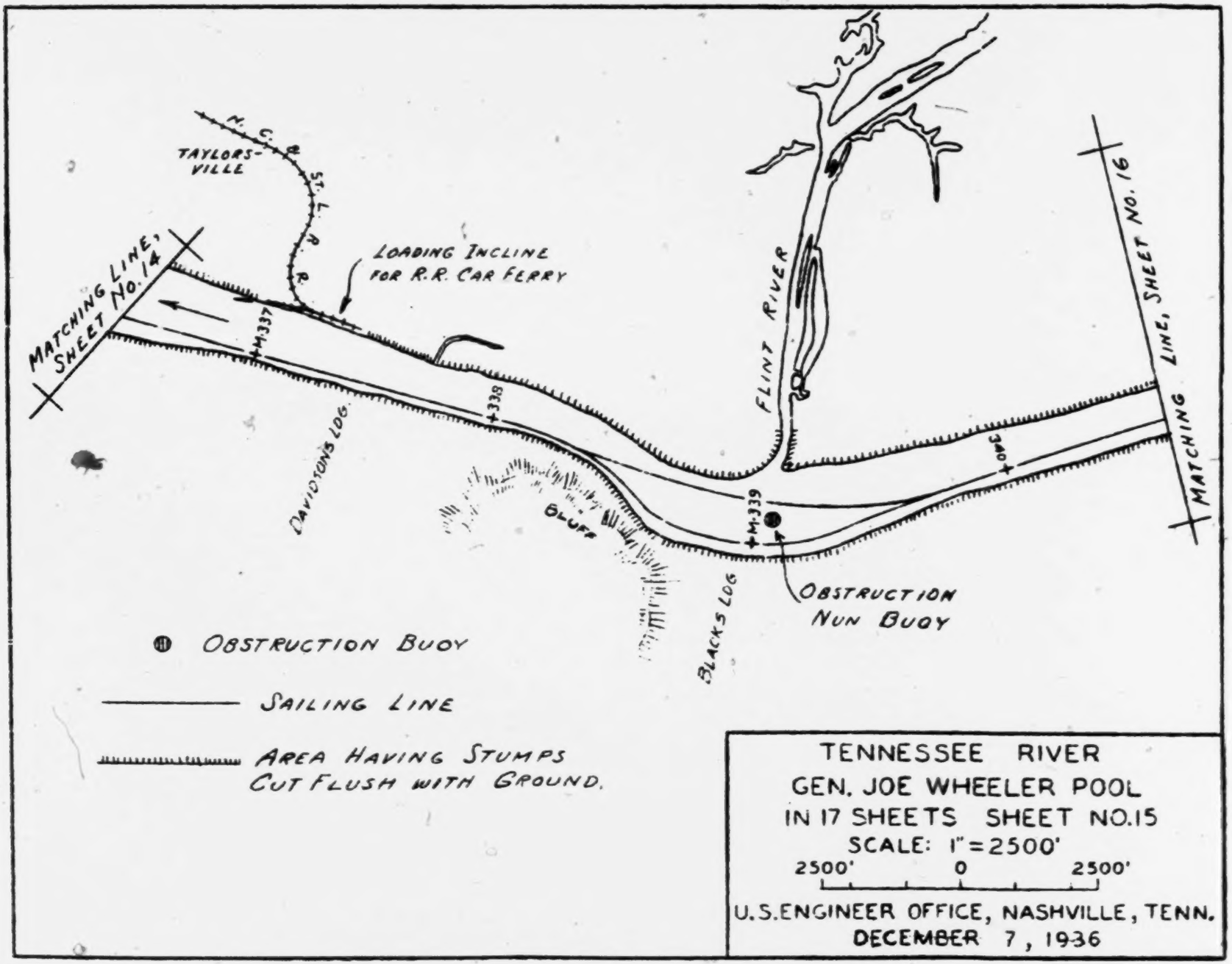

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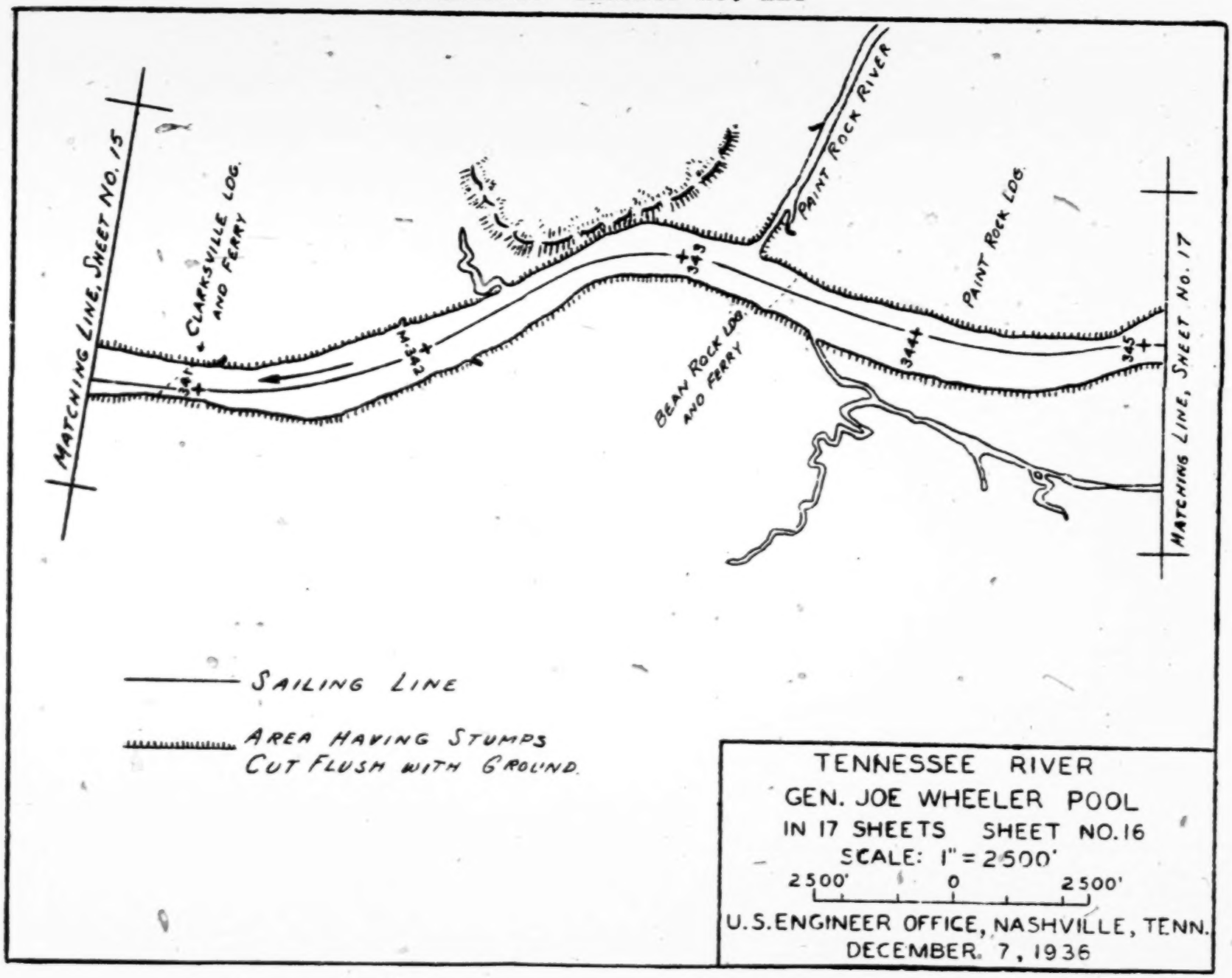

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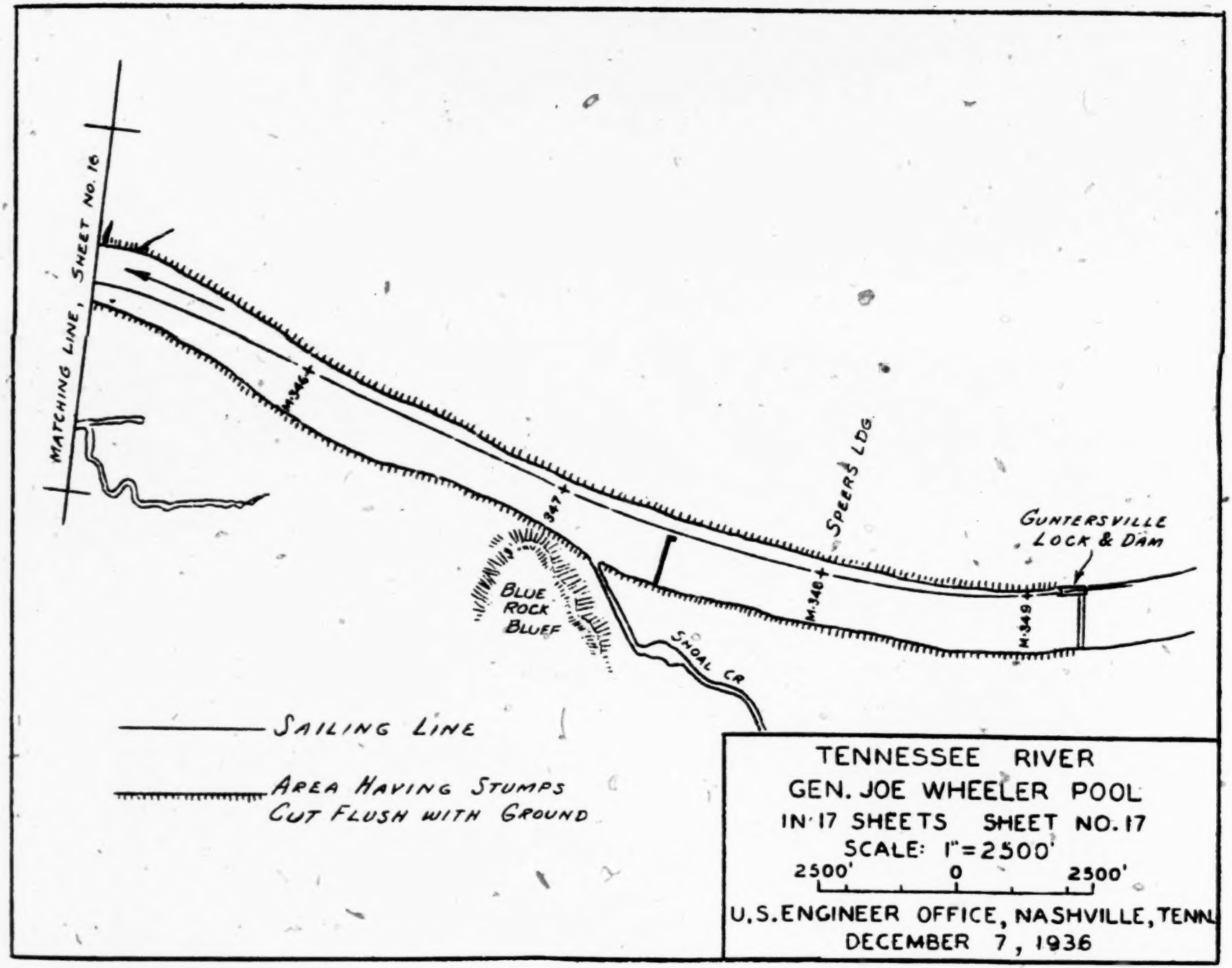

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[fol. 4211] DEFENDANTS' EXHIBIT No. 115

Theoretical Efficiencies of the Tennessee River Waterway

Low Dam Development

Item	Time Consumed (Hours)	Theoretical Time (Hours)	Time Lost (Hours)	Efficiency Loss %
Lockages	37.5	0	37.5	10.3
Running upstream	185.0	117.8	67.2	18.5
Running downstream	107.9	117.7	−9.8	−2.7
Miscellaneous delays	33.0	0	33.0	9.1
Total	363.4	235.5	127.9	35.2

Net efficiency—64.8%.

High Dam Development

Item	Time Consumed (Hours)	Theoretical Time (Hours)	Time Lost (Hours)	Efficiency Loss %
Lockages	13.5	0	13.5	4.7
Running upstream	129.5	117.8	11.7	4.1
Running downstream	115.6	117.7	−2.1	−0.7
Miscellaneous delays	25.9	0	25.9	9.1
Total	284.5	235.5	49.0	17.2

Net efficiency—82.8%.

Note.—The above calculations refer to a round trip, Paducah, Ky., to Knoxville, Tenn., and return. The lockage times are calculated on the basis of single lockages. The upstream running times are based on a still water towing speed of 5.5 m.p.h. minus current velocities of 2 m.p.h. with the low dams and minus 0.5 m.p.h. with the high dams. The downstream running times are based on a still water towing speed of 5.5 m.p.h. plus one-fourth of the current velocities. Miscellaneous delays are taken as 10% of the sum of the other three items.

[fol. 4212] DEFENDANTS' EXHIBIT No. 116

Map entitled "Tennessee River and Interconnecting Waterways".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 117 (Excluded)

House Document No. 254, 75th Congress, 1st Session.

(Omitted)

[fol. 4213] DEFENDANTS' EXHIBIT No. 118

Chart entitled "Some Industrial and Commercial Centers Reached By Interior Waterway System with Waterway Distance Between Them".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 119

Map entitled "Population Concentration Along Interior Waterway System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 120

Chart entitled "Principal Crops Produced In Tennessee Valley".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 121

Chart entitled "Types of Forest Resources In and Around Tennessee Valley".

(Original Exhibit)

[fol. 4214] DEFENDANTS' EXHIBIT No. 122

Chart entitled "Producing Centers For Some Basic Minerals In The Tennessee Valley."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 123

Map entitled "Traffic Producing Regions Touched By Interior Waterway System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 124

Chart entitled "Railroad Freight Origins and Terminations in Tennessee Valley and Contiguous Areas—1932"

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 125

Chart entitled "Ton—Miles of Traffic on the Tennessee River, 1933-1936".

(Original Exhibit)

(Here follow four photolithographs, side folios 4215-4218)

DEFENDANTS' EXHIBIT NO. 126

ESTIMATE OF TONNAGE MOVEMENT ON TENNESSEE RIVER FOR 1937 ASSUMING COMPLETE NAVIGATION FACILITIES

Note: (a) This estimate is based on present tonnage potentialities and makes no allowance for future growth of traffic.

(b) This estimate is confined to specific tonnage movements from or to points on or near the Tennessee River, concerning which definite information was obtained from shippers or receivers. It does not cover all probable commodities, nor all possible shipping and receiving points in the territory contiguous to the Tennessee Valley. For example, movements to and from Atlanta, Georgia, and district are not included.

(Movements Shown in Tons of 2000 Pounds)

Commodity	Annual Inbound Movement	Annual Outbound Movement[1]	Annual Movements Inbound & Outbound	Annual Savings by Use of Water Transportation	Average Savings per Ton by Use of Water Transportation
Agricultural Implements	4,800	3,000	7,800	$ 20,358.00	$2.61
Aluminum & Bauxite Ore Concentrates	18,000	5,000	23,000	25,160.00	1.09
Asphalt	13,102		13,102	14,660.88	1.12
Automobiles	22,500		22,500	93,323.00	4.15
Canned Goods	20,800	15,000	35,800	67,770.00	1.89
Cans, Sheet Iron & Steel	4,000		4,000	10,400.00	2.60
Cement		100,000	100,000	68,000.00	.68
Chemicals	19,250	22,500	41,750	73,445.00	1.76
Clay		36,400	36,400	24,388.00	.67
Coffee (Green)	6,500		6,500	8,320.00	1.28
Corn Syrup, Glucose, & Corn Starch	10,450		10,450	17,521.50	1.67
Cotton	46,000	62,000	108,000	232,500.00	2.15
Gasoline & Kerosene	505,000		505,000	2,105,200.00	4.17
Glassware, Fruit Jars & Bottles	4,500	6,000	10,500	19,252.00	1.83
Grain, Grain Products, Cereals & Rice	345,750		345,750	440,840.00	1.28
Iron & Steel Articles	249,200	878,000	1,127,200	1,693,703.00	1.50
Marble & Building Stone		45,000	45,000	45,000.00	

Asphalt	13,102		13,102	14,660.88	1.12
Automobiles	22,500		22,500	93,323.00	4.15
Canned Goods	20,800	15,000	35,800	67,770.00	1.89
Cans, Sheet Iron & Steel	4,000		4,000	10,400.00	2.60
Cement		100,000	100,000	68,000.00	.68
Chemicals	19,250	22,500	41,750	73,445.00	1.76
Clay		36,400	36,400	24,388.00	.67
Coffee (Green)	6,500		6,500	8,320.00	1.28
Corn Syrup, Glucose, & Corn Starch	10,450		10,450	17,521.50	1.67
Cotton	46,000	62,000	108,000	232,500.00	2.15
Gasoline & Kerosene	505,000		505,000	2,105,200.00	4.17
Glassware, Fruit Jars & Bottles	4,500	6,000	10,500	19,252.00	1.83
Grain, Grain Products, Cereals & Rice	345,750		345,750	440,840.00	1.28
Iron & Steel Articles	249,200	878,000	1,127,200	1,693,703.00	1.50
Marble & Building Stone		45,000	45,000	45,900.00	1.02
Matches	2,200		2,200	6,225.00	2.83
Packing House Products	52,750		52,750	123,935.00	2.35
Paper & Paper Articles	14,100	30,000	44,100	48,948.00	1.11
Paints & Varnishes	6,200		6,200	14,927.00	2.41
Roofing - Composition	15,900		15,900	23,119.00	1.45
Salt	25,100		25,100	34,764.00	1.39
Sand & Gravel		165,000	165,000	25,050.00	.15
Soap & Soap Powder	25,300		25,300	44,948.00	1.78
Sugar	34,000		34,000	48,600.00	1.43
Sulphur	10,200		10,200	20,120.50	1.97
Superphosphate		18,850	18,850	15,161.00	.80
Tires & Tubes	2,850	10,000	12,850	34,578.00	2.69
Tobacco (Unmanufactured)	12,000	1,200	13,200	28,056.00	2.13
Zinc Ore Concentrates		20,000	20,000	13,000.00	.65
	1,470,452	1,417,950	2,888,402	$5,442,172.88	$1.88
Coal & Coke[2]			1,311,423	681,165.60	.52
Forest Products[2]			1,486,907	1,612,056.60	1.08
Total			5,686,732	$7,735,395.08	$1.36
Present Annual Tonnage[3]			1,625,160	1,709,263.84	1.05
Grand Total			7,311,892	$9,444,658.92	$1.29

NOTE: Method of obtaining average savings per ton is division of total savings by total tonnage

1/ Outbound includes traffic having both origin and destination on the Tennessee River.

2/ Source: House Document No. 328, 71st Congress, 2nd Session, Appendix G, Section A, Table 26 (Supplementary).

3/ Average of 1933, 1934, 1935 and 1936 tonnages as reported by Chief of Engineers, U. S. Army.

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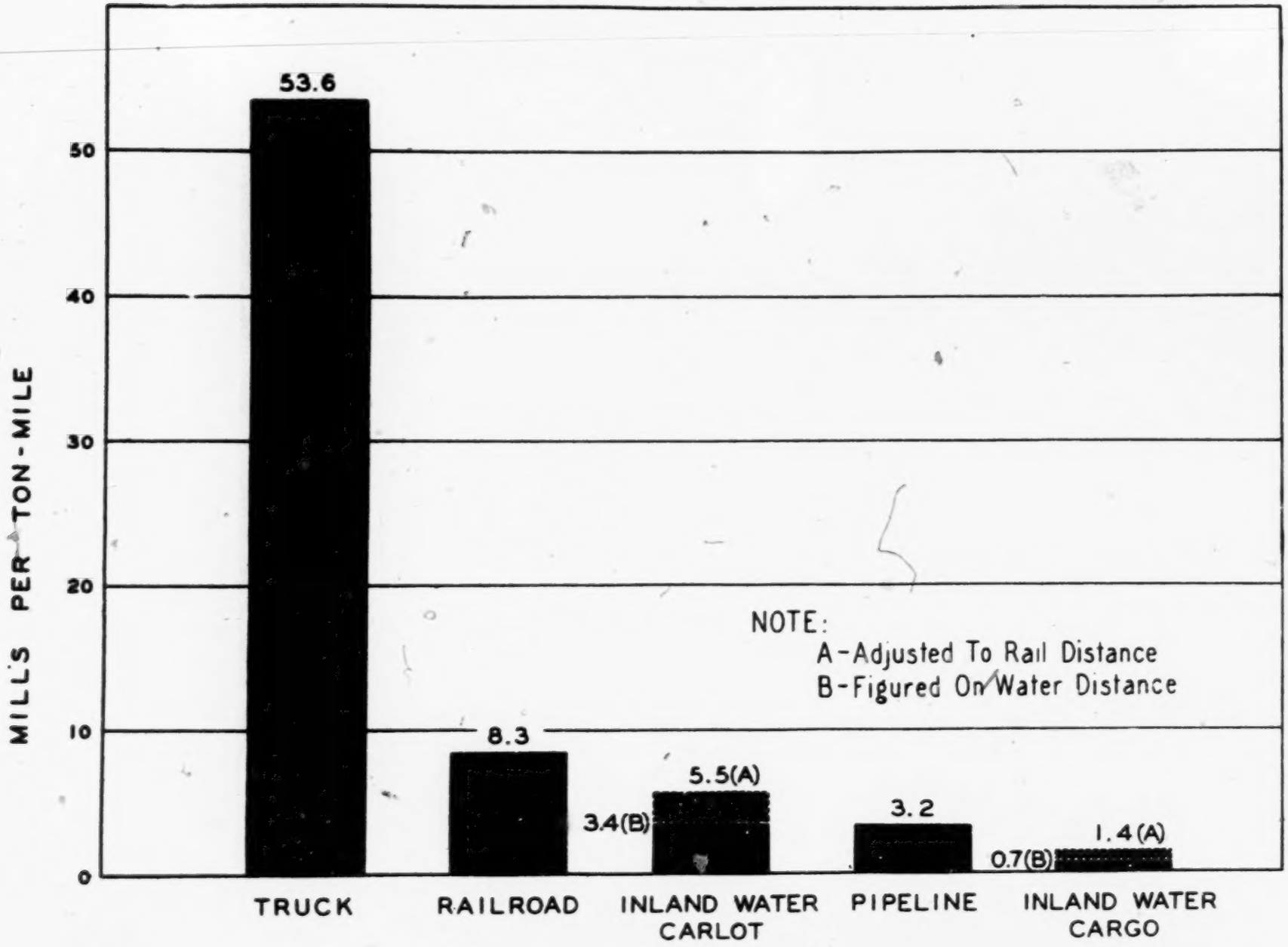
DEFENDANTS' EXHIBIT NO. 127

41368



COMPARATIVE UNIT FUNCTION COSTS - 1932

SOURCES: Freight Traffic Report, Vol. I, p 79
Merchandise Traffic Report, Exhibit 117-S

4216

DEFENDANTS' EXHIBIT NO. 128

STATEMENT SHOWING RATIO OF TRANSPORTATION SAVINGS
BY USE OF THE TENNESSEE RIVER
TO TRANSPORTATION CHARGES BY ALL-RAIL ROUTES
ON TONNAGES OBTAINED FROM RECENT TRAFFIC SURVEY

Commodity	Annual Tonnage	Transportation Charges: All-Rail	Transportation Charges: All-Water or Rail-Water	Savings By Water Transportation	Ratio of Savings to All-Rail Charges (Percent)
Agricultural Implements	7,800	$101,850.00	$81,492.00	$20,358.00	20.0
Aluminum and Bauxite Ore Concentrates	23,000	125,800.00	100,640.00	25,160.00	20.0
Asphalt	13,102	73,304.40	58,643.52	14,660.88	20.0
Automobile	22,500	628,299.00	534,976.00	93,323.00	14.8
Canned Goods	35,800	346,734.00	278,964.00	67,770.00	19.5
Cans, Sheet Iron & Steel	4,000	52,000.00	41,600.00	10,400.00	20.0
Cement	100,000	340,000.00	272,000.00	68,000.00	20.0
Chemicals	41,750	321,165.00	247,720.00	73,445.00	22.9
Clay	36,400	47,320.00	22,932.00	24,388.00	51.5
Coffee (Green)	6,500	41,600.00	33,280.00	8,320.00	20.0
Corn Syrup, Glucose & Corn Starch	10,450	91,902.50	74,381.00	17,521.50	19.1
Cotton	108,000	1,189,560.00	957,060.00	232,500.00	19.5
Gasoline & Kerosene	505,000	4,611,750.00	2,506,550.00	2,105,200.00	45.6
Glassware, Fruit Jars & Bottles	10,500	103,100.00	83,848.00	19,252.00	18.7
Grain, Grain Products, Cereals & Rice	345,750	2,211,635.00	1,770,795.00	440,840.00	19.9
Iron & Steel Articles	1,127,200	8,831,387.00	7,137,684.00	1,693,703.00	19.2
Marble & Building Stone	45,000	227,400.00	181,500.00	45,900.00	20.2
Matches	2,200	31,092.00	24,867.00	6,225.00	20.0
Packing House Products	52,750	619,845.00	496,910.00	123,935.00	20.0
Paper & Paper Articles	44,100	243,900.00	194,952.00	48,948.00	20.1
Paints & Varnishes	6,200	75,384.00	60,457.00	14,927.00	19.8
Roofing, Composition	15,900	121,195.00	98,076.00	23,119.00	19.1
Salt	25,100	191,335.00	156,571.00	34,764.00	18.2
Sand & Gravel	165,000	125,250.00	100,200.00	25,050.00	20.0
Soap & Soap Powder	25,300	224,028.00	179,080.00	44,948.00	20.1

[illegible]	[illegible]	[illegible]	41,600.00	10,400.00	20.0
Cement	100,000	340,000.00	272,000.00	68,000.00	20.0
Chemicals	41,750	321,165.00	247,720.00	73,445.00	22.9
Clay	36,400	47,320.00	22,932.00	24,388.00	51.5
Coffee (Green)	6,500	41,600.00	33,280.00	8,320.00	20.0
Corn Syrup, Glucose & Corn Starch	10,450	91,902.50	74,381.00	17,521.50	19.1
Cotton	108,000	1,189,560.00	957,060.00	232,500.00	19.5
Gasoline & Kerosene	505,000	4,611,750.00	2,506,550.00	2,105,200.00	45.6
Glassware, Fruit Jars & Bottles	10,500	103,100.00	83,848.00	19,252.00	18.7
Grain, Grain Products, Cereals & Rice	345,750	2,211,635.00	1,770,795.00	440,840.00	19.9
Iron & Steel Articles	1,127,200	8,831,387.00	7,137,684.00	1,693,703.00	19.2
Marble & Building Stone	45,000	227,400.00	181,500.00	45,900.00	20.2
Matches	2,200	31,092.00	24,867.00	6,225.00	20.0
Packing House Products	52,750	619,845.00	495,910.00	123,935.00	20.0
Paper & Paper Articles	44,100	243,900.00	194,952.00	48,948.00	20.1
Paints & Varnishes	6,200	75,384.00	60,457.00	14,927.00	19.8
Roofing, Composition	15,900	121,195.00	98,076.00	23,119.00	19.1
Salt	25,100	191,335.00	156,571.00	34,764.00	18.2
Sand & Gravel	165,000	125,250.00	100,200.00	25,050.00	20.0
Soap & Soap Powder	25,300	224,028.00	179,080.00	44,948.00	20.1
Sugar	34,000	236,600.00	188,000.00	48,600.00	20.1
Sulphur	10,200	103,444.00	83,323.50	20,120.50	19.5
Superphosphate	18,850	76,311.25	61,150.25	15,161.00	19.9
Tires & Tubes	12,850	156,180.00	121,602.00	34,578.00	22.1
Tobacco(Unmanufactured)	13,200	166,200.00	138,144.00	28,056.00	16.9
Zinc Ore Concentrates	20,000	89,000.00	76,000.00	13,000.00	14.6
	2,888,402	$21,804,571.15	$16,362,398.27	$5,442,172.88	25.0

STATEMENT SHOWING RATIO OF TRANSPORTATION SAVINGS BY USE OF THE TENNESSEE RIVER TO TRANSPORTATION CHARGES BY RAIL OR MOTOR-TRUCK ON PRESENT ANNUAL TENNESSEE R. TONNAGE

Commodity	Annual Tonnage [1/]	Transportation Charges By Rail Or Truck	Transportation Charges By Tenn. River	Savings By Tenn. River	Ratio of Savings to Rail Or Truck Charges (Percent)
Forest Products	117,532	$470,128.00	$71,694.52	$398,433.48	84.7
Sand & Gravel	1,399,665	1,399,665.00	349,916.25	1,049,748.75	75.0
Cement	71,874	172,497.60	29,468.34	143,029.26	82.9
Miscellaneous	33,154	132,616.00	24,865.50	107,750.50	81.2
Farm Products	2,935	12,914.00	2,612.15	10,301.85	79.8
TOTAL	1,625,160	$2,187,820.60	$478,556.76	$1,709,263.84	78.1

[1/] Average of 1933, 1934, 1935 and 1936 tonnage as reported by Chief of Engineers, U. S. Army

DEFENDANTS' EXHIBIT NO. 129

RAILROAD FREIGHT TRAFFIC

Southern District

	Revenue Tons Carried	Ratio To 1926=100	Present Increase Or Decrease From Preceding Year	Revenue Ton Miles	Ratio To 1926-100	Present Increase Or Decrease From Preceding Year
1926 Base	461,263,390	100.00	* * * *	101,426,273,438	100.00	* * * *
1927	449,753,073	97.50	- 2.50	96,338,368,210	94.98	- 5.02
1928	427,026,767	92.58	- 5.05	91,987,726,895	90.66	- 4.55
1929	429,575,010	93.13	+ 0.60	94,252,031,465	92.93	+ 2.49
1930	383,374,187	83.11	-10.76	83,787,261,765	82.61	-11.10
1931	308,708,997	66.93	-19.48	69,525,377,692	68.55	-17.02
1932	231,583,273	50.21	-24.98	54,476,716,367	53.71	-21.64
1933	253,680,864	55.00	+ 9.54	58,934,144,975	58.11	+ 8.18
1934	271,954,612	58.96	+ 7.20	62,366,517,800	61.49	+ 5.82
1935	282,743,317	61.30	+ 3.97	65,151,873,280	64.24	+ 4.47
1936	342,222,485	74.19	+21.04	78,313,705,936	77.21	+20.20
Est. 1937	364,364,000	78.99	+ 6.47	83,380,000,000	82.21	+ 8.47

Southern Region

1926 Base	318,241,433	100.00	* * * *	61,067,786,024	100.00	* * * *
1927	307,029,921	96.48	- 3.52	58,431,746,321	95.68	- 4.32
1928	291,385,723	91.56	- 5.10	55,770,538,066	91.33	- 4.55
1929	283,239,695	89.00	- 2.80	55,163,326,785	90.33	- 1.09
1930	247,130,374	77.65	-12.75	47,010,592,476	76.98	-14.78
1931	193,634,011	60.84	-21.65	37,675,401,754	61.69	-19.86
1932	137,944,462	43.35	-28.76	28,218,231,216	46.21	-25.10
1933	148,682,685	46.71	+ 7.78	30,040,782,142	49.19	+ 6.46
1934	160,061,113	50.30	+ 7.65	31,921,183,179	52.27	+ 6.26
1935	168,433,417	52.93	+ 5.23	34,125,127,235	55.88	+ 6.90
1936	204,649,650	64.31	+21.50	41,155,572,004	67.39	+20.60
Est. 1937	219,425,000	68.95	+ 7.22	44,127,000,000	72.26	+ 7.22

Sources: 1. Statistics of Railways in the United States, 1926-1936
2. Freight Commodity Statistics I.C.C. Statement 37100
3. Revenue Freight Loaded and Received from Connections - Association of American Railroads CS-54A for November 27, 1937. (48 weeks used to estimate 1937 annual figure.)

...river Terminal, Viz:

From:		Lorristown, Tennessee	Newport, Tennessee	Clinton, Tennessee	Sevierville, Tennessee	Maryville, Tennessee	Lenoir City, Tennessee	
ouston, Texas (1)	AR	1280	1320	1280	1440	1280	1260	
	WT	857	863	813	829	807	827	
		423	456	467	611	473	433	
Baton Rouge, and New Orleans, Louisiana (2)	AR	1040	1080	1000	1120	1000	980	
	WT	749	755	705	721	699	719	
		291	325	295	399	301	261	
Woodriver, Illinois (3)	AR	1000	1020	960	1120	980	980	
	WT	435	441	391	407	385	405	
		565	579	569	713	595	575	
Louisville, Kentucky	AR	780	800	720	880	760	760	
	WT	473	479	429	445	423	443	
		307	321	291	435	337	317	
Cincinnati, Ohio	AR	800	820	740	900	760	780	
	WT	526	532	482	498	476	496	
		274	288	258	402	284	284	
Shreveport, Louisiana	AR	1140	1180	1120	1280	1120	1100	Total
	WT	790	796	746	762	740	760	Average
		350	384	374	518	380	340	Saving
Average Saving		$3.68	$3.92	$3.76	$5.13	$3.95	$3.68	$4.02

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - 4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.
Highway miles from Knoxville: Morristown - 41, Newport - 44, Clinton - 19, Sevierville - 27, Maryville - 16, Lenoir City - 26.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-C, I.C.C. 2791.

[fol. 4219] DEFENDANTS' EXHIBIT No. 130

Chart entitled "Tonnage, Actual and Estimated, Moving on Mississippi River System Since 1814".

(Original Exhibit)

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Recapitulation for Movements

Origin	Destination	Tonnage	Saving Per Ton	Total Saving
	Knoxville, Tenn.	100,000	$4.14	$414,000
	Subsidiary Stations	50,000	4.02	201,000
*Houston, Texas)				
*New Orleans, La.)	Chattanooga, Tenn.	100,000	4.38	438,000
*Baton Rouge, La.)	Subsidiary Stations	30,000	3.93	117,900
*Shreveport, La.)				
*Wood River, Ill.)	Guntersville, Ala.	15,000	5.17	77,550
*St. Louis, Mo.)	Subsidiary Stations	35,000	4.49	157,150
*Louisville, Ky.)				
*Cincinnati, Ohio)	Decatur, Ala.	35,000	3.94	137,900
	Subsidiary Stations	40,000	3.88	155,200
	Florence, Ala.	25,000	4.29	107,250
	Subsidiary Stations	75,000	3.99	299,250
		505,000		$2,105,200

Average Saving Per Ton = $4.17

*Representative

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER

Rates in cents per ton of 2,000 pounds

From: \ To:		Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R	1160	910	950	1260	1120
	W	701	617	679	775	660
		459	293	271	485	460
Baton Rouge, (2) New Orleans, Louisiana	R	860	760	670	1000	690
	W	592	509	529	667	551
		268	251	141	333	441
Wood River, (3) Illinois	R	920	860	880	960	960
	W	279	197	216	353	239
		641	663	664	607	721
Louisville, Kentucky	R	780	780	780	740	840
	W	318	235	255	391	276
		462	545	525	349	564
Cincinnati, Ohio	R	800	880	860	760	880
	W	371	288	308	444	329
		429	592	552	316	551
Shreveport, Louisiana	R	1000	780	820	1100	960
	W	633	552	611	708	593
		367	228	209	392	367
Average Savings		$4.38	$4.29	$3.94	$4.14	$5.17

R: All-Rail
W: All-Water
(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis. Missouri, East St. Louis, and Alton, Illinois.

From: \ To:		Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R	1160	910	950	1260	1120
	W	701	617	679	775	660
		459	293	271	485	460
Baton Rouge, (2) New Orleans, Louisiana	R	860	760	670	1000	690
	W	592	509	529	667	551
		268	251	141	333	441
Wood River, (3) Illinois	R	920	860	880	960	960
	W	279	197	216	353	239
		641	663	664	607	721
Louisville, Kentucky	R	780	780	780	740	840
	W	318	235	255	391	276
		462	545	525	349	564
Cincinnati, Ohio	R	800	880	860	760	880
	W	371	288	308	444	329
		429	592	552	316	551
Shreveport, Louisiana	R	1000	780	820	1100	960
	W	633	552	611	708	593
		367	228	209	392	367
Average Savings		$4.38	$4.29	$3.94	$4.14	$5.17

R: All-Rail
W: All-Water
(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water rates were made on the basis of 4 mills per ton-mile, i.e., 3.5 mills for round trip towing service plus 0.5 mills per ton-mile for barge hire.

Tariff Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

		[illegible], Tennessee	Cleveland, Tennessee	Etowah, Tennessee	Dayton, Tennessee	Dalton, Georgia	
Houston, Texas (1)	AR	1240	1220	1240	1220	1160	
	WT	815	761	821	777	759	
		425	459	419	443	401	
Baton Rouge, and New Orleans, Louisiana (2)	AR	940	940	960	940	860	
	WT	706	652	712	668	650	
		234	288	248	272	210	
Wood River, Illinois (3)	AR	960	940	960	960	960	
	WT	393	339	399	355	337	
		567	601	561	605	623	
Louisville, Kentucky	AR	800	820	800	740	820	
	WT	432	378	438	394	376	
		368	442	362	346	444	
Cincinnati, Ohio	AR	800	840	820	760	840	
	WT	485	431	491	447	429	
		315	409	329	313	411	
Shreveport, Louisiana	AR	1060	1060	1100	1060	1000	Total
	WT	747	693	753	709	691	Average
		313	367	347	351	309	Saving
Average Saving		$3.70	$4.28	$3.78	$3.88	$4.00	$3.93

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - 4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.

Highway miles from Chattanooga: Athens - 57, Cleveland - 30, Etowah - 60, Dayton - 38, Dalton - 29.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER

Rates in cents per ton of 2,000 pounds

From: \ To:		Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R	1160	910	950	1260	1120
	W	701	617	679	775	660
		459	293	271	485	460
Baton Rouge, (2) New Orleans, Louisiana	R	860	760	670	1000	690
	W	592	509	529	667	551
		268	251	141	333	441
Wood River, (3) Illinois	R	920	860	880	960	960
	W	279	197	216	353	239
		641	663	664	607	721
Louisville, Kentucky	R	780	780	780	740	840
	W	318	235	255	391	276
		462	545	525	349	564
Cincinnati, Ohio	R	800	880	860	760	880
	W	371	288	308	444	329
		429	592	552	316	551
Shreveport, Louisiana	R	1000	780	820	1100	960
	W	633	552	611	708	593
		367	228	209	392	367
Average Savings		$4.38	$4.29	$3.94	$4.14	$5.17

R: All-Rail
W: All-Water
(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. [illegible]

From: \ To:		Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R	1160	910	950	1260	1120
	W	701	617	679	775	660
		459	293	271	485	460
Baton Rouge, (2) New Orleans, Louisiana	R	860	760	670	1000	690
	W	592	509	529	667	551
		268	251	141	333	441
Wood River, (3) Illinois	R	920	860	880	960	960
	W	279	197	216	353	239
		641	663	664	607	721
Louisville, Kentucky	R	780	780	780	740	840
	W	318	235	255	391	276
		462	545	525	349	564
Cincinnati, Ohio	R	800	880	860	760	880
	W	371	288	308	444	329
		429	592	552	316	551
Shreveport, Louisiana	R	1000	780	820	1100	960
	W	633	552	611	708	593
		367	228	209	392	367
Average Savings		$4.38	$4.29	$3.94	$4.14	$5.17

R: All-Rail
W: All-Water
(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water rates were made on the basis of 4 mills per ton-mile, i.e., 3.5 mills for round trip towing service plus 0.5 mills per ton-mile for barge hire.

Tariff Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From:	To: Representative Bulk-Stations Which Can Be Served From Knoxville River Terminal, Viz:						
		Lorristown, Tennessee	Newport, Tennessee	Clinton, Tennessee	Sevierville, Tennessee	Maryville, Tennessee	Lenoir City, Tennessee
ouston, Texas (1)	AR	1280	1320	1280	1440	1280	1260
	WT	857	863	813	829	807	827
		423	456	467	611	473	433
Baton Rouge, and New Orleans, Louisiana (2)	AR	1040	1080	1000	1120	1000	980
	WT	749	755	705	721	699	719
		291	325	295	399	301	261
Woodriver, Illinois (3)	AR	1000	1020	960	1120	980	980
	WT	435	441	391	407	385	405
		565	579	569	713	595	575
Louisville, Kentucky	AR	780	800	720	880	760	760
	WT	473	479	429	445	423	443
		307	321	291	435	337	317
Cincinnati, Ohio	AR	800	820	740	900	760	780
	WT	526	532	482	498	476	496
		274	288	258	402	284	284
Shreveport, Louisiana	AR	1140	1180	1120	1280	1120	1100 Total
	WT	790	796	746	762	740	760 Average
		350	384	374	518	380	340 Saving
Average Saving		$3.68	$3.92	$3.76	$5.13	$3.95	$3.68 $4.02

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - 4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.
Highway miles from Knoxville. [illegible]

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From: \ To: Representative Bulk-Stations Which Can Be Served From Chattanooga River Terminal, Viz:		Athens, Tennessee	Cleveland, Tennessee	Etowah, Tennessee	Dayton, Tennessee	Dalton, Georgia	
Houston, Texas (1)	AR	1240	1220	1240	1220	1160	
	WT	815	761	821	777	759	
		425	459	419	443	401	
Baton Rouge, and New Orleans, Louisiana (2)	AR	940	940	960	940	860	
	WT	706	652	712	668	650	
		234	288	248	272	210	
Wood River, Illinois (3)	AR	960	940	960	960	960	
	WT	393	339	399	355	337	
		567	601	561	605	623	
Louisville, Kentucky	AR	800	820	800	740	820	
	WT	432	378	438	394	376	
		368	442	362	346	444	
Cincinnati, Ohio	AR	800	840	820	760	840	
	WT	485	431	491	447	429	
		315	409	329	313	411	
Shreveport, Louisiana	AR	1060	1060	1100	1060	1000	Total
	WT	747	693	753	709	691	Average
		313	367	347	351	309	Saving
Average Saving		$3.70	$4.28	$3.78	$3.88	$4.00	$3.93

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - 4 mills per ton-mile.

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DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From: \ To:		Representative Bulk-Stations Which Can Be Served From Guntersville River Terminal, Vis: Gadsden, Alabama	Scottsboro, Alabama	Fort Payne, Alabama	Boaz, Alabama	
Houston, Texas (1)	AR	1100	1160	1120	1100	
	WT	728	714	764	688	
		372	446	356	412	
Baton Rouge, and New Orleans, (2) Louisiana	AR	560	860	630	840	
	WT	481	605	517	579	
		79	255	113	261	
Wood River, Illinois (3)	AR	960	900	960	960	
	WT	307	293	343	267	
		653	607	617	693	
Louisville, Kentucky	AR	860	780	840	840	
	WT	344	330	380	304	
		516	450	460	536	
Cincinnati, Ohio	AR	880	840	840	880	
	WT	397	383	433	357	
		483	457	407	523	
Shreveport, Louisiana	AR	940	960	960	940	Total
	WT	435	421	471	395	Average
		505	539	489	545	Saving
Average Saving		$4.35	$4.59	$4.07	$4.95	$4.49

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.

(2) Also applies from Gretna, [illegible] and Destrehan, Louisiana

From:		Alabama	Alabama	Alabama	Alabama	
Houston, Texas (1)	AR	1100	1160	1120	1100	
	WT	728	714	764	688	
		372	446	356	412	
Baton Rouge, and New Orleans, (2) Louisiana	AR	560	860	630	840	
	WT	481	605	517	579	
		79	255	113	261	
Wood River, Illinois (3)	AR	960	900	960	960	
	WT	307	293	343	267	
		653	607	617	693	
Louisville, Kentucky	AR	860	780	840	840	
	WT	344	330	380	304	
		516	450	460	536	
Cincinnati, Ohio	AR	880	840	840	880	
	WT	397	383	433	357	
		483	457	407	523	
Shreveport, Louisiana	AR	940	960	960	940	Total
	WT	435	421	471	395	Average
		505	539	489	545	Saving
Average Saving		$4.35	$4.59	$4.07	$4.95	$4.49

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - *4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.
*Except from New Orleans-Baton Rouge Group to Gadsden and Fort Payne, 3 mills per ton-mile.

Highway miles from Guntersville: Gadsden - 34, Scottsboro - 27, Fort Payne - 52, Boaz - 14.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

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From:		Athens, Alabama	Hartselle, Alabama	Cullman, Alabama	Huntsville, Alabama	
Houston, Texas (1)	AR	950	1040	1040	950	
	WT	709	703	741	729	
		241	337	299	221	
Baton Rouge, and New Orleans, Louisiana (2)	AR	820	650	530	840	
	WT	559	553	458	579	
		261	97	72	261	
Wood River, Illinois (3)	AR	900	900	900	900	
	WT	246	240	278	266	
		654	660	622	634	
Louisville, Kentucky	AR	760	780	800	780	
	WT	285	279	317	305	
		475	501	483	475	
Cincinnati, Ohio	AR	860	880	880	880	
	WT	338	332	370	358	
		522	548	510	522	
Shreveport, Louisiana	AR	880	880	880	880	Total
	WT	641	635	673	661	Average
		239	245	207	219	Saving
Average Saving		$3.99	$3.98	$3.66	$3.89	$3.88

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - *4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.
* Except from New Orleans-Baton Rouge Group to Cullman, 3 mills per ton-mile.
Highway miles from Decatur: Athens - 15, Hartselle - 12, Cullman - 31, Huntsville -

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

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gasoline will be consumed annually. The total domestic demand for all gasoline and kerosene, tax paid as well as non-taxable, is about 114% of the tax-paid gasoline consumed in the U.S.[3] The consumption of all gasoline and kerosene in the Tennessee Valley area may thus be considered to approximate 745,000 tons a year on above basis.

The estimate that 505,000 tons of gasoline and kerosene will move into the Tennessee Valley by water is a reasonable one when it is considered that approximately 745,000 tons of gasoline and kerosene is necessary to satisfy the needs of the Valley in a year, at the present automobile registration. Also, the figure is reasonable when the 1937 tonnage of gasoline and kerosene that moves on the Cumberland River is considered, approximately 266,000 tons. (This is an indicated figure based on the first eight months of 1937.[4]) The improved portion of the Cumberland is only about one-third the length of the Tennessee River.

There are possibilities that much more gasoline would move into the Tennessee Valley by water if pipe lines such as one from Chattanooga to Atlanta were constructed. Further increase in the amount of petroleum products distributed may arise from distribution when terminals on the Tennessee River serve a much wider area than is now foreseen. Much of the gasoline moving to Tennessee River terminals might compete with such products moving in from Atlantic Coast ports at the present time.

1/ Domestic Commerce, August 1935, p. 114; World's Almanac, 1937, p. 321.

2/ Market Data Handbook, 1936.

3/ Minerals Yearbook, 1937, pp. 1024, 1038.

4/ Letter of October 7, 1937, from Lieutenant Colonel C. E. Perry, District Engineer, Nashville, Tennessee.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From: / To:		Representative Bulk-Stations Which Can Be Served From Decatur River Terminal, Viz: Athens, Alabama	Hartselle, Alabama	Cullman, Alabama	Huntsville, Alabama	
Houston, Texas (1)	AR	950	1040	1040	950	
	WT	709	703	741	729	
		241	337	299	221	
Baton Rouge, and New Orleans, Louisiana (2)	AR	820	650	530	840	
	WT	559	553	458	579	
		261	97	72	261	
Wood River, Illinois (3)	AR	900	900	900	900	
	WT	246	240	278	266	
		654	660	622	634	
Louisville, Kentucky	AR	760	780	800	780	
	WT	285	279	317	305	
		475	501	483	475	
Cincinnati, Ohio	AR	860	880	880	880	
	WT	338	332	370	358	
		522	548	510	522	
Shreveport, Louisiana	AR	880	880	880	880	Total
	WT	641	635	673	661	Average
		239	245	207	219	Saving
Average Saving		$3.99	$3.98	$3.66	$3.89	$3.88

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From:	To: Representative Bulk-Stations Which Can Be Served From Florence River Terminal, Viz:					
		Cherokee, Alabama	Courtland, Alabama	Russellville, Alabama	Sheffield, Alabama	Tuscumbia, Alabama
Houston, Texas (1)	AR	910	950	950	910	910
	WT	661	675	669	625	629
		249	275	281	285	281
Baton Rouge, and New Orleans, Louisiana (2)	AR	760	730	760	760	760
	WT	553	567	561	517	521
		207	163	199	243	239
Wood River, Illinois (3)	AR	840	860	860	860	860
	WT	241	255	249	205	209
		599	605	611	655	651
Louisville, Kentucky	AR	800	800	800	780	780
	WT	279	293	287	243	247
		521	507	513	537	533
Cincinnati, Ohio	AR	880	880	880	880	880
	WT	332	346	349	296	300
		548	534	531	584	580
Shreveport, Louisiana	AR	780	820	820	780	780
	WT	596	610	604	560	564
		184	210	216	220	216
Average Saving		$3.85	$3.82	$3.92	$4.21	$4.17

Total Average Saving $3.99

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal [illegible]

				[illegible] Alabama	Alabama	Alabama	
Houston, Texas (1)	AR	910	950	950	910	910	
	WT	661	675	669	625	629	
		249	275	281	285	281	
Baton Rouge, and New Orleans, Louisiana (2)	AR	760	730	760	760	760	
	WT	553	567	561	517	521	
		207	163	199	243	239	
Wood River, Illinois (3)	AR	840	860	860	860	860	
	WT	241	255	249	205	209	
		599	605	611	655	651	
Louisville, Kentucky	AR	800	800	800	780	780	
	WT	279	293	287	243	247	
		521	507	513	537	533	
Cincinnati, Ohio	AR	880	880	880	880	880	
	WT	332	346	349	296	300	
		548	534	531	584	580	
Shreveport, Louisiana	AR	780	820	820	780	780	Total
	WT	596	610	604	560	564	Average
		184	210	216	220	216	Saving
Average Saving		$3.85	$3.82	$3.92	$4.21	$4.17	$3.99

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:
Water movement to river terminal - 4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.

Highway miles from Florence: Cherokee - 22, Courtland - 29, Russellville - 26, Sheffield - 4, Tuscumbia - 6.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Basic Information

Tax paid gasoline used per automobile is 660 gallons a year,[1] average for the Tennessee Valley states. Automobile registrations for the Tennessee Valley area were approximately 265,000 in 1934,[2] plus 15%, the amount of increase in the seven southeastern states in automobile registrations since 1934. Thus there are about 300,000 automobiles for which 650,000 tons of tax paid gasoline will be consumed annually. The total domestic demand for all gasoline and kerosene, tax paid as well as non-taxable, is about 114% of the tax-paid gasoline consumed in the U.S.[3] The consumption of all gasoline and kerosene in the Tennessee Valley area may thus be considered to approximate 745,000 tons a year on above basis.

The estimate that 505,000 tons of gasoline and kerosene will move into the Tennessee Valley by water is a reasonable one when it is considered that approximately 745,000 tons of gasoline and kerosene is necessary to satisfy the needs of the Valley in a year, at the present automobile registration. Also, the figure is reasonable when the 1937 tonnage of gasoline and kerosene that moves on the Cumberland River is considered, approximately 260,000 tons. (This is an indicated figure based on the first eight months of 1937.[4]) The improved portion of the Cumberland is only about one-third the length of the Tennessee River.

There are possibilities that much more gasoline would move into the Tennessee Valley by water if pipe lines such as one from Chattanooga to Atlanta were constructed. Further increase in the amount of petroleum products distributed may arise from distribution when terminals on the Tennessee River serve a much wider area than is now foreseen. Much of the gasoline moving to Tennessee River terminals might compete with such products moving in from Atlantic Coast ports at the present time.

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Knoxville, Tennessee

(Inbound)

			Origin of Own Tonnage
Cherokee Oil Co. (C. S. Reeder, Jr.)	Gasoline & Kerosene	150,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.

Chattanooga, Tennessee

(Inbound)

Pure Oil Company (H. L. Thatcher)	Gasoline & Kerosene	130,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
Texas Company (L. T. Mathis & G. L. Kelly)	Gasoline & Kerosene	120,000 tons	(Lawrence, Ill. (Houston, Tex.
Shell Petroleum Corp. (S. H. Campbell, Jr.)	Gasoline & Kerosene	130,000 tons	(Norco, La. (Shreveport, La.

Guntersville, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	50,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.

Decatur, Alabama

(Inbound)

Gulf Refining Company	Gasoline & Kerosene	75,000 tons	(Cincinnati, O.

Cherokee Oil Co. (C. S. Reeder, Jr.)	Gasoline & Kerosene	150,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.

Chattanooga, Tennessee

(Inbound)

Pure Oil Company (H. L. Thatcher)	Gasoline & Kerosene	130,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
Texas Company (L. T. Mathis & G. L. Kelly)	Gasoline & Kerosene	120,000 tons	(Lawrence, Ill. (Houston, Tex.
Shell Petroleum Corp. (S. H. Campbell, Jr.)	Gasoline & Kerosene	130,000 tons	(Norco, La. (Shreveport, La.

Guntersville, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	50,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.

Decatur, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	75,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Florence, Sheffield, Tuscumbia, Alabama

(Inbound)

Standard Oil Company (J. B. Gilbert)	Gasoline & Kerosene	100,000 tons	Baton Rouge, La.

Note: The above tonnage figures include gasoline and kerosene necessary to supply the bulk stations in the marketing areas around the Tennessee River terminals.

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[fol. 4230] DEFENDANTS' EXHIBIT No. 132

Tonnage Graph on Tennessee River—calendar year 1936.

(Original Exhibit)

Defendants' Exhibit No. 133

[fol. 4231]

Power Requirements of Four Groups of Utility Companies

Table 1939 and 1943

Operating Companies	Purchase Energy Requirements		Purchase Capacity Requirements					
			Delivery of Firm Energy		Machine Shortage Incl. Reserves		Overall	
	1939 (Kwh.)	1943 (Kwh.)	1939 (Kw.)	1943 (Kw.)	1939 (Kw.)	1943 (Kw.)	1939 (Kw.)	1943 (Kw.)
Commonwealth & Southern Group.....	564,300,000	1,600,800,000	261,700	519,000	207,000	559,100	261,700	559,100
Alabama Power Company Birmingham Electric Company Gulf Power Company Mississippi Power Company South Carolina Power Company Tennessee Electric Power Co. Southern Tennessee Power Co. Georgia Power Company								
Electric Pwr. & Lt.—National Pwr. & Lt. Group (Electric Bond and Share).....	132,700,000	426,100,000	90,600	177,000	88,200	190,000	90,600	190,000
Arkansas Power & Light Company Louisiana Power & Light Company Memphis Power & Light Company Mississippi Power & Light Company West Tennessee Power & Light Company								
National Power & Light Group.....	73,900,000	140,300,000	28,000	45,400	0	16,000	28,000	45,400
Carolina Power & Light, Western Division Tennessee Public Service Company								
Kentucky Utilities Group.....	0	2,300,000	.....	4,600	15,000	22,400	15,000	22,400
Kentucky Utilities, Pineville District Old Dominion Power Company Dixie Power & Light Company								
Total All Listed Companies.....	770,900,000	2,169,500,000	380,300	746,000	310,200	787,500	395,300	816,900

DEFENDANTS' EXHIBIT No. 134

[fol. 4232] Details of Computations

Study of Load Forecast and Power Requirements of Four Groups of Utility Companies

[fol. 4233]

Commonwealth and Southern Southeastern Group

Table A

Capacity Summary Sheet

	1936 1,000 kw	1939 1,000 kw	1943 1,000 kw
Maximum annual demand	896.0	1,120.0	1,433.0
Demand increased by 7½% margin to give maximum contemplated requirement		1,204.0	1,540.5
Capability fuel plants	398.7		
Capability present hydro plants having pondage	698.8		
Total available system capability representative dry year	1,097.5	1,097.5	1,097.5
Apparatus reserves required			
Machine reserves:			
Largest unit down		67.0	67.0
Other units down		33.5	33.5
Transmission and miscellaneous, 5%		56.0	71.6
Total apparatus reserves		156.5	172.1
Capacity remaining beyond reserves to meet maximum contemplated requirement		941.0	925.4
Capacity to be obtained elsewhere		263.0	615.1
Capacity from contracts:			
Present firm contracts		4.5	4.5
Customer plants, for reserve only		51.5	51.5
Balance to be purchased		207.0	559.1
Capacity required only for reserve		.....	40.1
Notes:			
Firm capacity necessary to supply firm energy to be purchased		261.7	519.0
Total reserves above forecast demand, all sorts		240.5	279.6
These reserves as a percent of total available capacity, including purchases		20.7%	18.7%

Defendants' Exhibit No. 134

[fol. 4234] Sheet 2

Commonwealth and Southern Southeastern Group

Table B

Energy Summary Sheet

	1936 1,000,000 k.w.h	1939 1,000,000 k.w.h.	1943 1,000,00 k.w.
Annual energy required	4,632.0*	5,740.0	7,406
Obtainable from system fuel plants	.....	2,382.1	2,839
Obtainable from system hydro plants (in 1931, taken as a representative dry year)	2,676.5	2,791.7†	2,964
Energy to be obtained elsewhere	.....	565.9	1,602
Energy obtainable from contracts (same as 1936)	.....	1.6	1
Balance to be purchased	.....	564.3	1,600

* Reported by companies.

† Larger than 1936 value because of larger load available to absorb energy

[fol. 4235] Sheet 3

Commonwealth and Southern Southeastern Group

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several System Demands 1,000 kw	Saving Through Diversity	Diversified Demand or "Peak" 1,000 kw	Load Factor	Energy Requirements 1,000,00 kwh
1934	.....	750.0*	5.3%	712.0	55.7%	3,477
1935	10.0%	825.0*	5.3%	783.0	56.5%	3,873
1936	14.8%	947.0*	5.7%*	896.0*	58.9%*	4,632
1937	9.8%	1,040.0	5.3%	988.0	59.0%	5,106
1938	8.0%	1,123.0	5.3%	1,066.0	58.8%	5,491
1939	5.0%	1,179.0	5.3%	1,120.0	58.5%	5,740
1940	7.5%	1,267.0	5.3%	1,203.0	59.0%	6,235
1941	7.0%	1,356.0	5.3%	1,288.0	59.0%	6,657
1942	3.0%	1,397.0	5.3%	1,327.0	58.3%	6,777
1943	8.0%	1,509.0	5.3%	1,433.0	59.0%	7,406

Average of the annual rates of increase, year by year, 1938–1943, 6.4%.

* Reported by companies.

(Here follows 1 paster, side folio 4236)

1943
1,000,000
k.w.h.
7,406.0
2,839.1

-2,964.6†
1,602.4

1.6
1,600.8

-b energy.

Energy
Require-
ments
1,000,000
kwh
3,477.0*
3,873.0*
4,632.0*
5,106.0
5,491.0
5,740.0
6,235.0
6,657.0
6,777.0
7,406.0

6.4%

DEFENDANTS' EXHIBIT No. 134

[fol. 4236]

Sheet 4

Commonwealth and Southern Southeastern Group—Continued

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
						1936							
Percentage monthly breakdown of annual energy	7.94	7.06	7.72	7.78	7.98	8.02	8.64	8.73	8.95	9.09	8.78	9.31	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves	21.0	19.3	19.3	19.5	20.5	21.1	22.5	21.0	22.0	19.5	22.5	22.1	.....
Average Number of week-days in month, all years	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month—all years	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
						1939							
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh	455.8	405.2	443.1	446.6	458.1	460.3	495.9	501.1	513.7	521.8	504.0	534.4	5,740.0
Daily energy under typical week-day load curve—1,000,000 kwh	17.0	16.3	16.1	16.8	16.5	17.0	18.2	17.9	19.6	19.0	19.1	19.7	.....
Typical peaks for forecast requirements, load factor 76.5%—1,000 kw	928.5	891.4	880.5	914.9	896.9	924.7	991.2	974.9	1,069.7	1,034.3	1,043.0	1,073.6	.....
						1943							
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh	588.0	522.9	571.7	576.2	591.0	594.0	639.9	646.5	662.8	673.2	650.3	689.5	7,406.0
Daily energy under typical week-day load curve—1,000,000 kwh	22.0	21.1	20.8	21.6	21.3	21.9	23.5	23.1	25.3	24.5	24.7	25.4	.....
Typical peaks for forecast requirements, load factor 76.5%—1,000 kw	1,197.9	1,150.4	1,136.3	1,180.4	1,158.6	1,192.9	1,279.1	1,257.8	1,379.4	1,334.7	1,345.6	1,385.4	.....

DEFENDANTS' EXHIBIT No. 134

[fol. 4237]

Sheet 5

Commonwealth and Southern

Southeastern Group

Table E

Power Assignments Under the Typical Load Curve for the Maximum Month November

	1939	1943
Usable fuel capacity—85% of plants capability—1,000 kw	326.0	326.0
Usable fuel capacity as a percent of typical monthly peak	31.3%	24.2
Dry year hydro energy available—1,000,000 kwh	118.4	118.4
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve	43.7%	37.2
Balance of typical peak requiring new capacity—1,000 kw	261.7	519.0
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh	151.9	297.2

(Here follows 1 paster, side folio 4238)

[fol. 4238]

DEFENDANTS' EXHIBIT No. 134

Sheet 6

Commonwealth and Southern

Southeastern Group

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative Dry year—1931—1,000,000 kwh:													
Alabama Power	129.3	141.1	147.3	130.8	133.9	131.3	84.3	86.8	92.7	75.8	58.9	103.2	1,315.4
Georgia Power	90.1	62.8	77.6	90.1	84.1	42.6	57.3	55.8	61.1	45.0	33.1	84.9	784.3
South Carolina Power	9.7	8.0	10.6	9.1	9.3	4.8	6.5	5.8	3.2	3.1	2.9	6.4	79.4
Tennessee Electric Power	49.5	39.4	50.4	51.7	52.7	30.4	43.7	51.1	37.7	27.0	23.5	40.1	497.2
Total hydro generation—1,000,000 kwh	278.6	251.3	285.9	281.6	279.9	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,676.5
As Increased by Availability of More Load—													
1939—10%	301.9	272.3	309.8	305.2	303.4	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,791.7
1943—25%	336.9	303.8	345.6	340.6	338.6	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,964.6
					1939								
Fuel plants usable capacity[1] expressed as a percentage of typical monthly peak	35.1	36.6	37.0	35.6	36.3	35.3	32.9	33.4	29.7	31.5	31.3	30.4	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Weekdays—1,000,000 kwh	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Saturdays—1,000,000 kwh	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Sundays and holidays—1,000,000	7.37	7.23	7.19	7.32	7.26	7.35	7.55	7.51	7.69	7.63	7.64	7.69	.....
Total energy obtainable from fuel plans—1,000,000 kwh	153.9	132.9	133.3	141.4	154.7	232.7	241.0	241.1	233.9	241.7	233.7	241.8	2,382.1
					1943								
Fuel plants usable capacity[1] expressed as a percentage of typical monthly peak	27.2	28.3	28.7	27.6	28.1	27.3	25.5	25.9	23.6	24.4	24.2	23.5	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week days—1,000,000 kwh	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Saturdays—1,000,000 kwh	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Sundays and holidays—1,000,000 kwh	7.83	7.81	7.79	7.83	7.82	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Total energy obtainable from fuel plants—1,000,000 kwh	242.5	219.0	226.1	234.7	242.5	234.7	242.5	242.5	234.7	242.5	234.7	242.5	2,838.9

NOTE: 1. Usable fuel plant capacity is 85% of dependable capacity excluding plants suitable only for standby (0.85 x 383,362 = 326,000 kw.).

[fol. 4239] DEFENDANTS' EXHIBIT No. 134

Sheet 7

Commonwealth and Southern

Southeastern Group

Table G

Typical Load Curves of Peak Month*

December

Time	Weekdays*	Saturdays	Sundays and Holidays
12- 1 AM	50.57	50.39	32.57
1- 2 AM	46.69	48.15	29.37
2- 3 AM	45.72	46.33	28.56
3- 4 AM	45.26	44.69	28.09
4- 5 AM	45.92	44.38	27.31
5- 6 AM	54.08	48.55	28.72
6- 7 AM	75.97	56.42	27.79
7- 8 AM	88.46	66.91	35.95
8- 9 AM	91.42	67.73	38.28
9-10 AM	95.05	67.59	37.50
10-11 AM	95.77	68.60	39.86
11-12 M	93.03	66.79	38.63
12- 1 PM	84.78	61.54	38.91
1- 2 PM	89.52	60.90	36.02
2- 3 PM	90.25	58.57	37.53
3- 4 PM	88.83	55.55	32.54
4- 5 PM	89.80	61.42	37.98
5- 6 PM	100.00	69.73	48.89
6- 7 PM	91.29	66.45	49.83
7- 8 PM	87.23	64.09	48.44
8- 9 PM	86.39	60.62	46.51
9-10 PM	79.50	55.52	42.29
10-11 PM	63.55	45.79	35.01
11-12 PM	54.98	38.27	32.97

* Composite monthly weekday curve taken from monthly typical load curves as follows: Alabama Power Company, November; Georgia Power Company, November; Mississippi Power Company, August; South Carolina Power Company, December.

DEFENDANTS' EXHIBIT No. 134

[fol. 4240] Sheet 8

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw	1943 1,000 kw
Maximum annual demand	225.8	281.6	370.1
Demand increased by 7½% margin to give maximum contemplated requirement		302.7	397.9
Capability fuel plants	205.0		
Capability present hydro plants having pondage	66.0		
Total available system capability representative dry year	271.0	271.0	271.0
Apparatus reserves required:			
Machine reserves:			
Largest unit down		30.0	30.0
Other units down		12.5	15.0
Transmission and miscellaneous, 5%		14.0	18.1
Total apparatus reserves		56.5	63.1
Capacity remaining beyond reserves to meet maximum contemplated requirement		214.5	207.9
Capacity to be obtained elsewhere		88.2	190.0
Capacity from firm contracts		.....	.....
Balance to be purchased		88.2	190.0
Capacity required only for reserves		.....	13.0
Notes:			
Firm capacity necessary to supply firm energy to be purchased		90.6	177.0
Total reserves above forecast demand, all sorts		77.4	90.9
These reserves as a percent of total available capacity, including purchases		21.7%	19.9%

[fol. 4241] Sheet 9

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kwh.	1943 1,000,000 kwh.
Annual energy required	1,142.7	1,418.2	1,867.6
Obtainable from system fuel plants	.....	1,242.8	1,398.8
Obtainable from system hydro plants (in 1936, taken as a representative dry year)	42.7	42.7	42.7
Energy to be obtained elsewhere	.....	132.7	426.1
Energy obtainable from contracts	.....	.....	.....
Balance to be purchased	.....	132.7	426.1

DEFENDANTS' EXHIBIT No. 134

fol. 4242

Sheet 10

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several System Demands 1,000 kw.	Diversified Demand or "Peak"* 1,000 kw.	Load Factor	Energy Requirements 1,000,000 kwh.
1934	....	183.6†	172.6	58.2%	879.8†
1935	7.2%	196.9†	185.1	59.0%	957.2†
1936	22.0%	240.3†	*225.8	57.6%	1,142.7†
1937	9.0%	261.9	246.1	57.6%	1,241.8
1938	5.9%	277.4	260.7	57.4%	1,310.9
1939	8.0%	299.6	281.6	57.5%	1,418.2
1940	9.0%	326.5	306.9	57.6%	1,552.8
1941	6.0%	346.1	325.3	57.5%	1,638.5
1942	4.4%	361.3	339.6	57.4%	1,707.6
1943	9.0%	393.8	370.1	57.6%	1,867.6

Average of the annual rates of increase, year by year, 1938–1943, 7.0%.

* Saving through diversity taken as 6.4%.
† Reported by companies.

(Here follows 1 paster, side folio 4243)

Defendants' Exhibit No. 134

[fol. 4243]

Sheet 11

Electric Power and Light

National Power and Light Group
(Electric Bond and Share)

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
					1936								
Percentage monthly breakdown of annual energy	7.25	7.13	6.76	6.87	7.37	8.82	8.76	9.74	10.38	9.38	8.93	8.61	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves	25.94	22.75	24.74	22.49	26.04	24.02	29.07	26.68	26.14	23.99	25.76	27.01	.....
Average number of week-days in month, all years	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month, all years	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
					1939								
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh	102.8	101.1	95.9	97.4	104.5	125.1	124.2	138.2	147.2	133.0	126.7	122.1	1,418.2
Daily energy under typical week-day load curve 1,000,000 kwh	3.60	3.91	3.26	3.52	3.49	4.44	4.15	4.58	5.32	4.57	4.61	4.21	.....
Typical peaks for forecast requirements, load factor 79.4%—1,000 kw	188.9	205.1	171.0	184.7	183.1	232.9	217.7	240.3	279.1	239.8	241.9	220.9	.....
					1943								
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh	135.4	133.2	126.2	128.3	137.6	164.7	163.6	181.9	193.9	175.2	166.8	160.8	1,867.6
Daily energy under typical week-day load curve—1,000,000 kwh	4.74	5.15	4.29	4.64	4.60	5.84	5.47	6.03	7.01	6.02	6.06	5.55	.....
Typical peaks for forecast requirements, load factor 79.4%—1,000 kw	248.7	270.2	225.1	243.4	241.3	306.4	287.0	316.4	367.8	315.8	317.9	291.2	.....

Defendants' Exhibit No. 134

(fol. 4244)

Sheet 12

Electric Power and Light

National Power and Light Group

(Electric Bond and Share)

Table E

Power Assignments Under the Typical Load Curve for the Maximum Month

September

	1939	1943
Usable fuel capacity—85% of plants capability—1,000 kw	172.8	172.8
Usable fuel capacity as a percent of typical monthly peak	61.98%	47.04%
Dry year hydro energy available—1,000,000 kwh	2.0	2.0
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve	5.56%	4.85%
Balance of typical peak requiring new capacity—1,000 kw	90.6	177.0
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh	31.1	68.3

(Here follows 1 paster, side folio 4245)

[fol. 4245]

DEFENDANTS' EXHIBIT No. 134

Sheet 13

Electric Power and Light

National Power and Light Group
(Electric Bond and Share)

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative dry year—1936—1,000,000 kwh.:													
Carpenter	5.748	0.884	2.006	3.041	0.208	0.296	0.073	0.024	1.000	0.236	1.983	9.304	24.657
Remmel	3.971	0.862	1.721	2.223	0.736	0.304	0.125	0.208	0.892	0.281	1.697	3.698	16.718
Russellville[1]	0.315	0.055	0.121	0.170	0.031	0.019	0.002	0.008	0.061	0.017	0.119	0.421	1.339
Total hydro generation—1,000,000 kwh.	10.034	1.801	3.848	5.434	0.975	0.619	0.054	0.240	1.953	0.534	3.799	13.423	42.714
						1939							
Fuel plants usable capacity[2] expressed as a percentage of typical monthly peak	91.58	84.35	100.00	93.67	94.48	74.28	79.47	71.99	61.98	72.14	71.52	78.32	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week-days—1,000,000 kwh.	3.48	3.58	3.26	3.44	3.43	3.72	3.65	3.76	3.92	3.76	3.76	3.66	.....
Saturdays—1,000,000 kwh.	3.44	3.59	3.18	3.40	3.38	3.73	3.66	3.76	3.93	3.77	3.77	3.68	.....
Sundays and holidays—1,000,000 kwh.	2.22	2.41	2.01	2.17	2.15	2.74	2.56	2.82	3.26	2.81	2.84	2.60	.....
Total energy obtainable from fuel plants—1,000,000 kwh.	92.8	95.6	92.0	92.0	100.5	107.5	107.3	112.5	114.1	112.4	108.2	107.9	1,242.8
						1943							
Fuel plants usable capacity[2] expressed as a percentage of typical monthly peak	69.56	64.03	76.85	71.08	71.69	56.46	60.28	54.68	47.04	54.78	54.42	59.41	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week-days—1,000,000 kwh.	3.80	3.89	3.70	3.78	3.77	4.01	3.94	4.04	4.15	4.08	4.04	3.96	.....
Saturdays—1,000,000 kwh.	3.81	3.99	3.70	3.76	3.77	4.02	3.98	3.96	4.05	4.15	4.09	3.98	.....
Sundays & Holidays—1,000,000 kwh.	2.92	3.16	2.64	2.85	2.83	3.53	3.34	3.62	3.98	3.62	3.63	3.38	.....
Total energy obtainable from fuel plants—1,000,000 kwh.	113.1	106.0	109.7	109.4	112.6	118.3	119.1	123.5	123.6	124.6	119.2	119.7	1,398.8

NOTE: [1] Annual generation reported for Russellville prorated by months in proportion to Carpenter and Remmel monthly generation.
[2] Fuel plant usable capacity is 85% of reported dependable fuel capacity.

[fol. 4246] DEFENDANTS' EXHIBIT NO. 134

Sheet 14

Electric Power and Light

National Power and Light Group
(Electric Bond and Share)

Table G

Typical Load Curves of Peak Month[1]

September

Time	Weekdays[1]	Saturdays	Sundays and Holidays
12- 1 AM	52.0	53.6	46.2
1- 2 AM	48.5	49.7	43.4
2- 3 AM	47.2	48.7	41.1
3- 4 AM	47.1	47.3	39.4
4- 5 AM	46.8	46.7	38.3
5- 6 AM	51.5	49.6	38.7
6- 7 AM	68.5	63.9	41.4
7- 8 AM	92.0	84.9	47.6
8- 9 AM	97.3	95.3	51.1
9-10 AM	98.9	97.7	51.0
10-11 AM	98.7	98.3	50.3
11-12 M	97.3	100.0	50.9
12- 1 PM	87.8	90.8	50.8
1- 2 PM	95.3	95.6	50.2
2- 3 PM	95.9	94.6	48.7
3- 4 PM	96.6	90.6	47.6
4- 5 PM	98.4	87.3	45.9
5- 6 PM	98.3	83.2	48.1
6- 7 PM	97.9	89.9	59.9
7- 8 PM	96.2	94.1	66.1
8- 9 PM	89.9	88.2	63.2
9-10 PM	80.4	81.4	58.4
10-11 PM	66.1	69.7	50.5
11-12 PM	57.2	59.8	44.7

[1] Composite monthly weekday curve taken from monthly typical load curves as follows: Arkansas Power & Light Co., September; Memphis Power & Light Co., December; Mississippi Power & Light Co., September.

DEFENDANTS' EXHIBIT No. 134

[fol. 4247] Sheet 15

Carolina Power and Light Tennessee Public Service Group

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw.	1943 1,000 kw.
Maximum annual demand	62.9	78.4	100.3
Demand increased by 7½% margin to give maximum contemplated requirement	.....	84.3	107.8
Capability fuel plants	15.0		
Capability present hydro plants having pondage	108.0		
Total available system capability representative dry year	123.0	123.0	123.0
Apparatus reserves required—Machine reserves:			
Largest unit down, installed capacity 36.0[1]		20.0	20.0
Other units down		.....	.....
Transmission and miscellaneous, 5%		6.2	6.2
Total apparatus reserves		26.2	26.2
Capacity remaining beyond reserves to meet maximum contemplated requirement		96.8	96.8
Capacity to be obtained elsewhere		.....	11.0
Capacity of firm contracts, Wateree Exchange, delivery, Est.		5.0	5.0
Balance to be purchased		.....	16.0
Notes: Firm capacity necessary to supply firm energy to be purchased		28.0	45.4
Total reserves above forecast demand, all sorts		32.1	32.1
These reserves as a percent of total available capacity including purchases		29%	25%

[1] Assume that 16,000 kw. of the load of this unit will be taken up by Appalachian Electric Power or Wateree under contract in emergency.

[fol. 4248] Sheet 16

Carolina Power and Light—Tennessee Public Service Group

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kwh.	1943 1,000,000 kwh.
Annual energy required	294.5	360.6	467.7
Obtainable from system fuel plants	.....	54.9	69.3
Obtainable from system hydro plants (in 1931, taken as a representative dry year)	.....	241.3	267.6
Energy to be obtained elsewhere	.....	64.4	130.8
Energy obtainable from contracts, Wateree, same as 1936, delivered	.....	9.5	9.5
Balance to be purchased	.....	73.9	140.3

Defendants' Exhibit No. 134

[fol. 4249]

Sheet 17

Carolina Power and Light—Tennessee Public Service Group

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several System Demands 1,000 kw.	Diversified Demand or "Peak"[1] 1,000 kw.	Load Factor	Energy Requirements 1,000,000 kwh.
1934	.....	48.9	48.4	52.1%	220.8
1935	9.6%	53.6	53.1	53.6%	249.0
1936	18.5%	63.5	62.9	53.5%	294.5
1937	10.0%	69.9	69.2	52.9%	320.3
1938	8.0%	75.5	74.7	52.8%	344.9
1939	4.7%	79.2	78.4	52.5%	360.6
1940	6.9%	85.1	84.2	53.3%	394.0
1941	6.5%	91.0	90.1	53.0%	418.3
1942	3.0%	93.8	92.8	52.2%	424.3
1943	8.0%	101.3	100.3	53.2%	467.7

Average of the annual rates of increase, year by year, 1938-1943, 6.2%.

[1] Saving through diversity taken as 1%.

(Here follows 1 paster, side folio 4250)

[fol. 4250]

Defendants' Exhibit No. 134

Sheet 18

Carolina Power and Light

Tennessee Public Service Group

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
					1936								
Percentage monthly breakdown of annual energy	7.94	7.12	7.55	7.36	7.74	8.11	8.78	8.72	9.13	9.36	8.84	9.35	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves	21.0	19.3	20.0	18.9	19.8	20.6	21.5	20.1	21.6	19.7	21.6	22.5	.....
Average number of week-days in month, all years	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month, all years	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
					1939								
Monthly breakdown of energy forecast, 1936 breakdown 1,000,000 kwh	28.6	25.7	27.2	26.5	27.9	29.3	31.7	31.4	32.9	33.8	31.9	33.7	360.6
Daily energy under typical week-day load curve—1,000,000 kwh	1.07	1.04	0.98	1.00	1.01	1.08	1.17	1.13	1.26	1.22	1.22	1.24	.....
Typical peaks for forecast requirements, load factor 73.9%—1,000 kw	60.5	58.4	55.5	56.6	57.0	61.2	66.3	64.0	71.3	69.1	69.1	69.8	.....
					1943								
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh	37.2	33.3	35.3	34.4	36.2	37.9	41.0	40.8	42.7	43.8	41.4	43.7	467.7
Daily energy under typical week-day load curve—1,000,000 kwh	1.39	1.35	1.27	1.30	1.31	1.40	1.52	1.47	1.64	1.58	1.58	1.61	.....
Typical peaks for forecast requirements, load factor 73.9%—1,000 kwh	78.5	75.8	72.1	73.5	73.9	79.3	85.9	83.1	92.5	89.6	89.6	90.5	.....

DEFENDANTS' EXHIBIT No. 134

Sd. 4251

Sheet 19

Carolina Power and Light—Tennessee Public Service Group

Table E

Power Assignments Under the Typical Load Curve For the Maximum Month

October

	1939	1943
Usable fuel capacity—85% of plants capability—1,000 kw.	10 2	10 2
Usable fuel capacity as a percent of typical monthly peak	14 77%	11 39%
Dry year hydro energy available—1,000,000 kwh.	8 39	8 39
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve	44 75%	37 90%
Balance of typical peak requiring new capacity—1,000 kw.	28 0	45 4
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.	17 77	27 80

(Here follows 1 paster, side folio 4252)

[fol. 4252]

DEFENDANTS' EXHIBIT No. 134

Sheet 20

Carolina Power and Light

Tennessee Public Service Group

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative dry year—1931—1,000,000 kwh.:													
Waterville	27.159	17.769	21.077	29.116	28.947	18.723	12.696	14.677	13.122	7.817	6.893	27.239	225.235
Marshall	1.881	1.484	2.041	1.880	1.952	1.296	1.201	1.374	0.576	0.301	0.424	1.773	16.183
Weaver[1]	0.956	0.634	0.761	1.020	1.018	0.659	0.458	0.528	0.451	0.267	0.241	0.955	7.948
Total hydro generation—1,000,000 kwh.	29.996	19.887	23.879	32.016	31.917	20.678	14.355	16.579	14.149	8.385	7.558	29.967	249.366
10% added for better use of water through greater load in 1939—1,000,000 kwh.	1.887	1.251	1.503	2.014	2.008	.....	.....	.....	.....	.....	.....	.....	8.663
Grand total hydro generation 1939—1,000,000 kwh.	31.883	21.138	25.382	34.030	33.925	20.678	14.355	16.579	14.149	8.385	7.558	29.967	258.029
15% added for better use of water through greater load in 1943—1,000,000 kwh.	2.831	1.877	2.254	3.022	3.012	.....	.....	.....	.....	.....	.....	.....	12.996
Grand total hydro generation 1943—1,000,000 kwh.	34.714	23.015	27.636	37.052	36.937	20.678	14.355	16.579	14.149	8.385	7.558	29.967	271.025
					1939								
Fuel Plants:													
Total energy generated by fuel—1,000,000 kwh.	.....	4.52	1.83	.....	.....	7.34	7.59	7.59	7.34	7.59	7.34	3.75	54.89
					1943								
Fuel Plants:													
Total energy generated by fuel—1,000,000 kwh.	2.460	6.85	7.59	.....	.....	7.34	7.59	7.59	7.34	7.59	7.34	7.59	69.28

NOTE: 1. Annual generation reported for Weaver prorated by months in proportion to Waterville and Marshall monthly generation.

Defendants' Exhibit No. 134

[fol 4253] Sheet 21

Carolina Power and Light—Tennessee Public Service Group

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holiday
12- 1 AM	47.89	46.38	31.76
1- 2 AM	41.05	40.52	30.23
2- 3 AM	40.68	39.40	25.65
3- 4 AM	40.57	39.48	27.12
4- 5 AM	38.67	38.64	25.83
5- 6 AM	41.17	39.36	26.06
6- 7 AM	56.55	46.23	27.14
7- 8 AM	83.46	57.41	28.03
8- 9 AM	92.67	68.93	32.93
9-10 AM	91.35	68.54	35.43
10-11 AM	93.77	68.59	32.97
11-12 M	93.99	70.03	32.85
12- 1 PM	83.33	60.85	35.11
1- 2 PM	88.93	58.36	33.18
2- 3 PM	88.23	55.81	28.50
3- 4 PM	87.13	51.10	27.37
4- 5 PM	89.28	48.35	28.78
5- 6 PM	94.76	60.25	35.20
6- 7 PM	100.00	66.74	49.80
7- 8 PM	91.08	67.39	50.47
8- 9 PM	86.51	60.37	46.20
9-10 PM	79.63	57.01	41.92
10-11 PM	64.67	51.73	34.62
11-12 P.M	51.14	40.10	30.08

Defendants' Exhibit No. 134

[fol 4253] Sheet 21

Carolina Power and Light—Tennessee Public Service Group

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holiday
12- 1 AM	47.89	46.38	31.76
1- 2 AM	41.05	40.52	30.23
2- 3 AM	40.68	39.40	25.65
3- 4 AM	40.57	39.48	27.12
4- 5 AM	38.67	38.64	25.83
5- 6 AM	41.17	39.36	26.06
6- 7 AM	56.55	46.23	27.14
7- 8 AM	83.46	57.41	28.03
8- 9 AM	92.67	68.93	32.93
9-10 AM	91.35	68.54	35.43
10-11 AM	93.77	68.59	32.97
11-12 M	93.99	70.03	32.85
12- 1 PM	83.33	60.85	35.11
1- 2 PM	88.93	58.36	33.18
2- 3 PM	88.23	55.81	28.50
3- 4 PM	87.13	51.10	27.37
4- 5 PM	89.28	48.35	28.78
5- 6 PM	94.76	60.25	35.20
6- 7 PM	100.00	66.74	49.80
7- 8 PM	91.08	67.39	50.47
8- 9 PM	86.51	60.37	46.20
9-10 PM	79.63	57.01	41.92
10-11 PM	64.67	51.73	34.62
11-12 PM	5. 14	40.10	30.08

DEFENDANTS' EXHIBIT NO. 134

[fol. 4254]

Sheet 22

Kentucky Utilities

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw.	1943 1,000 kw.
Maximum annual demand:			
Whole system	69.0		
Pineville district	32.6	37.8	44.4
Demand increased by 7½% margin to give maximum contemplated requirement	....	40.6	47.7
Capability fuel plants	42.0		
Capability present hydro plants through 66 kv. Dix line	4.0		
Total available system capability representative dry year	46.0	46.0	46.0
Apparatus reserves required—Machine reserves:			
Largest unit down		16.0	16.0
Other units down		....	....
Transmission and miscellaneous		1.9	2.2
Total apparatus reserves		17.9	18.2
Capacity remaining beyond reserves to meet maximum contemplated requirement		28.1	27.8
Capacity to be obtained elsewhere		12.5	19.9
Capacity from firm contracts, sale		2.5	2.5
Balance to be purchased		15.0	22.4
Capacity required only for reserve		15.0	17.8
Notes: Firm capacity necessary to supply firm energy to be purchased		....	4.6
Total reserves above forecast demand, all sorts		20.7	21.5
These reserves as a percent of total available capacity, including purchases		35.3%	32.7%

[fol. 4255]

Sheet 23

Kentucky Utilities

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kwh	1943 1,000,000 kwh
Annual energy required:			
Whole system	252.5		
Pineville district	163.4	189.8	224.1
Obtainable from system fuel plants	.....	189.8	222.8
Obtainable from system hydro plants	.....	.....	.....
Energy to be obtained elsewhere	.....	.....	1.3
Energy obtainable from contracts (same as 1936)	.....	.....	1.0
Balance to be purchased	.....	.....	2.3

Defendants' Exhibit No. 134

[fol. 4256]

Sheet 24

Kentucky Utilities

Table C

Forecast[1]—Demand and Energy

Year	Sum of the Several System Demands[2] 1,000 kw.	Load Factor	Energy Requirements 1,000,000 kwh.
1936	32.6	60.8%	163.4
1937	34.4	57.2%	172.0
1938	36.1	57.2%	180.8
1939	37.8	57.2%	189.8
1940	39.5	57.2%	199.1
1941	41.1	57.2%	207.0
1942	42.8	57.2%	215.7
1943	44.4	57.2%	224.1

Average of the annual rates of increase, year by year, 1938–1943, 4.8%.

[1] Forecast values based on predictions by company.
[2] No diversity taken.

Sheet 25

[fol. 4257]

Kentucky Utilities

Table E

Power Assignments Under the Typical Load Curve for the Maximum Month

February

	1939	1943
Usable fuel capacity—85% of plants capability—1,000 kw.	35.7	35.7
Usable fuel capacity as a percent of typical monthly peak	over 100.0%	88.6%
Dry year hydro energy available 1,000,000 kwh.	.....	.....
Percent of typical monthly peak supportable by system hydro energy placed at top of load curve	.....	.....
Balance of typical peak requiring new capacity—1,000 kw.	.....	4.6
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.	.....	0.39

[fol. 4258] DEFENDANTS' EXHIBIT No. 134

Sheet 26

Kentucky Utilities

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holidays
12- 1 AM	49.93	45.48	38.67
1- 2 AM	43.56	44.74	34.82
2- 3 AM	43.48	38.22	34.37
3- 4 AM	38.22	37.04	34.22
4- 5 AM	34.96	41.19	36.07
5- 6 AM	38.82	56.30	32.15
6 -7 AM	50.37	61.11	34.37
7- 8 AM	77.93	75.56	43.41
8- 9 AM	94.22	70.22	42.52
9-10 AM	96.15	71.33	45.26
10-11 AM	95.41	70.30	46.37
11-12 M	95.70	72.30	46.37
12- 1 PM	87.41	69.63	40.44
1- 2 PM	87.70	65.48	39.56
2- 3 PM	90.08	64.00	43.26
3- 4 PM	89.48	62.96	48.89
4- 5 PM	77.85	72.52	66.67
5- 6 PM	92.45	68.37	70.52
6- 7 PM	100.00	64.37	68.15
7- 8 PM	92.15	61.48	62.22
8- 9 PM	84.45	62.37	56.59
9-10 PM	80.00	57.33	48.59
10-11 PM	74.22	50.96	39.11
11-12 PM	61.33	47.41	34.15

(Here follows 1 photolithograph, side folio 4259)

DEFENDANTS' EXHIBIT NO. 134

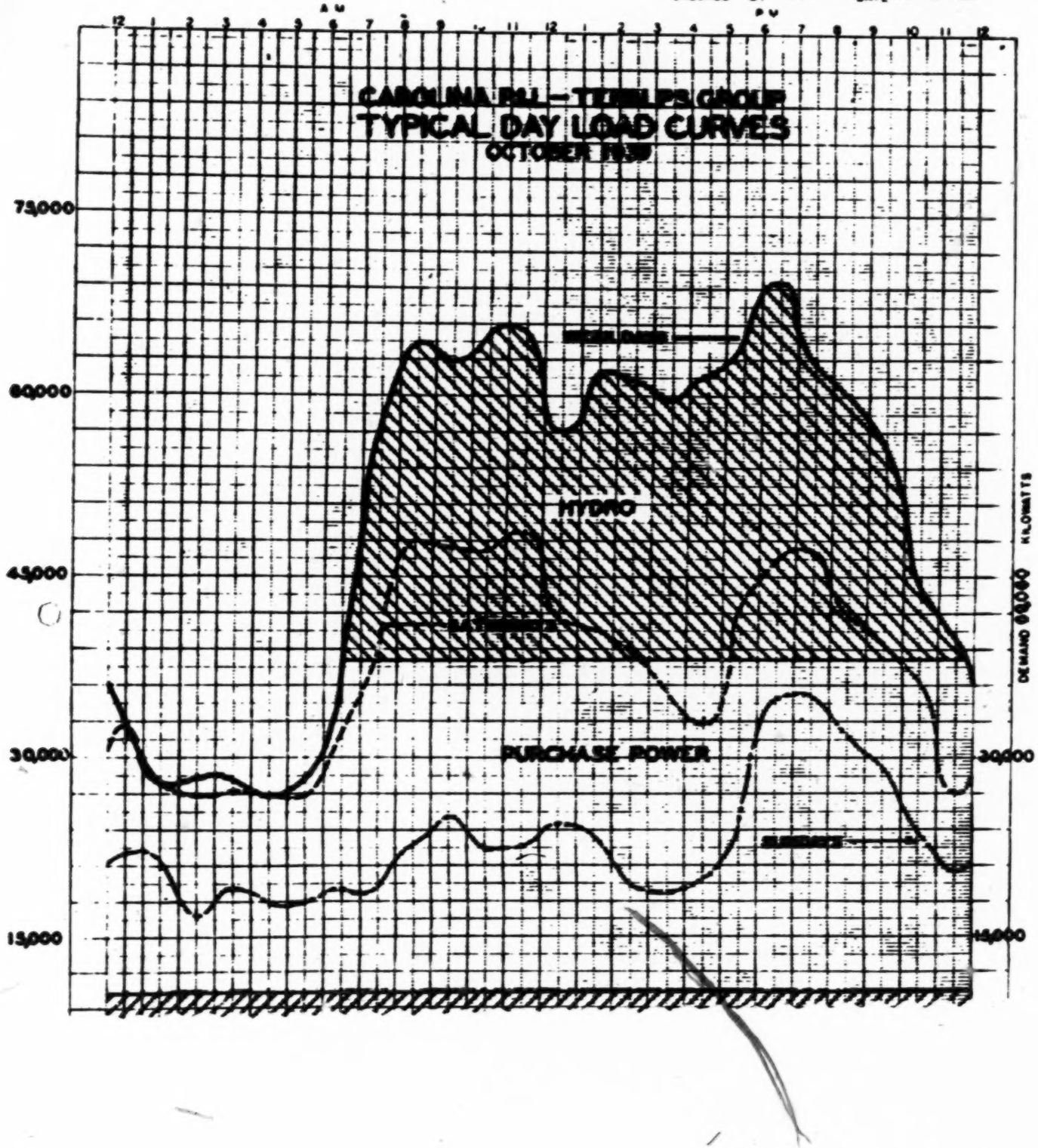
559)

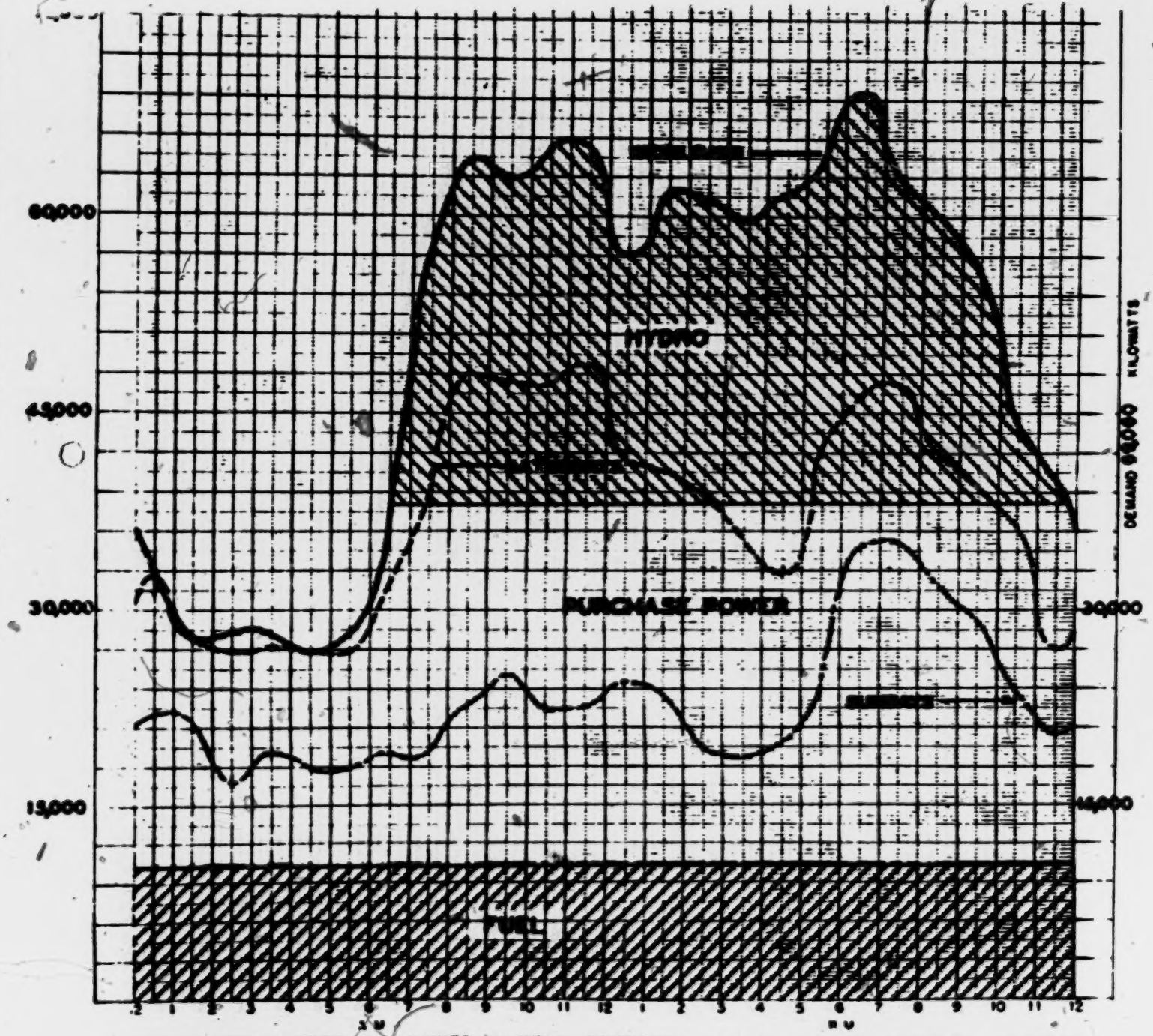
Sundays and Holidays
38.67
34.83
34.37
34.22
36.07
33.15
34.37
43.41
42.62
45.26
46.37
40.44
39.56
43.26
48.86
46.67
70.82
68.15
62.22
56.66
48.66
39.11
34.15

DEFENDANTS' EXHIBIT NO. 154

3544

PREPARED BY PHT DATE 11-15-'37
CHECKED BY PHT DATE 11-15-'37





NOTES SYSTEM HYDRO ALLOCATED IN PEAK-30880 KW

SYSTEM FUEL ALLOCATED IN BASE — 10,200 KW

PURCHASED POWER REQUIRED IS THE INTERMEDIATE BAND — 20,000 KW

ENERGY IN THIS BAND — 17,770,000 KWH

DAILY LOAD CURVE SHEET

WEEKDAY - SATURDAY - SUNDAY

TYPICAL

CAROLINA P&L — TENN. PS

4259

41-70A

[fol. 4260] DEFENDANTS' EXHIBIT No. 135

Stipulation

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, as follows:

1. For the purposes of this proceeding only, and without prejudice to any other suit or proceeding between the parties hereto, or otherwise, the facts contained in this stipulation and in the exhibits filed herewith, shall have the same force and effect as though offered and received in this proceeding as the testimony of competent witnesses, or as competent documents.

2. None of the parties, by entering into this stipulation, shall be deemed to have conceded the relevancy or materiality of any fact herein contained and no objection shall be required to be entered on the record to preserve the right of any party to question such relevancy or materiality at any stage of the proceeding.

3. Over eighty-five per cent (85%) of the voting stock of the complainants Memphis Power and Light Company, the Birmingham Electric Company, the Carolina Power and Light Company, the Holston River Electric Company, the Tennessee Public Service Company, the West Tennessee Power & Light Company, is owned by the National Power & Light Company. One hundred per cent (100%) of the voting stock of the complainant Appalachian Electric Power Company is owned by the American Gas & Electric Company, and the complainant Appalachian Electric Company in turn owns one hundred per cent (100%) of the voting stock of complainants Kingsport Utilities, Inc., and Kentucky and West Virginia Power Companies. Approximately ninety-four per cent (94%) of the voting stock of the complainant Mississippi Power & Light Company is owned by the Electric Power & Light Corporation.

4. The Electric Bond & Share Corporation, a New York corporation having its principal place of business at 2 Rector Street, New York City, owns a substantial share of the outstanding securities of the American Gas & Electric Company, the National Power & Light Company, and Electric Power & Light Corporation heretofore described as owning a substantial share of the outstanding securities of certain of the complainants.

DEFENDANTS' EXHIBIT No. 135

5. The following is a precise description of the affiliations through stock ownership described in paragraphs 3 and 4.

A. The Electric Bond & Share Company owns approximately the following voting securities of the American Gas & Electric Company, the National Power & Light Company, and the Electric Power & Light Company which represent approximately the following percentages of the total outstanding voting securities of each of said companies:

[fol. 4261]

Company and Class of Stock	Number of Shares Held	Percentages of Outstanding Voting Securities
American Gas:		
Common Stock	846,935	17.51%
National Company:		
Common Stock	2,540,438	46.56%
Electric Company:		
$7 Preferred Stock	485	47.20%
Common Stock	1,976,638	

B. American Gas & Electric Company owns all of the outstanding securities, other than directors' qualifying shares, if any, of the following complainants. Said complainants, in turn, own outstanding voting securities of the complainants named under them, which represent the percentages of the total outstanding voting securities of said companies, which are complainants, set forth opposite their respective names:

(1) Appalachian Electric Power Company:
  (a) Kentucky & West Virginia Power Company 100%
  (b) Kingsport Utilities, Inc. 100%

C. The National Power & Light Company owns outstanding voting securities of the following complainants which represent the percentages of the total outstanding voting securities of said companies, which are complainants, set opposite their respective names:

(1) Birmingham Electric Company 100.00%
(2) Carolina Power & Light Company 93.53%

(3) Holston River Electric Company	100.00%
(4) Memphis Power & Light Company	86.75%
(5) Tennessee Public Service Company	99.31%
(6) West Tennessee Power & Light Company	100.00%

D. The Electric Power & Light Company owns 94.03 per cent of the voting shares of the complainant Mississippi Power & Light Company.

6. The charts attached to the stipulation as Exhibit A are a reasonably accurate description of the stock ownership heretofore described.

7. The Electric Bond & Share Company has owned and now owns approximately the percentages of the total outstanding voting securities of the American Gas & Electric Company, Electric Power & Light Company and National Power & Light Company hereinbefore stated. Stockholders' meetings of such companies have been held annually since their organization, and occasionally special meetings have been called for the approval of security issues, agreements or consolidations and similar matters requiring stockholders' approvals. Calls or notices and proxies for those meetings were authorized by the respective boards of directors of these companies and the personnel of the proxies were suggested to such directors by the respective officers of such companies. The respective secretaries of these companies sent out such notices and proxies. At the stockholders' meetings of these companies, Bond and Share has voted the stocks of such companies [fol. 4262] owned by it through the proxies designated as above described. Exhibit B, consists of tables showing, for the past five years, the number of shares voted in person and by proxy at the stockholders' meetings of these companies and the number of shares voted by Bond and Share. During such years, Bond and Share has voted the following approximate percentages of the total number of shares of stock represented at such meetings: National Company, 62%, Electric Company, 77%, American Gas & Electric Company, 25%. Throughout the history of the companies, there has been no instance in which there has been any contest over proxies or in which any interests hostile to the respective managements have organized opposition to the

programs or policies of the respective managements or to the election of directors voted for by proxies designated by such managements.

8. The Commonwealth & Southern Corporation owns one hundred per cent (100%) of the outstanding voting securities of the original complainants, Georgia Power Company, Alabama Power Company, and Mississippi Power Company and approximately ninety-nine per cent (99%) of the total outstanding voting securities of the complainant Tennessee Electric Power Company.

One hundred per cent of the shares of the Southern Tennessee Power Company are owned by the Commonwealth & Southern Corporation.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Complainants.
John Lord O'Brien, Solicitor for Defendants.

HHF:DD:MC.

[fol. 4263] Amendment to Stipulation of September 14, 1937

It is agreed that the stipulation filed in this cause on August —, 1937, be amended by striking therefrom all of Section 8 thereof and inserting in lieu of said Section 8 *thereof and inserting in lieu of said Section 8* the following:

"8. The Commonwealth & Southern Corporation owns 100% of the Common Stock of the original complainants Alabama Power Company, Georgia Power Company and Mississippi Power Company and approximately 99% of the total outstanding Common Stock of the complainant The Tennessee Electric Power Company and considering also the preferred stocks of said companies which have voting power, owns voting securities which represent the following percentages of the total outstanding voting securities of each of said companies as follows:

"Alabama Power Company	91.40%
"Georgia Power Company	100%
"Mississippi Power Company	100%
"The Tennessee Electric Power Company	64.43"

DEFENDANTS' EXHIBIT No. 135

"100% of the shares of the Southern Tennessee Power Company are owned by The Commonwealth & Southern Corporation."

[fol. 4264] DEFENDANTS' EXHIBIT No. 136

Stipulation

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, as follows:

1. That the map attached hereto as Exhibit A, designated "Lines and Substations of the Tennessee Valley Authority in Service, under Construction, and Authorized," represents accurately all the transmission lines, rural lines, and substations of the Authority as of October 15, 1937.

2. That the table attached hereto as Exhibit B, entitled "Transmission Lines of Tennessee Valley Authority," correctly states the facts shown thereon.

3. That the table attached hereto as Exhibit C, entitled "Substations of Tennessee Valley Authority," correctly states the facts shown thereon.

4. That the map attached hereto as Exhibit D, designated "Rural Lines Owned by Municipalities and Cooperatives Purchasing Power from TVA and Rural Lines Owned by TVA," is an accurate representation as of October 15, 1937, of the rural lines owned by the municipalities and cooperative associations purchasing power from the Authority (except the North Georgia Electric Membership Corporation) and the rural lines owned by the Authority.

5. That the tables attached hereto as Exhibit E, entitled "Rural Lines Owned by Municipalities and Cooperatives and Rural Lines Owned by TVA," correctly state the facts shown thereon.

Each of the parties specifically reserves the right to object to the introduction of any of the facts stipulated above on the ground of materiality or relevance.

Charles M. Seymour, Solicitors for Complainants.
John Lord O'Brien, Solicitors for Defendants.

Defendants' Exhibit No. 136

Note:

Exhibit "A" to Defendants' Exhibit No. 136 is the same as Defendants' Exhibit No. 136A.

Exhibit "D" to Defendants' Exhibit No. 136 is the same as Defendants' Exhibit No. 136B.

DEFENDANTS' EXHIBIT NO. 136

Sheet 1 of 4—Exhibit B

[fol. 4265]

Transmission Lines of Tennessee Valley Authority

October 15, 1937

Line	Length Miles	Circuit Voltage KV	Operating at less than Circuit Voltage KV	Conductor Size and Material	Date of Transfer
I. Lines Transferred to or Purchased by Authority:					
A. Transferred by War Department:					
Wilson–Reservation Boundary (Connection to Alabama Power Company's Gorgas Line)	2.5	154		250,000 cm Cu.	
Wilson–Reservation Boundary (Connection to Alabama Power Company's Huntsville Line)	2.5	154	110	250,000 cm Cu.	
Wilson–U. S. Nitrate No. 2-A Line	1.4	154	110	300,000 cm Cu.	
Wilson–U. S. Nitrate No. 2-B Line	1.4	154	110	300,000 cm Cu.	
Total Miles	7.8				
B. Purchased from Alabama Power Company—Contract January 4, 1934					
Decatur, Ala.–Athens, Ala.	20.8	44		No. 4 Cu.	6- 1-36
Decatur, Ala.–Decatur Primary	1.9	44		No. 1 Cu.	6- 1-36
Decatur, Ala.–Cedar Lake Junction	5.1	44		No. 4 Cu.	6- 1-36
Decatur, Ala.–Hartselle	12.5	44		No. 4 Cu.	6- 1-36
Hobgood–Miss. State Line	28.5	44		No. 1 Cu.	6- 1-36
Hobgood–Moulton	25.6	44		No. 4 Cu.	6- 1-36
Hobgood–Rockwood	24.7	44		No. 2 Cu.	6- 1-36
U. S. Nitrate No. 2–Florence	3.0	44		2/0 Cu.	6- 1-36
Wilson–Hobgood	5.5	44		No. 1 Cu.	6- 1-36
Red Bay–Miss. State Line	1.3	22		No. 6 H.D.Cu.	6- 1-36
Total Miles	128.9				

4177

Defendants' Exhibit No. 136

[fol. 4266]

Sheet 2 of 4—Exhibit B

Transmission Lines of Tennessee Valley Authority—October 15, 1937—Continued

Lines	Length Miles	Circuit Voltage KV	Operating at less than Circuit Voltage KV	Conductor Size and Material	Date of Transfer
C. Purchased from Mississippi Power Company—Contract January 4, 1934					
Burnsville–Booneville	19.0	44		No. 2 Cu.	6- 1-34
Burnsville–Corinth	14.1	44		No. 2 Cu.	6- 1-34
Iuka–Burnsville	9.0	44		No. 1 Cu.	6- 1-34
Miss. State Line–Iuka	5.0	44		2/0 ACSR	6- 1-34
Tupelo–Okolona	17.2	44		No. 6 H.D. Cu.	6- 1-34
Golden–Fulton	23.0	22			
Total Miles	87.3				
II. Lines Constructed by Authority:					Date of Completion
A. Plant Tie Lines					
Wilson–Wheeler	16.0	44		397,500 cm ACSR	1-10-34
Wilson–Pickwick	45.2	154	110	397,500 cm ACSR	9-26-35
Wheeler–Norris	218.1	154		636,000 cm ACSR	7-28-36
Wilson–Wheeler	15.3	154		636,000 cm ACSR	7-28-36
Wheeler–Guntersville	65.1	154		636,000 cm ACSR	12-14-36
Watts Bar–Chickamauga	47.9	154	44	636,000 cm ACSR	2- 2-37
Total Miles	407.6				
B. Other Lines:					
Amory–Okolona	13.9	44		2/0 ACSR	9- 2-34
Athens, Ala. Pulaski	32.8	44		2/0 ACSR	12- 1-34
(1)Athens, Tenn.–Dayton (Decatur–Dayton Section)	12.5	44		No. 1 ACSR	2- 1-35
(1)Athens, Tenn.–Dayton (Athens–Decatur Section)	12.6	22		No. 1 ACSR	2- 1-35
(2)Pickwick–Burnsville	16.2	110		4/0 ACSR	2-19-35
(3)Booneville–Tupelo	30.0	44		2/0 ACSR	8-25-35
Tupelo–New Albany	24.7	44		2/0 ACSR	3-22-36
New Albany–Ingomar	6.5	12		No. 2 ACSR	4- 6-36
Columbia–Dickson	36.0	44		2/0 ACSR	5-12-36

B. Other Lines (Continued)					
Pulaski–Columbia	33.8	44		2/0 ACSR	5–12–36
Potts Camp–Holly Springs	13.6	12		No. 2 ACSR	5–15–36
Pickwick–Jackson	51.1	110		4/0 ACSR	7–18–36
Jackson–Bolivar	27.1	44	12	2/0 ACSR	7–20–36
Bolivar–Somerville	23.6	12		No. 2 ACSR	7–25–36
Columbia–Monsanto #1 Line	5.2	44		250,000 cm Cu.	8– 6–36
Wheeler–Columbia	63.8	154		397,500 cm CASR	12–14–36
Burnsville–Tupelo	46.0	110	44	4/0 ACSR	12–24–36
Santeetlah–Hiwassee	34.0	44		2/0 ACSR	12–31–36
Chickamauga–Friendship	10.2	44		2/0 ACSR	2– 2–37
Columbia–Monsanto #2 Line	5.3	44		250,000 cm Cu.	4–17–37
Norris–Alcoa	33.9	154		636,000 cm ACSR	5–29–37
Pickwick–Memphis (Not Energized)	102.2	154		636,000 cm ACSR	8–18–37
Tupelo–Pontotoc (Not Energized)	19.4	44		4/0 ACSR	9–13–37
Total Miles	655.3				
III. Lines Under Construction (Partially Complete):					Construction Begun
Jackson–Milan–Trenton	36.4	44		2/0 ACSR	7–27–37
Norris–Knoxville	20.8	110		397,500 cm ACSR	9–15–37
Tie to Arkansas Power & Lt	4.9	110		397,500 cm ACSR	10– 1–37
Columbia–Victor	17.0	44		397,500 cm ACSR	11– 7–37
Total Miles	79.1				
IV. Lines Authorized by Board of Tennessee Valley Authority:					
Chickamauga–Guntersville (Plant Tie Line)	90.0	154		636,000 cm ACSR	
Columbia–Murfreesboro	38.0	44		2/0 ACSR	
Pulaski–Fayetteville	30.0	44		2/0 ACSR	
S. Memphis–N. Memphis	18.9	110		Not known	
Total Miles	176.9				

(1) Initial operation 22 KV from Athens. After 3–21–37, 44 KV from Decatur to Dayton, Athens–Decatur section not operating.
(2) Initial service to Pickwick Dam at 44 KV. After 8–15–37, 110 KV.
(3) Purchased pole line. 44 KV added in space originally provided for it.

DEFENDANTS' EXHIBIT No. 136

[fol. 4269]

Sheet 1 of 5—Exhibit C

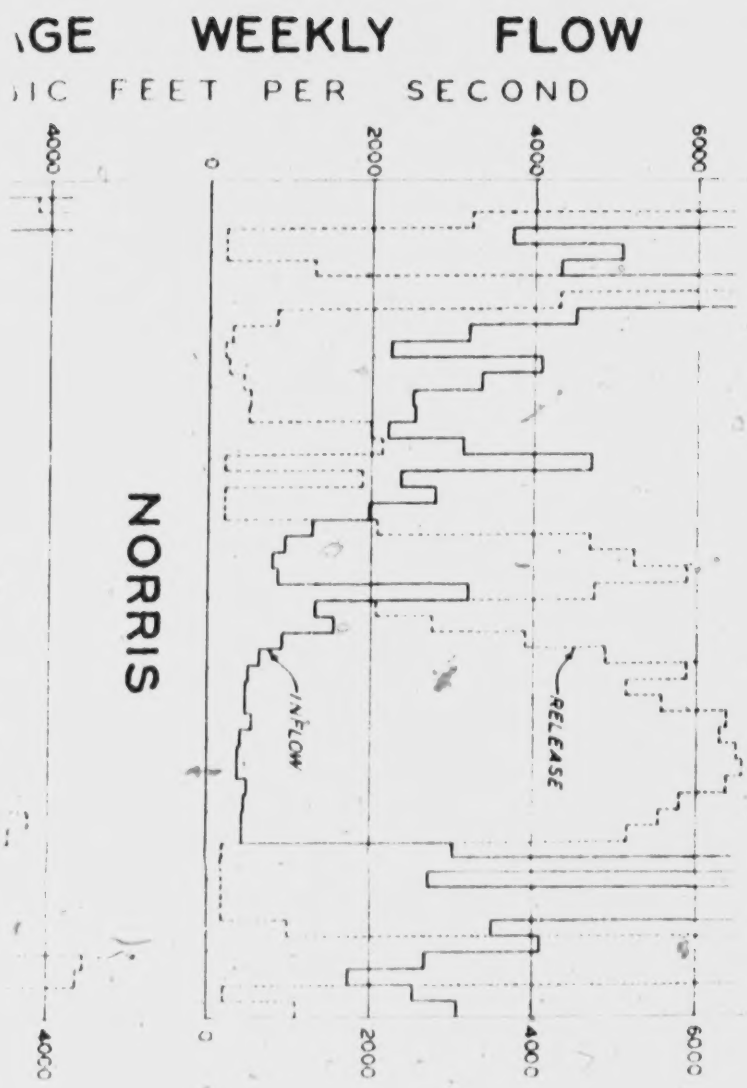
Substations of Tennessee Valley Authority

October 15, 1937

Name	Location	Capacity KVA	Primary Voltage KV	Date of Completion
1. Substations Constructed:				
Amory	Amory, Miss.	1,500	44	9- 2-34
Pulaski	Pulaski, Tenn	1,500	44	1- 4-35
(1)Dayton	Dayton, Tenn.	600	44	2- 1-35
(2)Dam Construction	Pickwick Dam, Tenn	7,500	110	2-19-35
Okolona	Okolona, Miss.	1,500	44	7-14-35
44 KV	Wilson Dam, Ala	15,000	46	7-28-35
Ardmore	Ardmore Tenn. State Line	450	44	10- 1-35
Dickson	Dickson, Tenn	1,200	44	5-12-36
Holly Springs	Holly Springs, Miss.	600	12.45	5-15-36
Bolivar	Bolivar, Tenn	300	12.45	7-18-36
Milan	Milan, Tenn.	750	12.45	7-18-36
Somerville	Somerville, Tenn	300	12.45	7-18-36
(3)Primary	Jackson, Tenn	10,000	110	8- 8-36
(4)Primary	Columbia, Tenn	600	44	12-10-36
		36,000	154	12-14-36
Dam Construction	Guntersville, Ala	30,000	154	12-14-36
Santeetlah	Santeetlah Plant, N. C.	4,500	44	12-16-36
Dam Construction	Hiwassee Dam, N. C.	4,500	44	12-31-36
Friendship	Friendship, Ga	1,500	44	2- 2-37
Watts Bar	Watts Bar, Tenn	15,000	154	2- 2-37
(5)Primary	New Albany, Miss.	3,000	44	3-22-36
Iuka	Iuka, Miss.	750	44	7-18-37
Colbert	Wilson Dam, Ala	4,500	44	8-12-37
Primary	Burnsville, Miss	13,500	110	8-15-37
Ford City	Ford City, Ala.	40	44	9- 8-37
Dam Construction	Chickamauga Dam, Tenn	6,000	44	9-12-37

II. Substations Purchased—January 4, 1934 Contract:

A. Purchased from Mississippi Power Co.:				
Booneville	Booneville, Miss.	1,000	44	6- 1-34
(7)Central	Burnsville, Miss.	150	44	6- 1-34
(8)Corinth	Corinth, Miss.	1,200	44	6- 1-34
Fulton	Fulton, Miss.	225	22	6- 1-34
Iuka	Iuka, Miss.	1,000	44	6- 1-34
Rienzi	Rienzi, Miss.	150	44	6- 1-34
(9)Primary	Tupelo, Miss.	4,500	44	6- 1-34
B. Purchased from Alabama Power Co.:				
District	Athens, Ala.	3,000	44	6- 1-36
Central	Belle Mina, Ala.	450	44	6- 1-36
Central	Cherokee, Ala.	600	44	6- 1-36
Colrock	Colrock, Ala.	600	44	6- 1-36
Courtland	Courtland, Ala.	600	44	6- 1-36
Primary	Decatur, Ala.	7,500	110	6- 1-36
Goodyear Mills	Decatur, Ala.	4,500	44	6- 1-36
(10)Central	Decatur, Ala.	3,000	44	6- 1-36
(11)Central	Florence, Ala.	4,500	44	6- 1-36
(12)Central	Flint, Ala.	120	44	6- 1-36
L. & N. Shops	Decatur, Ala.	900	44	6- 1-36
(13)District	E. Florence, Ala.	750	44	6- 1-36
(14)Central	Hartselle, Ala.	1,200	44	6- 1-36
Leighton	Leighton, Ala.	450	44	6- 1-36
Margerum	Margerum, Ala.	600	44	6- 1-36
District	Moulton, Ala.	600	44	6- 1-36
Red Bay	Red Bay, Ala.	225	22	6- 1-36
Alabama Stone Co.	Rockwood, Ala.	1,000	44	6- 1-36
Town Creek	Town Creek, Ala.	600	44	6- 1-36
Waco	Waco, Ala.	3,000	44	6- 1-36
U. S. Nitrate No. 2	Wilson Dam, Ala.	13,500	110	6- 1-36


AGE WEEKLY FLOW
IC FEET PER SECOND
NORRIS
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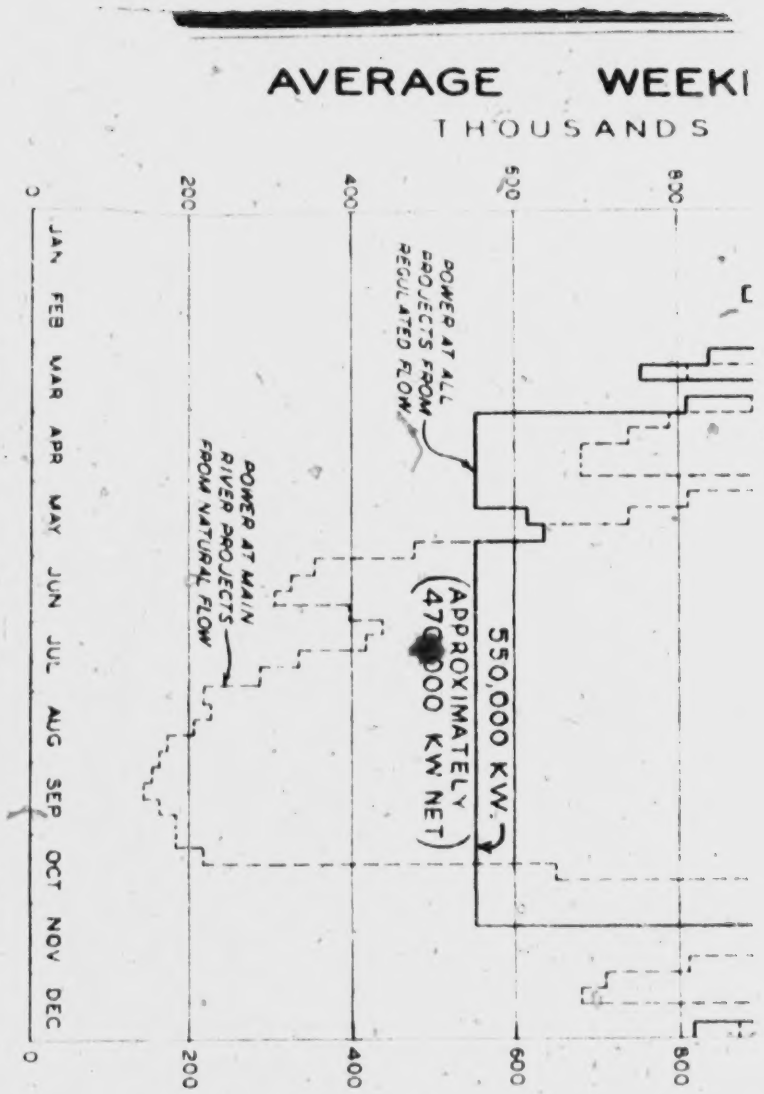
6000


AVERAGE WEEKL
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POWER AT ALL PROJECTS FROM REGULATED FLOW
POWER AT MAIN RIVER PROJECTS FROM NATURAL FLOW
550,000 KW.
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200
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600
800
GROSS SYSTEM POWER
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
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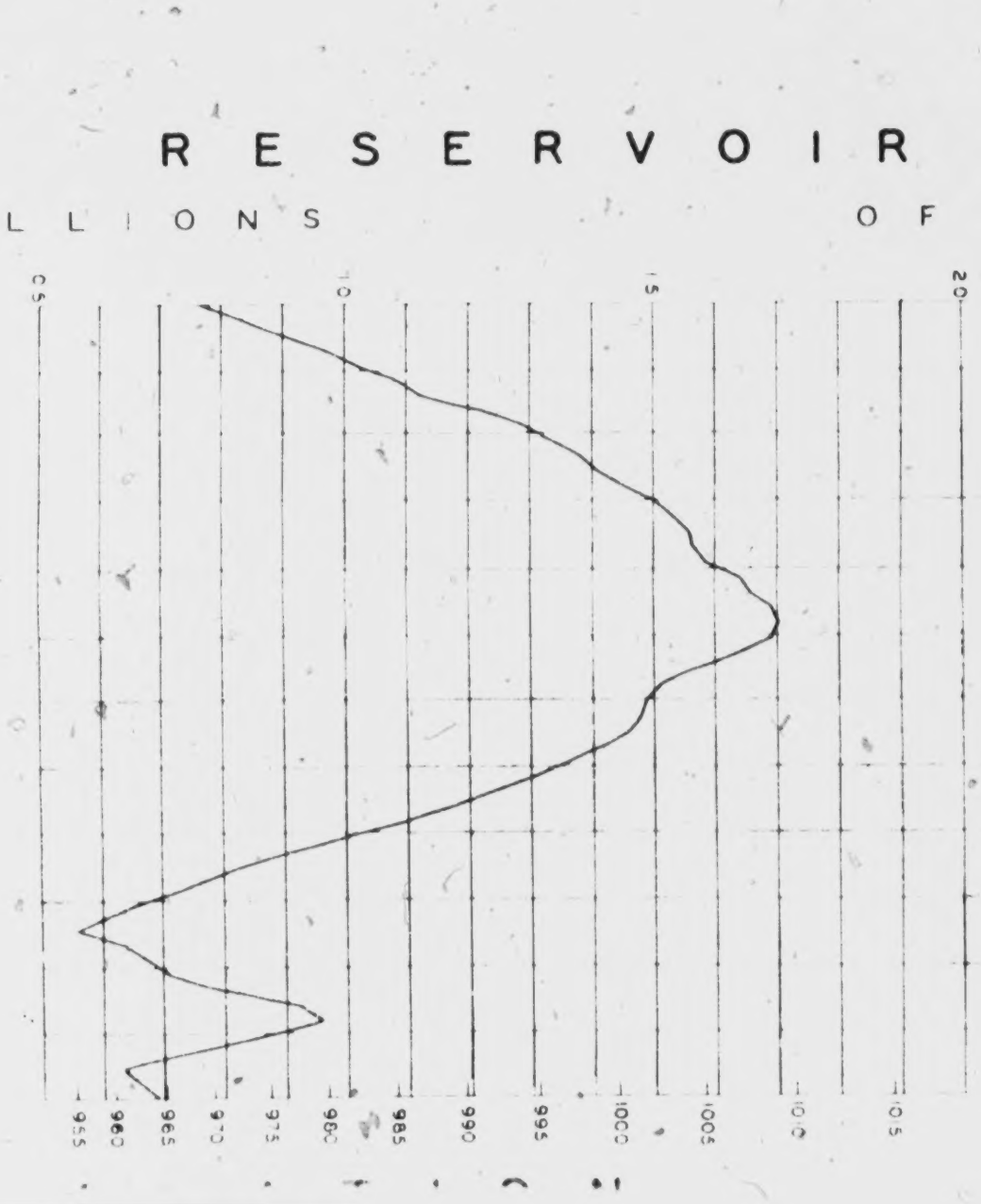
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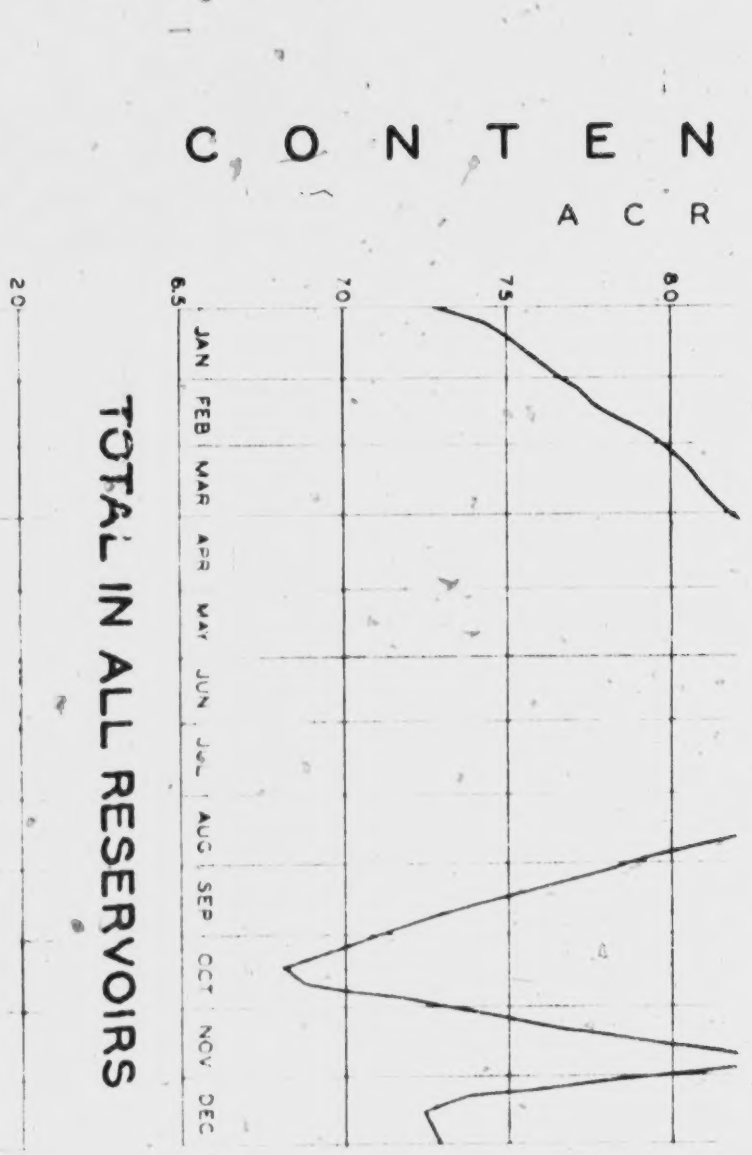
CONTEN
ACR
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7.0
7.5
8.0
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
TOTAL IN ALL RESERVOIRS

DEFENDANTS' EXHIBIT NO. 136

[fol. 4271]

Sheet 3 of 5—Exhibit C

Substations of Tennessee Valley Authority—October 15, 1937—Continued

Name	Location	Capacity KVA	Primary Voltage KV	Date Removed
C. Purchased from Alabama Power Company but later removed.				
Colrock	Colrock, Ala	600	44	3-14-37
(12)Central	Flint, Ala	120	44	9-30-37
U. S. Nitrate No. 2	Wilson Dam, Ala	13,500	310	3-12-37
				Field Work Begun
III. Substations Under Construction (Partially Completed):				
Trenton	Trenton, Tenn	3,000	44	8-25-37
Knoxville	Knoxville, Tenn	4,500	110	9-17-37
Primary	S. Memphis, Tenn	60,000	154	5-14-37
		20,000	110	5-14-37
IV. Substations Authorized by Board of Tennessee Valley Authority:				
Fayetteville	Fayetteville, Tenn	3,000	44	
Murfreesboro	Murfreesboro, Tenn	1,500	44	
Primary	N. Memphis, Tenn	20,000	110	
Victor Chemical	Mt. Pleasant, Tenn	15,000	44	

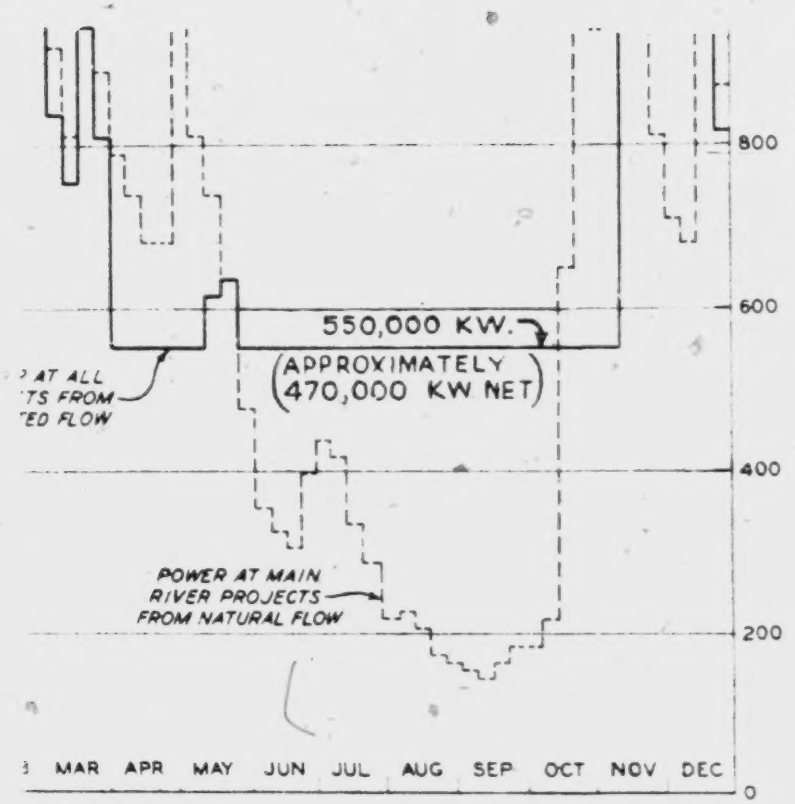
[fol. 4272] Sheet 4 of 5

V. Substations at Generating Plants:

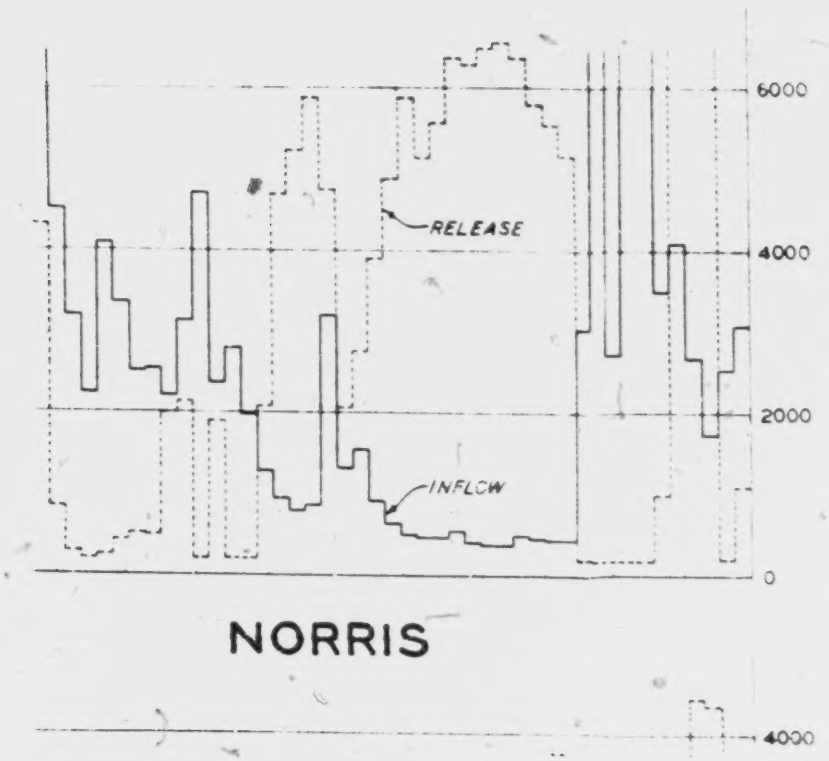
A. Transferred from War Department:				
Switchyard	Wilson Dam, Ala	130,000 130,000	110 154	
B. Constructed:				
Switchyard	Norris Dam, Tenn	112,000	154	7-26-36
Switchyard	Wheeler Dam, Tenn	72,000	154	11-19-36
C. Under Construction:				
Switchyard	Pickwick Dam, Tenn	144,000	154	
Switchyard	Guntersville Dam, Tenn	96,000	154	
Switchyard	Chickamauga Dam, Tenn	108,000	154	

[fol. 4273] Sheet 5 of 5

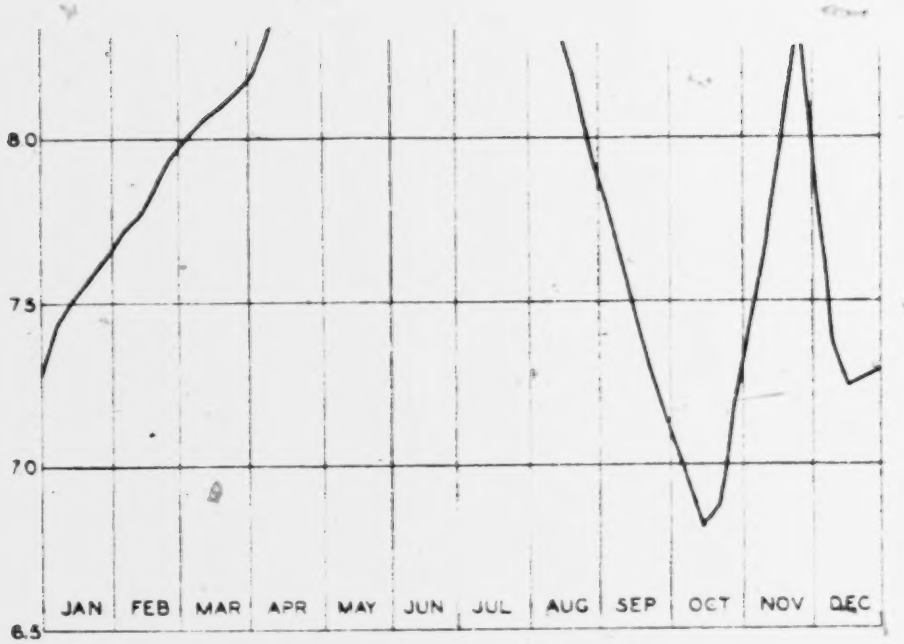
(1) Initial service at 22 KV. Changed to 44 KV 3-21-37.
(2) Initial service 15,000 KVA. Changed to 7,500 KVA 9-26-37.
(3) Capacity increased from 5,000 KVA to 10,000 KVA 9-26-37.
(4) 36,000 KVA capacity self-cooled, being increased to 48,000 KVA by adding air-blast.
(5) Initial capacity 1,500 KVA changed to 3,000 KVA 3-13-37.
(6) Not energized.
(7) Capacity changed to 100 KVA 8-15-37.
(8) Capacity changed to 5,000 KVA 2-18-36.
(9) Capacity changed to 6,000 KVA 9-15-35. 110 KV connection with 15,000 KVA of transformer capacity being added to station.
(10) Capacity changed to 4,500 KVA 4-18-37.
(11) Capacity of 1500 KVA changed from 12 KV to 44 KV.
(12) Received 80 KVA only.
(13) Capacity changed to 1,500 KVA 8-8-37.
(14) Capacity changed to 1,500 KVA 7-4-37.



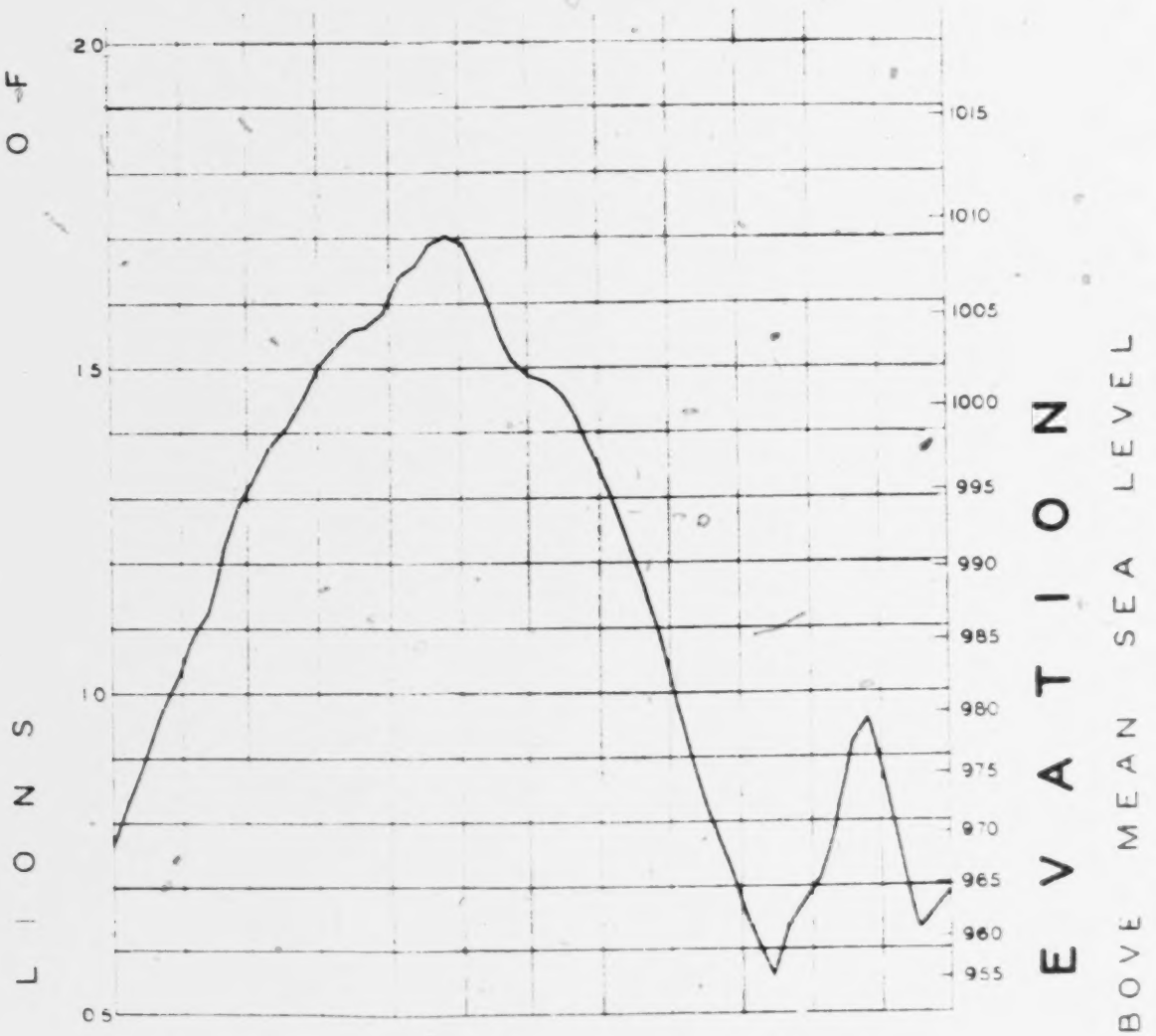
GROSS SYSTEM POWER



NORRIS



TOTAL IN ALL RESERVOIRS



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DEFENDANTS' EXHIBIT No. 136

[fol. 4274]

Exhibit E

Rural Lines Owned by Municipalities and Cooperatives*
Purchasing Power from T.V.A.
and
Rural Lines Owned by TVA

Number	Municipality or Co-operative carrying on rural service	(1) Total miles of line owned by Municipality or Cooperative as of 10/15/37	(2) Number miles purchased by TVA under Jan. 4, 1934, contract and re-sold to Municipality or Cooperative	(3) Number miles financed and constructed by TVA and sold to Municipality or Cooperative	(4) Number miles constructed by TVA under contract with Municipality or Cooperative	(5) Number of miles constructed by Municipality or Cooperative
I	Gibson Co. EMC	245	0	147	98	0
II	Southwest Tenn. EMC	287	0	0	287	0
III	City of Bolivar RS	12	0	12	0	0
IV	Pickwick EMC	97	0	97	0	0
V	City of Pulaski RS	28	0	28	0	0
VI	Duck River EMC	524	0	151	373	0
VII	Middle Tenn. EMC	248	0	0	248	0
VIII	Meigs Co. EMC	187	0	0	105	82
IX	City of Dayton RS	35	0	35	0	0
X	Holly Springs RS	60	0	0	0	60
XI	Alcorn Co. EPA	85	14	53	0	18
XII	Tishomingo Co. EPA	11	6	5	0	0
XIII	Prentiss Co. EPA	41	19	7	0	15
XIV	City of New Albany RS	71	25	46	0	0
XV	Tombigbee EPA	255	59	196	0	0
XVI	Pontotoc EPA	67	23	44	0	0
XVII	City of Okolona RS	65	0	0	0	65
XVIII	Monroe Co. EPA	128	0	9	67	52
XIX	City of Athens RS	137	70	14	53	0
XX	Joe Wheeler EMC	173	68	105	0	0
XXI	Cullman Co. EMC	191	5	74	112	0
	Totals	2,947	289	1,023	1,343	292

Number	Location	Total miles of line owned by TVA as of 10/15/37	TVA Direct Operations: Number miles of line purchased by TVA	TVA Direct Operations: Number miles of line constructed by TVA
A	Wilson Dam Vicinity	314	60 (from Ala. Pr. Co. under Jan. 4, 1934 contract)	254
B	Lincoln Co., Tenn.	165	0	165
C	Norris Dam Vicinity	107	8 (from TEP Co.)	99
D	Supply Lines only (Shown also on Exhibits A and B)	43.7	0	43.7
	Totals	629.7	68	561.7

Summary

Total miles of line purchased by TVA and sold to Municipalities or cooperatives	289
Total miles of line purchased by TVA—Direct Operations	68
Total miles of line financed and constructed by TVA—Direct Operations	561.7
Total miles of line constructed by Municipality or Cooperatives	292
Total miles of line financed and constructed by TVA and sold to Municipalities or Cooperatives	1,023
Total miles of line constructed by TVA under contract with Municipalities or Cooperatives	1,343
Grand Total	3,576.7*

Note: Of the total mileage shown aggregating 3,576.7* miles, approximately 490* miles were under construction as of October 15, 1937.

* Exclusive of rural lines owned by North Georgia Electric Membership Corporation.

[fol. 4275] DEFENDANTS' EXHIBIT No. 136A

Map entitled "Lines and Substations of Tennessee Valley Authority In Service, Under Construction And Authorized".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 136B

Map entitled "Rural Lines Owned By Municipalities and Cooperatives Purchasing Power From TVA and Rural Lines Owned By TVA".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 137

Map entitled "Lines and Substations of Tennessee Valley Authority and Lines and Substations Purchased or Options By Tennessee Valley Authority From Commonwealth & Southern companies".

(Original Exhibit)

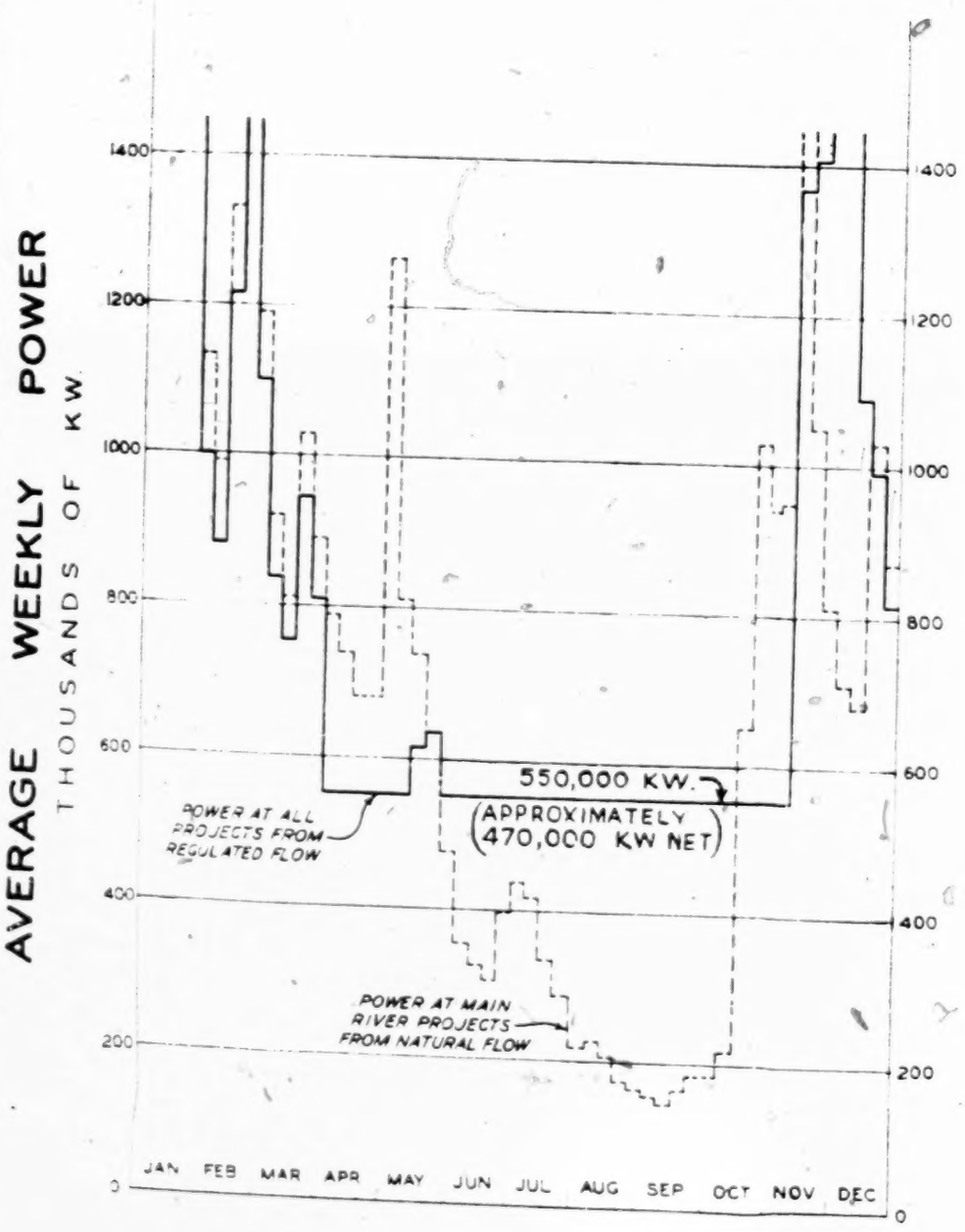
DEFENDANTS' EXHIBIT No. 138

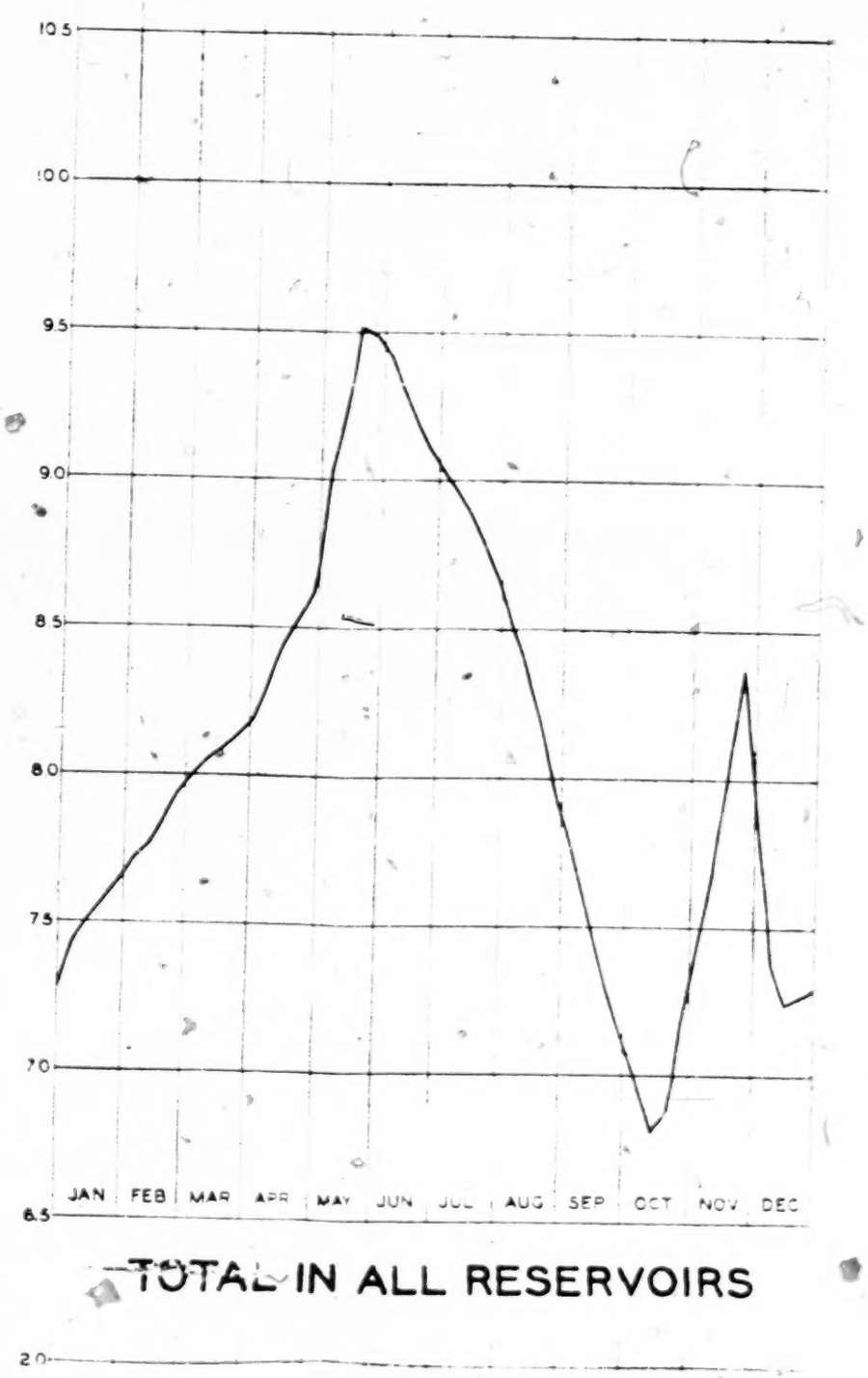
Map entitled "Transmission Facilities of Tennessee Valley Authority and Private Utilities".

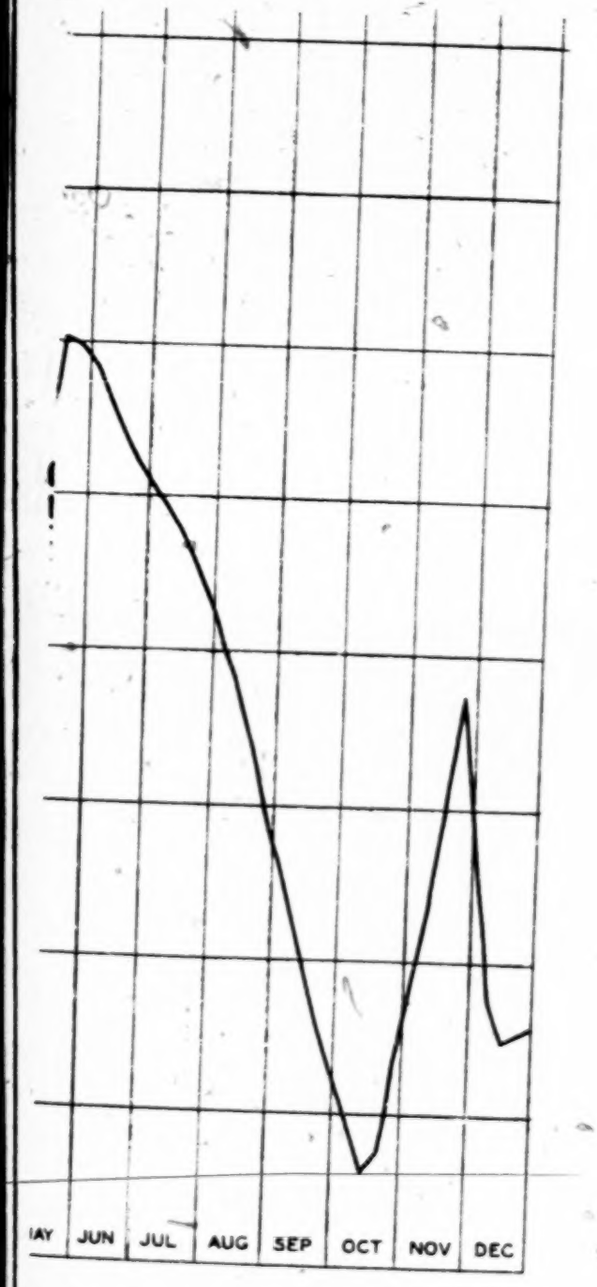
(Original Exhibit)

(Here follows one photolithograph side folio 4276)

DEFENDANTS' EXHIBIT NO. 139





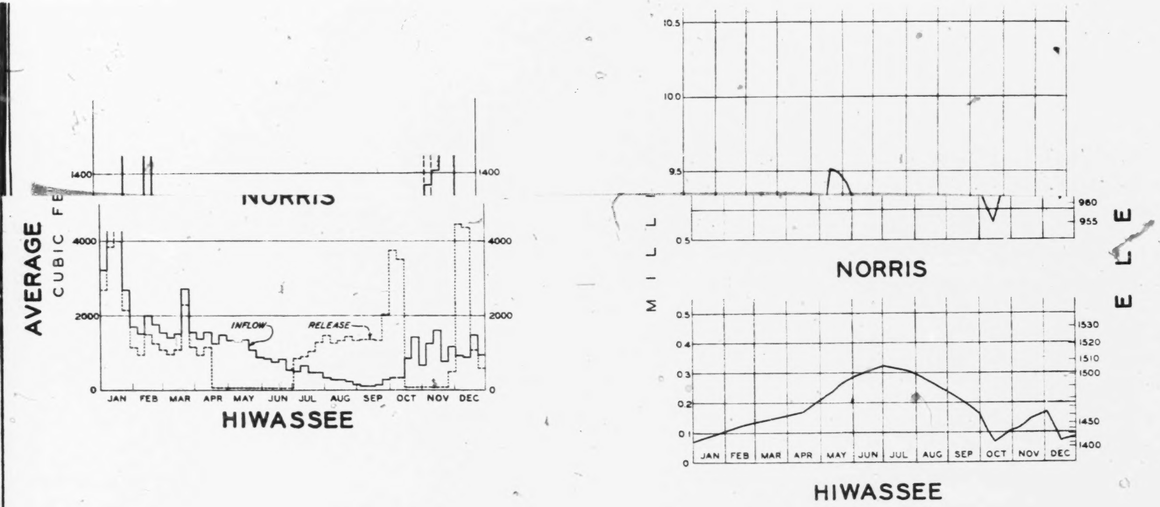


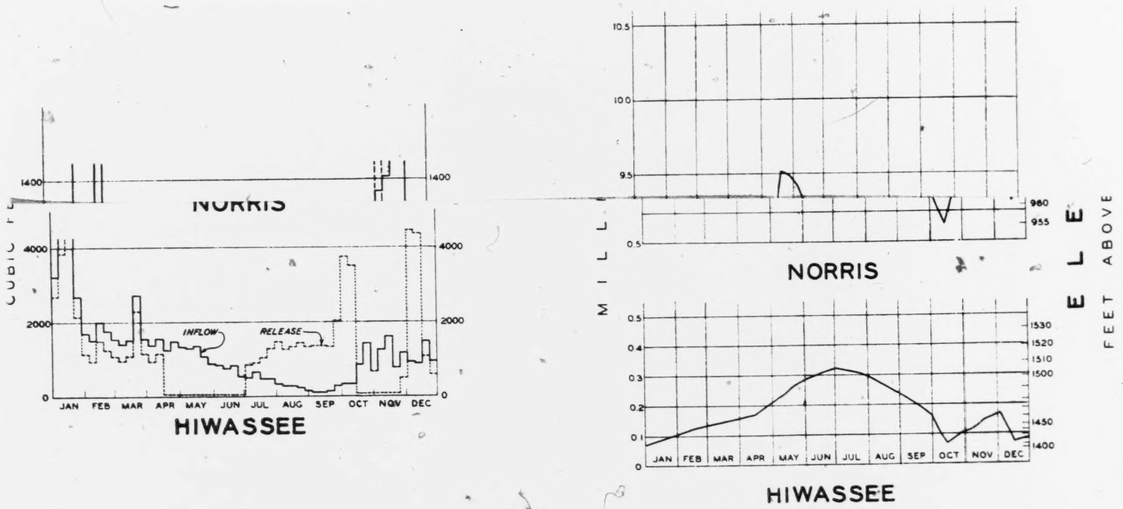
ALL RESERVOIRS

APPROXIMATE SYSTEM OPERATION
DRY YEAR LIKE 1925

PROJECTS INCLUDED IN SYSTEM

GILBERTSVILLE
PICKWICK
WILSON
WHEELER
GUNTERSVILLE
CHICKAMAUGA
WATTS BAR
COULTER SHOALS
NORRIS
HIWASSEE


AVERAGE
CUBIC FE
1400
NORRIS
4000
2000
0
INFLOW
RELEASE
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
HIWASSEE
MILLI
ELE
10.5
10.0
9.5
980
955
NORRIS
0.5
0.4
0.3
0.2
0.1
1530
1520
1510
1500
1450
1400
HIWASSEE


1400
NORRIS
4000
2000
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INFLOW
RELEASE
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
HIWASSEE
10.5
10.0
9.5
980
955
NORRIS
0.5
0.4
0.3
0.2
0.1
1530
1520
1510
1500
1450
1400
HIWASSEE
FEET ABOVE

APPF

[fol. 4277] DEFENDANTS' EXHIBIT No. 140

Tennessee Valley Authority

Status of Generating Capacity as of December 31, 1937

Generating Units in Operation

Project	No. of Units	Capacity of each unit KW
Wilson	4	20,000
	4	26,000
Norris	2	50,000
Wheeler	2	32,000
Generating Units being Installed		
Pickwick	2	36,000
Generating Units under Contract		
Guntersville	2	24,000
Chickamauga (a)	2	27,000
Future Generating Units Authorized by Board		
Guntersville	1	24,000
Chickamauga	1	27,000
Hiwassee	1	60,000
Wheeler	2	32,000

(a) Generators not purchased.

[fol. 4278] DEFENDANTS' EXHIBIT No. 141

Successive Steps of Installation and Estimated Firm Power Capacity

Generating Unit	Scheduled Completion Date	Installed Capacity KW	Estima Firm Po Capac KW
Wilson #1 to 8	Existing	184,000	
Norris #1 & 2	Existing	100,000	
Wheeler #1 & 2	Existing	64,000	
Total		348,000	258,00
Pickwick #1	July 1, 1938	36,000	
Total		384,000	325,00
Pickwick #2	Sept. 1, 1938	36,000	
Total		420,000	355,00
Guntersville #1 & 2	Jan. 1, 1940	48,000	
Total		468,000	395,000
Guntersville #3	June 1, 1940	24,000	
Total		492,000	410,000
Chickamauga #1	Aug. 1, 1940	27,000	
Total		519,000	425,000
Chickamauga #2	Nov. 1, 1940	27,000	
Total		546,000	440,000
Chickamauga #3	Jan. 1, 1941	27,000	
Total		573,000	460,000
Wheeler #3	June 1, 1941	32,000	
Hiwassee #1	June 1, 1941	60,000	
Total		665,000	540,000
Wheeler #4	Aug. 1, 1941	32,000	
Total		697,000	570,000

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alled city W	Estimated Firm Power Capacity KW
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000	258,000
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000	325,000
000	
000	355,000
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000	395,000
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000	410,000
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000	425,000
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000	440,000
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000	460,000
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000	
000	540,000
000	
000	570,000

[fol. 4279]

DEFENDANTS' EXHIBIT No. 142

Sheet 1

Water Releases at Norris, Wheeler and Wilson Dams

June, 1936 Through November, 1937

Comparison of Total Discharges with Discharges Available for Generation

Month and Year	Norris Dam			Wheeler Dam			Wilson Dam		
	Total Discharge Below Dam D.S.F.—See Note	Estimated Discharge Available for Generation D.S.F.*	Percentage of Total Discharge %	Total Discharge Below Dam D.S.F.	Estimated Discharge Available for Generation D.S.F.*	Percentage of Total Discharge %	Total Discharge Below Dam D.S.F.	Estimated Discharge Available for Generation D.S.F.*	Percentage of Total Discharge %
June, 1936	43,280	.....**	.....	.....	.....	.....	423,900	423,900	100.00
July	34,790	16,660	47.89	.....	.....	.....	859,180	695,970	81.00
August	89,220	80,270	89.97	.....	.....	.....	522,940	522,940	100.00
September	134,460	116,480	86.63	.....	.....	.....	495,700	495,700	100.00
October	29,700	29,700	100.00	.....	.....	.....	618,290	607,560	98.26
November	73,100	73,100	100.00	575,290	209,000***	36.33	573,430	573,430	100.00
December	57,090	55,440	97.11	1,070,340	289,510	27.04	1,121,430	734,410	65.49
Total for 7 Months	461,640	371,650	80.51	1,645,830	498,510	30.29	4,614,870	4,053,910	87.84
January, 1937	4,530	4,530	100.00	5,326,780	294,500	5.53	5,600,360	930,600	16.61
February	560,360	198,360	35.40	3,119,090	266,000	8.53	3,181,260	810,000	25.46
March	225,710	152,060	67.37	1,654,850	294,500	17.80	1,707,710	842,400	49.33
April	10,340	10,340	100.00	1,074,980	446,500	41.53	1,126,170	716,080	63.58
May	15,130	15,130	100.00	1,873,930	589,000	31.43	2,002,510	849,150	42.40
June	91,050	91,050	100.00	685,980	560,610	81.72	729,060	684,950	93.95
July	86,180	86,180	100.00	615,950	484,080	78.59	640,040	602,340	94.11
August	80,500	80,500	100.00	660,730	540,550	81.81	691,860	679,510	98.21
September	108,630	108,630	100.00	664,340	527,040	79.33	656,670	644,120	98.09
October	192,300	176,400	91.73	897,740	548,780	61.13	898,620	686,930	76.44
November	322,120	229,430	71.22	687,670	555,920	80.84	700,540	685,460	97.85
Total for 11 Months	1,696,850	1,152,610	67.93	17,262,040	5,107,480	29.59	17,934,800	8,131,540	45.34

Note: D.S.F.—Day-second-feet. A discharge of one day-second-foot is equal to a discharge of one cubic foot of water per second for twenty-four hours. The monthly totals are the aggregate amounts of water discharged in a month in day-second-feet.

* That part of the total discharge below the dam which could have been passed through the turbines if operated to full capacity, or to the extent permitted by the amount of the releases if such releases were not adequate to operate the turbines at full capacity, at the time water was released.

** The first water released from Norris Reservoir was on June 19, 1936. The first generating unit was placed in operation on July 28, 1936 and the second generating unit was placed in operation on September 30, 1936.

*** The first generating unit at Wheeler Dam was placed in operation on November 9, 1936. The November data shown are from November 9 through 30. The second generating unit was placed in operation on April 14, 1937.

1-1-38

4190

DEFENDANTS' EXHIBIT No. 142

[fol. 4280]

Sheet 2

Water Releases at Norris, Wheeler and Wilson Dams—June, 1936 Through November, 1937—Continued

Comparison of Turbine Discharges with Total Discharges and Discharges Available for Generation

Month and Year	Norris Dam			Wheeler Dam			Wilson Dam		
	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Available for Generation %	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Available for Generation %	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Availabe for Generation %
June, 1936	.....	.....	.....	.....	.....	.....	421,290	99.38	99.38
July	8,850	25.44	53.12	.....	.....	.....	636,980	74.14	91.52
August	70,250	78.74	87.52	.....	.....	.....	502,400	96.07	96.07
September	111,300	82.77	95.55	.....	.....	.....	495,700	100.00	100.00
October	28,950	97.47	97.47	.....	.....	.....	469,070	75.86	77.20
November	53,740	73.51	73.51	131,620	22.88	62.98	563,730	98.31	98.31
December	22,700	39.76	40.95	170,070	15.89	58.74	412,010	36.74	56.10
Total for 7 Months	295,790	64.07	79.59	301,690	18.33	60.52	3,501,180	75.87	86.36
January, 1937	550	12.14	12.14	5,620	0.10	1.91	249,560	4.46	26.82
February	25,750	4.60	12.98	91,450	2.93	34.38	101,620	3.19	12.54
March	44,490	19.71	29.26	22,820	1.38	7.75	69,980	4.10	8.31
April	9,150	88.49	88.49	97,210	9.04	21.77	101,230	8.99	14.14
May	3,190	21.08	21.08	50,180	2.68	8.52	125,490	6.27	14.78
June	2,240	2.46	2.46	143,580	20.93	25.61	82,880	11.37	12.10
July	40,680	47.20	47.20	201,020	32.64	41.53	121,900	19.05	20.24
August	46,620	57.91	57.91	227,750	34.47	42.13	142,990	20.67	21.04
September	28,320	26.07	26.07	222,600	33.51	42.23	198,570	30.24	30.83
October	38,090	19.81	21.59	179,950	20.04	34.14	169,440	18.85	24.87
November	17,810	5.53	7.76	184,470	26.83	33.18	219,150	31.28	31.97
Total for 11 Months	256,810	15.14	22.28	1,426,650	8.26	27.93	1,582,810	8.82	19.46

That part of the total discharge below the dam which passed through the water wheels of the generating units.

1-1-38

4191

DEFENDANTS' EXHIBIT No. 142

[fol. 4281]

Sheet 3

Water Releases at Norris, Wheeler and Wilson Dams—June, 1936 Through November, 1937—Continued

Extent of Use of Norris Storage Releases for Generation at Wheeler and Wilson Dams

Month and Year	Wheeler Dam			Wilson Dam		
	Norris Reservoir Storage Releases D.S.F.**	Norris Storage Releases Used For Generation D.S.F.	Percentage of Norris Storage Releases Used For Generation %	Norris Reservoir Storage Releases D.S.F.**	Norris Storage Releases Used For Generation D.S.F.	Percentage of Norris Storage Releases Used For Generation %
June, 1936	.....	.....	....	8,750	8,750	100.00
July	.....	.....	....	39,530	13,440	34.00
August	.....	.....	....	51,830	48,200	93.00
September	.....	.....	....	105,710	105,710	100.00
October	.....	.....	....	35,920	27,920	77.73
November	14,320	.....	....	23,230	20,890	89.93
December	75,890	.....	....	75,890	46,570	61.36
Total for 7 Months	90,210	.....	....	340,860	271,480	9.65
January, 1937	.....	.....	....	.....	.....	.....
February	309,380	.....	....	309,380	.....	.....
March	154,620	.....	....	154,620	.....	.....
April	.....	.....	....	.....	.....	.....
May	.....	.....	....	.....	.....	.....
June	17,120	.....	....	17,120	.....	.....
July	41,130	1,120	2.72	41,130	.....	.....
August	57,090	.....	....	57,090	.....	.....
September	57,530	.....	....	57,530	.....	.....
October	144,620	.....	....	144,620	.....	.....
November	275,430	6,920	2.51	275,430	.....	.....
Total for 11 Months	1,056,920	8,040	0.76	1,056,920	.....	.....

** Total discharge below Norris Dam less natural flow of Clinch River at the site of Norris Dam. Five to six days has been estimated for the time of water travel between Norris Dam and Wheeler and Wilson Dams.

1-1-38

4192

Defendants' Exhibit No. 143

[fol. 4282]

Summary of Contracts for the Disposition of Power by TVA as of December 15, 1937

Sheet 1

Contractors	Previous Service	Point of Delivery	Date of Contract	Date of Initial Purchase
Municipalities:				
1. Amory, Mississippi	Municipal Plant	Substation (City Gate)	3- 9-34 (10-15-36)*	9- 2-34
2. Athens, Alabama$	Municipal Distribution System$$$	" " "	4- 6-34	6- 1-34
3. Bolivar, Tennessee	Municipal Plant	" " "	12-31-35	7-20-36
4. Dayton, Tennessee	Municipal Distribution System$$$	" " "	9-12-34	2- 1-35
5. Dickson, Tennessee	Municipal Plant	" " "	10-23-35	5-12-36
6. Florence, Alabama$	Alabama Power Company	" " "	3-14-34 (7-6-36)*	7-15-36
7. Holly Springs, Mississippi	Municipal Plant	" " "	11-12-35 (2-2-37)**	5-15-36
8. Jackson, Tennessee	Municipal Plant & WTP & Lt. Co.***	" " "	10-16-35 (9-1-37)*	7-18-36
9. Milan, Tennessee	Municipal Plant	" " "	12-31-35	7-18-36
10. Muscle Shoals City, Alabama$	Municipal Plant	" " "	1-19-35	10-14-33
11. New Albany, Mississippi$	Municipal Plant	" " "	9-13-34 (3-1-37)*	11-12-34
12. Okolona, Mississippi	Municipal Plant	" " "	4-23-35 (3-24-37)**	7-14-35
13. Pulaski, Tennessee	Municipal Plant	" " "	3- 8-34	1- 4-35
14. Sheffield, Alabama$	Alabama Power Company	" " "	3-14-34 (3-16-36)*	3-16-36
15. Somerville, Tennessee	Municipal Plant	" " "	12-31-35	7-25-36
16. Trenton, Tennessee	Municipal Plant	" " "	8-23-37	11-16-37
17. Tupelo, Mississippi$	Municipal Distribution System$$$	" " "	11-13-33	2- 7-34
18. Tuscumbia, Alabama$	Alabama Power Company	" " "	3-14-34 (3-8-37)*	4- 1-37
Cooperatives	**Previous Service (Wholesale)**			
1. Alcorn County EPA$	None x	Substation at Corinth, Mississippi	6- 1-34 (6-30-37)*	6- 1-34
2. Cullman County EMC$$	None	Metered at Morgan-Cullman Co. line	8- 4-36	8- 8-36
3. Duck River EMC$$	None	Substation at Columbia, Tennessee	10-31-36	5-27-36
4. Gibson County EMC	None	Metered at Madison-Gibson Co. line	8-13-36	8-13-36
5. Joe Wheeler EMC$	None x	Substations at Hartselle and Moulton, Alabama	9-24-37	10- 1-37
6. Lincoln County EMC$$	None	Substation at Ardmore, Tennessee	12-11-37	12-11-37
7. Meigs County EMC	None	Substation at Watts Bar	10-14-35	8- 6-36
8. Middle Tennessee EMC$$	None	Metered at Midland, Tennessee	8-13-36	12-10-36
9. Monroe County EPA	None	Substation at Amory, Mississippi	7-19-35 (2-14-36)**	2-15-36
10. North Georgia EMC$$	None	Substation at Friendship, Georgia	6-15-36	7-17-36
11. Pickwick EMC $$	None	Metered at Miss.-Tenn. State Line	8-26-36	4-21-36
12. Pontotoc EPA$	None x	Metered at Pontotoc-Lee Co. Line	2-15-35 (2-12-36)*	3- 1-35
13. Prentiss County EPA$	None x	Substation at Booneville, Mississippi	6-13-35 (12-1-36)*	6-20-35
14. Southwest Tennessee EMC	None	Substation at Jackson, Tennessee	12- 9-36	8- 1-37
15. Tishomingo County EPA$	None x	Substation at Iuka, Mississippi	7-19-35 (6-30-37)*	8-15-35
16. Tombigbee EPA$	None x	Substation at Tupelo, Mississippi	10-19-35	11- 1-35

$ Serves territory within "ceded" areas in Mississippi or Alabama described in contract of January 4, 1934.

$$ Service initiated under 2500 kw. clause of contract of January 4, 1934.

$$$ Wholesale power supply purchased at City Gate, in Athens, Alabama, from Alabama Power Company; in Dayton, Tennessee, from a local lumber mill; and in Tupelo, Mississippi, from Mississippi Power Company. Industrial customers in Athens and Tupelo with a load over 25 horsepower were served directly by Alabama Power Company and Mississippi Power Company, respectively.

* Date in parenthesis is date of existing contract superseding original contract.

** Date in parenthesis is date of contract modifying or supplementing original contract.

*** Power purchased from the Authority under the earlier contract has been used by the city in replacement of power previously generated by municipally owned generators and used only for municipal water pumping, street lighting, and other municipal uses. The later contract covers a power supply for both municipal purposes and resale.

x Retail service by Mississippi Power Co. or Alabama Power Co. prior to transfer of property to Authority under contract of January 4, 1934.

4193

Defendants' Exhibit No. 143

[fol. 4283]

Sheet 2

Contractors	Existing Service	Point of Delivery Contemplated	Date of Contract	Date of Initial Purchase
Municipalities (Not yet Purchasing)				
1. Chattanooga, Tennessee	Tennessee Electric Power Company	Substation (City Gate)	6-17-37	
2. Knoxville, Tennessee	Tennessee Public Service Company	" " "	3- 1-34 (2-19-36)*(5-18-36)**	
3. Memphis, Tennessee	Memphis Power & Light Company	" " "	11-23-35	
4. Decatur, Alabama#	Alabama Power Company	" " "	3-14-34	
5. Russellville, Alabama#	Alabama Power Company	" " "	3-13-34	
6. Middlesboro, Kentucky	Kentucky Utilities Company	" " "	7-29-37 (10-20-37)**	
7. Guntersville, Alabama	Alabama Power Company	" " "	5-21-37	
8. Paris, Tennessee	Kentucky-Tennessee L. & P. Co.	" " "	11- 2-37	
Cooperatives (Not yet purchasing)	**Previous Service (Wholesale)**			
1. Northeast Mississippi EPA	None	Substation at New Albany, Mississippi	3-26-37 (7-27-37)**	
2. Cherokee County EMC	None	Substation at Crossville, Alabama	11- 2-37	
3. Tippah County EMC#	None	Substation at Ripley, Mississippi	11- 5-37	
Industrials	**Previous Service**	**Point of Delivery**		
1. Alabama Asphaltic Limestone Company#	Alabama Power Company	Substation on Customer's Property	5- 1-36	5- 1-36
2. Goodyear Decatur Mills#	Alabama Power Company	" " " "	5- 1-36	5- 1-36
3. Lacey Asphaltic Limestone Company#	Alabama Power Company	" " " "	5-13-37	5-18-37
4. L & N Railroad Shops#	Alabama Power Company	" " " "	6-22-36	5- 1-36
5. Rockwood Ala. Stone Company#	Alabama Power Company	" " " "	6-25-36	5- 1-36
6. Robbins Rubber Company#	Customer Owned Generator	" " " "	11- 1-36	12- 4-34
7. Wade & Richey Mining Company#	None	" " " "	5- 1-37	4-28-37
8. Monsanto Chemical Company##	None	" " " "	5-15-36 (5-16-36) (6-2-36)**	8- 6-36
9. Aluminum Company of America	Customer Owned Generators	" " " "	7-17-36 (7-20-37)*** 7-20-37	7- 6-37
Industrials (Not yet purchasing)	**Existing Service**	**Point of Delivery Contemplated**		
1. Electro Metallurgial Company#	None	Substation on Customer's Property	8-17-37	6- 1-39
2. Victor Chemical Company	None	" " " "	7- 2-37	2- 1-38
3. Sardis Dam (War Department)	None	" at Pontotoc, Mississippi	5-14-37	
Utilities				
1. Arkansas Power & Light Company		Substation on Customer's Property	6-16-37	11-22-37

Located within "ceded areas" in Mississippi or Alabama described in contract of January 4, 1934.
Service initiated under 2,500 KW clause of contract of January 4, 1934.
* Date in parenthesis is date of existing contract superseding original contract.
** Date in parenthesis is date of contract modifying or supplementing original contract.
*** Two agreements with the Aluminum Company executed 7-20-37, one amending the earlier agreement of 7-17-36 and the other setting up new and additional power purchase arrangements.

12-22-37

[fol. 4284] DEFENDANTS' EXHIBIT No. 143A

Press Release, Morning Papers, Jan. 5 1934

Tennessee Valley Authority,
New Sprankle Building,
Knoxville, Tennessee

Contract

This contract, made and entered into this 4th of January, 1934, between Tennessee Valley Authority, a corporation organized and existing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called Authority, and Commonwealth & Southern Corporation, a corporation organized and existing under the laws of the State of Delaware, hereinafter called Commonwealth Company; Alabama Power Company, a corporation organized and existing under the laws of the State of Alabama, hereinafter called Alabama Company, Tennessee Electric Power Company, a corporation organized and existing under the laws of the State of Maryland, hereinafter called Tennessee Company, Georgia Power Company, a corporation organized and existing under the laws of the State of Georgia, hereinafter called Georgia Company, and Mississippi Power Company, a corporation organized and existing under the laws of the State of Maine, hereinafter called Mississippi Company, the Alabama Company, Tennessee Company, Georgia Company and Mississippi Company to be hereinafter collectively designated as Power Companies,

Witnesseth:

Whereas, Power Companies, all of which are subsidiaries of commonwealth Company, and Authority, for the mutual benefit of the respective power systems of Power Companies and Authority, desire to enter into an agreement for the interchange of electric power and for certain switching and other services in connection with such interchange as hereinafter specifically set forth; and

Whereas, the electrical system of all Power Companies are interconnected and the interchange arrangement hereinafter agreed upon will benefit each of said Power Com-

panies whether or not any interchange is made directly with each of said companies; and

Whereas, Alabama Company, Tennessee Company and Mississippi Company desire to sell, and Authority desires to purchase, certain land, buildings and physical properties devoted to the generation, transmission and distribution of electricity, together with certain franchises, contracts and going business as herein specifically set forth; and

Whereas, the parties desire to enter into certain other and further covenants, as herein specifically enumerated:

Now, Therefore, in consideration of the covenants herein mutually entered into, the parties hereto covenant and agree as follows:

1. Mississippi Company covenants and agrees to convey to Authority, its nominee or nominees, promptly upon the execution of this contract, all of its transmission and distribution lines, substations, generating plants and other property (except one certain dam site in Tishomingo County, State of Mississippi, on the Tennessee River) used in connection with the generation, transmission, distribution or sale of electrical energy by it in the Counties of Pontotoc, Lee, Itawamba, Union, Benton, Tippah, Prentiss, Tishomingo and Alcorn in the State of Mississippi, said property being more particularly described in Exhibit A attached hereto and hereby made a part thereof. Authority agrees to pay for such properties on the date of delivery thereof the sum of eight hundred and fifty thousand dollars ($850,000).

2. Alabama Company covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its low tension (44 kv. or lower) transmission lines, sub- [fol. 4285] stations (including the high tension station at Decatur and the Sheffield steam plant station) and all rural lines and rural distribution systems in the Counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan (excluding the Hulaco area), north half of Franklin (including the town of Red Bay), and the territory in the northern part of Cullman served by a certain line of Alabama Company extending south from Decatur, all in the State of Alabama, said property being more particularly described

in Exhibit B, attached hereto and hereby made a part hereof. Authority covenants and agrees that when it has taken all of such properties it will pay therefor an aggregate sum of one million dollars ($1,000,000). Alabama Company further agrees promptly upon the execution of this contract to convey to Authority, its nominee or nominees, all of the real property which it owns within and adjacent to the area known as the Joe Wheeler dam site in the Counties of Lawrence and Lauderdale, in the State of Alabama, said property being more particularly described in Exhibit C, attached hereto and hereby made a part hereof. Authority covenants and agrees to pay an aggregate sum of one hundred and fifty thousand dollars ($150,000) for such properties. Authority agrees to pay for such properties on the respective dates of delivery thereof at 60.17448% of the respective prices shown for such properties in said Exhibit B, and at 51.81257% of the respective prices shown for such properties in Exhibit C.

3. Tennessee Company covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its transmission and distribution lines, sub-stations, distribution systems and other properties used in connection with the transmission, distribution and sale of electrical energy by it in the Counties of Anderson, Campbell, Morgan (except the lines extending into Morgan County from Harriman), Scott and the west portion of Claiborne, and all of the 66 kv. transmission line from Cove Creek to Knoxville in Knox County, all in the State of Tennessee, being more particularly described in Exhibit D, attached hereto and hereby made a part hereof. Authority agrees to pay for such properties on the respective dates of delivery thereof at 65.91702% of the respective prices shown for such properties in said Exhibit D. Authority covenants and agrees that if and when it takes all of such properties it will pay therefor an aggregate sum of nine hundred thousand ($900,000) dollars.

4. Power Companies severally covenant and agree that the properties which by this contract they agree to convey to Authority, its nominee or nominees, shall be conveyed free of liens or other encumbrances, except such liens or

encumbrances as may be specifically recited in the respective exhibits, title being subject to approval of counsel for Authority; and Power Companies severally covenant and agreed to secure any necessary waiver of liens or encumbrances created by any security issue authorized and/or outstanding against the property which they agree to convey. All conveyances by Power Companies shall be by general warranty deed, and title shall be subject only to the liens or encumbrances recited in said exhibits; Provided, however, that Power Companies shall not be required to warrant easements or rights-of-way assigned or transferred hereunder, other than that they validly hold and exercise such easements or rights-of-way, and are free to transfer same to Authority. Any conveyance of property shall include not only the physical property, easements and rights-of-way, but shall also include all machinery, equipment, tools and working supplies set forth in the respective exhibits, and all franchises, contracts and going business relating to the use of any of said properties, without extra charge. Power Companies severally covenant and agree to transfer or secure the transfer of said franchises, contracts and going business, and to transfer said properties with all present customers attached, so far as they are able. Power Companies severally covenant and agree that pending the transfer of any properties to Authority as herein provided, they will maintain such properties in good condition, and expend for such maintenance the amounts normally allowed therefor in their respective budgets.

[fol. 4286] 5. Alabama Company covenants and agrees to convey its urban distribution systems in the above named counties in Alabama, said distribution systems being listed in Exhibit B, to the respective municipalities in or adjacent to which such systems are located, together with all franchises, contract rights, and going business thereto appertaining, when it has agreed with any such municipality on the price to be paid for the same. Alabama Company agrees to make every reasonable effort to come to an early agreement with said municipalities for such sales. In the event that any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Alabama Company, or if for some other reason the sale of any such system cannot be consummated, Au-

thority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Alabama Company. Authority covenants and agrees to use its best endeavors to assist in bringing about the purchase of such distribution systems by the respective municipalities at fair prices.

If Authority elects to purchase said transmission systems in said areas prior to the purchase by municipalities of said distribution systems, then Authority agrees to exchange with Alabama Company sufficient electric energy to supply said distribution systems.

6. Tennessee Company covenants and agrees as to any municipal distribution systems in the above named Counties in Tennessee which Authority does not elect to purchase, Tennessee Company will convey such distribution systems to the municipalities in or adjacent to which such systems are located, together with all franchises, contract rights and going business thereto appertaining when it has agreed with any such municipality on the price to be paid for same. Tennessee Company agrees to make every reasonable effort to come to an agreement with said municipalities for such sales. In the event any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Tennessee Company, or if for some other reason the sale of any such system cannot be consummated, Authority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Tennessee Company. Authority covenants and agrees as to any of said distribution systems which it does not purchase to use its best endeavors to assist in bringing about the purchase of such distribution systems by the respective municipalities at fair prices.

If Authority elects to purchase said transmission systems in said areas prior to the purchase by municipalities of said distribution systems, then Authority agrees to exchange with Tennessee Company sufficient electrical energy to supply said distribution systems.

7. Power Companies covenant and agree that during the period of this contract none of said companies will sell elec-

tric energy to any municipality, corporation, partnership, association or individual in any portion of the above-described counties or parts thereof in Alabama, Tennessee and Mississippi, in which portions the properties of Power Companies listed in the respective schedules attached hereto have been transferred out of Power Companies in accordance with this contract or in which Power Companies at the time of entering into this contract do not own such properties. During said period Authority will not sell electric energy outside of said counties to any municipality, corporation, partnership, association or individual which, or the distribution system serving which, is now supplied by Power Companies, nor will Authority sell electric energy outside of said counties to the customers of non-utilities supplied by Power Companies; Provided, however, that nothing herein contained shall be construed to prevent Authority from selling electric energy outside of said counties to any municipality or municipalities which, or the distribution system serving which, is not on the date of the [fol. 4287] execution of this agreement being served by Power Companies; and Provided, further, that distribution systems having interchange contracts with Power Companies, or supplied by companies or systems having interchange contracts with Power Companies, shall not within the meaning of this contract be considered as being supplied with electricity by Power Companies, except that Authority shall not have the right to interchange power with any utility operating under an interchange contract with Power Companies; and Provided, further, that nothing herein contained shall be construed to prevent Authority from selling electric energy to rural consumers or organizations thereof, in the counties of Rhea, Roane, Meigs and the western part of McMinn on the so-called plateau, in the State of Tennessee, not now being served by Tennessee Company, and to rural consumers or organizations thereof in Monroe County in the State of Mississippi not now being served by Mississippi Company; and Provided, further, that Authority may serve electric energy to any fertilizer plant or other industry operated by it, without any restriction as to the location thereof; and Provided, further, that in addition to the above described exceptions nothing in this contract shall be construed to prevent Au-

thority from selling, outside of the five counties or parts thereof above named and the counties named in Sections 1, 2 and 3 of this contract, electric energy up to a total demand of 2500 kw. to customers not at the time served by Power Companies.

8. As a part of the interchange arrangements provided for by this contract, Authority agrees to deliver to Power Companies on demand, at points hereinafter described, all of its surplus hydro-electric power, and Authority agrees to supply not less than 20,000 kw., if Power Companies desire that amount, plus the totalized net demand of Authority on Power Companies at the various exchange points hereinafter described, plus fifteen per cent of such totalized net demand for line losses; and Power Companies agree to receive and take such power when, as and to the extent required by them. The term "totalized net demand" as used herein shall be construed to mean the aggregate one hour integrated demand of Authority at all exchange points, less the aggregate one hour integrated demand of Power Companies at all exchange points. The term "surplus hydro-electric power" as used herein shall be construed to mean the excess of available water capacity over Authority's own requirements as such may exist from time to time. The decision as to what constitutes excess capacity at any given time shall be in the discretion of the acting Chief Operating Officer of Authority at Wilson Dam at such time; Provided, however, that nothing herein contained shall be construed as a limitation on the obligation of Authority to supply 20,000 kw. to Power Companies, Authority agrees to supply Power Companies on request all data bearing upon water capacity and Authority's requirements.

9. Authority covenants and agrees to supply power to Power Companies at the following points of exchange, and at such other points as the parties may from time to time agree:

(a) At Wilson Dam on the 154 kv. line connecting Gorgas and Nashville;

(b) At Wilson Dam on the 110 kv. line extending from Wilson Dam to Huntsville at the point where the line crosses the southern boundary of U. S. Nitrate Plant No. 2;

(c) At the point where the 44 kv. line extending from West Point to Tupelo intersects the southern boundary line of Lee County, Mississippi; Provided, however, that Authority shall not be obligated to render service at this point unless and until the line from Tupelo to Wilson Dam is constructed by Authority.

(d) At such other points as may be necessary to comply with the obligations of Authority under this contract to supply distribution systems operated by Power Companies.

[fol. 4288] 10. Power Companies covenant and agree to supply power to Authority at the following points of exchange:

(a) At Wilson Dam on the 154 kv. line connecting Gorgas and Nashville;

(b) At Wilson Dam on the 110 kv. line extending from Wilson Dam to Huntsville at the point where the line crosses the southern boundary of U. S. Nitrate Plant No. 2;

(c) At the point where the 44 kv. line extending from West Point to Tupelo intersects the southern boundary line of Lee County, Mississippi;

(d) At the point where the high-tension substation at Decatur, Alabama, joins the 110 kv. line of the Alabama Company extending from Sheffield to Huntsville;

(e) At or near the point on the 44 kv. line between Huntsville and Decatur where the line crosses the boundary of Limestone and Madison Counties, Alabama;

(f) At a point on the 120 kv. line of the Tennessee Company at or near Cove Creek, Tennessee;

(g) At a point on the 154 kv. line connecting Wilson Dam and Nashville at or near Mount Pleasant, Tennessee;

(h) At such other points on the lines of Power Companies as Authority may from time to time designate for service to any customer which Authority may serve under Section 7 of this contract; Provided, however, that Authority shall pay the whole cost of such additional connections; and Provided, further, that Power Companies shall be under no obligation to render service to an amount in excess of the surplus transmission capacity of the respec-

tive lines except that Authority may, solely at its own expense, advance funds to the respective Power Companies for increasing the transmission capacity of said lines and that upon being advanced the funds Power Companies shall be obligated to make such increase in transmission capacity; and Provided, further, that Authority shall not have the right under this sub-paragraph to designate any exchange points outside of the Tennessee Valley Basin. Power Companies shall retain title to all improvements thus financed on said lines; Provided, however, that should Authority purchase said lines, the net increase in value because of such improvements shall be deducted from the purchase price.

11. Power Companies covenant and agree that after the expiration of this agreement the interchange arrangement then in effect will be maintained by Power Companies for an additional period (not exceeding eighteen months) sufficient to permit Authority to construct its own transmission facilities for serving all of the territory which it is then serving in whole or in part with power obtained at such interchange points.

12. The cost of installing the necessary apparatus for the exchange of power at Wilson Dam shall be borne in equal part by Authority and Alabama Company. The cost of installation of additional interchange facilities at the remaining points shall be borne by Authority. The cost of operation and maintenance of the interchange facilities at the interchange points described in Section 9 and in subparagraphs (a) to (g), inclusive, of Section 10 hereof, shall be borne equally by Authority and the respective Power Company directly involved, and such operation and maintenance shall be under the general control and direction of Authority and said such Power Company, and shall be effected through joint employees whose compensation shall be equally borne. No such employee shall be continued in service if objected to by either party. The cost and control of the operation and maintenance of the additional [fol. 4289] points of exchange, provided for by Section 10 (h), shall be governed in the same manner except that Authority shall reimburse Power Company for its share of such cost of operation and maintenance.

13. Power Companies agree to have available at all times for exchange, at each point of exchange, energy and capacity to supply the entire demands of the customers served by Authority from such points of exchange, subject to the limitations as to transmission capacity set forth in Section 10 (h) hereof; Provided, that the maximum amount which Authority shall be entitled to demand at all points of exchange shall be 70,000 kv.

14. In the computation of the obligations for energy interchanged under the terms of this contract, and in the settlements therefor, Power Companies shall act and be treated jointly, through an agent of their own selection, hereinafter called Agent; and Power Companies covenant and agree to select such an agent promptly upon the execution of this contract, and promptly to notify Authority of their selection in writing. Power Companies may jointly designate a new agent from time to time, upon giving Authority three calendar months notice in writing; and such new agent shall succeed to all the rights, duties and obligations of its predecessor. Power Companies hereby waive all recourse against Authority, except through such agent. Power Companies and Commonwealth Company shall, however, be jointly and severally liable for all obligations hereunder pertaining to said interchange arrangements, the establishment and maintenance of exchange points, the amount of energy or capacity to be made available at such points, and the settlement of obligations created thereby, including the payment of quarterly settlements provided for in Section 15, and the monthly payment provided for in Section 16 hereof.

15. Computation of the obligations for energy interchanged under the terms of this contract shall be made on the following basis. Statements shall be rendered to each other by Agent and Authority quarterly. The first statement shall be rendered within ten days after March 31, 1934, for the period beginning with the date of execution of this contract and extending to and including March 31, 1934. Similar statements shall be rendered within ten days after the close of the quarterly calendar periods dating from March 31st thereafter. The statements shall show the amount of energy exchanged at each exchange point

plus 15 per cent for line losses on the transmission thereof from the point of generation; Provided, however, that line losses shall not be considered in the determination of the amount due Authority for the delivery of energy to Power Companies at the point of generation. Statements shall be computed as per the following example, viz.:

(1) Kilowatt Hours Received by Power Companies from Authority at the point of generation		30,000,000 kwh.
(2) Kilowatt Hours Received by Power Companies from Authority at exchange points other than the point of generation	8,000,000 kwh.	
Add 15% for line losses	1,200,000 kwh.	9,200,000 kwh.
Total Received by Power Companies		39,200,000 kwh.
(3) Kilowatt Hours Received by Authority from Power Companies at exchange points	20,000,000 kwh.	
Add 15% for line losses	3,000,000 kwh.	23,000,000 kwh.
Difference (2) and (3)		16,200,000 kwh.

[fol. 4290] and the excess of energy delivered by Power Companies (considered as a unit) to Authority and vice versa, shall be paid for by Agent or Authority, as the case may be, within twenty days after March 31, 1934, or of the close of subsequent quarterly periods as the case may be The party receiving such excess of energy over the energy delivered in exchange during such period shall pay therefor at the following rates:

First 300,000 Kilowatt Hours per period at 3.6 mills per kwh.

Next 600,000 Kilowatt Hours per period at 2.7 mills per kwh.

Next 2,100,000 Kilowatt Hours per period at 2.25 mills per kwh.

Next 18,600,000 Kilowatt Hours per period at 1.8 mills per kwh.

Next 21,600,000 Kilowatt Hours per period at 1.35 mills per kwh.

Excess Kilowatt Hours per period at 1.08 mills per kwh.

16. In addition to the energy payments hereinbefore provided, Agent agrees to pay monthly to Authority $16,200

(1) for the reservation by Authority for the use of Power Companies of the 20,000 kw. of capacity as hereinbefore provided, (2) for the use of the 154 kv. line of Authority on the reservation at Wilson Dam, (3) for the use of other property of Authority required for the interchange of power, (4) and to cover the expense of the switching and voltage regulation by Authority necessary to synchronize its operations with the operations of Power Companies.

17. Tennessee Company agrees to file with the Railroad and Public Utilities Commission of Tennessee, simultaneously with the execution of this contract, schedules of domestic service rates, as follows:

Metered Residential Service

Alternating Current, Single Phase Applicable to any residential service installation located on the Tennessee Electric Power Company's existing alternating current single phase distribution lines within the State of Tennessee

Energy Charge—Net

New "Immediate" Rate		New "Promotional" Rate	
6.5¢ per kwh.	first 25 kwh.	$1.00 per mnth.	incl. 15 kwh. per mnth.
5¢ " "	next 85 "	4.5¢ " kwh.	next 50 "
3¢ " "	next 140 "	2¢ " "	next 135 "
1.5¢ " "	over 200 "	1¼¢ " "	next 500 "
		1¢ " "	over 700 "

Minimum Bill—$1.00 per month.

Procedure in Applying New "Immediate" and New "Promotional" Rates

A base bill will be established for each customer as follows:

[fol. 4291] A—For Existing Customers:

The base bill will be the kwh. use for the same month of the year preceding the effective date of the new rates, computed under the new "Immediate" rate.

B—For New Customers:

The base bills for new customers and for those taken on during the 12 months preceding the effective date of the

new rates will be their first 12 months use computed under the new "Immediate" rate.

Whenever the customer's bill under the new "Immediate" rate is equal to or less than his base bill, the new "Immediate" rate will apply.

Whenever the customer's bill under the new "Promotional" rate is greater than his base bill, the new "Promotional" rate will apply.

Whenever the customer's bill under the new "Immediate" rate will be greater than his base bill but under the new "Promotional" rate will be less than his base bill, the customer will be billed the base bill. No bill under the new "Promotional" rate will be for less than the base bill and no bill under the new "Immediate" rate will be rendered for an amount greater than the base bill.

At the close of the first 12 months of the application of the new rates, all base bills will be reduced 5%. The resultant base bills will be reduced another 5% at the end of 24 months. At the end of 36 months the new "Immediate" rate will be eliminated and the new "Promotional" rate will apply to every residence customer.

Minimum Charge:

$1.00 per month.

Prompt Payment:

The above are net rates—if bills are not paid within 10 days from the date thereof the gross rate will apply which will be 5% in excess of the above net rates.

Term of Agreement:

From date of connections until disconnected on 30 days written notice of one party to the other or on non payment of bills for service.

18. The parties hereto shall not be liable to each other on account of any interruption of the exchange of power as provided in this contract or any damages resulting therefrom due to strikes, fires, storms, break-downs or other cause beyond their control.

DEFENDANTS' EXHIBIT NO. 143A

19. Power Companies and Commonwealth Company covenant and agree to cooperate in the sale of electrical appliances throughout the entire territory served by Power Companies, and to use their utmost endeavors to cooperate with Authority and with Electric Home and Farm Authority, Inc., to promote the sale of electric appliances throughout the Tennessee Valley States served by them.

[fol. 4292] 20. Compliance by Authority with any direction or requirement of the Tennessee Valley Authority Act of 1933 shall not be construed in any way as a violation of the terms of this agreement, nor shall such compliance be construed or urged as a failure or partial failure of consideration hereunder.

21. This contract shall remain in force and effect from the date of the execution hereof until midnight December 31, 1938, or until three months after the completion of Norris Dam power plant, whichever is earlier. Upon completion of said plant, if before October 1, 1938, Authority shall notify Commonwealth Company of such completion and this contract shall terminate three calendar months after the receipt of such notification.

22. Power Companies covenant and agree promptly upon the request of Authority to apply to the respective state public service commissions and other public bodies whose consent or approval is required by law to make effective the several terms of this contract for such consent or approval, and to prosecute such applications with diligence.

23. This contract is executed in sextuplicate, and shall enure to and be binding upon the successors and assigns of the respective parties hereto.

In Witness Whereof the parties hereto have caused this instrument to be signed and sealed by their duly authorized

officers, and attested under the hand and seal of their respective secretaries.

Commonwealth and Southern Corporation, by —— ——, President.
Attest: —— ——, Secretary.

Alabama Power Company, by —— ——, President.
Attest: —— ——, Secretary.

Tennessee Electric Power Company, by —— ——, President.
Attest: —— ——, Secretary.

Mississippi Power Company, by —— ——, President.
Attest: —— ——, Secretary.

Georgia Power Company, by —— ——, President.
Attest: —— ——, Secretary.

Tennessee Valley Authority, by —— ——, Chairman.
Attest: —— ——, Secretary.

[fol. 4293] Exhibit "A"—Sheet 1 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Merchandise and Supplies located as follows:

Corinth	Plantersville
Biggersville	Chesterville
Iuka	Pontotoc
Dennis	Ecru
Booneville	Fulton
Baldwyn	Golden
Tupelo	Belmont
Auburn	Myrtle
East Tupelo	Blue Mountain

[fol. 4294] Exhibit "A"—Sheet 2 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Generating Plants

Corinth Steam Plant—Main building approximately 131 ft. x 75 ft. x 23 ft. consisting of 2 boilers and 3 Turbo-Generators totaling approximately 2,225 KVA capacity, on lot approximately 254 ft. x 193 ft.

Tupelo Steam Plant—Main building approximately 45 ft. x 43 ft. x 33 ft. with 3 boilers and 2 Turbo-Generators totaling approximately 4,375 KVA, on lot of approximately 25,000 sq. ft.

Blue Mt. Oil Engine Plant—Building approximately 24 ft. x 41 ft. x 14 ft. containing 2 Fairbanks-Morse Oil Engines, direct connected to 2 generators totaling approximately 150 KVA capacity, on lot approximately 96 ft. x 120 ft.

Myrtle Oil Engine Plant—Main building 30 ft. x 40 ft. x 18 ft. containing one Fairbanks-Morse Oil Engine direct connected to generator of approximately 75 KVA capacity, on lot approximately 66 ft. x 100 ft.

[fol. 4295] Exhibit "A"—Sheet 3 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Transportation Equipment

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Baldwyn.

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Booneville.

G. M. C. 12,000 pound gross rating truck with winch located at Corinth.

DEFENDANTS' EXHIBIT No. 143A

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Corinth.
Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Iuka.
Reo 1½ Ton Truck with Canopy Top located at Tupelo.
Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Tupelo.
Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Myrtle.

[fol. 4296] Exhibit "A"—Sheet 4 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Furniture, Fixtures and Tools Located as Follows:

Iuka	Fulton
Corinth	Tupelo
Booneville	Blue Mountain
Baldwyn	Myrtle
Pontotoc	

[fol. 4297] Exhibit "A"—Sheet 5 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

City Distribution and Rural Systems Located in the Following Cities, Villages and Communities:

Iuka	Ecru
Burnsville	Verona
Corinth	Shannon
Biggersville—Including Rural Line from Corinth to Biggersville	Nettleton
	Fulton
	Golden

DEFENDANTS' EXHIBIT No. 143A

Rienzi	Belmont
Thrasher	Dennis
Booneville	Tishomingo
Wheeler	Padden
Baldwyn	Myrtle
Guntown	Hickory Flats
Saltillo	Potts Camp
Auburn—Rural Extension from Tupelo	Blue Mountain
Belden	Tupelo
Sherman	Plantersville — Rural Extension from Tupelo
Pontotoc	

[fol. 4298] Exhibit "A"—Sheet 6 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Non-Operating Property

One lot approximately 32 ft. x 27 ft. formerly used for generating plant—located in Nettleton.

One lot approximately 53 ft. x 80 ft. with brick building approximately 28 ft. x 63 ft. x 12 ft. formerly used as generating plant—located in Baldwyn.

[fol. 4299] Exhibit "A"—Sheet 7 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Rural Distribution Systems

Chesterville	Extension	from	Tupelo.
Country Club	"	"	"
Gaulding	"	"	Corinth.
Godfrey	"	"	Shannon.
Harden	"	"	Pontotoc.

DEFENDANTS' EXHIBIT No. 143A

Hill Extension	from		Tupelo.
Iuka Road	"	"	Corinth.
Robbins	"	"	Shannon.
Ruff	"	"	Tupelo.
Shirley	"	"	Shannon.
Vaughn	"	"	Shannon.

[fol. 4300] Exhibit "A"—Sheet 8 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Transmission and Distribution Lines

State Line—Iuka—Approximately 5 miles of 44 kv. #1 3 strand copper conductors with telephone line.

Iuka—Corinth—Approximately 23.1 miles of 44 kv. transmission line #2 copper conductors and telephone line.

Burnsville—Booneville—Approximately 19.0 miles of 44 kv. transmission line #2 copper conductors and telephone line.

Iuka—Fulton—Approximately 45.5 miles of 22 kv. transmission line with #4 copper and #1/0 A.C.S.R. conductors.

Tupelo—Okolona—Approximately 19.3 miles of 44 kv. transmission line with 3 #2/0 and #2 aluminum conductors.

Booneville—Tupelo—Approximately 33 5 miles of 13.2 kv. transmission line with 3 #2/0 aluminum conductors.

Tupelo—Pontotoc—Approximately 22.0 miles of 13.2 kv. transmission line with 3 #2 aluminum conductors, including rural services.

Pontotoc—Ecru—Approximately 8.5 miles of 13.2 kv. transmission line with 2 #2 aluminum conductors.

Tupelo—Sherman—Approximately 12.6 miles of 13.2 kv. transmission line with #2 aluminum conductors, including services for 15 customers.

Tupelo—Nettleton—Approximately 15 miles of 13.2 kv. transmission line located partially on 44 kv. line from

Defendants' Exhibit No. 143a

Tupelo to Okolona (previously listed) with #2 aluminum conductors.

Myrtle—Hickory Flats—Approximately 9 miles of 13.2 kv. transmission line with #2 aluminum conductors.

Hickory Flats to Blue Mountain—Approximately 9 miles of 13.2 kv. transmission line with #2 aluminum conductors.

Hickory Flats to Potts Camp—Approximately 6.3 miles of 13.2 kv. transmission line with #2 aluminum conductors.

[fol. 4301]

Exhibit "A"

January 1934

Mississippi Power Company

Inventory of Property to be Conveyed to the Tennessee Valley Authority

Substations

Iuka	44 KV	Substation with	3	transformers totaling	1000	KVA capacity
Burnsville	44	"	3	"	150	"
Corinth	44	"	3	"	1200	"
Rienzi	44	"	3	"	150	"
Booneville	44	"	3	"	1000	"
	Includes a 13 KV bank of 3 transformers totaling 450 KVA capacity					
Fulton	22 KV	Substation with	3	transformers totaling	225	KVA capacity
Belmont	22	"	3	"	112	"
Dennis	22	"	3	"	75	"
Tishomingo	22	"	3	"	300	"
Tupelo	44	"	6	"	4500	"
Baldwyn	13	"	3	"	750	"
Pontotoc	13	"	3	"	300	"
Myrtle	13	"	3	"	75	"
Blue Mountain	13	"	3	"	112	"

(Here follows 1 photolithograph, side folio 4302)

DEFENDANT'S EXHIBIT NO. 143-A

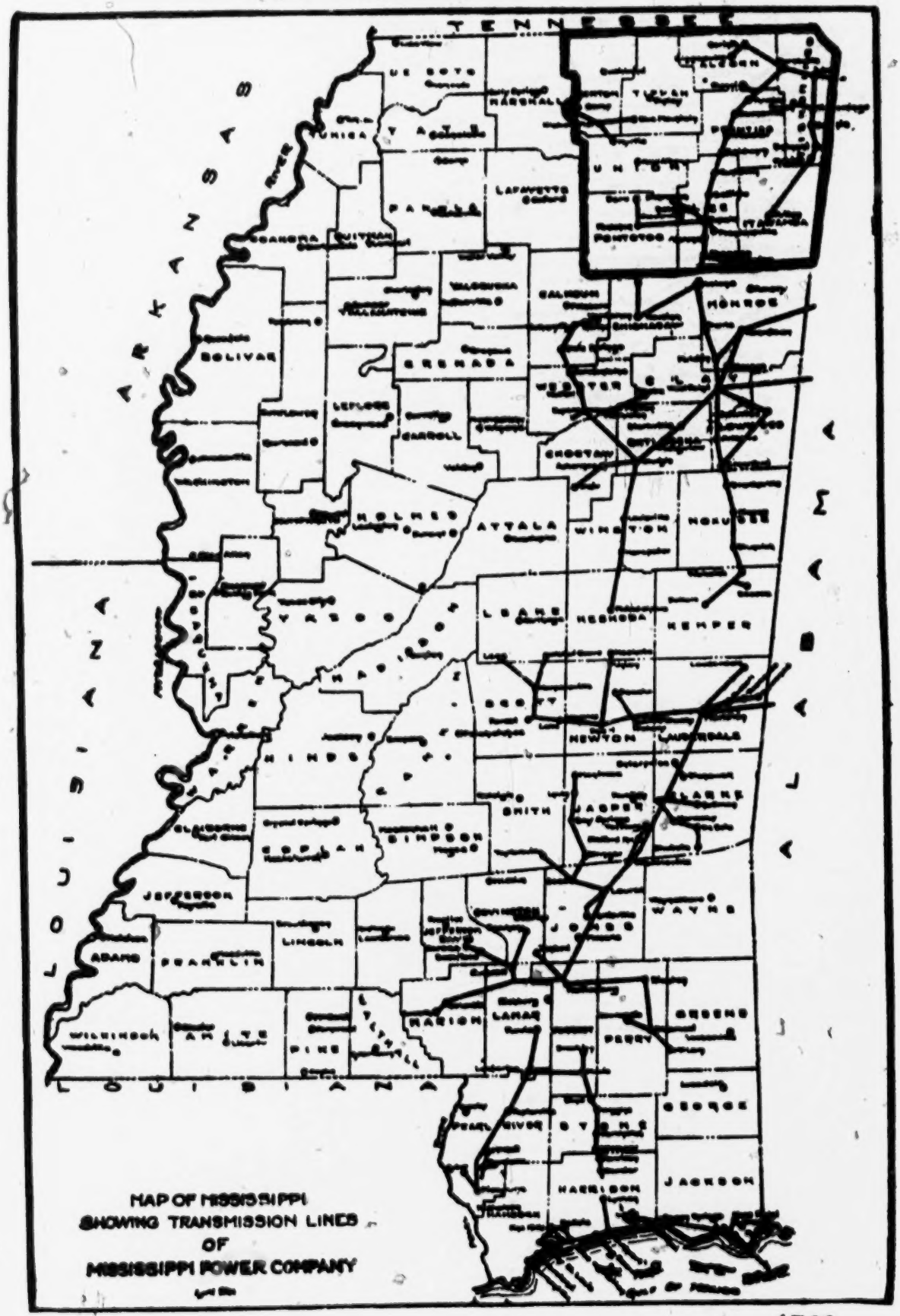
DEFENDANT'S EXHIBIT NO. 143-A

January 1934

Exhibit "A"

Sheet 10 of 10 Sheets

Area in N.E. Mississippi enclosed in red comprises territory allocated to the T.V.A by this agreement



4302

Defendants' Exhibit No. 143A

[fol. 4303]

Exhibit "B"

January 1934

Alabama Power Company

Inventory of Property to be Conveyed to the Tennessee Valley Authority

Primary Substations

Primary Substations	Present Replacement Value 12-1-33	Description
Nitrate Plant #2—110/44 KV..	$113,000	3—4500 KVA 110-44 Transf; 1-20,000 KVA regulator
Wilson Dam.....	$1,750	Misc. Insulators & Conductors
Decatur.....	$135,000	3—2,500 KVA 110-44 KV Transf; 2—46 KV breakers
Total.....	$249,750	

[fol. 4304]

44 Kv. Transmission Lines

44 Kv. Lines	Present Replacement Value 12-1-33	Description
Hobgood to Russellville—Rockwood.....	$85,600	Approximately 16.8 Mi. 2/0 Copper Std. and 8.5 Mi. 1/0 ACSR Pole Cap.
Hobgood to Mississippi State Line.....	156,026	Approximately 28.4 Mi. #1 Copper Std. 2 Cross Arm
Hobgood to Courtland to Moulton.....	54,400	Approximately 23.3 Mi. #4 Copper Std. 2 Cross Arm
Hobgood to Nitrate Plant #2 and Florence Central Substation.....	66,000	Approximately 5.5 Mi. #1 Copper Std. and 3 Mi. 203200 on ACSR 4/0 and 2/0 copper
Decatur Central Sub. to L. & N. Shops to Flint.....	32,000	Approximately 5.9 Mi. #4 Copper and 1/0 ACSR Misc.
Flint to Hartselle.....	20,000	Approximately 7 Mi. #4 copper.
Decatur Central Sub. to Cedar Lake to Madison.....	86,000	Approximately 17 Mi. #4 and #1 Copper and 1/0 ACSR Misc.
Belle Mina to Athens.....	45,000	Approximately 14.5 Mi. #4 Copper Std. 2 Cross Arm.
Total.....	$545,026	

If any of these transmission lines conveyed to the Tennessee Valley Authority are located on the same right-of-way on which are located other lines of the Power Company not transferred under this agreement, such right-of-way shall not be conveyed to the Tennessee Valley Authority, but the Authority shall have the right to operate and maintain the line purchased.

If any of the transmission lines conveyed to the Tennessee Valley Authority carry distribution lines on the structures conveyed, the Company shall have the right to operate and maintain these distribution lines.

If any of the transmission lines conveyed to the Tennessee Valley Authority occupy jointly structures with other transmission lines of the Power Company, the structures are not to be conveyed and the operation and maintenance of structures is to be joint.

[fol. 4305] DEFENDANT'S EXHIBIT No. 143A

Exhibit "B"

Sheet 3 of 7 Sheets

January 1934

Alabama Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Substations in the following list include property rights, fencing, structures, busses, high and low tension switches, transformers, regulators, street lighting equipment, communication equipment, metering equipment, panels, instruments, relays, metering transformers and miscellaneous equipment that is now connected and essential for operation.

If land is jointly used with facilities not transferred to the Tennessee Valley Authority, the land to be conveyed is only that necessary for the substation.

44 Kv. Substations

44 Kv. Substations	Present Replacement Value 12-1-33	Description
Red Bay (22 k.v.)	$10,200	3-75 k.v.a. 1 Unregulated Circuit
Waco Central	24,017	3-1000 k.v.a. 1 " "
Alabama-Rockwood Company	14,865	3-333 k.v.a. 2 " "
Leighton Central	10,952	3-150 k.v.a. 1 " "
Town Creek Central	11,409	3-200 k.v.a. 1 " "
Courtland Central	13,709	3-200 k.v.a. 2 " "
Moulton District	17,645	4-200 k.v.a. 2 " "
Hobgood Switching Station and Substation	31,000	Land is not included
Colrock Central	13,709	3-200 k.v.a. 2 Unregulated Circuits
Cherokee Central	11,409	3-200 k.v.a. 1 " "
Alabama Rock Asphalt (Margerum)	11,409	3-200 k.v.a. 1 " "
Mississippi Power Meter. Equipment (Margerum)	3,500	4-Inst.

[fol. 4306] Sheet 4 of 7 Sheets

44 kv. Substations	Present Replacement Value 12-1-33	Description
Florence Central	$46,220	3—1000 kva. and 3—500 kva. 11 kv. Sub. 3 Regulated—1 Unregulated Circuits.
East Florence	15,900	4—250 kva. 1 Unregulated Circuit 1—Ex. Switch Bay.
Goodyear-Decatur Company	21,091	3—1500 kva.
Decatur Central	35,320	3—1000 kva. 2 Regulated and 2 Unregulated Circuits. Underground LV Cables.
L. & N. Shops	12,200	3—300 kva. 1 Unregulated Circuit.
Flint Central	6,900	3—40 kva. LT Fuses.
Hartselle Central	32,236	3—250 kva. 1 Regulated and 1 Unregulated Circuit 2.3 kv. 4—150 kva. 1 Unregulated Circuit, 11 kv.
Belle Mina Central	10,952	3—150 kva. 1 Unregulated Circuit.
Athens District	31,120	4—1000 kva. 3 Unregulated Circuit.
Total	$385,763	

Defendants' Exhibit No. 143a

[fol. 4307]

January 1934

Exhibit "B"

Sheet 5 of 7 Sheets

Alabama Power Company

Inventory of Property to be Conveyed to the Tennessee Valley Authority

Rural Distribution Systems in the following list includes poles, cross arms, pins, insulators, guys, transformers, primary and secondary conductors, customers meters and services, customers appliance wiring, property rights and miscellaneous devices now connected and essential to operation, except poles and other facilities not essential for this service which are within urban areas not conveyed.

Rural Distribution Systems

District	Present Replacement 12-1-33	Description
Decatur	$33,004	Flint, Trinity, Moulton Heights, etc.
Hartselle	75,231	Hartselle-Falkville Line. Falkville-Eva-Fairview. Hartselle-Decatur Highway. Hartselle-East Pike.
Russellville	3,725	Russellville-Hester. Waco-Hovater.
Courtland	62,624	Courtland-Moulton-Decatur Highway. Courtland-Wheeler-Hillsboro.
Leighton	8,680	Fennel and Alexander Exts.
Cherokee	15,403	Barton-Barton-McWilliams.
Sheffield	6,521	Florence-Weeden Ext.
Belle Mina	23,759	Greenbriar. Decatur Highway. Tennessee Valley Experimental Farm.
Rogersville	109,173	Florence-Rogersville. Anderson-Lexington.
Athens	143,175	Athens-Tanner. Athens-Ardmore. Athens-Capshaw. Athens-Elkmont.
	$481,295	

[fol. 4308] DEFENDANTS' EXHIBIT No. 148A

January 1934 Exhibit "B"

Sheet 6 of 7 Sheets

Alabama Power Company

This property not to be transferred to Tennessee Valley Authority. It is listed herewith to show the urban distribution which is retained by the Power Company.

Distribution Systems

Urban

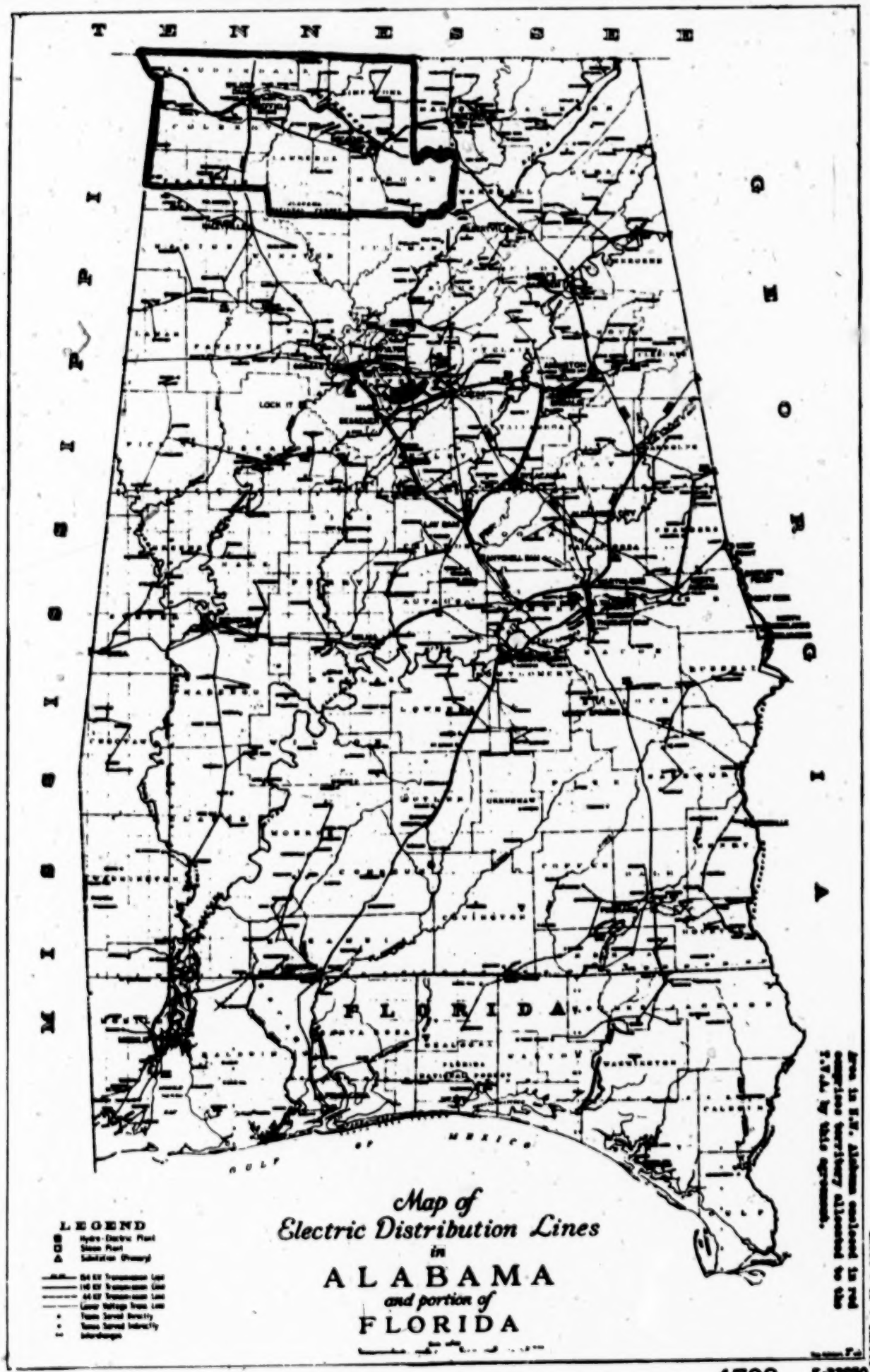
(Including Offices and Warehouses Except as Noted)*

District	Present Replacement Value 12-1-33	Description
Decatur*	$350,000	Decatur, Albany, Austinville.
Hartselle	81,000	Hartselle, Falkville.
Russellville	148,784	
Courtland	60,500	Courtland and Town Creek.
Leighton	19,500	Leighton.
Cherokee	19,500	Cherokee.
Sheffield*	760,000	Sheffield, Tuscumbia, Florence, Seven Points and Industrials.
Belle Mina	6,100	Belle Mina.
Rogersville	0	District.
Athens	31,000	District.
Red Bay District	40,000	Town and Lines.
Total	$1,516,284	

(Here follows 1 photolithograph, side folio 4309)

DEFENDANT'S EXHIBIT NO. 143-A

DEFENDANT'S EXHIBIT NO. 143-A



4309

42184

[fol. 4310] DEFENDANTS' EXHIBIT NO. 143A

January 1934

Exhibit "C"

Sheet 1 of 1 Sheet

Alabama Power Company

Listing of Lands at Joe Wheeler Dam Site to be Conveyed to the Tennessee Valley Authority

Acreage	Price	Description
Approximately 1,643 acres.....	$289,505	Lauderdale County—T35—R8W. Certain lands in Sect. 4. Lawrence County—T35—R8W. Certain lands in Sects. 14, 15, 16, 17, 20, 21 and 23. All in State of Alabama comprising Site #3 or Joe Wheeler Dam Site on Tennessee River.

[fol. 4311] DEFENDANT'S EXHIBIT No. 143A

Exhibit "D"

Sheet 1 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Coal Creek District

Kind of Property	Present Replacement Value 12-1-33	Description
Arlington-Coal Creek Transmission Line, except, however, rights-of-way on which are located other lines of the Power Company not transferred under this agreement, such right-of-way shall not be conveyed to the Tennessee Valley Authority, but the Authority shall have the right to operate and maintain the line purchased.	$228,803	Approx. 20 miles 66 k.v., 2/0 copper single circuit and about 2.5 miles double circuit all spaced for 120 k.v.
Arlington-Coal Creek Telephone Line.	23,550	29 miles approx. length on highways and private R/W.
Supply Lines 11 k.v.a.....	86,360	Coal Creek-Clinton—about 9.6 mi. Coal Creek-Briceville, " 3.8 " Briceville Lag 1.3 " Clinchmore Lag 6.1 " Coal Creek-Block 10.4 " Black Diamond Lag 2.3 " Sun Coal Co. Lag 1.3 " Red Ash Lag 0.2 " Magnet Mills Extension 0.9 " New Caryville Coal Co. Lag 1.3 "
Coal Creek Primary Substation.	86,200	3000 k.v.a. 66/13.2 k.v. transformers together with regulator, oil circuit breaker switchboard, etc., located on one acre of land. Metal building 22' x 21' on concrete foundation.
Distribution Substitutes 11/2.3 k.v. (for supplying power customers and distribution systems. If land is jointly used with facilities not transferred to the Tennessee Valley Authority, the land and building to be conveyed is only that necessary for the substation.)	40,592	Block Coal & Coke Co. 300 k.v.a. Red Ash Coal Co. 225 " Southern Collieries Co. 300 " Clinton 525 " Magnet Knitting Mills 225 " Briceville 37½ " Sun Coal Co. 600 " Clinch More Coal Co. 450 " Andersonville 250 " Clinch River 2500 "

[fol. 4312] DEFENDANT'S EXHIBIT No. 143A

Exhibit "D"
Sheet 2 of 7 Sheets
January 1934
The Tennessee Electric Power Company
Inventory of Property to Be Conveyed to the Tennessee Valley Authority
Coal Creek District (Continued)

Kind of Property	Present Replacement Value 12-1-33	Description
Distribution System in this list includes poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	$102,300	Lines in, to, and through the town of Coal Creek, Clinton, Andersonville, Caryville, Jacksboro and the scattered mining communities.
General Property.....	4,400	Lot at Coal Creek Clinton Office Furn. & Fixtures Substation Site at Clinton 1 Truck
Total—Coal Creek District	$572,205	

[fol. 4313] Sheet 3 of 7 Sheets
Petros District

Kind of Property	Present Replacement Value 12-1-33	Description
Coal Creek-Petros Transmission Line	$142,117	Approx. 22.5 miles 66 k.v. single circuit 2/0 A.C.S.R.
Coal Creek-Petros Tel. Line....	6,550	About 23 miles on 66 k.v. poles
Supply Line—11 k.v.	68,120	Petros-Windrock about 12.6 miles Petros-Sunbright " 20.6 " Petros-Fork Mtn. " 4.6 " Fork Mtn. Lag " 1.4 "
Petros Substation	45,050	3000 k.v.a. 66/11 k.v. & 750 k.v.a. 11/2.3 k.v. together with switches, panels, etc., located on lot 200' x 300'.
Distribution Substation 11/2.3 k.v. (for supplying power customers and distribution system)	17,436	Windrock Coal Co. 300 k.v.a. Diamond Coal Co. #1 150 " Diamond Coal Co. #2 225 " Fork Mtn. Coal Co. 300 " Coal Field Coal Co. 225 " Oliver Springs 50 " Wartburg 37½ " Lancing 37½ " Sunbright 25 "
Distribution System in this list includes poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	31,800	Lines in, to, and through Petros, Oliver Springs, Wartburg, Lancing, Sunbright and the scattered mining communities.
General Property.....	550	One lot in Oliver Springs One truck
Total—Petros District.....	$311,623	

[fol. 4314] DEFENDANTS' EXHIBIT No. 143A

Exhibit "D"

Sheet 4 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

LaFollette District

Kind of Property	Present Replacement Value 12-1-33	Description
Coal Creek-LaFollette Transmission Line	$60,113	Approx. 12 miles 66 k.v. single circuit 2/0 A.C.S.R.
LaFollette Substation	36,800	2000 k.v.a. 66/11/2.3 k.v. with switches, panels, etc., located on a lot 112 ft. x 210 ft.
Distribution systems in this list include poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	42,000	In and around LaFollette
General Property	9,500	Office building in LaFollette Furniture and Fixtures, Autos.
Total—LaFollette District	$148,413	

Sheet 5 of 7 Sheets

[fol. 4315] Westbourne District

Kind of Property	Present Replacement Value 12-1-33	Description
LaFollette-Westbourne Transmission Line	$51,392	Approx. 18 miles 66 k.v. 2/0 ACSR single circuit
Supply Lines—11 k.v.	52,220	Westbourne-Pruden—about 10.3 mi. Westbourne-Cotula— " 2.1 " Westbourne-Morley— " 2.7 "
Westbourne Primary Substation	45,600	4—667 k.v.a. 66/11/2.3 k.v. transformers with switches, regulator, panels, structures, etc.
Distribution Substation 11/2.3 k.v.	39,000	Pruden—2000 k.v.a. 33/11/2.3 k.v. Royal Blue Coal Co. 450 k.v.a. Eagan 600 " Clairfield 150 " Morley 300 " Anthras 300 "
Distribution Systems in this list include poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	2,800	Small rural service.
General Property	300	Auto
Total—Westbourne District	$191,312	

[fol. 4316] DEFENDANTS' EXHIBIT NO. 143A

Exhibit "D"

Sheet 6 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Oneida District

Kind of Property	Present Replacement Value 12-1-33	Description
Generating Plants located in leased building and land	$89,000	2—Unit 700 k.w. steam driven from two boilers 300 B.H.P. in main plant. In the auxiliary plant there is 220 k.w. Gen. capacity and 150 B.H.P.
Supply Lines—11 k.v.....	15,150	Oneida-Huntsville about 7.9 miles New River Lag " 2.4 "
Distribution Systems in this list include poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	35,300	Oneida, Huntsville, Helenwood distribution.
General Property.....	2,350	Building and interest in storage lot. Office furniture, fixtures and an auto.
Total—Oneida District.....	$141,800	

(Here follows 1 photolithograph, side folio 4317)

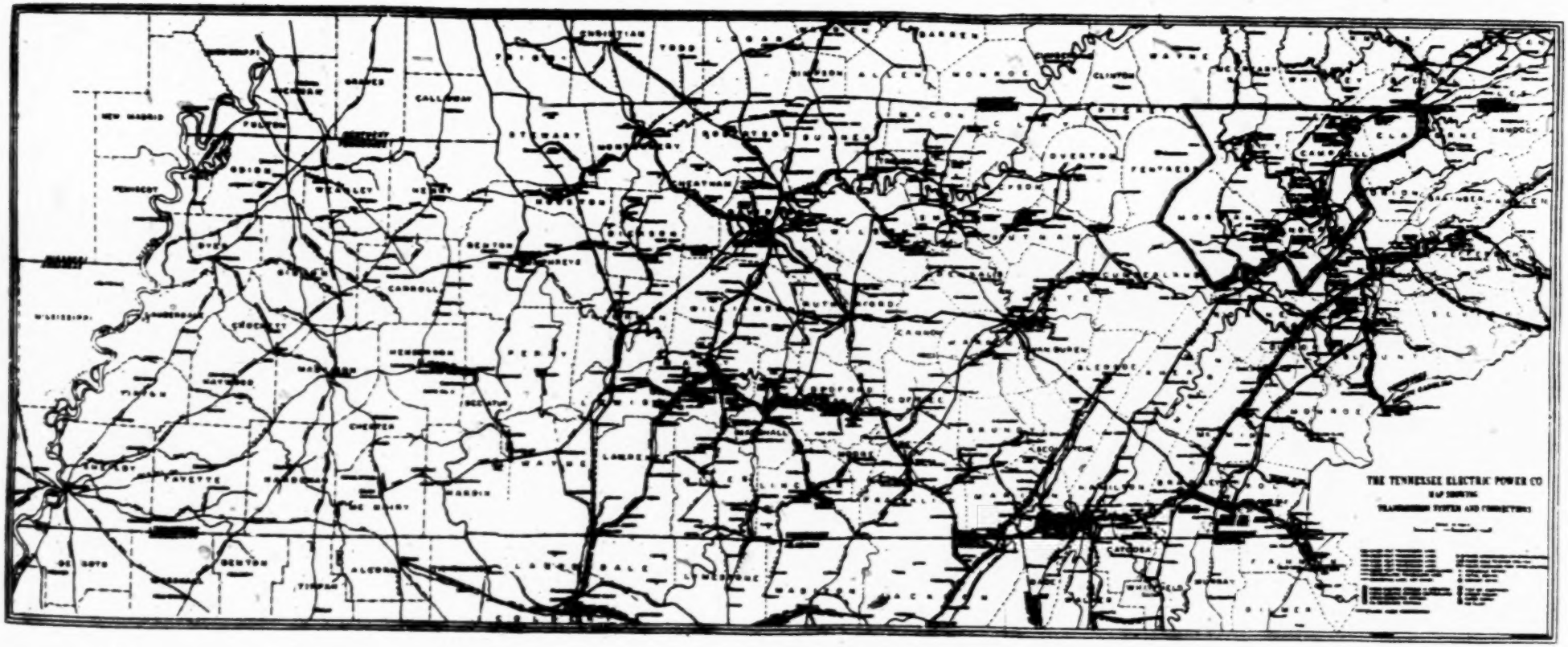
January 1954

Exhibit "D"

Area in Northern Tennessee enclosed in red comprises territory allocated to the T.V.A. by this agreement.

Sheet 7 of 7 Sheets

DEFENDANT'S EXHIBIT NO. 143-A



4317

[fol. 4318] DEFENDANTS' EXHIBIT No. 143 B

Amendatory Contract

This Amendatory Contract, made and entered into this 13th day of February, 1934, between Tennessee Valley Authority, a corporation organized and existing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called Authority, and Commonwealth & Southern Corporation, a corporation organized and existing under the laws of the State of Delaware, hereinafter called Commonwealth Company, Alabama Power Company, a corporation organized and existing under the laws of the State of Alabama, hereinafter called Alabama Company, Tennessee Electric Power Company, a corporation organized and existing under the laws of the State of Maryland, hereinafter called Tennessee Company, Georgia Power Company, a corporation organized and existing under the laws of the State of Georgia, hereinafter called Georgia Company, and Mississippi Power Company, a corporation organized and existing under the laws of the State of Maine, hereinafter called Mississippi Company, the Alabama Company, Tennessee Company, Georgia Company and Mississippi Company to be hereinafter collectively designated as Power Companies,

Witnesseth:

Whereas, the parties hereto, on January 4, 1934, entered into a contract for the purchase and sale of property, the interchange of power, and for other purposes, a copy of said contract being attached hereto and hereby made a part hereof; and

[fol. 4319] Whereas, through a misunderstanding on the part of the draftsman of said contract as to the segregation of the consideration stated for the properties in Alabama purchased and sold, Section 2 of said contract fails to carry out the true and correct intent and agreement of the parties at the time of the execution thereof; and

Whereas, none of the parties hereto has acted or changed its position in reliance upon said errors, and all of said parties are now desirous of correcting the said contract so as to make it embody the true intent and agreement which was originally intended to be expressed thereby:

Now, Therefore, in consideration of the covenants herein mutually entered into, the parties hereto covenant and agree as follows:

DEFENDANTS' EXHIBIT No. 143 B

1. Section 2 of said contract of January 4, 1934, is hereby amended to express the true meaning and intent of the parties thereto as follows:

"2. Alabama Company, covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its low tension (44 kv. or lower) transmission lines, substations (including the high tension station at Decatur and the Sheffield steam plant station) and all rural lines and rural distribution systems in the Counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan (excluding the Julaco area) north half of Franklin (including the town of Red Bay), and the territory in the northern part of Cullman served by a certain Lines of Alabama Company ex-[fol. 4320] tending south from Decatur, all in the State of Alabama, said property being more particularly described in Exhibit B, attached hereto and hereby made a part hereof. Alabama Company further agrees promptly upon the execution of this contract to convey to Authority, its nominee or nominees, all of the real property which it owns within and adjacent to the area known as the Joe Wheeler dam site in the Counties of Lawrence and Lauderdale, in the State of Alabama, said property being more particularly described in Exhibit C, attached hereto and hereby made a part hereof. Authority covenants and agrees that when it has taken all of such properties it will pay therefor an aggregate sum of One Million One Hundred Fifty Thousand ($1,150,000) Dollars. Authority agrees to pay for such properties on the respective dates of delivery thereof as follows:

(1) For the properties shown in Exhibit C, Forty Eight Thousand, Seven Hundred Forty Four ($48,744) Dollars, which is 16.857015% of the price shown for such properties in said Exhibit:

(2) For each of the properties shown in Exhibit B, 66.267509% of the respective price shown for each of such properties in said Exhibit.

2. Except as herein amended, said contract of January 4, 1934, shall be and remain in full force and effect.

3. This amendatory contract is executed in sextuplicate and shall enure to and be binding upon the successors and assigns of the respective parties hereto.

DEFENDANTS' EXHIBIT No. 143 B

[fol. 4321] In Witness Whereof the parties hereto have caused this instrument to be signed and sealed by their duly authorized officers, and attested under the hand and seal of their respective secretaries.

Commonwealth and Southern Corporation, by Wendell L. Willkie, President.

Attest: E. E. Nelson, Secretary.

Alabama Power Company, by Thos. W. Martin, President.

Attest: Walter M. Hood, Secretary.

Tennessee Electric Power Company, by J. C. Guild, Jr., President.

Attest: B. F. Manning, Secretary.

Mississippi Power Company, by B. E. Eaton, President.

Attest: L. H. Crowell, Secretary.

Georgia Power Company, by P. S. Arkwright.

Attest: W. H. Wright, Secretary.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman.

Attest: C. A. Bock, Secretary.

[fol. 4322] DEFENDANTS' EXHIBIT No. 144

Power Contract Between Tennessee Valley Authority and Lincoln County Electric Membership Corporation

This Agreement, made and entered into as of the 1st day of December, 1937, but actually executed this 11th day of December, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and Lincoln County Electric Membership Corporation (hereinafter called "Corporation"), a corporation organized, created and existing under and by virtue of the laws of the State of Tennessee.

DEFENDANTS' EXHIBIT No. 144

Witnesseth:

Whereas, Authority, by section 10 of the Tennessee Valley Authority Act of 1933, as amended, is authorized to sell surplus power generated by it and not used in its operations and is directed to give preference to states, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit; and,

Whereas, by section 11 of said act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, Corporation desires to purchase electric power from Authority to be distributed and sold by Corporation to its members, and after investigation by Authority it appears that quantities of power sufficient to meet the requirements of Corporation under the terms of this contract will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas, Corporation has been organized under the laws of the State of Tennessee for the purpose of acquiring facilities for the purchase and distribution of electric power to its members at the lowest cost consistent with sound business practice and without profit; and

Whereas, Authority has constructed certain lines for and on behalf of Corporation with the understanding that said lines would be taken over and operated by Corporation as soon as they proved suitable as an operating unit; and

Whereas, said lines were temporarily operated by Authority directly pursuant to agreement labeled "Contract for Collection of Bills and other services," dated October 1, 1935, as extended for a period of one year by supplement dated June 29, 1936, and as further extended by supplement dated June 29, 1937 until January 1, 1938; and

[fol. 4323] Whereas, Corporation has formally signified to Authority its desire to take over and operate said lines and both parties have duly authorized the execution of this agreement,

Now, Therefore, for and in consideration of the premises and of the mutual covenants herein contained (the obligations of Authority being subject to all the provisions of the Tennessee Valley Authority Act of 1933, as amended), the parties hereto mutually covenant and agree as follows:

1. Incorporation of Other Documents.—This contract is executed and shall be construed in connection with a certain "Quitclaim Deed" and "Mortgage" executed between Authority and Corporation on even date herewith, which instruments are attached hereto and hereby made a part hereof.

2. Term of Contract.—This contract shall be effective as of the date of execution hereof and shall continue in effect for twenty (20) years.

3. Power Supply.—Authority will, for the term hereof, supply electricity to Corporation for corporate purposes and for resale. Corporation agrees to purchase from Authority and Authority agrees to supply the entire electricity requirements of Corporation. Should Corporation during the period of this contract desire to increase its purchases in excess of 750 kw., Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as six (6) months after date of demand if the additional requirements are 1500 kw. or less, twelve (12) months after date of demand if the additional requirements are over 3500 kw. but not over 5000 kw., and two (2) years after date of demand if the additional requirements are in excess of 5000 kw. Such electricity shall be delivered in the form of three-phase, alternating current, at approximately 60 cycles per second and approximately 11,950 volts, or at such other voltage as the parties may from time to time agree.

4. Point of Delivery.—The energy to be supplied Corporation hereunder shall be delivered at the metering equipment situated on the low tension side of Authority's substation located on Authority's Athens-Pulaski 44,000 volt transmission line, approximately three (3) miles north of

the Alabama-Tennessee state line on U. S. Highway No. 31, or at such other point as may be mutually agreed upon.

5. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges."

(a) Wholesale Rates.—Corporation agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate."

(b) Resale Rates.—In order to assure a wide and ample distribution of electricity in the area served by Corporation, Corporation agrees to charge consumers the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the said Schedule of Rates and Charges and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or [fol. 4324] special uses of electricity may be added from time to time by agreement of the parties. The term "Contractor" in said schedule shall be construed to mean Corporation. If it should appear that the rates provided for in said resale schedule with the surcharge provided for therein do not produce revenues sufficient to operate and maintain Corporation's electric system on a self-supporting and financially sound basis, then Corporation and Authority shall agree upon, and Corporation shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis.

6. Repayment of Indebtedness.—Corporation acknowledges its long term obligation to Authority as of the date of this contract to be One Hundred Eighty-six Thousand, Four Hundred Twenty-nine Dollars and Fifty-seven Cents ($186,429.57) with interest thereon at the rate of three- and one-half per cent (3½%) per annum payable semi-annually. Said amount has been arrived at by deducting from the total cost of the properties conveyed to Corporation by the Quitclaim Deed, executed on even date herewith, being One Hundred Ninety Thousand Five Hundred Twenty-seven Dollars and Forty-two Cents ($190,527.42), the amount of amortization collections made by Authority for and on account of Corporation, pursuant to the Contract for Collection of Bills and Other Services, hereinabove mentioned,

being Six Thousand Fifteen Dollars and Forty-seven Cents ($6,015.47), and adding to the result thereof the amount of accounts receivable, being One Thousand Nine Hundred Seventeen Dollars and Sixty-two Cents ($1,917.62), for electric service to persons during the month of November, 1937, it being hereby agreed that said accounts receivable for said month shall be paid directly to and shall be the property of Corporation. It is hereby expressly recognized and agree that the figures above given are estimates only, subject to final determination, and that the long term obligation of Corporation, as given herein and in the Quitclaim Deed executed in connection herewith, is subject to appropriate adjustment, plus or minus, upon such final determination. Corporation agrees to pay to Authority on account of such long term obligation and any other indebtedness now owing to Authority or hereafter incurred, until such indebtedness shall have been totally repaid,

(a) All amortization charges collected by Corporation as provided in section 7 of this contract;

(b) The total surplus revenues as defined in section 8 of this contract.

All payments due under this agreement shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate. The amount so paid shall be credited to any outstanding accounts of Corporation in Authority's discretion. Failure to make such payments shall constitute a default under the aforesaid Mortgage, and Authority may forthwith at its option declare this contract terminated, and/or exercise all rights and powers granted Authority on the failure of Corporation to perform its obligations and promises to Authority.

[fol. 4325] 7. Amortization Charges.—Corporation agrees to collect the amortization charges provided for in the Schedule of Rates and Charges until all its long term obligations to Authority have been fully discharged. Such charges, when collected, shall be considered trust funds and shall be devoted exclusively to the payment of the obligations of Corporation to Authority.

8. Disposition of Corporation's Revenues.—Corporation, for the purpose of providing reasonable rates for electric service pursuant to this contract and to law, agrees to dispose of its gross revenues (not including amortization charges, which shall be disposed of as hereinbefore provided) in the following manner:

(a) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials, and supplies, power at wholesale and insurance;

(b) From remaining revenues Corporation shall next currently provide for the payment, at maturity, of interest on all bonds or other indebtedness applicable to Corporation's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon;

(c) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction, and for contingencies, and to provide a reasonable amount of cash working capital. As further security of Corporation's indebtness to Authority, Corporation agrees that Authority may in its discretion fix the maximum amounts for the reserves and funds herein authorized to be set up and may direct the investment or disposition of such reserves and funds.

(d) After the payment or setting up of the above amounts, all remaining revenues shall be considered surplus revenues and shall be paid over to Authority in the manner prescribed above until Corporation's indebtedness to Authority on account of property purchased from Authority shall be satisfied.

(e) After the satisfaction of the indebtedness to Authority all the surplus revenues shall serve as a basis for the reduction or elimination of amortization charges or surcharges to consumers, and thereafter for the reduction of rates.

Surplus revenues shall be computed as of June 30 of each year.

9. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled "Schedule of

Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Corporation and Authority. It is understood and agreed that the several provisions of said schedule, with such changes as may from time to time be adopted pursuant thereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

10. Rules and Regulations.—Attached hereto, and made a part hereof, is a Schedule of Rules and Regulations. Corporation hereby adopts said schedule as the rules and regulations of Corporation. The provisions of said schedule may [fol. 4326] be amended by Corporation at any time upon ten (10) days' written notice to Authority setting forth the nature of and the reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Corporation.

11. Rendition of Advisory Services by Authority.—Authority agrees upon request to render advisory services to Corporation in problems of personnel and administration and to secure the attendance of its officers at meetings of the Corporation, its Board or Executive Committee, so far as may be practicable and convenient. Corporation agrees to pay the reasonable value of such advisory services as are rendered by Authority at the request of Corporation. Corporation agrees that it will not employ or retain in its employ any person whom Authority reasonably considers unqualified for his position, or whose services Authority reasonably deems to be unnecessary.

12. Use of Corporation's Lines.—Authority shall have the right, to the extent of the transmission capacity of Corporation's lines, to the use of Corporation's poles and wires for transmission purposes; Provided, however, that Authority shall compensate Corporation for such use by such amounts as may be mutually agreed upon, or by an interchange of electricity, compensating Corporation for line losses, or both; Provided, further, that Authority shall indemnify and save Corporation harmless for any loss, dam-

age, and injury, or other casualty to persons or property caused by Authority's use of such transmission facilities.

13. Construction of Additional Facilities.—Authority will construct for Corporation such additional rural transmission and distribution lines in and adjacent to Lincoln County, Tennessee, as Authority and Corporation may from time to time agree upon and designate. Said lines will be constructed by Authority for and on behalf of Corporation as Corporation's agent. Corporation agrees to pay Authority therefor the actual cost to Authority of constructing such lines, including overheads, with interest on unpaid balances at the rate of three and one-half per cent (3½%) per annum, payable semi-annually. Such obligations shall be considered as a part of the total long term obligation of Corporation to Authority, and payment shall be secured by the Mortgage executed to Authority on even date herewith.

14. Reports to Authority.—Corporation agreees that not later than the first day of September of each year it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may reasonably request. Corporation agrees promptly to render such additional reports and information to Authority as Authority may from time to time reasonably request.

[fol. 4327] 15. Bonding of Employees. — Corporation agrees to bond in a reasonable amount all employees whose duties require or permit them to handle or dispose of money belonging to Corporation.

16. Discrimination.—Corporation agrees that the surplus power purchased hereunder shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

17. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be

considered a waiver with respect to any subsequent default or matter.

18. Rescission of Prior Agreements.—The Contract for Collection of Bills and Other Services, dated October 1, 1935, is hereby cancelled, annulled, and rescinded, without prejudice, however, to any rights or obligations of the parties hereto which may have accrued thereunder.

19. Contract Not Transferable: Neither this contract nor any interest therein shall be transferable or assignable by Corporation to any other party without the consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in duplicate by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, by (S.) John B. Blandford, Jr., General Manager. (Seal.)

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

Lincoln County Electric Membership Corporation, (S.) By D. L. Conger, President. (Seal.)

Attest: (S.) R. D. Cowley, Secretary.

The Schedule of Rates and Regulations, Schedule of Terms and Conditions and Schedule of Rules and Regulations attached to and made a part of this contract are substantially the same as said Schedules attached to and made a part of the contract between TVA and the City of Dickson, Tennessee, (Complainants' Exhibit No. 118).

[fol. 4328] DEFENDANTS' EXHIBIT No. 145

Power contract between Tennessee Valley Authority and Arkansas Power & Light Company, Dated June 16, 1937

To avoid repetition this exhibit is not set out herein at length as it appears at page 294 of Defendants' Exhibit No. 154.

Defendants' Exhibit No. 146

Amendatory Agreement Between Tennessee Valley Authority and Aluminum Company of America, Dated July 20, 1937

To avoid repetition this exhibit is not set out herein at length as it appears at page 313 of Defendants' Exhibit No. 154.

4237

Defendants' Exhibit No. 147

[fol. 4329]

Analysis of Power Disposition and Use by TVA

Part I*

Calendar Year 1933

Direct Service:	No. Ultimate Customers 12-31-33	Total of Kilowatt Hours	June	July	August	September	October	November	December
Government Res. & Uses:									
Fertilizer Works (Muscle Shoals)	1	316,241	.....	59,889	64,511	58,664	60,762	72,415	.....
Muscle Shoals Operations (Wilson Village 1-2 & 3)	..**	604,939	.....	75,195	77,168	78,100	82,795	90,337	201,344
Navigation Locks	1	62,470	.....	6,600	7,660	5,540	8,700	15,970	18,000
Wholesale Customers:									
Urban:									
Muscle Shoals City, Ala.	..**	20,300	.....	.....	.....	.....	2,500	6,900	10,900
Sub Total	..	1,003,950	.....	141,684	149,339	142,304	154,757	185,622	230,244
Sales to C. & S. Companies***	..	253,048,375	15,474,135	36,798,330	49,646,650	34,703,710	49,388,521	44,691,158	22,345,871
Grand Total	..	254,052,325	15,474,135	36,940,014	49,795,989	34,846,014	49,543,278	44,876,780	22,576,115

* Part II which follows Part I gives a description of the normal source of energy, the method of delivery and the point of delivery for each customer or group of customers.

** Record of ultimate consumers in Muscle Shoals Operations and Muscle Shoals City not available in early period.

*** Alabama Power Company in 1933—Beginning in January 1934 sales were made under contract of January 4 with C. & S. companies including the complainants Alabama Power Company, Tennessee Electric Power Company, and Mississippi Power Company, and the non-complainant Georgia Power Company.

12-22-37

[fol. 4330]

Defendants' Exhibit No. 147

Analysis of Power Disposition and Use by TVA

Sheet 2

Part I

Calendar Year 1934

Direct Service:	No. Ultimate Consumers 12-31-34	Total of Kilowatt Hours	January	February	March	April	May	June	July	August
Industrial:										
Robbins Tire & Rubber Co. (Colbert)	1	26,240								
Temporary Rural:										
Lauderdale Co., Ala.	160	10,525								
Mississippi Pr. Dist. (Blue Mt. & Myrtle)	319	134,349						14,126	14,560	19
Pontotoc E.P.A., Miss.	479	278,208						29,776	26,385	41
Prentiss Co. E.P.A., Miss.	739	610,927						62,010	66,778	89
Tishomingo Co. E.P.A., Miss.	516	353,738						32,255	46,756	49
Tombigbee E.P.A., Miss.	1,174	636,776						38,112	48,011	61
Government Res. & Uses:										
Fertilizer Works (Muscle Shoals)	1	6,429,054		18,855	69,554	59,517	67,906	93,660	93,155	90
James Bldg., Chattanooga	1	46,650								
Muscle Shoals Operations$	333	2,556,679	242,000	242,000	242,000	192,711	192,711	192,711	188,597	188
Navigation Locks	1	175,210	18,740	18,740	18,740	10,730	3,610	4,240	5,740	5
Norris Townsite, Tennessee$ $	338	1,669,374						69,400	142,178	157
Norris Dam Construction	1	9,237,922				194,400	703,687	730,235	848,000	1,212
Wheeler Village, Alabama$ $ $	45	96,951								6
Wheeler Dam Construction	1	5,803,089	52,600	129,200	235,440	360,000	386,000	407,200	448,800	558
Wholesale Customers:	**No. Ultimate Customers Served by Wholesale Purchasers**									
Urban:										
Amory, Miss.	759	349,800								
Athens, Alabama	856	1,077,200						122,400	142,800	152
Muscle Shoals City, Ala.	79	212,160	14,100	15,100	14,000	10,200	14,100	11,640	17,400	16
New Albany, Mississippi	728	159,600								
Tupelo, Mississippi	1,403	6,003,100		330,100	481,000	490,000	485,000	481,000	000,600	587
Cooperative Serving Rural:										
Alcorn Co. E.P.A., Miss.	1,696	2,134,600						268,400	294,200	318
Total	9,630	38,002,152	327,440	753,995	1,060,734	1,320,558	1,853,004	2,557,165	2,888,960	3,556
Sales to C. & S. Companies		151,832,448	18,076,956	54,438,731	4,619,944	24,361,715	40,058,330	7,834,798	1,715,909	1,222
Grand Total		189,834,600	18,494,396	55,000,726	5,680,678	25,682,273	41,911,344	10,391,963	4,604,869	4,785

$ Includes employee houses.
$ $ Includes employee houses and neighboring rural resident.
$ $ $ Employee houses.

12-22-37

Defendants' Exhibit No. 147

Analysis of Power Disposition and Use by T...

Sheet 2

Part I

Calendar Year 1934

No. Ultimate Consumers 12–31–34	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	October	November	December
1	26,240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,240
160	10,525	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,649	6,876
319	134,349	.....	.....	.....	.....	.....	14,126	14,560	19,248	18,188	21,038	22,998	24,191
479	278,208	.....	.....	.....	.....	.....	29,776	26,385	41,841	42,992	45,949	47,302	43,963
739	610,927	.....	.....	.....	.....	.....	62,010	66,778	89,104	110,080	99,581	98,673	84,701
516	353,738	.....	.....	.....	.....	.....	32,255	46,756	49,954	67,330	69,906	50,462	37,075
1,174	636,776	.....	.....	.....	.....	.....	38,112	48,011	61,331	167,193	131,750	107,284	83,095
1	6,429,054	.....	18,855	[illegible],554	59,517	67,906	93,660	93,155	90,377	95,117	261,536	2,255,723	3,323,654
1	46,650	.....	.....	.....	.....	.....	.....	.....	.....	6,750	16,110	20,280	3,510
333	2,556,679	242,000	242,000	242,000	192,711	192,711	192,711	188,597	188,145	191,217	200,602	225,370	258,615
1	175,210	18,740	18,740	18,740	10,730	3,610	4,240	5,740	5,790	8,550	10,860	24,070	45,400
338	1,669,374	.....	.....	.....	.....	.....	69,400	142,178	157,376	161,242	253,403	471,442	414,333
1	9,237,922	.....	.....	.....	194,400	703,687	730,235	848,000	1,212,800	1,280,060	1,440,000	1,683,200	1,145,600
45	96,951	.....	.....	.....	.....	.....	.....	.....	6,636	7,672	9,573	16,771	56,299
1	5,803,089	52,600	129,200	235,440	360,000	386,000	407,200	448,800	558,964	588,728	763,227	898,429	974,501
No. Ultimate Customers Served by Wholesale Purchasers													
759	349,800	.....	.....	.....	.....	.....	.....	.....	.....	81,000	87,600	87,000	94,200
856	1,077,200	.....	.....	.....	.....	.....	122,400	142,800	152,000	149,600	161,600	163,600	185,200
79	212,160	14,100	15,100	14,000	10,200	14,100	11,640	17,400	16,440	18,120	22,580	25,580	32,900
728	159,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61,200	98,400
1,403	6,003,109	.....	330,100	481,000	490,000	485,000	481,000	000,600	587,400	668,800	700,800	617,600	652,800
1,696	2,134,600	.....	.....	.....	.....	.....	268,400	294,200	318,800	322,200	322,800	294,800	313,400
9,630	38,002,152	327,440	753,995	1,060,734	1,320,558	1,853,004	2,557,165	2,888,960	3,556,206	3,984,779	4,618,915	7,175,433	7,904,953
.....	151,832,448	18,076,956	54,438,731	4,619,944	24,361,715	40,058,330	7,834,798	1,715,909	1,229,451	(−916,204)	(−434,848)	(−132,870)	980,536
.....	189,834,600	18,494,396	55,000,726	5,680,678	25,682,273	41,911,344	10,391,963	4,604,869	4,785,657	3,068,575	4,184,067	7,042,563	8,885,489

sident.

[fol. 4331]

Defendants' Exhibit No. 147

Sheet 3

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1935

Direct Service:	No. Ultimate Consumers 12-31-35	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	Oct
Industrial:												
Robbins Tire & Rubber Co	1	804,240	35,360	42,320	45,120	60,000	64,160	72,800	59,040	87,680	111,760	90
Temporary Rural:												
Colbert Co., Ala	142	147,514	.....	.....	7,479	6,029	12,126	16,287	18,380	20,209	19,033	14
Lauderdale Co., Ala	307	198,731	10,813	9,825	9,513	11,360	13,974	15,383	18,708	23,410	24,261	27
Lincoln Co., Tenn	157	5,482	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mississippi Pr. Dist	486	482,487	29,100	26,756	30,970	33,184	50,620	39,121	38,463	37,529	46,837	47
Pontotoc E.P.A., Miss	0	87,465	43,066	44,399	.....	.....	.....	.....	.....	.....	.....	.....
Prentiss Co. E.P.A., Miss	0	538,021	92,070	88,402	79,562	87,865	92,866	97,256	.....	.....	.....	.....
Tishomingo Co. E.P.A., Miss	0	383,281	38,909	39,769	36,874	41,027	45,957	57,528	68,221	54,996	.....	.....
Tombigbee E.P.A., Miss	0	1,324,866	82,160	85,258	78,093	91,718	93,958	100,294	123,518	126,864	256,764	23
Government Res. & Uses:												
Fertilizer Works (Muscle Shoals)	1	54,382,102	4,950,888	6,025,809	4,009,974	6,125,481	7,623,719	7,689,961	8,004,345	4,895,178	3,979,513	37
James Building, Chattanooga	1	188,530	15,030	12,120	11,130	17,130	17,610	18,870	19,890	20,070	16,230	1
Muscle Shoals Operations*	355	3,233,870	263,646	250,211	246,880	259,360	296,169	264,755	283,179	285,020	258,042	250
Navigation Locks	1	348,370	54,360	44,200	31,320	26,730	19,910	15,170	10,150	12,220	15,450	1
Norris Townsite, Tenn.**	478	5,329,463	758,863	597,000	456,000	380,770	236,770	263,770	263,770	257,770	251,770	38
Norris Dam Construction	1	13,715,200	1,462,400	1,363,200	1,427,200	1,456,000	729,600	1,212,800	1,350,400	1,177,600	908,800	947
Pickwick Village, Tenn.***	91	525,139	.....	.....	.....	.....	.....	.....	14,783	18,946	31,665	6
Pickwick Dam Construction	1	7,769,741	.....	.....	30,000	168,000	396,000	384,000	447,217	551,054	616,335	1,23
Wheeler Village, Ala.***	59	409,315	63,835	53,392	38,651	24,287	15,653	14,070	17,424	16,098	18,071	2
Wheeler Dam Construction	1	11,450,256	1,107,765	861,808	988,549	986,993	963,707	988,570	1,098,136	1,106,182	795,609	90
Wholesale Customers:	No. of Ultimate Customers Served by Wholesale Purchasers											
Urban:												
Amory, Miss	794	1,204,200	88,200	81,600	86,400	85,600	90,400	92,000	109,600	120,800	111,200	11
Athens, Ala	994	2,524,000	186,800	170,800	181,600	182,400	195,200	198,400	217,600	220,000	218,400	24
Muscle Shoals City, Ala	119	369,130	35,960	31,100	24,350	24,200	20,820	21,550	23,540	25,960	27,600	3
New Albany, Miss	799	1,559,000	98,400	94,800	103,200	105,600	117,600	112,800	128,400	141,600	163,200	16
Okolona, Miss	464	629,000	.....	.....	.....	.....	.....	.....	56,000	109,600	138,400	12
Pulaski, Tenn	810	1,952,400	119,900	121,900	133,600	138,700	155,100	159,500	190,600	205,200	180,000	17
Tupelo, Miss	1,711	8,492,000	764,800	611,200	569,600	576,000	604,800	572,800	686,000	815,600	805,200	89
Municipalities Also Serving Rural Customers:												
Dayton, Tenn	710	1,229,000	.....	88,800	88,000	96,800	131,200	121,600	141,600	126,400	116,000	11
Cooperatives Serving Rural:												
Alcorn Co. E.P.A , Miss	2,165	5,991,000	344,400	290,600	329,800	346,400	369,000	415,700	465,600	490,300	719,920	76
Pontotoc E.P.A., Miss	671	800,000	.....	.....	55,200	57,000	63,600	67,800	82,200	79,800	101,400	9
Prentiss Co. E.P.A., Miss	801	1,000,000	.....	.....	.....	.....	.....	45,600	144,000	149,400	189,600	167
Tishomingo Co. E.P.A., Miss	615	515,000	.....	.....	.....	.....	.....	.....	.....	80,960	122,120	112
Tombigbee E.P.A., Miss	1,714	394,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Subtotal	14,449	127,988,112	10,646,725	11,035,269	9,099,065	11,388,634	12,420,519	13,058,385	14,080,764	11,256,446	10,243,180	7,633
Sales to C. & S. Companies	.....	240,614,000	12,463	185,572	310,980	68,327	59,003	(−175,699)	54,481,745	32,897,358	32,057,417	34,628
Grand Total	.....	368,602,112	10,659,188	11,220,841	9,410,045	11,456,961	12,479,522	12,882,686	68,562,509	44,153,804	42,300,597	42,260

*Includes employee houses.
**Includes employee houses and neighboring rural residents.
***Employee houses.

12-22-37

[fol. 4331]

	June	July	August	September	October	November	December
Direc							
Industrial:							
Robbins	7,800	59,040	87,680	111,760	90,160	70,800	65,040
Temporary R							
Colbert C	287	18,380	20,209	19,033	14,781	15,318	17,782
Lauderda	383	18,708	23,410	24,261	27,209	24,065	10,210
Lincoln C	....	.....	.....	.....	.....	1,543	3,939
Mississip	121	38,463	37,529	46,837	47,824	51,782	50,301
Pontotoc	....	.....	.....	.....	.....	.....	.....
Prentiss C	256	.....	.....	.....	.....	.....	.....
Tishomin	528	68,221	54,996	.....	.....	.....	.....
Tombigb	294	123,518	126,864	256,764	235,762	50,477	.....
Government F							
Fertilizer	961	8,004,345	4,895,178	3,979,513	376,776	323,920	376,538
James Bu	870	19,890	20,070	16,230	16,170	13,290	10,980
Muscle Sl	755	283,179	285,020	258,042	250,010	265,628	310,970
Navigatio	170	10,150	12,220	15,450	18,790	42,100	57,970
Norris To	770	263,770	257,770	251,770	381,000	555,000	927,000
Norris Da	800	1,350,400	1,177,600	908,800	947,200	915,200	764,800
Pickwick	....	14,783	18,946	31,665	61,535	137,368	260,842
Pickwick	000	447,217	551,054	616,335	1,230,625	1,820,552	2,125,958
Wheeler	070	17,424	16,098	18,071	22,695	42,684	82,455
Wheeler	570	1,098,136	1,106,182	795,609	908,505	815,316	829,145
Whol							
Urban:							
Amory, M	000	109,600	120,800	111,200	111,200	108,800	118,400
Athens, A	400	217,600	220,000	218,400	245,600	240,000	267,200
Muscle Sl	550	23,540	25,960	27,600	33,000	36,600	64,500
New Alba	90	128,400	141,600	163,200	163,200	156,000	174,600
Okolona,	....	56,000	109,600	138,400	120,000	102,400	103,200
Pulaski,	500	190,600	205,200	180,000	179,939	184,000	184,000
Tupelo, M	800	686,000	815,600	805,200	892,800	796,800	796,800
Municipalities							
Dayton,	600	141,600	126,400	116,000	112,800	100,800	105,600
Cooperatives							
Alcorn C	700	465,600	490,300	719,920	766,860	714,740	738,300
Pontotoc	800	82,200	79,800	101,400	99,600	96,600	97,200
Prentiss C	600	144,000	149,400	189,600	167,400	149,400	155,400
Tishomin	....	.....	80,960	122,120	112,430	101,730	98,410
Tombigb	....	.....	.....	.....	.....	198,200	196,600
Subtotal	385	14,080,764	11,256,446	10,243,180	7,633,862	8,131,113	8,994,230
Sales to C. &	699)	54,481,745	32,897,358	32,057,417	34,626,720	33,233,382	52,857,348
Grand Total	686	68,562,509	44,153,804	42,300,597	42,260,582	41,364,495	61,851,578

*Includes e
**Includes e
***Employee

12-22-37

[fol. 4332]

Defendants' Exhibit No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1936

Sheet 4

Direct Service:	No. Ultimate Customers 12-31-36	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	
Industrial:												
Alabama Asph. Limestone (Colbert)	1	292,200	.....	.....	.....	.....	45,600	54,000	61,200	39,000	19,200	
Goodyear Decatur Mills (Ala. Pr. Dist.)	1	6,746,700	.....	.....	.....	.....	674,700	774,000	888,000	831,000	876,000	
L. & N. R. R. Co. (Ala. Pr. Dist.)	1	118,300	.....	.....	.....	.....	12,600	12,400	11,600	13,200	13,800	
Monsanto Chemical Co	1	952,500	.....	.....	.....	.....	.....	.....	.....	8,000	75,500	
Robbins Tire & Rubber Co. (Colbert)	1	1,162,160	37,600	63,840	52,800	83,840	98,800	104,000	92,560	132,000	190,480	
Rockwood Ala. Stone Co. (Ala. Pr. Dist.)	1	161,600	.....	.....	.....	.....	8,000	8,000	9,000	21,600	23,000	
Temporary Rural:												
Alabama Power Dist	373	734,722	.....	.....	.....	.....	55,172	68,947	71,903	75,574	195,438	
Colbert Co., Ala	290	316,557	20,182	19,466	14,969	12,600	28,927	33,852	25,361	25,819	43,155	
Lauderdale Co., Ala	885	763,023	22,113	22,963	19,639	22,288	23,712	61,597	74,581	75,318	140,636	
Lincoln Co., Tenn	565	267,652	8,184	9,889	11,551	16,606	18,450	22,602	26,644	26,052	28,726	
Mississippi Pr. Dist	.....	57,510	4,680	7,380	14,935	15,564	14,951	.....	.....	.....	.....	...
Duck River E.M.C., Tenn	.....	90,438	.....	.....	.....	.....	.....	.....	14,150	20,035	21,662	
Pickwick E.M.C., Tenn	.....	141,594	.....	.....	.....	.....	19,428	32,910	33,624	55,632	.....	...
Government Res. & Uses:												
Chickamauga Dam Construction	1	4,394,000	.....	.....	.....	6,000	56,000	92,000	246,000	442,000	652,000	
Fertilizer Works (Muscle Shoals)	1	66,692,000	2,712,743	6,511,990	7,560,798	7,191,607	7,215,382	7,065,755	6,745,635	6,538,020	6,564,350	1,
Guntersville Village, Ala.$$$	43	192,9[illegible]	.....	.....	.....	.....	.....	6,738	10,496	11,546	10,181	
Guntersville Dam Construction	1	5,055,2[illegible]	.....	.....	.....	30,000	322,200	299,262	283,504	420,454	541,819	
James Bldg., Chattanooga	1	134,1[illegible]	12,450	11,190	14,100	13,800	13,530	14,160	14,970	12,450	10,650	
Muscle Shoals Operations$	341	3,550,7[illegible]	329,711	345,588	317,598	280,606	276,028	268,226	279,382	280,872	275,864	
Navigation Locks	1	304,8[illegible]	56,410	26,810	55,090	25,050	9,200	10,900	7,090	8,890	10,450	
Norris Townsite, Tenn.$$	593	6,057,0[illegible]	960,000	876,000	600,000	477,000	297,000	282,060	276,000	279,000	270,000	
Norris Dam Construction	1	4,182,4[illegible]	819,200	732,800	700,800	521,600	342,400	288,000	182,400	73,600	60,800	
Pickwick Village, Tenn.$$$	119	1,712,0[illegible]	276,007	277,409	160,978	137,098	59,609	53,010	50,379	48,725	46,236	
Pickwick Dam Construction	1	17,688,7[illegible]	2,177,513	1,971,151	1,746,302	997,382	926,791	962,690	1,030,241	901,935	1,230,784	1,
Wheeler Village, Ala.$$$	54	474,7[illegible]	86,891	93,651	46,638	42,846	16,278	14,444	14,672	14,684	14,196	
Wheeler Dam Construction	1	4,602,2[illegible]	845,309	832,649	534,362	467,854	268,322	267,756	185,328	172,016	192,504	

$ Includes employee houses.
$$ Includes employee houses and neighboring rural residents.
$$$ Employee houses.

DEFENDANTS

lysis of Power

Calendar Y

June	July	August	September	October	November	December	Mont
							100,476
54,000	61,200	39,000	19,200	27,000	28,200	18,000	.....
74,000	888,000	831,000	876,000	933,000	852,000	918,000	.....
12,400	11,600	13,200	13,800	16,900	18,300	19,500	.....
.....	.....	8,000	75,500	168,000	368,500	332,500	.....
94,000	92,560	132,000	190,480	97,600	102,720	105,920	.....
8,000	9,000	21,600	23,000	20,000	16,000	56,000	.....
							42,200
							5,280
38,947	71,903	75,574	195,438	189,498	40,135	38,055	.....
33,852	25,361	25,819	43,155	32,755	36,008	23,463	753,600
31,597	74,581	75,318	140,636	138,513	91,601	70,062	
22,602	26,644	26,052	28,726	34,105	33,469	31,374	
.....	.....	.....	.....	.....	.....	.....	228,000
.....	14,150	20,035	21,662	20,933	13,658	.....	118,800
32,910	33,624	55,632	.....	.....	.....	.....	206,880
							94,600
							192,000
92,000	246,000	442,000	652,000	873,000	954,000	1,073,000	
35,755	6,745,635	6,538,020	6,564,350	1,052,803	283,231	7,249,695	
6,738	10,496	11,546	10,181	19,074	62,381	72,514	466,700
99,262	283,504	420,454	541,819	838,926	1,173,619	1,145,486	.....
14,160	14,970	12,450	10,650	7,380	4,980	4,440	.....
38,226	279,382	280,872	275,864	283,204	272,058	341,620	.....
10,900	7,090	8,890	10,450	16,000	43,900	35,100	.....
32,000	276,000	279,000	270,000	375,000	630,000	735,000	.....
38,000	182,400	73,600	60,800	124,800	134,400	201,600	2,000
33,010	50,379	48,725	46,236	107,450	236,391	258,713	.....
12,690	1,030,241	901,935	1,230,784	1,918,510	1,724,629	2,100,847	.....
14,444	14,672	14,684	14,196	22,914	46,824	60,706	85,000
37,756	185,328	172,016	192,504	231,786	321,686	282,718	147,000
							89,000
							184,000
							14,573,000
							−654,000
							13,919,000

DEFENDANTS' EXHIBIT No. 147

[fol. 4333]

Analysis of Power Disposition and Use by TVA

Part I

Calender Year 1936 (Continued)

Sheet 5

Wholesale Customers:	No. Ultimate Customers 12-31-36 Served by Wholesale Purchasers	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	O
Urban:												
Amory, Miss	854	1,523,912	112,800	105,080	106,476	107,320	116,236	132,800	146,400	145,600	135,200	
Bolivar, Tenn	300	265,500	.....	.....	.....	.....	.....	.....	15,600	45,900	46,800	
Dickson, Tenn	767	1,216,800	.....	.....	.....	.....	76,000	143,200	156,000	162,400	169,600	
Florence, Ala	2,497	4,870,202	.....	.....	.....	.....	.....	.....	458,400	857,580	828,000	
Holly Springs, Miss	575	692,400	.....	.....	.....	.....	30,400	68,800	80,400	90,400	82,400	
Jackson, Tenn	1	672,000	.....	.....	.....	.....	.....	.....	46,200	132,000	125,400	
Milan, Tenn	630	619,200	.....	.....	.....	.....	.....	.....	43,200	107,200	110,400	
Muscle Shoals City, Ala	114	500,960	80,600	76,200	42,200	37,200	27,000	27,200	27,200	27,200	24,800	
Sheffield, Ala	1	80,020	.....	.....	5,520	8,300	8,140	7,160	7,420	7,920	7,720	
Somerville, Tenn	234	220,500	.....	.....	.....	.....	.....	.....	4,500	32,700	34,200	
Tupelo, Miss	1,837	10,312,600	915,200	723,200	753,600	641,000	675,000	786,000	865,000	856,000	1,018,000	1
Municipalities Also Serving Rural Customers:												
Athens, Ala	1,436	3,153,500	245,600	229,600	228,000	221,600	225,600	220,000	242,400	251,200	257,600	
Dayton, Tenn	819	1,576,800	108,800	108,000	118,400	109,600	124,800	144,800	144,800	152,800	151,200	
New Albany, Miss	1,465	2,819,430	227,400	207,000	206,760	195,180	184,910	219,050	211,200	236,540	306,040	
Okolona, Miss	664	1,443,100	100,000	94,400	94,400	91,200	96,000	104,300	113,280	130,525	195,295	
Pulaski, Tenn	954	2,678,400	181,600	168,800	192,000	183,200	211,200	231,200	248,800	260,000	261,600	
Cooperatives Serving Rural:												
Alcorn Co. E.P.A., Miss	2,264	7,524,340	618,000	483,900	466,700	455,900	487,900	485,500	549,500	580,040	880,000	
Cullman Co. E.M.C., Ala	730	118,846	.....	.....	.....	.....	.....	.....	.....	695	15,732	
Duck River E.M.C., Tenn	382	59,450	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Gibson Co. E.M.C., Tenn	381	226,310	.....	.....	.....	.....	.....	.....	.....	7,670	50,000	
Meigs Co. E.M.C., Tenn	405	84,640	.....	.....	.....	.....	.....	.....	.....	6,440	12,080	
Middle Tenn. E.M.C.	42	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Monroe Co. E.P.A., Miss	329	413,480	.....	1,200	2,840	2,800	14,040	24,800	40,200	49,200	85,600	
North Georgia E.M.C., Ga	926	192,948	.....	.....	.....	.....	.....	.....	3,000	13,463	22,906	
Pickwick E.M.C., Tenn	641	308,000	.....	.....	.....	.....	.....	.....	.....	.....	80,900	
Pontotoc E.P.A., Miss	1,002	1,673,400	93,600	85,800	85,200	79,200	101,850	132,850	135,000	158,750	260,400	
Prentiss Co. E.P.A., Miss	922	2,244,000	157,200	148,200	147,600	156,600	156,000	175,200	193,200	211,800	241,200	
Tishomingo Co. E.P.A., Miss	682	1,384,840	101,520	90,710	89,110	89,820	260	97,520	128,120	132,750	172,920	
Tombigbee E.P.A., Miss	2,118	2,949,300	184,000	174,800	184,400	165,000	184,200	199,000	210,000	263,700	514,600	
Subtotal	27,249	176,674,004	11,495,313	14,499,666	14,573,766	12,885,661	13,610,616	13,996,629	14,704,540	15,447,895	17,598,024	13,
Sales to C. & S. Companies	.....	556,626,670	3,372,429	663,744	−654,444	207,350	475,223	51,820,211	89,627,600	84,736,309	88,520,774	66,
Grand Total	.....	733,300,674	14,867,742	15,163,410	13,919,322	13,093,011	14,085,839	65,816,843	104,332,140	100,184,204	106,118,798	80,

12-22-37

EXHIBIT No. 147

sposition and Use by TVA

Part I

937 Through October

heet 6

June	July	August	September	October	November	December	March	April
132,800	146,400	145,600	135,200	136,000	132,800	147,200		
.....	15,600	45,900	46,800	55,500	52,200	49,500	39,600	42,000
143,200	156,000	162,400	169,600	170,400	155,200	184,000	957,000	936,000
.....	458,400	857,580	828,000	906,422	844,800	975,000	18,000	17,200
68,800	80,400	90,400	82,400	94,400	116,800	128,800	78,400	120,960
.....	46,200	132,000	125,400	108,600	115,200	144,600	45,000	35,000
.....	43,200	107,200	110,400	118,400	113,600	126,400	.....	.....
27,200	27,200	27,200	24,800	30,160	47,000	54,200	.....	.....
7,160	7,420	7,920	7,720	8,120	9,780	9,940	397,500	482,000
.....	4,500	32,700	34,200	51,000	48,900	49,200		
786,000	865,000	856,000	1,018,000	1,040,000	979,600	1,060,000		
							40,591	40,830
							25,713	37,467
							58,857	72,493
							30,400	36,111
220,000	242,400	251,200	257,600	268,000	373,400	390,500		
144,800	144,800	152,800	151,200	140,000	127,200	146,400		
219,050	211,200	236,540	306,040	289,000	264,200	272,150		
104,300	113,280	130,525	195,295	160,650	126,450	136,600		
231,200	248,800	260,000	261,600	262,400	232,000	245,600	901,000	587,000
							7,782,675	7,952,97
							65,740	51,06
							1,032,260	614,93
485,500	549,500	580,040	880,000	896,600	777,200	843,100	.....	.....
.....	.....	695	15,732	29,519	36,000	36,900	96,400	85,00
.....	.....	.....	.....	.....	23,700	35,750	323,338	286,97
.....	.....	7,670	50,000	73,100	47,780	47,760	32,300	20,38
.....	.....	6,440	12,080	19,280	21,480	25,360	66,160	52,67
.....	.....	.....	.....	.....	.....	3,000	741,000	495,00
24,800	40,200	49,200	85,600	64,800	59,000	69,000	254,120	122,18
.....	3,000	13,463	22,906	37,175	50,630	65,774	1,668,678	2,119,87
.....	.....	.....	80,900	84,400	87,500	55,200	59,069	31,48
132,850	135,000	158,750	260,400	222,600	153,450	164,700	279,683	69,63
175,200	193,200	211,800	241,200	231,600	195,600	229,800		
97,520	128,120	132,750	172,920	154,560	115,580	123,970		
199,000	210,000	263,700	514,600	363,800	258,000	247,800		
996,629	14,704,540	15,447,895	17,598,024	13,565,637	13,053,740	21,242,517		
820,211	89,627,600	84,736,309	88,520,774	66,827,853	98,757,388	72,272,230		
816,843	104,332,140	100,184,204	106,118,798	80,393,490	111,811,128	93,514,747		

DEFENDANTS' EXHIBIT No. 147

[fol. 4334]

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October

Sheet 6

Direct Service:	No. Ultimate Consumers 10-31-37	Total Kilowatt Hours for 10 Months	January	February	March	April	May	June	July	August	September
Industrial:											
Alabama Asph. Limestone (Colbert)	1	310,800	1,800	12,600	39,600	42,000	48,000	51,000	52,200	7,800	5,400
Goodyear Decatur Mills (Ala. Pr. Dist.)	1	8,868,000	894,000	852,000	957,000	936,000	882,000	900,000	873,000	933,000	936,000
L. & N. Railroad (Ala. Pr. Dist.)	1	138,000	19,300	17,300	18,000	17,200	13,300	9,700	10,600	10,800	11,600
Robbins Tire & Rubber Co. (Colbert)	1	1,075,200	103,680	72,320	78,400	120,960	133,120	95,360	107,200	115,840	123,520
Rockwood Alabama Stone Co. (Ala. Pr. Dist.)	1	598,000	20,000	38,000	45,000	35,000	23,000	16,000	35,000	128,000	125,000
Wade and Richey Mining Co. (Ala. Pr. Dist.)	1	65,880	.....	.....	.....	.....	9,300	12,240	11,640	11,640	11,460
Aluminum Co. of America	1	46,051,490	.....	.....	.....	.....	.....	.....	9,629,360	14,880,000	13,632,540
Monsanto Chemical Co.	1	68,933,500	359,500	371,500	397,500	482,000	435,000	2,550,000	13,145,000	17,360,000	18,720,000
Temporary Rural:											
Alabama Power Dist.	63	489,995	33,107	34,206	40,591	40,830	47,732	50,592	50,066	59,404	118,135
Colbert Co., Ala.	534	474,140	30,352	27,738	25,713	37,467	39,197	49,359	60,020	53,184	84,650
Lauderdale Co., Ala.	1,177	1,063,567	77,932	70,268	58,857	72,493	71,395	89,299	96,293	99,148	232,500
Lincoln Co., Tenn.	702	430,198	34,169	35,656	30,400	36,111	34,861	41,294	50,711	44,539	55,774
Government Res. & Uses:											
Chickamauga Dam Construction	1	9,172,000	1,036,000	1,112,000	901,000	587,000	653,000	652,000	932,000	1,054,000	1,155,000
Fertilizer Works	1	67,879,540	7,525,780	7,796,580	7,782,675	7,952,975	8,551,585	7,560,740	8,183,233	208,609	4,627,980
Guntersville Village, Ala.***	43	369,458	58,006	73,704	65,740	51,068	23,069	13,487	14,060	14,405	16,819
Guntersville Dam Construction	1	6,574,542	565,994	1,042,296	1,032,260	614,932	396,931	298,513	465,940	605,395	709,181
Hiwassee Village, N. C.***	45	85,340	.....	.....	.....	.....	.....	2,184	7,440	10,763	20,381
Hiwassee Dam Construction	1	1,785,360	6,100	34,200	96,400	85,000	112,000	132,816	155,560	207,237	390,619
Muscle Shoals Operations*	357	2,949,362	325,972	300,664	323,338	286,978	289,312	284,280	310,529	292,718	255,286
Navigation Locks	1	188,100	37,300	34,600	32,300	20,380	11,520	7,300	6,100	8,300	3,000
Norris Dam Construction	1	558,334	243,200	87,058	66,160	52,675	37,600	34,800	2,112	2,000	2,000
Norris Townsite, Tenn.**	849	5,230,711	675,000	834,000	741,000	495,000	336,000	300,000	387,200	370,800	466,100
Pickwick Village, Tenn.***	116	1,262,735	232,520	249,812	254,120	122,185	72,306	50,744	53,135	46,854	57,224
Pickwick Dam Construction	1	16,171,668	1,972,180	2,043,728	1,668,678	2,119,875	1,680,794	1,095,256	1,067,465	1,181,546	1,780,376
Wheeler Village, Ala.***	44	344,334	56,823	61,324	59,069	31,452	20,736	15,165	11,745	21,590	22,190
Wheeler Dam Construction	1	1,199,131	328,547	362,702	279,683	69,620	84,770	52,099	7,163	3,019	3,600

* Includes employee houses.
** Includes employee houses and neighboring rural residents.
*** Employee houses.

12-22-37

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October

Sheet 6

	No. Ultimate Consumers 10-31-37	Total Kilowatt Hours 10 Months	January	February	March	April	May	June	July	August	September	October
	1	310	1,800	12,600	39,600	42,000	48,000	51,000	52,200	7,800	5,400	49,800
t)	1	8,[illegible]	894,000	852,000	957,000	936,000	882,000	900,000	873,000	933,000	936,000	705,000
Dist.)	1	[illegible]	19,300	17,300	18,000	17,200	13,300	9,700	10,600	10,800	11,600	10,200
	1	1,0[illegible]	103,680	72,320	78,400	120,960	133,120	95,360	107,200	115,840	123,520	124,800
ert)	1	[illegible]	20,000	38,000	45,000	35,000	23,000	16,000	35,000	128,000	125,000	133,000
ia. Pr. Dist.)	1	[illegible]	.....	.....	.....	.....	9,300	12,240	11,640	11,640	11,460	9,600
a. Pr. Dist.)	1	46,[illegible]	.....	.....	.....	.....	.....	.....	9,629,360	14,880,000	13,632,540	7,909,580
	1	68,[illegible]	359,500	371,500	397,500	482,000	435,000	2,550,000	13,145,000	17,360,000	18,720,000	15,113,000
	63	[illegible]	33,107	34,206	40,591	40,830	47,732	50,592	50,066	59,404	118,135	15,332
	534	[illegible]	30,352	27,738	25,713	37,467	39,197	49,359	60,020	53,184	84,650	66,460
	1,177	1,[illegible]	77,932	70,268	58,857	72,493	71,395	89,299	96,293	99,148	232,500	195,322
	702	[illegible]	34,169	35,656	30,400	36,111	34,861	41,294	50,711	44,539	55,774	68,683
	1	9,[illegible]	1,036,000	1,112,000	901,000	587,000	653,000	652,000	932,000	1,054,000	1,155,000	1,090,000
	1	67,[illegible]	7,525,780	7,796,580	7,782,675	7,952,975	8,551,585	7,560,740	8,183,233	208,600	4,627,980	7,689,201
	43	[illegible]	58,006	73,704	65,740	51,068	23,069	13,487	14,060	14,405	16,819	39,100
	1	6,[illegible]	565,994	1,042,296	1,032,260	614,932	396,931	298,513	465,940	605,395	709,181	842,900
	45	[illegible]	.....	.....	.....	.....	.....	2,184	7,440	10,763	20,381	44,572
	1	1,[illegible]	6,100	34,200	96,400	85,000	112,000	132,816	155,560	207,237	390,619	565,428
	357	2,[illegible]	325,972	300,664	323,338	286,978	289,312	284,280	310,529	292,718	255,286	280,225
	1	[illegible]	37,300	34,600	32,300	20,380	11,520	7,300	6,100	8,300	9,000	21,300
	1	[illegible]	243,200	87,058	66,160	52,675	37,600	34,800	2,112	2,000	2,000	30,729
	849	5,[illegible]	675,000	834,000	741,000	495,000	336,000	300,000	387,200	370,800	466,100	645,611
	116	1,[illegible]	232,520	249,812	254,120	122,185	72,306	50,744	53,135	46,854	57,224	123,835
	1	16,[illegible]	1,972,180	2,043,728	1,668,678	2,119,875	1,680,794	1,095,256	1,067,465	1,181,546	1,780,376	1,561,765
	44	[illegible]	56,823	61,324	59,069	31,452	20,736	15,165	11,745	21,590	22,190	44,240
	1	1,[illegible]	328,547	362,702	279,683	69,620	84,770	52,099	7,163	3,019	3,600	7,928

neighboring rural residents.

Defendants' Exhibit No. 147

Sheet 7

[fol. 4335]

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October (Continued)

Wholesale Customers:	No. Ultimate Consumers 10-31-37 Served by Wholesale Purchasers	Total Kilowatt Hours for 10 Months	January	February	March	April	May	June	July	August	Septer
Urban:											
Amory, Miss	913	1,568,800	142,400	126,400	140,000	141,600	153,600	155,200	168,000	183,200	182,4
Bolivar, Tenn	337	696,100	49,200	45,600	53,800	62,400	69,700	70,500	75,900	83,600	86,2
Dickson, Tenn	832	1,696,800	184,000	162,400	169,600	161,600	159,200	163,200	163,200	182,400	173,6
Florence, Ala	2,735	10,108,019	981,600	945,200	1,051,900	979,779	1,041,600	994,340	979,200	1,070,400	1,017,6
Holly Springs, Miss	641	1,156,200	120,000	107,200	115,200	104,800	103,200	102,400	108,000	114,400	128,0
Jackson, Tenn	1	1,299,000	127,200	96,600	112,200	124,800	145,200	135,000	148,800	97,800	143,4
Milan, Tenn	731	1,340,000	127,200	116,000	124,800	118,400	124,000	125,600	143,200	145,600	144,8
Muscle Shoals City, Ala	142	373,254	52,200	50,000	48,600	35,900	26,500	29,954	29,000	31,200	30,3
Sheffield, Ala	344	1,004,920	10,720	32,200	41,300	39,800	42,500	71,300	120,200	157,000	222,0
Somerville, Tenn	275	562,000	48,300	43,800	46,800	50,400	57,000	57,300	61,800	63,900	71,1
Tupelo, Miss	1,918	8,149,800	1,063,000	923,000	921,000	671,000	644,700	667,000	739,000	752,800	858,0
Tuscumbia, Ala	1,002	1,601,000	.....	.....	.....	171,000	199,000	216,000	228,000	244,000	290,0
Municipalities Also Serving Rural Customers:											
Athens, Ala	1,658	3,970,260	357,300	311,360	341,000	332,500	352,100	355,900	372,400	390,800	577,3
Dayton, Tenn	854	1,509,600	152,000	131,200	138,400	136,000	144,000	160,800	169,600	170,400	157,6
New Albany, Miss	1,597	2,912,520	265,500	236,270	251,070	240,380	253,920	265,190	284,400	303,890	412,1
Okolona, Miss	756	1,680,850	130,650	109,300	115,950	120,350	158,250	175,400	195,450	209,100	245,6
Pulaski, Tenn	1,046	2,695,200	240,000	215,200	243,200	244,800	276,000	282,400	296,800	304,000	285,6
Cooperatives Serving Rural:											
Alcorn Co. E.P.A., Miss	2,465	7,130,500	841,800	686,000	571,400	560,700	600,400	602,100	642,100	659,800	949,9
Cullman Co. E.M.C., Ala	1,019	490,200	39,000	33,300	40,500	41,400	46,500	49,200	54,300	56,100	62,7
Duck River E.M.C., Tenn	776	493,285	39,560	34,535	34,910	37,895	41,590	46,940	50,435	59,195	64,8
Gibson Co. E.M.C., Tenn	1,059	1,027,900	46,620	46,800	54,280	61,040	82,800	103,460	123,220	134,360	171,8
Meigs Co. E.M.C., Tenn	689	407,285	29,520	26,750	28,365	29,150	34,250	43,950	50,900	54,650	53,9
Middle Tennessee E.M.C., Tenn	712	504,600	15,600	23,100	30,600	38,700	52,800	62,400	70,800	74,700	68,7
Monroe Co. E.P.A., Miss	395	907,200	63,400	73,000	61,000	72,600	102,600	114,200	86,200	80,800	163,0
North Georgia E.M.C., Ga	1,632	994,030	70,930	70,400	81,400	88,400	101,400	104,900	114,700	122,400	115,7
Pickwick E.M.C., Tenn	763	729,700	60,300	52,700	64,400	58,400	65,200	67,500	72,800	76,600	107,3
Pontotoc E.P.A., Miss	1,085	2,069,200	154,900	132,700	147,100	147,800	157,150	173,200	189,350	204,950	400,9
Prentiss Co. E.P.A., Miss	980	2,289,000	201,000	189,600	210,000	208,800	211,800	213,600	237,000	246,000	294,6
Southwest Tennessee E.M.C., Tenn	722	380,545	.....	.....	.....	.....	.....	.....	11,890	59,400	139,1
Tishomingo Co. E.P.A., Miss	767	1,323,860	121,850	109,950	112,680	106,800	107,640	119,600	141,940	149,160	185,5
Tombigbee E.P.A., Miss	2,469	3,025,600	246,200	216,800	229,800	223,800	242,200	245,800	123,400	306,000	588,4
Joe Wheeler E.M.C., Ala	575	127,890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Subtotal	35,836	306,513,977	20,619,212	20,911,621	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,5
Sales to C. & S. Companies	.....	13,325,083	11,750,439	1,574,644	.....	.....	.....	.....	.....	.....	.....
Grand Total	.....	319,839,060	32,369,651	22,486,265	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,5

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FENDANTS' EXHIBIT No. 147

Sheet 7

of Power Disposition and Use by TVA

Part I

Year 1937 Through October (Continued)

February	March	April	May	June	July	August	September	October
126,400	140,000	141,600	153,600	155,200	168,000	183,200	182,400	176,000
45,600	53,800	62,400	69,700	70,500	75,900	83,600	86,200	99,200
162,400	169,600	161,600	159,200	163,200	163,200	182,400	173,600	177,600
945,200	1,051,900	979,779	1,041,600	994,340	979,200	1,070,400	1,017,600	1,046,400
107,200	115,200	104,800	103,200	102,400	108,000	114,400	128,000	153,000
96,600	112,200	124,800	145,200	135,000	148,800	97,800	143,400	168,000
116,000	124,800	118,400	124,000	125,600	143,200	145,600	144,800	170,400
50,000	48,600	35,900	26,500	29,954	29,000	31,200	30,300	39,600
32,200	41,300	39,800	42,500	71,300	120,200	157,000	222,000	267,900
43,800	46,800	50,400	57,000	57,300	61,800	63,900	71,100	81,600
923,000	921,000	671,000	644,700	667,000	739,000	752,800	858,000	910,300
.....	.....	171,000	199,000	216,000	228,000	244,000	290,000	253,000
311,360	341,000	332,500	352,100	355,900	372,400	390,800	577,300	579,600
131,200	138,400	136,000	144,000	160,800	169,600	170,400	157,600	149,600
236,270	251,070	240,380	253,920	265,190	284,400	303,890	412,150	399,750
109,300	115,950	120,350	158,250	175,400	195,450	209,100	245,650	220,750
215,200	243,200	244,800	276,000	282,400	296,800	304,000	285,600	307,200
686,000	571,400	560,700	600,400	602,100	642,100	659,800	949,900	1,016,300
33,300	40,500	41,400	46,500	49,200	54,300	56,100	62,700	67,200
34,535	34,910	37,895	41,590	46,940	50,435	59,195	64,805	83,420
46,800	54,280	61,040	82,800	103,460	123,220	134,360	171,880	203,640
26,750	28,365	29,150	34,250	43,950	50,900	54,650	53,950	55,800
23,100	30,600	38,700	52,800	62,400	70,800	74,700	68,700	67,200
73,000	61,000	72,600	102,600	114,200	86,200	80,800	163,000	90,400
70,400	81,400	88,400	101,400	104,900	114,700	122,400	115,700	123,800
52,700	64,400	58,400	65,200	67,500	72,800	76,600	107,300	104,500
132,700	147,100	147,800	157,150	173,200	189,350	204,950	400,950	361,100
189,600	210,000	208,800	211,800	213,600	237,000	246,000	294,600	276,600
.....	.....	.....	.....	.....	11,890	59,400	139,100	170,155
109,950	112,680	106,800	107,640	119,600	141,940	149,160	185,540	168,700
216,800	229,800	223,800	242,200	245,800	123,400	306,000	588,400	462,200
.....	.....	.....	.....	.....	.....	.....	.....	127,890
0,911,621	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,560	45,965,416
1,574,644	.....	.....	.....	.....	.....	.....	.....	.....
2,486,265	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,560	45,965,416

4244

DEFENDANTS' EXHIBIT No. 147

[fol. 4336]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1933

Sheet 8

	Source of Energy	Method of Delivery	Point of Delivery
Direct Service:			
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations		(2.3 KV via U.S.N.P. #2 Substation	(Fertilizer Works Substation
(Wilson Villages 1, 2, & 3	Wilson Dam	(2.3 & 46 KV Buses at U.S.N.P. #2 Substation	(U.S.N.P. #2 Substation
		(2.3 KV Feeder from Wilson Dam	(Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Wholesale Customers:			
Urban:			
Muscle Shoals City, Alabama	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line

12-30-37

4245

Defendants' Exhibit No. 147

[fol. 4337]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1934

Sheet 9

Direct Service:	Normal Source of Energy	Method of Delivery	Point of Delivery
Industrial:			
Robbins Tire & Rubber Co. (Colbert)	Wilson Dam	2.3 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Temporary Rural:			
Lauderdale County, Alabama	C. & S. Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Ultimate Consumer Meters
Mississippi Power District (Blue Mountain & Myrtle)	Blue Mountain & Myrtle Oil Engines*	2.3 & 13.2 KV from Oil Engine Plants**	Ultimate Consumer Meters
Pontotoc E.P.A., Mississippi	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Prentiss County E.P.A., Miss.	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Prentiss County E.P.A., Miss.	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Margerum, Ala.**	Ultimate Consumer Meters
Tishomingo County E.P.A., Miss.	C & S Interchange	2.3 & 22 KV via TVA 44 KV Line from Margerum, Ala.**	Ultimate Consumer Meters
Tombigbee E.P.A., Miss.	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals)	Wilson Dam	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertlizer Works Substation
James Building, Chattanooga	C & S Interchange	T. E.P. Co., Chattanooga System	James Building, Chattanooga
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Wilson Dam	12, 2.3 & 0.46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	C & S Interchange	A. P. Co 11 KV Feeder from East Florence Substation	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Wheeler Village, Alabama	Wilson Dam	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters
Wheeler Dam Construction	Wilson Dam	12 KV Feeder from U.S.N.P. #2 Substation	Wheeler Dam Substation
Wholesale Customers:			
Urban:			
Amory, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Amory Substation
Athens, Alabama	C & S Interchange	A. P. Co. 11 KV System	Athens Central Substation
Muscle Shoals City, Alabama	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
New Albany, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	New Albany City Substation
Tupelo, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Cooperative Serving Rural:			
Alcorn County E.P.A., Miss.	C & S Interchange	TVA 44 KV Line from Margerum, Ala.**	Corinth Substation

* Operation of oil engines until power from the hydro system was made available by means of transmission facilities.

** Property acquired from Mississippi Power Company under contract of January 4, 1934.

12-30-37

4246

Defendant' Exhibit No. 147

[fol. 4338]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1935

Sheet 10

	Normal Source of Energy	Method of Delivery	Point of Delivery
Direct Service:			
Industrial:			
Robbins Tire & Rubber Co. (Colbert)	Wilson Dam	2.3 KV Feeder then 11 KV Feeder from Fertilizer Works Sub	Substation on Customer's Property
Temporary Rural:			
Colbert County, Alabama	Wilson Dam	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Lauderdale County, Alabama	C & S Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Ultimate Consumer Meters
Lincoln County, Tennessee	C & S Interchange	11 KV via TVA 44 KV Line from near Athens, Alabama	Ultimate Consumer Meters
Mississippi Power District	Blue Mountain & Myrtle Oil Engines*	2.3 & 13.2 KV from Oil Engine Plants**	Ultimate Consumer Meters
Mississippi Power District	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Mississippi Power District	Wilson Dam	11 KV via TVA 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Pontotoc E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Prentiss County E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Prentiss County E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Margerum, Alabama**	Ultimate Consumer Meters
Tishomingo County E.P.A., Miss.	C & S Interchange	2.3 & 22 KV via TVA 44 KV Line from Margerum, Alabama**	Ultimate Consumer Meters
Tombigbee E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Tombigbee E.P.A., Mississippi	Wilson Dam	2.3 & 11 KV via TVA 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals)	Wilson Dam	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
James Building, Chattanooga	C & S Interchange	T.E.P. Co. Chattanooga System	James Building, Chattanooga
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Wilson Dam	12, 2.3 & 0.46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	C & S Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tennessee	Wilson Dam	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction	Wilson Dam	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Alabama	Wilson Dam	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters
Wheeler Dam Construction	Wilson Dam	12 KV Feeder then 44 KV Feeder from U.S.N.P. #2 Substation	Wheeler Dam Substation

* Operation of oil engines until power from the hydro system was made available by means of transmission facilities.
** Property acquired from Mississippi Power Company under contract of January 4, 1934.

4247

Defendants' Exhibit No. 147

[fol. 4339]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1935 (Continued)

Sheet 11

Wholesale Customers:	Normal Source of Energy	Method of Delivery	Point of Delivery
Urban:			
Amory, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Amory Substation
Athens, Alabama	C & S Interchange	A. P. Co. 11 KV System	Athens Central Substation
Muscle Shoals City, Alabama	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
New Albany, Mississipp	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Mississippi**	New Albany City Substation
New Albany, Mississipp	Wilson Dam	11 KV via 44 KV Line from Pickwick Dam Substation	New Albany City Substation
Okolona, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Okolona Substation
Pulaski, Tennessee	C & S Interchange	TVA 44 KV Line from near Athens, Alabama	Pulaski Substation
Tupelo, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Municipalities Serving Rural:			
Dayton, Tennessee	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
Cooperatives Serving Rural:			
Alcorn County E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Corinth Substation
Alcorn County E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Corinth Substation
Pontotoc E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Pontotoc County Lines
Pontotoc E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Pontotoc County Lines
Prentiss County E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Booneville Substation
Prentiss County E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Booneville Substation
Tishomingo County E.P.A., Miss	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Iuka Substation
Tishomingo County E.P.A., Miss	Wilson Dam	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Tombigbee E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Tupelo Substation

** Property acquired from Mississippi Power Company under contract of January 4, 1934.

12-30-37

4248

DEFENDANTS' EXHIBIT No. 147

[fol. 4340]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936

Sheet 12

	Normal Source of Energy	Method of Delivery	Point of Delivery
Direct Service:			
Industrial:			
Alabama Asph. Limestone (Colbert)	Wilson Dam*	44 KV Line from Wilson Dam#	Margerum Substation
Goodyear Decatur Mills, Ala	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	Goodyear Mills Substation
L. & N. R. R. Co., Ala	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	L & N Shops Substation
Monsanto Chemical Co	C & S Interchange	TVA 44 KV Line from Athens, Alabama	Monsanto Substation
Monsanto Chemical Co	Wilson Dam*	154 KV Line from Wheeler Dam###	Monsanto Substation
Robbins Tire & Rubber Co. (Colbert)	Wilson Dam*	11 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Rockwood Ala. Stone Co., Ala	Wilson Dam*	44 KV Line from Wilson Dam#	Rockwood Substation
Temporary Rural:			
Alabama Power District	C & S Interchange	2.3 & 1 KV via TVA 44 KV Line from Decatur Primary Sub.#	Ultimate Consumer Meters
Alabama Power District	Wilson Dam*	2.3 & 1 KV via 44 KV Line from Wilson Dam#	Ultimate Consumer Meters
Colbert County, Ala	Wilson Dam*	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Lauderdale County, Ala	C & S Interchange	A. P. Co. 11 KV Feeder from E. Florence Substation	Ultimate Consumer Meters
Lauderdale County, Ala	Wilson Dam*	11 KV via 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Lincoln County, Tenn	C & S Interchange	11 KV via TVA 44 KV Line from near Athens, Ala.	Ultimate Consumer Meters
Lincoln County, Tenn	Wilson Dam*	11 KV via 154 KV Line from Wheeler Dam###	Ultimate Consumer Meters
Mississippi Power District	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Miss.***	Ultimate Consumer Meters
Mississippi Power District	Wilson Dam*	11 KV via 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Duck River E.M.C. Tenn	Wilson Dam*	11 KV from Lincoln County	Ultimate Consumer Meters
Pickwick E.M.C. Tenn	Wilson Dam*	6.9 KV from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick E.M.C. Tenn	Wilson Dam*	Alcorn 11 KV System	Ultimate Consumer Meters
Government Res. & Uses:			
Chickamauga Dam Construction	C & S Interchange	T.E.P.Co. 44 KV System	Chickamauga Dam Substation
Fertilizer Works (Muscle Shoals)	Wilson Dam*	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Guntersville Village, Ala	C & S Interchange	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Village, Ala	Wilson Dam*	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Dam Construction	C & S Interchange	11 KV via A. P. Co. 110 KV System	Guntersville Dam Substation
Guntersville Dam Construction	Wilson Dam*	11 KV via TVA 154 KV System	Guntersville Dam Substation
James Building, Chattanooga	C & S Interchange	T.E.P. Co. Chattanooga System	James Building, Chattanooga
Navigation Locks	Wilson Dam	2.3 KV T.E.P. Co. Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	Wilson Dam*	TVA 11 KV System in Lauderdale County	Wheeler Dam Lock #3
Navigation Locks	C & S Interchange	A. P. Co. 11 KV Feeder from E. Florence Substation	Wheeler Dam Lock #3
Navigation Locks	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam Lock #3
Norris Townsite, Tenn	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tenn	Wilson Dam*	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction	Wilson Dam*	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Ala	Wilson & Wheeler Dams	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters

* Wilson-Norris Hydro System from July 28 through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.
** Property acquired from Mississippi Power Company under Contract of January 4, 1934.
*** Property acquired from Mississippi Power Company under Contract of January 4, 1934, plus TVA extensions.
# Property acquired from Alabama Power Company under Contract of January 4, 1934.
Property acquired from Alabama Power Company under Contract of January 4, 1934, plus TVA extensions.
Operated part of year at 44 KV.

4249

Defendants' Exhibit No. 147

[fol. 4341]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936 (Continued)

Sheet 13

	Normal Source of Energy	Method of Delivery	Point of Delivery
Direct Service (Continued):			
Government Res. & Uses (Continued):			
Wheeler Dam Construction	Wilson Dam*	44 KV Feeder from Wilson Dam	Wheeler Dam
Wheeler Dam Construction	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam
Muscle Shoals Operation	Wilson Dam*	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operation	Wilson Dam*	12, 2.3 & .46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operation	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Wholesale Customers:			
Urban:			
Amory, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.	Amory Substation
Amory, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Amory Substation
Bolivar, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Bolivar Substation
Dickson, Tenn	C & S Interchange	TVA 44 KV Line from near Athens, Ala.	Dickson Substation
Dickson, Tenn	Wilson Dam*	154 KV Line from Wheeler Dam###	Dickson Substation
Dickson, Tenn	Wilson Dam*	44 KV Line from Columbia Substation	Dickson Substation
Florence, Ala	C & S Interchange	A. P. Co. 11 KV. & 44 KV Systems	Florence Bridge & Florence Central Sub.
Florence, Ala	Wilson Dam*	44 KV Line from Wilson Dam	Reservation Boundary Line
Holly Springs, Miss	Wilson Dam*	11 KV via New Albany–Tupelo 44 KV Line	Holly Springs Substation
Jackson, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Jackson City Substation
Milan, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Milan Substation
Muscle Shoals City, Ala	Wilson Dam*	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
Sheffield, Ala	Wilson Dam*	2.3 KV from Fertilizer Works Substation	Nyhoff & Sheffield Substations
Somerville, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Somerville Substation
Tupelo, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.**	Tupelo Substation
Tupelo, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Tupelo Substation
Municipalities also Serving Rural:			
Athens, Ala	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation	Athens Central Substation Athens District Substation
Dayton, Tenn	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
New Albany, Miss	Wilson Dam*	11 KV via Tupelo Substation	Union County Line
New Albany, Miss	Wilson Dam*	11 KV via New Albany–Tupelo 44 KV Line	New Albany District Substation
Okolona, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.	Okolona Substation
Okolona, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Okolona Substation
Pulaski, Tenn	C & S Interchange	TVA 44 KV Line from near Athens, Ala.	Pulaski Substation
Pulaski, Tenn	Wilson Dam*	154 KV Line from Wheeler Dam###	Pulaski Substation
Pulaski, Tenn	Wilson Dam*	44 KV Line from Columbia Primary Substation	Pulaski Substation

* Wilson-Norris Hydro System from July 28 through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.

** Property acquired from Mississippi Power Company under Contract of January 4, 1934.

Operated part of year at 44 KV.

4250

Defendants' Exhibit No. 147

[fol. 4342]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936 (Continued)

Sheet 14

Wholesale Customers (Continued)	Normal Source of Energy	Method of Delivery	Point of Delivery
Cooperatives Serving Rural			
Alcorn E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Corinth Substation
Cullman Co. E.M.C., Ala.	C & S Interchange	11 KV via TVA 44 KV Line Hartselle to Decatur Primary Sub.##	Cullman–Morgan Co. Line
Duck River E.M.C., Tenn.	Wilson Dam*	11 KV Line from Lincoln County	Lincoln–Bedford Co. Line
Gibson Co. E.M.C., Tenn.	Wilson Dam*	11 KV Line from Jackson Primary Substation	Madison–Gibson County Line
Meigs Co. E.M.C., Tenn.	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Decatur, Tenn., Substation
Middle Tenn., E.M.C.	Wilson Dam*	11 KV from Columbia Primary Sub. via Duck River E.M.C.	Midland, Tenn.
Monroe Co. E.P.A., Miss.	C & S Interchnage	11 KV via TVA 44 KV Line from Okolona, Miss.	Amory Substation
Monroe Co. E.P.A., Miss.	Wilson Dam*	11 KV via 44 KV Line from Pickwick Dam Substation	Amory Substation
North Georgia E.M.C., Ga.	C & S Interchange	T.E.P. Co. 11 KV System	Ooltewah Substation
Pickwick E.M.C., Tenn.	Wilson Dam*	6.9 KV Line from Pickwick Dam Substation	Pickwick Dam Substation
Pickwick E.M.C., Tenn.	Wilson Dam*	Alcorn E.P.A. 11 KV System	Miss.–Tenn. State Line
Pontotoc E.P A., Miss.	Wilson Dam*	11 KV from Tupelo Substation via Tombigbee E.P.A.	Pontotoc County Line
Pontotoc E.P.A., Miss.	Wilson Dam*	11 KV from New Albany Substation	Pontotoc County Line
Prentiss Co. E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Booneville Substation
Tishomingo Co. E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Tupelo Substation

* Wilson-Norris Hydro System from July 28, through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.
Property acquired from Alabama Power Company under Contract of January 4, 1934, plus TVA extensions.

12-30-37

4251

DEFENDANTS' EXHIBIT No. 147

[fol. 4343

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937

Sheet 15

Direct Service:	Source of Energy	Method of Delivery	Point of Delivery
Industrial:			
Alabama Asphaltic Limestone (Colbert)	Hydro System	44 KV Line from Wilson Dam#	Margerum Substation
Goodyear Decatur Mills, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	Goodyear Mills Substation
L & N Railroad Shops, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	L & N Shops Substation
Robbins Tire & Rubber Co. (Colbert)	Hydro System	11 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Robbins Tire & Rubber Co. (Colbert)	Hydro System	11 KV from Colbert Substation	Substation on Customer's Property
Rockwood Ala. Stone Co., Alabama	Hydro System	44 KV Line from Wilson Dam#	Rockwood Substation
Wade & Richey Mining Company	Hydro System	44 KV Line from Wilson Dam#	Rockwood Substation
Aluminum Company of America	Hydro System	154 KV Line Norris Dam to Alcoa, Tennessee	Alcoa Substation
Monsanto Chemical Company	Hydro System	44 KV Lines from Columbia Primary Substation	Monsanto Substation
Temporary Rural:			
Alabama Power District	Hydro System	2.3 & 11 KV via TVA 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Alabama Power District	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Decatur Primary Sub.##	Ultimate Consumer Meters
Colbert County, Alabama	Hydro System	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Colbert County, Alabama	Hydro System	11 KV from Colbert Substation	Ultimate Consumer Meters
Lauderdale County, Alabama	Hydro System	11 KV via 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Lincoln County, Tennessee	Hydro System	11 KV via 44 KV Line from Columbia Primary Substation	Ultimate Consumer Meters
Government Res. & Uses:			
Chickamauga Dam Construction	C & S Interchange	T.E.P. Co. 44 KV System	Chickamauga Dam Substation
Chickamauga Dam Construction	Hydro System	44 KV Line from Watts Bar Substation	Chickamauga Dam Substation
Fertilizer Works (Muscle Shoals)	Hydro System	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Guntersville Village, Alabama	Hydro System	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Dam Construction	Hydro System	TVA 154 KV System	Guntersville Dam Substation
Hiwassee Village, N. C.	Aluminum Company Interchange	2.3 KV from Hiwassee Dam Substation	Ultimate Consumer Meters
Hiwassee Dam Construction	Aluminum Company Interchange	TVA 44 KV Line from Santeetlah Dam	Hiwassee Dam Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Hydro System	12 2.3 & .46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tennessee	Hydro System	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction	Hydro System	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Alabama	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Ultimate Consumer Meters
Wheeler Dam Construction	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam

Property acquired from Alabama Power Company under contract of January 4, 1934.

Property acquired from Alabama Power Company under contract of January 4, 1934, plus TVA extensions.

4252

Defendants' Exhibit No. 147

[fol. 4344]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937 (Continued)

Sheet 16

Wholesale Customers:	Source of Energy	Method of Delivery	Point of Delivery
Urban:			
Amory, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Amory Substation
Bolivar, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Bolivar Substation
Dickson, Tennessee	Hydro System	44 KV Line from Columbia Primary Substation	Dickson Substation
Florence, Alabama	Hydro System	44 KV Line from Wilson Dam	Reservation Boundary Line
Holly Springs, Mississippi	Hydro System	11 KV via New Albany–Tupelo 44 KV Line	Holly Springs Substation
Jackson, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Jackson City Substation
Milan, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Milan Substation
Muscle Shoals City, Alabama	Hydro System	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
Muscle Shoals City, Alabama	Hydro System	11 KV from Colbert Substation	Nyhoff & Sheffield Substation
Sheffield, Alabama	Hydro System	2.3 KV from Fertilizer Works Substation	Colbert Substation
Sheffield, Alabama	Hydro System	11 KV from Colbert Substation	Plant #1 Substation
Sheffield, Alabama	Hydro System	Plant #1 4.0 KV Bus via Fertilizer Works 12 KV Feeder	Somerville Substation
Somerville, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Tupelo Substation
Tupelo, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Tuscumbia Substation
Tuscumbia, Alabama	Hydro System	11 KV Line from Fertilizer Works Substation	Tuscumbia Substation
Tuscumbia, Alabama	Hydro System	11 KV from Colbert Substation	
Municipalities Also Serving Rural:			
Athens, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	Athens District Substation
Dayton, Tennessee	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
Dayton, Tennessee	Hydro System	44 KV Line from Watts Bar Substation	Dayton Substation
New Albany, Mississippi	Hydro System	11 KV via Tupelo–New Albany 44 KV Line	New Albany District Substation
Okolona, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Okolona Substation
Pulaski, Tennessee	Hydro System	44 KV Line from Columbia Primary Substation	Pulaski Substation
Cooperatives Serving Rural:			
Alcorn E.P.A., Mississippi	Wilson Dam Hydro System	44 KV Line from Pickwick Dam Substation	Corinth Substation
Cullman Co. E.M.C., Alabama	C & S Interchange	11 KV via TVA 44 KV Line Hartselle to Decatur Primary Substation##	Cullman–Morgan County Line
Duck River E.M.C., Tennessee	Hydro System	11 KV from Columbia Primary Substation	Columbia Primary Substation
Gibson Co. E.M.C., Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Madison–Gibson County Line
Meigs Co. E.M.C., Tennessee	Hydro System	11 KV Line from Watts Bar Substation	Watts Bar Substation
Middle Tennessee E.M.C.	Hydro System	11 KV from Columbia Primary Substation via Duck River EMC	Midland, Tennessee
Monroe County E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Amory Substation
North Georgia E.M.C., Georgia	Hydro System	11 KV Line from Watts Bar Substation	Friendship Substation
Pickwick E.M.C., Tennessee	Hydro System	6.9 KV Line from Pickwick Dam Substation	Pickwick Dam Substation
Pickwick E.M.C., Tennessee	Hydro System	Alcorn E.P.A. 11 KV System	Mississippi–Tennessee State Lines
Pontotoc E.P.A., Mississippi	Hydro System	11 KV from Tupelo Substation via Tombigbee E.P.A.	Pontotoc County Line
Pontotoc E.P.A., Mississippi	Hydro System	11 KV from New Albany Substation	Pontotoc County Line
Prentiss County E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Booneville Substation

Property acquired from Alabama Power Company under contract of January 4, 1934.

Property acquired from Alabama Power Company under contract of January 4, 1934, plus TVA extensions.

4253

DEFENDANTS' EXHIBIT NO. 147

[fol. 4345]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937 (Continued)

Sheet 17

	Source of Energy	Method of Delivery	Point of Delivery
Cooperatives Serving Rural (Continued):			
Southwest Tennessee E.M.C., Tennessee	Hydro System	11 KV Bus from Jackson Primary Substation	Jackson Primary Substation
Tishomingo Co. E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Tupelo Substation
Joe Wheeler E.M.C., Alabama	Hydro System	44 KV Line Wilson Dam to Moulton Substation#	Moulton District Substation
Joe Wheeler E.M.C., Alabama	C & S Interchange	44 KV Line Decatur Primary Substation to Hartselle Substation#	Hartselle District Substation

Property acquired from Alabama Power Company under contract of January 4, 1934.

12-30-37

[fol. 4346]

DEFENDANTS' EXHIBIT No. 148

Use of Norris and Wheeler Dams for Power Supplied to Commonwealth and Southern Companies

June Through December, 1936

	June	July	August	September	October	November	December	7 Month Total
1. Wilson Dam Net Generation—Kwh	69,370,305	105,371,028	82,864,379	81,574,275	76,950,317	92,928,950	79,379,495	588,438,749
Estimated Generating Ability of Wilson Dam in Accordance with Daily System Load Requirements*								
2. (a) With Norris Storage Releases—Kwh**	69,370,305	105,469,228	83,218,579	81,574,275#	79,960,917	93,124,050	88,245,295	600,952,649
3. (b) Without Norris Storage Releases—Kwh	67,809,605	103,233,128	74,787,579	64,432,875	71,827,317	89,555,850	80,587,055	552,233,409
4. Sales to C & S Companies—Kwh	51,820,214	89,627,600	84,736,309	88,520,774	66,827,853	98,757,388	72,272,230	552,562,368
Sales to C & S Companies Expressed as a Percentage of Wilson Dam Generating Ability Shown Above:								
5. (a) With Norris Storage Releases—%	74.70	84.98	101.82	108.51	83.59	106.05	81.90	91.95
6. (b) Without Norris Storage Releases—%	76.42	86.82	113.30	137.38	93.04	110.27	89.68	100.06
7. Total Hydro System Net Generation—Kwh***	69,370,305	108,518,828	105,292,539	111,779,435	84,971,877	115,708,590	97,611,355	693,252,929
Wilson Dam Generating Ability Shown Above Expressed as a Percentage of the Total Hydro System Net Generation:								
8. (a) With Norris Storage Releases—%	100.00	97.19	79.04	72.98	94.09	80.48	90.40	86.63
9. (b) Without Norris Storage Releases—%	97.75	95.13	71.03	57.64	84.53	77.40	82.56	79.66
10. Total TVA System Sales—Kwh	65,816,843	104,332,140	100,184,204	106,118,798	80,393,490	111,811,128	93,514,747	662,171,350
11. Sales to C & S Companies Expressed as a Percentage of Total TVA System Sales—%	78.73	85.91	84.58	83.42	83.13	88.33	77.28	83.45

* These figures show the generating ability of Wilson Dam in accordance with daily system load requirements by giving preference to any Wilson Dam generation that could have been utilized from spillway discharges in place of actual generation at Norris and Wheeler Dams.

** Norris storage releases are the discharges below Norris Dam less natural flow of Clinch River at the site of Norris Dam.

*** Norris Dam generation included on and after July 28, 1936 and Wheeler Dam generation included on and after November 9, 1936, the respective initial dates of operation.

\# No water was discharged through the spillway gates at Wilson Dam from August 15 through October 4, 1936.

1-1-38

[fol. 4347] DEFENDANTS' EXHIBIT No. 149

Hydro System Power Data

Calendar Years 1926 Through 1937

Calendar Year	Kwh. Available	Kwh. Generated	Kwh. Not Used	Kwh. Sold
1926	936,300,000	439,379,300	496,920,700	432,629,000
1927	763,500,000	565,609,500	197,890,500	557,025,000
1928	1,339,400,000	222,096,800	1,117,303,200	216,859,000
1929	1,349,000,000	171,681,600	1,177,318,400	165,821,000
1930	801,200,000	306,119,200	495,080,800	299,260,000
1931	836,600,000	345,603,400	490,996,600	339,424,000
1932	1,141,900,000	288,638,000	853,262,000	280,619,000
1933	1,244,946,000	287,862,300	957,083,700	280,981,538
1934	1,352,559,000	206,684,400	1,145,874,600	189,834,600
1935	1,316,980,000	394,706,000	922,274,000	368,602,808
1936	1,462,310,000	778,358,800	683,951,200	733,300,674
1937	2,269,961,000	501,788,800	1,768,172,200	442,693,018

Note: Hydro System Installed Capacity:

Year 1926 to July 28, 1936—184,000 kw. (Wilson Dam)
July 28, 1936 to September 30, 1936—234,000 kw. (50,000 kw. at Norris Dam added)
September 30, 1936 to November 9, 1936—284,000 kw. (50,000 kw. at Norris Dam added)
November 9, 1936 to April 14, 1937—316,000 kw. (32,000 kw. at Wheeler Dam added)
April 14, 1937 to date—348,000 kw. (32,000 kw. at Wheeler Dam added)

[fol. 4348] DEFENDANTS' EXHIBIT No. 150

Stipulation

It is hereby stipulated and agreed by counsel for the respective parties hereto that:

1. Continuously since the completion of Wilson Dam in September 1925, the complainant Alabama Power Company has had a 154 kv. transmission line interconnected with Wilson Dam, and since 1930 the complainant Tennessee Electric Power Company has interconnected at that point with the dam and with the Alabama Power Company by means of a 154 kv. transmission line owned and operated by the Southern Tennessee Electric Power Company.

2. Since 1925 the Mississippi Power Company has been interconnected with the system of the Alabama Power Company and has purchased substantial quantities of power from that company.

DEFENDANTS' EXHIBIT No. 150

3. From 1921 until January 4, 1934, the Alabama Power Company paid the following sums to the Government of the United States for power and use of facilities, namely:

[fol. 4349]

U. S. Nitrate Plant No. 2	Net Energy (k.w.h.)	Total Payments by Years	
1921	.....	$10,000.00	
1922	44,136,705	208,273.41	
1923	46,910,411	213,820.81	
1924	16,403,967	152,807.93	
1925	136,914,763	393,829.54	
1926	20,185,370	160,370.75	
1927	16,943,801	153,887.60	
1928	.....	120,000.00	
1929	.....	120,000.00	
1930	.....	120,000.00	
1931	.....	35,000.00	
1932	.....	18,000.00	
1933	.....	18,000.00	
Total	281,495,017	$1,723,990.04	1,723,990.04
Waco Substation			
1923		750.00	
1924		1,800.00	
1925		1,800.00	
1926		1,800.00	
1927		1,800.00	
1928		900.00	
			8,850.00
Wilson Dam			
Year	k.w.h.	Actual Payments	
1925 (4 mos.)	44,429,000	82,953.37	
1926	432,629,000	890,617.47	
1927	557,025,000	1,171,763.33	
1928	216,859,000	454,285.87	
1929	165,821,000	500,000.00	
1930	299,260,000	597,012.41	
1931	339,424,000	677,265.56	
1932	280,619,000	560,000.00	
1933	279,977,588	560,000.00	
1934 (4 days)	2,190,181	4,380.36	
Total	2,618,233,769	$5,498,278.37	5,498,278.37
Total—all payments			$7,231,118.41

[fol. 4350] 4. The only interconnections which the two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Company, had for the delivery of power to them from the Tennessee Valley Authority are the aforesaid interconnections at Wilson Dam.

5. The generating plants at Norris and Wheeler Dams were interconnected with Wilson Dam and placed in opera-

tion as parts of the Tennessee Valley Authority system on July 28, 1936, and November 9, 1936, respectively.

6. These two complainant companies were informed on or about the aforesaid dates that the generating plants at Norris and Wheeler Dams, respectively, were completed; and complainants knew that Norris Dam was in production and interconnected with Wilson Dam in October 1936, and that Wheeler Dam was in production and interconnected with Wilson Dam some time in November 1936. A true copy of letter written by John C. Weadock, General Counsel of The Commonwealth & Southern Corporation, to James Lawrence Fly, General Counsel of Tennessee Valley Authority, under October 24, 1936, is attached hereto as "Exhibit A." A true copy of a letter written by James Lawrence Fly, General Counsel of Tennessee Valley Authority, to John C. Weadock, General Counsel for The Commonwealth & Southern Corporation, under date of October 31, 1936, is attached hereto as "Exhibit B." A true copy of a letter written by Wendell L. Willkie, President of The Commonwealth & Southern Corporation, to David E. Lilienthal, Director of the Tennessee Valley Authority, under date of November 13, 1936, is attached hereto as "Exhibit C." A true copy of a letter written by James Lawrence Fly, General Counsel of the Tennessee Valley Authority, to Wendell L. Willkie, President of The Commonwealth & Southern Corporation, under date of November 17, 1936, is attached hereto as "Exhibit D."

[fol. 4351] 7. The two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Company, through their aforesaid interconnections through Wilson Dam have purchased power from the Tennessee Valley Authority in the following amounts:

Alabama Power Company	1934	110,127,068 kwh.
	1935	164,127,787 kwh.
	1936	344,308,127 kwh.
Tennessee Electric Power Company	1934	39,514,200 kwh.
	1935	76,022,503 kwh.
	1936	212,313,103 kwh.

8. These two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Com-

pany, purchased substantial amounts of power from the Authority in each of the last seven months of the year 1936 under the contract of January 4, 1934.

9. Alabama Power Company paid to the Authority a total of $479,573.67 for power purchased from the Authority prior to January 4, 1934, under a contract previously made with the War Department and not under the Tennessee Valley Authority contract. Alabama Power Company and The Tennessee Electric Power Company paid to the Authority an aggregate of $1,814,918.04 for power purchased from the Authority under the contract of January 4, 1934, for the period from January 4, 1934, to February 3, 1937. The above $479,573.67 is included in tabulation on page 2.

10. Complainant Alabama Power Company is currently purchasing power from the Tennessee Valley Authority in accordance with the closing agreement under the contract of January 4, 1934, and taking delivery from the Tennessee Valley Authority by means of its said interconnection through Wilson Dam and over the transmission lines purchased from the Alabama Power Company under the contract of January 4, 1934, to supply urban properties in the ceded area formerly supplied by the transmission lines sold [fol. 4352] to the Tennessee Valley Authority.

Baker, Hostetler, Sidlo & Patterson, Frantz, McConnell & Seymour, Trabue, Hume & Armistead, by S. D. L. Jackson, Jr., Solicitors for Complainants. John Lord O'Brian, Solicitor for Defendants.

[fol. 4353] "Exhibit A"

Copy

Weadock & Whiting, Attorneys, Twenty Pine Street, New York City

Telephone JOhn 4-5560

October 24, 1936.

John C. Weadock, Justin R. Whiting, Chas. W. Reichhard

James Lawrence Fly, Esq., General Counsel, Tennessee Valley Authority, Knoxville, Tennessee.

DEAR MR. FLY:

In our Cleveland conference you objected to including any reference to TVA letting electric energy generated at

Norris Dam flow upon the power companies transmission lines and the reference made thereto in the proposal submitted to you. I informed you of our opinion that under the contract of January 4, 1934, as amended, the power companies agreed to take power and exchange for power generated at Wilson Dam and not elsewhere and it having been intimated that in any litigation complaining of the acts of the TVA, its directors, officers and agents it may be claimed that the power companies are receiving benefit from the TVA which might estop them from complaining and I told you that because of such intimation the power companies protested against the TVA letting electric energy flow upon the power companies transmission lines and that formal notice thereof would be given.

I started to draft a formal notice and protest along the lines stated to you but it occurred to me that it will be quite enough if I confirm in writing to you that the power companies do protest and object to the TVA letting any electric energy generated at Norris Dam or any place other than Wilson Dam on to their lines and unless you advise me that this letter will not be regarded as sufficient for my purpose no further or formal notice will be given.

Your attention in this regard is particularly called to the provisions of Section 9 of the contract of January 4, 1934, which fixes the points at which the TVA is to supply power to the power companies and clearly refers to points from which power coming from Wilson Dam only could be supplied.

Mr. Wilkie tells me that the power companies will do everything possible to aid in the exploration of the feasibility of a power pool as suggested by the President at the recent White House conference. He has asked me, however, in the meantime to see that nothing is done which may estop the power companies in the present action of the Tennessee Electric Power Co. et al. v. Tennessee Valley Authority, et al. or in any other action from enforcing their rights. It had not occur-ed (sic) to us until the intimation referred to that there was any need for protesting and objecting about Norris Dam power. We would much prefer to obtain an assurance that nothing would be claimed in such litigation.

Very truly yours, (S.) Jno. C. Weadock.

DEFENDANTS' EXHIBIT No. 150

[fol. 4354] "Exhibit B"

Copy

October 31, 1936.

Judge John C. Weadock, Weadock & Whiting, 20 Pine Street, New York City.

DEAR JUDGE WEADOCK:

I have your letter of October 24 stating that the power companies in the C. & S. system protest and object to the TVA letting any electric energy generated at Norris Dam, or any place other than Wilson Dam, onto their lines. I agree with you that your letter is adequate notice of your views and that nothing will be served by giving further or formal notice.

However, as Mr. Lilienthal pointed out to Mr. Wilkie in Washington two weeks ago, and as I pointed out to you at our Cleveland meeting, the power companies have at all times been fully aware of the amount of our generation and water releases at Norris Dam, that all our power is pooled and it is impracticable to segregate Norris from Wilson power, and that the Authority could not have delivered the amounts of power the companies have been taking in the current low water period except for such releases and generation. The amount purchased by you has been a matter in your discretion.

Our contract requires the Authority to supply you with "all of its surplus hydro-electric power," and you therefore have the right to purchase as much power, from all hydro-electric sources, as we have available after satisfying the Authority's other requirements. Our Board feels that it has no alternative but to perform its obligations consistently with the agreements between the parties and the extended practice pursuant thereto.

With kind regards to you, I am

Very truly yours, James Lawrence Fly, General Solicitor.

JLF:KK

DEFENDANTS' EXHIBIT No. 150

[fol. 4355]

"Exhibit C"

Copy

The Commonwealth & Southern Corporation,
Twenty Pine Street, New York

Wendell L. Willkie, President.

November 13th, 1936.

Mr. David E. Lilienthal, Director, Tennessee Valley Authority, Knoxville, Tennessee.

MY DEAR MR. LILIENTHAL:

Under date of November 9, 1936, Mr. Fly wired me as follows:

"This will confirm our conversation of November sixth regarding the requested interchange at Arlington and the temporary outage on one of the lines of the Alabama Power Company to permit our crossing that line without undue hazard or expense (paragraph) This will confirm on behalf of myself and my associates and on behalf of the Authority the statement which I made to you that neither of these transactions will be mentioned in the course of litigation or will be relied on in any way as against the Commonwealth & Southern Corporation or any of its related companies in any case in which any such company is a party (Stop) Kindly confirm to me by wire Washington office."

To which under date of November 10, 1936 I replied by wire as follows:

"Pursuant to your application (comma) report of Mr. Longley and your engineer and Mister Fly's wire of last night to Mr. Weadock we grant you the exchange point at Arlington as described in your application and the wire crossing in Alabama (Stop) Will you kindly have your engineers get in touch with Mr. J. A. Longley Tennessee Electric Power Company and Mr. J. M. Barry Alabama Power Company to work out details of the respective matters (Stop) Letter follows."

which is hereby confirmed.

I, of course, want again to say that the granting of your request for the exchange point at Arlington and the crossing

in Alabama under the contract of January 4, 1934, is not to be construed as giving consent to your putting power generated elsewhere than at Wilson Dam as constructed and operated at the date of the said contract upon the lines of the "Power Companies," parties thereto, at any point and our protest against your so doing is hereby renewed and emphasized.

I understand you are leaving on a short vacation tomorrow and I hope you will have a good rest.

Sincerely yours, (S.) Wendell L. Willkie, President.

WLW:FAR.
gt.

[fol. 4356] "Exhibit D"

Copy

November 17, 1936.

Mr. Wendell L. Willkie, President, The Commonwealth & Southern Corporation, 20 Pine Street, New York.

DEAR MR. WILLKIE:

In Mr. Lilienthal's absence, your letter of November 13 has been drawn to my attention. I discussed the contents of your letter with Mr. Lilienthal by telephone, and he has suggested that I make this response.

We are in agreement as to the terms of the arrangement for the Arlington interchange and the crossing in Alabama, as set forth in your letter. In accordance with the agreement, we do not intend to rely upon either of these transactions as against your companies in the course of litigation as regards the transmission of power from sources other than Wilson Dam.

As to your renewal of the more general protest regarding the propriety of our putting power from the new dams onto the lines of your companies, we believe that our position is satisfactorily spelled out in my letter to Judge Weadock under date of October 31, 1936, which was in response to his letter of October 24.

Sincerely yours, James Lawrence Fly, General Solicitor.

JLF:LJ.

CC: Mr. Lilienthal
Mr. Blandford

[fol. 4357] DEFENDANTS' EXHIBIT No. 151

Storage in TVA Mainstream Projects

(In acre-feet)

Project	Total Volume in pool (at navigation level)*	Flood Storage*
Gilbertsville	1,530,000	4,600,000
Pickwick	616,000	416,000
Wheeler	680,000	440,000
Guntersville	709,000	242,000
Chickamauga	314,000	325,000
Watts Bar	795,000	337,000
Coulter Shoals	230,000	140,000
Total	4,874,000	6,500,000

* Figures taken from Defendants' Exhibits 39, 42, 43, 45, 46, 47, 48.

[fol. 4358] DEFENDANTS' EXHIBIT No. 152

Excerpts from pages 71 to 73 of House Document No. 328

42. Reduction of flood heights by storage reservoirs and surcharge pondage.—In order to determine the reduction of flood heights which may be secured by storage reservoirs and surcharge pondage, the effect which such projects would have upon flood heights on the main stream have been traced downstream from the source of the main stream to its mouth for 10-foot surcharge on Tennessee projects and for certain reservoir projects for the 1926 flood. For this purpose seven cases illustrating the effects which these projects would have had during the 1926 flood were determined as follows:

Case I. Effect of Cove Creek storage.

Case II. Effect of Tennessee River projects operated at normal pool elevation.

Case III. Effect of surcharge pondage secured by 10-foot surcharge on Tennessee River projects in addition to Cove Creek storage.

Case IV. Effect of surcharge pondage secured by 15-foot surcharge on Tennessee River projects in addition to Cove Creek.

DEFENDANTS' EXHIBIT No. 152

Case V. Effect of all storage projects of the entire system and Tennessee River projects operated at normal pool elevation.

Case VI. Effect of all storage projects of the entire system and surcharge pondage secured by 10-foot surcharge on Tennessee River projects.

Case VII. Effect of high dams at Chickamauga, Dam No. 3, and Aurora Landing, assuming reservoirs full at the beginning of flood and normal pool elevation maintained.

The methods employed and the results obtained are shown in detail in Part II, Appendix B, report on partial survey of the Tennessee River and its tributaries, printed in House Document No. 185, Seventieth Congress, first session. Tabulated effect of operations is as follows:

(Here follows one photolithograph, side folio 4359)

Defendants' Exhibit No.152

Effect on flood stages—1926 flood

Operation	Knoxville stage (feet)			London stage (feet)			Rockwood stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I							25.0	18.4	−6.6
Case II	14.8	14.8	0	20.5	21.7	+1.2	25.0	26.0	+1.0
Case III	14.8	14.8	0	20.5	17.6	−2.9	25.0	14.7	−10.3
Case IV	14.8	14.8	0	20.5	15.8	−4.7	25.0	13.1	−11.9
Case V	14.8	6.8	−8.0	20.5	10.5	−10.0	25.0	14.6	−10.4
Case VI	14.8	6.8	−8.0	20.5	5.5	−15.0	25.0	10.1	−14.9

Operation	Chattanooga stage (feet)			Florence stage (feet)			Johnsonville stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I	38.4	32.7	−5.7	26.4	24.6	−1.8	40.5	38.9	−1.6
Case II	38.4	39.2	+.8	26.4	26.8	+.4	40.5	43.5	+3.0
Case III	38.4	26.3	−12.1	26.4	20.3	−6.1	40.5	32.5	−8.0
Case IV	38.4	22.4	−16.0	26.4	17.2	−9.2	40.5	27.4	−13.1
Case V	38.4	28.0	−10.4	26.4	22.9	−3.5	40.5	42.6	+2.1
Case VI	38.4	17.6	−20.8	26.4	16.8	−9.6	40.5	27.7	−12.8
Case VII	38.4	40.1	+1.7	26.4	29.2	+2.8	40.5	60.0	+19.5

Flood storage on Tennessee River

Project	Miles above mouth	Crest elevation	Total volume in pool	1926 flood		Maximum flood		Flood storage provided by 10-foot surcharge
				Natural flood storage in channel	Natural flood storage eliminated	Natural flood storage in channel	Natural flood storage eliminated	
PROPOSED DAMS			*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*
Aurora Landing	42	352	775,000	1,525,000	700,000	2,400,000	775,000	505,000
Pickwick Landing	206	408	285,000	615,000	260,000	875,000	285,000	210,000
Dam No. 2	259	505	250,000	225,000	100,000	325,000	160,000	
Dam No. 3	275	549	285,000	605,000	235,000	940,000	250,000	215,000
Guntersville	357	589	203,000	558,000	203,000	900,000	203,000	168,000
Hales Bar	431	626	50,000	155,000	50,000	450,000	50,000	0
Chickamauga	472	676	225,000	205,000	190,000	750,000	225,000	198,000
White Creek	543	714	68,000	83,000	63,000	220,000	68,000	73,000
						105,000	35,000	35,000

Case I							25.0	18.4	−6.6
Case II	14.8	14.8	0	20.5	21.7	+1.2	25.0	26.0	+1.0
Case III	14.8	14.8	0	20.5	17.6	−2.9	25.0	14.7	−10.3
Case IV	14.8	14.8	0	20.5	15.8	−4.7	25.0	13.1	−11.9
Case V	14.8	6.8	−8.0	20.5	10.5	−10.0	25.0	14.6	−10.4
Case VI	14.8	6.8	−8.0	20.5	5.5	−15.0	25.0	10.1	−14.9

Operation	Chattanooga stage (feet)			Florence stage (feet)			Johnsonville stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I	38.4	32.7	−5.7	26.4	24.6	−1.8	40.5	38.9	−1.6
Case II	38.4	39.2	+.8	26.4	26.8	+.4	40.5	43.5	+3.0
Case III	38.4	26.3	−12.1	26.4	20.3	−6.1	40.5	32.5	−8.0
Case IV	38.4	22.4	−16.0	26.4	17.2	−9.2	40.5	27.4	−13.1
Case V	38.4	28.0	−10.4	26.4	22.9	−3.5	40.5	42.6	+2.1
Case VI	38.4	17.6	−20.8	26.4	16.8	−9.6	40.5	27.7	−12.8
Case VII	38.4	40.1	+1.7	26.4	29.2	+2.8	40.5	60.0	+19.5

Flood storage on Tennessee River

Project	Miles above mouth	Crest elevation	Total volume in pool	1926 flood		Maximum flood		Flood storage provided by 10-foot surcharge
				Natural flood storage in channel	Natural flood storage eliminated	Natural flood storage in channel	Natural flood storage eliminated	
PROPOSED DAMS			*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*	*D. s. f.*
Aurora Landing	42	352	775,000	1,525,000	700,000	2,400,000	775,000	505,000
Parkwick Landing	206	408	285,000	815,000	260,000	875,000	285,000	210,000
Dam No. 2	259	505	250,000	225,000	100,000	325,000	160,000	.....
Dam No. 3	275	549	285,000	605,000	235,000	940,000	250,000	215,000
Guntersville	357	589	203,000	558,000	203,000	900,000	203,000	168,000
Hales Bar	431	626	50,000	155,000	50,000	450,000	50,000	0
Chickamauga	472	676	225,000	205,000	190,000	750,000	225,000	198,000
White Creek	543	714	68,000	83,000	63,000	220,000	68,000	73,000
Marble Bluff	577	747	35,000	40,000	32,000	195,000	35,000	35,000
Coulter Shoals	608	802	95,000	55,000	50,000	245,000	95,000	50,000
Total	.....	.....	2,271,000	4,066,000	1,883,000	7,300,000	2,140,000	1,454,000
HIGH DAMS								
Aurora Landing	42	408	6,927,000	2,140,000	2,000,000	3,275,000	2,690,000	.....
Dam No. 2	259	505	250,000	225,000	80,000	325,000	100,000	.....
Dam No. 3	275	605	3,795,000	1,163,000	1,060,000	1,840,000	1,327,000	.....
Hales Bar	431	626	50,000	155,000	50,000	450,000	50,000	.....
Chickamauga	472	714	1,547,000	288,000	273,000	970,000	792,000	.....
Marble Bluff	577	757	70,000	40,000	40,000	195,000	70,000	.....
Coulter Shoals	608	812	145,000	55,000	55,000	245,000	140,000	.....
Total	.....	.....	12,784,000	4,066,000	3,578,000	7,300,000	5,169,000	.....

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DEFENDANTS' EXHIBIT No. 152

[fol. 4360] 43. Reduction of flood heights by storage reservoirs only.—The results which may be secured by the use of storage reservoirs only are well illustrated by Case I for Cove Creek alone, and Case V for all storage reservoirs of the system. The effect in reducing the height of floods is greatest immediately below the storage reservoirs. This effect decreases in proportion to the distance (uncontrolled drainage area) below the reservoirs. For Case I, Cove Creek alone, the reduction in flood height for the 1926 flood at Rockwood is 6.6 feet, while at Johnsonville it is 1.6 feet. For Case V, all storage projects and projects on the main stream maintained at normal pool elevation, the reduction in flood heights at Chattanooga is 10.4 feet, while at Johnsonville the gage height is increased over that of the natural flood height by 2.1 feet, due to the effect of projects on the Tennessee River when maintained at normal pool elevation. Without surcharge on projects on the main stream all reservoirs of the entire system could not reduce the height of floods on the lower river.

44. Reduction of flood heights by surcharge pondage.—The results which may be secured by the use of surcharge pondage are well illustrated by Cases III, IV, and VI. For Case III, Cove Creek and 10-foot surcharge pondage on the Tennessee River projects, the reduction in flood heights at Chattanooga is 12 feet and at Johnsonville, 8 feet. For Case VI, all storage projects and only 10-foot surcharge pondage on Tennessee River projects, the reduction in flood heights at Chattanooga is 20.8 feet and at Johnsonville 12.8 feet. The effect of surcharge pondage is, therefore, to eliminate an increase in heights of floods by projects along the main stream and in conjunction with the storage held out by storage reservoirs to reduce the height of floods and transmit this reduction to the lower river.

[fol. 4361] DEFENDANTS' EXHIBIT No. 153

Report of Subcommittee of the Committee on Appropriations on the Independent Offices Appropriation Bill for 1938.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 154

Annual Report of the Tennessee Valley Authority for the Fiscal Year ending June 30, 1937.

(Original Exhibit)

[fol. 4362] DEFENDANTS' EXHIBIT No. 155

Resolution of Board of Directors of TVA, Adopted December 20, 1937

Whereas, The Assistant Chief Engineer has recommended that the Authority exercise certain options to purchase the site of the proposed Gilbertsville Dam, camp, and access road, and reservoir land adjacent thereto, involving an estimated expenditure of Seven Hundred and Fifty Thousand Dollars ($750,000.00), and

Whereas, Authorization to exercise these options is presently necessary inasmuch as several of them expire on December 31, 1937, and the others shortly thereafter, and

Whereas, After investigating and studying the Gilbertsville Project, the Assistant Chief Engineer and the several consulting engineers have recommended a definite location for the site, which is shown on a map filed with the records of the Authority as Exhibit 12-20-37b, and

Whereas, They have also recommended a maximum pool level of not less than elevation 375, therefore

Be it Resolved, That the recommendations fixing a site and establishing a maximum pool level are hereby approved.

Further Resolved, That the recommendation establishing a taking line as shown on the map (Exhibit 12-20-37b), and based upon a maximum pool level at elevation 375, is hereby adopted as a basis for the acquisition of land.

Further Resolved, That upon receipt of approval from the Head of the Maps and Surveys Division, the Director of the Land Acquisition Department is hereby authorized and directed to exercise the Authority's options to purchase the above described land.

Further Resolved, That upon receipt of approval from the Head of the Maps and Surveys Division, the Director of the Land Acquisition Department is hereby authorized and directed to renew, as the date of expiration is reached, such

options as are now held covering the lands lying within the brown line, so that further consideration may be given to these lands.

Further Resolved, That the options to purchase those lands enclosed within the green lines on the map (Exhibit 12-20-37b) shall be allowed to expire.

[fol. 4363] DEFENDANTS' EXHIBIT No. 156

Resolution of Board of Directors of TVA, Adopted December 20, 1937

Resolved, That the proposed letter by the General Manager to Mr. Clifton A. Woodrum, Chairman of the Subcommittee on Independent Offices Appropriations of the House Committee on Appropriations, with reference to development of plans for the Gilbertsville Dam is approved, and the General Manager is authorized and directed to transmit the said letter in the following form:

The Honorable Clifton A. Woodrum, Chairman, Subcommittee on Independent Officers Appropriations of the House Committee on Appropriations, Washington, D. C.

DEAR MR. WOODRUM:

The Board of Directors of the Tennessee Valley Authority today took action with reference to a more definite determination of plans for the Gilbertsville Dam which, while not materially affecting the budget estimates submitted to your subcommittee, is of such a character that we think the matter should be brought to your attention and the record made clear.

The committee was advised at the hearing on December 13, 1937, that the plans for the Gilbertsville Dam were still in a tentative stage and therefore precise final figures could not be given. However, the printed budget justification which had been submitted to the committee prior to the hearings did set out on page 10 detailed estimates on the Gilbertsville project. These figures were compiled from the best preliminary data available to budget officers of the Authority when the table on page 10 was prepared and

printed in September. At that time, and for months prior thereto, the Authority's engineers, along with a group of consultants, had been making intensive investigations and studies of the projects and were arriving at conclusions differing in some respects from those upon which the budget officers' data were based, particularly in the matter of maximum pool level. While the Authority makes every effort to keep the Appropriations Committee informed of the latest data on its projects, it will be appreciated that plans are constantly evolving and that it is frequently impossible to revise all figures on a project to reflect the detailed changes which our engineers are continuously considering.

Very recently the Authority's engineers and the consulting engineers reached a final conclusion that the maximum pool level for the dam should be set at not less than elevation 375, and they have made recommendations [fol. 4364] accordingly. This figure was five feet higher than the tentative maximum pool level which had been used in prior computations. The reason for the increase was the judgment of the engineers that increased flood storage was highly desirable at the project and economically justified. The change in maximum pool level means that there will be approximately 4,600,000 acre feet of controlled flood storage at Gilbertsville instead of 3,700,000 acre feet, the amount obtained with a maximum pool level at elevation 370, and shown in the table appearing in the budget justification on page 10.

As certain options which the Authority had previously secured for land in this reservoir will expire on December 31, 1937, and as the conclusions of the engineers have matured sufficiently to warrant definite action, the Board today approved their recommendations, authorized the fixing of the taking line as required by a maximum pool level at elevation not less than 375, and provided for the taking up of options accordingly. We attach a copy of the Board resolution.

In order to advise the committee of the latest information available on our projects, we suggest that the tables already submitted to you be revised in line with the latest action, even though there will be no change in the estimated total cost of the project, and no effect on the budget requests.

DEFENDANTS' EXHIBIT No. 156

The change in pool level will somewhat increase the actual cost of the project over a project with maximum pool level at 370. However, as the entire project has been in a tentative planning stage, it was necessary that the estimates of total cost already submitted be only preliminary, and that they should provide a margin for the contingency that in the process of evolution plans might be somewhat changed. Our engineers are satisfied that the overall cost of the project will be well within the figure of approximately $100,000,000 testified to by Mr. Bock at the hearings, and we think the figure of $95,000,000 given on the table, page 10, in our budget estimate can fairly stand as the present estimate for the project.

We should like to state that it is especially important that the record be clarified in view of the fact that the figures which we supplied to the committee in the budget justification have been secured and used by our opponents in the pending litigation in Chattanooga to show a discrepancy between our budget figures and the most recent conclusions of our engineers.

Very truly yours, John B. Blandford, Jr., General Manager.

[fol. 4265] DEFENDANTS' EXHIBIT No. 157

Resolution of Board of Directors of TVA, Adopted February 20, 1936

Resolved, That pending further determinations of policy by the Board, any authority heretofore granted to exercise or execute the option of January 4, 1934, to acquire the electrical properties of the Tennessee Electric Power Company in the Norris Dam area, is hereby revoked.

Further Resolved, That pending further action of the Board, no officer or representative of the Authority is authorized to bind the Authority with reference to the exercise of said option.

Further Resolved, That any offers or tenders heretofore made with respect to said property are hereby withdrawn and revoked.

[fol. 4366] DEFENDANTS' EXHIBIT No. 158

Resolution of Board of Directors of TVA, Adopted January 25, 1935

Whereas, the Authority, by a certain Agreement between it and the Alabama Power Company, dated August 9, 1934, was granted an option by said Alabama Power Company to purchase, for the sum of $1,000,000, certain urban distribution systems in Northern Alabama, more fully described in said Agreement, by which said Agreement the term of said option was to expire on November 12, 1934, and

Whereas, Section 1 of said Agreement, dated August 9, 1934, provided further that the date of delivery of a notice of election by the Authority to exercise the said option granted thereunder should constitute "the purchase date" within the meaning of said contract, which said purchase date was fixed as August 10, 1934, by the delivery by the Authority, on said date, of a notice of election to exercise said option, and

Whereas, Section 3 of said Agreement, dated August 9, 1934, provided that in the event that releases from the liens of the Indentures of Mortgage of said Alabama Power Company, covering said distribution systems, should not be ready and available for delivery within sixty days from the aforesaid purchase date, or from the date of the approval by the Alabama Public Service Commission of said Company's petition for approval of the said sale and conveyance of said distribution systems (whichever was of later date), then the Authority should be under no further obligation to purchase said property, notwithstanding its prior election to purchase the same, and Whereas, more than sixty days have elapsed from said purchase date and from the date of the approval, given on November 24, 1934, by the Alabama Public Service Commission, of the said sale and conveyance to the Authority of said distribution systems by the Alabama Power Company, and

Whereas, heretofore the Authority has made a proper tender to the Alabama Power Company of the consideration called for by said Agreement of August 9, 1934, and has made a proper demand for the conveyance of said properties in accordance with the terms of said Agreement of August 9, 1934, and has at all times been ready, willing, and able to consummate said transaction, and

DEFENDANTS' EXHIBIT No. 158

Whereas, as of the date hereof, the Authority is ready, willing, and able to consummate said transaction by the purchase of said urban distribution systems, and said Alabama Power Company has refused and now refuses to make said conveyance and has failed and refused to obtain said releases, as required by Section 3 of said Agreement, and [fol. 4367] Whereas, said releases required by said Section 3 of said Agreement, dated August 9, 1934, as of the date hereof, are not ready and available for delivery;

Now, Therefore, in consideration of the premises it is:

Resolved, that by reason of the aforesaid failure and refusal of the Alabama Power Company to have ready and available for delivery said releases required by said Agreement, dated August 9, 1934, or to make said conveyance conformably to the provisions of said Agreement, the Authority hereby withdraws from said Agreement of August 9, 1934, and said contract be, and it is hereby, cancelled, annulled and rescinded, and

Resolved, that Charles R. Hoffman, Assistant Secretary of the Corporation, be, and he is hereby, authorized and directed, upon behalf of the Authority, to notify said Alabama Power Company of the determination of the Authority to withdraw from said Agreement of August 9, 1934, and of the cancellation, annulment and rescission, by the Authority, of said Agreement.

[fol. 4368] APPENDIX "A"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 105, being "House Document 328, 71st Congress, 2nd Session," Entitled "Tennessee River and Tributaries, North Carolina, Tennessee, Alabama, and Kentucky"

Page 10

5. At the present time there are 69 terminals on the Tennessee River. The navigation equipment in service on the river consists of 61 towing vessels and 183 barges which are owned by 39 operators. The commerce for 1926 was 1,982,252 tons. The average haul was 15.6 miles, making a total

ton-mileage of 39,020,096. Of this total 48 per cent was forest products, 23 per cent iron and steel, 15 per cent sand and gravel, 7 per cent farm products, and 7 per cent miscellaneous freight. Due to the fact that the river has not been adequately improved for navigation the commerce is small compared with the potential traffic which might use a satisfactory waterway. An appreciable amount of traffic has developed between the mouth and Florence. Above Florence it is impracticable to use boats and tows of large capacity such as are necessary for the economic transportation of heavy freight, and navigation is suspended during the low-water season. The estimated cost of transporting the 1926 traffic by water is $842,777 while the estimated cost of transporting the same by rail is $2,720,481, giving a total annual saving of $1,877,704. Traffic on the tributaries is of insignificant amount except for a considerable movement of sand and gravel on the lower 4 miles of the French Broad River.

Page 11

11. The district engineer considers that it will be possible to provide for 9-foot navigation on the main stream from its mouth to its source, 652 miles, by means of a series of navigation, power and flood control developments that are economically sound. * * *

Pages 12-13

13. Improvement of the main river solely by regulation of flow by means of reservoirs would not be satisfactory, because sufficient navigable depths can not be so secured. It is possible to provide a 9-foot waterway by means of low-lift dams, but such a waterway would be inferior to the high-dam developments and would not permit the economical development of power. * * *

[fol. 4369]

Pages 16-17

23. Flood Control.—The greater part of the flood damages caused to local communities and to railroads and highways occurs on the main stream and on the lower part of the tributaries which are overflowed by backwater from the main stream. It is estimated that the large flood of 1926 caused damages amounting to approximately $2,650,000. In

a supplementary report the district engineer states that in his opinion it is quite possible that floods larger than any previously recorded may some day occur. He estimates that a flood of the magnitude which might be expected on the average once in 500 years would do damage amounting to $14,350,000 and that the average annual damage from floods may be taken as $1,780,000 if due weight is given to the probability of future floods greater than those previously recorded. On the tributaries large floods may occur at any time while on the main stream all major floods of record have occurred during the period of December to April.

Page 17

25. The amount of flood control that can be secured by this project has been determined by a detailed study of the flow that occurred during the December, 1926, flood. The results shown in the following table are obtained by using storage as explained in each case.

Case I. Effect of Cove Creek storage with existing conditions on the main stream and other tributaries.

Case II. Effect of proposed Tennessee River projects operated without surcharge with existing conditions on the tributaries.

Case III. Effect of Tennessee River projects operated with 10-foot surcharge in combination with Cove Creek storage.

* * * * * * *

Condition	Gage height of 1926 flood in feet	
	Knoxville	Chattanooga
Actual	14.8	38.4
Case I	14.8	32.7
Case II	14.8	39.2
Case III	14.8	26.3

Pages 19-20

33. As required by law the report of the district engineer sets up a comprehensive plan for the ultimate utilization of the water resources of the Tennessee River for navigation in connection with power development and the con-

trol of floods. This ultimate plan includes the construction [fol. 4370] of about 200 dams and about 150 power houses, resulting in the canalization of about 1,900 miles of waterway and the production of about 3,000,000 kilowatts of continuous power. The estimated cost of the entire project is in excess of $1,200,000,000. Such a project could be executed only by progressive steps and large portions can not be commenced until many years have elapsed. During this period the development of the art of engineering and changes in economic conditions will indicate the modifications which are necessary in the general layout of those portions of the plan and in the design of the structures. For this reason it would be unwise to adopt or even approve the entire plan at the present time. Considerable portions of the plan lie outside of the present limits of Federal jurisdiction. However, this thorough plan will be a valuable general guide for progressive development of the resources of the Tennessee Basin, and the large amount of engineering data contained in the report and its appendices should be made available for the use of interested parties. The board concurs in the recommendations of the district and division engineers that the report and its appendices be printed.

Page 21

* * * It is evident that the full utilization of the resources of this river for the public benefit requires its improvement by means of high dams built for the joint development of power and navigation.

Page 64

* * * The series of low dams for navigation only provide no flood control.

Pages 496-7

5. The studies indicate that of the total of 27,584,000 tons moving to, from, and across the basin in 1926, approximately 9,559,000 tons could have been more economically transported by water than by rail, resulting in an annual saving of approximately $12,231,000, if the main stream were developed from Paducah to Knoxville. The foregoing figures are based on 1926 traffic. Due to increase in traffic in the United States and in the Southeast, the foregoing

figures would be doubled by the time the waterway is completed (assumed to be 1940). If the main stream were developed only to Chattanooga instead of to Knoxville, only 3,982,000 tons of the 9,558,000 indicated by the studies would be economical and the savings resulting therefrom would be only $5,111,000 of the $12,231,000.

6. While the studies indicate that approximately 9,000,000 tons may be moved economically by water with an annual saving of $12,000,000, it does not seem reasonable to assume [fol. 4371] that all of this freight would take advantage of the waterway. From a knowledge of the manner in which the estimates were made and a study of the various items concerned, it is estimated that 60 per cent of the total is a conservative estimate of that which would use the waterway. According to this estimate, the amount of 1926 rail traffic which would have utilized the waterway had it been constructed is approximately 5,700,000 tons and an annual saving in transportation of approximately $7,300,000. This, added to the tranportation at present utilizing the waterway, amounts to 7,682,000 tons per annum and an annual saving of $9,800,000.

7. The rate of increase in traffic in the United States and the southeastern territory for the 10 years preceding 1926 was approximately 231 per cent of that of 1926. Considering this rate of increase in commerce, it is estimated that by 1950 the commerce which would utilize the waterway if constructed from Paducah to Knoxville is approximately 17,800,000 tons with an annual saving of approximately $22,800,000. For a development of the waterway from Paducah to Chattanooga only the corresponding estimates for commerce which would use the waterway by 1950 are 7,400,000 tons with a saving in transportation of $9,600,000 per annum. The foregoing does not take into consideration the increase in commerce due to industrial development in the basin which is bound to take place when the water power indicated by the survey is developed. It is, however, ample to justify the construction of the combined navigation, water power, flood-control project, or for the project for navigation only in case the water-power project be not promptly developed.

[fol. 4372] APPENDIX "B"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 107, Being Part 1 of the "Annual Report of the Chief of Engineers of the U. S. Army, 1936"

P. 1035

Under the provisions of the Tennessee Valley Authority Act of 1933, as amended by an act approved August 31, 1935, the Tennessee Valley Authority is given power to construct such dams in the Tennessee River as will provide a 9-foot channel and maintain a water supply for same, from Knoxville to its mouth. This agency has under construction at the present time four high navigation power dams as follows: Pickwick Landing (mile 206.7), General Joe Wheeler (mile 274.9), Guntersville (mile 349.0), and Chickamauga (mile 471.0).

[fol. 4373] APPENDIX "C"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 108, Being "Hearing before the Subcommittee of House Committee on Appropriations, 73rd Congress, 1st Session."

P. 23-25

Dr. Morgan: * * * That dam will have one immediate result and another long-time result. Do you want me to go into it fully?

The Chairman: Yes; you may proceed.

Dr. Morgan: At the present time, the Muscle Shoals power is not sold, and we will have to build a market for it. Flood control down the Tennessee River is another item, and, also, navigation. My idea in respect to building this dam is to build it at once, and use it primarily for flood control. Then, when the market for power expands, we would begin to use it for that purpose as well as for flood control. Then, by and by, we would build another dam, say, half for flood control and half for power. Now, the power largely affects flood control all the way down the Tennessee River.

The Chairman: That is by reason of creating reservoirs to hold the water?

Dr. Morgan: Yes. Then as a flood-control measure it will begin to return its value immediately.

The Chairman: How many acre-feet of reservoir does this dam create?

Dr. Morgan: I cannot tell you, because the surveys are not completed. I would rather not put in the record a guess that would be bad. It is a very large reservoir. I can tell you, for instance, that at Chattanooga the dam will lower high water 9-½ feet. That is at a point 150 miles below the dam. Further on down it would lower the water very substantially, all the way down to the Ohio River.

The Chairman: Have you any data available by which you could tell us about how many acre-feet storage there would be?

Dr. Morgan: Yes, sir.

The Chairman: When you get your testimony, you may supply that information for the record.

Dr. Morgan: I will do so.

NOTE.—The estimated storage capacity above the dam is about 3,000,000 acre-feet.

Mr. Bolton: Will your plan conform to the general plans developed by the Chief of Engineers covering flood control, [fol. 4374] navigation, etc., in the Tennessee River?

Dr. Morgan: Yes, sir.

Mr. Bolton: Covering navigation and flood control.

Dr. Morgan: Yes, sir; all together.

Mr. Bolton: Do these plans conform to the studies that were made by the engineers 3 or 4 years ago?

Dr. Morgan: That study was a preliminary study, and the engineers have been modifying it. Therefore there must be some modification of it.

Mr. Bolton: I am referring to the studies and plans that cost the Government about $1,000,000 to make. That was done by the engineers 2 or 3 years ago.

Dr. Morgan: That was a study that covered a very large area, and when we come to actually apply it in detail, we find that it must have some modifications. Some of those plans already have been modified by the Army engineers in construction work already begun under their direction, such large scale plans must necessarily be tentative.

Mr. Bolton: That study covered the Tennessee Valley.

Dr. Morgan: It covered navigation and flood control.

Mr. Bolton: And power, also.

Dr. Morgan: Yes, sir.

Mr. Oliver: You contemplate building a dam at Cove Creek that will serve not only navigation and flood control purposes, but will increase the power at Muscle Shoals and at all intermediate dams between Cove Creek and Muscle Shoals, do you not?

Dr. Morgan: Yes, sir.

Mr. Oliver: And at other dams that may be built hereafter?

Dr. Morgan: Yes, sir. The justification for building it right now is the value we derive from it for flood control. Then, by and by, as the power demand creeps up, we may build another dam. That will afford us a better degree of flood control.

P. 26

Mr. Bolton: I want to make sure that your plans for this development are in general conformity with the plans and studies developed by the engineers for flood control, navigation, and so forth, in the Tennessee River.

Dr. Morgan: They conform to the general policy, but the details are changing.

[fol. 4375] Mr. Bolton: I mean the plans developed by the engineers for the Tennessee River, providing 9-foot navigation, so as to conform to the general governing inland waterway development all over the country.

Dr. Morgan: Yes, sir.

[fol. 4376] APPENDIX "D"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 109, Being "Extract from Hearings before the Subcommittee of House Committee on Appropriations, 73rd Congress, 2nd Session."

P. 162

Dr. Morgan: You are speaking of the Tennessee Valley Authority as being primarily a power development. That is not true. You are assuming that the Tennessee Valley Authority is a power development project.

The Chairman: Not altogether; no. Your dams are primarily necessary for flood prevention. That is another object of it.

Pp. 179-80

Mr. Bacon: Could you give us, for the record, not now, necessarily, what you consider will be the future development of navigation on this river?

Dr. Morgan: I can only give you an estimate; it will only be an estimate.

. . . . . .

Mr. Bacon: You anticipate some real navigation on this river?

Dr. Morgan: Yes.

Mr. Bacon: And can you give some kind of an estimate of what you think it will be?

Dr. Morgan: As well as anybody can.

Mr. Bacon: I wish you would put in the record.

Dr. Morgan: All right.

[The table referred to is as follows:]

The Army engineers propose to provide for 9-foot navigation on the main stream from the Ohio River to Knoxville and to ultimately provide 9- and 6-foot navigation on the principal tributaries. Estimates of possible tonnage with such system of waterways are given in table E, plate 66 of House Document No. 328.

The following table is condensed from plate 66, and gives the estimated possible tonnage for 1950 for the main river and the principal tributaries:

River	Possible tonnage (1950)
Tennessee	13,098,900
Clinch	2,680,000
Powell	2,420,500
Holston	4,018,500
South Fork Holston	28,200
Watauga	28,200
North Fork Holston	235,000
French Broad	470,000

APPENDIX "D"

River	Possible tonnage (1950)
Nolichucky	188,000
Hiwassee	1,175,000
[fol. 4377] Little River	37,600
Little Tennessee	188,000
Sequatchie	235,000
Elk	37,600
Bear Creek—Macky's Creek	3,525,000
Duck	940,000
Total, main river and tributaries	29,304,500

Information on the present status of navigation is given on page 31 of House Document 328. Appendix C, part I, page 205, House Document 328, is a detailed discussion of navigation and contains tables on commercial statistics of water-borne commerce for Tennessee and several tributaries for the years 1920 to 1927. These tables show that the tonnage for the year 1927 on the various rivers was as follows:

River	Tonnage
Tennessee	2,291,519
Clinch	7,380
French Broad	121,373
Hiwassee	860
Holston	945
Little Tennessee	375
Duck	2,150
Buffalo	51,718

The figures given for the tributaries in table E are very optimistic.

* * * * * * *

Mr. Bacon: Also, on flood control, could you put in the record the information on floods on the Tennessee River in the past?

Dr. Morgan: Yes.

Mr. Bacon: Those facts must be available. * * * Those will be generally greater than the estimate made by the Army.

APPENDIX "D"

P. 181

The estimated damages for the Army's 500-year flood are also given, but in this figure the Authority does not concur for the reasons previously stated in this memorandum.

P. 184

Mr. Taber: How much do you estimate will be the cost of the Norris Dam?

Dr. Morgan: Thirty-four millions.

Mr. Taber: And in that there is nothing in the nature of navigation?

Dr. Morgan: Except that that will raise the water level on the lower river as much as possibly a 20 million dollar expenditure on the lower river itself.

Mr. Bolton: Do you know how much tonnage is expected on the river?

. . . . . .

[fol. 4378]

P. 184

Mr. Taber: The Hiwassee Dam is next; how much do you estimate on that?

Dr. Morgan: Our estimate is 13 millions. There is a question as to the site. We have not established which site we will use.

Mr. Taber: There is nothing in the nature of navigation there.

Dr. Morgan: Except there is hardly anything you can do for navigation better than to even up the flow above; by letting out stored water and at low water.

P. 185

Mr. Taber: How high is Pickwick Landing Dam?

Dr. Morgan: It is about 50 feet.

P. 186

Mr. Taber: Is this a storage proposition?

Dr. Morgan: That is a run of the river plant; in that, more than in any other, navigation is the important item. The rapids below Muscle Shoals will be flooded by that dam and made navigable.

[fol. 4379] APPENDIX "E".

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 112, Being "Extract from Hearings before the Subcommittee on Appropriations, United States Senate, 73rd Congress, 2nd Session".

P. 272

Dr. Morgan: The people of the community establish the cooperatives and we contract with that cooperative. The cooperative is a local organization, organized in that community, and we are making a contract with that cooperative that under these conditions we will furnish power, just as we are making contracts with municipalities that we will furnish the power.

[fol. 4380] APPENDIX "F"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 114, being "Hearing before the Subcommittee of the House Committee on Appropriations, 74th Congress, 1st Session".

Pp. 468-9

Dr. Arthur E. Morgan: The selling of those bonds would imply that this entire program is a self-liquidating program. Part of it is; part of it is not. Part of it is a flood-control program. For instance, in the building of the Norris Dam, if we were building it for navigation and power alone, it would be built to a certain height. By adding about one-third to the cost of that, we added great elements of flood control, and such flood control is definitely an additional cost. It meant a that much bigger dam, that much more flowage to purchase, and so forth.

This is only incidentally a power development. It is primarily a navigation development and a flood-control development. Neither navigation nor flood control is self-liquidating in the usual sense.

Damages as Result of Tennessee River Floods

Mr. Thurston: What is there along that river to flood, Dr. Morgan?

Dr. Arthur E. Morgan: Our work has a very definite effect on the Mississippi River and the Ohio below. The damages will run about $2,000,000 a year on the Tennessee itself, from floods.

Mr. Thurston: Damages to what?

Dr. Arthur E. Morgan: To property. The biggest damage is in the city of Chattanooga, where the damages will run something between a half million dollars and a million dollars each year on the average.

Mr. Thurston: Each year they come down and erect buildings in this area that they know the high water will damage the following year?

Dr. Arthur E. Morgan: No; a substantial part of the city is subject to floods.

Mr. Thurston: But you say that the damage is about a million dollars each year.

Dr. Arthur E. Morgan: That does not mean that they have put up new buildings. Take the railway terminals, for instance. They cannot put those where they please. They have to put them where the lay of the land requires, with factory buildings, and so forth. About the only places to build for many of those facilities are places that are subject to flood. That is the case in many other cities. In Cincinnati, for instance, if they should eliminate all building below the flood level they would have a serious situation.

Mr. Thurston: But they do constantly come down and put buildings on this area that are washed away by floods?

Dr. Arthur E. Morgan: No; not washed away. It is very much damaged. I should say that is even more true of railroad facilities, they do not rebuild the tracks every year, but there is damage done, and they come back and rehabilitate the damage.

[fol. 4381] Mr. Thurston: So they have damage of about a million dollars each year in the city of Chattanooga?

Dr. Arthur E. Morgan: There is a listing of those damages in the Army Engineers' Report 309, published, I think, in 1929.

Mr. Thurston: One would think that some of these people that have these losses each year would move up to higher ground so they would not be subject to that damage each year.

Dr. Arthur E. Morgan: It is not always feasible. There are a good many cities in which that is true. Take the railroads, for instance. Railroad lines follow the topography of the country. A railroad cannot climb up over hills or very steep grades. You find a good many towns in America where the change is not feasible, that is, to get out of the reach of floods entirely.

Mr. Bacon: So that to prevent floods in Chattanooga you would need dams above Chattanooga. That is where the Norris Dam comes in; is that correct?

Dr. Arthur E. Morgan: That is correct.

(Here follow three photolithographs, side folios 4382-4384)

General summary analysis of estimates

Programs and projects	Actual fiscal year 1934	Allotment, fiscal year 1935	Estimate, fiscal year 1936	Remarks
I. Navigation an flood control program:				
A. Norris Dam and Reservoir	96, 713, 785	$18, 847, 040	$10, 661, 426	Total estimated cost $36,222,246
B. Wheeler Dam and Reservoir	2, 181, 221	15, 972, 449	8, 690, 022	Total estimated cost $26,843,782.
C. Pickwick Landing Dam and Reservoir	.....	2, 880, 343	10, 618, 000	Total estimated cost $24,364,499.
D Tributary dam projects	.....	280, 666	6, 400, 000	
E. Main river dam projects	.....	69, 940	3, 370, 000	
F. General investigations of water resources	95, 320	299, 655	280, 000	
Total, water control program	8, 990, 309	38, 330, 223	40, 046, 530	
II. Electricity program:				
A. Electricity operations (wholesale)	¹ 548, 657	¹ 136, 023	¹ 713, 000	
B. Temporary retail operations	¹ 2, 770	¹ 27, 849	¹ 20, 000	
C. Electric plant and equipment	1, 874, 319	6, 568, 724	5, 505, 000	
Total, electricity program	1, 322, 892	6, 404, 582	4, 772, 000	
III. National defense program:				
A. Muscle Shoals general properties	513, 588	920, 325	280, 000	
B. Fertilizer projects	560, 512	2, 064, 455	2, 225, 000	
Total, national defense program	1, 074, 100	2, 983, 780	2, 578, 000	
IV. Related regional development program:				
A. Agriculture, watershed protection	24, 346	402, 701	2, 892, 000	
B. Industrial research and surveys	40, 201	558, 245	875, 000	
C. Forestry, watershed protection	105, 644	307, 058	526, 000	
D. Land planning	28, 922	231, 943	230, 000	
E. Social and economic	157, 116	431, 526	800, 000	
F. General mapping	¹ 70, 067	969, 520	410, 000	
Total, regional development program	555, 286	2, 900, 992	5, 432, 000	
V. Other undistributed expenditures:				
A. General equipment	414, 425	291, 682	100, 000	
B. Administration and service expense (undistributed)	128, 336	¹ 1, 325	.....	
Total, other undistributed expenditures	543, 761	290, 357	100, 000	
Grand total, all programs	12, 486, 348	51, 909, 314	52, 929, 530	

¹ Revenue, credit.

Revision of general summary analysis

[This tabulation is a revision of the general summary analysis of Budget estimates of the Tennessee Valley Authority for 1936, presented to the House Appropriations Committee at hearings on May 28, 1935. The changes, with the exception of the rearrangements, which are explained in the footnote (1), are made pursuant to a request from the committee. Some items are decreased and others increased from the amounts recommended by the Authority at the hearings]

Programs and projects	Actual, fiscal year 1934	Allotment, fiscal year 1935	Estimate, fiscal year 1936	Remarks
I. Navigation and flood-control program:				
A. Norris Dam and Reservoir	$6,713,708	$18,847,049	$10,661,428	Total estimated cost $26,222,246.
B. Wheeler Dam and Reservoir	2,181,221	15,972,449	8,690,092	Total estimated cost $26,843,762.
C. Pickwick Landing Dam and Reservoir		2,889,882	10,615,089	Total estimated cost $26,264,499.
D. Tributary dam projects (Hiwassee Dam)		260,668	6,280,000	Reduced $280,000 from T. V. A. proposed budget. Total estimated cost $12,000,000.
E. Main river dam projects (Guntersville and Chickamauga Dams)		62,840	5,000,000	Increased $1,700,000 from T. V. A. proposed budget, in order to provide funds for beginning second downriver dam (Chickamauga) if construction is found technically feasible.
F. General investigations of water resources	96,230	299,655	280,000	
Total, navigation and flood-control program	8,990,209	38,332,223	41,496,529	
II. Electricity program:				
A. Electricity operations (wholesale)	[1] 548,057	[1] 136,028	[1] 713,000	
B. Temporary retail operations	[1] 2,770	[1] 27,849	[1] 20,000	
C. Electric plant and equipment	1,874,319	6,568,734	5,044,000	
Total, electricity program	1,322,093	6,494,843	4,313,000	
III. National defense and fertilizer program:				
A. Muscle Shoals general properties	513,988	929,225	280,000	
B. Fertilizer projects—nitrate plant no. 2	500,512	2,064,455	3,593,000	See footnote 1
C. Fertilizer demonstrations—Valley States		206,407	702,000	Do.
Total national defense program	1,074,100	4,200,187	4,525,000	

See footnotes at end of table.

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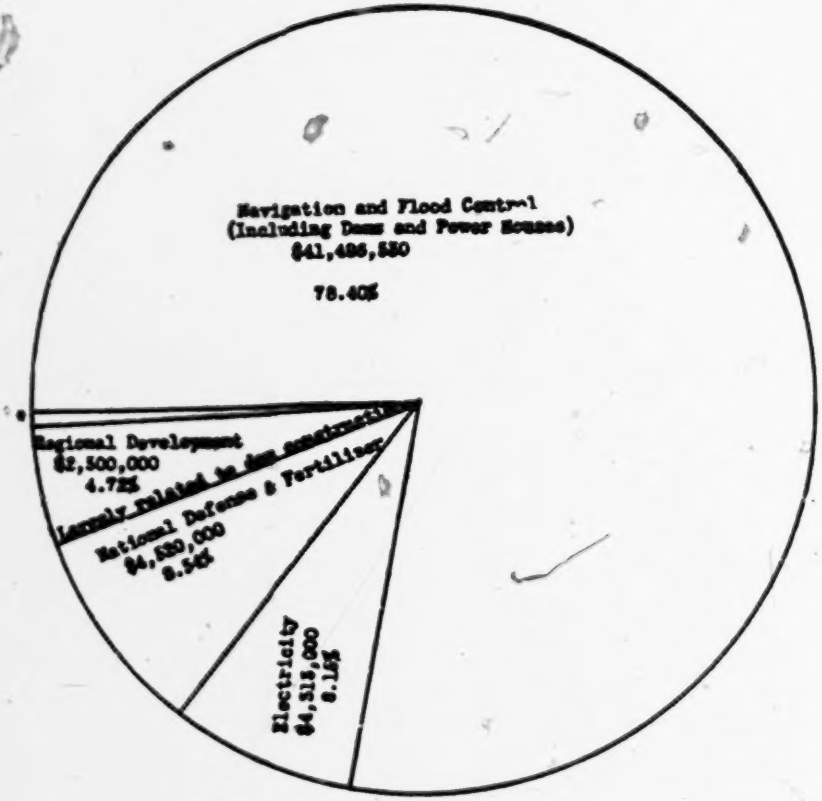

*Undistributed Expenditures - $100,000 - .19%.

Appendix "F"

[fol. 4385] Pp. 480-1

The Chairman: Now, reverting back to your summary statement, we have the item of general investigations of water resources. You spent $95,320 in 1934; you spent $299,655 in 1935; and you expect to spend $280,000 in 1936?

Dr. Arthur E. Morgan: Yes, sir.

Borings for the Aurora Dam

The Chairman: Just what is that project?

Dr. Arthur E. Morgan: That is working out the engineering problems in connection with dam construction. One of the large items there, which we have not isolated because it is so difficult to tell in advance, is the borings for the Aurora Dam or for some other dam near the mouth of the Tennessee River. We are exploring the possibilities.

The Chairman: The possibilities of what?

Dr. Arthur E. Morgan: Of foundation.

The Chairman: Then this exploration is for the purpose of finding a dam site, with suitable foundation, suitable banks, and so forth, to construct a dam at or near Aurora Landing; is that it?

Dr. Arthur E. Morgan: That is part of it. Another part is the silt investigations. We are carrying on investigations of the rate at which these reservoirs will silt up, and how to handle that. Then there is stream flow.

Stream Flow Investigations

The Chairman: You ought to have had that for years now.

Dr. Arthur E. Morgan: The trouble is that the records are inadequate. We could work with very much greater surety if they had actually been better developed.

[fol. 4386] The Chairman: The Geological Survey has been taking stream flow, has it not?

Dr. Arthur E. Morgan: But very inadequately. The records there are very inadequate for planning purposes. We have put in 114 gaging stations on the various tributaries, so that we can get those records.

The Chairman: It will take several years to get accurate records, will it not?

Dr. Arthur E. Morgan: Every year adds to what we have, especially as to low flows.

The Chairman: Stream flow depends on the rainfall, and the rainfall may be several inches deeper in one year than in another.

Dr. Arthur E. Morgan: Yes; and our rainfall records are inadequate. In the operation of these dams we must know how much to hold back in our various reservoir dams, and when to let it out, and when we need to hold it. The effective operation of those dams depends upon a knowledge of rainfall and run-off which will take years to develop fully.

The Chairman: Well, are we going to maintain a complete set of rainfall gages and river gages for the operation of this Tennessee River system, and not depend on the Weather Bureau at all?

Dr. Arthur E. Morgan: We are not doing that. We are cooperating with both the Weather Bureau and the Geological Survey. They are keeping up their own records, and where we need additional ones to get effective knowledge, we are adding them; but the records are turned over to them and are published by them. We are not setting up any additional facilities except where it is necessary to fill in the records, and there we are turning them over to the Geological Survey and the Weather Bureau for their use. We are working in very close cooperation with them.

Pp. 482-3

The Chairman: This is what is in my mind. You have started three dams, have you not?

Dr. Arthur E. Morgan: Yes.

The Chairman: That is all, is it?

Dr. Arthur E. Morgan: Yes.

The Chairman: The Norris Dam, the Wheeler Dam, and the Pickwick Landing Dam; that is all you have stated?

Dr. Arthur E. Morgan: Yes.

The Chairman: Have you any reason to believe that regulation by those three dams will not prevent overflows?

Dr. Arthur E. Morgan: Yes.

The Chairman: You do not think they will?

Dr. Arthur E. Morgan: They will not completely, no. They will go a long way toward preventing overflow.

The Chairman: You think they will prevent all except very high overflows?

Dr. Arthur E. Morgan: No; they will do about between a half and a third of the job on the Tennessee River. They will add substantially to the value of flood control on the Ohio and the Mississippi River also. But they will not completely prevent floods on the Tennessee. That is only one of their purposes.

[fol. 4387] P. 485

Mr. Bacon: How many dams in all will be necessary to complete the 9-foot channel, in which I presume will go to Knoxville?

Dr. Arthur E. Morgan: To Knoxville.

Mr. Bacon: How many additional dams will be necessary for a 9-foot channel?

Dr. Arthur E. Morgan: Three to a point just above Chattanooga.

Mr. Bacon: Three in addition to the four now built or building?

Dr. Arthur E. Morgan. Yes.

P. 495

Dr. Arthur E. Morgan: Yes; it is this: That the Congress established the policy of creating a 9-foot channel in the Tennessee River to Knoxville by means of low navigation dams. It was acknowledged on all sides that high dams were better than low dams and the specific statement is made that if a private organization, or a State or a municipality—if any other agency shall build high dams—then the cost of building low dams shall be contributed to them by the United States.

Mr. Bacon: As a practical matter, no municipality or private concern is going to build on the Tennessee River, because you would not let them.

Dr. Arthur E. Morgan: This law was passed before the Tennessee Valley Authority Act.

The Chairman: All of that is conditioned upon the high dam being constructed so that it would aid navigation?

Dr. Arthur E. Morgan: Yes. As the Army Engineers testified in this other hearing, and as is generally recognized, high dams are very much more economical. But for navigation— for instance, as an illustration, the Wilson Dam takes the place of about seven low dams. The two combined locks, the tandem lock at Wilson Dam, is very much cheaper to operate than it would be to operate seven low dams with a few miles between each one.

The low dams leave a navigation channel which is very narrow, where it is canalized. The high dam leaves a full width of the river in which to travel.

There is no comparison whatever as to the relative values of the two dams.

The Chairman: The high dam backs up water which it can release for purposes of navigation into the lower parts of the river below.

Dr. Arthur E. Morgan: Yes.

The Chairman: That is very plain.

Pp. 518-19

The Chairman: You have an item of $40,000 for "transportation investigations (economics)". You state that these are studies of transportation problems. Does not that look far-fetched in connection with this valley?

Dr. Arthur E. Morgan: No, sir; not in that valley. That region is in a fairly impossible condition from the transportation standpoint.

We are developing a navigation system on the Tennesseee River, and one of our primary considerations is where are the terminals going to be.

The Chairman: Where the towns are located, at suitable points.

[fol. 4388] Dr. Arthur E. Morgan: That may not follow. The set-up of transportation for that region for the future, as far as we can see, will be this: There will be river terminals where they will gather up all these materials from the region around for 50 or 75 miles, and they will be brought in by truck or boat. The highway system has not been developed.

Mr. Thurston: Do they not have State highways systems?

Dr. Arthur E. Morgan: We are working with them. We are cooperating with them.

Mr. Thurston: Is it not primarily the duty of the State of Tennessee to provide roads within the State?

Dr. Arthur E. Morgan: We are not providing roads. Through Alabama and Tennessee, we are working in cooperation with the States themselves. We are trying to coordinate the railroad facilities with the highway facilities and navigation facilities, so as to work out an economic program. That is all we are trying to do.

Pp. 523-4

The Chairman: You refer to four dams—the Wilson Dam, the Norris Dam, the Wheeler Dam, and the Pickwick Dam. Do you believe that these dams will produce all the power you will need to meet the demand for power?

Dr. Arthur E. Morgan: Our studies indicate that by the time the dams are built there will be a shortage of power of more than what they can produce. The studies of the Federal Power Commission and our own studies are together on that.

The Chairman: Then you think the Hiwassee project is of next importance. You think it is important to complete the project from every standpoint; flood control, production of power, and navigation?

Dr. Arthur E. Morgan: As I say, this estimate does not include power installation. We would not install the power facilities until we find that we need it.

The Chairman: I understand that. But you think it is necessary for the other two elements?

Dr. Arthur E. Morgan: Yes.

P. 535

Mr. Lilienthal: * * * About 98 per cent of the rural area in that section, which is a prosperous section in the valley, does not have any electric service at the moment; and in addition to that a group of some seven or eight municipalities in west Tennessee, in this same group of counties, has petitioned for a source of power. They are now supplying their own needs through expensive steam stations, many of them obsolete, and fuel stations.

The Chairman: How much is that line estimated to cost?

Mr. Lilienthal: That totals $1,650,000. That will provide an outlet and an additional source of revenue for power.

The survey of that project is still incomplete, but it appears to be a very likely and appropriate thing to do from a business point of view, without in any way taking away existing business of any private company.

The Chairman: That is $2,700,000 and $3,495,000.

[fol. 4389] P. 538

Mr. Lilienthal: This is new construction, in 8 counties in Mississippi, 6 counties in Alabama, and 5 counties in Tennessee.

The Chairman: You mean the new construction of lines?

Mr. Lilienthal: The construction of farm lines to farms not now served; yes, sir.

P. 540

Mr. Thurston: Section 23 (3), it seems to me, is very interesting.

The maximum generation of electric power consistent with flood control and navigation.

Where do you get additional authority to make power that you expect to sell generally? Under what section is that?

Dr. Arthur E. Morgan: The maximum control of electric power consistent with flood control and navigation is this: Whenever you build a dam, you inevitably develop hydraulic power. You lift that water up so that it has got to fall. Now, if we could get into a position where the further navigation and flood control could be carried by this method, and if the Government has no burden of carrying navigation and flood control currently, year to year, all that is good.

Now, when we are building a dam, we essentially create hydraulic power. The question then is, shall we waste that or shall we develop whatever is consistent with navigation and flood control?

Mr. Thurston: It seems to me, though, that you are going to generate so much more power than you can use in your own enterprises that, of course, you will have an excess to sell or go to waste.

Dr. Arthur E. Morgan: We are only changing its nature from hydraulic power to electric power. That power is

developed when we build the dam. Now, whether we use that power or waste it is another matter. It is just a question of whether we use it or waste it. If we build these dams, that power is going to be there. Are we going to use it or waste it? That is the only question.

The Chairman: In other words, the development of hydroelectric power, under this act, extends only to flood prevention and navigation?

Dr. Arthur E. Morgan: Yes, sir; and you cannot build these dams without developing hydraulic power. The dam makes that head of water. Now the question is, are we going to waste it or are we going to use it?

Pp. 616-17

Dr. Arthur E. Morgan: I should say, as to the Norris Dam, that the power is only one item there. It happens that power and navigation pretty well coincide. When the rivers are low, you need it for navigation, and you are liable to need it for power at the same time; but the navigation has the right-of-way.

[fol. 4390] Navigation

Mr. Taber: I do not suppose there is any substantial navigation there at the present time.

Dr. Arthur E. Morgan: We are having quite a bit of navigation. The materials for building our dams are hauled on the river. There is pretty heavy navigation now.

Mr. Taber: But that is about all there is of it?

Dr. Arthur E. Morgan: That is the greater part.

Mr. Taber: Is it open for navigation?

Dr. Arthur E. Morgan: No, sir; only in sections. We cannot have navigation until we get a channel to navigate in. Our channel is down to a foot and a half deep in some stretches, and until that channel is completed we have no conditions for through navigation.

Mr. Taber: Then how are you able to use it for your own purposes?

Dr. Arthur E. Morgan: We cannot go beyond our own.

Mr. Taber: You mean you cannot go beyond your own Wheeler Dam?

Dr. Arthur E. Morgan: Yes, sir. That is at the head of the pool of Wilson Dam, you see. We have got fine gravel

deposits just above us that we would like to use in the Wheeler Dam, but the channel is so shallow that we cannot use it; and we are getting the gravel 50 miles away, down the river, because we cannot get up the river to get it.

Mr. Taber: And does the Wheeler Dam throw the water back to maintain navigation all the way to Norris or not?

Dr. Arthur E. Morgan: Oh, no. It throws it back about 80 miles up to Guntersville. With the Hales Bar Dam, which now exists, and the Guntersville Dam, in between, the water will be backed up to Chattanooga.

Mr. Bacon: And the Chickamauga Dam will carry it to Knoxville?

Dr. Arthur E. Morgan: No; there is no dam in between. The White Creek Dam and the Chickamauga and perhaps a dam at Coulters Shoals will take it to Knoxville.

Mr. Bacon: And the Aurora will bring it up to Pickwick?

Dr. Arthur E. Morgan: Yes, sir. The Norris Dam will raise the level down to Pickwick; so we will have about 7 feet already. The Aurora would make it 9 feet or more.

Mr. Bacon: The Aurora will not have to be a very high dam, then?

Dr. Arthur E. Morgan: It will be about 40 feet, I think: but it will be an expensive one, because the foundations are not the best.

Pp. 626-7.

Mr. Taber: In order to understand the actual situation with reference to flood damages incurred on the Tennessee River, it appears that this entire basin, according to the statement you gave us the other day, reflects an average annual flood damage, on account of all floods, running to $291,000 a year. Is that approximately correct?

Dr. Arthur E. Morgan: The total estimated average annual damage from all floods is $1,784,000.

[fol. 4391] Mr. Taber: Where do you find that?

Dr. Arthur E. Morgan: That is in the last column. What you were reading from is just the land. The first column is for cities, which is $1,000,000 a year—cities and towns: the second is land, $291,000; the next is railroads, $332,000; the next is highways, $157,000; and the total is $1,784,000, as an average annual costs.

Mr. Taber: With reference to Pickwick Dam, there is not to be any power installation; that is practically a navigation proposition for the present; is that correct?

Dr. Arthur E. Morgan: There is about a million acre-feet of flood control there. It is more substantial than any other dam for flood control, except Norris.

Mr. Taber: There is a very substantial flood-control value there.

Dr. Arthur E. Morgan: Yes.

Mr. Taber: Because you impound how much water?

Dr. Arthur E. Morgan: One million three hundred thousand acre-feet volume. We have under consideration raising that a few feet to add to its flood storage.

P. 631

Total Reservoir Storage of Water at Four Dams

The Chairman: I do not know whether you got this complete in the record or not, but I want to have you put it all in one place. I will read this statement to see if it is correct. As to the acre-feet of water that could be impounded under these dams when completed, the amount for the Wilson Dam is 500,000 feet; for the Wheeler Dam 1,250,000 feet; for the Norris Dam 3,650,000 feet; and for the Pickwick Dam 1,032,000.

Navigation to Knoxville, Tenn.

I want to make this clear. Up to what point does this project contemplate navigation?

Dr. Arthur E. Morgan: Up to Knoxville.

The Chairman: What dams are absolutely essential to be constructed to provide navigation to Knoxville?

Dr. Arthur E. Morgan: In addition to those we are now building?

The Chairman: What dams are essential?

Dr. Arthur E. Morgan: The Aurora Dam.

The Chairman: Is the Norris Dam in it?

Dr. Arthur E. Morgan: It furnishes water.

The Chairman: Is it essential? It is a mother dam, is it not?

Dr. Arthur E. Morgan: Yes, Norris Dam, Wilson Dam, Wheeler Dam, Pickwick Dam, Aurora Dam, Guntersville,

Chickamauga Dam, and White Creek Dam are essential and the Hiwassee Dam will be valuable, but not indispensable.

The Chairman: That will give a 9-foot channel, will it?

Dr. Arthur E. Morgan: Yes.

[fol. 4392] Pp. 635-6

Mr. Bacon: Which do you think would be the most valuable, so far as you can picture it.

Dr. Arthur E. Morgan: Guntersville would be the most valuable, because that would bring navigation up to Chattanooga. It would make Chattanooga the head of navigation.

Mr. Bacon: And that navigation would be available in carrying out the work up to Chattanooga.

Dr. Arthur E. Morgan: Yes.

Mr. Bacon: Then you will have pretty good navigation from Chattanooga down to Pickwick, and how far below?

Dr. Arthur E. Morgan: We will have a 7-foot channel down to the Ohio River.

Mr. Bacon: Down to Paducah.

Dr. Arthur E. Morgan: Yes, sir.

Mr. Bacon: You would have a 7-foot channel down to Paducah, including a 9-foot channel from Pickwick to Chattanooga, if you build the Guntersville Dam.

Dr. Arthur E. Morgan: Yes, sir. A 9-foot channel from Chattanooga to Pickwick to 7 feet below. It may be 6½ feet.

Mr. Bacon: When the Chickamauga Dam, White Creek Dam, and Coulter Shoals Dam are built at a cost of $45,000,000 you will have a 9-foot channel from Chattanooga to Knoxville, but you do not intend to go ahead with that until you have built this 9-foot channel from Chattanooga to Guntersville.

Dr. Arthur E. Morgan: You have stated the case, from the standpoint of navigation. The Guntersville Dam would bring navigation right to Chattanooga.

Mr. Bacon: You would not want to go above Chattanooga with a 9-foot channel until you brought it to Chattanooga.

Dr. Arthur E. Morgan: No; probably not for navigation purposes.

Mr. Bacon: Will there be power at Chickamauga?

Appendix "F"

Dr. Arthur E. Morgan: Yes; good power.
Mr. Bacon: Will you put the power installation in
Dr. Arthur E. Morgan: When it is needed.
Mr. Bacon: How about Guntersville.
Dr. Arthur E. Morgan: It is the same thing there.
Mr. Bacon: You will not install it right away, but you will fix it so it can be installed?
Dr. Arthur E. Morgan: Yes.

[fol. 4393]

Appendix "G"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 115, Being "Hearing before the Subcommittee of House Committee on Appropriations, 74th Congress, 2nd Session, Part I."

P. 115

We have an item of about a half million dollars to continue exploration at Gilbertsville.
The Chairman: Did you find a foundation there?
Dr. A. E. Morgan: Yes, we found a good foundation finally.
Mr. Taber: Did you get away from the cave situation at Aurora?
Dr. A. E. Morgan: Yes.
Mr. Taber: You found it was not a good site.
Dr. A. E. Morgan: It was not a good site, and we have gone down the river where we can provide much better flood control.
Mr. Taber: Have you made drillings, or are you not far enough along to tell us about that?

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The Chairman: As for navigation, figuring on the dams that you recommend, how many miles of river will be navigable?
Dr. A. E. Morgan: There will be just about 750 miles of 9-foot navigation—650 miles on the main river and something over 100 miles on the tributaries.

APPENDIX "G"

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Dr. A. E. Morgan: Yes, sir; the output would be from that capacity; but I would like to go further than that and say that that means only a part of the total generating capacity that would be possible if the market grows. I would like further to say that in making a navigable channel, you must build the dams where dams are required for navigation. You cannot build them where they happen to be suited for power development. For instance, the location of the Chickamauga Dam site, that was appropriated for last year, is determined by the requirements for navigation. Nobody would ever build a dam there for power, but a dam is required at approximately that location to provide a navigable channel.

The Chairman: What dam is that?

Dr. A. E. Morgan: The Chickamauga Dam. You asked when there would be a return from power, and I was saying, that some of these dams would not be built if power were the main objective, but they are built in order to provide a navigable channel.

The Chairman: And to prevent floods.

Dr. A. E. Morgan: Yes, sir.

[fol. 4394] Pp. 126-7

Dr. A. E. Morgan: The only way to get at this is this: The levees in the Mississippi Valley have been built up about as high as they can safely be built. It is estimated that if it were at all feasible to raise them higher, it would cost somewhere between $35,000,000 and $50,000,000 a foot to raise the levee system higher. When you undertake to do that, you get into great difficulties because of raising the flood levels in the backwater of the tributaries.

The Chairman: The levees back the river up.

Dr. A. E. Morgan: Yes, sir. If the flood level is raised on the main river, the water level will be backed up the tributaries a greater distance. This system of reservoirs proposed by the TVA would lower the flood water stage along the Mississippi levees possibly 3 feet.

The Chairman: On the stretches below.

Dr. A. E. Morgan: Yes, sir, below the mouth of the Ohio.

The Chairman: I am asking you——

Dr. A. E. Morgan (interposing): I am indicating the difficulty of calculating just what the flood benefit would be on the Mississippi, but a reasonable estimate would be somewhere about $100,000,000.

The Chairman: What benefit does the country realize from navigation, and what from flood prevention, from the erection of these dams?

Dr. A. E. Morgan: I would say that possibly for flood control on the Mississippi, $100,000,000 might well be charged. Possibly a third or a half of the cost of the system might properly be charged to flood control.

Mr. Bacon: And the other half to navigation?

Dr. A. E. Morgan: Yes, sir.

The Chairman: How much should be charged against navigation?

Dr. A. E. Morgan: Possibly half. For flood control we have a more definite calculation. I must add that these are very rough estimates or guesses. In discussing these matters you appreciate that I am largely speculating in general-ties. We are now preparing the report on the allocations of value of all the properties to submit to Congress in detailed form as required by the act.

Mr. Bacon: Taking the investment of $343,000,000, would you say that half would be chargeable to flood control and the other half to navigation?

Dr. A. E. Morgan: I think the other half could be charged properly to navigation.

The Chairman: In other words, you think that the benefit that the country receives from flood control and navigation justifies the entire expenditure?

Dr. A. E. Morgan: Yes, sir.

Pp. 127-9

Mr. Bacon: You say that half of the $343,000,000 may be charged to navigation. What navigation will you get when the project is finished, or what depth will you give?

Dr. A. E. Morgan: A minimum of 9 feet draft. That would be a minimum 12-foot channel, because you want that much depth under the vessel. On the lower part of the river, the locks are 110 feet wide and 600 feet long, with a usuable depth of 10 feet. This system will connect with the general

Mississippi system, with a total of something over 5,000 miles of similar channel.

Mr. Bacon: Do you think there is enough navigation on the river to warrant an expenditure of $172,000,000?

[fol. 4395] Dr. A. E. Morgan: I believe there will be as time goes by. It will not happen all at once; it will take some time for navigation to develop. The War Department in 1926 estimated that by 1950 the actual savings on the freight hauled would be $22,000,000 a year.

Mr. Bacon: By 1950.

Dr. A. E. Morgan: Yes, sir.

Mr. Thurston: Three per cent of $171,000,000 would be approximately $5,000,000. You would have to show a net profit on transportation of $5,000,000 a year.

Dr. A. E. Morgan: The War Department estimated the saving by 1950 on the cost of freight would be $22,000,000 a year.

Mr. Thurston: The charge-off for flood control, would be $171,000,000, for the limited area that would be protected by flood control.

Dr. A. E. Morgan: Its chief value would be on the Mississippi. The Mississippi levees are now getting to the point where they cannot safely be built higher without substantially increasing the cross section. If they are built any higher, there will be increased danger of failure from excessive seepage through sand layers underneath.

Rivers Contributing Flood Waters to Mississippi River

Mr. Thurston: Has there been any estimate of the flood waters supplied by the various tributaries of the Mississippi?

Dr. A. E. Morgan: The contribution of flood waters is largely by the Ohio and the tributaries entering farther down the river. The whole Missouri River watershed, would not make as much difference as the Tennessee River. It is the lower tributaries that cause the greatest floods.

Mr. Bacon: What are those tributaries?

Dr. A. E. Morgan: There are four of them, the Arkansas, the Ohio, the Tennessee and the Red.

Mr. Thurston: Have they finished the project under the Public Works appropriation, on the lower Mississippi, or

has that been discontinued because of the Tennessee Valley project?

Dr. A. E. Morgan: I do not know how to answer that question.

Mr. Thurston (interposing): That project is an independent scheme of the Army engineers, for the control of Mississippi flood waters.

Dr. A. E. Morgan: I do not know. I cannot answer that.

Mr. Bacon: If you improved the Ohio, or if you could control floods in the Ohio, that would be important in the control of floods in the Mississippi. The Ohio is more important in that respect than the Tennessee, is it not? You do not have as much flood in the Tennessee as in the Ohio, do you?

Dr. A. E. Morgan: Yes, sir; we have very destructive floods in the Tennessee.

Cooperation With Corps of Army Engineers

Mr. Thurston: I want to know if the Tennessee Valley Authority coordinates its work with that of the Corps of Army Engineers for flood prevention in the Mississippi River.

Dr. A. E. Morgan: Yes, sir; we are endeavoring to do so.

Mr. Thurston: Do you have a joint board to coordinate it?

Dr. A. E. Morgan: We do not have a formal joint board, but their representatives and our representatives meet together. Arrangements have been made for their liaison [fol. 4396] officer to meet out liaison officer. Two or three weeks ago we spent considerable time in their office at Louisville, we going over their data and they going over our data. We used their data and they use ours.

Mr. Thurston: The basic principles upon which your river work has been progressed were not drawn up or made up by War Department or the Army Corps of Engineers, were they?

Dr. A. E. Morgan: The War Department, or the Corps of Engineers, United States Army, recommended to Congress that the Tennessee River be improved for 9-foot navigation from Knoxville to the mouth. They indicated two ways of doing that—one by a series of low navigation dams, which

were to be provided for navigation only, and the other a series of high navigation dams for navigation, flood control, and power.

The Chief of Engineers recommended to Congress that if the States, municipalities, or private agencies would build higher dams, the Federal Government should commit itself to share the cost to the extent of the cost of the low dams to be displaced. Under such a plan, 32 low dams would be displaced by 7 higher ones. The Congress, in the Rivers and Harbors Act of 1930, definitely committeed the United States Government to contribute to the cost of the higher dams the saving that would be made by not building the lower dams.

Mr. Thurston: Your philosophy in relation to this project is that of the $343,000,000, one-half of the charge should be allocated to flood control, and the other $170,000,000 should be allocated to navigation.

Dr. A. E. Morgan: No, sir; you asked what expenditure would be justified by flood control and by navigation.

Pp. 129-31

The Chairman: You said awhile ago that these dams on the Tennessee River and its tributaries had a powerful effect on flood prevention in the Mississippi River.

Dr. A. E. Morgan: Yes, sir.

The Chairman: I wish you would state how many acre-feet of water all of the dams on this project, when completed, could hold back from the flood waters of the Mississippi River.

Dr. A. E. Morgan: It will take a minute or two to calculate it.

The Chairman: Suppose you insert that in the record.

Dr. A. E. Morgan: I will do that.

(Since the close of these hearings the data requested have been published in the Authority's report on the Unified Development of the Tennessee River System, at p. 19. See also the table inserted at p. 123 of these hearings.)

Mr. Taber: Along with that, incorporate a statement showing what the total flow is, so we can estimate what the proportions are.

The Chairman: There are three rivers emptying into the Mississippi that contribute largely to its flood waters—

namely, the Arkansas, the Ohio, and the Tennessee. As I understand it, they are the main tributaries of the Mississippi that cause floods.

Dr. A. E. Morgan: Yes, sir. The Red River comes in below, and contributes to the floods to a less degree.

The Chairman: Which one of those rivers contributes the greatest flow of flood waters to the Mississippi?

Dr. A. E. Morgan: The Ohio River, which includes the Tennessee, causes the greatest flood damage in the aggregate.

The Chairman: Which contributes the most, the Ohio River or the Tennessee?

Dr. A. E. Morgan: I think it would be the Ohio where the two rivers come together. I think the Ohio would sometimes have a bigger flow than the Tennessee. Sometimes one contributes more, sometimes the other.

[fol. 4397] The Chairman: Which has the greater influence on Mississippi floods, the Ohio or the Arkansas?

Dr. A. E. Morgan: The Ohio comes in much farther up the river than the Arkansas, so there is a large part of the river that is not affected by the Arkansas that is affected by the Ohio.

The Chairman: Which is the larger river at Paducah, the Ohio or the Tennessee?

Dr. A. E. Morgan: The Ohio has a larger flow.

The Chairman: Which has the greater drainage area? Does the Ohio have the greater drainage area and greater rainfall?

Dr. A. E. Morgan: The Ohio has the larger drainage area, but the Tennessee area has the heavier rainfall.

Mr. Taylor: What is the distance between the mouth of the Ohio and its junction with the Tennessee?

Dr. A. E. Morgan: It is about 40 or 50 miles.

Mr. Taylor: That does not amount to much so far as flood works are concerned.

Mr. Cannon: The Missouri is longer than any other tributary of the Mississippi.

Dr. A. E. Morgan: Yes, sir; but it brings its waters in at a time of the year when the crest has passed the other areas, and it drains a great area of light rainfall. The effect of the Missouri on the Mississippi is less than that of the Ohio or Arkansas.

Mr. Taber: How does the rainfall up here at Norris Dam compare with that down along the Mississippi Valley? Are the rainfalls heavier or lighter?

Dr. A. E. Morgan: The rainfall above the Norris Reservoir is heavier than that of the part of the Mississippi which lies to the north of the Tennessee, but lighter than the rainfall of the drainage area south of the Tennessee.

Mr. Taber: You get the most of it from the hills?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: You very seldom get any heavy rainfalls over in these mountains in the East, in Tennessee, and in the west end of North Carolina at the same time the rains are falling on the other side of the Mississippi, do you?

Dr. A. E. Morgan: You do not often, but once in a while you may.

Mr. Taber: It takes a considerable time for water to flow from such a place as Norris Dam, or such places as you have been operating on, down into the Mississippi, and then down into the levee territory, does it not?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: How long would it take ordinarily for a flood tide of water to flow from Norris Dam over into the levee territory on the Mississippi River?

Dr. A. E. Morgan: About 2 weeks from the highest reservoir.

Mr. Taylor: It is a rapid stream.

Dr. A. E. Morgan: Yes, sir; it is a rapid stream.

Mr. Taber: A flood tide from any of the other rivers would get into the levee territory in 4, 5, or 6 days, would it not?

Dr. A. E. Morgan: From the Missouri, it might be 6 weeks.

Mr. Taber: How rapidly a flowing river is the Arkansas?

Dr. A. E. Morgan: The waters of the Arkansas would come down at about the same time.

Mr. Taber: About the same time as the waters of the Tennessee.

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: You mean it takes as long for the water to come down the Arkansas as down the Tennessee?

[fol. 4398] Dr. A. E. Morgan: The Arkansas River rises

in Colorado, but the major part of the rainfall in its drainage basin comes within 500 miles of the mouth of the river.

Mr. Taber: Then, it does not take very long.

Dr. A. E. Morgan: I would say that from a large part about the same length of time would be required as from the area above Norris Dam.

Mr. Taber: How far is it from the Norris Dam into the levee territory of the Mississippi?

Dr. A. E. Morgan: About 700 miles.

Mr. Taber: If the levee territory does not begin at the mouth of the Ohio——

Dr. A. E. Morgan (interposing): Cairo has the highest levees on the Mississippi. If it had been confined within levees, the water would have risen to 58.5 feet at Cairo in the 1927 flood.

Mr. Taber: That is the big source of the floods in the Mississippi—that is, waters coming out of the Ohio.

Dr. A. E. Morgan: The Ohio is looked upon as controlling floods on the Mississippi, or as the biggest element.

Mr. Cannon: Has that height varied in the last 50 years appreciably?

Dr. A. E. Morgan: Yes, sir; it is higher than it used to be. The levees have been raised, and the water cannot get away. For instance, in the twenties, the reports of the Chief of Engineers each year said that the Mississippi River is now permanently safe from floods. I think 3 years after that report first came out, and about 2 weeks after the report was printed in 1927, a flood came along that tore the levees to pieces.

Pp. 131-3

Mr. Taber: To what extent will these dams reduce the flood hazard, first, in the Mississippi, and, second, in the lower reaches of these rivers?

Dr. A. E. Morgan: In the case of the Mississippi, no single tributary is ever controlling. If you could control the other tributaries as well as we are controlling the Tennessee, you would have the job done.

Mr. Taber: In other words, floods are due to the flood waters that go in from the Tennessee, the Ohio, Arkansas,

and Red, but taken by themselves, no one of those rivers would create a serious situation at any one time, if there were no flood waters coming from some of the others.

Dr. A. E. Morgan: That is not quite the case. If you take the stretch from Cairo, Ill., down to the mouth of the Arkansas, or a distance of some 100 miles below the Arkansas alone would have practically nothing to do with it if the Ohio were controlled. If you should go below there, it would be possible to have a flood out of the Arkansas, and a big one, but it would not be so big as to be troublesome if the Ohio were controlled.

Mr. Taber: Have you estimated the amount of water coming down this river at flood times?

Dr. A. E. Morgan: Yes, sir; the flow of the Tennessee River was about 430,000 cubic feet per second at Chattanooga, and about 500,000 cubic feet per second at its mouth in the maximum flood of record.

Mr. Taber: How much of the flood will be taken off of that maximum by the work that you already have under construction?

Dr. A. E. Morgan: Roughly one-quarter. It would take off about 100,000 cubic feet per second.

[fol. 4399] Mr. Taber: That would be over a period of how long a time? This 100,000 cubic feet per second will fill up the dams in what length of time?

Dr. A. E. Morgan: It is not so simple to answer as that. As you get into the engineering factors, you will find it difficult to answer that in simple language. The Tennessee is so close to the Mississippi that with a warning such as was given in the present flood in the upper Ohio, the gates could be let open ahead of the flood and the water could be let out. We would lower our reservoirs on the lower Tennessee and get them empty so as to have the storage space available for the time they would be needed when the flood comes down from above. On the other hand, at the headwaters, we would close the gates at the beginning of a period of heavy rainfall, so a very large degree of control could be secured. The lower reservoirs are not used until needed, or right up to the time when the flood crest comes. Further up, as soon as the floods begin the gates are closed.

The Chairman: It depends on when it reaches the lower river.

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: Then, that would mean that all those dams will be operated on some supposed level, or that they will always be kept less than full in ordinary operations, so as to be ready to meet that situation.

Dr. A. E. Morgan: It is not necessary to do that. The Gilbertsville Dam, the lowest proposed dam on the Tennessee, can be used for illustration. We could keep that reservoir full all the time until we knew a flood was coming, because there we have plenty of time to empty it, before any flood crest would reach the lower river.

Mr. Taber: In other words, the local drainage area is not heavy——

Dr. A. E. Morgan (interposing): That is not the point.

Mr. Taber: The local drainage is not serious.

Dr. Morgan: No, sir; you do not get my meaning.

Mr. Taber: I do not think you got the meaning of what I said.

Dr. A. E. Morgan: The point is this: Suppose we have stored 3 or 4 million acre-feet. There is fine storage right at the end of the river. This Gilbertsville Dam would have wonderful storage.

Mr. Taber: You told us you would open that and let it out when you thought a flood was coming?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: And you said that, in other words, the local drainage into that dam was not heavy enough so that your situation generally would be upset because of that operation?

Dr. A. E. Morgan: Yes.

But it is a problem of so relating the operation of the upper and lower dams that the full benefit of the whole system can be realized. For instance, the Gilbertsville reservoir could be kept full, and the local drainage would not amount to anything. It could be emptied in time to be ready for flood water from above. At the Norris Reservoir, on the other hand, at this time of the year, say the 1st of April, the time has passed when a great flood is apt to originate in the hills; so we can begin to store water and fill it up. We know during what seasons great floods originate of the kind which affect the Mississippi, and we can manage the Norris Reservoir to get the greatest benefit.

APPENDIX "G"

[fol. 4400] P. 133

Mr. Cannon: You speak of a storage dam for flood relief and other purposes. What other purposes besides flood and power is it available for?

Dr. A. E. Morgan: For instance, the Norris Reservoir that we have there has 3,400,000 acre-feet of storage, one of the largest reservoirs in America. Now, during low water, when the Tennessee and Mississippi Rivers run low, we can let that water out and raise the water level for navigation; and below each one of our dams, if we have this storage controlled so we can release it at low water, we can save expensive dredging that otherwise would be necessary for navigation.

(Here follows one photolithograph, side folio, 4401)

PRESENT AND PROSPECTIVE IMPROVEMENTS IN NAVIGATION

(See p. 138)

The CHAIRMAN. Now, we want a statement as to the present and prospective navigation on this river as the improvements proceed. What is the navigability of the river now, as to depth, height, and so forth?

Dr. A. E. MORGAN. The river now, below Wilson Dam, has a limit of navigable depth of about 4 feet.

The CHAIRMAN. Below Wilson Dam to the mouth?

Dr. A. E. MORGAN. Yes, sir.

The CHAIRMAN. How many miles is that?

Dr. A. E. MORGAN. It is 260 miles. That does not mean that it is all that shallow, but the controlling depth is about 4 feet.

The CHAIRMAN. I understand. Then that 260 miles from Wilson Dam down is 4 feet?

Dr. A. E. MORGAN. The controlling limit is 4 feet.

From Wilson Dam up to Chattanooga, about 205 miles, the controlling depth is 3 feet. From Chattanooga to Knoxville, which is about 184 miles, the controlling depth is 1 foot at present.

The CHAIRMAN. That is no navigation at all?

Dr. A. E. MORGAN. Only in high water.

The CHAIRMAN. Now put in the record a detailed statement of the present and prospective development of this navigation, as to depth, as these dams and reservoirs are erected.

Dr. A. E. MORGAN. Yes, sir.

(The statement requested is as follows:)

Status of channel depths on Tennessee River

Successive pools of main river projects	From Paducah to Gilbertsville	Gilbertsville pool	Pickwick pool	Wilson pool	Wheeler pool	Guntersville pool	Hales bar pool	Chattanooga to Chickamauga	Chickamauga pool	Watts bar pool	Coulter Shoals pool (to head of river above Knoxville)
Length of pools (miles)	22.6	184.1	52.7	15.5	74.1	82.1	33.0	6.9	58.9	73.6	68.6
Project and river miles from mouth	Minimum channel depth (in feet) at ordinary low water, after completion of each project										
Depths prior to Tennessee Valley Authority construction	12.0	4.5	4.0	12.0	3.0	3.0	[1] 12.0	[2] 4.0	1.3	1.0	1.6
Wheeler, mile 274.9	(3)	5.0	5.0	(3)	12.0	3.0	(3)	4.0	1.3	1.0	1.6
Norris	(3)	5.0	4.1	(3)	(3)	4.6	(3)	5.8	3.4	1.0	1.6
Pickwick, mile 206.7	(3)	5.1	[1] 12.0	(3)	(3)	4.6	(3)	5.8	3.4	1.0	1.6
Guntersville, mile 349.0	(3)	5.2	(3)	(3)	(3)	12.0	(3)	5.8	3.4	1.0	1.6
Chickamauga, mile 471.0	(3)	5.3	(3)	(3)	(3)	(3)	(3)	6.0	12.0	1.0	1.6
Fontana	(3)	5.8	(3)	(3)	(3)	(3)	(3)	6.3	(3)	2.1	1.6
Fowler Bend	(3)	9.0	(3)	(3)	(3)	(3)	(3)	6.5	(3)	2.1	1.6
Gilbertsville, mile 22.6	(3)	12.0	(3)	(3)	(3)	(3)	(3)	6.6	(3)	12.0	1.6
Watts bar, mile 529.9	(3)	(3)	(3)	(3)	(3)	(3)	(3)	6.6	(3)	(3)	12.0
Coulter Shoals, mile 608.5	(3)	(3)	(3)	(3)	(3)	(3)	(3)	12.0	(3)	(3)	[4]
Raising Hales bar pool	(3)	(3)	(3)	(3)	(3)	(3)	(3)				

[1] With flashboards up at Hales bar. [2] After improvement of Florence Canal. [3] Project depth.

The pools across top of table are listed in succession from the mouth to the head of river. The projects to the left are listed in chronological order for construction. Reading horizontally from the left the resulting depth in each pool is shown, following the construction of a given project.

Norris, Fontana, and Fowler Bend, being storage projects on tributaries, increase the depths in unimproved sections by storage release in low-water season. This also maintains the low-water depth at the heads of pools and the storage of flood water reduces pool fluctuations during floods.

After a minimum depth of 12 feet has been obtained, the table shows "project depth." Depths shown are minimum gross channel depths. The 12-foot depth provides 3 feet of overdepth for the 9-foot draft required for the navigation project.

APPENDIX "G"

[fol. 4402] P. 136

Mr. Bacon: What is the other one?

Dr. A. E. Morgan: That is at Gilbertsville. That will back the water up 184 miles, across the State of Kentucky and the State of Tennessee.

Mr. Taber: There is not much drop there in that terrain, then?

Dr. A. E. Morgan: No, sir.

Mr. Bacon: What will that Gilbertsville Dam cost?

Dr. A. E. Morgan: The Gilbertsville Dam will cost about $60,000,000, unless extra storage for Mississippi flood control is provided, in which case the cost would be $14,000,000 more than that.

Mr. Taber: And how high would it be?

Dr. A. E. Morgan: It would be about 60 feet.

There is a possibility of raising the Gilbertsville Dam somewhat more; not because navigation needs it, but because you could get the cheapest flood-control storage that you could anywhere on the Mississippi system by raising it about 8 feet, if that were desirable.

Mr. Taber: That would make more power, too?

Dr. A. E. Morgan: It would make some more power, but that is not so important there as flood control. It would be principally flood storage. You would not be saving that for power.

Pp. 138-40

The Chairman: You did not finish on the navigation. You got off on a particular dam. The last I heard of navigation before these particular dams came up was that there was 3 feet between Wilson Dam and Chattanooga.

Dr. A. E. Morgan: With the completion of our system we would have a minimum of 9 feet of draft.

The Chairman: To where?

Dr. A. E. Morgan: From Knoxville to the Ohio River.

The Chairman: Now, you had 3 feet before. What is the next depth you are going to have; the next step you are going to have in navigation?

Dr. A. E. Morgan: Nine feet draft.

The Chairman: How far up the river?

Dr. A. E. Morgan: If this program——

The Chairman: I am not talking about the whole program. Certainly the completion of one or two dams, or the ones that are now started, will add to navigation somehow.

Dr. A. E. Morgan. The completion of the Pickwick Dam project will give us 9 feet up to Wheeler Dam, and the completion of Wheeler Dam will give us 9 feet up to Guntersville.

The Chairman: From the mouth?

Dr. A. E. Morgan: The completion of Guntersville, which is now under way, will give us 9 feet up to Hales Bar. From the mouth it will be 9 feet except at the lower end below Pickwick and in the Florence Canal between Lock No. 1 and Wilson Dam.

The Chairman: You have not got up to above Chattanooga. What is that dam up there—Chickamauga?

Dr. A. E. Morgan: Yes; that is Chickamauga Dam. That will give us 9 feet except as I just stated, and as soon as the lower dams are finished it will be 9 feet all the way from the mouth. That will give us that depth up to near Rockwood, in the iron, coal, and limestone region. We have some of the big iron possibilities of America there, I am told.

The Chairman: And the completion of your Hiwassee Dam does nothing except as a stand-by reservoir to help this navigation at low water.

[fol. 4403] Dr. A. E. Morgan: Navigation and flood control; yes. Each dam as it is completed gives 9 feet draft above it.

The Chairman: Then with the dams now under way you will have not less than 7-foot depth up above Chattanooga?

Dr. A. E. Morgan: Yes, sir.

The Chairman: To where?

Dr. A. E. Morgan: To about Rockwood.

The Chairman: And about how many miles above Chattanooga?

Dr. A. E. Morgan: About 70.

Now, there is one little gap in there that I have not described. The Hales Bar Pool, which is below Chattanooga, will have to be raised or considerable dredging will have to be done in between, or a low-navigation dam built.

The Chairman: That will not be expensive?

Dr. A. E. Morgan: About $4,000,000.

The Chairman: What will have to be done, then, to give navigation to Knoxville?

Dr. A. E. Morgan: There will have to be two more dams.

Mr. Chairman: Where will they be?

Dr. A. E. Morgan: At Watts Bar—which was called White Creek before—and Coulter Shoals. Those will give navigation to Knoxville.

The Chairman: How many feet?

Dr. A. E. Morgan: Nine feet draft except at the points I indicated.

The Chairman: Is the dam at the mount of the Tennessee necessary for nine feet draft?

Dr. A. E. Morgan: Yes, sir.

The Chairman: At a cost of $160,000,000?

Dr. A. E. Morgan: No; only $60,000,000—the Gilbertsville Dam.

The Chairman: That is necessary for 9 feet?

Dr. A. E. Morgan: Yes, sir.

The Chairman: So, under the present program, we are aiming at 7 feet navigation up to Knoxville?

Dr. A. E. Morgan: No; 9 feet. This Gilbertsville Dam on the Tennessee itself, not on the Ohio——

The Chairman (interposing): You have not got an estimate for that, have you? That is not included in this estimate?

Dr. A. E. Morgan: It is included in our total estimate; yes—not for appropriations this year.

The Chairman: I understand. It is included in your total estimate; it is included in your entire plan. But I am talking about the estimate that is before us now.

Dr. A. E. Morgan: For next year?

The Chairman: Yes.

Dr. A. E. Morgan: No; it is not included in that.

The Chairman: We are working now for the next goal of 7 feet up to above Chattanooga.

Dr. A. E. Morgan: Nine feet draft above Chattanooga.

The Chairman: Then in order to get 9 feet from the mouth it would take $60,000,000 for the Gilbertsville Dam and the two dams, Coulters Shoals and Watts Bar?

Dr. A. E. Morgan: About $50,000,000 more.

The Chairman: About $50,000,000 more; to give you 9 feet clear up to Knoxville?

Dr. A. E. Morgan: Yes, sir. We have now, with the finishing of the dams that are now being built, 7 feet depth up to Pickwick and 9 feet draft from there to above Chattanooga. It is only below Pickwick that we would have 7 feet depth; the rest of the way it is 9 feet draft as required for the 9-foot project.

The Chairman: In other words, you need water high up? [fol. 4404] Dr. A. E. Morgan: Yes, sir.

The Chairman: That is just because some of the dams are not backed up?

Dr. A. E. Morgan: It is just because the lower dam is not completed—the one at Gilbertsville, way down below.

The Chairman: Have you any record of what the difference in benefit to navigation is—I mean, that is actually and practically put into effect—between 7 and 9 feet?

Dr. A. E. Morgan: This is the difference: This 9-foot channel on the Tennessee is part of a 9-foot channel from Pittsburgh down to the Mississippi and on down to the Gulf, and from St. Paul down the Mississippi all the way, and from Chicago down the Illinois River all the way. About 5,000 miles is being built to a channel, for boats with a 9-foot draft. If a certain section there has only 7-foot depth, you have to have a different class of craft on it.

The Chairman: You are sure about the boats being built for a 9-foot channel?

Dr. A. E. Morgan: I say they are going to be built for the channel that is provided. The Government for years past has set a 9-foot draft channel as the standard. Now, if it is the standard in all parts of 5,000 miles of waterway except on the lower Tennessee, then the boats that are built for the rest of the system cannot effectively use that part. That is the difference.

The Chairman: There ought to be another difference. There ought to be a difference in the capacity of the boats; because a 9-foot channel ought to carry a greater tonnage in one load than a 7-foot channel.

Dr. A. E. Morgan: The difference is even more than I have indicated, because, as it is now, that 7 feet is just dragging on the bottom of the river, and a boat with a 7-foot draft would scrape the rocks on the bottom of the river; whereas our 9 feet is 9 feet of draft, with about 3 feet under it. So it is really comparing about 7 feet with 12 feet.

The Chairman: Nine feet of free water?

Dr. A. E. Morgan: Yes, sir; water for boats of 9-foot draft, with 3 feet of water underneath.

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Dr. A. E. Morgan: There is a silting problem there, and some small reservoirs have largely silted up since they have been built. They are very small ones. We are undertaking as part of our program, to stimulate agricultural change, to get land out of plow crops into grass crops, and we are already affecting that situation. But our storage reservoirs are large enough so that if it takes a hundred years to change that culture back we still will not have lost much. We are making definite provision for silt deposit in the design of each storage reservoir on the tributaries.

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Dr. A. E. Morgan: Then we are making very careful studies of the silt deposits on all the rivers where we are planning to build dams.

Mr. Thurston: Is it possible that some very important plant may be erected at a given point, we will say near a dam, and that it will really, in a few years, become almost valueless because the storage has diminished so greatly?

Dr. A. E. Morgan: No; we are building no structures that would be menaced in the next century. We are working into a program of erosion control for a long-time program.

[fol. 4405] P. 205

Mr. Taber: It is a question of adding and subtracting.

Dr. A. E. Morgan: It is not a matter merely of adding and subtracting. We can protect Chattanooga locally only by levees. That is the only way to protect it locally. Now, if we should build levees that would take care of the 1917 flood, and build them so that the city would consider itself safe to build behind them, then, if a big flood should come along, the city would be much worse off than if it had not provided that protection. Therefore, before we are safe in building levees at Chattanooga, we must be sure that we are going to be in a position of holding extreme flood stages down to a point where the levee will not be overtopped.

We have no business building levees that will be overtopped once in a while, because that might largely destroy the city. It would be worse off than if it had no levees. Now, it is impossible to build levees high enough to give that protection without first providing reservoir control. If we can first cut big floods down to reasonable limits, then we can safely build levees, but we do not dare to build them if they are to be overtopped. If levees are built, and people build behind them, and they are liable to be overtopped, they are worse off than if they had no levees.

Pp. 211-12

Mr. Taber: Are you planning to have a power lay-out at this dam?

Dr. A. E. Morgan: No, sir; not at present.

Mr. Taber: Is this a navigation dam, or is it a power dam primarily?

Dr. A. E. Morgan: It is a navigation and flood-control project. There is a possibility of power whenever it is justified.

Mr. Taber: How many acre-feet of water will there be in this reservoir?

The Chairman: Three hundred thousand acre-feet of storage will be available for flood control, according to the statement, and the elevation is 595 feet.

Mr. Taber: What territory does this dam protect against floods?

Dr. A. E. Morgan: The storage given for flood control is 300,000 acre-feet.

Mr. Taber: What territory below is protected by this dam?

Dr. A. E. Morgan: It will primarily affect the Mississippi.

Mr. Taber: The lower Mississippi.

Dr. A. E. Morgan: Yes, sir. It will have its effect all the way along but its primary effect will be on the Mississippi.

Mr. Taber: It is not a major item so far as flood control on the Mississippi is concerned, is it?

Dr. A. E. Morgan: There is scarcely any such thing as a major item in flood control in the Mississippi. It must be an accumulation of various items to relieve the Mississippi.

Mr. Taber: This provides how much water back to Chickamauga?

Dr. A. E. Morgan: It will provide 9 feet. It does not go back to Chickamauga, but it goes to Hale's Bar, which is a private dam below Chattanooga. It will provide 9 feet there, up to Hale's Bar.

Mr. Taber: That is how far?

Dr. A. E. Morgan: About 82 miles.

Mr. Taber: How far is it from Hale's Bar back to Chickamauga?

Dr. A. E. Morgan: About 30 miles.

[fol. 4406] P. 226

The Chairman: Is it for navigation alone, or for navigation and power?

Dr. A. E. Morgan: It is flood control and navigation.

The Chairman: No power in it at all?

Dr. A. E. Morgan: It would have power possibilities, though we are not estimating for power at present.

The Chairman: How near is the Norris Dam to it?

Dr. A. E. Morgan: About 74 miles.

The Chairman: Watts Bar is not on the Tennessee River, is it?

Dr. A. E. Morgan: Yes. That is the same as White Creek. That is on the Tennessee River. Above Chattanooga you first come to the Chickamauga Dam, then to the Watts Bar Dam, and then to Coulter Shoals Dam.

Mr. Taber: How far is it to Watts Bar from Chickamauga?

Dr. A. E. Morgan: That is about 59 miles.

Mr. Taber: According to the way they have got this laid out for me, which was put on by somebody here, it is only about half as far from Watts Bar to Coulter Shoals as it is from Chickamauga to Watts Bar.

Dr. A. E. Morgan: Fifty-nine miles is the length of the reservoir above the Chickamauga Dam, and it is 74 miles from Watts Bar Dam site to Coulter Shoals Dam site. The pool of Watts Bar would be 74 miles, and Coulter Shoals is 53. The Coulter Shoals Dam would make the Tennessee River navigable for 4 miles above Knoxville, to where it is formed by the junction of the French Brook and Holston Rivers.

The Chairman: Coulter Shoals is not above Knoxville?

Dr. A. E. Morgan: Coulter Shoals is about 45 miles below Knoxville, on the main river.

P. 235

Maintenance of Stream-Flow Stations

Dr. A. E. Morgan: I have a map indicating the stream-flow stations that we are working on.

The Chairman: Suppose you finish your break-down.

Dr. A. E. Morgan: In the matter of rainfall we are co-operating with the United States Weather Bureau, and we have established 189 rainfall stations throughout the area, in addition to those of the Weather Bureau. We need those for our weather forecasting, for building our dams, and for operating them afterward.

I have a map indicating the locations and the amount of rainfall.

The Chairman: Do you expect to maintain all of those stations?

Dr. A. E. Morgan: Not all of them, but we will maintain part of them until we get a good record of that section of the country. Some of them we will maintain permanently.

The Chairman: You have regular men stationed there, or are they mostly accommodation men?

Dr. A. E. Morgan: They are men who go out in the morning and in the evening, farmers who live near by.

The Chairman: Do you pay them for it?

Dr. A. E. Morgan: Yes; it varies, depending on how far away a man lives. We are working out a process now that seems to be satisfactory, of radio recording whereby you put a battery in the station with a little radio outfit, and that information is transmitted by radio. Then we hope to develop a radio receiving outfit in our office, so there is need for nobody to look after the station. It would work automatically. About once in 6 months it would be necessary to put in another battery. We hope in time to have automatic recording for those stations.

[fol. 4407] The Chairman: Recording of what?

Dr. A. E. Morgan: We worked that up particularly for the water stages. We can use it also for temperature and for rainfall.

The Chairman: That is, you mean the stage of the water in the river?

Dr. A. E. Morgan: Yes. Then there are silt investigations. We are working on the question as to how fast reservoirs will silt up.

The Chairman: It seems to me you ought to be working on the question of how to stop erosion.

Dr. A. E. Morgan: To do that we have to get some measurements as to the kind of problem we are handling.

Studies of Silting of Dams

When we went down there we had estimates on the Norris Dam ranging all the way from a hundred to two thousand years as to the time it would take to silt the dam. That is the range within which the engineers were guessing. We are making studies to know what our problem is.

The Chairman: You are still guessing?

Dr. A. E. Morgan: We are guessing, but within narrower limits as we secure definite data.

[fol. 4408] APPENDIX "H"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 116, being "Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives, 75th Congress, 1st Session."

Page 341

Dr. Arthur E. Morgan: • • •

For instance, in connection with the Norris Dam, all during the flood on the Ohio during this last winter we completely closed the gates of the Norris Dam and stored about a million and a half acre-feet of water, enough to make a substantial difference in river stages below.

It is quite probable that the Norris Dam saved the city of Cairo. There were two towns there side by side, Cairo and Mound City, each surrounded by levees. The Mound City levee failed and the Cairo did not. It was by taking the action we did at the Norris Dam that the flood stage at Cairo was reduced by about 6 inches.

The Norris Dam did not cut down the flow quite enough to save Mound City, but did cut it down enough to save Cairo.

Pages 341-2

May I take up the matter of the general planning of the system?

We have there a river system draining somewhat more than 40,000 square miles. For 650 miles of that river, from Knoxville to its mouth, the Government has adopted a policy of making it navigable with a channel for vessels of 9-foot draft, which means 12 or 13 feet minimum depth of water. It is necessary to have storage for regulating navigation stages and for flood control, and incidentally it is valuable for power. The further we can see ahead, the more accurately we can appraise the total possibilities, and the better we can design each particular project and determine the feasibility and the cost of the several possible dams. We must determine whether it is better to make a dam higher on the main river or to get some storage on the tributary streams, and how large the dams on the tributary streams should be as parts of the single unified system.

In the general development of such public works in this country such thoroughgoing studies as we are making would have saved their cost many times over.

During the course of more than 50 years the official estimates of the total cost of the Mississippi flood-control system, made by those in responsible charge, have been, in general, several hundred per cent in error from the first official estimate in 1874 down to the 1927 flood. An estimate would be carried for years until a flood would demonstrate its inadequacy, then a revised and enlarged estimate would [fol. 4409] be made and carried until another flood would bring about a further revision. That is not the best way to plan a great program. With proper planning it is possible to eliminate a very large part of that learning by catastrophe. We can learn better by thoroughgoing engineering study.

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Mr. Taber: What jobs on the river are for flood control, do you think?

Dr. Morgan: Different degrees in various cases. The Gilbertsville project is especially valuable for flood control. In fact, I think that the whole cost of the Gilbertsville Dam and Reservoir would be justified for flood control alone, and that is the largest unit in the entire project.

Pages 367-8-9

Mr. Boylan: What is the nature of the navigation on the river now?

Dr. Morgan: It is very largely prospective, for the reason that both above and below this there are rocks and shallows that largely prevent navigation. The Gilbertsville and Pickwick Dams will carry vessels of 9-foot draft up to the Wilson Dam, and these other dams will carry it above. Above there we have a low-water depth of a foot and a half. That will be made a low-water depth of 12 feet by the Guntersville Dam.

There cannot be any extensive navigation until the dams are built. It is somewhat like saying, "I want to build a railroad through this country; how much did that railroad carry last year?" before it was built.

We have made very careful studies of what we considered to be the conservatively probable traffic on that river.

Mr. Boylan: What kind of traffic?

Dr. Morgan: It will be coal, oil, gasoline, bauxite, aluminum oxide, phosphates, steel, lime, minerals, marble——

Mr. Boylan: These shipments just affect the Tennessee Valley development, do they, or will you get them from further up the river?

Dr. Morgan: There will be shipments from further up the river when navigation is made feasible.

Mr. Boylan: But that is purely speculative?

Dr. Morgan: Not any more speculative than any economic development. Until your store is actually built, or your hotel, it is speculative whether it is going to produce. We think that freight savings of from $1 to $1.25 a ton will be possible just as soon as water-carrying can be provided, and that if that waterway had been available for operation for the past 5 years, so that boats could have been built and put in operation, today, it would be carrying about 6,000,000 tons of freight, with a saving of $1 to $1.25 a ton.

[fol. 4410] Mr. Boylan: Is that from the valley itself—from the Tennessee Valley—or from further up the river?

Dr. Morgan: It would include both. The traffic would be down the Ohio and up the Tennessee and down the Mississippi. It would have its share of the traffic of the Mississippi River system.

Mr. Boylan: What is the nearest terminal now on the river to the TVA?

Dr. Morgan: On the Tennessee?

Mr. Boylan: Yes.

Dr. Morgan: We have terminals there now.

Mr. Boylan: Before you reach the TVA, how far do they come down?

Dr. Morgan: The TVA takes in the entire Tennessee River area.

Mr. Boylan: I am trying to find out how far under your existing navigation a ship can navigate the river. Can you navigate it at all?

Dr. Morgan: Yes. Last year's movement was about 2,000,000 tons. It is used, and has been extensively used in the past, but under great difficulty because of the shallows.

Mr. Boylan: How far is it used, and to what point?

Dr. Morgan: Cement is hauled from the Mississippi River up the Ohio and up the Tennessee for about 400 miles, and then you cannot go any further because of shallows.

Mr. Boylan: Is that clear navigation up to the confines of the TVA, that 400 miles?

Dr. Morgan: You see, the whole of the Tennessee River is in the TVA area.

Mr. Boylan: What I am trying to find out is whether or not there is any navigation on the river now, and where it is coming from.

Dr. Morgan: Some comes from within the Tennessee Valley, and some comes from the Ohio River and the Mississippi River.

Mr. Boylan: What is the nature of the articles transported?

Dr. Morgan: Steel, cement, crushed limestone, gravel, oil, gasoline.

Mr. Boylan. When they reach the terminal—that is, as far as they can go now—what is done with each shipment?

Is there a terminal there where they have to transship by rail, or what?

Dr. Morgan: No; there is not, because it is just coming into existence. There are little terminals, but they are not modern at all. Where you have only a foot and a half of water, you do not have much navigation. They just run up in the high water, and run up to a bank or small terminal. There are lumber companies that use the lower river for shipping their lumber out.

Mr. Boylan: Can they get it out?

Dr. Morgan: Yes; except in low water.

Mr. Boylan: How far can they get it out?

Dr. Morgan: The biggest shippers now are about 200 miles upstream from the mouth of the river.

Mr. Boylan: But they can ship only 200 miles?

Dr. Morgan: That takes the shipment to the Ohio River, where there is a 9-foot depth.

[fol. 4411] Mr. Boylan: Then what do they do with their merchandise?

Dr. Morgan: They ship 200 miles on the Tennessee, and then take it up and down the river, on the Mississippi and the Ohio. I think that this will answer your question—there is approaching completion today an inland navigation system on the Mississippi and its tributaries. It is not now in existence; but if no interruption occurs, 5 or 10 years from now it will be in existence and that will provide a channel for vessels of 9-foot draft downstream from St. Paul on the Mississippi, from Chicago on the Great Lakes, from Pittsburgh on the Ohio, and from Knoxville on the Tennessee down the Ohio and down the Mississippi, and there will be five or six thousand miles of such channel.

Now, the people of America are not fully aware of what happened to the middle of the United States when the Panama Canal was built. It has brought a paralysis to the interior of the United States. The Pacific and the Atlantic coasts have grown rapidly, while the interior of the country has gone back or largely stood still. The State of Iowa has actually lost in population, I believe. Missouri has largely stood still. The interior of our country cannot thrive until you have transportation more nearly on an equality with the rest of the country.

Mr. Boylan: You might say, then, that prior to the advent of the TVA there was no navigation on the Tennessee River?

Dr. Morgan: There was and has been considerable navigation, but under great difficulty.

Mr. Boylan: But practically prohibitive navigation?

Dr. Morgan: Yes; except for the lower river; because the river got down to a depth of a foot and a half. Here is a map; those dark lines are the lines of navigation that are being completed now.

Mr. Boylan: Can you get through to the Gulf now?

Dr. Morgan: Yes.

Mr. Boylan: From the Tennessee Valley?

Dr. Morgan: Yes.

Mr. Boylan: From the Tennessee Valley?

Dr. Morgan: Yes.

Mr. Boylan: What is the mean depth of the water?

Dr. Morgan: Below Wilson Dam it gets down to 3 and 3½ feet.

Mr. Boylan: You can use barges, canoes, and things like that?

Dr. Morgan: With the finishing of Pickwick Dam the minimum depth below Wilson Dam will be probably 5 feet, and with the completion of the Guntersville job the minimum depth will be 12 feet.

Mr. Boylan: At low water?

Dr. Morgan: At low water.

Mr. Boylan: Then you can use fair-size schooners and barges?

Dr. Morgan: Anything that can go in interior waters will travel there.

Mr. Boylan: But this will all be in the future?

Dr. Morgan: I think that within 5 years of the completion [fol. 4412] of this improvement it can be a reality. As to the possible navigation after the completion of the channel, we have made very careful estimates, of which the details are available. We believe that almost immediately on the completion of these dams we will have a traffic of about 6,000,000 tons on the river, and we will save somewhere between $1.10 and $1.25 a ton of freight on all of that traffic.

Mr. Ludlow: How much of that traffic will be outgoing and how much incoming, the relative percentage?

Dr. Morgan: I will give you that in just a moment.

That traffic of 6,000,000 tons would be the immediate result. We have two or three of the ablest men on water transportation in the country on our staff. They report those figures. They believe that within 20 or 25 years that traffic would at least double. We have great mineral resources, great resources there that simply cannot be used at the present time. The freight rates are extremely adverse to that region, and my personal belief is that when water transportation gets to going well the railroads will actually benefit by it because anything that brings about the general prosperity of that country will mean more business for the railroads. Each type of transportation will have its own business.

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Dr. Morgan: The operation of Norris Dam differs substantially from that of Wilson Dam or the Wheeler Dam. Norris Dam will be held at low elevations during the winter and during the first part of the flood season, so that the storage it gathers for power purposes will also be valuable for flood purposes. That is, during the fall we run the water down low and use up the power storage, and we hold it down there during the season when floods ordinarily occur, so that the same storage capacity that is good for floods is also good for power to some extent. During the latter part of the highwater season we close the gates and store the stream flow. A flood may occur and furnish part of that water supply. If not, the ordinary flow will do so.

Water Levels of Norris Dam

Then about the 1st of April the reservoir will be filled to the summer storage level, because we are almost sure that there will be no excessive floods later than that.

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Dr. Morgan: Yes. I am speaking in general terms. We have worked this out, and the management of that reservoir is one of the technical problems of the TVA, and the simple statement that I make would require qualifications as the problem is worked out in detail.

Mr. Taber: Your instructions to your operating division would naturally be on the basis of a current situation?

Dr. Morgan: Yes.

[fol. 4413] Mr. Taber: Rather than anything else. Your operating group would never get instructions from year to year?

Dr. Morgan: They would get general instructions, but if, for instance, we found that the ground was very dry in a certain year and would absorb much rain, if January had been an exceedingly dry month and the streams were empty, and so forth, we could assume an absorption of rainfall more than we could if it had been a wet month and the ground was full of water. Such practical facts would enter into determining current action.

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Dr. Morgan: We have made a report of the total situation with reference to that flood and the part that Norris Dam took in it, and the control exercised. We would like to include a copy of that report in the record, if we may.

(The report referred to is as follows:)

Flood-Control Activities of the Tennessee Valley Authority During Recent Ohio-Mississippi River Flood and Possibilities of Additional Flood-Control Benefits With Completion of Tennessee Valley Authority Program in Tennessee River System

During the flood of January 1937 the Tennessee Valley Authority dams were ready to be used for flood storage. The entire flow of the river above the Norris Dam was stored throughout the whole duration of the flood. The effect was substantially to lower flood heights on the lower Ohio and adjacent Mississippi.

No universal rule can be stated as to combination works for flood control, navigation control, and power development. With proper engineering planning and management, the various uses often can be combined in single structures with greater economy and effectiveness than can be secured by single-purpose developments. The possibility of combining varied purposes, and the economies resulting from such combinations, vary in different projects.

APPENDIX "H"

It is important to point out that during the recent flood on the Ohio and Mississippi Rivers the Authority had only three dams in operation—Wilson and Wheeler Dams, on the main Tennessee River, just above Florence, Ala., and Norris Dam, on the Clinch River, a headwater tributary of the Tennessee, 80 miles above its junction with the Tennessee. Wilson Dam, constructed before the Authority was created was not designed or built with provision for the storing of flood water. Therefore, only Wheeler and Norris Dams, both constructed by the Authority, were available for flood-control operations at the time of this flood. Norris Dam, one of three proposed tributary stream dams, completely controls the flood run-off from 2,950 square miles. This is about 7 per cent of the total area of the Tennessee River Basin. [fol. 4414] Wheeler Dam, one of nine proposed main river dams, has a total drainage area above it of nearly 30,000 square miles, with only about 500,000 acre-feet capacity for flood storage. This capacity in this single dam is wholly inadequate to afford complete control of the flood run-off from above.

Obviously, with these limited storage facilities available at present, nothing approaching adequate control of the floodwaters from the Tennessee River can be expected. The Authority not only does not claim to be able at present to effect such complete flood control, but it fully realizes its inability to do so. Moreover, it recognizes the need for the completion of the dams under construction and those proposed, both on the main stream and tributaries, if adequate flood-control benefits are to be achieved.

During the recent flood the water-control activities of the Authority were beneficial to flood conditions on the Ohio and Mississippi Rivers. Throughout the entire flood period during January the flood-storage space available at its two dams for flood-control purposes was utilized to the very best advantage. There were absolutely no other water uses during that period.

Norris Reservoir, after storing throughout the spring flood season of 1936, during which time Chattanooga in particular and the Tennessee River in general benefited through the material reduction of flood heights, was steadily drawn down during the dry season. This lowering of Norris began the middle of June and continued till early in

December, the releases being timed to best serve navigation on the lower Tennessee River to make ready for the flood season which usually begins during the latter part of December and lasts until the end of March or early in April. At the low point the reservoir was nearly 60 feet below the top of gates and had room for more than 1,500,000 acre-feet of storage, nearly all of which was actually used during the period of the Ohio-Mississippi flood in storing all the floodwaters above the dam. No water releases were made from Norris during the entire flood period in January. The flood-storage space in Wheeler Reservoir was also used to the best advantage during the flood period.

Engineers of the Authority kept in touch daily with the progress of the flood down the Ohio and into the Mississippi, using the long-distance telephone and other means at their disposal, and this gave them the information needed for the operation of their dams so as to be of the most benefit in the flood emergency on those rivers.

The flood at Cairo, Ill., at the junction of the Ohio and Mississippi remained above the dangerous stage of 58 feet for about 15 days during which time about 964,000 acre-feet of water was stored in Norris and Wheeler Reservoirs. This represents an average reduction of about 32,000 cubic feet per second from the flood flow of the Tennessee River. In other words, if the reservoirs had not been in operation at [fol. 4415] the time, the Tennessee River would have contributed an average of 32,000 cubic feet per second more to the flood throughout the 15-day critical period than it actually did contribute.

At no time during the critical period above 58 feet at Cairo did the Tennessee River discharge its full natural flow. In the month of January during the flood period, 1,250,000 acre-feet of water was stored in Norris alone, during which time the reservoir rose more than 40 feet to within about 3 feet of the top of spillway gates.

The net effect of the Tennessee Valley Authority flood-control operations on the Ohio and Mississippi Rivers was a real benefit at a crucial time when each additional inch in flood height was a very serious matter, possibly serious enough to make the difference between holding or losing levees. After the completion of all of the proposed dams

on the main stream and the tributaries of the Tennessee River, the beneficial flood-control effect on the Ohio and Mississippi Rivers will be several times as great.

Preliminary estimates indicate that with the completion of Gilbertsville, Pickwick, Wilson, Wheeler, Guntersville, and Chickamauga Dams on the main stream, and Norris and Hiwassee Dams on tributary streams, the recent flood crest could have been reduced about 2½ feet at Paducah and about 2 feet at Cairo. The addition of Watts Bar and Coulter Shoals Dams on the main stream and Fontana Dam on a tributary stream would add further benefits in the lowering of flood heights at Paducah and Cairo.

Pages 399, 400, 401, & 402

(Here follows o photolithograph, side folio 4416)

APPENDIX "H"

Tennessee Valley Authority annexed budget—Summary

	Actual, prior years	Actual, fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
Revenue:				
Navigation, flood-control, and hydroelectric program	$2,392,555	$2,027,780	$2,489,131	$4,517,848
National-defense program	86,178	82,980	86,791	85,410
Other undistributed	2,918	3,866	3,500	3,800
Total revenue	2,482,861	2,114,256	2,579,422	4,608,458
Expenditures (obligation basis):				
Navigation, flood-control, and hydroelectric program	46,503,545	50,397,223	45,097,344	48,877,970
Fertilizer and soil-conservation program	2,709,349	3,518,903	3,807,402	3,808,800
National-defense program	1,414,110	890,193	406,565	311,144
Regional studies, experiments, and demonstrations program	402,000	458,899	273,231	257,242
Other undistributed expenditures	935,256	394,125	1,505,582	53,300
Total expenditures	51,994,260	55,898,943	51,270,124	53,106,456
Net appropriation requirements	49,461,679	53,484,687	48,690,702	48,500,000
Means of financing:				
Appropriations, prior years	75,000,000			
Prior year's appropriation available in 1936	−25,518,321	25,518,321		
Tennessee Valley Authority fund of 1936		34,000,000		
Property received from War Department		757,096		
1936 appropriation available in 1937		−8,790,702	8,700,702	
Tennessee Valley Authority fund of 1937			39,900,000	
Contract authorization for 1938				5,500,000
Estimate of appropriation for 1938				43,000,000
Total available funds	49,481,679	53,484,687	48,690,702	48,500,000
Adjustment to cash basis	−1,958,079	−4,653,263	−5,690,702	500,000
Total carried to general budget summary	47,523,600	48,831,424	43,000,000	49,000,000

JUSTIFICATION OF ESTIMATES

The above statement presents the actual and estimated revenues, expenditures, net appropriation requirements, and means of financing of the Tennessee Valley Authority for the fiscal year 1938 and prior periods. The net appropriation requested for the fiscal year 1938 is $43,000,000, or an increase of $3,100,000 over the appropriation for 1937. In addition to the appropriation requested for 1938, a contract authorization of $5,500,000 is requested to provide for equipment that must be ordered in that year. These two amounts make up the total of $48,500,000 that will be required. Comparative statements of revenues and net-appropriation requirements, by programs and projects, follow, in which the estimates for 1938 are justified in detail.

It will be noted that the entire amount of the estimate for 1938 is covered by the appropriation of new funds and the contract authorization. In 1937 nearly a fifth of the total available fund is composed of the reappropriated unobligated balance of the 1936 appropriation. It is estimated that no such balance will be available for 1938.

Receipts, by programs, Tennessee Valley Authority

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
Navigation, flood-control, and hydroelectric program:				
Structures and improvements				
Norris project	$788,291	$487,504		
Wheeler project	339,178	312,368		
Pickwick Landing project	31,513	305,121	$356,858	$343,302
Hiwassee project			35,100	215,894
Guntersville project		27,194	222,350	299,429
Chickamauga project		1,876	31,225	56,826
Electrical plant and equipment—repayments	36,117	38,401	78,600	100,000
Subtotal	1,193,087	1,172,864	724,131	974,841

APPENDIX "H"

[fol. 4417] Receipts, by programs, Tennessee Valley Authority—Continued

Navigation, flood-control, and hydroelectric program—Continued.

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
Operations:				
Water-control operations:				
(a) Norris project	.....	.....	$306,850	$306,850
(b) Wheeler project	.....	.....	81,150	11,055
Subtotal	.....	.....	388,000	317,905
Electricity operations:				
(a) Operating revenues	$1,194,070	$827,589	1,316,000	3,150,000
(b) Nonoperating revenues	6,398	27,507	61,000	75,000
Subtotal	1,200,468	855,096	1,377,000	3,225,000
Total navigation, flood-control, and hydroelectric program	2,393,555	32,027,760	2,489,131	4,517,546
National-defense program: Maintenance of idle property	86,108	82,930	86,791	85,410
Other undistributed: Administrative and service	2,918	3,566	3,500	3,500
Total receipts	2,482,581	2,114,256	2,579,422	4,606,456

Appendix "H"

[fol. 4418] **Justification of Estimates**

The estimated receipts of the Authority for 1938 are $4,606,456, an increase of $2,027.034 over those estimated for 1937, and an increase of $2,492,200 over those actually received in 1936. The major portion of these receipts is derived from the operating phases of the navigation, flood control, and hydro-electric program. These operations are becoming increasingly important as the demand for electric energy continues to mount, and as some of the new generating plants of the Authority are being brought into operation. This is evidenced by an increase in receipts from electricity operations from $855,096 in 1936 to an estimated total almost double that amount, or $1,377.000 in 1937; and an estimated total almost four times the 1936 amount, or $3,225,000, in 1938. This estimate is explained in detail in a following statement.

Receipts from water-control operations consist principally of income from employee-housing facilities at the Norris and Wheeler projects, which are entering the operating stage. This income approximately offsets the expense of operating the facilities. At Norris, however, an increasing amount of revenue is to be derived from the recreational and other use of the reservoir and the lands around its margin by the public.

Receipts under the structures and improvements section of this program are of two types. The first of these is composed of payments from employees for food, rent, electricity, water, etc., at the construction camps. It is purely incidental to the construction activities. The second consists of repayments from municipalities and cooperative associations which have purchased electrical distribution facilities from the Authority. It will serve, eventually, to liquidate the Authority's investment in such properties. The increase for 1938 over 1937 is accounted for by the larger volume of such transactions outstanding, and by the expected improvement in the operating position of the newer cooperative associations, a number of which are still in the organization stage.

Receipts under the national defense program represent payments for rent, electricity, water, etc., from employees living in the villages on the nitrate-plant reservations at Muscle Shoals. They serve to reduce the cost of maintaining these properties in stand-by condition. Receipts under the other undistributed section of the Budget consist of income from the sale of salvaged materials of a general character, the sale of information bulletins, and sundry other similar sources.

Appendix "H"

[fol. 4419]

Net appropriation requirements—All programs

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
I. Navigation, flood-control, and hydroelectric program	$44,109,990	$48,309,463	$42,608,213	$44,360,424
II. Fertilizer and soil-conservation program	2,709,349	3,518,503	3,897,402	3,506,600
III. National defense program	1,328,002	747,263	319,774	225,734
IV. Regional studies, experiments, and demonstrations	402,000	458,899	273,231	357,242
V. Other undistributed expenditures	932,338	390,559	1,592,082	50,000
Total	49,481,679	53,484,687	48,690,702	48,500,000

Appendix "H"

[fol. 4420] Justification of Estimates

The above statement presents in summary form actual and estimated net appropriation requirements for the entire Tennessee Valley Authority program. In this summary and in all of the following statements actual and estimated receipts have been included in order to show the amount of appropriated funds required to finance the various programs and projects.

Since the above estimates for the individual programs are explained in detail in the following text, none of this will be duplicated at this point. It should be noted, however, that the total appropriation requirement for 1938 is $190,702 less than the total for 1937. This decrease is accounted for by substantial reductions in the estimates for the fertilizer and soil conservation, national defense, and other undistributed expenditures programs. These reductions are offset in part by an increase of $1,752,211 for the navigation, flood control, and hydroelectric program and an increase of $84,011 for the regional studies, experiment, and demonstrations program.

The increase for the navigation, flood control, and hydroelectric program is due primarily to the heavy construction schedule involved in completing or continuing work on the six projects now under construction. Included in the estimate for dams under construction is $6,000,000 to provide in part for generator installations in the Guntersville and Chickamauga projects. These installations have been scheduled to meet increased load requirements of the area. Without these installations water power created by the dams will be wasted ans substantially increased revenues will be lost.

APPENDIX "H"

[fol. 4421]

I. Navigation, Flood Control, and Hydroelectric Program

Summary

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
A. General investigations projects	$1,345,892	$2,121,075	$1,622,484	$2,515,375
B. Structures and improvements	43,398,924	46,762,374	41,258,090	43,824,747
C. Operations	(634,826)	(513,986)	(272,361)	(1,979,698)
Total	44,109,990	48,369,463	42,608,213	44,360,424

Appendix "H"

[fol. 4422] Justification of Estimates

The statement show- above sets forth in summary form the estimates for the navigation, flood control, and hydroelectric program, which totals, for 1938, $44,360,424 and exceeds by $1,752,208 the estimated expenditures under this program in 1937. This total estimate for 1938 is based on a series of carefully prepared estimates for each project and activity involved in this program. These detailed estimates are set forth on the following pages. Preceding these detailed estimates and immediately following this statement a series of charts and tables is presented to provide in broad outline some of the major phases of the entire program.

The first exhibit is a plan and profile showing the existing and proposed high dams on the Tennessee River. This exhibit, which is entirely self-explanatory, gives a clear picture of the work being done and to be done in providing a 9-foot navigable channel from Knoxville, Tenn., to the mouth of the river, a distance of 652 miles.

The second exhibit is a tabulation giving data on the principal features of present and proposed dam and reservoir projects. The third exhibit is a tabulation showing the status of channel depths at the various sites. This shows the depths prior to Tennessee Valley Authority construction and the resulting depth in each pool following the construction of a given project. The fourth exhibit is a general statement on floods and the flood-control features of the Tennessee Valley Authority program.

The final exhibit is a chart showing system demand, generator installations, and firm power capacity actual and projected to the end of 1940. Since the 1938 estimate includes amounts totalling $6,000,000 for four additional generating units, this exhibit will be explained in detail. This study shows that the great amount of water power provided by the Tennessee Valley Authority dams will be wasted unless electric generating equipment is installed so that it may be sold to the market known to exist.

[fol. 4423] Pages 411-414

The 1938 estimate for general investigation projects of $2,515,375 represents an increase of $892,891 over the 1937 estimate and an increase of $394,300 over the actual expenditures for 1936.

This increase is due principally to the estimate for preliminary project investigations, although small increases are required for general water-control investigations. The estimates for electricity research and development and for general mapping and map records show reductions from the 1937 estimates. This shift in emphasis is occasioned by the necessity for intensive planning both on general investigations and investigations on the main river and tributaries. The flood of January and February of 1937 has demonstrated the need for additional flood-control works in the Mississippi watershed. According to Major General Markham, Chief of Engineers, the flow of the Ohio at that time was 600,000 cubic feet per second greater than any previous estimates. The Tennessee and its tributaries offer opportunities for the construction of storage facilities which will make substantial contributions to the control of the future floods, however great they may be. The investigations provided for in these estimates will more adequately establish the possibilities for economical flood storage, both on the main river and on the tributaries, before construction work proceeds to the point where maximum benefits might be precluded by work already done.

The estimates are explained in detail in the following paragraphs:

1. Water-control Investigations, $408,626.—This estimate provides for the continuation of investigations contributing to the integrated development of the Tennessee River system to achieve the greatest possible navigation and flood-control benefits for both the Tennessee and Mississippi Rivers. This work involves the collection and compilation of hydrographic data and various engineering and economic studies and reports.

The estimate for hydrographic data of $158,079 provides for continuation of an intensive stream-gaging program in cooperation with the United States Geological Survey, Water Resources Branch. There are 174 river gage stations in the Tennessee River basin for which data are compiled by the Tennessee Valley Authority. The United States Geological Survey operates 132 of these stations and the Authority operates the remaining 42. The Authority also compiles data from 344 rainfall stations located in

or near the Tennessee River Basin. The Authority operates and maintains 197 of these stations, the United States Weather Bureau operates 126, and the remaining 21 stations are either operated privately or by other governmental agencies. The Authority operates 46 silt-sampling stations from which data are regularly compiled. Other activities include evaporation measurements, weather forecasting, and preparation of special reports. It should be noted that this [fol. 4424] estimate covers general investigations which cannot be charged directly to preliminary, operating, or construction projects. These data are essential to a full interpretation of the Tennessee watershed as related to flood control on the Tennessee and the Mississippi Rivers.

The 1938 estimates for engineering studies and reports of $179,002 provides for continuation of a general navigation study involving a complete analysis of the navigation program for the purpose of fixing policies and determining facts and presenting same in a complete report: continuation of a study of floods and flood control on the river as a whole to determine methods of control and to secure data as to flood control benefits in the Tennessee and lower Mississippi, with particular attention to the value of flood storage on the lower reaches of the Tennessee with respect to its effect on the Ohio and Mississippi; continuation of power studies to determine plant capacities, sequence of power installations, and methods of operation of the system at various States in its development; and development of a coordinated plan for the construction and operation of the several projects. This estimate includes a special study of the flood-control problem at Chattanooga where local protection works will be required in addition to the protection provided by storage reservoirs. Information as to the amount of local protection that can be economically provided is needed in order to determine the amount of additional storage needed to provide complete flood control protection. Also included is a study of coordinated reservoir operation to most effectively utilize available storage capacity in order to reduce flood flows, maintain flows for navigation, and generate power.

The estimate for economic studies and reports of $71,545 provides for continuation of studies relating to the economics of transportation—rail, water, highway, air, and

pipe line—in the Tennessee Valley area and contiguous territory, involving, specifically, the collection and making available of data relating to transportation in this area, outlets to markets, accessibility to raw materials from a transportation standpoint, the feasibility of water transportation, possible coordination of existing transportation facilities, and the analysis of the freight rate structure from, to, and within the valley area. This estimate also includes other small general studies relating to the navigation and flood control program.

2. Preliminary Project Investigations, $1,572,049.—During 1937, investigations on two remaining dams on the upper Tennessee River which are necessary to provide a 9-foot channel to Knoxville were practically discontinued at the recommendation of the House Appropriations Committee. Estimates are included in the 1938 Budget which provide for the resumption of these preliminary investigations in order to determine the exact location, general design, and probable costs of these structures, so that con- [fol. 4425] struction can be started in the future. Investigations on tributaries were also discontinued in 1937, and their resumption is provided for in the 1938 estimate. It is urgent that these investigations be renewed so that adequate preparation will have been made for future construction.

Gilbertsville Dam and Reservoir, $742,439.—The Gilbertsville Dam will be located 22.5 miles above the mouth of the Tennessee River. The amount requested for 1938 provides for the continuation of studies and investigations preliminary to the beginning of actual construction. This preliminary work will be sufficiently advanced by the end of the fiscal year 1938 so that construction of the project can be commenced early in the fiscal year 1939. During 1938 the principal work to be undertaken is as follows:

(1) Subsurface investigations at both the Gilbertsville and the Birmingham sites, the latter being the only feasible alternate site;

(2) Revisions of estimates and reports required to enable initiation of final designs;

(3) Topographic, dam-site, reservoir land and reservoir utility and cemetery surveys, and area and mosaic mapping;

(4) Preliminary surveys and studies of construction plant, design, hydrographic data, highway and railroad relocation, land acquisition and management, backwater protection, malaria control, reservoir clearing, and general social and economic features of the project.

The reservoir will be 184 miles long, providing navigation to Pickwick Dam. According to present estimates, it will furnish 3,700,000 acre-feet of flood storage. The dam structure will consist of concrete spillway, navigation lock 110 by 600 feet with a maximum lift of probably 68 feet, nonoverflow sections, and intakes for a powerhouse to be constructed as the need for additional generating capacity arises. Earth embankments with a volume of 2,500,000 cubic yards will connect the concrete structure with high ground at each abutment. The over-all length will be approximately 8,300 feet and the maximum height 150 feet.

Watts Bar Dam and Reservoir, $216,628.—The Watts Bar Dam will be located at the head of the Chickamauga Reservoir, approximately 530 miles above the mouth of the Tennessee River. At the beginning of the fiscal year 1937 the investigation of this site had proceeded to the extent of a preliminary drilling program and preliminary estimates of cost. At that time the project had not been studied in sufficient detail to develop substantially a final layout and sufficient drilling had not been done to determine the exact location of the site.

[fol. 4426] Since no funds were included in the 1937 Budget for the further studies which are essential before design and construction of the project can be undertaken, it is highly important that money be included in the 1938 Budget for this purpose. Otherwise, when construction is authorized, there will be considerable loss of time and possibly some sacrifice in economy.

Approximately the entire 1938 fiscal year will be required for these investigations, which are proposed as follows:

(1) Detailed program of core drilling, test pits, and other foundation investigations, to determine the exact location for the axis of the dam.

(2) Detailed studies of backwater effects at various communities above the dam, principally Kingston and Harriman, checking tentative pool levels, and determining backwater damages.

(3) Studies of the layout for structures and development of preliminary design details, so that the plan can be more fully developed and more accurate estimates of construction costs prepared.

(4) Preparation of the final engineering report based on the investigations so as to afford basic information needed by various agencies of the Authority before design, construction, land acquisi-on, and other activities can begin.

(5) Studies concerning the flood control benefits of this project in relation to the other main river and tributary projects.

Coulter Shoals Dam and Reservoir, $230,532.—The Coulter Shoals Dam will be located at the head of Watts Bar Reservoir, approximately 600 miles above the mouth of the Tennessee River. The reservoir will extend to Knoxville. There were no funds in the 1937 Budget for completion of investigations at the Coulter Shoals Dam site, other than a small amount to complete preliminary drilling which had been started in May 1936.

It appears that not less than 1 year will be necessary to complete project investigations before the dam can be definitely located and sufficient information developed so that detailed designs and other activities can proceed.

At the time work was stopped, due to lack of appropriations for this project, the general location of what appears to be a favorable site had been found, but the detailed drilling which will be necessary to explore thoroughly this site may develop conditions which will necessitate further exploration and involve an extended drilling program. The foundation rock for this dam will be Knoxdolomite, which is subject to extensive solution, and in the progress of [fol. 4427] detailed drilling, cavities may be found which would make the site now contemplated unfeasible for construction. This project has not been investigated to the same extent that the Watts Bar project has been investigated, and furthermore, the foundation difficulties will be

much greater, due to entirely different rock formation at the Coulter Shoals site. At least one alternate site should be fully investigated.

The studies which have been made for project layout and the cost estimates on the basis of the best data now available are very preliminary and a great deal of work must be done to develop the basic data for further reports. This work will include the following.

(1) Completion of at least one, if not several, extensive drilling contracts.

(2) Study of backwater damages in the reservoir, particularly at Knoxville, balancing the maximum feasible pool level against extensive potential damages, and investigating methods of protection for minimizing these damages.

(3) Preparation of a preliminary report on engineering investigations to enable studies of land acquisi--on, reservoir clearance, highway and railroad relocation, and similar problems to be investigated, and preparation of a final report to form a basis for the actual work of all activities.

It is extremely important that money be included in the 1938 Budget for the above purposes. Otherwise, when the project is authorized for construction, a year probably will expire before any detailed design or construction could be initiated. It may be anticipated that the foundation conditions at Coulter Shoals will be difficult, and it is both unsafe and uneconomical to initiate a construction program on such a project without knowing to the fullest extent the story on the foundations which are available.

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Mr. Woodrum: What is the status of that project?

Dr. A. E. Morgan: If I may spend just a moment, I will indicate the necessity of this examination.

At the time the TVA was organized, private interests had settled upon a dam site there. It was called the Shannon site, I believe. It is sometimes called the Aurora site. They are close together and they are confused in the popular mind. That had been settled upon by private industry and by the Government engineers. That, you might say, was the official site of that dam. For a couple of years TVA was under great pressure to recommend the beginning of that

dam and we refused to do so because we felt that the information we had was inadequate and we continued our study of the situation.

It is a difficult site to explore, for the reason that it is in a country that has been raised and lowered within quite recent geologic time. There is about 50 to 100 feet of allu- [fol. 4428] vial soil over the bedrock, and under the soil winding back and forth, there is a river channel 50 to 100 feet deep. You have to explore to find out where that river channel is. Then, it is a region that is faulted and it is a kind of rock that has cavities in it. It is one of the most treacherous places in which to build a dam.

So we refused, against a great deal of pressure locally, to recommend any construction there until we had felt our way. The result is that we have located a site that is entirely superior to the one that was the official site when we came on the job. It is at Gilbertsville, quite a ways below the original site. Not only is it a better site for construction purposes, but it offers a very great possibility for coordinating the control of the Ohio River with that of the Tennessee River.

Page 419

Dr. A. E. Morgan: * * * Take flood control on the Mississippi as a whole. The Federal Government has appropriated money for building, but not enough for finding out what to do; and for 50 years, from the original official report in 1874 until the great flood of 1927, estimates of cost of that work were so inadequate that at no time did they amount to as much as 20 percent of the real cost.

I can quote the estimates by the responsible ranking officials during 50 years on the Mississippi to show you that at all times during that period the official estimates of cost of completing Misissippi flood control were at no time 20 percent of what it is now recognized the actual cost will be.

Mr. Taber: Should they be that much? You say they were never 20 percent of what they cost.

Dr. A. E. Morgan: They were never 20 percent of what the actual total cost is now recognized to be. That is because the Government spent money for building, but did not spend enough money in preliminary investigations to find out what they were doing.

Mr. Taber: You mean the preliminary estimates were never as much as 20 percent of what the total cost was?

Dr. A. E. Morgan: For a period of 50 years, from 1874 to 1927, the official published estimates of cost of Mississippi flood control were never 20 percent of what the actual cost was going to be and is admitted today as necessary.

[fol. 4429] Page 425

Mr. Wigglesworth: What is the ultimate limit of this program you have in mind? How many of these projects are ultimately to be constructed?

Dr. A. E. Morgan: We presented to the Congress a year ago a program for the unified control of the Tennessee River. That includes the construction of the Gilbertsville, Watts Bar, Coulter Shoals, and Fontana Dams, but no others.

Mr. Wigglesworth: Does this picture go beyond that?

Dr. A. E. Morgan: It does not extend beyond those projects. We have no plans beyond that.

But in defining those projects we ought to have a degreee of information that we do not yet possess, for a number of reasons.

For instance, the Mississippi River Committee of the National Resources Board, as well as the Army engineers, have indicated that for complete flood control, or for safe flood control, on the Mississippi River it will be necessary or desirable to get a certain amount of storage on the Tennessee River. That estimate is about 10 million acre-feet of storage on the Tennessee.

The structures we have recommended, and that are included in this plan presented to Congress, will store about 8 million acre-feet, and it will be necessary to have from 2 to 4 million acre-feet additional to meet the demands of the control on the Mississippi River.

Pages 451-2

Mr. Lilienthal: * * * I would like to refresh the committee's recollection, although you are, of course, familiar with the statute under which we operate, by reading if I may section 9 (a) of the act which pretty well defines what our duty is with respect to electricity, both as to its production and to the marketing. That section reads:

The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purpose of promoting navigation and controlling floods. So far as may be consistent with such purpose the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof; and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this Act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority.

The statute further lays down in considerable detail the policies that are to guide the Board and by which the Board is bound in this matter of the sale of power thus generated. [fol. 4430] Section 10, for example, lays down a policy of preference to States, counties, municipalities and cooperative organizations of citizens or farmers not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members.

Section 11, requires that the power shall be distributed and sold equitably among the States, counties and municipalities within transmission distance; and at another point authorization is given in this marketing program for the construction of transmission lines.

That general background indicates, it seems to me, the responsibility of this phase of the program to produce as much revenue as possible within the limits of market possibility and the transmission area. It indicates the kind of customers who are entitled to purchase; priority to public agencies, but including every other kind of customer, including private utilities and industrials. And those customers are included, we believe, with those priorities among customers to which we will refer in analyzing the revenues.

Preliminary to discussing these particular figures with respect, to transmission lines, for which we are asking $4,700,000 this year, I hope the committee will bear in mind the policies laid down for us and by which we are bound in this act with respect to the marketing of this power;

that we are not free simply to sell it at the busbar at these various dams if requests are made upon us by applicants to whom we must give preference. Further, in the disposition of power generally, transmission lines are obviously necessary, for two reasons: One, the tying together of this series of great dams (the map on p. 30 indicates the progress of that program); and, second, the building of lines for marketing purposes.

These lines may sometimes be lines between dams, which also serve as marketing lines, or they may be primarily marketing lines which also serve a subsidiary purpose in tying of the dams together.

Pages 498-9

Mr. Lilienthal: * * * The need for power in the Tennessee Valley area has been recognized for some years. It has been classified as a deficiency area by the Federal Power Commission in its careful estimate made under the direction of the Congress as to power resources. It has been confirmed by estimates made before this committee.

In 1935, on page 596 of the hearings before this committee, we stated that our figures and the figures of the Federal Power Commission and substantially of the Army Engineers point to the absorption of the existing surplus within 1 or 2 per cent during 1937, which happens to synchronize with the date when the Wheeler and Norris Dams were to provide a total of four additional generators. That is exactly what has happened. The estimates that had been made indicating a vast surplus have been shown to be unnecessarily pessimistic.

[fol. 4431] In 1935, at the time that the Federal Power Commission studies and our own studies were made, the chief engineer of one of the largest utility companies operating in the South, a very able man, presented estimates as to the situation that will exist in 1940; and I should like to point to these as indicating the basis for our own feeling that the estimates that we have been making have been on some realistic basis.

On page 284 of the hearings before the Committee on Military Affairs in March of 1935, Mr. Yates introduced a table in which he estimated that in 1936 there will be a need in his southern companies of 3,763,000,000 kilowatt-

hours; and that 4 years hence, in 1940, there will be a need of 4,575,000,000 kilowatt-hours.

We have the actual figures for 1936, and they show these results: 1936 showed an actual energy required and utilized by those companies of 4,644,000,000 kilowatt-hours, as compared to the estimate of 3,763,000,000 kilowatt-hours. The estimate for 1940 was 4,575,000,000 and the actual for 1936 was in excess of that by 100,000 kilowatt-hours.

The fact is that there is a deficiency in the supply of power in the whole Tennessee Valley area.

Pages 529-530

Mr. Lilienthal: * * * You might be interested in a statement indicating, with respect to particular communities, the efforts which the communities have made to buy, and the result of those efforts. I should think it would be appropriate at this point to have a statement inserted in the record.

Mr. Woodrum: We would like to have that inserted in the record.

Mr. Lilienthal: A large number of cities have demonstrated an interest in obtaining lower electricity rates for their citizens by distributing TVA energy through municipally owned plants. Several hundred cities have applied to TVA for energy; many others have communicated with TVA on the matter. It will be recalled that the statute expressly provides that cities and other nonprofit agencies shall be given preference by TVA in the sale of its surplus power, and confers upon such agencies specific rights flowing out of such preference.

In its relations with these cities, the Authority early laid down two guides from which it has not deviated: (1) Whether or not a city should acquire a system to distribute wholesale energy from the Authority's dam was entirely a local question for the community to decide for itself; (2) once a city had decided to acquire a system for distribution of TVA electricity, the Authority took the position that every possible effort be made by the city to purchase existing facilities rather than construct a new and competing system. This position was reiterated time after time. In some instances the Authority, rather than allow [fol. 4432] negotiations between city and utility to fall

through, sought to carry them on itself after the cities had failed.

By this second guide the Authority sought to preserve the existing systems and protect actual and useful investments of private companies in such properties. At the same time this would permit the citizens to exercise their right under State law to own and operate electrical distribution systems, and their preferential rights conferred by the act of Congress.

Some of the cities had sought to own and operate their distribution systems prior to creation of the Tennessee Valley Authority. In seeking to distribute TVA energy, citizens had expressed themselves at the polls—sometimes by great majorities, as 17½ to 1 in Memphis and 93 to 1 in Lewisburg—or through their duly elected governing bodies to exercise their right to acquire and operate their own electric distribution business.

Pages 537-8

(Here follow two photolithographs, side folios 4433 and 4434)

in proposals for purchase of the existing plant. H. B. Sanders, newspaper proprietor and one of the citizens active in seeking municipal ownership and distribution of T. V. A. energy, reported that the company had obtained an injunction against the city, and "also, they have refused to sell their plant to the city or even discuss naming a price."

In Henderson, Tenn., citizens voted a $35,000 bond issue to build or purchase a distribution system, but the local manager of the West Tennessee Power & Light Co. told city officials that the company was not interested in a sale, that if one were to be considered it would have to be a sale of all the properties owned or controlled by the company.

Table showing towns officially applying for TVA power

State and town	County	Population	How served
Alabama:			
Bessemer	Jefferson	20,721	Birmingham Electric Co.
Boaz	Marshall	1,691	Alabama Power Co.
Cherokee	Colbert	659	Do.
Chairmont Springs	Clay		
Courtland	Lawrence	359	
Elkmont	Limestone	192	
Fayetteville	Morgan	843	Alabama Power Co.
Hartselle	Morgan	2,204	Do.
Huntsville	Madison	11,554	Do.
Jasper	Walker	5,313	Do.
Leighton	Colbert	670	Do.
Madison	Madison	431	
Mooresville	Limestone	114	
Moulton	Lawrence	630	Alabama Power Co.
Red Bay	Franklin	1,707	Do.
Robertsdale	Baldwin	678	Riviera Utilities Corporation.
Rogersville	Lauderdale	445	
Russellville	Franklin	3,146	Alabama Power Co.
Tarrant City	Jefferson	7,341	Birmingham Electric Co.
Town Creek	Lawrence	427	
Vina	Franklin	519	
Valley Head	DeKalb	430	
Arkansas:			
El Dorado	Union	16,421	Arkansas General Utility.
Paragould	Greene	5,996	Arkansas Utilities Co.
West Memphis	Crittenden	895	Arkansas Power & Light.
Georgia:			
Cartersville	Bartow	5,250	Municipal.
Dalton	Whitfield	8,160	Do.
Waycross	Ware	15,510	Georgia Power & Light Co.
Illinois:			
Harrisburg	Saline	11,625	Central Illinois Public Service Co.
Metropolis	Massac	5,373	Municipal.
Kentucky:			
Fulton	Fulton	3,502	Kentucky Utilities Co.
Middlesboro	Bell	10,350	Do.
Trenton	Todd	524	Kentucky-Tennessee Light and Power Co.
Mississippi:			
Aberdeen	LaFayette	3,925	Mississippi Power Co.
Bruce	Calhoun	946	To be served by Pontotoc County Electric Power Association.
Coffeeville	Yalobusha	458	Mississippi Power & Light Co.
Fulton	Itawamba	927	
Greenwood	Leflore	11,123	Municipal.
Hickory Flat	Benton	337	
Oxford (Contract refused by referendum)	Lafayette	2,890	Municipal.
Ripley	Tippah	1,998	Ripley Utilities Co.
Starkville	Oktibbeha	3,612	Mississippi Power Co.
State College	Clay	4,677	
West Point	Haywood	2,414	Municipal.
North Carolina: Waynesville			
Ohio:			
Cincinnati	Hamilton	451,160	Cincinnati Gas & Electric Co.
Portsmouth	Scioto	42,560	Ohio Power Co.

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APPENDIX "H"

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Table showing towns officially applying for TVA power—Continued

State and town	County	Population	How served
Tennessee			
Adamsville	McNairy	643	Tennessee Electric Power Co
Ardmore	Giles		
Bemis (contract negotiations in progress)	Madison		Bemis Bag Co.
Big Sandy	Benton	603	Tennessee Light & Power Co.
Brueton	Carroll	1,112	Do
Chattanooga	Hamilton	119,798	Tennessee Electric Power Co.
Clarksville	Montgomery	9,242	Kentucky-Tennessee Light & Power Co.
Clinton	Anderson	1,927	Tennessee Electric Power Co.
Coal Creek	do	1,116	Do.
Columbia	Maury	7,982	Do.
Decaturville	Decatur	419	
Dresden	Weakley	1,047	Kentucky-Tennessee Light & Power Co.
Dyer	Gibson	1,214	Do
Dyersburg	Dyer	8,733	Municipal.
Etowah	McMinn	4,209	Etowah Power Co.
Fayetteville	Lincoln	3,822	Tennessee Electric Power Co.
Gallatin	Sumner	3,060	Kentucky-Tennessee Light & Power Co.
Gleason	Weakley	760	Do.
Grand Junction	Hardeman	824	Interstate Utilities Co.
Greeneville	Greene	5,544	Tennessee Eastern Electric Co.
Greenfield	Weakley	1,429	Kentucky-Tennessee Light & Power Co.
Humboldt	Gibson	4,613	West Tennessee Power & Light Co.
Jellico	Campbell	1,530	Tennessee General Utilities Co.
LaFollette	do	2,637	Tennessee Electric Power Co.
Lawrenceburg	Lawrence	3,102	Municipal.
Lebanon	Wilson	4,656	Do.
Lenoir City	Loudon	4,470	Tennessee Electric Power Co.
Lewisburg	Marshall	3,112	Do.
Livingston	Overton	1,526	Do.
Martin	Marion	3,500	Kentucky-Tennessee Light & Power Co.
Morristown	Hamblen	7,306	Grange County Electric Co.
Moscow	Fayette	296	
Murfreesboro	Rutherford	7,993	Tennessee Electric Power Co.
Obion	Obion	1,100	Kentucky-Tennessee Light & Power Co.
Oliver Springs	Roane	880	Tennessee Electric Power Co.
Paris	Henry	8,164	Kentucky-Tennessee Light & Power Co.
Parsons	Decatur	915	Tennessee Electric Power Co.
Pressmen's Home	Hawkins		
Ridgely	Lake	979	Southern Utilities Co.
Ripley	Lauderdale	2,330	West Tennessee Power & Light Co.
Rives	Obion	417	
Rockwood	Roane	3,898	Tennessee Electric Power Co.
Rogersville	Hawkins	1,880	Holston River Electric Co.
Rutherford	Gibson	747	Kentucky-Tennessee Light & Power Co.
Savannah	Hardin	1,120	Tennessee Electric Power Co.
Sharon	Weakley	806	Kentucky-Tennessee Light & Power Co.
Springfield	Robertson	5,577	Municipal.
Toone	Hardeman	296	
Union City	Obion	5,365	Municipal.
Western State Hospital	Harriman		
Winchester	Franklin	3,210	Tennessee Electric Power Co.
Virginia, Dungannon	Scott	282	

[fol. 4435] APPENDIX "I"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 365, Being "Hearings Before the Committee on Military Affairs, House of Representatives, 74th Congress, 1st Session, Vol. 1"

Page 24

Mr. Lilienthal: * * * There have been some suggestions from partisan sources that there is now existing an unreasonable surplus power and that we are adding to the surplus. Our computations show that there is a threat of a deficit of power in the Tennessee Valley and in the country as a whole.

Pages 24-25

Mr. Lilienthal: * * * Furthermore, that duty to market power is related to the duty to prevent waste. It is a painful thing to anyone who has a realization of the implications of the situation to see Wilson Dam today. Mr. Chairman, on account of the high water, almost all of the gates of Wilson Dam are open and the water is pouring over the spillway, almost the entire length of the spillway.

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Mr. Lilienthal: * * * Before the Tennessee Valley Authority as a corporation had been organized, a large number of the communities in that section of Mississippi had written most emphatic messages to the incoming directors insisting that those communities were going to have some of that power. Some of the communities took formal action, others acted through chambers of commerce and school boards and the like.

[fol. 4436] Page 30

The Chairman: This non-profit corporation was organized by the citizens of that section of Mississippi and financed by the Tennessee Valley Authority:

Mr. Lilienthal: Upon their own initiative; yes, sir.

The Chairman: And you deal with them and they are in fact an entirely separate legal entity, with whom you have a contractor's relation?

Mr. Lilienthal: They run their own show.

Appendix "I"

Page 37

Mr. May: What was their original valuation of it, when they first submitted it to you?

Mr. Lilienthal: I do not know. I can submit that figure, but the property was admittedly badly depreciated and allowed to run down, and a great deal of reconstruction has been necessary in order to put it in working condition.

Mr. May: I will be obliged to you if you will give me the figures on what their original proposition was, or what their estimated value of it was.

Mr. Lilienthal: I have it now.

The company put a replacement value new on the inventory of $1,628,495.00. The purchase price was $850,000.00, which is 52 per cent of the replacement value new.

Now, it is a well known fact to people in this field that the electric companies have been paying dividends without building up adequate reserves for depreciation and maintenance, and this company was in that situation. It would have violated our trust as public officers to pay a nickel more for the property than it was worth at the time, despite that error in the past. We paid for the property as it stood.

[fol. 4437]

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Mr. Lilienthal: * * * As to TVA, we never suggested building competing distribution facilities, and have consistently urged against it by others, in season and out; we have tried hard to prevent a situation where that was the only way out.

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Mr. Lilienthal: I think that we paid too much for the Mississippi property. I always felt that it was not worth more than 40 per cent of its replacement cost new, because it was so badly run down.

Mr. May: Are you referring to those towns in Northern Mississippi?

Mr. Lilienthal: Yes. We paid 50 per cent of what they thought it would cost to replace it new.

Mr. May: Why were you anxious to pay more than you thought they were worth?

Mr. Lilienthal: Like in every other deal, we believed that it would work out, and we didn't want to see those towns build competing plants. As a matter of fact, it has proven out very satisfactorily by and large.

Page 92

Dr. Morgan: * * * The high dams are of very much greater value to navigation than the low dams are.

One reason is that in passing through a lock, it takes about so long to open the locks, and to close them and it is much [fol. 4438] quicker to pass through 1 high lock than it is through 3 or 4 or 6 or 7 low locks.

Then, between the locks, with the high dams you have deep water and a wide channel, and navigation is far more effective in a broad, open channel than it is in a narrow cut.

You have that situation on the Panama Canal. The difficult navigation on the canal lies in the Culebra Cut, which is narrow and restricted. In the wide open channels vessels can pass and maneuver. Wide channels are much superior.

Another very great advantage of high dams is in relation to the enormous deposits of silt which are coming down from the tributaries. Above the high dams there is space at the bottom of the reservoirs. If a dam is 50 feet high, it would have 20 feet of bottom space for the deposit of silt, and that might be enough to last for a hundred years of deposits or 50 years of deposits, until we can get the silt control under way.

If we should build the low navigation dams, within 10 years we might be putting dredges in to dredge those channels open again.

So, from the standpoint of economy of travel and of locking, from the standpoint of easier manipulation of vessels in a broad, open channel, than in a narrower one, from the standpoint of the prevention of silting, and the elimination of the expense of dredging, the high dams are unquestionably superior to the low dams.

Then again, in those high dams, the water is backed up in some of the tributaries and we get many more miles of navigable channels than we do with a low dam that creates navigable depth just within the main channel.

So, taking the project as a whole, there is no comparison between these high dams and the low dams.

[fol. 4439]

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 366, Being "Hearings Before the Committee on Military Affairs, House of Representatives, 74th Congress 1st Session, Vol. 2"

Pages 826-827

Mr. Schaefer: Mr. Lilienthal; I believe the last time you appeared before the Committee you made a statement that at the present time you had surplus power and you were trying to find ways and means of disposing of that power; is that correct?

Mr. Lilienthal: Yes, sir.

Mr. Schaefer: Being one of the directors of this big corporation, under what economic theory do you think it advisable to construct more electric-producing units when you cannot dispose of the power you now have?

Mr. Lilienthal: My conception of the economic theory is this, Mr. Congressman, that there are certain major public purposes that the law provides for; navigation, flood control, soil erosion, and similar purposes. Those are affected by the building of a dam.

Mr. Schaefer: Will you pardon me just a moment? I was not raising that point of going ahead with those projects, at all. My statement was merely in connection with purchasing equipment necessary to produce the power.

Mr. Lilienthal: The installation of the generators?

Mr. Schaefer: Yes. That is what I am referring to.

Mr. Lilienthal: We have made computations which, in graph form and otherwise, have been submitted to the committee for this record, showing the estimates of the need for power in that section. It appears pretty clear—and the figures of the power Commission seem to confirm it—that [fol. 4440] there will be a demand, a need for that power by the time that installation is put in.

At Wheeler Dam we have only one unit put in, although there is room for more.

Appendix "J"

No plans are being made for present installation of power facilities at all at Pickwick Dam. It is purely a navigation dam.

At Norris two units are the full capacity of that storage dam.

As I said, Wheeler has one unit, although more can be put in. Pickwick has none, and Wilson at present has eight.

We have tried to relate what we estimate will be the need for the use of those particular facilities to the facilities that we have. As greater need arises in the future, provision is made for installing additional equipment.

Mr. Schaefer: But your judgment and opinion are based on this report of the Power Commission to a great extent; is that the idea?

Mr. Lilienthal: No; I would not say that. At the time that our plans were made, we made our own investigations. We had made them prior to that time, based pretty largely on a study of the past history of the electrical industry in the United States and the forecast methods that are generally used by utility companies in that respect.

You will recall one of the charts showed the Alabama Power Co., had made a forecast for the following year. While it is based on a technic that I am not entirely fa- [fol. 4441] miliar with, there is a technic that engineers use in forecasting future demand.

That has been employed in trying to see whether or not at the end of the construction period the need will be such as to sustain increased equipment, and then we translate results, or these engineers do, in terms of so many additional generators needed.

[fol. 4442] IN UNITED STATES DISTRICT COURT

STIPULATION AS TO STATEMENT OF EVIDENCE

It is hereby stipulated and agreed between the appellants and appellees, by their solicitors, that the above and foregoing statement of evidence, including the exhibits, is complete, true and correct and may be approved by the Judges.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume and Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Appellants. William C. Fitts, Jr., Solicitors for Appellees.

[fol. 4443] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER APPROVING STATEMENT OF EVIDENCE—Filed April 16, 1938

It appearing to the Court that the foregoing statement of the evidence, together with the exhibits, is true, complete and properly prepared and includes all the evidence necessary for a decision of the questions presented by the Appeal, the same is hereby approved and ordered filed as a Statement of the Evidence to be included in the Record on Appeal in the above styled cause, all as provided for in Paragraph (b) of Equity Rule 75.

Approved for entry.

Florence E. Allen, U. S. Circuit Judge. John J. Gore, District Judge. John D. Martin, District Judge.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour,

O. K. By Charles D. Snepp, Solicitors for Appellants.
O. K. William C. Fitts, Jr., Solicitors for Appellees.

[fol. 4444] IN UNITED STATES DISTRICT COURT

(Caption omitted)

PRÆCIPE FOR TRANSCRIPT OF RECORD—Filed April 16, 1938

To the Clerk:

The appellants and appellees having through their solicitors agreed as to what shall be included in this præcipe, you will please make a transcript of record to be filed in the United States Supreme Court pursuant to an appeal allowed in the above entitled cause and include in such transcript of record the following pleadings, papers, documents, and exhibits, and no others, to wit:

1. The original Bill of Complaint with all of the exhibits attached thereto.
2. Order of Removal signed by A. E. Mitchell, Chancellor of the Chancery Court of Knox County, Tennessee.
3. Certificate of the Clerk and Master of the Chancery Court of Knox County, Tennessee, to transcript of removal.
4. Certificate of Disqualification of George C. Taylor, District Judge, and designation of Judge John J. Gore.
5. The Amendment to the Bill of Complaint filed August 10, 1936.

[fol. 4445] 6. Defendants' Motion filed August 14, 1936 to Quash Service of Subpœna and Dismiss Bill of Complaint for Lack of Jurisdiction.

7. Memorandum opinion filed October 17, 1936, overruling Defendants' Motion to Quash Service of Subpœna and Dismiss the Bill of Complaint for Lack of Jurisdiction.
8. Decree, filed October 19, 1936, overruling Motion to Quash Service of Subpœna and Dismiss Bill of Complaint.
9. Defendants' Motion filed October 20, 1936, to Dismiss Bill of Complaint.
10. Memorandum opinion filed November 9, 1936, overruling Defendants' Motion to Dismiss.
11. Decree, filed November 12, 1936, overruling Motion to Dismiss.
12. Answer to the Bill of Complaint filed by the Defendants on November 24, 1936, omitting, however, all exhibits attached thereto except Exhibits "A" and "K" and insert-

ing at the place where Exhibits "A" and "K" would be otherwise inserted the following statements:

Exhibit "A" attached to Answer to the original Bill of Complaint is the same as Complainants' Exhibit No. 328, being a copy of the Report to Congress by TVA on the Unified Development of the Tennessee River System, dated March 1936, and is here omitted since Complainants' Exhibit No. 328 is transmitted as an original exhibit.

Exhibit "K" attached to the Answer to the original Bill of Complaint is a copy of the printed record in the case of Tennessee Valley Authority, et al., v. Ashwander, et al., and is transmitted as an original exhibit.

13. Memorandum opinion filed December 22, 1936, granting the preliminary injunction.

14. Order filed January 19, 1937, fixing time for taking depositions.

15. Order filed March 19, 1937, fixing time for taking depositions.

16. Defendants' Motion filed June 14, 1937, to strike portions of the Bill of Complaint.

17. Defendants' Motion filed June 14, 1937, for Bill of Particulars.

18. Opinion of the United States Circuit Court of Appeals [fol. 4446] for the Sixth Circuit in the case of Tennessee Valley Authority, et al., Appellants, v. The Tennessee Electric Power Company, et al., Appellees, decided May 14, 1937, and filed on June 15, 1937. (The opinion is here omitted as a copy of it is attached as "Appendix C" to the "Separate Statement As To Jurisdiction", which is Item No. 56 herein.)

19. Order, filed June 16, 1937, Dissolving Preliminary Injunction.

20. Order, filed July 3, 1937, on Defendants' Motion to Strike portions of the Bill of Complaint.

21. Order, filed July 3, 1937, appointing Hal H. Clements, Jr., Special Master.

22. Order filed July 8, 1937, on Defendants' Motion for Bill of Particulars.

23. Bill of Particulars filed August 6, 1937.

24. Stipulation filed August 14, 1937, and Amendment thereto filed September 2, 1937.

25. Suggestion filed August 28, 1937, that Act of Congress of August 24, 1937, requires application to Senior or Presiding Circuit Judge for designation of two additional judges to hear cause, omitting the draft of the request for designation of additional judges.

26. Motion filed September 20, 1937, to compel Defendants to produce documents and permit inspection thereof, together with the exhibits attached thereto.

27. Motion filed September 20, 1937, for leave to take the deposition of Harold L. Ickes, omitting however, Exhibit "A" thereto attached and inserting in the place where such exhibit would be otherwise inserted the following statement:

Exhibit "A" attached to the motion for leave to take the deposition of Harold L. Ickes is a copy of the order appointing Hal H. Clements, Jr., as Special Master, and to avoid duplication is here omitted.

28. Application of Complainants filed September 20, 1937, for an order requiring Defendants to produce documents, or, in the alternative, for extension of time for taking testimony before Special Master.

29. Orders filed September 21, 1937, designating judges to try case.

29½. Affidavit of James Lawrence Fly filed September 27, 1937.

30. Order filed September 29, 1937, permitting Complainants to amend the motion to compel Defendants to produce certain documents and permit inspection thereof.

[fol. 4447] 31. Order filed September 29, 1937, permitting Complainants to amend the motion to take the deposition of Harold L. Ickes, together with Exhibit "C" attached thereto.

32. Memorandum decision filed September 29, 1937, overruling Complainants' motion for leave to take the deposition of Harold L. Ickes, overruling Complainants' Motion for an order requiring Defendants to produce documents, or, in the alternative, for an extension of time for taking testimony before the Special Master and overruling Complainants' motion to compel Defendants to produce documents and permit inspection thereof.

33. Order filed September 29, 1937, overruling and denying Complainants' motion for leave to take the deposition of Harold L. Ickes.

34. Order filed September 29, 1937, overruling and denying Complainants' motion to compel Defendants' to produce documents and permit inspection thereof.

35. Order filed September 29, 1937, overruling and denying application of Complainants for an order requiring Defendants to produce documents, or, in the alternative, for extension of time for taking testimony before the Special Master.

36. Supplement filed October 21, 1937, to Bill of Particulars.

37. Memorandum opinion filed November 1, 1937, on Complainants' motion to require Defendants to produce documents and permit the inspection thereof, Complainants' motion for an order requiring Defendants to produce documents, or, in the alternative, for an extension of time for taking testimony before Special Master, and Complainants' motion for leave to take the deposition of Harold L. Ickes.

38. Petition filed November 12, 1937, for rehearing motion to take the deposition of Harold L. Ickes.

39. Motion filed December 6, 1937, for leave to take deposition of Harold L. Ickes, together with the affidavit attached thereto.

40. Motion filed January 18, 1938, on behalf of the Complainants to strike and disregard briefs filed by the Defendants on January 17, 1938, together with the affidavit attached thereto.

41. Complainants' suggested Findings of Fact, filed January 19, 1938.

42. Defendants' suggested Findings of Fact and Conclusions of Law, filed January 19, 1938.

[fol. 4448] 43. Opinion of the Court, dated January 21, 1938, and filed January 24, 1938.

44. Order filed January 24, 1938, overruling Complainants' motion to strike and disregard briefs filed by Defendants on January 17, 1938.

45. Order filed January 24, 1938, regarding Findings of Fact and Conclusions of Law requested by the Complainants and Defendants.

46. Final decree, filed January 25, 1938.

47. Motion filed February 7, 1938, to dismiss suit as against Georgia Power Company without prejudice.

48. Georgia Power Company's petition for rehearing filed February 7, 1938, together with all exhibits attached thereto; omitting, however, Exhibit 2 except as noted below and in-

serting in the place where said exhibit would be otherwise inserted the following statement:

Exhibit 2 is a copy of the motion referred to herein as being filed February 7, 1938.

49. Motion filed February 8, 1938, by Defendants for Findings of Fact and Conclusions of Law, omitting, however, the attached draft of Findings of Fact and Conclusions of Law and inserting in the place where same would otherwise be inserted the following statement:

The draft of Findings of Fact and Conclusions of Law attached to the motion is the same as the Findings of Fact and Conclusions of Law filed by the court on February 23, 1938, and is here omitted.

50. Order filed February 22, 1938, dismissing the Georgia Power Company without prejudice.

51. Order filed February 23, 1938, on Findings of Fact and Conclusions of Law.

52. Findings of Fact and Conclusions of Law, filed February 23, 1938.

53. Notice of Appeal served on Appellees on February 23, 1938, and filed on the same date.

54. Petition for Appeal filed February 24, 1938.

55. Assignment of Errors filed February 24, 1938.

56. Separate Statement as to Jurisdiction together with the appendices, filed February 24, 1938.

57. Order filed February 24, 1938, allowing appeal.

58. Appeal bond, filed February 24, 1938.

[fol. 4449] 59. Citation, including acceptance of service by Appellees on February 24, 1938, and filed on the same date.

60. Acknowledgment of service by Appellees of copies of the Petition for Appeal, Order Allowing Appeal, Assignments of Error, Statement as to Jurisdiction and Notice of Rule 12, Paragraph 3, of the Rules of the Supreme Court, filed February 24, 1938.

61. Complainants' exception filed March 3, 1938, to the Order of February 23, 1938. (Item No. 51 herein.)

62. Order of the Court for transmission of original exhibits filed April 4, 1938.

63. Notice of the lodging of the Statement of Evidence and exhibits, and the acknowledgment of service thereof, filed April 7, 1938.

64. Order, filed April 16, 1938, approving Statement of Evidence.

65. Statement of the evidence under Equity Rule 75, including the exhibits, all of which the court approved.

66. Original exhibits to be transmitted to the Supreme Court as enumerated in the Court's order of April 4, 1938, referred to herein as item No. 62.

67. This Praecipe.

68. Certificate of the Clerk.

Said transcript to be prepared as required by law and the rules of this Court and the rules of the Supreme Court of the United States and to be filed in the office of the Clerk of the Supreme Court of the United States on or before the 25th day of April, 1938.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snepp, Solicitors for Appellants. Wm. C. Fitts, Jr., Solicitor for Appellees.

[fol. 4450] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 4451] IN SUPREME COURT OF THE UNITED STATES

STATEMENT OF POINTS TO BE RELIED UPON—Filed April 18, 1938

Come now The Tennessee Electric Power Company, Franklin Power & Light Company, Memphis Power & Light Company, Southern Tennessee Power Company, Birmingham Electric Company, Missippi Power Company, Appalachian Electric Power Company, Carolina Power & Light Company, Tennessee Public Service Company, Holston River Electric Company, Alabama Power Company, Kentucky & West Virginia Power Company, Inc., Kingsport Utilities, Incorporated, Kentucky-Tennessee Light & Power Co., West Tennessee Power & Light Company, Mississippi Power & Light Company, East Tennessee Light & Power Company and Tennessee Eastern Electric Company, appellants in the above entitled cause and adopt their Assignments of Error as their State-
[fol. 4452] ment of Points to be Relied Upon.

R. T. Jackson. Charles C. Trabue. Charles M. Seymour.

Dated April 18, 1938.

[fol. 4453] [File endorsement omitted.]

[fol. 4454] IN SUPREME COURT OF THE UNITED STATES

STIPULATION AS TO PRINTING OF RECORD—Filed April 18, 1938

It is hereby stipulated between the appellants and appellees, by their attorneys, that in printing the Record in the above entitled cause the Clerk shall only omit therefrom the following maps, drawings, documents and papers:

Complainants' Exhibit Nos. 7, 12, 27, 29, 33, 37, 41, 45, 49, 54, 74, 82, 89, 98, 101, 105, 105c, 105d, 106, 107, 108, 109, 112-116, inclusive, 182, 183, 184, 187, 199, 205-210, inclusive, 266, 320, 321, 326-330 inclusive, 332, 332a, 333a, 334, 335a, 336, 338, 342-346 inclusive, 350, 351, 352, 354, 357, 358, 359, 361, 362, 364, 365, 366, 372, 409-411 inclusive, 485, 487-496 inclusive, 503, 646, 907, 909, 912-915 inclusive, 925, [fols. 4455-4456] 933, 936 and 942.

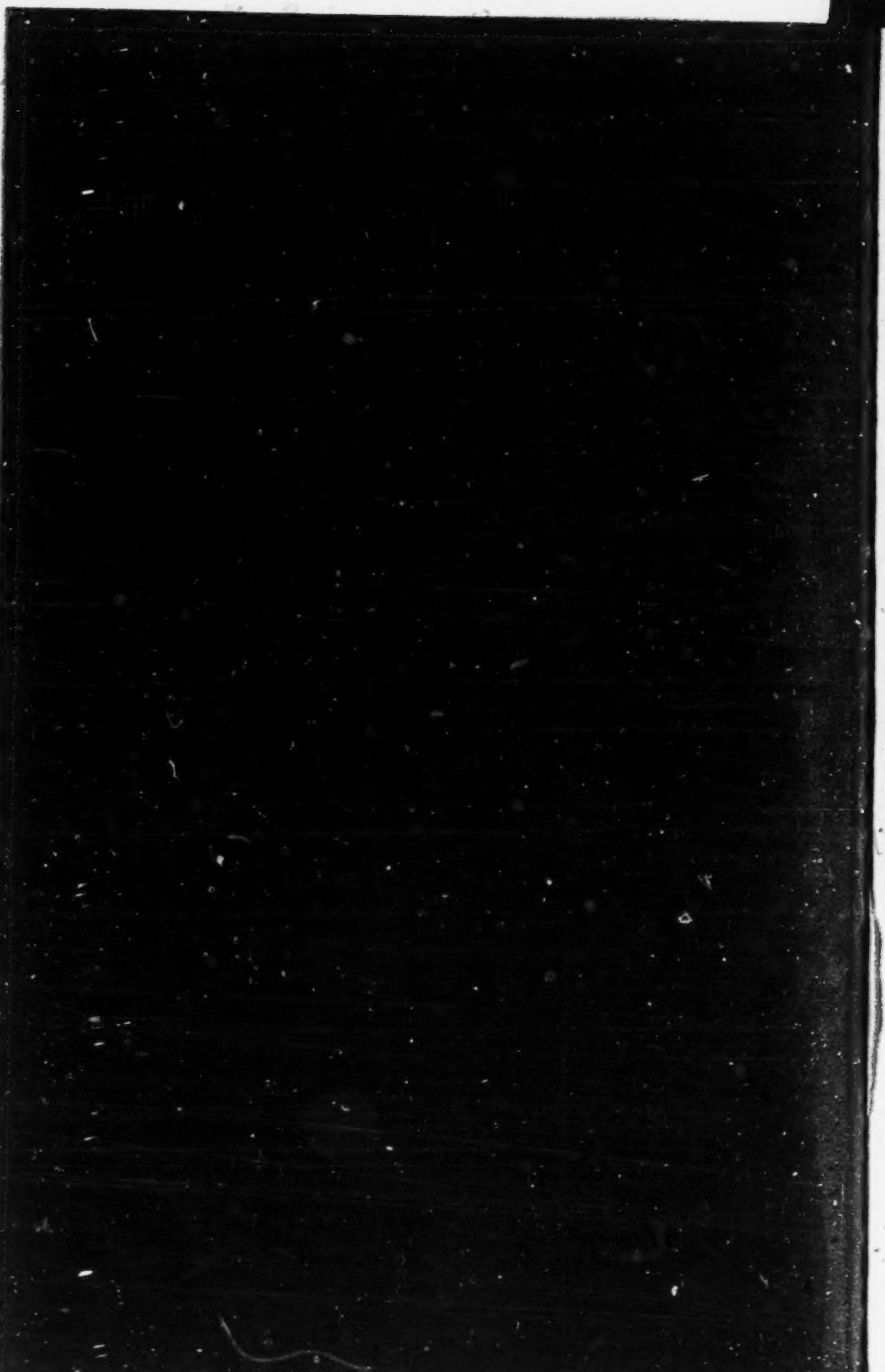
Defendants' Exhibit Nos. 31, 32, 36, 37, 38, 40, 44, 49, 50, 55-64 inclusive, 66, 72, 73, 81, 83, 86, 87, 89-93 inclusive, 95, 96, 97, 98, 104, 109, 110, 116, 118-125 inclusive, 130, 132, 136a, 136b, 137, 138, 153, 154, and Exhibit "K" to Defendants' Answer.

It is further stipulated that the maps, charts, documents, papers, etc., above mentioned which are to be omitted from the printed Record shall be preserved by the Court and may be referred to by counsel, or the Court, if deemed necessary during the course of the argument or otherwise in the disposition of the cause.

Charles C. Trabue, Charles M. Seymour, R. T. Jackson, Counsel for Appellants. William C. Fitts, Jr., Counsel for Appellees.

Dated April 18, 1938.

Endorsed on cover: File No. 42,456. E. Tennessee, D. C. U. S. Term No. 975. The Tennessee Electric Power Company, et al., appellants, vs. Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal. Filed April 18, 1938. Term No. 975, O. T., 1937.



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SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1937

No. 975

THE TENNESSEE ELECTRIC POWER COMPANY, A MARYLAND CORPORATION, ET AL.,

Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, A BODY CORPORATE CREATED BY AN ACT OF CONGRESS APPROVED MAY 18, 1933; ARTHUR E. MORGAN, HARCOURT A. MORGAN, AND DAVID E. LILIENTHAL, EACH INDIVIDUALLY AND AS AN EXECUTIVE OFFICER AND DIRECTOR OF THE TENNESSEE VALLEY AUTHORITY,

Appellees.

SEPARATE STATEMENT AS TO JURISDICTION.

In compliance with Rule 12 of the Revised Rules of the Supreme Court of the United States, appellants here submit their separate typewritten statement disclosing the basis upon which it is contended that the Supreme Court of the United States has jurisdiction upon appeal to review the decree of the United States District Court for the Eastern District of Tennessee, Northern Division, in the above entitled cause.

I.

The instant suit was originally filed in the Chancery Court at Knoxville, Tennessee, and was removed by the defendants therein to the United States District Court for the Eastern District of Tennessee, Northern Division. The complainants are eighteen corporations each of which was and is engaged in the generation, transmission or sale of electric energy as a public utility and operating in one or more of the States of Tennessee, Georgia, Alabama, Mississippi, Kentucky, North Carolina or Virginia, and entirely or partly in an area within which electrical energy might be practically transmitted from one or more of the dams now constructed, under construction or proposed to be constructed on the Tennessee River or its tributaries by Tennessee Valley Authority.

The defendants are Tennessee Valley Authority, a corporation created by Act of the Congress of the United States, and the three individuals who have comprised at all times since its organization and now do comprise the Board of Directors of said Authority, each of whom is named as defendant as an individual and as a director of said Authority.

Complainants, in said bill, seek an order or decree enjoining the further execution of the Tennessee Valley Authority Act of May 18, 1933, as amended August 31, 1935, and enjoining acts being performed and threatened to be performed by said Authority and the individual directors thereof in the execution of said statute upon the ground that neither said statute nor any of the acts being done or threatened to be done by the Authority and the individual Directors is authorized by any provision of the Constitution of the United States and they are severally in violation of Article I, Section 1, Article II, Sections 1 and 8, and in violation of the Fifth, Ninth and Tenth Amendments thereof, (a)

in that the said statute attempts to authorize and the defendants are engaged in constructing and threatening to complete the construction of a large system of dams and reservoirs for the purpose of generating hydro-electric power on the Tennessee River and its tributaries; (b) in that the said statute purports to authorize and the defendants are engaged in constructing heavy duty transmission lines to interconnect such hydro-electric generating plants so as to create a power pool from which, at any point, electric power can be drawn without reference to the point of generation and so as to create an integrated power generating system; (c) in that the said statute purports to authorize and the defendants are engaged in constructing and threatening to carry to completion a duplicating system of high tension transmission lines, substations, distribution lines and other facilities for the transmission, distribution and sale of electricity as a public utility throughout the State of Tennessee and large parts of the States of Alabama, Georgia, Mississippi, Kentucky, North Carolina, Virginia and West Virginia, in which complainants are now and have been operating as electric utilities, pursuant to the laws and the regulations of Public Authorities of the respective States in which each of complainants' properties and businesses are located; (d) in that the statute purports to authorize and the Authority and the defendant directors are engaged in creating and threatening to complete a huge Federally-owned and operated electric utility, which will compete with, if it will not destroy, each of the complainants in their respective service areas in the states aforesaid; (e) in that the statute purports to authorize and the said Authority and individual directors are engaged in the promotion of ownership and operation of local electric intrastate utilities by municipalities and non-profit organizations as agents of the Tennessee Valley Authority to distribute

power sold by it; (f) in that the statute purports to authorize and the Tennessee Valley Authority and individual directors are engaged in effecting a Federal regulation of the local electric rates of said municipalities, non-profit organizations and existing electric utilities, including the complainants, in the area in which said Authority and said directors are operating and threatening to operate said Federally-owned electric utility; and (g) in that the defendants, as a means of furthering the aforesaid objects and of taking over the operation and control of the electric power business in the territory now served by the several complainant companies, have promulgated and prescribed electric rates which are non-compensatory, confiscatory and discriminatory, have acted in concert with PWA, REA and other Federal agencies in assisting and inciting municipalities and non-profit organizations, through loans and gifts of Federal funds and by a campaign of propaganda against privately owned utilities to acquire local distribution systems to distribute TVA power, and have aggressively advertised and promoted the sale of TVA power among the customers of the complainant companies; and that the present and threatened future execution of said statute by said Authority and the present and threatened acts of said individual directors threaten irreparable injury, if not destruction, of the properties and businesses of each of the complainants, are unauthorized by any provision of the Constitution of the United States, invade the powers reserved to the States and the people and have and will further deprive each of complainants of their property without due process of law, all in violation of the Constitution of the United States, as aforesaid.

Pursuant to an act of the Congress of the United States, passed August 24, 1937, to wit, 28 U. S. C. § 380a, the presiding judge of the United States Circuit Court of Appeals for

the Sixth Circuit designated the Honorable Florence E. Allen, United States Circuit Judge, the Honorable John J. Gore, United States District Judge and the Honorable John D. Martin, United States District Judge to hear and determine said cause, and said United States District Court, so constituted as a statutory or three judge court heard the evidence and arguments and entered its decree denying the prayers of the complainants' Bill of Complaint and dismissing the same at complainants' cost.

II.

By express provisions of said Section 380a of Title 28, United States Code, jurisdiction is conferred upon this Court to review, by direct appeal, the judgments, including the judgment in the instant case of such specially constituted district court.

III.

The statute of the Congress of the United States, the validity of which is involved, is the Tennessee Valley Authority Act approved May 18, 1933 (48 Statutes 58-72), as amended August 31, 1935 (49 Statutes 1075-1081), and is hereto appended verbatim as appendix A.

IV.

The judgment complained of and sought to be reviewed was entered January 25, 1938, and a petition for the allowance of an appeal therefrom was presented February 24, 1938.

V.

The opinion of the specially constituted United States District Court, filed January 21, 1938, is hereto attached, marked "Appendix B" and the opinion of the United States Circuit Court of Appeals for the Sixth Circuit denying com-

plainants an interlocutory injunction in said cause filed the 14th day of May, 1937, is hereto attached and marked "Appendix C."

Respectfully submitted,

CHARLES C. TRABUE,
CHARLES M. SEYMOUR,
RAYMOND T. JACKSON,
Solicitors for Petitioners.

TRABUE, HUME & ARMISTEAD,
FRANTZ, MCCONNELL & SEYMOUR,
BAKER, HOSTETLER, SIDLO & PATTERSON,
Of Counsel for Petitioners.

Dated February 24, 1938.

APPENDIX "A".

[PUBLIC—No. 17—73D CONGRESS.]

[H. R. 5081.]

AN ACT.

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority" (hereinafter referred to as the "Corporation"). The board of directors first appointed shall be deemed the incorporators, and the incorporation shall be held to have been effected from the date of the first meeting of the board. This Act may be cited as the "Tennessee Valley Authority Act of 1933."

SEC. 2. (a) The board of directors of the Corporation (hereinafter referred to as the "board") shall be composed of three members, to be appointed by the President, by and with the advice and consent of the Senate. In appointing the members of the board, the President shall designate the chairman. All other officials, agents, and employees shall be designated and selected by the board.

(b) The terms of office of the members first taking office after the approval of this Act shall expire as designated by the President at the time of nomination, one at the end of the third year, one at the end of the sixth year and one at the end of the ninth year, after the date of approval of this Act. A successor to a member of the board shall be appointed in the same manner as the original members and shall have a term of office expiring nine years from the date of the expiration of the term for which his predecessor was appointed.

(c) Any member appointed to fill a vacancy in the board occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(d) Vacancies in the board so long as there shall be two members in office shall not impair the powers of the board to execute the functions of the Corporation, and two of the members in office shall constitute a quorum for the transaction of the business of the board.

(e) Each of the members of the board shall be a citizen of the United States, and shall receive a salary at the rate of $10,000 a year, to be paid by the Corporation as current expenses. Each member of the board, in addition to his salary, shall be permitted to occupy as his residence one of the dwelling houses owned by the Government in the vicinity of Muscle Shoals, Alabama, the same to be designated by the President of the United States. Members of the board shall be reimbursed by the Corporation for actual expenses (including traveling and subsistence expenses) incurred by them in the performance of the duties vested in the board by this Act. No member of said board shall, during his continuance in office, be engaged in any other business, but each member shall devote himself to the work of the Corporation.

(f) No director shall have financial interest in any public-utility corporation engaged in the business of distributing and selling power to the public nor in any corporation engaged in the manufacture, selling, or distribution of fixed nitrogen or fertilizer, or any ingredients thereof, nor shall

any member have any interest in any business that may be adversely affected by the success of the Corporation as a producer of concentrated fertilizers or as a producer of electric power.

(g) The board shall direct the exercise of all the powers of the Corporation.

(h) All members of the board shall be persons who profess a belief in the feasibility and wisdom of this Act.

SEC. 3. The board shall without regard to the provisions of Civil Service laws applicable to officers and employees of the United States, appoint such managers, assistant managers, officers, employees, attorneys, and agents, as are necessary for the transaction of its business, fix their compensation, define their duties, require bonds of such of them as the board may designate, and provide a system of organization to fix responsibility and promote efficiency. Any appointee of the board may be removed in the discretion of the board. No regular officer or employee of the Corporation shall receive a salary in excess of that received by the members of the board.

All contracts to which the Corporation is a party and which require the employment of laborers and mechanics in the construction, alteration, maintenance, or repair of buildings, dams, locks, or other projects shall contain a provision that not less than the prevailing rate of wages for work of a similar nature prevailing in the vicinity shall be paid to such laborers or mechanics.

In the event any dispute arises as to what are the prevailing rates of wages, the question shall be referred to the Secretary of Labor for determination, and his decision shall be final. In the determination of such prevailing rate or rates, due regard shall be given to those rates which have been secured through collective agreement by representatives of employers and employees.

Where such work as is described in the two preceding paragraphs is done directly by the Corporation the prevailing rate of wages shall be paid in the same manner as though such work had been let by contract.

Insofar as applicable, the benefits of the Act entitled "An Act to provide compensation for employees of the United States suffering injuries while in the performance of their duties, and for other purposes," approved September 7, 1916, as amended, shall extend to persons given employment under the provisions of this Act.

SEC. 4. Except as otherwise specifically provided in this Act, the Corporation—

(a) Shall have succession in its corporate name.

(b) May sue and be sued in its corporate name.

(c) May adopt and use a corporate seal, which shall be judicially noticed.

(d) May make contracts, as herein authorized.

(e) May adopt, amend, and repeal bylaws.

(f) May purchase or lease and hold such real and personal property as it deems necessary or convenient in the transaction of its business, and may dispose of any such personal property held by it.

The board shall select a treasurer and as many assistant treasurers as it deems proper, which treasurer and assistant treasurers shall give such bonds for the safe-keeping of the securities and moneys of the said Corporation as the board may require: *Provided*, That any member of said board may be removed from office at any time by a concurrent resolution of the Senate and the House of Representatives.

(g) Shall have such powers as may be necessary or appropriate for the exercise of the powers herein specifically conferred upon the Corporation.

(h) Shall have power in the name of the United States of America to exercise the right of eminent domain, and in the purchase of any real estate or the acquisition of real estate by condemnation proceedings, the title to such real estate shall be taken in the name of the United States of America, and thereupon all such real estate shall be en-

trusted to the Corporation as the agent of the United States to accomplish the purposes of this Act.

(i) Shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses, and other structures, and navigation projects at any point along the Tennessee River, or any of its tributaries, and in the event that the owner or owners of such property shall fail and refuse to sell to the Corporation at a price deemed fair and reasonable by the board, then the Corporation may proceed to exercise the right of eminent domain, and to condemn all property that it deems necessary for carrying out the purposes of this Act, and all such condemnation proceedings shall be had pursuant to the provisions and requirements hereinafter specified, with reference to any and all condemnation proceedings.

(j) Shall have power to construct dams, reservoirs, power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines.

SEC. 5. The board is hereby authorized—

(a) To contract with commercial producers for the production of such fertilizers or fertilizer materials as may be needed in the Government's program of development and introduction in excess of that produced by Government plants. Such contracts may provide either for outright purchase of materials by the board or only for the payment of carrying charges on special materials manufactured at the board's request for its program.

(b) To arrange with farmers and farm organizations for large-scale practical use of the new forms of fertilizers under conditions permitting an accurate measure of the economic return they produce.

(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, for the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction.

(d) The board in order to improve and cheapen the production of fertilizer is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer.

(e) Under the authority of this Act the board may make donations or sales of the product of the plant or plants operated by it to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the board may direct, for experimentation, education, and introduction of the use of such products in cooperation with practical farmers so as to obtain information as to the value, effect, and best methods of their use.

(f) The board is authorized to make alterations, modifications, or improvements in existing plants and facilities, and to construct new plants.

(g) In the event it is not used for the fixation of nitrogen for agricultural purposes or leased, then the board shall maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency, until the Congress shall by joint resolution release the board from this obligation, and if any part thereof be used by the board for the manufacture of phosphoric acid or potash, the balance of nitrate plant numbered 2 shall be kept in stand-by condition.

(h) To establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency.

(i) To request the assistance and advice of any officer, agent, or employee of any executive department or of any

independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the service of such officers, agents, and employees, and the President shall, if in his opinion, the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided*, That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is hereby authorized to grant such licenses thereunder as shall be authorized by the board: *Provided further*, That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

(j) Upon the requisition of the Secretary of War or the Secretary of the Navy to manufacture for and sell at cost to the United States explosives or their nitrogenous content.

(k) Upon the requisition of the Secretary of War the Corporation shall allot and deliver without charge to the War Department so much power as shall be necessary in the judgment of said Department for use in operation of all locks, lifts, or other facilities in aid of navigation.

(l) To produce, distribute, and sell electric power, as herein particularly specified.

(m) No products of the Corporation shall be sold for use outside of the United States, its Territories and possessions, except to the United States Government for the use of its Army and Navy, or to its allies in case of war.

(n) The President is authorized, within twelve months after the passage of this Act, to lease to any responsible farm organization or to any corporation organized by it

nitrate plant numbered 2 and Waco Quarry, together with the railroad connecting said quarry with nitrate plant numbered 2, for a term not exceeding fifty years at a rental of not less than $1 per year, but such authority shall be subject to the express condition that the lessee shall use said property during the term of said lease exclusively for the manufacture of fertilizer and fertilizer ingredients to be used only in the manufacture of fertilizer by said lessee and sold for use as fertilizer. The said lessee shall covenant to keep said property in first-class condition, but the lessee shall be authorized to modernize said plant numbered 2 by the installation of such machinery as may be necessary, and is authorized to amortize the cost of said machinery and improvements over the term of said lease or any part thereof. Said lease shall also provide that the board shall sell to the lessee power for the operation of said plant at the same schedule of prices that it charges all other customers for power of the same class and quantity. Said lease shall also provide that, if the said lessee does not desire to buy power of the publicly owned plant, it shall have the right to purchase its power for the operation of said plant of the Alabama Power Company or any other publicly or privately owned corporation engaged in the generation and sale of electric power, and in such case the lease shall provide further that the said lessee shall have a free right of way to build a transmission line over Government property to said plant paying the actual expenses and damages, if any, incurred by the Corporation on account of such line. Said lease shall also provide that the said lessee shall covenant that during the term of said lease the said lessee shall not enter into any illegal monopoly, combination, or trust with any privately owned corporation engaged in the manufacture, production, and sale of fertilizer with the object or effect of increasing the price of fertilizer to the farmer.

SEC. 6. In the appointment of officials and the selection of employees for said Corporation, and in the promotion of any such employees or officials, no political test or qualification shall be permitted or given consideration, but all such appointments and promotions shall be given and made

on the basis of merit and efficiency. Any member of said board who is found by the President of the United States to be guilty of a violation of this section shall be removed from office by the President of the United States, and any appointee of said board who is found by the board to be guilty of a violation of this section shall be removed from office by said board.

SEC. 7. In order to enable the Corporation to exercise the powers and duties vested in it by this Act—

(a) The exclusive use, possession, and control of the United States nitrate plants numbered 1 and 2, including steam plants, located, respectively, at Sheffield, Alabama, and Muscle Shoals, Alabama, together with all real estate and buildings connected therewith, all tools and machinery, equipment, accessories, and materials belonging thereto, and all laboratories and plants used as auxiliaries thereto; the fixed-nitrogen research laboratory, the Waco limestone quarry, in Alabama, and Dam Numbered 2, located at Muscle Shoals, its power house, and all hydroelectric and operating appurtenances (except the locks), and all machinery, lands, and buildings in connection therewith, and all appurtenances thereof, and all other property to be acquired by the Corporation in its own name or in the name of the United States of America, are hereby intrusted to the Corporation for the purposes of this Act.

(b) The President of the United States is authorized to provide for the transfer to the Corporation of the use, possession, and control of such other real or personal property of the United States as he may from time to time deem necessary and proper for the purposes of the Corporation as herein stated.

SEC. 8. (a) The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the northern judicial district of Alabama within the meaning of the laws of the United States relating to the venue of civil suits.

(b) The Corporation shall at all times maintain complete and accurate books of accounts.

(c) Each member of the board, before entering upon the duties of his office, shall subscribe to an oath (or affirmation) to support the Constitution of the United States and to faithfully and impartially perform the duties imposed upon him by this Act.

SEC. 9. (a) The board shall file with the President and with the Congress, in December of each year, a financial statement and a complete report as to the business of the Corporation covering the preceding governmental fiscal year. This report shall include an itemized statement of the cost of power at each power station, the total number of employees and the names, salaries, and duties of those receiving compensation at the rate of more than $1,500 a year.

(b) The Comptroller General of the United States shall audit the transaction of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all papers, books, records, files, accounts, plants, warehouses, offices, and all other things, property and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositaries. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the board, one for public inspection at the principal office of the corporation, and the other to be retained by him for the uses of the Congress. The expenses for each such audit may be paid from moneys advanced therefor by the Corporation, or from any appropriation or appropriations for the General Accounting Office, and appropriations so used shall be reimbursed promptly by the Corporation as billed by the Comptroller General. All such audit expenses shall be charged to operating expenses of the Corporation. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties intrusted to the Corporation by law.

SEC. 10. The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members: *Provided*, That all contracts made with private companies or individuals for the sale of power, which power is to be resold for a profit, shall contain a provision authorizing the board to cancel said contract upon five years' notice in writing, if the board needs said power to supply the demands of States, counties, or municipalities. In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines the board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable: *Provided further*, That the board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region.

SEC. 11. It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties, and municipalities within transmission dis-

tance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. It is further hereby declared to be the policy of the Government to utilize the Muscle Shoals properties so far as may be necessary to improve, increase, and cheapen the production of fertilizer and fertilizer ingredients by carrying out the provisions of this Act.

SEC. 12. In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power, it is hereby expressly authorized, either from appropriations made by Congress or from funds secured from the sale of such power, or from funds secured by the sale of bonds hereafter provided for, to construct, lease, purchase, or authorize the construction of transmission lines within transmission distance from the place where generated, and to interconnect with other systems. The board is also authorized to lease to any person, persons, or corporation the use of any transmission line owned by the Government and operated by the board, but no such lease shall be made that in any way interferes with the use of such transmission line by the board: *Provided*, That if any State, county, municipality, or other public or cooperative organization of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members, or any two or more of such municipalities or organizations, shall construct or agree to construct and maintain a properly designed and built transmission line to the Government reservation upon which is located a Government generating plant, or to a main transmission line owned by the Government or leased by the board and under the control of the board, the board is hereby authorized and directed to con-

tract with such State, county, municipality, or other organization, or two or more of them, for the sale of electricity for a term not exceeding thirty years; and in any such case the board shall give to such State, county municipality, or other organization ample time to fully comply with any local law now in existence or hereafter enacted providing for the necessary legal authority for such State, county, municipality, or other organization to contract with the board for such power: *Provided further,* That all contracts entered into between the Corporation and any municipality or other political subdivision or cooperative organization shall provide that the electric power shall be sold and distributed to the ultimate consumer without discrimination as between consumers of the same class, and such contract shall be voidable at the election of the board if a discriminatory rate, rebate, or other special concession is made or given to any consumer or user by the municipality or other political subdivision or cooperative organization: *And provided further,* That as to any surplus power not so sold as above provided to States, counties, municipalities, or other said organizations, before the board shall sell the same to any person or corporation engaged in the distribution and resale of electricity for profit, it shall require said person or corporation to agree that any resale of such electric power by said person or corporation shall be made to the ultimate consumer of such electric power at prices that shall not exceed a schedule fixed by the board from time to time as reasonable, just, and fair; and in case of any such sale, if an amount is charged the ultimate consumer which is in excess of the price so deemed to be just, reasonable, and fair by the board, the contract for such sale between the board and such distributor of electricity shall be voidable at the election of the board: *And provided further,* That the board is hereby authorized to enter into contracts with other power systems for the mutual exchange of unused excess power upon suitable terms, for the conservation of stored water, and as an emergency or breakdown relief.

SEC. 13. Five per centum of the gross proceeds received by the board for the sale of power generated at Dam Num-

bered 2, or from any other hydropower plant hereafter constructed in the State of Alabama, shall be paid to the State of Alabama; and 5 per centum of the gross proceeds from the sale of power generated at Cove Creek Dam, hereinafter provided for, or any other dam located in the State of Tennessee, shall be paid to the State of Tennessee. Upon the completion of said Cove Creek Dam the board shall ascertain how much additional power is thereby generated at Dam Numbered 2 and at any other dam hereafter constructed by the Government of the United States on the Tennessee River, in the State of Alabama, or in the State of Tennessee, and from the gross proceeds of the sale of such additional power 2½ per centum shall be paid to the State of Alabama and 2½ per centum to the State of Tennessee. These percentages shall apply to any other dam that may hereafter be constructed and controlled and operated by the board on the Tennessee River or any of its tributaries, the main purpose of which is to control flood waters and where the development of electric power is incidental to the operation of such flood-control dam. In ascertaining the gross proceeds from the sale of such power upon which a percentage is paid to the States of Alabama and Tennessee, the board shall not take into consideration the proceeds of any power sold or delivered to the Government of the United States, or any department or agency of the Government of the United States, used in the operation of any locks on the Tennessee River or for any experimental purpose, or for the manufacture of fertilizer or any of the ingredients thereof, or for any other governmental purpose: *Provided,* That the percentages to be paid to the States of Alabama and Tennessee, as provided in this section, shall be subject to revision and change by the board, and any new percentages established by the board, when approved by the President, shall remain in effect until and unless again changed by the board with the approval of the President. No change of said percentages shall be made more often than once in five years, and no change shall be made without giving to the States of Alabama and Tennessee an opportunity to be heard.

SEC. 14. The board shall make a thorough investigation as to the present value of Dam Numbered 2, and the steam plants at nitrate plant numbered 1, and nitrate plant numbered 2, and as to the cost of Cove Creek Dam, for the purpose of ascertaining how much of the value or the cost of said properties shall be allocated and charged up to (1) flood control, (2) navigation, (3) fertilizer, (4) national defense, and (5) the development of power. The findings thus made by the board, when approved by the President of the United States, shall be final, and such findings shall thereafter be used in all allocation of value for the purpose of keeping the book value of said properties. In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said board for the purpose of control and management shall be ascertained and allocated.

SEC. 15. In the construction of any future dam, steam plant, or other facility, to be used in whole or in part for the generation or transmission of electric power the board is hereby authorized and empowered to issue on the credit of the United States and to sell serial bonds not exceeding $50,000,000 in amount, having a maturity not more than fifty years from the date of issue thereof, and bearing interest not exceeding 3½ per centum per annum. Said bonds shall be issued and sold in amounts and prices approved by the Secretary of the Treasury, but all such bonds as may be so issued and sold shall have equal rank. None of said bonds shall be sold below par, and no fee, commission, or compensation whatever shall be paid to any person, firm, or corporation for handling, negotiating the sale, or selling the said bonds. All of such bonds so issued and sold shall have all the rights and privileges accorded by law to Panama Canal bonds, authorized by section 8 of the Act of June 28, 1902, chapter 1302, as amended by the Act of December 21, 1905 (ch. 3, sec. 1, 34 Stat. 5), as now compiled in section 743 of title 31 of the United States Code. All funds derived from the sale of such bonds shall be paid over to the Corporation.

SEC. 16. The board, whenever the President deems it advisable, is hereby empowered and directed to complete Dam

Numbered 2 at Muscle Shoals, Alabama, and the steam plant at nitrate plant numbered 2, in the vicinity of Muscle Shoals, by installing in Dam Numbered 2 the additional power units according to the plans and specifications of said dam, and the additional power unit in the steam plant at nitrate plant numbered 2.

SEC. 17. The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct, either directly or by contract to the lowest responsible bidder, after due advertisement, a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam: *Provided, however,* That the President is hereby authorized by appropriate order to direct the employment by the Secretary of War, or by the Secretary of the Interior, of such engineer or engineers as he may designate, to perform such duties and obligations as he may deem proper, either in the drawing of plans and specifications for said dam, or to perform any other work in the building or construction of the same. The President may, by such order, place the control of the construction of said dam in the hands of such engineer or engineers taken from private life as he may desire: *And provided further,* That the President is hereby expressly authorized, without regard to the restriction or limitation of any other statute, to select attorneys and assistants for the purpose of making any investigation he may deem proper to ascertain whether, in the control and management of Dam Numbered 2, or any other dam or property owned by the Government in the Tennessee River Basin, or in the authorization of any improvement therein, there has been any undue or unfair

advantage given to private persons, partnerships, or corporations, by any officials or employees of the Government, or whether in any such matters the Government has been injured or unjustly deprived of any of its rights.

SEC. 18. In order to enable and empower the Secretary of War, the Secretary of the Interior, or the board to carry out the authority hereby conferred, in the most economical and efficient manner, he or it is hereby authorized and empowered in the exercise of the powers of national defense in aid of navigation, and in the control of the flood waters of the Tennessee and Mississippi Rivers, constituting channels of interstate commerce, to exercise the right of eminent domain for all purposes of this Act, and to condemn all lands, easements, rights of way, and other area necessary in order to obtain a site for said Cove Creek Dam, and the flowage rights for the reservoir of water above said dam, and to negotiate and conclude contracts with States, counties, municipalities, and all State agencies and with railroads, railroad corporations, common carriers, and all public utility commissions and any other person, firm, or corporation, for the relocation of railroad tracks, highways, highway bridges, mills, ferries, electric-light plants, and any and all other properties, enterprises, and projects whose removal may be necessary in order to carry out the provisions of this Act. When said Cove Creek Dam, transmission line, and power house shall have been completed, the possession, use, and control thereof shall be intrusted to the Corporation for use and operation in connection with the general Tennessee Valley project, and to promote flood control and navigation in the Tennessee River.

SEC. 19. The Corporation, as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers, shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulæ, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or

any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation to be instituted and prosecuted on the equity side of the appropriate district court of the United States, for the recovery of reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided*, That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter, discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States.

SEC. 20. The Government of the United States hereby reserves the right, in case of war or national emergency declared by Congress, to take possession of all or any part of the property described or referred to in this Act for the purpose of manufacturing explosives or for other war purposes; but, if this right is exercised by the Government, it shall pay the reasonable and fair damages that may be suffered by any party whose contract for the purchase of electric power or fixed nitrogen or fertilizer ingredients is hereby violated, after the amount of the damages has been fixed by the United States Court of Claims in proceedings instituted and conducted for that purpose under rules prescribed by the court.

SEC. 21. (a) All general penal statutes relating to the larceny, embezzlement, conversion, or to the improper handling, retention, use or disposal of public moneys or property of the United States, shall apply to the moneys and property of the Corporation and to moneys and properties of the United States intrusted to the Corporation.

(b) Any person who, with intent to defraud the Corporation, or to deceive any director, officer, or employee of the Corporation or any officer or employee of the United

States (1) makes any false entry in any book of the Corporation, or (2) makes any false report or statement for the Corporation, shall, upon conviction thereof, be fined not more than $10,000 or imprisoned not more than five years, or both.

(c) Any person who shall receive any compensation, rebate, or reward, or shall enter into any conspiracy, collusion, or agreement, express or implied, with intent to defraud the Corporation or wrongfully and unlawfully to defeat its purposes, shall, on conviction thereof, be fined not more than $5,000 or imprisoned not more than five years, or both.

SEC. 22. To aid further the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development consequent to this Act, and to provide for the general welfare of the citizens of said areas, the President is hereby authorized, by such means or methods as he may deem proper within the limits of appropriations made therefor by Congress, to make such surveys of and general plans for said Tennessee basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds, or through the guidance or control of public authority, all for the general purpose of fostering an orderly and proper physical, economic, and social development of said areas; and the President is further authorized in making said surveys and plans to cooperate with the States affected thereby, or subdivisions or agencies of such States, or with cooperative or other organizations, and to make such studies, experiments, or demonstrations as may be necessary and suitable to that end.

SEC. 23. The President shall, from time to time, as the work provided for in the preceding section progresses, recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said section.

and for the especial purpose of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation; and (6) the economic and social well-being of the people living in said river basin.

SEC. 24. For the purpose of securing any rights of flowage, or obtaining title to or possession of any property, real or personal, that may be necessary or may become necessary in the carrying out of any of the provisions of this Act, the President of the United States for a period of three years from the date of the enactment of this Act, is hereby authorized to acquire title in the name of the United States to such rights or such property, and to provide for the payment for same by directing the board to contract to deliver power generated at any of the plants now owned or hereafter owned or constructed by the Government or by said Corporation, such future delivery of power to continue for a period not exceeding thirty years. Likewise, for one year after the enactment of this Act, the President is further authorized to sell or lease any parcel or part of any vacant real estate now owned by the Government in said Tennessee River Basin, to persons, firms, or corporations who shall contract to erect thereon factories or manufacturing establishments, and who shall contract to purchase of said Corporation electric power for the operation of any such factory or manufacturing establishment. No contract shall be made by the President for the sale of any of such real estate as may be necessary for present or future use on the part of the Government for any of the purposes of this Act. Any such contract made by the President of the United States shall be carried out by the board: *Provided*, That no such contract shall be made that will in any way abridge or take away the preference right to purchase power given in this Act to States, counties, municipalities,

or farm organizations: *Provided further*, That no lease shall be for a term to exceed fifty years: *Provided further*, That any sale shall be on condition that said land shall be used for industrial purposes only.

SEC. 25. The Corporation may cause proceedings to be instituted for the acquisition by condemnation of any lands, easements, or rights of way which, in the opinion of the Corporation, are necessary to carry out the provisions of this Act. The proceedings shall be instituted in the United States district court for the district in which the land, easement, right of way, or other interest, or any part thereof, is located, and such court shall have full jurisdiction to divest the complete title to the property sought to be acquired out of all persons or claimants and vest the same in the United States in fee simple, and to enter a decree quieting the title thereto in the United States of America.

Upon the filing of a petition for condemnation and for the purpose of ascertaining the value of the property to be acquired, and assessing the compensation to be paid, the court shall appoint three commissioners who shall be disinterested persons and who shall take and subscribe an oath that they do not own any lands, or interest or easement in any lands, which it may be desirable for the United States to acquire in the furtherance of said project, and such commissioners shall not be selected from the locality wherein the land sought to be condemned lies. Such commissioners shall receive a per diem of not to exceed $15 for their services, together with an additional amount of $5 per day for subsistence for time actually spent in performing their duties as commissioners.

It shall be the duty of such commissioners to examine into the value of the lands sought to be condemned, to conduct hearings and receive evidence, and generally to take such appropriate steps as may be proper for the determination of the value of the said lands sought to be condemned, and for such purpose the commissioners are authorized to administer oaths and subpœna witnesses, which said witnesses shall receive the same fees as are provided for witnesses in the Federal courts. The said commissioners shall thereupon file a report setting forth their conclusions as to

the value of the said property sought to be condemned, making a separate award and valuation in the premises with respect to each separate parcel involved. Upon the filing of such award in court the clerk of said court shall give notice of the filing of such award to the parties to said proceeding, in manner and form as directed by the judge of said court.

Either or both parties may file exceptions to the award of said commissioners within twenty days from the date of the filing of said award in court. Exceptions filed to such award shall be heard before three Federal district judges unless the parties, in writing, in person, or by their attorneys, stipulate that the exceptions may be heard before a lesser number of judges. On such hearing such judges shall pass de novo upon the proceedings had before the commissioners, may view the property, and may take additional evidence. Upon such hearings the said judges shall file their own award, fixing therein the value of the property sought to be condemned, regardless of the award previously made by the said commissioners.

At any time within thirty days from the filing of the decision of the district judges upon the hearing on exceptions to the award made by the commissioners, either party may appeal from such decision of the said judges to the circuit court of appeals, and the said circuit court of appeals shall upon the hearing on said appeal dispose of the same upon the record, without regard to the awards or findings theretofore made by the commissioners or the district judges, and such circuit court of appeals shall thereupon fix the value of the said property sought to be condemned.

Upon acceptance of an award by the owner of any property herein provided to be appropriated, and the payment of the money awarded or upon the failure of either party to file exceptions to the award of the commissioners within the time specified, or upon the award of the commissioners, and the payment of the money by the United States pursuant thereto, or the payment of the money awarded into the registry of the court by the Corporation, the title to said property and the right to the possession thereof shall pass to the United States, and the United States shall be

entitled to a writ in the same proceeding to dispossess the former owner of said property, and all lessees, agents, and attorneys of such former owner, and to put the United States, by its corporate creature and agent, the Corporation, into possession of said property.

In the event of any property owned in whole or in part by minors, or insane persons, or incompetent persons, or estates of deceased persons, then the legal representatives of such minors, insane persons, incompetent persons, or estates shall have power, by and with the consent and approval of the trial judge in whose court said matter is for determination, to consent to or reject the awards of the commissioners herein provided for, and in the event that there be no legal representatives, or that the legal representatives for such minors, insane persons, or incompetent persons shall fail or decline to act, then such trial judge may, upon motion, appoint a guardian ad litem to act for such minors, insane persons, or incompetent persons, and such guardian ad litem shall act to the full extent and to the same purpose and effect as his ward could act, if competent, and such guardian ad litem shall be deemed to have full power and authority to respond, to conduct, or to maintain any proceeding herein provided for affecting his said ward.

SEC. 26. The net proceeds derived by the board from the sale of power and any of the products manufactured by the Corporation, after deducting the cost of operation, maintenance, depreciation, amortization, and an amount deemed by the board as necessary to withhold as operating capital, or devoted by the board to new construction, shall be paid into the Treasury of the United States at the end of each calendar year.

SEC. 27. All appropriations necessary to carry out the provisions of this Act are hereby authorized.

SEC. 28. That all Acts or parts of Acts in conflict herewith are hereby repealed, so far as they affect the operations contemplated by this Act.

SEC. 29. The right to alter, amend, or repeal this Act is hereby expressly declared and reserved, but no such amend-

ment or repeal shall operate to impair the obligation of any contract made by said Corporation under any power conferred by this Act.

SEC. 30. The sections of this Act are hereby declared to be separable, and in the event any one or more sections of this Act be held to be unconstitutional, the same shall not affect the validity of other sections of this Act.

Approved May 18th, 1933.

[PUBLIC—No. 412—74TH CONGRESS.]
[H. R. 8632.]
AN ACT.

To amend an Act entitled "An Act to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes", approved May 18, 1933.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That subdivision (i) of section 4 of the Act entitled "An Act to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes", approved May 18, 1933, be, and the same is hereby, amended by adding thereto the following proviso: "*Provided*, That nothing contained herein or elsewhere in this Act shall be construed to deprive the Corporation of the rights conferred by the Act of February 26, 1931 (46 Stat. 1422, ch. 307, secs. 1 to 5, inclusive), as now compiled in sections 258a to 258e, inclusive, of Title 40 of the United States Code."

SEC. 2. That subdivision (j) of said section 4 of said Act be, and the same is hereby, amended to read as follows:

"(j) Shall have power to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins; and shall have power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines. The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system."

SEC. 3. That said section 4 of said Act be, and the same is hereby, further amended by adding a new subdivision, (k), at the end of said section as follows:

"(k) At any time before the expiration of five years from the date when this section, as amended, becomes law may in the name of and as agent for the United States and subject to approval of the President, dispose of any of such real property as in the judgment of the Board may be no longer necessary in carrying out the purposes of this Act, but no land shall be conveyed on which there is a permanent dam, hydraulic power plant, fertilizer plant or munitions plant, heretofore or hereafter built by or for the United States or for the Authority."

SEC. 4. That subdivision (c) of section 5 of said Act be, and the same is hereby, amended to read as follows:

"(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, with farmers, landowners, and associations of farmers or landowners, for the use of new forms of fertilizer or fertilizer

practices during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers and otherwise."

SEC. 5. That said Act be, and the same is hereby, further amended by adding a new section after section 9 of said Act, as follows:

"SEC. 9a. The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority."

SEC. 6. That section 10 of said Act be, and the same is hereby, amended by adding thereto a proviso as follows: "*Provided further*, That the Board is authorized to include in any contract for the sale of power such terms and conditions, including resale rate schedules, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act, and in case the purchaser shall fail to comply with any such terms and conditions, or violate any such rules and regulations, said contract may provide that it shall be voidable at the election of the Board: *Provided further*, That in order to supply farms and small villages with electric power directly as contemplated by this section, the Board in its discretion shall have power to acquire existing electric facilities used in serving such farms and small villages: *And provided further*, That the terms 'States', 'counties', and 'municipalities' as used in this Act shall be construed to include the public agencies of any of them unless the context requires a different construction."

SEC. 7. That said Act be, and the same is hereby, further amended by adding a new section after section 12 of said Act, as follows:

"SEC. 12a. In order (1) to facilitate the disposition of the surplus power of the Corporation according to the policies set forth in this Act; (2) to give effect to the priority herein accorded to States, counties, municipalities, and nonprofit organizations in the purchase of such power by enabling them to acquire facilities for the distribution of such power; and (3) at the same time to preserve existing distribution facilities as going concerns and avoid duplication of such facilities, the Board is authorized to advise and cooperate with and assist, by extending credit for a period of not exceeding five years to, States, Counties, municipalities and nonprofit organizations situated within transmission distance from any dam where such power is generated by the Corporation in acquiring, improving, and operating (a) existing distribution facilities and incidental works, including generating plants; and (b) interconnecting transmission lines; or in acquiring any interest in such facilities, incidental works, and lines."

SEC. 8. That said Act be, and the same is hereby, further amended by adding to section 14 of said Act the following:

"The Board shall, on or before January 1, 1937, file with Congress a statement of its allocation of the value of all such properties turned over to said Board, and which have been completed prior to the end of the preceding fiscal year, and shall thereafter in its annual report to Congress file a statement of its allocation of the value of such properties as have been completed during the preceding fiscal year.

"For the purpose of accumulating data useful to the Congress in the formulation of legislative policy in matters relating to the generation, transmission, and distribution of electric energy and the production of chemicals necessary to national defense and useful in agriculture, and to the Federal Power Commission and other Federal and State agencies, and to the public, the Board shall keep complete accounts of its costs of generation, transmission, and distribution of electric energy and shall keep a complete ac-

count of the total cost of generating and transmission facilities constructed or otherwise acquired by the Corporation, and of producing such chemicals, and a description of the major components of such costs according to such uniform system of accounting for public utilities as the Federal Power Commission has, and if it have none, then it is hereby empowered and directed to prescribe such uniform system of accounting, together with records of such other physical data and operating statistics of the Authority as may be helpful in determining the actual cost and value of services, and the practices, methods, facilities, equipment, appliances, and standards and sizes, types, location, and geographical and economic integration of plants and systems best suited to promote the public interest, efficiency, and the wider and more economical use of electric energy. Such data shall be reported to the Congress by the Board from time to time with appropriate analyses and recommendations, and, so far as practicable, shall be made available to the Federal Power Commission and other Federal and State agencies which may be concerned with the administration of legislation relating to the generation, transmission, or distribution of electric energy and chemicals useful to agriculture. It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power and in addition to the statement of the cost of power at each power station as required by section 9 (a) of the 'Tennessee Valley Act of 1933', the Board shall file with each annual report, a statement of the total cost of all power generated by it at all power stations during each year, the average cost of such power per kilowatt hour, the rates at which sold, and to whom sold, and copies of all contracts for the sale of power."

SEC. 9. That said Act be and the same is hereby further amended by adding after section 15 of said Act a new section as follows:

"SEC. 15a. With the approval of the Secretary of the Treasury, the Corporation is authorized to issue bonds not to exceed in the aggregate $50,000,000 outstanding at any one time, which bonds may be sold by the Corporation to obtain funds to carry out the provisions of section 7 of this amendatory Act. Such bonds shall be in such forms and denominations, shall mature within such periods not more than fifty years from the date of their issue, may be redeemable at the option of the Corporation before maturity in such manner as may be stipulated therein, shall bear such rates of interest not exceeding 3½ per centum per annum, shall be subject to such terms and conditions, shall be issued in such manner and amount, and sold at such prices, as may be prescribed by the Corporation, with the approval of the Secretary of the Treasury: *Provided*, That such bonds shall not be sold at such prices or on such terms as to afford an investment yield to the holders in excess of 3½ per centum per annum. Such bonds shall be fully and unconditionally guaranteed both as to interest and principal by the United States, and such guaranty shall be expressed on the face thereof, and such bonds shall be lawful investments, and may be accepted as security, for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority or control of the United States or any officer or officers thereof. In the event that the Corporation should not pay upon demand, when due, the principal of, or interest on, such bonds, the Secretary of the Treasury shall pay to the holder the amount thereof, which is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, and thereupon to the extent of the amount so paid the Secretary of the Treasury shall succeed to all the rights of the holders of such bonds. The Secretary of the Treasury, in his discretion, is authorized to purchase any bonds issued hereunder, and for such purpose the Secretary of the Treasury is authorized to use as a public-debt transaction the proceeds from the sale of any securities hereafter issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under such Act, as amended, are extended to include any purchases of the Corporation's bonds hereunder. The

Secretary of the Treasury may, at any time, sell any of the bonds of the Corporation acquired by him under this section. All redemptions, purchases, and sales by the Secretary of the Treasury of the bonds of the Corporation shall be treated as public-debt transactions of the United States. With the approval of the Secretary of the Treasury, the Corporation shall have power to purchase such bonds in the open market at any time and at any price. No bonds shall be issued hereunder to provide funds or bonds necessary for the performance of any proposed contract negotiated by the Corporation under the authority of section 7 of this amendatory Act until the proposed contract shall have been submitted to and approved by the Federal Power Commission. When any such proposed contract shall have been submitted to the said Commission, the matter shall be given precedence and shall be in every way expedited and the Commission's determination of the matter shall be final. The authority of the Corporation to issue bonds hereunder shall expire at the end of five years from the date when this section as amended herein becomes law, except that such bonds may be issued at any time after the expiration of said period to provide bonds or funds necessary for the performance of any contract entered into by the Corporation, prior to the expiration of said period, under the authority of section 7 of this amendatory Act."

SEC. 10. That section 26 of said Act be, and the same is hereby, amended to read as follows:

"SEC. 26. Commencing July 1, 1936, the proceeds for each fiscal year derived by the Board from the sale of power or any other products manufactured by the Corporation, and from any other activities of the Corporation including the disposition of any real or personal property, shall be paid into the Treasury of the United States at the end of each calendar year, save and except such part of such proceeds as in the opinion of the Board shall be necessary for the Corporation in the operation of dams and reservoirs, in conducting its business in generating, transmitting, and distributing electric energy and in manufacturing, selling, and distributing fertilizer and fertilizer ingredients. A con-

tinuing fund of $1,000,000 is also excepted from the requirements of this section and may be withheld by the Board to defray emergency expenses and to insure continuous operation: *Provided*, That nothing in this section shall be construed to prevent the use by the Board, after June 30, 1936, of proceeds accruing prior to July 1, 1936, for the payment of obligations lawfully incurred prior to such latter date."

SEC. 11. That said Act be, and the same is hereby, further amended by adding after section 26 of said Act a new section, as follows:

"SEC. 26a. The unified development and regulation of the Tennessee River system requires that no dam, appurtenant works, or other obstruction, affecting navigation, flood control, or public lands or reservations shall be constructed, and thereafter operated or maintained across, along, or in the said river or any of its tributaries until plans for such construction, operation, and maintenance shall have been submitted to and approved by the Board; and the construction, commencement of construction, operation, or maintenance of such structures without such approval is hereby prohibited. When such plans shall have been approved, deviation therefrom either before or after completion of such structures is prohibited unless the modification of such plans has previously been submitted to and approved by the Board.

"In the event the Board shall, within sixty days after their formal submission to the Board, fail to approve any plans or modifications, as the case may be, for construction, operation, or maintenance of any such structures on the Little Tennessee River, the above requirements shall be deemed satisfied, if upon application to the Secretary of War, with due notice to the Corporation, and hearing thereon, such plans or modifications are approved by the said Secretary of War as reasonably adequate and effective for the unified development and regulation of the Tennessee River system.

"Such construction, commencement of construction, operation, or maintenance of any structures or parts thereof in violation of the provisions of this section may be pre-

vented, and the removal or discontinuation thereof required by the injunction or order of any district court exercising jurisdiction in any district in which such structures or parts thereof may be situated, and the Corporation is hereby authorized to bring appropriate proceedings to this end.

"The requirements of this section shall not be construed to be a substitute for the requirements of any other law of the United States or of any State, now in effect or hereafter enacted, but shall be in addition thereto, so that any approval, license, permit, or other sanction now or hereafter required by the provisions of any such law for the construction, operation, or maintenance of any structures whatever, except such as may be constructed, operated, or maintained by the Corporation, shall be required, notwithstanding the provisions of this section."

SEC. 12. That said Act be, and the same is hereby, further amended by adding at the end of said Act a new section, as follows:

"SEC. 31. This Act shall be liberally construed to carry out the purposes of Congress to provide for the disposition of and make needful rules and regulations respecting Government properties entrusted to the Authority, provide for the national defense, improve navigation, control destructive floods, and promote interstate commerce and the general welfare, but no real estate shall be held except what is necessary in the opinion of the Board to carry out plans and projects actually decided upon requiring the use of such land: *Provided*, That any land purchased by the Authority and not necessary to carry out plans and projects actually decided upon shall be sold by the Authority as agent of the United States, after due advertisement, at public auction to the highest bidder, or at private sale as provided in section 3 of this amendatory Act."

SEC. 13. That section 4 of said Act of May 18, 1933 (48 Stat. 58), be amended by adding subsection (l) as follows:

"(l) Shall have power to advise and cooperate in the readjustment of the population displaced by the construction of dams, the acquisition of reservoir areas, the protection of watersheds, the acquisition of rights-of-way, and other

necessary acquisitions of land, in order to effectuate the purposes of the Act; and may cooperate with Federal, State, and local agencies to that end."

SEC. 14. That subsection (b) of section 9 of said Act be and the same is hereby amended to read as follows:

"(b) All purchases and contracts for supplies or services, except for personal services, made by the Corporation, shall be made after advertising, in such manner and at such times sufficiently in advance of opening bids, as the Board shall determine to be adequate to insure notice and opportunity for competition: *Provided*, That advertisement shall not be required when, (1) an emergency requires immediate delivery of the supplies or performance of the services; or (2) repair parts, accessories, supplemental equipment, or services are required for supplies or services previously furnished or contracted for; or (3) the aggregate amount involved in any purchase of supplies or procurement of services does not exceed $500; in which cases such purchases of supplies or procurement of services may be made in the open market in the manner common among businessmen: *Provided further*, That in comparing bids and in making awards the Board may consider such factors as relative quality and adaptability of supplies or services, the bidder's financial responsibility, skill, experience, record of integrity in dealing, ability to furnish repairs and maintenance services, the time of delivery or performance offered, and whether the bidder has complied with the specifications.

"The Comptroller General of the United States shall audit the transactions of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all papers, books, records, files, accounts, plants, warehouses, offices, and all other things, property, and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositaries. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the Board, one

for public inspection at the principal office of the Corporation, and the other to be retained by him for the uses of the Congress: *Provided*, That such report shall not be made until the Corporation shall have had reasonable opportunity to examine the exceptions and criticisms of the Comptroller General or the General Accounting Office, to point out errors therein, explain or answer the same, and to file a statement which shall be submitted by the Comptroller General with his report. The expenses for each such audit shall be paid from any appropriation or appropriations for the General Accounting Office, and such part of such expenses as may be allocated to the cost of generating, transmitting, and distributing electric energy shall be reimbursed promptly by the Corporation as billed by the Comptroller General. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties entrusted to the Corporation by law."

SEC. 15. That the sections of this Act are hereby declared to be separable, and in the event of any one or more sections of this Act, or parts thereof, be held to be unconstitutional, such holding shall not affect the validity of other sections or parts of this Act.

Approved, August 31, 1935.

APPENDIX "B".

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF TENNESSEE, NORTHERN DIVISION

In Equity. No. 228

THE TENNESSEE ELECTRIC POWER COMPANY *et al., Complainants,*

v.

TENNESSEE VALLEY AUTHORITY *et al., Defendants.*

Decided January 21st, 1938.

Before Allen, Circuit Judge, and Gore and Martin, District Judges.

ALLEN, *Circuit Judge:*

Complainants have filed a bill in equity praying for relief against the operation of the Tennessee Valley Authority Act of 1933, as amended (48 Stat. 58; 49 Stat. 1075; 16 U. S. C. 831 et seq.). The bill joins as defendants the Tennessee Valley Authority, the agency created by the Congress to carry out the provisions of these statutes, and Arthur E. Morgan, David E. Lilienthal, and Harcourt A. Morgan, who are the chief executive officers of the Authority and constitute its board of directors.

The complainants are nineteen companies generating, transmitting and distributing power within Tennessee, Alabama, Mississippi, North Carolina, South Carolina, Kentucky, Virginia, West Virginia, and Georgia, one of which, the Georgia Power Company has been enjoined from participating in this action by the United States District Court for the Northern District of Georgia (*Georgia Power Co. v. Tennessee Valley Authority*, 17 Fed. Supp. 769). This decree has been affirmed by the Court of Appeals for the Fifth Circuit (89 Fed. (2d) 218). For this reason we give no consideration to alleged competition of the Authority with the Georgia Power Company.

The complainants are in general owned by holding companies, as set forth in the findings of fact. They are all taxpayers, citizens of and authorized to do business within the states in which they operate, and none of them claims to operate under any exclusive franchise.

The bill cannot be summarized within the appropriate limits for a trial court's opinion. In addition to its seventy pages of pleading and sixty-five pages of exhibits, it contains within the bill itself much that is argumentative, repetitious and immaterial to the legal questions presented. It charges coercion, fraud and conspiracy on the part of the defendants officially and individually. It charges that Secretary Harold L. Ickes, Public Works Administrator, has joined with the Authority in certain coercion and conspiracy against the legal rights of these complainants. The argumentative matter and conclusions which we deem immaterial are so interwoven with allegations bearing upon the legal questions presented that it is impossible to extricate them. The same statement is true of the prayer. Paragraphs h, i, l, o, p and q of the prayer are considered by the court to have no relation to this case under *Ashwander* v. *Tennessee Valley Authority*, 297 U. S. 288, which held that such matter presents no justiciable controversy (p. 324). It suffices, therefore, to say that in its essential and material features the bill seeks a decree holding that the Tennessee Valley Authority Act of 1933 as amended, and the acts generally done by the board of directors thereunder and individually violate the Constitution of the United States. It seeks an injunction restraining the defendants, their agents and employees, from carrying out the provisions of the statute with reference to the sale of electric power, from purchasing, constructing or otherwise acquiring electric generating plants, transmission lines or distribution lines, or from selling electric energy, except such energy as may be produced at Wilson Dam, "to the extent the production and sale of power at Wilson Dam has been held legal." For practical purposes this bill seeks to enjoin the further construction of TVA dams now in process of construction in the Tennessee Valley, the construction of new dams in such valley for which specific ap-

propriation has been made by Congress, and the operation for generation and sale of electric power of all TVA dams built and to be built.

The answer denies the material allegations of the bill. Only one of the affirmative defenses requires special mention. The defendants claim that certain of the complainants are estopped to deny the constitutionality of the TVA statutes because of extensive purchases of power from the Authority. These purchases were made under the contract of January 4, 1934, by which certain complainants contracted with the Authority to transfer to the Authority their plants, lines, equipment, customers and franchises within certain counties within Mississippi and Alabama for a valuable consideration and upon the condition that the Authority would not operate within those states outside of the counties specified. The properties have been transferred and the contract to date has been fully performed. The court has ruled in favor of the complainants on this contention, and has held that the record presents no essential difference from the situation covered by the ruling as to estoppel in the *Ashwander* case, *supra*, at 323, and therefore this question will not be discussed.

After a trial which consumed about seven weeks, in which approximately 1,100 exhibits were offered, the material issues in the case as briefed, argued and outlined in the actual testimony are defined as follows:

(1) Whether the Authority is engaged in acts constituting in law malice, coercion, and duress, to the injury of complainants.

(2) Whether the Authority and the individual defendants have conspired with Secretary Ickes and the Public Works Administration to induce municipalities and cooperative associations through loan grant agreements from the Public Works Administration to set up their own distribution systems and to coerce them into executing contracts for purchase of TVA power by threat of denial or cancellation of such PWA loan grants.

(3) Whether the acts of the defendants are authorized by the TVA statutes.

(4) Whether the act itself is unconstitutional and void, and the acts done under it are illegal because the Congress is not empowered either under the interstate commerce clause, Art. I, Section 8, or under the national defense powers, Art. I, Section 8, of the United States Constitution, to enact the TVA statutes.

(5) Whether the generation of electricity at the TVA dams is unlawful because it is inconsistent with the regulation of interstate commerce, with flood control, with the improvement of navigation on a navigable river, and with purposes of national defense.

(6) Whether the method of disposition of electric energy authorized by the TVA statutes is appropriate and constitutional under the power to dispose of Government property conferred upon the Congress by Section 3 of Article IV of the Constitution.

Each of the dams constructed, in process of construction and proposed for the TVA system, while varying somewhat in use, as hereafter set forth, is a unit of an integrated multiple-purpose project, the system being designed for coordinated use of the full benefits of the river along the line of navigation, flood control, national defense and power development. Wherever water falls power is created, and one of the express purposes of the TVA statutes is that hydro-electric power so created shall be sold to assist in liquidating the cost of the project. This is in line with the general development of the conservation movement from 1908 to the present, as it relates to streams. See National Waterways Commission Report, Senate Document 469, 62d Congress, Second Session, Appendix I, pages 27, 52, 61, 82, 85, 87; Statement of Chairman of Federal Power Commission, House Document 395, 73d Congress, Second Session, page 54; Report of National Resources Board, pages 263, 264. Similar provisions on river projects have been embodied in previous legislation. In 1912 a statute was enacted authorizing the Secretary of War to provide in navigation dams, in order to make possible the economical future development of water power, such foundations, sluices, and other works as may be considered desirable

for the development of such power. 37 Stat. 233. The Boulder Dam Project Act of 1928 (45 Stat. 1057) provided for a multiple-purpose project for irrigation, flood control, improvement of navigation and generation of power. As fully appears from the opinion in *Arizona* v. *California,* 283 U. S. 423, navigation on the Colorado River was negligible in comparison with navigation on the Tennessee River on the record in this case. Though navigation on the Colorado River had ceased, the project of reclaiming its navigability was held by the Supreme Court to establish the constitutionality of the multiple-purpose project, including the generation and sale of power.

TVA Project

Pursuant to the TVA statute as amended and to subsequent related enactments, the Authority has constructed and is planning to construct seven high dams on the main channel of the Tennessee River, and certain dams on its tributaries. The Tennessee River is formed by the confluence of the Holston and French Broad Rivers in the east-central part of Tennessee. It flows southwesterly across the eastern part of Tennessee into Alabama, westerly across the northern part of Alabama, northerly between Alabama and Mississippi, and across the western part of Tennessee and Kentucky, and empties into the Ohio River near Paducah, Kentucky. Its length is 652 miles, and its drainage basin is 40,600 square miles. It has eight principal tributaries. The main stream dams, including Wilson, which was constructed previous to 1933, are as follows:

(1) Gilbertsville, on which preliminary investigations are in progress, located in Kentucky about 22 miles from the mouth of the river.

(2) Pickwick Landing Dam, under construction and almost completed, located in Tennessee about 206 miles from the river's mouth.

(3) Wilson Dam, now in operation, constructed by United States Army engineers and transferred to the Authority

under the TVA Act, located at Muscle Shoals, Alabama, about 259 miles from the river's mouth.

(4) Wheeler Dam, construction of which was begun by the United States Army Engineers and completed by the Authority, located in Alabama about 15 miles above Wilson Dam and about 275 miles from the river's mouth. This dam is now in operation.

(5) Guntersville Dam, under construction, located near Guntersville, Alabama, 349 miles from the mouth of the river.

(6) Chickamauga Dam, now under construction, located near Chattanooga, Tennessee, 471 miles from the mouth of the river.

(7) Watts Bar Dam, on which preliminary investigations are in progress, located in Tennessee about 530 miles from the mouth of the river.

(8) Coulter Shoals Dam, on which preliminary investigations are in progress, located in Tennessee 602 miles from the river's mouth.

The tributary dams are Norris, completed and in operation, located in Tennessee on the Clinch River about 79 miles from the mouth of the Clinch and about 647 miles from the mouth of the Tennessee, and Hiwassee Dam, now under construction, located in North Carolina on the Hiwassee River about 75 miles from the mouth of that river and about 560 miles from the mouth of the Tennessee River.

A third tributary reservoir, Fontana, on the French Broad River, is recommended by the Authority, but the Congress has made no specific appropriation for this suggested dam. While Wheeler and Norris are the only dams built by the Authority which are completed and in operation, they coordinate in use with Wilson at Florence, Alabama. They release water to Wilson, and thus aid in the generation of power at Wilson. Wilson Dam was built under the war powers of the Congress, as held in *Ashwander* v. *Tennessee Valley Authority, supra.* While the validity

of Wilson Dam is not and cannot be questioned, its present use in combination with Norris and Wheeler, and its future use in conjunction with Guntersville, Chickamauga and Hiwassee, all of these dams being upstream from Wilson and each being part of an integrated system built for the combined purposes of navigation, flood control, power and national defense, has immediate bearing on this case.

The importance of the Tennessee Drainage Basin has been recognized for over a century and repeated acts of Congress have provided for the canalization of different parts of the river. A canal with locks throughout the length of Muscle Shoals opened to navigation in 1834 fell into disuse. Another Muscle Shoals canal was completed about 1891. The Rivers and Harbors Act of 1890 provided that the Colbert Shoals section should be improved by a lock and a canal. In 1913 the Hale's Bar lock and dam, completed by private interests, provided a canalization of 33 miles of the river below Chattanooga. The Widow's Bar lock and dam below Hale's Bar was completed in 1926. Wilson Dam provided a canalized waterway for 15½ miles from Muscle Shoals. Lock No. 1, immediately below Wilson Dam, was completed in 1926.

These projects were in general unrelated and uncoordinated. This was the situation when a comprehensive survey of the Tennessee basin was ordered in five successive Acts of Congress from 1922 to 1928, resulting in the reports contained in House Document 328. This document contained an exhaustive report by the district engineer and comments thereon, together with recommendations made by the division engineer, the board of engineers for rivers and harbors, and the chief of engineers. It set forth alternate plans for securing a depth of nine feet in the main stream, that is, an improvement for navigation only, and also a plan for the development of the river and its tributaries for purposes of flood control, navigation and power. The suggested plan for the improvement of navigation only involved in one of its phases the building of 32 low dams which would provide a nine-foot navigable channel, but would have no value either for flood control or power.

HOUSE DOCUMENT 328.

The complainants vigorously assert that House Document 328 recommends the low dam plan, as distinguished from the TVA plan. It is of little assistance in this phase of the controversy to rely only upon the recommendations of the various engineers, without studying the text (House Document 328, pages 1-25). As to the report of the district engineer, of which the chief engineers said "There has never been presented to Congress a more thorough and exhaustive stu'y", the board of engineers for rivers and harbors, in its conclusions on the various projects presented, stated that "The construction of the storage reservoirs (on the tributaries) described in this report would have a favorable effect in reducing floods on the Tennessee River and on the lower portions of its tributaries" (p. 23). It declared that "The improvement of the Tennessee from its mouth to Knoxville by a series of low movable dams without power development would have practically no effect on floods" (p. 23). It also said, speaking of low-lift dams, that "Such a waterway would be inferior to the high-dam developments and would not permit the economical development of power" (p. 13). The board of engineers pointed out that in addition to having no value whatever for flood control, the 32 low dams, though less expensive to construct than the high dams, provided a navigation channel inferior to that of the high dam plan.

It stated its opinion that the river "has large potential value as a means of transportation and that its improvement to a depth of nine feet would ultimately make it an important feeder to the Ohio-Mississippi system" (p. 20). It concluded that "It is evident that the full utilization of the resources of this river for the public benefit requires its improvement by means of high dams built for the joint development of power and navigation."

These extracts show that consideration of the bare recommendations, apart from the conclusions expressed, are misleading. In the recommendations the division engineer disagreed with the district engineer who drew the report, as to his estimate of the amount of benefit to navigation. The

board of engineers disagreed on certain points with the division engineer, and the chief of engineers, in certain matters, disagreed with all of his subordinates. But the projects actually recommended by each of these engineers were not in essential features the same as those embodied in the TVA statutes. They provided for the development of the river by private interests, or by a combination of private interests and the Government.

In order to carry out this policy, the Rivers and Harbors Act was passed in 1930, extending to private interests on certain conditions the right to develop the river by a series of high dams in co-operation with the Government. No private interest availed itself of the opportunity and in 1933 Congress delegated the task to an agency of the Government.

The program adopted by the Authority, in its main features, and the choice of the sites for the various dams, follow the broader multiple-project plan outlined in House Document 328 (p. 43), commended by the board of engineers of rivers and harbors, as superior to the low dam plan. This multiple project contemplated the erection of seven high dams in the main stream (in addition to Wilson, which had already been built), and reservoirs on the tributaries.

Uses of the Dams.

The dams on the tributaries, as outlined in House Document 328, and as shown in the evidence, are used and to be used for flood control, water regulation, power and purposes of national defense. Of the completed dams, Norris is so constructed as to be able to retain the entire flood waters of the Clinch in flood season, and was in fact so operated in 1936 and 1937. In 1936 it averted a probable flood at Chattanooga. It also generates power. Releases of water from Norris in the dry season are now used for regulation of stream flow so as to maintain a seven-foot navigable channel throughout the summer. Similar releases will be necessary until the entire series of main-stream dams as planned has been completed. Wheeler backs the water of the Tennessee into a slack water pool providing nine-foot navigation to Guntersville. It generates power and has a

surcharge usable for flood control. It is uncontradicted that the releases from Norris and Wheeler, and from Hiwassee, Guntersville and Chickamauga, as planned, create and will create extra head for continuous water power at Wilson, and thus aid in the national defense. Cf. *Ashwander* v. *Tennessee Valley Authority, supra.*

Of the dams under construction, Guntersville, Chickamauga, and Pickwick Landing are essential to the maintenance of nine-foot navigation. Each of these dams is equipped with electric generators and has a substantial surcharge usable for flood control. Hiwassee, on a tributary, will be used mainly for flood control and power, and for aiding Wilson Dam with water releases at dry season. Until the project is completed it will assist in regulating stream flow, thus improving navigation. Gilbertsville, while authorized by Congress, has only been investigated and surveyed. The plans for this dam have necessarily been delayed because of its size and because of the difficulty of locating suitable rock foundation. It is reasonably estimated that Gilbertsville, when completed, will supply over 4,000,000 acre feet of flood storage, and it is the most important of the series for flood control on the Ohio and the Mississippi The Tennessee contributes materially to the flood crest on the Ohio at Cairo. Its flood flow is almost double its drainage area in relation to other feeders of the Mississippi, because of the high precipitation in the Tennessee Valley which varies from 47.5 inches per year at Knoxville to 51.2 at Paducah on the main stream. The Ohio with its tributaries, including the Tennessee, is the principal feeder to the Mississippi floods. All of the TVA dams, on both the river and the tributaries, are used so far as constructed, are planned, as shown by the official TVA reports, and are required under the statute, to be employed as an integrated, co-oridnated system for the combined purposes of navigation, flood control, power and national defense.

Conspiracy, Coercion and Unlawful Competition.

The bill charges a conspiracy to injure or destroy the complainants' business, to compete unlawfully, to breach the complainants' existing contracts with their customers, to

compel and coerce complainants to sell their plants at distress figures. It charges that the TVA has conspired with and practiced coercion upon municipalities and co-operatives to compel them to set up their own distribution systems for the purpose of selling TVA power at retail. If the record had substantiated the allegations of the bill, grave questions would have been presented. But these allegations have not been established. None of the complainants has sold its property except those covered by the contract of January 4, 1934, a contract entered into at arm's length and not even challenged by complainants as unfair. Since complainants have not sold, they have not been coerced to sell their properties, and the negotiations for sale presented in this record do not evidence acts deemed coercion under settled legal principles. No malice in law is shown on this record. The motive of officials who execute a law is immaterial, even though accompanied by a wrongful purpose. *Isbrandtsen-Moller Co.* v. *United States*, 300 U. S. 139, 145.

Unlawful Competition

Neither has unlawful competition been proved. The attempt to show that the Authority has endeavored to persuade complainants' customers to breach their existing contracts for purchase of power from complainants has totally failed. In every case where a customer of the complainants has been lost to the Authority, the cause has been not unlawful competition, but the lawful allurement of substantially lower prices. In every such case the change of relationship has occurred at a time when no contract with any of the complainants was in existence. In fact, it is shown that the TVA does not serve the complainants' customers with direct service except as to industrials and "ceded areas." Thus the municipalities now served by the TVA in Tennessee,—Dayton, Pulaski, and Dickson,—each generated its own power prior to the time when the TVA started selling them power. The positive statement is made by officers of the Mississippi Power & Light Company, the Franklin Power & Light Company, the Holston River Electric Company, the Birmingham Electric Company, the Carolina Power & Light Company, the Appa-

lachian Electric Power Company, the West Virginia Power Company, the Kingsport Company, the East Tennessee Light & Power Company, the Tennessee Eastern Company, and by the Southern Tennessee Power Company, that the TVA serves neither any of its customers direct, nor any wholesale customer by whom distribution is made to any of these utilities' former customers. The TVA serves certain cities and customers formerly served by the Alabama Power Company, but all of these customers are situated or reside within certain counties called the "ceded area" in which it was contracted in the agreement of January 4, 1934, by the Alabama Power Company, that its lines should be sold to the TVA within that area, and that the TVA should serve within that district and nowhere else in Alabama. The TVA is serving nowhere else in Alabama except within this area. The Mississippi Power Company has made a similar contract with the TVA, and the TVA is not serving outside of the "ceded area" in Mississippi. No fraudulent attempt has been made to secure complainants' markets. Whatever compulsion exists is the inevitable compulsion exercised by the fact that a competitor sells at lower rates than complainants. But if the operation of the TVA is legal, the complainants have no legal right not to be subjected to such competition even though it curtail or destroy their business. *Alabama Power Co.* v. *Ickes*, 293 U. S. —, decided January 3, 1938.

Conspiracy With Public Works Administration.

The complainants allege that the defendants have conspired with the Public Works Administration to finance the construction of duplicating distribution lines and systems in various municipalities and co-operatives for the purpose of using TVA power and selling that power at rates so low as to constitute competition destructive to complainants' business. Numerous contracts are introduced in evidence between the Public Works Administration and municipalities and co-operatives, providing for the financing of electrical distribution projects. The power is being sold, or is contracted to be sold, to these municipalities and co-operatives at wholesale by TVA.

The facts do not establish a conspiracy. It is not questioned that loans were made within the provisions of the Public Works Administration statute. The validity of that statute is not attacked in this proceeding, and we therefore assume that it is valid. The acts done by Secretary Ickes and his subordinates have been done under the purview of the controlling statute. Their acts are presmued to be valid. Where no fraud, malice, or coercion is shown, co-operative action by two groups of public officials in administering the provisions of two statutes, does not constitute conspiracy. The decisions relied on by complainants with respect to unlawful concert, plan or design, involve a plan either to commit an unlawful act or to commit acts otherwise lawful with the intent to violate a statute, or commit an unlawful act. Cf. *Swift and Company* v. *United States*, 196 U. S. 375. The acts done by the officials of the Public Works Administration in co-operation with the officials of the TVA, as shown by this record, were done with the intent to carry out the provisions of the Public Works Administration statute; the acts done by the TVA in co-operation with the Public Works Administration were done with the intent to carry out the TVA statute. Intent to execute a valid and existing law is not evidence of illegality. As to the transactions of the Public Works Administration, no evidence of conspiracy is presented.

Coercion Upon Municipalities and Co-Operatives.

Certain officials and employees of the TVA gave information, counsel and encouragement to municipalities and co-operatives at the request of such municipalities and co-operatives with respect to the general feasibility of setting up distribution systems for TVA power. The decision on such matters was made by the municipality or co-operative concerned. Under the statutes of Alabama, Tennessee and Mississippi, hereinafter cited, both municipalities and rural co-operatives are authorized to construct generating plants and distribution systems for the purpose of creating and distributing electric energy. Georgia has a similar statute concerning co-operatives. These cities and co-operatives were free to obtain information and counsel from

any source. In each case the decision of the municipality involved was made either by the citizens at an election, or by its duly elected officers. The decision of the co-operative involved was made by its lawful representatives. Presentation by the Authority of facts as to TVA rates and contracts for power given to citizens or officers of a city or rural co-operative at their request do not constitute intimidation or coercion.

DAMAGE.

The record shows that the sales of every one of these complainants and the proceeds of these sales have reached an all-time high in recent years. Several of the most important complainants recently extended their lines, built new plants, and acquired new equipment. The Authority concedes that it sells, or intends to sell, power within a 250-mile radius of the claimed operation of each of these companies, from some one of the dams, built or proposed in the TVA Unified Plan, at substantially lower rates, residential, industrial, and rural, than those of the complainants, and that some displacement of service will result. 250 miles is the distance within which electricity can feasibly be transported from each of the dams. As a result of the lower TVA rates, cities which formerly purchased power from some one of the complainants have taken steps to finance the construction of distribution systems, or have negotiated with the power companies to purchase the existing systems of the power companies, in many instances securing financial aid from the Public Works Administration with the express purpose of selling TVA power through the systems thus acquired. The city of Memphis has issued bonds for this purpose, and under the contract which the city has signed with the Authority, the Memphis Power & Light Company will be deprived of its greatest outlet. A similar proposition has been made, but not yet carried through, in Knoxville. If the arrangement is consummated, the Tennessee Public Service Company and the Carolina Power & Light Company will each be deprived of one of its most profitable customers. A similar situation exists in Chattanooga. The rural co-operatives distribute TVA power, but for the most part they reach areas not

formerly served by these complainants. The Monsanto Chemical Company, which has a large industrial plant near Columbia, Tennessee, has failed to renew its contract for the purchase of power from the Tennessee Electric Power Company, and the Volunteer Portland Cement Company took similar action in failing to renew its contract with the Tennessee Public Service Company.

In view of the inevitable effect of the lower rates of the TVA within this area, and the economic necessity forced upon the complainants of lowering their rates to meet the competitive rates of the Authority, we conclude that the record presents evidence of substantial future damage to these complainants. But such damage constitutes *damnum absque injuria* unless sales of power by the TVA are unlawful. *Alabama Power Co.* v. *Ickes, supra.*

We find in this record no coercion, conspiracy, malice or fraud on the part of the defendants. None existing, the operation of the Authority is lawful unless (1) the defendants are exceeding their statutory authority, or (2) the statute is unconstitutional.

Compliance with the Statute.

Section 9a of the statute reads as follows:

> "The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this Chapter provided, and thereby so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority."

It is the principal contention of the complainants that this statute is a sham, pretense, and fraud, and these dams as built and planned cannot and will not be operated within the statute. We therefore consider the actual operation of the dams.

In Water Bulletin No. 1, dated June 30, 1936, adopted by the TVA Board, it was ordered that the reservoirs of the Authority be operated 'First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Requirements for the control of malaria and temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dam shall be converted into electricity as is feasible."

The complainants contend that this order is a sham, and that none of the dams can be or will be operated in compliance therewith. They direct a particular attack upon Norris, which is now completed and in operation. However, Water Bulletin No. 2, dated June 30, 1936, ordered that until further notice water be released from Norris reservoir so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 c. f. s. The evident purpose was to maintain a constant and sufficient stream flow for Wilson Dam. This and succeeding water bulletins, which are in evidence, outlining the same general policy, have for one of their main purposes the increase of continuous water power at Wilson. Hence, operation of the dams above Wilson is clearly constitutional under the national defense powers of the Congress.

With reference to the general operation, a resolution of the TVA Board, adopted July 1, 1936, created a committee on water control operations, consisting of the chief water control planning engineer and the chief electrical engineer, which committee was and is authorized to prepare general regulations as to the control of water through the operation of reservoirs. The regulations are transmitted to the general manager in the form of bulletins, and at times of flood or emergency, oral instructions are also given. Woodward, the chief water control planning engineer, testified

that he prepares these bulletins and that none is issued without his approval. He stated that he was guided in his operations by the statute, and that the constant flow of 15,000 c. f. s. was maintained at Florence, Alabama, for the purpose of securing the necessary navigable dept in the river. Karr, electrical engineer at Norris, testified that if the limited instructions given to him for operation were such that he had either to violate the instructions or to leave a city without power, "some one would have to go without power temporarily." Woodward testified that he permits the use of the water for power, and in special cases, if extra water is wanted, it is given extra consideration. It is uncontroverted that the water control planning engineer is in direct charge of the regulation of water flow, and also that he regulates water flow from Norris primarily for navigation and flood control.

It appears that in actual operation there is a seasonal drawing down of Norris Dam so that extra storage space may be available during the flood season. Norris was actually operated during the flood of 1937 to reduce the crest on the Tennessee River and to reduce the crest on the Ohio at Cairo. The complainants' expert Kurtz was familiar with the fact that Norris was so operated. Power is produced at Norris. The defendants introduced detailed testimony as to the full amount of TVA power presently produced, the available facilities for generation, the possibilities for future generation, the present load and the load now contracted for.

Complainants urge that the estimated future TVA load set forth in the various TVA reports, and the load it may reasonably be expected to acquire because of its substantially lower rates, will demand that the dams built and to be built be operated in violation of the statute and not (as required in Sec. 9a) in the primary interest of navigation and flood control. But this point is completely refuted by the numerous TVA contracts which are in evidence and are described in the findings of fa

These contracts generally conta .. a clause relieving the Authority of any obligation to supply power when prevented by fire, accident, breakdown, act of God, or an

other causes beyond the Authority's control. Substantially all of these contracts contain the following provision: "Subject to the provisions of the Tennessee Valley Authority Act of 1933 as amended, the parties hereto agree as follows * * *." Under the familiar rule, this provision reads the statute, including its mandatory requirement that the dams and reservoirs be operated primarily for flood control and navigation, into every one of these contracts. Under the contracts with the Arkansas Power and Light Company, the Victor Chemical Works, the Aluminum Company of America dated July 30, 1937, and with the Electro-Metallurgical Company, which are contracts both for firm and secondary power, the Authority is expressly relieved of obligation to supply power when service is interrupted or suspended by reason of floods or back-water caused by floods.

Reading these contracts in conjunction with the statute and the general resolution governing water control above described, it is evident that the long-term contracts of the Authority strongly corroborate (1) the sincerity of the resolution and water bulletins establishing the system of water control in the interest of flood control and navigation; (2) the testimony of Woodward and Karr; (3) the uncontradicted facts as to the principles applied in the actual operation of the dams. The overwhelming weight of the testimony supports defendants' contention that the mandatory provision of the statute that navigation and flood control be given primary consideration both at the other dams, built and planned, and at Norris Dam, is at all times scrupulously followed and that the statute is neither violated nor exceeded.

CONSTITUTIONALITY OF TVA STATUTE MUST BE DETERMINED.

Since no fraud, coercion, conspiracy or malice is shown, and since the Authority has acted within the provisions of the statute under consideration, unless the statute itself is unconstitutional the dams are lawfully erected, the energy is lawfully created, and the water power is the property of the United States. *Ashwander* v. *Tennessee Valley Authority, supra.* It therefore is essential to the decision of the

case pleaded in the bill to determine the constitutionality of this statute.

THE STATUTE.

The complainants contend that the statute was enacted primarily for power purposes, and that flood control, navigation, and national defense are incidental and merely a cloak for the unlawful purpose of permitting the government to enter the power business. The defendants contend that the statute was passed and that dams were erected and are under construction, or were authorized, for the purpose of combined flood control, navigation, and national defense; and that the installation of generators, the creation of power and its sale, have been authorized by the Congress as an incident to the exercise of constitutional powers.

NATIONAL DEFENSE.

Article I, Sec. 8, sub-sec. 1 of the Constitution of the United States, provides that the Congress shall have power "to provide for the common defense and general welfare of the United States."

In pursuance of this power it may make all laws which shall be necessary and proper for carrying into execution the national defense powers. An express purpose of the Tennessee Valley Authority Act is that of maintaining the properties owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of national defense. The amended Tennessee Valley Authority Act, Title 16, U. S. C. A., Section 831p, provides that "The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct * * * a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Num-

bered 2 and at any and all other dams below the said Cove Creek Dam * * *."

In compliance with this provision, Norris Dam was built and is being operated to create extra head of water power at Wilson Dam. This means that constitutional authority to construct Norris exists in addition to the congressional power to authorize the construction of this dam under other clauses of the Constitution of the United States.

Navigation and Flood Control.

The Constitution of the United States, Article I, Section 8, provides that the Congress shall have power to regulate interstate commerce. Commerce includes navigation. *Gibbons* v. *Ogden*, 9 Wheat. 1. Control of navigable waters embraces flood control.

The statute on its face repeatedly stresses navigation and flood control. The purpose clause of the act reads:

> "To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes."

The first paragraph of the enactment creates the Authority for the purpose of maintaining and operating properties owned by the United States in the vicinity of Muscle Shoals in the interest of the national defense and "to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River basins." The board of the Authority is given power (Section 4j) "to contruct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams * * * will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation

on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins." Other sections in which the purposes of navigation and flood control are stressed are Sections 13, 18, 23, and 26a. The most important section is 9a, heretofore quoted, which governs the operation of any dam or reservoir, in the possession and control of the board, and requires the board to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. Numerous specific provisions of the statute relate to the generation and sale of electric power for the purpose of assisting in liquidating the cost of these projects, but all of them are limited and controlled by this general provision in Section 9a.

Under the statute, therefore, the generation of electric energy is specifically required to be incidental to the exercise of constitutional powers under the interstate commerce clause, and the operation complies with this requirement. The record shows that the dams are adapted by their construction to combined use for flood control and improved navigation, and to generate electricity. All experts agree that the pondage at each of the dams on the main river and also at the storage dams on the tributaries can be drawn down, and that space thereby made available is capable of being used to store flood waters in the rainy season. It appears from the uncontroverted testimony that the erection of the main-river dams will create a nine-foot navigable channel. We find from the weight of the evidence that Norris has been used for the purpose of controlling floods. These facts are not controverted, except by opinion evidence.

Certain expert witnesses, in answer to hypothetical questions, stated that the dams might be operated for the primary purpose of power. Thousands of pages of testimony and exhibits were introduced to show that Congress might have adopted a better plan than the TVA Unified System. Experts equally qualified testified to the contrary.

The court is of opinion that the relative value of these various plans is immaterial, since it has been established that the TVA project is reasonably adapted to use for com-

bined flood control, navigation, power and national defense, and that in actual operation the creation of energy is subordinated to the needs of navigation and flood control.

In short, the contention that the statute and the unified project authorized therein are a sham and pretense is without foundation. It cannot be disputed that the river is navigable and that it occupies a strategic position with relation to floods, both within its own drainage area and on the Ohio-Mississippi. We are not at liberty to conclude that the river is not susceptible of development as an important waterway, nor that it cannot be regulated so as to assist substantially in the control of floods in the alluvial valley of the Mississippi as well as practically eliminating local floods on the Tennessee River. *Ashwander* v. *Tennessee Valley Authority, supra.* Norris will create additional power for use for purposes of national defense at Wilson. Hence, we are not at liberty to conclude that the Congress has not undertaken this specific development for purposes within its constitutional powers, nor that the construction of these high dams and reservoirs along the lines proposed is not an appropriate means to accomplish these legitimate ends. Cf. *Ashwander* v. *Tennessee Valley Authority, supra.* The dams and their power equipment, both constructed, under construction and authorized, must be taken to have been authorized, constructed and planned in the exercise of the constitutional functions of the Government.

Interference with States' Rights.

Complainants contend that the TVA statutes constitute an unlawful interference with the police power of the states because they regulate the rates of utilities which themselves are subject to state regulation. The statute does not fix, nor purport to fix, the complainants' rates. But the contention is that the lower rates of the TVA will inevitably force complainants to lower their rates, and also that the TVA in its operations is not subject to the police power of the state.

The Authority operates within four of the nine states in which these complainants do business, namely, Tennessee, Alabama, Mississippi, and Georgia, its contracts with cities

and co-operatives in Tennessee, Alabama and Mississippi being authorized by express legislation. All municipalities in these three states have the statutory power to own and operate electric distribution systems. General Laws of Mississippi, 1936, Ch. 185; Carmichael Act, Alabama Code, Section 2001 (1), et seq.; Public Acts of Tennessee, 1935, Ch. 32, Tennessee Code, Section 3708 (1) et seq. In Mississippi, Tennessee and Alabama, municipalities are expressly authorized to contract for TVA power and to make agreements with TVA as to resale rates. Ch. 271, General Laws of Mississippi, 1936; Ch. 37, Public Acts of Tennessee 1935, Tennessee Code, Section 3708 (96) et seq.; Alabama Code, Section 687 (62). In Mississippi, Tennessee and Alabama, non-profit membership corporations such as rural co-operatives may operate electric systems, purchase from TVA, and make contracts as to resale rates. This is also true in Georgia, where the North Georgia Membership Corporation is alleged to compete with the Tennessee Electric Power Company. Ch. 184, General Laws of Mississippi, 1936; Ch. 231, Public Acts of Tennessee, 1937, which is an amendment of the Electric Membership Corporation Act of 1935; Alabama Code, Section 687 (18), et seq.; Georgia Laws, 1937, p. 644.

The Supreme Court of Alabama has upheld the validity of the Carmichael Act (Section 2001 (1), et seq., Alabama Code) in *Oppenheim* v. *Florence*, 229 Ala. 50, 155 Sou. 859. The similar act relating to co-operatives was sustained by the Supreme Court of Alabama in *Alabama Power Co.* v. *Cullman County Electric Membership Corp.*, 174 Sou. 866. In Tennessee the Supreme Court has upheld the right of the cities of Memphis and Chattanooga to buy TVA power and to establish their own electric systems under special laws. *Memphis Power & Light Co.* v. *Memphis*, Dec. term, 1936; *Tennessee Electric Power Co.* v. *Chattanooga*, Dec. term, 1936; *Tennessee Public Service Co.* v. *Knoxville*, 170 Tenn. 40.

The actions which the complainants attack are authorized by the states themselves. It is strange doctrine that acts authorized by a sovereign state constitute interference with its sovereign rights because of the fact that they are also

authorized by the Federal Government. We think that deliberate cooperation between the state and the United States, authorized in each case both by the state legislature and by the Congress, constitutes no abdication of any state right.

Moreover, no state has intervened as a party in this proceeding to protest that its laws are violated by the TVA, and no regulatory commission is a party to this action. These complainants are not authorized to object on behalf of the states. *Georgia Power Co.* v. *Tennessee Valley Authority*, 14 Fed. Supp. 673, 676. Questions of the conflict of the TVA statute with the sovereign power of the states are not properly raised until the interested parties are before the court. *Georgia Power Co.* v. *Tennessee Valley Authority, supra.* The TVA statutes do not violate either the Ninth or the Tenth Amendment to the Constitution of the United States.

Since the United States has acquired these dam sites legally, the water power, the right to convert it into electric energy, and the energy produced constitute property belonging to the United States (*Ashwander* v. *Tennessee Valley Authority, supra*). This electric energy may be rightfully disposed of by the United States through the action of the Congress, under Section 3 of Article IV of the Constitution of the United States (*Ashwander* v. *Tennessee Valley Authority, supra*). Since floods frequently recur, and the needs of navigation are continuous, hydro-electric power generated at dams which control floods and improve navigation is continuously created, and the Government may adopt any appropriate constitutional means of disposing of the property. It is not limited in such disposition to a few, or to infrequent transactions. This is the inevitable logic of the *Ashwander* decision, *supra*, at 315, in which every kind of electric facility, many miles of distribution and transmission lines and continuous and permanent operation were called in question because the contract attacked in that case was the contract of January 4, 1934, in which certain of these complainants, for valuable consideration, ceded sixteen counties to the TVA for electric service.

While the Government, in selling its property, performs many functions that would be performed in the operation of a private business trading in similar property, inasmuch as the energy sold is created at dams lawfully erected within the Federal power, the Government in performing these functions is not entering into private business. It is merely using an appropriate method of disposing of its property. The Government may sell land belonging to the United States in competition with a real estate agency, carry parcels in competition with express companies, and manage and control its thousands of square miles of national parks even as a private company. The Government has an equal right to sell hydro-electric power, lawfully created, in competition with a private utility. There is no constitutional authority which denies the Government the right to seek a wider market (*Ashwander* v. *Tennessee Valley Authority, supra*), and the transmission and distribution lines erected are a proper facility for conveying the property of the United States to the market. The creation of the Authority is appropriate. The disposition of the energy is continuous and constant, and it is appropriate that a continuing agency be created in order to carry out this legitimate federal function.

We conclude that, since none of the complainants claims to operate under an exclusive franchise, no fraud, malice, coercion, or conspiracy exists; since the Authority is not exceeding its statutory powers, and since the statute is constitutional, the competition with these complainants is lawful. It follows that the holding in *Alabama Power Co.* v. *Ickes, supra,* recently decided, squarely applies. These complainants have no immunity from lawful competition, even if their business be curtailed or destroyed.

A decree will be entered denying the injunction sought, dismissing the bill of complainants, and taxing costs against the complainants. Findings of fact and conclusions of law will be filed.

* * * * * * *

APPENDIX "C".

Filed May 14, 1937. John W. Menzies, Clerk.

UNITED STATES CIRCUIT COURT OF APPEALS, SIXTH CIRCUIT.

No. 7606.

TENNESSEE VALLEY AUTHORITY *et al., Appellants,*

v.

THE TENNESSEE ELECTRIC POWER CO. *et al., Appellees.*

Appeal from the United States District Court for the Eastern District of Tennessee, Northern Division

Decided May 14, 1937

Before Moorman, Simons and Allen, Circuit Judges.

SIMONS, *Circuit Judge:*

Nineteen corporations in the business of generating, transmitting and distributing electric energy as public utilities in the area within and contiguous to the Tennessee river basin commenced a suit in the Chancery Court at Knoxville, Tennessee, against the Tennessee Valley Authority, a corporation organized under special act of Congress, and the three directors of that corporation, to restrain acts being performed or threatened under powers claimed to be conferred by the TVA Act. They allege such acts to be either unauthorized or conferred by an unconstitutional grant of power. The suit was removed by the defendants to the United States District Court for the Eastern District of Tennessee. There a temporary injunction was granted, and the appeal is from the interlocutory decree. The Georgia Power Company, one of the plaintiffs, being restrained by an injunctional order subsequently issued out of the District Court for the Northern District of Georgia, and the Alabama Power Company, another, similarly restrained by the District Court for the Northern District

of Alabama, withdraw their support of the decree, but the remaining plaintiffs defend it.

The bill charges the defendants with having promulgated a program for the construction, development and operation of a great Federally owned and operated public utility system for the generation, transmission and distribution of electricity, in all territory within physical transmission distance of the electric generating plants to be constructed under such program. It charges that with or without the authority of the act they contemplate construction of generating plants at 149 power sites on the Tennessee river and its tributaries, the construction of transmission and distribution lines to gridiron the entire area within 250 miles of such plants; that they plan to produce an amount of electric energy greatly exceeding the total consumption of the area, which includes all of the State of Tennessee and a large part of the six neighboring states. It charges that the execution of this program will irreparably injure if not wholly destroy the business and property of each of the plaintiffs, and that the defendants have already performed or are in process of performing a vast number of acts in the execution of their power program, which is being carried out as rapidly as possible. It charges the program itself, and all of the acts done pursuant to it to be unconstitutional and void, and that if the TVA Act purports to authorize such program, it is to that extent also unconstitutional and void. The defendants first challenged the jurisdiction of the court by motion to quash service of the subpœna, and later the sufficiency of the bill by a motion to dismiss. Upon the overruling of both motions they answered, denying the material allegations of the bill and challenging by supporting affidavits the right of the plaintiffs to either permanent or temporary relief. Their appeal not only assails the preliminary injunction, but brings up the jurisdictional and procedural questions decided against them below.

Jurisdiction must, of course, be first examined. The Tennessee Valley Authority is a public agency. By the terms of the statute creating it, its domicile is in Alabama. Therefore it is asserted that under the laws of Tennessee

actions against it are local and not transitory, and may be brought only in a court of competent jurisdiction at the place of its domicile, and this notwithstanding the fact that the bill charges lack of legal or constitutional authority for acts being or threatened to be performed in Tennessee.

Section 4, of the Tennessee Valley Authority Act, specifically provides that the corporation may sue and be sued in its corporate name. This provision is without qualification. Section 8 (a) is as follows:

> "The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the Northern Judicial District of Alabama within the meaning of the laws of the United States relative to the venue of civil suits."

The laws relating to venue of civil suits are well understood, particularly since the clarification of their interpretation in *Lee v. Chesapeake & Ohio Ry. Co.*, 260 U. S. 653. The present suit was begun in a state court of Tennessee. Under the authority of § 28 of the Judicial Code it was removed to that United States district court within the jurisdiction of which the state court action was pending. Whether a suit may be removed depends upon whether it could have been brought originally in the Federal district courts, which by § 24 of the Judicial Code, so far as applicable, have original jurisdiction of all suits of a civil nature, at common law or in equity, which arise under the Constitution or laws of the United States. This being such a case, it could have been brought originally in a Federal court. The test of removability is not whether the suit could have been brought in the particular district to which it was removed, but whether it could have been brought at all in a Federal district court. The venue of such suit after removal is not the district in which it might have originally been brought, but is the district in which the case is pending, for the right to remove is a personal privilege of the defendant, which he may assert or may waive. *General Investment Co.* v. *Lake Shore & Michigan Southern Ry. Co.*, 260 U. S. 245, 275. No question of Federal juris-

diction here arises by virtue of § 8 (a) of the TVA Act, and the laws in respect to venue.

But while venue is waived by removal of a cause from a State into a Federal court, want of jurisdiction in the State court is not cured thereby, but may be asserted after removal is consummated. *Lambert Run Coal Co.* v. *Baltimore & Ohio R. R. Co.*, 258 U. S. 377; *Cain* v. *Commercial Publishing Co.*, 232 U. S. 124, 131; *General Investment Co.* v. *Lake Shore Ry., supra*, 288. It is first urged on behalf of the appellants that they may not be sued in Tennessee because no local statute specifically authorizes suit against a public agency. Section 8676, Shannon's Code, however, provides that any corporation claiming existence under the laws of the United States is subject to suit in Tennessee to the same extent as are local corporations. Denial of the applicability of this statute, based upon the rule that statutes which refer to corporations in general terms do not apply to public agencies, is not persuasive, for the Tennessee statute speaks not in general terms but with precision.

The principal challenge, however, to the jurisdiction of the Tennessee court is based upon the fact that the TVA Authority, being a public agency domiciled in Alabama, may not under the laws of Tennessee be sued in that state since actions against a public agency are local and not transitory, and suit may be brought against it only at its domicile. Authority for the Tennessee rule invoked is the leading case of *Board of Directors of St. Francis Levee District* v. *Bodkin Bros.*, 108 Tenn. 700. There a suit was brought in Tennessee against the Levee District, which was a public corporation of Arkansas authorized to build levees on the Mississippi river. The Arkansas statute authorized it to sue and be sued, but domiciled the corporation in Arkansas. The Supreme Court of Tennessee held actions against such a Board not transitory but local, and that they must be brought at the place of domicile, resting its conclusion upon a rule of public policy, convenience and comity, which requires that public bodies should not be subject to the burden of carrying on law suits in scattered courts, since such suits inevitably hinder and delay the successful conduct of governmental functions.

There is no challenge to the soundness of the rule of the Bodkin case. The question is whether it applies. The origin of, and the reasons underlying the rule were discussed by this court in *Park Co.* v. *City of Decatur*, 138 Fed. 550, 553. There a municipality of Illinois was sued by attachment in the courts of Kentucky. It was said, "As elsewhere, the municipalities of Illinois are localized in their sphere of operation. They have no legal presence elsewhere, and their officials do not and cannot ordinarily represent them abroad, certainly not for the purpose of receiving service of process against them, or giving jurisdiction over them in foreign courts. For this reason and because of the public inconvenience resulting from carrying on litigation in a distant forum, the rule has become quite generally recognized that such corporations cannot be sued elsewhere than in the venue of their location; and because the venue of the courts in the counties of England and the states of the Union is usually, if not universally, coextensive with the boundaries of such counties, the rule is stated in the terms that a suit against a city or town or other limited municipal district must be brought in the courts of the county, and the county itself is only suable there." In fact in *Pack, Wood & Co.* v. *The Township of Greenbush*, 62 Mich. 122, the court indicated that the agents of a township may not bind the township by their acts or doings beyond the limit of the township unless expressly or impliedly authorized, for the localities in which they may exercise and perform them are limited by the boundaries of the township and the county in which it is located. The jurisdiction of a court may not therefore follow the persons of public officers wherever they may go beyond the municipalities for which they were elected or chosen. The Bodkin case does not go beyond this. It construed the Arkansas statute as giving consent to suits against the levee board only where the Board had its situs. Since it cannot have a situs outside of the state of its creation it is not subject to suit in a foreign state, and the levee district as an agency of the government is analagous to counties, municipalities, boards of education and the like.

The Tennessee Valley Authority has no restricted situs. It is authorized under the act to carry on operations upon the Tennessee river and its tributaries without respect to state lines or the limits of judicial districts, and may acquire by purchase or condemnation anywhere, lands, easements or rights of way necessary to carry out the provisions of the act. In the exercise of the power of eminent domain conferred upon it, it may institute proceedings in any district court of the United States, within the jurisdiction of which required lands, easements, rights of way or other interests are located. Indeed, so unfettered is it by political subdivisions that commissioners who are to ascertain the value of property are not to be selected from the locality wherein land sought to be condemned lies. Residence is not synonymous with situs, and the act creating the Authority is replete with provisions pointing to its mobility and the transitory character of its activities. Neither the rule of the Bodkin case nor the reasons which gave it birth limit jurisdiction over an ambulatory corporation of this character to the courts of its domicile. The state court had jurisdiction, and the court below acquired it by removal. It becomes unnecessary to consider other bases of jurisdiction asserted by the plaintiffs.

The challenge to the sufficiency of the bill is based upon two main grounds. It is said that the bill is defective because premised upon an alleged power program which is non-justiciable and because of an improper joinder of parties and causes which renders the bill multifarious, in violation of Equity Rules 26 and 37. In our opinion the existence of multifariousness must depend upon whether a justiciable controversy is presented by allegations of irreparable injury flowing from the authorization, promulgation and substantial initiation of the power program described in the bill. If there is no justiciable controversy between plaintiffs as a class and defendants, and one does not arise in respect to any plaintiff until some concrete act threatening irreparable injury to it is committed or threatened, such as the invasion of its territory by competing lines, the building of generating stations within transmission dis-

tance of its customers or the like, then indeed the bill may be clearly multifarious, and as we understand the argument, so much the plaintiffs are ready to concede. But if the unitary power program, as permitted or commanded by the act, or as promulgated by the directors of the Authority, directly creates or imminently threatens irreparable injury to the plaintiffs, varying in degree, perhaps, in respect to each but identical in kind, then we fail to see misjoinder either of plaintiffs or causes of action, for "a bill is not multifarious that presents a common point of litigation, the decision of which will affect the whole subject matter, and will settle the rights of all the parties to the suit;" Equity Rules 28, U. S. C. A., 114, Compilers Note 227. The general principle is well understood.

In determining the sufficiency of the bill we are not required to examine anything but the structure of the bill itself. *Nelson* v. *Hill*, 5 How. 126, 132. It becomes necessary, therefore, to consider the case made by it. The general program has been described—it remains to consider the injury charged to flow therefrom. Each of the plaintiffs has, it is alleged, valid authority by franchise or otherwise, to carry on its business in the territory it serves either indeterminately or for a period of years. Each operates within transmission distance of electric generating plants constructed, under construction or proposed. Each owns property of great value for the distribution and generation of electric energy within its service territory, with rates fixed by state authority. Each is supplying public utility service as a going concern, with large investments devoted to that purpose. Each has numerous agreements with consumers and reasonable expectancy of renewal of contracts. Each has issued stocks and bonds purchased by the public on the faith and credit of its lawfully granted authority and the protection afforded such investments by the laws of the State and the Constitution of the United States. There exists, it is said, a common threat to the interests of each in that the Tennessee Valley Authority Act permits those charged with its administration to acquire and develop all the water power sites on the Tennessee river and its tributaries, to build and utilize steam plants auxiliary thereto,

to interconnect vast electric generating plants into a superpower system, to acquire and construct transmission or distribution lines throughout the transmission area of these plants, and to distribute and sell power so generated to domestic, commercial, municipal and industrial users of light and power, and the area embraced includes all or a substantial part of the territory in which each plaintiff operates.

In short, it is asserted that the Act permits or commands, and the defendants propose, the construction, development and operation of a mammoth Federally owned and operated system for the generation and distribution of electricity in competition with each plaintiff through all or a substantial part of its territory. Electricity so produced will be sold at a price with which private producers cannot compete because its sale is to be subsidized by the public treasury. It is the purpose of the act and of the persons charged with its administration to eliminate all existing privately owned and operated utilities. Not only is the mere existence of the statute a threat to their business because it depresses the value of their present securities and destroys the market for additional securities required to permit expansion and modernization of properties, but the defendants are threatening to go beyond the clear authority of the act by constructing and operating hydro-electric plants with auxiliary steam plants, by interconnecting such plants into a vast power system, and so to take over the entire market for electricity in the area. The defendants have announced that unless existing utilities sell their transmission lines to them such lines will be duplicated. They have announced their intention to regulate local intrastate rates and service by a so-called "yardstick" method through Federally subsidized competition which will supplant state regulation as inadequate and unsatisfactory. Their power program will be carried out in Kentucky, Alabama, Georgia, North Carolina, Mississippi and Tennessee, and will include such cities as Chattanooga, Knoxville, Birmingham, Memphis and Atlanta. They have conspired with the Federal Public Works Administrator to force the existing utilities in the area, including the plaintiffs, to sell their properties for less than fair value, failing which their properties and services will be duplicated with

monies advanced by the Public Works Administration. In pursuance of this program, it is alleged, definite portions of the area have already been occupied, and the public has been offered contracts for electric energy at confiscatory prices in furtherance of a systematic campaign to injure the plaintiffs and destroy their credit and good will. The general allegations are supported by specific allegations, which it is neither necessary nor convenient to recite. In brief, as was urged in argument, the plaintiffs conceive themselves to be united by a common peril, and united therefore they complain.

To the justiciability of their common grievance, the defendants rely for a complete answer upon specific rulings of the Supreme Court in *Ashwander* v. *Tennessee Valley Authority*, 297 U. S. 288. They lay the bill in the Ashwander case by the side of the present bill, and by exhaustive comparative analysis urge the conclusiveness of that decision on the issue now under consideration. The "deadly parallel" is frequently devastating, but so only when controversies are substantially identical and of equal breadth. We have given careful consideration to the Ashwalder case. It sustains constitutional power of TVA to enter into a specific contract with the Alabama Power Company, one of the original plaintiffs in the present suit. That contract related solely to the purchase by TVA of transmission lines for disposal of excess energy generated at Wilson dam and for exchange of energy. The Ashwander case was a derivative suit brought by preferred stockholders of the Alabama Power Company to set aside the contract as ultra vires. By limitations imposed upon the court by the nature of the suit, and through limitations of the judicial process, the Ashwander case was kept within very narrow compass.

It is well understood, of course, that a stockholder may not maintain a suit in behalf of his corporation until he has made a demand upon the corporation that it do so, and the corporation has failed or refused to comply. The scope of the suit he may then maintain is limited by the scope of his demand. Ashwander and his fellow-stockholders were primarily concerned with the contract of January 4, 1934, for the sale by the Alabama Power Company of the transmis-

sion lines running from Wilson Dam. The electric energy there generated was more than sufficient to supply all the requirements of the contract. The issues were confined to the constitutional authority for the construction by TVA of Wilson Dam, and for its disposal by reasonable method of the electric energy there generated. Finding the construction of Wilson Dam a valid exercise of constitutional power under the war and commerce clauses, the electric energy there generated to be property of the United States, for the sale of which authority exists in § 3 of Article IV of the Constitution, and the method of disposal not inappropriate according to the nature of the property, the court refused to set aside the contract, the decision concluding with the following: "The question of the constitutional right of the Government to acquire or operate local or urban distribution systems is not involved. We express no opinion as to the validity of such an effort, as to the status of any other dam or power development in the Tennessee valley, whether connected with or apart from the Wilson Dam, or as to the validity of the Tennessee Valley Authority Act or of the claims made in the pronouncements and program of the authority apart from the questions we have discussed in relation to the particular provisions of the contract of January 4, 1934, affecting the Alabama Power Company."

It is true that the stockholders in the Ashwander case sought a declaratory judgment with respect to the constitutional validity of the entire Tennessee Valley activity, and that the court did not recognize in their challenge to the Act, or to other things done in pursuance thereof, a case of actual controversy within the scope of the act of June 14, 1934, providing for declaratory judgments, for "the judicial power does not extend to the determination of abstract questions," and a justiciable controversy does not arise save as pronouncements, policies and programs have "fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of the persons complaining." The court had clearly in mind, however, that the persons complaining in the Ashwander case were stockholders, whose interests might perhaps be affected by the invalidity of a specific contract entered into

by their corporation, but not necessarily or immediately affected by other acts or assertions of authority on the part of the Federal agency involved. This, we think, the court made plain: "While plaintiffs, as stockholders, might insist that the Board of Directors should take appropriate legal measures to extricate the corporation from particular transactions and agreements alleged to be invalid, plaintiffs had no right to demand that the directors should start a litigation to obtain a general declaration of the unconstitutionality of the Tennessee Valley Authority Act in all its bearings or a decision of abstract questions as to the right of the Authority and of the Alabama Power Company in possible contingencies."

The case made by the present bill presents a different aspect. Here are no preferred stockholders whose interests are limited to their distributive share in the assets of the corporation, and whose grievance is circumscribed by their own formulated estimate of it. Here are seventeen utility corporations already suffering the economic pinch of actual or threatened competition they conceive to be illegal, and facing what they conceive to be not only irreparable injury, but possible destruction, not through any one specific act of the defendants which singly considered may not be an unconstitutional exercise of power, but through a far flung program which they charge will inevitably effect and has for its very purpose their common annihilation. We are not convinced that the Ashwander decision precludes us from recognizing a justiciable controversy between these plaintiffs as a class and the Tennessee Valley Authority as an instrumentality of the Government involving the constitutional validity of the described program, whether authorized by the Act or transcending its authority.

Another consideration is of importance. Eighteen months have elapsed since the Ashwander decision in the Supreme Court. Three years have passed since the District Court announced the decision there reviewed. We are told that the program of the Tennessee Valley Authority and its directors has gone forward with all reasonable dispatch. What then may have been merely tentative or speculative may now be approaching realization. What then was re-

mote may now be imminent, and mere concept have fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of those complaining. This may only be determined by full hearing on the merits. Moreover, the distinction between the case here made and that presented by the bill in the Ashwander case is not only clear but is brought into bold relief by the dissenting opinion in the Ashwander case. The injury and threat of injury is here assigned not to a single act or series of acts, but to the entire program, the full sweep of which is illustrated by the acts already done and proposed. The primary grievance in the Ashwander case related to the constitutional power of TVA to execute a specific contract. It was thought by the plaintiffs there to demonstrate invalidity of the contract not merely by challenging the power of the Authority to execute it, but by challenging its power to promulgate and carry into execution a power program of which the assailed contract was but a part, and to test the validity of the very act under the authority of which the program was conceived—even to the extent of seeking a declaratory judgment thereon. The power program was involved only as its possible invalidity might infect with invalidity the assailed contract. The dissent makes it clear that the court rejected the theory that "the plan makes the part unlawful." So while it results that one may not secure relief against an act which is not itself an unconstitutional exercise of power, it also results that one may not complain of a plan which, though possibly open to attack on the ground of constitutional invalidity, does not as such injure him, and this is but an application of the familiar principle that courts will not pass upon the constitutionality of a statute per se, but will set it aside only when both invalidity and direct or imminent danger of injury to the persons complaining of its enforcement are made clear. *Massachusetts v. Mellon*, 262 U. S. 447. The court below did not err in overruling the motion to dismiss.

We reach, therefore, the question as to whether, upon the showing made, the plaintiffs have established their right to a temporary injunction of the scope granted, and upon this issue it is not necessary for us to determine the meritorious

question as to the constitutional validity of the power program, for the ultimate rights of the plaintiffs should be decided only when the court is "in possession of the materials necessary to enable it to do full and complete justice between the parties." *Eagle Glass & Mfg. Co.* v. *Rowe*, 245 U. S. 275; *Interstate Transit Co.* v. *City of Detroit*, 46 Fed. (2d) 42, (C. C. A. 6). Ordinarily upon an appeal from an interlocutory order granting or refusing a temporary injunction, the determination of the trial court will not be disturbed "unless contrary to some rule of equity or the result of improvident exercise of judicial discretion." *Meccano, Ltd.* v. *John Wanamaker*, 253 U. S. 136, 141; *City of Owensboro* v. *Cumberland T. N. T. Co.*, 174 Fed. 739, 747, (C. C. A. 6). The question here presented is not unattended with difficulty. It involves not only the substantial nature and debatable character of the claims of the plaintiffs, the probability of irreparable injury to them, the necessity and appropriateness of an injunction to maintain the status quo, but includes also the usual questions of balance of equities, and the possibility of severe damage to the defendants and to the public interest if the temporary injunction is wrongly issued. Relief is moreover based upon transgression of constitutional power by and under an act of Congress, and decision must ultimately if not presently be made with due regard to the presumption of validity that attaches to such enactment. Finally, the case presents the extraordinary situation in that the authority of the Congress to enact the statute in certain of is aspects, and to authorize thereby certain important transactions in respect to the construction of Wilson Dam, and to the sale and distribution by means of transmission lines of the electric energy there generated, has already been sustained by the Supreme Court, and that other acts and transactions here alleged to illustrate the sweep of the challenged power program are not readily to be distinguished from those heretofore validated. Granted that it is not necessary that the facts in support of a preliminary injunction be established with the same certainty that is required upon final hearing, and that we are not required to prejudge the meritorious controversy, yet it would seem that in a case of this kind, giving

full consideration to the history of the litigation, the gigantic public undertaking involved, the enormous sums of money already expended, the public interest which may not be ignored, and while carefully considering the irreparable injury claimed, considering also possible overbalancing injury to the defendants and the public, the gravity of the factual and constitutional questions involved must be made to appear at least with more clearness than in the ordinary case, if not indeed, as suggested in the concurring opinion in the Ashwander case, "beyond peradventure clear."

Pursuant to the TVA Act, the Tennessee Valley Authority has now completed and put into operation not only the Wilson Dam, in the vicinity of Muscle Shoals, but the Norris Dam on the Clinch river, a tributary of the Tennessee river, and the Wheeler Dam on the Tennessee river. It has also initiated the construction of dams on the Tennessee river at Pickwick Landing, Tennessee, at Gunthersville, Alabama, and Chickamauga, in the vicinity of Chattanooga, Tennessee, and has entered upon preliminary operations for the construction of the Hiwassee Dam on the Hiwassee river, near Murphy, North Carolina. It has also recommended to Congress the construction of three additional dams on the Tennessee river, which, it asserts, will complete the contemplated nine-foot channel from Paducah to Knoxville and provide a substantial measure of flood control on the Tennessee and Mississippi river systems. It has been selling approximately 75% of its available electric power to four of the plaintiffs, and its existing electric service is limited to consumers in the service area of these four companies and of three others complaining.

The District Judge found that the defendants had acquired or constructed extensive electric transmission and rural distribution facilities; had built and are building transmission lines which duplicate those of the plaintiffs; had erected a substantial number of miles of high tension transmission and distribution lines, most of them rural; were actively in competition with some of the plaintiffs, offering electric service at substantially lower rates, and that pending determination of the suit upon its merits the plaintiffs are in danger of irreparable injury through fur-

ther enlargement and extension of facilities, solicitation and negotiation of contracts with actual or potential customers in the plaintiffs' service area, and that loss to the defendants by reason of the injunction would not be comparable to the damage likely to be suffered by the plaintiffs in the event the injunction should issue. Though he deemed it immaterial, he also concluded that the facts of record supported the following proposed finding:

> "All of the transmission lines constructed or acquired, or under construction by the Tennessee Valley Authority, or physically connected with Wilson Dam are within transmission distance of Wilson Dam, except the Santeelah-Hiwassee Transmission line and substation. All of the power now being sold by the Authority is being delivered by means of these lines or by interchanges under the contract of January 4th. The present dependable capacity of Wilson Dam is in excess of the present power requirements of the existing customers of the Authority excluding complainant power companies. The present load now being sold to customers of the Authority other than the complainant power companies, is approximately 22,500 kw. The maximum amount of power that it is reasonably possible for the Authority to dispose of up to May 1st, 1937, by the use of facilities already existing or which may be constructed up to May 1st, 1937, is 37,000 kw."

Concluding that the suit raised grave questions both of law and of fact with reference to the validity of the Tennessee Valley Authority Act, and of the acts of the defendants done and being done in reliance upon it, he enjoined them from enlarging or extending their facilities other than the completion of certain lines and sub-stations in process of construction, from serving consumers not already served, from initiating new construction, from soliciting or negotiating contracts with customers of the plaintiffs, or consumers in their service areas, from supplying service connections to existing rural lines, and in the main from enlarging the service beyond the scope of the project already established. While it is unnecessary to recite all of the

provisions of the injunctional order, it must be conceded that it is sweeping. Less would perhaps not have sufficed the plaintiffs in view of the scope of their claims of irreparable injury, and more would doubtless have resulted in complete paralysis of the entire activity.

We have already indicated some of the considerations that must control decision upon the propriety of a temporary injunction. A complete catalogue cannot, of course, be compiled. A petitioner's own appraisal of his fears is not to be disregarded, so it is important to note that the bill when filed contained no prayer for preliminary relief, was not amended to pray for it until long after suit had been begun, and in this respect was brought up for hearing more than six months after its filing date. It is also important to note that the trial judge in the Ashwander case, although subsequently holding the Tennessee Valley Authority's disposal of power illegal, refused to grant a preliminary injunction, and that Judge Sibley of the Fifth Circuit Court of Appeals, sitting by designation in the Northern District of Georgia, likewise refused to preliminarily restrain the activity of the defendants in the area served by the Georgia Power Company, one of the original plaintiffs here (*Georgia Power Co.* v. *Tennessee Valley Authority et al.*, decided May 28, 1936).

However grandiose may be the conception of its directors as to ultimate scope of the TVA project, it is clear, we think, that the presently contemplated plan includes provision only for a nine-foot level for navigation and flood control purposes on the Tennessee river. This will be accomplished by the seven dams building and proposed. There is no occasion, therefore, on the question of irreparable injury *pendente lite* to consider the effect of 149 inter-connected power supplying projects upon the rights of the plaintiffs in the present inquiry, however important that may become on final hearing. Nor is it to be supposed that all or substantially all of the construction already entered upon or planned can possibly be completed before the pending case may be reached and tried upon its merits. The trial judge found substantial support for a finding that the maximum amount of power reasonably possible for the

6d

Authority to dispose of up to May 1, 1937, by the use of existing facilities, or those which might be constructed up to May 1, 1937, to be 37,000 kw. Without denying that some injury may be suffered if the injunction is lifted, it does not so clearly appear that it will of necessity overbalance the injury which must inevitably be suffered by the defendants and the public.

The possibility of maintaining the status quo by means of the injunction is not established. The court may not command the waters of the Tennessee river and its tributaries to cease their flow. The peculiar property that inheres in the power of falling water, and in the electric energy into which it may be translated, if not used, is forever lost. It is, moreover, inescapable that in the conduct of an activity of the size and scope herein delineated, a great organization must necessarily have been built up, including not only laborers, equipment and executives, but technological experts and specialists of many kinds. To appraise the injury to the defendants from the disorganization which must follow substantial or even partial cessation of activity is impossible, but that it will be great cannot be denied. So also in respect to the public interest involved. The loss, inconvenience and discomfort of the residents of the area in failing to obtain cheap electric energy, if it be found in the end that it may lawfully be supplied to them, may likewise not be measured, but equally incontrovertible is it that it will be great. Insofar, also, as restraint will delay effective control of the flood waters of the Tennessee river and its tributaries, the public interest in the achievement of that objective is similarly beyond appraisal. Human experience of the catastrophic effect upon great areas of overflowing rivers is too recent and too painful to permit of any doubt either as to the existence or extent of the public interest that is threatened by the maintenance of the injunction, and against which the threat to private interests must be balanced. From such possible injury it is clear no bond can adequately safeguard the public interest.

There is no occasion at this time to review the principles which govern courts in passing upon constitutional questions. The cases announcing them have been collected in

the concurring opinion of the Ashwander case, and public attention is presently focused upon them. The great power of the courts to set aside an act of Congress is exerted with reluctance in the ordinary case. It is invoked with even greater caution where great public enterprises are involved, and while it will be exercised only when it is absolutely necessary, this applies with even greater force on appeals from an interlocutory injunction [*Allen* v. *Omaha Live Stock Co.*, 275 Fed. 1, 3 (C. C. A. 8)], for as was said by Judge Learned Hand, "We are told that to declare a statute unconstitutional we must be assured beyond question that it is such. A temporary stay now is a declaration for a time that it is unconstitutional; it is to dispense with the statute until the case be finally decided." *Dryfoos* v. *Edwards*, 284 Fed. 596, 603.

It is our conclusion under all of the circumstances of the case that the interlocutory injunction was improvidently granted, and should be set aside. We have given serious consideration to both the private interests and the public enterprise involved, and while "Elusive interests of haste should not be permitted to obscure substantial requirements of ordinary procedure" (*Duke Power Co.* v. *Greenwood Co.*, 299 U. S. 259, 268), both are so important that undue delay in arriving at final judgment must likewise be avoided. To that end we have contributed as best we may by advancing the cause for argument and giving precedence to it in decision on present issues. We have no doubt that the District Judge, whose earnest application to the problems presented and whose courageous assumption of responsibility in respect to them is so evident upon this record, will cooperate with counsel to bring the cause to early hearing and disposition upon its merits.

Interlocutory decree reversed, and cause remanded for trial.

ALLEN, *Circuit Judge*, concurring:

I concur with the conclusion and in the main in the opinion, but think that in addition to ruling upon the questions raised in this appeal, the court should lay down rules for the guidance of trial courts as to the practice of issu-

ing temporary injunctions which in effect suspend the operation of statutes.

The considerations which govern the issuance of temporary injunctions in a suit between private parties have often been applied in injunction suits against public officials, where the damage to the public is readily ascertainable and where the public interest may be properly protected. However, the decisions recognize a clear distinction where the damage to the public cannot be readily appraised and where the acts complained of involve, as here, a public policy authorized by statute, ordinance or order of a duly constituted public board or officer. Cf. *Hurley* v. *Kincaid*, 285 U. S. 104, note; *Lagunitas Water Co.* v. *Marin County Water Co.*, 163 Cal. 332; *Jones* v. *Lassiter*, 169 N. C. 750; *Red C. Oil Mfg. Co.* v. *Board of Agriculture*, 172 Fed. 695, aff. 222 U. S. 380; *Berdan* v. *Passaic Valley Sewerage Commissioners*, 82 N. J. Eq. 235, aff. 83 N. J. Eq. 340. The public has an interest in the enforcement of all duly enacted law, and the citizens within the area of the Tennessee Valley Authority have a material and pecuniary interest in the enforcement of this particular law. *Railroad Commission* v. *Central of Georgia Ry.*, 170 Fed. 225, 232, 233. Cf. *Cook Brewing Co.* v. *Garber*, 168 Fed. 942, 951. A preliminary injunction in such a case is rightly refused where it would be granted in a suit between private individuals. *Cook Brewing Co.* v. *Garber, supra.* Cf. *New York City* v. *Pine*, 185 U. S. 93, 97; *Southern Counties Gas Co.* v. *City of Long Beach*, 295 Fed. 530, 533; *Water Company of Tonopah* v. *Public Service Commission*, 250 Fed. 304. The delay in carrying out the statute resulting from issuance of a temporary injunction in cases similar to this is an injury to the public interest.[1] Where such a statute is suspended

[1] "The litigation is likely to end sooner if no injunction is in force. Its dispatch is greatly dependent upon the conduct of the case by the complainants. They would not be inclined to press the case for speedy decision when they have once secured a preliminary injunction. As long as it stands, it is as good as any other, and experience shows that it often has practically the effect of a permanent injunction. Knowledge of this fact was probably one of the causes for the enactment of the statute allowing appeals from these interlocutory orders." *Railroad Commission of Alabama* v. *Central of Georgia Ry.*, 170 Fed. 225, 233 (C. C. A. 5).

by preliminary injunction the damage to the public interest cannot readily be appraised, and the public interest cannot be protected by the giving of bond. The equities cannot be balanced, and the *status quo*, so far from being maintained, is destroyed.

MOORMAN, *Circuit Judge*, dissenting in part:

I agree to the setting aside of the injunction, not on the grounds stated in the opinion or concurrence, but for the reason that in my opinion the bill does not state a case for judicial decision. The suit is an attack on the aims and purposes of the Tennessee Valley Authority as expressed in its "power program." Its purpose is to obtain a decree invalidating the program, not as an act or acts done or about to be done, but in its plans and purposes. This tenders an abstract issue only. *Ashwander* v. *Tennessee Valley Authority*, 297 U. S. 288, holds that it is not a justiciable question. I find none in the bill. To spell one out from one or another of its allegations of fact would make it defective for joinder of parties having interests too widely variant. I am of opinion, therefore, that the bill should be dismissed, and I dissent from the holding that it should not.

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In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

THE TENNESSEE ELECTRIC POWER COMPANY,
FRANKLIN POWER & LIGHT COMPANY,
MEMPHIS POWER & LIGHT COMPANY,
SOUTHERN TENNESSEE POWER COMPANY,
BIRMINGHAM ELECTRIC COMPANY,
MISSISSIPPI POWER COMPANY,
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CAROLINA POWER & LIGHT COMPANY,
ALABAMA POWER COMPANY,
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KINGSPORT UTILITIES, INCORPORATED,
KENTUCKY-TENNESSEE LIGHT & POWER CO.,
WEST TENNESSEE POWER & LIGHT COMPANY,
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EAST TENNESSEE LIGHT & POWER COMPANY,
TENNESSEE EASTERN ELECTRIC COMPANY,
Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, and
ARTHUR E. MORGAN, HARCOURT A. MORGAN and
DAVID E. LILIENTHAL, each individually and as an Executive Officer and Director of Tennessee Valley Authority,
Defendants-Appellees.

ON DIRECT APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE.

BRIEF FOR APPELLANTS.

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THE GATES LEGAL PUBLISHING CO., CLEVELAND, OHIO

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BRIEF FOR APPELLANTS.

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Raymond T. Jackson,
Counsel for Appellants.

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FOR THE CONVENIENCE OF THE COURT, THE FOLLOWING SYMBOLS HAVE BEEN USED IN CONNECTION WITH EXHIBIT REFERENCES THROUGHOUT THIS BRIEF.

* Original exhibit reproduced by appellants or appellees in two separately bound volumes of maps and charts, nine copies of which have been supplied to the Court.

° Original exhibit, nine copies of which have been supplied to the Court.

÷ Original exhibit not reproduced or printed except when followed by a record reference, cited for the convenience of the Court, which indicates that the portion of the original exhibit referred to was also offered and excluded as an excerpt, and as such is printed in the record.

All other exhibits referred to in this brief are printed in the record, Volumes IV to VII.

TABLE OF ABBREVIATIONS USED IN REFERENCES.

Fdg.—Finding of Fact made by the trial court.

Add. Fdg.—Additional Finding of Fact made by Judge Gore.

In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

THE TENNESSEE ELECTRIC POWER COMPANY, *et al.*,
Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, *et al.*,
Defendants-Appellees.

ON DIRECT APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE.

BRIEF FOR APPELLANTS.

This is a direct appeal from a final decree entered by the United States District Court for the Eastern District of Tennessee, after a hearing on the merits, dismissing a Bill brought by appellants to enjoin the appellees, Tennessee Valley Authority[1] and its directors, from generating, transmitting and distributing electricity for sale in competition with appellants upon the ground that the Tennessee Valley Authority Act[1] (Acts of Congress, May 18, 1933, and August 31, 1935, 48 Stat. 58, 49 Stat. 1075, 16 U. S. C. 831, *et seq.*), under color of which the appellees are proceeding, either does not authorize such acts or is to that extent unconstitutional.

[1] The Tennessee Valley Authority and the Tennessee Valley Authority Act are hereinafter sometimes referred to respectively as TVA and the TVA Act.

OPINIONS BELOW.

The opinion of the District Court for the Eastern District of Tennessee is reported in 21 F. Supp. 947, and appears in the record at R. 542. An opinion by the United States Court of Appeals for the Sixth Circuit on an appeal from an order granting a preliminary injunction in this cause is reported in 90 F. (2d) 885 and appears in the record at R. 267. Three unreported opinions of the District Court overruling appellees' motion to quash service of subpoena and dismiss the bill of complaint, overruling appellees' motion to dismiss the bill for insufficiency and multifariousness, and granting appellants' application for a preliminary injunction, appear at R. 141, 158 and 260, respectively.

JURISDICTION.

A statement of the grounds on which jurisdiction of this Court is invoked has been separately filed in accordance with Paragraph 1 of Rule 12 of this Court. On May 16, 1938, this Court entered an order noting probable jurisdiction.

QUESTIONS PRESENTED.

The case presents the question of the constitutionality of the TVA Act in whole and in each of its several parts, or, if the Act be valid, then the validity of the administration thereof, in whole or in part, by those assuming to act thereunder in the particulars involved. The specific questions are:

1. Whether the electricity being generated and to be generated by TVA is being or will be constitutionally produced so that the Federal Government or its agency (TVA) acquires or will acquire any title to such electricity as incidentally produced.—

(a) in the exercise of the power of the Federal Government to regulate interstate commerce, or

(b) in the exercise of the war power.

2. Whether, assuming the electricity is being, and will be, constitutionally acquired by TVA under the TVA Act, the statutory and administrative methods of disposing of the property are an unconstitutional exercise of the power to dispose of property

(a) as in excess of the scope of that power, or

(b) in violation of the Fifth, Ninth and Tenth Amendments and contrary to our dual system of government.

3. Whether the appellants have a standing to sue to test the legality and constitutionality of the acts of the appellees done or threatened to be done either under the color or outside the terms of the TVA Act.

4. Whether, unless the appellants are entitled, on the record as made, to a reversal of the decree with directions to grant the relief prayed for, the appellants, nevertheless, are not entitled to a reversal of the decree because of prejudicial errors of the trial court in matters of procedure and in rulings on evidence amounting to a denial of due process of law to appellants.

STATUTE INVOLVED.

This suit involves the interpretation and constitutionality of the TVA Act, as amended. (Act of Congress of May 18, 1933; amended by the Act of Congress of August 31, 1935; 48 Stat. 58; 49 Stat. 1075; 16 U. S. C. 831, *et seq.*) The TVA Act and the material parts of other statutes, State and federal, cited in this brief or cited by the trial court as bearing on the case, are printed in the separate appendix to this brief.

STATEMENT OF THE CASE.

A. THE PARTIES AND THE PROCEEDINGS BELOW.

The appellants are sixteen corporations [1] respectively engaged in the business of supplying electricity to the public in the area in which TVA is supplying, offering to supply, or preparing and imminently threatening to supply, electric power to the public. (See pp. 61-64, *infra.*) The appellees are the Tennessee Valley Authority, a corporation created under the Act of Congress known as the TVA Act, and the three individuals who constitute its Board of Directors.

The suit was originally filed in the Chancery Court of Knox County, Tennessee, on May 29, 1936 (R. 1), and the case was thereafter duly removed at the instance of the appellees to the District Court of the United States for the Eastern District of Tennessee. The District Court on October 19, 1936, entered an order overruling a motion of the appellees to quash service of process and to dismiss the bill for want of jurisdiction. (R. 155.) On November 12, 1936, the District Court also entered an order overruling appellees' motion to dismiss the bill on the grounds that the bill stated no case or controversy and was multi-

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[1] Originally the Georgia Power Company, Tennessee Public Service Company and Holston River Electric Company were also parties complainant. The Georgia Power Company was subsequently enjoined from further participation in this suit upon the ground that a prior suit, involving the same issues, was still pending and undetermined in a Federal District Court in Georgia (*Georgia Power Co. v. Tennessee Valley Authority*, 17 F. Supp. 769, affirmed 89 F. (2d) 218, certiorari denied 302 U. S. 692); and said Company was subsequently dismissed without prejudice as a party to the instant suit. (R. 582.) Since this appeal was taken, Tennessee Public Service Company and Holston River Electric Company have turned over their electric facilities to TVA and its nominee, the City of Knoxville; and subsequently this Court entered an order permitting these companies to withdraw as parties to this suit and to this appeal without prejudice to the rights of the remaining appellants.

farious. (R. 159.) On December 22, 1936, the District Court entered an order granting the preliminary injunction which had been prayed for by appellants. On the same day the appellees took an appeal from the decree of preliminary injunction to the United States Circuit Court of Appeals for the Sixth Circuit, which, on May 14, 1937, rendered an opinion holding that the interlocutory injunction should be dissolved, that the Bill states a justiciable case or controversy, that the Bill is not multifarious, that the District Court has jurisdiction and that the case should be remanded for trial on the merits. (R. 267.) A decree was entered accordingly. (R. 285.) The appellees applied to this Court for a writ of certiorari to review this decree of the Court of Appeals on the ground that the Court of Appeals should have directed the dismissal of the Bill instead of remanding the case for trial on the merits. The application for certiorari was denied. (301 U. S. 710.)

Thereafter, and before the cause came on for trial, the Act of Congress of August 24, 1937, was passed, providing for a special three-judge court to hear and determine cases brought to enjoin, as unconstitutional, the execution of a federal statute. (50 Stat. 751, 752, Sec. 3; 28 U. S. C. 380a.) Pursuant to this statute a three-judge court was convened as the United States District Court for the Eastern District of Tennessee to hear the cause.[1] After a hearing on the merits, which was concluded on January 15, 1938, the three-judge court on January 25, 1938, entered the decree dismissing the Bill. (R. 573.) This appeal from that decree is taken directly to this Court under the Act of Congress of August 24, 1937. (50 Stat. 751, 752, Sec. 3; 28 U. S. C. 380a.)

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[1] Honorable Florence E. Allen, Circuit Judge, and Honorable John D. Martin, District Judge, were designated to participate with Honorable John J. Gore, District Judge, in hearing the cause. (R. 357.)

B. THE NATURE, PURPOSE AND SCOPE OF THE STATUTE AND THE CURRENT STAGE OF ITS EXECUTION.

(1) Background of the Tennessee Valley Authority Act.

An examination of the background upon which the TVA Act was passed shows that TVA is a federal corporation created by Congress to develop the power resources of the Tennessee River and its tributaries as a federal enterprise. In 1925, the Congress directed the Secretary of War, through the Corps of Engineers of the United States Army, and the Federal Power Commission to prepare and submit to Congress estimates of the cost of making surveys of the navigable streams of the United States and their tributaries with a view to formulating general plans for the most effective improvement of such streams for the federal purpose of navigation in combination with the most efficient development of the non-federal uses of such streams, such as water power, flood control and irrigation. (Act of Congress of March 3, 1925; 43 Stat. 1186, 1190, App. p. 35.) The manifest purpose of these surveys was to inform Congress as to the relative value of the streams for federal use, that is, navigation, and for non-federal uses, such as water power, irrigation and municipal water supply, so that Congress might exercise its paramount power over the streams for purposes of navigation in recognition of and with due regard for local non-federal uses, frequently more valuable.

In a report made pursuant to the Act of March 3, 1925, and published as House Document 308, 69th Congress, 1st Session (1926), the Corps of Engineers outlined a plan for surveys of practically all of the navigable streams of the United States and their tributaries (including the Tennessee River and its tributaries) to appraise the value of their federal and non-federal uses, and the surveys outlined in that document were authorized by the Act of Congress of January 21, 1927. (44 Stat. 1010, 1015.

App. p. 35.) All reports subsequently made under this authority are commonly known as "308 Reports."

The survey for the Tennessee River and its tributaries was transmitted to Congress on May 15, 1930, and published as House Document 328, 71st Congress, 2nd Session. (Comp. Ex. 105[2], p. 1.) This "308 Report," as required by the Act of Congress, examined both the federal and non-federal potential uses of the Tennessee River and its tributaries. The Chief of Engineers reported that the proper method of improving the Tennessee River for 9-foot navigation would be by the construction of 32 low-lift dams at a cost of $56,000,000 with locks 56 x 360 feet, or at a cost of approximately $75,000,000 with locks 110 x 600 feet. Such a channel with the larger locks would conform to the standards upon which the Mississippi River and its principal tributaries had been and were being improved for navigation. (Comp. Ex. 105[2], p. 4, par. 16; p. 97, par. 78; p. 100, par. 79; Add. Fdg. 3, R. 671.) *The improvement of the river for navigation alone would not have produced any commercial power but only sufficient power to operate the locks.* (Putnam R. 1155; Comp. Ex. 346*; Comp. Ex. 105[2], p. 100, par. 79, Add. Fdg. 19, R. 674.)

The Chief of Engineers pointed out that the District Engineer "as required by law" had shown "the ultimate use that may be made of the waters of the Tennessee Basin by the United States *and its citizens*," or, in other words, the sum of the values of the potential federal and non-federal uses of the river and its tributaries. (Comp. Ex. 105[2], p. 2, par. 8.) This ultimate use that might be made of the Tennessee River and its tributaries "by the United States *and its citizens*" included, as disclosed by the report, the ultimate development *by the citizens of the United States* of the river and its tributaries *for power* and the improvement of the river and some of its tributaries by the United States for navigation.

The report on the power resources, as distinguished from the navigation resources, of the Tennessee River and its tributaries showed that their maximum development would provide approximately 5,000,000 kilowatts of firm (i.e. dependable) capacity and would produce 25,000,000,000 kilowatt-hours of firm energy annually and that the cost of developing these power resources and providing in connection therewith the facilities necessary to provide or preserve 9-foot navigation[1] would be approximately $1,200,000,000. (Add. Fdg. 5, R. 672; Comp. Ex. 105°, p. 3, par. 10; p. 2, par. 8; p. 88, par. 67.)

The District Engineer regarded the cost of the low dams necessary to improve the river for navigation "as a measure of the benefits to navigation which are secured by the construction of the high dams and locks," (Comp. Ex. 105°, p. 5, par. 16) or, in other words, by the development of the power resources of the river with provision for the facilities necessary under such circumstances for navigation and without which navigation would be completely obstructed by the power development. The District Engineer then recommended "the adoption of the project for the improvement of the Tennessee River to Knoxville by low dams with locks of Ohio River standards * * * at an estimated cost of $74,709,000 * * *, provided that *under the provisions of the Federal water power Act* a high dam may be substituted for any two or more of the proposed low dams if the resulting cost to the United States will thereby be reduced *and the navigable capacity of the*

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[1] The development of the power resources involves the construction of high power dams; and, of course, unless navigation facilities such as locks, proper entrance channels and proper protection against currents produced by power operations were provided, these power projects would completely obstruct navigation on the river except such as might be carried on locally within each power pool.

waterway will not be lessened." (Comp. Ex. 105°, p. 5, par. 17.)

The controlling recommendation of the Chief of Engineers was:

> "that the adopted project by the United States for the improvement of the Tennessee River from its mouth to Knoxville be for a navigable depth of 9 feet at low water by low dams in the number and approximate location as set forth in the report of the district engineer: *Provided,* That under the provisions of the *Federal water power act* a high dam with locks may be substituted for any two or more of the low dams and *built by private interests, States, or municipalities: And provided further,* That in case high dams are built before the United States shall have built the projected locks and low dams which are to be replaced, the United States shall contribute to the cost of the substituted structures an amount equal to the estimated cost of the works of navigation for which substitution is made." (Comp. Ex. 105°, pp. 6-7, par. 23.)[1]

The Congress adopted the project for the improvement of navigation on the Tennessee River as thus recommended by the Chief of Engineers. (Act of Congress of July 3, 1930, 46 Stat. 918, 927-8, App. p. 36; Add. Fdg. 3, R. 671.) This is now, and at all times since, has been, the adopted Federal Navigation Project for the improvement of the Tennessee River. (Annual Report of Chief of Engineers, 1932, Part 1, Comp. Ex. 106†, pp. 1206-8, R. 2617; Annual Report of Chief of Engineers, 1936, Part 1, Comp. Ex. 107†, pp. 1032-4; R. 2619-20A.)

Private interests had acquired or were in the process of acquiring most of the sites for high power dams on the Tennessee River and many of its tributaries. (Add. Fdg. 5, R. 672; Barry R. 871; Kurtz R. 1231-2, 1217-8, 1228-9;

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[1] Unless otherwise noted, throughout this brief the emphasis has been supplied.

Watkins R. 1540-1, 1558.) However, because of the depression, the absence of a market for the power or the economic unsoundness of the construction of such high power dams on the Tennessee River, private interests, municipalities and States did not, prior to May, 1933, undertake the construction of any high power dams on the Tennessee River under the provisions of the Federal Water Power Act and the Act of Congress of July 3, 1930. (Add. Fdg. 5, R. 671.)

In this situation and on May 18, 1933, Congress passed the TVA Act which created a federal corporation to engage in the development of the power resources of the Tennessee River and its tributaries and the transmission and sale of such power just as those resources might have been developed by private power companies, municipalities or States under the terms of the Federal Water Power Act and the Act of Congress of July 3, 1930. As will hereafter more particularly appear, the Tennessee Valley Authority, a corporation, stands in the same relation to the Federal Navigation Project on the Tennessee River that private corporations, States and municipalities stand in cases where they make power developments on navigable streams under the Federal Water Power Act and where they would have stood if they had made these same power developments on the Tennessee River and its tributaries.

(2) The general purposes and pertinent features of the Tennessee Valley Authority Act.

(a) The relation, if any, of the TVA Act[1] to the improvement of navigation is at most incidental to power development. The TVA Act provides for the complete development of all of the power resources of the Tennessee River and its tributaries and merely acknowledges that

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[1] The TVA Act and the pertinent provisions of the Federal Power Act are printed in the Appendix to this brief.

such development must be in subordination to the paramount rights of navigation,—that is, the statute provides that TVA may develop all of the power resources of the Tennessee River and its tributaries upon exactly the same terms and conditions with reference to dominance of navigation that the Federal Power Act imposes upon a private company that undertakes to develop power resources on a navigable stream. (Barker R. 1992, 2016-7; Bowman R. 2249-51; Add. Fdg. 23, R. 675.) Thus, under the Federal Power Act the private licensee must "maintain the project works in a condition of repair adequate for the purposes of navigation" and "shall so maintain and operate said works as not to impair navigation." (16 U. S. C. 803(c).) A licensee under the Federal Power Act is required to construct, in connection with his power project, "structures for navigation purposes, in accordance with plans and specifications approved by the Chief of Engineers and the Secretary of War" (16 U. S. C. 804(a)); and the operation of such a licensed project "shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure as may be made from time to time by the Secretary of War." (16 U. S. C. 811.) Control of navigation facilities incidentally provided in connection with a power development *is vested in the War Department*, both under the Federal Power Act and under the TVA Act, and both the private licensee and TVA are obligated to supply without charge the power necessary for the operation of navigation facilities *as directed by the War Department*. (Federal Power Act, 16 U. S. C. 804(c), 811; TVA Act, Secs. 7(a), 5(k).) Like the Federal Power Act, the TVA Act is found in the Title of the Federal Code devoted to Conservation (Title 16) and not in the Title devoted to Navigation. (Title 33.)

(b) The TVA Act, in express terms, turns over the entire power resources of the Tennessee River and its tributaries[1] to a federal corporation for development as the basis for the creation of a great unitary federally-owned and operated electric power system. The power resources of the Tennessee River system, plus steam generating plants authorized to be constructed or acquired under the Act, are to constitute the generating facilities around which the ultimate electric system is to be constructed. Thus the Act provides:

1. That TVA may condemn lands for the construction of "dams, reservoirs, transmission lines, power houses and other structures * * * *at any point along the Tennessee River or any of its tributaries*" (Sec. 4 (i)), and that no one else may develop any power resources of the Tennessee River or its tributaries without the consent of TVA. (Sec. 26a.)
2. That TVA "shall have power to acquire or construct *power houses, power structures, transmission lines*, navigation projects and incidental works in the Tennessee River and its tributaries, and *to unite the various power installations into one or more systems by transmission lines.*" (Sec. 4 (j).)
3. That TVA "in the construction of any future *dam, steam plant, or other facility*, to be used *in whole or in part* for the *generation or transmission of electric power*," may issue or sell on the credit of the United States serial bonds not exceeding $50,000,000. (Sec. 15.)

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[1] The survey of the power resources of the Tennessee River and its tributaries made by the Army Engineers had disclosed to Congress that their maximum development would produce a firm or dependable capacity of 5,000,000 kilowatts and an annual output of 25,000,000,000 kilowatt-hours. (Comp. Ex. 105, pp. 3, 88, pars. 10, 67; Add. Fdg. 5, R. 672.)

4. That the Cove Creek (Norris) project, "together with a transmission line from Muscle Shoals" should be constructed "according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, *so that the maximum amount of primary power* may be developed at Dam Numbered 2 (Wilson) and *at any and all other dams* below the said Cove Creek Dam." (Sec. 17.)
5. That the President shall recommend legislation to accomplish, among other things, "*the maximum generation of electric power* consistent with flood control and navigation." (Sec. 23.)
6. That TVA may retain out of the proceeds of its power sales, such part as "in the opinion of the board shall be necessary for the Corporation * * * in conducting *its business in generating, transmitting and distributing electric energy*" (Sec. 26.)
7. That TVA shall in any event retain a continuing fund of $1,000,000 to defray emergency expenses and to insure continuous operation of the power business. (Sec. 26.)
8. That TVA may "produce, distribute, and sell electric power as herein particularly specified." (Sec. 5(1).)
9. That TVA may sell the power on long-term contracts ranging from 20 to 30 years. (Secs. 10, 12.)
10. That TVA may, out of funds appropriated by Congress, funds derived from the sale of power, or funds secured by the sale of bonds, "construct, lease, purchase, or authorize the construction of *transmission lines within transmission distance from the place where generated*,

and to interconnect with *other systems.*" (Sec. 12.)

11. That TVA may enter into contracts "*with other power systems*" for the exchange of power. (Sec. 12.)

12. That TVA shall have no control over the locks, i.e. the navigation facilities (Sec. 7(a)), and that upon requisition of the Secretary of War, TVA shall supply power without charge for use in operation of navigation facilities (Sec. 5(k)), as in the case of a private power development under the Federal Power Act.

The foregoing makes plain that under the statute the development of the power resources of the Tennessee River and its tributaries is not merely incidental to navigation improvement, but that the development of such power is at least an independent and separate, if not the paramount, objective of the statute. The TVA power project, like the power project of any private power company, need only be "consistent" with—that is, not unreasonably obstructive to—navigation and flood control, in so far as the latter comes within the field of federal power. Consistently with the statutory purpose to create a federal agency for power development, the TVA directors were forbidden to have a financial interest in a public utility corporation but were not forbidden to have a financial interest in a commercial barge line. (Sec. 2(f).)

(c) The statute affirmatively and in detail provides for the regulation of matters of intrastate concern, that is, the regulation of local electric rates, services and practices, and for the establishment of a policy of having the local electric business carried on by public bodies or nonprofit organizations. An examination of the Act discloses:

1. That the TVA in selling electricity "shall give preference to States, counties, municipalities and

cooperative organizations * * * *not organized or doing business for profit.*" (Sec. 10.)

2. That all contracts for sale of power to private companies or individuals, reselling such power for profit, shall contain a cancellation clause so that TVA may recapture the power for use in promoting the statutory policy of having the local electric business in the several States carried on by public bodies or non-profit organizations. (Sec. 10.)

3. That further to favor the policy of placing the local electric business in the hands of public bodies or non-profit organizations, TVA may enter into contracts for 30 years with such organizations, provided they will build transmission lines to TVA generating stations or transmission lines. (Sec. 12.)

4. That to forward such policy, TVA may extend credit for a period not exceeding five years to such public bodies and non-profit organizations situated within transmission distance from any TVA generating station to acquire and operate existing distribution facilities and incidental works, *including generating plants* and interconnecting transmission lines (Sec. 12a), and that for this purpose TVA is authorized to issue bonds in the amount of $50,000,000 upon the credit of the United States. (Sec. 15a.)

5. That TVA may "construct transmission lines to farms and small villages that are not otherwise supplied with electricity *at reasonable rates.*" (Sec. 10.)

6. That TVA may "make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable." (Sec. 10.)

7. That TVA may "include in any contract for the sale of power *such terms and conditions, including resale rate schedules,*" and "provide for such

rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act." (Sec. 10.)

8. That TVA may provide that any contract shall be voidable at its election in case the purchaser fails to comply with any terms, rules or regulations prescribed by TVA. (Sec. 10.)
9. That TVA "shall have power to acquire existing electric facilities used in serving such farms and small villages." (Sec. 10.)
10. That the power shall be sold at rates which will establish a policy in the several states of favoring domestic and rural use over industrial use. (Sec. 11.)
11. That the power shall be sold to domestic and rural consumers "at the lowest possible rates." (Sec. 11.)
12. That all contracts for sale of TVA power to public bodies or cooperative organizations "shall provide that the electric power shall be sold and distributed to the ultimate consumer without discrimination." (Sec. 12.)
13. That TVA shall require in all contracts for sale of power to corporations or persons doing business for profit that such power shall be resold "*at prices that shall not exceed a schedule fixed by the board from time to time as reasonable, just and fair.*" (Sec. 12.)
14. That the statute provides for no hearing, appeal or review in connection with the fixing of any rates or other regulations of the local electric business.
15. That TVA shall fix its own rates (Sec. 14) and hence shall be free from State regulation.

The plain effect of the foregoing provisions is: that TVA may extend its electric business to any and all localities in the several States within transmission distance of its unitary grid system or power pool, without securing

any State or local franchise or complying with State law; that having taken over the public duty of supplying electric service to any or all localities in the various States within transmission distance of this power pool, it may discontinue such service without State approval or consent; and that the establishment within the States of these federal policies in relation to the local electric business is made certain and complete through the production and sale of an amount of electricity unlimited in relation to the available market (see pp. 65-69, *infra*) with numerous statutory subsidies provided at the expense of federal and State taxpayers so that privately owned and state-regulated utilities cannot compete. Many of the foregoing statutory provisions also are designed to promote the establishment, growth and expansion of the TVA power business.

(3) The steps taken and immediately threatened in the execution of the TVA Act and in the current TVA construction program known as the TVA Unified Plan.

Since its organization in 1933, TVA has been engaged in building the high dams essential for power production on the Tennessee River with incidental navigation facilities and in building high power dams and reservoirs on certain of its tributaries with no navigation facilities whatever. (Def. Ex. 153†, pp. 919, 970-977; Fdgs. 29-38, 40, 171, R. 600-4, 638; Add. Fdg. 18, R. 674.) *The TVA program of construction* of dams and hydro-electric plants on the Tennessee River and its tributaries has steadily and rapidly expanded from year to year since the organization of TVA until the present time when, *known as the TVA Unified Plan,* it includes seven high power dams and hydro-electric developments on the Tennessee River, designated as Gilbertsville, Pickwick Landing, Wheeler, Guntersville, Chickamauga, Watts Bar and Coulter Shoals, and

three high power dams and reservoirs on tributaries, designated as Norris on the Clinch River, Hiwassee on the Hiwassee River, and Fontana on the Little Tennessee River. (Comp. Ex. 328°, p. 20; Comp. Exs. 327*, 343*, 354*; see also Fdgs. 29-40, R. 600-4; Add. Fdgs. 8, 33, 107, R. 673, 677, 700.)[1] This is still the current construction program of the TVA as disclosed by the latest hearings before a committee of the Congress in December, 1937. (Def. Ex. 153†, pp. 948, 919.) The TVA Unified Plan also includes increasing the height of Wilson Dam (Comp. Ex. 328°, p. 25), which was built under the National Defense Act of June 3, 1916, (39 Stat. 166, 215), and completed in 1925.

The dams and hydro-electric projects already completed by TVA are Norris on the Clinch River and Wheeler on the Tennessee River. (Fdgs. 29, 30, 171, R. 600, 638.) The Pickwick Landing, Guntersville and Chickamauga projects on the Tennessee River and the Hiwassee project on the Hiwassee River are in process of construction. (Fdgs. 31-34, R. 601-2.) Schedules for the construction of the other projects have been reported to the Congress. (Comp. Ex. 328°, p. 27; Def. Ex. 153†, pp. 948, 977.) TVA has also requested funds to explore other tributaries for the purpose of discovering suitable sites and foundation conditions for the construction of additional hydro-electric developments on the tributaries. (Comp. Ex. 328°, p. 23; Comp. Ex. 108†, p. 25, R. 2621; Comp. Ex. 116†, p. 414; Kimball, R. 1852.)

The history of TVA activities shows that the present construction program of TVA is only a stage in the de-

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[1] The steady and rapid growth of the TVA construction program is vividly shown by the successive Congressional Hearings on TVA Appropriations (Comp. Exs. 108†, p. 23, R. 2621; 109†, pp. 137, 139-40, R. 2623-5; 112†, p. 287, R. 2680; 114†, p. 635, R. 2690; 115†, p. 279, R. 2696; 116†, p. 403, R. 2700A; Def. Ex. 153†, p. 948), the TVA Appropriation Acts (48 Stat. 274, 1055; 49 Stat. 596, 1607; 50 Stat 217) and the TVA Annual Reports since 1933. (Comp. Ex. 113°.)

velopment which TVA may be expected to continue to expand within the sweep of the statute until it substantially encompasses the development of the entire power resources of the Tennessee River and its tributaries. (See Comp. Ex. 105°, p. 3, par. 10; Add. Fdgs. 107, 112, R. 700-1.) Funds have been regularly provided by Congress on request of appellees as rapidly as the TVA construction program could be feasibly prosecuted. (48 Stat. 274, 1055; 49 Stat. 596, 1607; 50 Stat. 217; Comp. Exs. 108†, 109†, 112†, 114†, 115†, 116†, and Def. Ex. 153†.)

Moreover, TVA is not wholly dependent upon Congressional appropriations for the execution of its construction program, for it may utilize its power to issue bonds in the amount of $50,000,000 to build electric facilities of any kind (TVA Act, Sec. 15) and in the further amount of $50,000,000 to finance the acquisition of municipal and cooperative distribution lines to distribute TVA power (TVA Act, Sec. 15a), and it may utilize its income from its electric business, which it has reported to Congress will reach $23,000,000 a year (Comp. Ex. 115†, p. 279, R. 2697) even with the present TVA schedule of rates which are below subsidized cost. (See pp. 79-80, *infra*.) TVA has advised Congress that it is following the policy of financing its construction work through federal appropriations while holding its bonding power in reserve so that such bonding power, together with income from its power business, will be available for further extensions of its power plant and system when, as and if there should be any insufficiency of funds from the Congressional appropriations to carry out any enlargement or expansion of power facilities desired by TVA. (Dr. A. E. Morgan, Comp. Ex. 109†, pp. 138-9, R. 2624-5.) Thus TVA is becoming increasingly independent, and eventually will become wholly independent, of Congressional appropriations for financing any construction program which it desires to undertake.

All of the foregoing power dams, as well as Wilson Dam, are, or are to be, interconnected by heavy duty transmission lines so as to form a vast grid system or power pool. Thousands of miles of transmission lines will be necessary to distribute the power to be generated. (See pp. 69-70, *infra.*)

The plan provides for power generating machinery with an initial capacity of 697,000 kilowatts and an ultimate capacity of 1,922,000 kilowatts. (Add. Fdg. 7, R. 672; Def. Ex. 153†, p. 919.) For convenience and brevity, the capacity and energy output and the area of existing and threatened TVA power operations are described later in their appropriate relation to the issues in this suit. (See pp. 65-69, *infra.*) The foregoing is merely a brief description of the current construction program of TVA which is hereinafter sometimes referred to generally as the "TVA Unified Plan."

C. REVIEW OF THE FACTS RELATING TO THE CREATION OF THE WATER POWER.

(1) The creation of the water power by TVA is not incidental to the improvement of the Tennessee River for navigation but any improvement of the Tennessee River for navigation is incidental to the creation of water power.

This issue of fact is whether the water power will come into being as the incidental result of building structures which have a real, substantial and *bona fide* relation to the improvement of the Tennessee River for navigation, or whether the water power will come into being, wholly or in part, from the operation of structures deliberately designed and built to create water power.

On this issue of fact, as on others, the majority of the trial court failed or refused to make any findings on essential facts. Such findings as may be interpreted as

in any way apposite are bare conclusions which are not supported by findings of essential underlying facts (*Interstate Circuit v. United States,* 304 U. S. 55) or by the evidence. These conclusions are also based upon an erroneous conception of law as to the constitutional power of the Federal Government to acquire water power or electricity. Many evidentiary findings of the trial court are obviously based on the same erroneous conception of law and are consequently immaterial. Other evidentiary findings find no substantial support in the record, which establishes the contrary beyond dispute, and in some cases are squarely in conflict with the uncontradicted evidence.[1] The following are the essential facts on this issue as established by undisputed evidence or the clear weight of the evidence and in large part found by Judge Gore.

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[1] The general nature of these Findings and the manner in which they were adopted are described at pp. 91-92, *infra.* In relation to navigation, Fdgs. 47, 52, 53, 70, 74-76, 93, 94 are bare conclusions unsupported by findings of essential underlying facts or by evidence. Fdgs. 39, 42, 44, 46, 47, 52-54, 56, 57, 68-71, 73, 79, 93, 94 are based upon erroneous conceptions of law (pp. 103-104, 121-122, *infra.*) Fdgs. 39, 41, 42, 44, 46, 47, 52-5, 68-76, 79, 93, 94 are unsupported by and contrary to the clear weight of the evidence.

Thus Fdg. No. 41 (R. 604) states that the TVA dams are the same as those described in H. D. 328, 71st Cong. 2nd Sess. (Comp. Ex. 105) which "were designed primarily for navigation and flood control." An examination of that report shows that in so far as the TVA dams correspond in location with, or resemble, any dams discussed in that report, they correspond with and resemble the dams which were there described as essential to a vast scheme for the maximum development of the power resources of the Tennessee River and its tributaries by private interests, States or municipalities at an estimated ultimate cost of $1,200,000,000. They were described in that report only in obedience to the Congressional mandate that "308 Reports" should advise the Congress as to *all* the beneficial uses of the water resources of navigable streams, both federal and non-federal. (See pp. 6-9, *supra.*) The extent to which the foregoing findings are erroneous is set forth in Assignments of Error 68-71, 73, 75, 79. (R. 736-740.)

A comparison of the existing project for the improvement of navigation on the Tennessee River, adopted by the Act of July 3, 1930 (herein referred to as the Federal Navigation Project), for the Tennessee River and the TVA Unified Plan from the standpoint of the physical structures, capacity to carry commerce, integration with our great inland waterway system, power development, cost or economic justification, order of construction and expedition, navigation benefits and all the material characteristics of a Rivers and Harbors project conclusively establish that the TVA Unified Plan is a power project and not a navigation project which incidentally produces some power.[1]

Physical Aspects of Channels. The Federal Navigation Project provided for the creation of a 9-foot channel from Knoxville at the head of the river to its mouth by the construction of some 32 low navigation dams with locks 110 x 600 feet. (Comp. Ex. 105°, pp. 4, 6, pars. 16, 23; Putnam R. 1152-3.) The navigation pools behind these dams would be confined within the natural banks of the stream. This is of great importance in protecting inland water navigation against the hazards of winds and waves. (Putnam [2] R. 1158-9, 1187; Add. Fdg. 37, R. 678.) The lift

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[1] The purpose of examining the nature of the structures and the characteristics of the project embodied in the TVA Unified Plan is not to ascertain whether a better or more economical navigation project could have been designed, as the trial court surprisingly suggests in its opinion (R. 561), but to ascertain whether the project in the TVA Unified Plan is a navigation project, or a power project. or two separate projects combined in a single scheme, or whether the structures which create the power have any real, substantial or *bona fide* relation to the improvement of navigation.

[2] Major R. W. Putnam, officer of the Corps of Engineers from his graduation from West Point in 1913 until his resignation in 1926, during which period he held, among other positions, that of United States District Engineer for the Chicago District. Since 1926 he has had a wide practice as a consulting engineer on river and harbor work and has also been actively engaged in the commercial navigation business on inland waterways. (R. 1148-51.)

of these locks and dams averages 11.3 feet and their cost averages $2,330,000. (Comp. Ex. 105 B, R. 2616B.) These dams would be of a movable wicket type having navigable passes which would make possible open river navigation for substantial portions of the year. (Add. Fdg. 30, R. 677; Putnam R. 1154.) Under the standard practice of the Corps of Engineers the channel at controlling points would be dredged to an overdepth of three feet so that controlling depths would be twelve feet.[1] (Add. Fdg. 4, R. 671; Putnam R. 1174; Watkins R. 1604-5; Barker R. 2009.) All of the structures in the Federal Navigation Project are appropriate and necessary for navigation. Practically no land lying outside the natural banks would be flooded by the navigation pools.

The structures included in the TVA Unified Plan are very different, and, apart from incidental navigation facilities without which navigation would be completely barred, are neither essential nor useful for navigation. These structures consist of seven high power dams on the Tennessee River and three high power dams on certain tributaries. (See pp. 17-18, *supra*.) The two dams on the Tennessee River below Wilson Dam and Dam No. 1 are being, or are to be, provided with locks 110 x 600 feet; but the five dams on the Tennessee River above Wilson Dam[2] are being, or are to be, provided with locks only 60 x 360 feet. (Fdg. 43, R. 607; Putnam R. 1158.) The maximum lift at the seven dams on the Tennessee River ranges from 45 to 71

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[1] It is the depth at critical or controlling points, commonly known as "controlling depths," which determines the over-all capacity and usability of an inland waterway.

[2] Both the navigation channel provided by the Federal Navigation Project and the navigation channel which will be incidentally provided in connection with the power project embodied in the TVA Unified Plan utilize Wilson Dam and Dam No. 1, both of which had been previously built by the Federal Government, and Hales Bar Dam which had been previously built by a predecessor of The Tennessee Electric Power Company.

feet with an average of 60 feet and an average normal lift of 55 feet, and the cost of these dams will range from $30,000,000 to $112,000,000 each. (Comp. Ex. 116†, p. 403, R. 2700A; Def. Ex. 153†, p. 919; Putnam R. 1156; Add. Fdg. 33, R. 677.) These dams will have no navigable passes (which are impossible in a high power dam) so that craft would have to lock through at all seasons of the year.

The navigation channel in the Tennessee River which will be incidentally provided in connection with the power project embodied in the TVA Unified Plan will be what is known as a 9-foot channel with over-depths at controlling points of only two feet, and consequently with a controlling depth of only eleven feet. (Bowman R. 2234, 2237; Barker R. 1951.) These high dams will create a series of great artificial lakes, which, as hereinafter pointed out, are dangerous and undesirable for the type of craft which use our inland waterway system. These lakes will extend far beyond the natural banks of the river, will have widths as great as six miles (Fdg. 77, R. 618; Def. Ex. 60*), and will permanently flood 415,700 acres of rich valley land. (Def. Ex. 153†, p. 919.)

Tributary Dams. The Federal Navigation Project includes no tributary dams or reservoirs. The TVA Unified Plan includes three high power dams and reservoirs on three of the tributaries. These dams range in height from 265 to 450 feet. (Comp. Ex. 328°, pp. 25, 95, 100, 104; Def. Ex. 153†, pp. 972, 974; Def. Ex. 49*.) None of them has or will have any navigation facilities. Norris, Hiwassee and Fontana would be obstructions to any possible navigation on the tributaries. (Add. Fdgs. 18, 34, R. 674, 677; Putnam R. 1168.) None of these tributary dams will be of any value to navigation on the Tennessee River on completion of the TVA Unified Plan. (Add. Fdgs. 16, 18, R. 674; Putnam R. 1168-9, 1187-8, Offer to Prove, R. 2309, 2334;

Kelly[1] R. 1375.) The appellees attempted to prove that it would be possible to have through traffic on the Clinch River by means of a coal conveyor to carry coal over Norris Dam from barges above the dam to barges in the river below; but upon their own evidence the trial court found that this would not be practicable or feasible. (Fdg. 80, R. 619; Watkins R. 1622-3; Barker R. 1956-7, 1995-8; Comp. Ex. 933*.) This was apart from the fact that it also appeared that the Clinch River is not practicably navigable in any event. (Barker R. 1998; Comp. Ex. 365†, p. 302.)

The appellees below advanced the fanciful contention that these tributary reservoirs are navigation developments because the release of the stored water during the low water season for the generation of power at the tributary plants and at the main river power plants downstream will incidentally enrich the low water flow of the Tennessee River. *The construction of the Federal Navigation Project or the main river dams of the TVA Unified Plan will result in slack water navigation on the Tennessee River from its mouth to its head at Knoxville.* (Add. Fdg. 16, R. 674; Putnam R. 1155, 1167-9; Kelly R. 1375; Comp. Exs. 105A, 105B, R. 2616A, B; Comp. Ex. 342*.) And the only possible method of improving the Tennessee River for 9-foot navigation is by canalization or slack water navigation. (Barker R. 1943; see also Comp. Ex. 105°, p. 33.) *It is uncontradicted that with slack water navigation the ex-*

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[1] Colonel Wm. Kelly, President of the Buffalo, Niagara & Eastern Power Corporation; officer in the Corps of Engineers from the time of his graduation from West Point in 1899 until his resignation in 1928, serving as Assistant to the Chief of Engineers, a member of several Commissions studying flood control on the Mississippi River, Chairman of the Board formed to study Mississippi flood control immediately after the great flood of 1927, member of the Board studying the St. Lawrence Waterway, and Chief Engineer for the Federal Power Commission for five years. (R. 1362-6.)

treme low water flow of the Tennessee River is far more than sufficient to supply all of the needs of navigation. Any additional flow will either have no effect or its effect, if any, will be unfavorable to navigation. (Add. Fdg. 16, R. 674; Putnam R. 1155, 1167-9, 1188, Offer to Prove, R. 2309-10, 2333-4; Kelly R. 1375; Woodward R. 1796-7.) It is also clear that there is no benefit to navigation from enrichment of low water flow in the Mississippi River (Putnam R. 1168, Offer to Prove, R. 2309-10, 2331, 2333-4; Knappen, Offer to Prove, R. 2355-6); and moreover TVA is not charged with any duty or granted any authority in relation to navigation on the Mississippi River under the TVA Act.

Integration with Mississippi Inland Waterway System. The Federal Navigation Project provides a waterway fully integrated with, and in every way adapted to incorporation in, the great inland waterway system of the Mississippi River and its principal tributaries, which system is uniformly based on a 9-foot channel (with usual over-depths at controlling points) and standard locks 110 x 600 feet. (Add. Fdg. 3, R. 671; Putnam R. 1169; Barker R. 2009; Comp. Ex. 105°, p. 100, par. 79.) The navigation facilities which will be incidentally provided in connection with the power project embodied in the TVA Unified Plan are not integrated with that system because their controlling depths are a foot less, because five of its seven locks are scarcely more than half standard size for the Mississippi system and because the wide waters in the lakes created by the TVA power dams require a different type of transportation equipment than that commonly used on the Ohio and Mississippi Rivers. (Add. Fdg. 22, R. 675; Putnam R. 1169, Offer to Prove, R. 2304-6; Willson R. 1393.)

Capacity for Carrying Commerce. The capacity of the Federal Navigation Project is substantially greater than that of the navigation facilities which would be incidentally provided in connection with the power project

embodied in the TVA Unified Plan (Add. Fdgs. 26-29, 35, R. 675-7; Putnam R. 1153-4, 1157-8), even with no allowance for the fact that during a substantial and important part of the year (which would be as great as 67 per cent of the time in the lower river) there would be open river navigation and, therefore, practically unlimited capacity in the Federal Navigation Project. (Add. Fdg. 30, R. 677; Putnam R. 1154; Barker R. 2004.)

Power Production. The Federal Navigation Project would produce no power except a small amount for the operation of navigation facilities. It would produce no commercial power. (Add. Fdg. 19, R. 674; Putnam R. 1155-6, 1166; Comp. Ex. 105°, p. 100, par. 79; Comp. Ex. 346°.)

On the other hand, the structures in the TVA Unified Plan are precisely the kind of structures which would be built by a private power company for the purpose of developing the maximum amount of power. (Add. Fdg. 75, R. 685; Crane R. 1283-4; Kurtz R. 1218; Bowman R. 1744, 1765.) The maximum development of the power resources of a given stream would be achieved by building a single dam at its mouth high enough to concentrate at that point the entire fall of the stream. Since that is not ordinarily practicable, the greatest practicable development of the power resources of a stream is achieved by developing the entire fall of the stream by the smallest number of high dams that it is practicable to construct. The TVA Unified Plan provides for the construction of the smallest number of high dams with which it is practicable to develop the entire fall of the Tennessee River (Add. Fdg. 76, R. 685; Bowman R. 1764-5), and in addition provides a vast amount of power storage on the tributaries which greatly increases the firm capacity of the system.

In an extreme low water year the TVA Unified Plan will have (over and above the capacity of Wilson Dam before it was incorporated in the TVA power system) 632,000

kilowatts of firm (i.e. dependable) capacity at 100% load factor or 1,072,000 kilowatts of firm capacity at 60% load factor, which is a representative load factor for a large utility in the area in which TVA is carrying on its power business. (Add. Fdgs. 11, 12, 19, R. 673-4; Putnam R. 1158, 1166; Kurtz R. 1211-12, 1215; Comp. Ex. 346*.) It will create a vast quantity of firm and secondary power. (See pp. 66-69, *infra.*) *It is an undisputed fact that five-sixths of this vast quantity of firm power will be created by the three tributary dams and reservoirs.* (Add. Fdg. 11, R. 673; Kurtz[1] R. 1215.) These tributary dams, as before pointed out, are obstructions to any conceivable navigation on the tributaries and of no benefit to navigation on the Tennessee River. (See pp. 24-26, *supra.*)

Comparative Costs. The cost of the Federal Navigation Project would be less than $75,000,000. (Add. Fdg. 31, R. 677; Putnam R. 1155; Barker R. 1993; Comp. Ex. 105°, pp. 7, 100.) If constructed with smaller locks comparable in size to the locks built or to be built at all except two of the TVA power dams on the Tennessee River, the Federal Navigation Project could have been built for about $56,000,000. (Comp. Ex. 105°, p. 4, par. 16.) The TVA Unified Plan will cost approximately $473,000,000, exclusive of Wilson Dam (Add. Fdg. 31, R. 677; Putnam R. 1158; Comp. Ex. 116†, p. 403, R. 2700A; Def. Ex. 153†, p. 919), or approximately $400,000,000 more than the Federal Navigation Project. (Putnam R. 1161; Comp. Ex. 346*.)

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[1] Ford Kurtz, Chief Hydraulic Engineer, J. G. White Engineering Corporation, for 28 years hydraulic engineer for this Company and intimately connected with the design and construction of some of the largest hydro-electric projects in this country and abroad; acted as consultant on a large number of other projects such as a complete and extensive investigation of the Los Angeles Aqueduct, a $220,000,000 project, flood control dams of Muskingum flood control system, Fort Peck for U. S. Engr. Corps, and storage of flood waters of the Blue Nile in Lake Tsana for the Egyptian, Sudanese and Ethiopian Governments. (R. 1189-1193.)

Moreover, the cost of constructing the TVA Unified Plan exceeds the investment which may be justified for the benefit of navigation by $425,650,000. (Add. Fdg. 43, R. 678; Putnam 1164, 1166; Comp. Ex. 346*.) Indeed, even the cost of the Federal Navigation Project exceeds the justifiable expenditure for navigation by $39,400,000, but under the standard practice of the Corps of Engineers in such cases that project would have been constructed gradually as economic justification developed. (Add. Fdgs. 17, 41, 43, R. 674, 678; Putnam R. 1164, 1166; Comp. Ex. 346*; Kelly R. 1375; Comp. Ex. 105°, p. 7.) This grossly disproportionate expenditure under the TVA Unified Plan is not for the benefit of navigation but for some other purpose. (Add. Fdgs. 15, 21, R. 674-5; Putnam R. 1169, 1185; Kelly R. 1375.) That purpose is the deliberate and independent construction of a power project. (Kurtz R. 1218-19; Crane[1] R. 1283-4.)

Order of Construction and Delay in Providing a Continuous Nine-Foot Channel. The Federal Navigation Project could have been entirely completed between the date of the adoption of the TVA Act and the time of trial at a cost approximately equal to the sum spent by TVA on Wheeler and Norris Dams and power plants so that navigation would now have, and for a considerable time past would have had, the benefit of a continuous navigable channel over the 652 mile length of the Tennessee River fully in-

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[1] Albert S. Crane, Consulting Engineer, for 39 years engaged in the design and construction of dams and hydro-electric plants and for 15 years Vice President in charge of engineering and construction for J. G. White Engineering Corporation; designed over 38 dams and hydro-electric plants and acted as consultant on between 20 and 30 other large dams; at present consulting engineer on the Mahookey Flood Control Project in New York State and on the Board of Consulting Engineers on Southern New York Flood Control District. (R. 1280-2.)

tegrated with the 9-foot channel in the Ohio and Mississippi Rivers and certain of their important tributaries. (Add. Fdg. 24, R. 675; Woodward R. 1796; Barker R. 1993.) At the time of the trial after almost five years of construction activity and after the expenditure of nearly $200,000,000, TVA had added only 74 miles of 9-foot channel on the Tennessee River. (Fdgs. 40, 77, R. 603, 618.)

The Tennessee River, as above indicated, connects with a 9-foot inland waterway in the Ohio and Mississippi Rivers and certain of their more important tributaries. The two most important centers of industry and commerce in the Tennessee Valley are Knoxville and Chattanooga. In five years TVA has failed to improve the lower 184 miles of the Tennessee River so as to afford an adequate connection with the 9-foot channel in the great inland waterway system of the Mississippi Valley and has likewise failed to provide any practicable navigable channel whatsoever between the two most important commercial and industrial centers in the Tennessee Valley. (Barker R. 1988-90.)

TVA, on the contrary, undertook first the construction of Norris and Wheeler Dams, both of which were the most important from the standpoint of power development, not only by reason of the power developed at those sites, but also by reason of increasing the firm power capacity of Wilson Dam. (Kelly R. 1375; Woodward R. 1815, 1798; Comp. Ex. 909*; Bowman R. 2251.) The operation of Norris Dam also permits the manipulation of the pools of the main river dams for power purposes and daily peaking to meet the utility load curve. (Add. Fdg. 25, R. 675; Barker R. 1994.) TVA next undertook the construction of the Pickwick Landing project below Wilson Dam, which not only provided additional power at its site, but also increased the firm power capacity of Wilson Dam by enabling TVA to escape the restrictions placed by the Army Engineers upon peaking for power purposes at Wilson Dam.

(Bowman R. 1744-5, 1747, 2251; Woodward R. 1813.) Norris and Hiwassee (now under construction) will also increase the firm power capacity of other main stream dams when and if they are constructed.

The sites of the TVA dams are those which would be developed if the primary purpose were to produce as quickly as possible a vast amount of firm power for utility use (Kurtz R. 1218; Crane R. 1283-4; Bowman R. 1744), and the incidental provision of a continuous 9-foot navigation channel has been, and is being, postponed to meet the demands of that power program. Indeed, there is evidence in the record that TVA may not provide the 9-foot channel throughout more than one-fourth of the length of the river *within a period of eight or ten years.* (Barker R. 1993.) Yet generating equipment has already been scheduled for installation *within the next three years,* sufficient to serve a utility load of 570,000 kilowatts. (Def. Exs. 140, 141, R. 4187, 4188.)

Claimed Advantages of TVA Navigation Facilities are Non-existent or Negligible and are More than Offset by Disadvantages. The facts reviewed show that *in all of the substantial and important characteristics of an inland waterway,* the Federal Navigation Project is definitely superior to the navigation facilities which will be incidentally provided in connection with the power project of the TVA Unified Plan. The appellees have claimed trifling advantages for the incidental TVA navigation facilities in negligible and inconsequential respects, but a review of the evidence shows no measurable advantage *even in these negligible matters.* (Putnam R. 1158-61; Kelly R. 1374; Add. Fdg. 40, R. 678.)

Thus the reduction in the number of lockages arising from the construction of the smaller number of high dams is offset by locks of higher lift (Putnam R. 1158-9, 2325-6;

Comp. Exs. 932, 935; Barker R. 2000-3), by the necessity of breaking up of standard Ohio River tows at the smaller TVA locks above Wilson (Putnam R. 1158, 1172; Barker R. 2003-4; Watkins R. 1601-2)[1] and by the fact that for a substantial and important period of the year there will be open river navigation and, therefore, practically unlimited capacity under the Federal Navigation Project, just as is the case with the federal navigation project on the Ohio River. (Add. Fdgs. 30, 35, R. 677; Putnam R. 1154, 1159; Barker R. 2004, 2013.)

The appellees claimed that smaller fluctuations of stage in the pools in the TVA Unified Plan will benefit terminal facilities, but there is no difference in pool fluctuations under the Federal Navigation Project and under the TVA Unified Plan at the four principal terminal sites upon the Tennessee River,—that is, Florence, Sheffield, Chattanooga and Knoxville (Add. Fdg. 20, R. 675; Putnam R. 2298, 2330, Offer to Prove, R. 2332-3; Barker R. 2010-11; Watkins R. 1609-11), and the fluctuations that exist at these points are inconsequential. (Putnam R. 2330.) The TVA Unified Plan will destroy one of the most modern existing terminals on the river at Danville, Tennessee. (Watkins R. 1611-12; Putnam R. 1167.) There is no record of federal expenditure to avoid natural fluctuations of stage for the benefit of terminals on the Ohio, Monongahela, or any other important inland waterway. (Barker R. 2020.) Fluctuations in stage on the Ohio River very greatly exceed those on the Tennessee River. (Watkins R. 1612.)

The suggestion that the TVA high power dams benefit navigation by backing water up into the mouths of tributaries is plainly without substance. Not only did the Chief of Engineers fail to recommend the improvement of

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[1] The small TVA locks above Wilson also necessitate the breaking up of the only important tows (railroad car ferry at Guntersville, Ala.), which are presently and for many years have been using the Tennessee River. (R. 1953.)

any tributary of the Tennessee River (Comp. Ex. 105°, pp. 1-7; Barker R. 1986-7), but the backing up of the water into the mouths of tributary streams creates no navigable channel reaching any potential commerce (Barker R. 1983-4, 2005-6; R. 2008) and is in fact merely the incidental result of the construction of the high power dams on the main stream. (Barker R. 2007.) Indeed, the only substantial effect is to flood some valuable farm lands. (Offer to Prove, R. 1244-50.)

Appellees' claim that the greater depths of the large TVA lakes will benefit navigation by making greater speeds possible is insubstantial (Putnam, Offer to Prove, R. 2329), if not wholly unfounded. The depths which would be provided by the Federal Navigation Project are wholly adequate and conform to the development of the remainder of the Mississippi River system. (Add. Fdg. 3, R. 671; Putnam R. 1169; Comp. Ex. 105°, pp. 100, 5, 6, pars. 79, 17, 23.) Depths greater than necessary to eliminate bottom friction are of no value to navigation and excessive depths are hazards to navigation in that they make it difficult to ground boats immediately in case of accident and increase the difficulty and expense of salvage operations when boats founder. (Add. Fdg. 36, R. 678; Putnam R. 1160, Offer to Prove, R. 2329-30.) The large lakes impounded behind the TVA dams have sufficient depth and width to permit the creation of waves of 3 feet or more in height. (Add. Fdg. 38, R. 678; Putnam R. 2304, Willson R. 1392.) Any theoretical advantage in increased speed of tows is not only practically negligible, but is far more than offset by the increased hazard to the equipment having limited freeboard, which is used in inland water transportation, from wind and waves upon the large TVA lakes (Putnam R. 1158-61, 1187, 2304, Offer to Prove, R. 2329; Willson R. 1392-3, 1395; Add. Fdg. 37, R. 678) and the much more serious consequences of the inevitable oc-

casional accidents in such deep water.[1] (Putnam R. 1160, Offer to Prove, R. 2329-30.)

Of like character is the appellees' claim that lower current velocities will prevail at the heads of the large TVA lakes than would occur at the heads of the small pools behind the low navigation dams of the Federal Navigation Project. There is no proof that the current velocities under the Federal Navigation Project would be a material consideration (Putnam, Offers to Prove, R. 2309, 2327-9) or that they would be greater than those prevailing on more important inland waterways where the Congress has never dreamed of spending hundreds of million of dollars to transform the rivers into vast artificial lakes.

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[1] The appellees advanced the claim that the Corps of Engineers is substituting "high" dams for "low" dams on navigation projects. This, however, is a mere play on words. In fact, the Engineers Corps is merely replacing certain antiquated navigation dams by new dams which are "high" dams only in the sense that their height is slightly greater than that of the antiquated dams which they are replacing. None of these modern navigation dams remotely approaches in height any of the dams in the TVA Unified Plan. In fact, the appellees were unable to cite any instances where the new dams are high enough to extend the river beyond its natural banks (Watkins R. 1618); and this would be contrary to the practice of the Corps of Engineers (Putnam R. 1187, 2337.)

Appellees also advanced the contention that the Corps of Engineers is no longer constructing wicket dams (that is, dams with navigable passes), although they were unable to offer any proof that the Corps of Engineers had adopted such a policy. As a matter of fact the Corps of Engineers has currently recommended the construction of wicket dams on the Ohio River (Putnam R. 2310-12; Comp. Ex. 936†, excluded, pp. 1, 2, 14, 157) and is presently constructing dams of this type at La Grange and Peoria on the Illinois River (Annual Report of the Chief of Engineers for the fiscal year ending June 30, 1937, Vol. I, p. 974.) Of course, the determination of whether a navigation dam shall be a fixed dam or shall have a navigable pass is solely a question of judgment as to which will be the more beneficial to navigation on the stream and has nothing to do with the height of the dam.

Over-all Comparison: The structures in the TVA Unified Plan are not primarily designed to improve navigation on the Tennessee River. (Add. Fdg. 21, R. 675; Putnam R. 1169.) They are precisely the kind of structures which would be built by a private power company for the purpose of developing rapidly the maximum amount of power. (Add. Fdg. 75, R. 685; Crane R. 1283-4; Kurtz R. 1218; Bowman R. 1744, 1765.) The navigation facilities incidentally provided in connection with the power project embodied in the TVA Unified Plan are over-all inferior to the Federal Navigation Project. The vast additional expenditure provides no additional navigable capacity or navigation advantages. The explanation of the huge additional expenditure cannot be found in navigation (Add. Fdg. 15, R. 674; Putnam R. 1161, 1169; Kelly R. 1375; Comp. Ex. 105°, pp. 4-5; Comp. Exs. 105A, 105B, R. 2616A, B; Comp. Ex. 346*) but is plainly attributable to power development. (Crane R. 1284; Kurtz R. 1218-19.)

The situation was accurately summarized by *General George B. Pillsbury, then Assistant Chief of Engineers,* in his testimony given before the House Committee on Military Affairs (Comp. Ex. 365†, pp. 301-2) on proposed amendments to the TVA Act, as follows:

> "General Pillsbury: Congress authorized, in the Rivers and Harbors Act of 1930, the construction of locks and dams on the Tennessee River at an estimated cost of $75,000,000 or $70,000,000—I think $75,000,000—to provide 9-foot barge navigation to Knoxville, at the head of the river.
>
> The estimates were based on low navigation dams, but the Act, in accordance with the recommendation of the Chief of Engineers, provided that if high dams were built by the States, municipalities, or private corporations under licenses from the Federal Power Commission, as then provided by law, that the cost of the low dams would be contributed to the cost of the high dams which would replace them.

> The Tennessee Valley Authority is constructing high dams in certain localities. * * * They invariably consulted us *on all matters relating to navigation.*
>
> Mr. McLean: Have they embarked on a program of high dams instead of the low dams?
>
> General Pillsbury: Yes. *The low dams have no power value whatever.*
>
> Mr. McLean: *So that the high dams would be constructed with the idea of electrical power generation only in view?*
>
> General Pillsbury: *Oh, yes.* The high dams are very much more costly than the low ones. *They are not better for navigation,*[1] *but the justification for their large expenditure can be found only in the power that they make available.*"

A review of the evidence leaves no doubt that the water power is not coming into being and is not to come into being, as the incidental result of structures built or to be built for the improvement of the Tennessee River for navigation.

(2) The creation of none of the water power is incidental to the operation of structures built for protection against flood damages to navigation.

Flood damages to navigation on the Tennessee River are negligible in character and amount and would not be reduced by the TVA Unified Plan in an amount sufficient

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[1] The court in its opinion states that the main stream dams "are essential to the *maintenance* of 9-foot navigation." (R. 550.) In fact these high dams were essential and desirable only for power development, and they are related to the maintenance of 9-foot navigation only in the sense that, if and when they are built, they will submerge, and make impossible the use of, any navigation facilities other than those incidentally resulting from power development so long as they remain.

to justify any capital expenditure. (Putnam R. 1167; Add. Fdg. 44, R. 679.)[1]

The completion of the TVA Unified Plan would not eliminate any measurable amount of flood damages to navigation on the Mississippi River (Kelly R. 1374, 1368); and moreover TVA is not granted any power or charged with any duty under the TVA Act with respect to navigation on the Mississippi River. (Add. Fdg. 45, R. 679.) No part of the cost of the TVA Unified Plan may properly be charged to protection against, or elimination of, flood damages to navigation on the Tennessee or Mississippi Rivers. (Kelly R. 1374; Putnam R. 1167.)

(3) None of the TVA commercial water power is created as the incidental result of the operation of any flood control structures; and such flood control structures as are included in the TVA Unified Plan are a minor, if not a pretensive, part and purpose of that Plan.

On this issue also the majority of the trial court failed or refused to make any findings on essential facts, that is, whether, and if so to what extent, any of the water power is or will be created by the operation of structures built for flood control. Their conclusory findings, to the extent, if at all, that they may be apposite, are not only unsupported by evidentiary findings and by the record but are against the clear weight of the evidence. Their conclusory findings and many of their evidentiary findings are based upon an erroneous conception of law as to the constitutional power of the Federal Government to acquire water

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[1] In so far as Fdg. 59 (R. 612) states or implies that flood damages to navigation are not inconsequential and that they would be appreciably reduced by the TVA Unified Plan, it is a bare conclusion, not supported by findings of essential underlying facts or by the evidence. It was rejected by Judge Gore. (R. 669.)

power or electricity and as to the nature and scope of any federal power over flood control.[1]

TRIBUTARY PROJECTS. (a) *None of the commercial water power created by the tributary projects is created by the operation of flood control structures.* A review of the evidence shows that the tributary projects severally consist of a large power reservoir upon which is superimposed a small flood control reservoir and that such flood control reservoirs do not and can not produce any commercial power. The tributary projects consist of the Norris project on the Clinch River, the Hiwassee project on the Hiwassee River and the Fontana project on the Little Tennessee River. The Norris project is a typical tributary project and it is sufficient, therefore, to review the evidence bearing upon the structural and functional characteristics of this project.

The Norris Dam is 214 feet high from the bottom of the river to the top of its gates, elevation 1034. (Comp. Ex. 328°, pp. 91, 92; Comp. Ex. 362*; Def. Ex. 50*, 51; Wessenauer R. 2190.) The lower 135 feet, or up to elevation 955, is built and utilized to create *dead storage* by impounding water above the dam so as to concentrate the fall of the river and thus make possible the production of commercial power. The purpose and function of this dead storage at Norris is to make possible the production of electric power. (Kurtz R. 1210, 1213; Comp. Ex. 362*; Wessenauer R. 2189-90; Add. Fdg. 70, R. 684; Creager, Offer to Prove,

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[1] Fdgs. 39, 47, 60, 62, 63, 65, 68, 69, 74-6, 93, 94 are bare conclusions unsupported by findings of essential underlying facts or by evidence. Fdgs. 39, 41-7, 60-69, 74-6, 79, 93, 94 are unsupported by and contrary to the clear weight of the evidence. Fdgs. 39, 42, 44, 46, 47, 58-60, 65, 68, 69, 73, 74, 79, 93, 94 are based upon an erroneous conception of law. (See p. 128, *infra*.) The extent to which the foregoing findings are erroneous is set forth in Assignments of Error 68, 72-6, 78, 79.

2406-7.) This dead storage behind Norris Dam is shown upon drawings of Norris Reservoir storage contained in a technical article published by one of the TVA engineers (a witness for appellees) before the trial of this litigation and in drawings offered as exhibits in the *Ashwander* case[1] by another TVA engineer who also appeared as a witness for appellees in this suit.[2] (Bowman R. 1750; Kimball R. 1862; Comp. Exs. 904, 912*.)

The volume of this dead storage behind Norris Dam is 570,000 acre feet. The space occupied by this dead storage behind Norris Dam has no flood control value because it is always full of water and consequently can never be used to impound any flood waters. (Kurtz R. 1213; Add. Fdg. 70, R. 684; Comp. Ex. 362*.)

The next 65 feet of Norris Dam, that is, from elevation 955 to elevation 1020, is built and utilized to create *power storage*. (Kurtz R. 1212-14.) This power storage (Comp. Ex. 362*) is also shown on Comp. Ex. 904, which is a diagram of the Norris Reservoir storage prepared by the appellees' witness Bowman. (Bowman R. 1750.) This power storage at Norris Dam is provided and utilized to create additional head for power production and to provide usable storage of water for even greater production of

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[1] *Ashwander v. Tennessee Valley Authority*, 297 U. S. 288.

[2] On Comp. Ex. 904, a drawing of Norris Reservoir prepared and published by appellees' witness Bowman after the trial of the *Ashwander* case and before the trial of this suit, the standard terms, that is "dead storage," "power storage" and "flood storage" are shown for the different types of storage at Norris. In the instant case, however, the engineering witnesses for the appellees in their testimony and exhibits have studiously avoided the use of these standard terms and substituted instead such coined terms as "minimum navigation level" for "dead storage" (even though the tributary reservoirs have no navigation facilities) and the coined term "controlled flood surcharge" for "power storage." (Def. Exs. 39, 42, 43, 45a, 46a, 47, 48, 53, 54, 151; Bowman R. 1730-1, 1733, 1749-50; Barker R. 1998; Comp. Ex. 904.)

power during the low water season, both at Norris Dam and at all the power plants on the main river below. (Kurtz R. 1212-14; Comp. Ex. 362*; Bowman R. 1734, 1739, 1742; Wessenauer R. 2189-90; Add. Fdg. 70, R. 684.) This power storage at Norris is filled annually. (Def. Ex. 90*.)

The volume of this power storage at Norris is 1,500,000 acre feet. This power storage has no genuine flood control value because, manifestly, if this space is full when the inevitable flood occurs, it is not available to impound the flood waters (Kurtz R. 1214; Add. Fdg. 70, R. 684); and whether any of this space will be empty when the flood occurs, and if so, how much, is not only uncertain and unpredictable, but is merely incidental to, and dependent upon, the power operations which utilize this power storage for power production. (Kurtz R. 1214; Def. Ex. 90*.) Floods do not occur just because the power storage of a dam happens to be empty. Nor do they fail to occur just because the power storage of a dam happens to be full. Genuine flood storage must be available whenever a flood occurs. (Kurtz R. 1213-14; Watkins R. 1560-2.)

There is an irreconcilable conflict between flood control and power development, that is, between keeping the reservoir space empty to catch the inevitable flood when it does occur and keeping the reservoir space full to create head and storage for power production.[1] There is no object in keeping water permanently or seasonally in a reservoir except for power production or for industrial or domestic use. This was conceded by appellees' witness Woodward when he stated that partial filling is not for flood control, but for the benefit of low water regulation, which in-

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[1] Were this not so, every private power development would be a flood control project, which it is not. Indeed, some surcharge capacity above the power storage is often necessary merely to compensate for natural valley storage destroyed by the power reservoir. (Watkins R. 1562, 1565-6; Kelly R. 1373; Comp. Ex. 411.*)

creases the amount of firm power. (Woodward R. 1788, 1798-9, 1815; Add. Fdgs. 80, 85, R. 686-7; Kurtz R. 1213-14.) The only flood control value in power storage is that undependable and accidental amount that is inherent in every power dam of every power company in the country, but such storage does not constitute flood protection because it is obviously impossible to fill a reservoir early in the year for power production, as the Norris Reservoir is filled, on the assumption that a prediction can be made that a great flood will not occur.[1] Great floods have occurred on head waters of the Tennessee and nearby rivers during the summer and at other times of the year. (Justin[2] R. 2376-8; Comp. Ex. 941; Kurtz R. 1198; Add. Fdg. 73, R. 684; Minser, Offer to Prove, R. 2365-8, 2370.)

The conflict between flood control and power development was recognized by appellees' witness Bowman in a technical article written prior to the trial of this suit (Bowman R. 1738, 1749-50; Comp. Ex. 904; Add. Fdg. 80, R. 686), and in a Congressional Hearing in 1937 (Comp. Ex. 116†, p. 344), by Dr. A. E. Morgan who testified:

> "For power development it is desirable to store water as quickly as possible during high water and to use it in low water. For flood control it is desirable

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[1] It is no more possible to make such a prediction than it is to tell whether a coming year will be a low water season. It is not possible to predict rainfall or to predict at any time of any year, whether the rest of the year will be dry or wet, and, manifestly, reservoirs cannot be operated on hindsight. (Add. Fdg. 55, R. 680; Woodward R. 1811, 1822; Kimball R. 1884; Floyd R. 1901-2.)

[2] Joel D. Justin, consulting hydraulic engineer on flood control, irrigation and hydro-electric developments in this country and abroad, including a large number of flood control projects now under construction and completed for the Federal Government; author of standard text-books and numerous technical articles on flood control, hydro-electric developments and related subjects. (R. 2373-5.)

to keep the reservoir capacity empty, as much as possible. For power development a full reservoir is best. For flood control an empty reservoir is best. There is a certain tendency to conflict there."

This examination of the structural and functional characteristics of the Norris project shows that the first 200 feet of Norris Dam above the river bed, or up to elevation 1020, impounds dead and power storage and produces the commercial power created by that project. This large power reservoir, creating the commercial power, has been purposefully and separately built; it is filled annually for power; it is drawn down annually for power; it is operated exactly the same as any power reservoir of any utility and it provides no flood storage except an undependable amount that is inherent in every power dam of every power company in the United States. (Kurtz R. 1212-14; Comp. Ex. 362*; Bowman R. 1734, 1739, 1741-2; Wessenauer R. 2189-90.)

The top 14 feet of Norris Dam, or from elevation 1020 to 1034, is built and utilized to create flood storage. This storage space, like all genuine flood storage, will be kept empty at all times except when it is temporarily in use to impound flood waters during a flood. Such flood waters will be released as rapidly as practicable in order to make the space available to catch the next flood. In other words, this storage space will be available to impound flood waters no matter what time of year the flood may occur, except that when filled beyond elevation 1029 or 1030, it will flood and has flooded towns, highways and bridges. (R. 1855; Woodward R. 1822; Kimball R. 1855; Bowman R. 1769.) This top 14 feet of the dam is the precise equivalent of a 14 foot dam built as an entirely separate and distinct project on the top of the power reservoir or of a flood control reservoir of equal capacity built along side of the power reservoir. This top 14 feet is the only genuine flood

control storage provided in the Norris Project.[1] (Kurtz R. 1210, 1214; Comp. Exs. 362*; 904.)

The volume of this flood control storage is 497,000 acre feet. (Kurtz R. 1210, 1214; Comp. Ex. 362*; Add. Fdg. 70, R. 684.) This flood storage at Norris Dam can not and does not produce any commercial power for the very simple reason that this space is always kept empty to impound flood water when a flood occurs and the impounded flood waters are discharged as rapidly as practicable. Consequently none of the commercial water power created by the tributary dams, of which Norris is typical, can be or is created by the operation of any flood control structure. (Kurtz 1214; Add. Fdg. 70, R. 684.)

The evidence shows that the Norris project consists of a large power reservoir (dead storage and power storage) upon which is superimposed a small flood control reservoir (flood control storage). The power reservoir is 200 feet high measured from the bottom of the river and the superimposed flood control reservoir is only 14 feet high. The power reservoir, separately and purposefully built, creates all of the commercial power, but it does not provide any genuine flood control; and the small flood control reservoir does not, incidentally or otherwise, produce any commercial power.

The trial court excluded as immaterial official statements issued by TVA, stating that "*Norris Dam is being built for power development*" (Comp. Ex. 863, excluded, R. 3829) and that:

> "If we admit that the use of electricity can not be increased manyfold; if that is our mental attitude, then

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[1] The tributary reservoirs are far beyond prediction distance from the Mississippi River. (Woodward R. 1783, 1806-8.) Hence, for this and other reasons, the limited flood storage of the tributary reservoirs could not benefit Mississippi floods. (See pp. 57-60, *infra*.)

we must be logical and immediately stop construction of the Cove Creek Dam (Norris) and of the Joe Wheeler Dam." (Comp. Ex. 800, excluded, R. 3706.)

Prior to the construction of Norris Dam, appellee, Dr. A. E. Morgan, while testifying before the House Committee on Appropriations (Comp. Ex. 108†, p. 25, R. 2621-2) in 1933. frankly admitted that it was to be built for the development of power:

> "Mr. Collins: You will build the same type of dam (at the site of Norris) that you would build if there was a scarcity of power, and you were building it for the development of further power. In other words, you will build that kind of dam.
>
> Dr. Morgan: Yes, sir."

The record thus discloses not only that the small flood control structure superimposed on the top of the Norris project creates none of the commercial power, but that power development was the primary and dominant purpose of the construction of the Norris project as well as of the other tributary projects. (Crane R. 1284; Kurtz R. 1218-19; Dr. A. E. Morgan, Comp. Ex. 112†, pp. 252-3, 287, R. 2674, 2680; Add. Fdg. 73, R. 684.)

(b) *Two and six-tenths times as much flood storage could have been provided at the site of Norris Dam for less than one-quarter of the cost of Norris Dam.* Norris Dam cost $36,310,370. (Fdg. 29, R. 600; Kurtz R. 1210; Comp. Ex. 362*; Comp. Ex. 116†, p. 403, R. 2700A.) This dam provides genuine flood storage of only 497,000 acre-feet with no allowance for the destruction of natural valley storage by the power structure upon which the small flood control structure is superimposed. A flood control dam could have been built at the same site as the Norris Dam for $8,136,000, providing 1,312,000 acre-feet of genuine

flood storage. (Add. Fdgs. 69, 70, R. 683-4; Kurtz R. 1210, 1214; Comp. Ex. 362*.) TVA engaged the Bureau of Reclamation to design the Norris Dam. (Comp. Ex. 113°, p. 2.) This Bureau, through one of its engineers, reported that a reservoir for flood protection alone with flood storage of 1,255,000 acre-feet could be built at the site of the Norris Dam for approximately $7,150,000. (Woodward R. 1816.) *This project would have produced no electric power.* This evidence shows that two and six-tenths times as much flood storage could have been provided at the site of Norris Dam for less than one-quarter of the cost of Norris Dam and that Norris Dam was built for some other purpose than flood control. (Add. Fdgs. 69, 70, R. 683-4.) That purpose is the maximum production of power as stated in the TVA Act itself. (TVA Act, Sec. 17.) Norris is typical of all the TVA tributary projects (see p. 38, *supra*). The trial court excluded authorized public statements by appellees that Norris Dam was being built for power development and that its construction is not justified unless there is a market for the power.[1]

(c) *The tributary projects increase five-fold the amount of firm power which could otherwise be produced on the Tennessee River.* These tributary projects increase the firm continuous capacity of the TVA power project from 110,000 kilowatts to 660,000 kilowatts. (Add. Fdg.

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[1] "The Norris Dam is being built for power development, but that is not an end in itself. We do not develop power just so that there can be power development. We develop power to contribute to the well-being of the people in this region. It is only a means to an end. The object of building a dam is to provide power; the object of providing power is to raise economic and social conditions of a region." (Comp. Ex. 863, excluded, R. 3829.) "Take the Norris Dam, for instance. It would not pay to build it in the hope that somebody might wish to buy its power in the future. It is not justified unless you can count on a market. That is true for other up-river dams." (Comp. Ex. 844, excluded, R. 3798.)

11, R. 673; Comp. Ex. 328°, p. 62; Kurtz R. 1215; Comp. Ex. 115†, p. 279, R. 2697.) None of this increase in firm power results from any flood control storage provided at any of the tributary reservoirs but solely from the utilization of the power storage provided at those reservoirs. The evidence shows that the appellees have faithfully followed the statutory mandate to construct the Cove Creek (Norris) Dam "*so that the maximum amount of primary power may be developed* at Dam Numbered 2 (Wilson) and at any and all other dams below the said Cove Creek Dam." (TVA Act, Sec. 17.) The trial court in its opinion expressly finds that the statute required Norris Dam to be constructed and operated so that the maximum amount of primary power may be developed at all other dams downstream and that "Norris Dam was built and is being operated to create extra head of water power at Wilson Dam." (R. 559.) The TVA reservoirs are constructed to produce the maximum amount of power (Crane R. 1284; Kurtz R. 1218-19; Dr. A. E. Morgan, Comp. Ex. 112†, pp. 252-3, 287, R. 2674-80.) And Judge Gore found that the proposed method of operation of all the TVA dams is not for flood control but primarily for the purpose of power. (Add. Fdg. 73, R. 684.)

(d) *The TVA Unified Plan will provide no flood protection on some of the most important tributaries of the Tennessee River where the greatest flood damage has been experienced.* The TVA Unified Plan provides no flood protection on the Holston River or the French Broad River which are two of the most important tributaries of the Tennessee River.[1] (Comp. Ex. 328°, p. 12; R. 1209; Kurtz

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[1] The trial court excluded an official TVA Press Release stating that the building of tributary reservoirs has been determined by the opportunities for power development:

"The Tennessee Valley Authority has been importuned by many people to prepare designs for a water power dam

(Continued on page 47)

R. 1205; Comp. Exs. 354*, 355; Kimball R. 1852, Watkins R. 1583.) On the Emory River where seventy-five per cent of the total flood damage on all tributaries occurs and where twenty-two lives were lost in the 1929 flood, no protection whatsoever is afforded by the TVA Unified Plan (Kurtz R. 1196, 1199, 1207, 1209; Kimball R. 1886; Watkins R. 1583; Add. Fdgs. 50, 64, R. 680, 683.) Any genuine flood control system would provide protection on these important tributaries.

The estimated annual average flood damages on the French Broad River are $110,416, on the Holston River $28,850 and on the Emory River, exclusive of damage to lands, $355,500, or a total of $495,260. (Comp. Ex. 105°, p. 734, Col. 16; Comp. Ex. 349, Col. 9, R. 3084-B.) On the other hand, the estimated average annual flood damages on the Hiwassee (including the Ocoee) are $21,725, on the Little Tennessee River (including all its tributaries) are $26,495 and on the Clinch River, exclusive of damage to lands, are $33,590 (Comp. Ex. 549, R. 3084-B), and including the damage to lands on the Clinch, Emory and Powell Rivers (not segregated), the average annual flood damages on the Clinch River would be about $46,000 a year. (Comp. Ex. 105°, p. 734, Col. 6.)

Thus the total average annual flood damages on the Clinch, Hiwassee and Little Tennessee Rivers (including an excessive amount for damages to lands on the Clinch) are $94,220. The trial court excluded, as immaterial, evidence

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and regulating reservoir on the French Broad just above Asheville. The topography of this site affords a natural reservoir basin which, considered for its physical aspects alone, is one of the best of such sites in the Tennessee Valley. However, the preliminary data available at the present time regarding this proposed project appear to indicate that *the cost of water power produced there would be so much greater than the cost of similar power produced at other locations*, that we are forced to the conclusion that the construction of a dam at this site is not economically justified at the present time." (Comp. Ex. 872, excluded, R. 3856.)

that the average annual value of crops standing in September and October on lands which will be flooded by the Chickamauga, Guntersville, Pickwick Landing and Wheeler reservoirs at normal pool level was $3,126,000, or an average of over $20 per acre. (Offer to Prove, R. 1244-50; Def. Ex. 153†, p. 947.) On the same basis, the total value of crops on lands flooded, or to be flooded, by the three tributary reservoirs, would be approximately $992,000 annually. (Def. Ex. 153†, p. 919.) While the average annual value per acre of crops in the tributary basins is doubtless less than in the Tennessee Valley, the average annual value of the crops destroyed by the tributary reservoirs is a very substantial figure.

The capitalized value at 4 per cent of the total average annual flood damage on the Clinch, Hiwassee and Little Tennessee Rivers, is less than $2,400,000. The three TVA projects on these tributaries, which would eliminate only a part of this average annual flood damage, will cost approximately $120,000,000.

The greatest practicable flood protection on the tributaries and on the main river could have been obtained at a fraction of the cost of the TVA system by the construction of genuine flood control reservoirs on the Emory, Holston, French Broad, Clinch and Hiwassee Rivers. Such a system of genuine flood control structures, built and operated solely for flood control, could have been built for about one-sixth of the cost of the TVA power projects (see pp. 55-57, *infra*) and for about $40,000,000 less than the cost of the three tributary power projects alone. Such a system would provide ten times as much flood storage in a great flood at and above Chattanooga (where practically all flood damage in the Tennessee Valley occurs) as the TVA Unified Plan, and an immeasurably greater ratio of protection to life and property (Kurtz R. 1205-7; Comp. Ex. 353, 355, 357*); for the limited flood storage of the small flood control reservoirs constructed on top of the TVA power

structures would have a negligible effect and be of negligible value in a great flood when flood protection is the most needed and the most valuable. (Comp. Exs. 352*, 354*, 356, 357*, 358*, 359*.)

Main River Projects. (a) *None of the commercial water power created by the main river projects is created by the operation of any flood control structures.* This appears from an examination of the evidence bearing upon the structural and functional characteristics of the main river projects. We have previously pointed out that five-sixths of the firm water power which will be created by the TVA Unified Plan is created by the use of the tributary projects. (See pp. 45-46, *supra.*) However, the remaining 110,000 kilowatts of firm power which could be produced at the main stream dams without the tributary projects is not brought into being by the operation of any flood control structures. (Kurtz R. 1213.) The Guntersville project is a typical main river project. It is sufficient, therefore, to examine the structural and functional characteristics of a typical Tennessee River project.[1]

The Guntersville Dam which is located on the Tennessee River about midway between its mouth and its source, is approximately 60 feet high from its foundation to the top of its gates and extends 40 feet above its normal tailwater at elevation 555 to the top of its gates at elevation 595. (Comp. Ex. 328°, p. 82; Def. Ex. 45A.) The first 36 feet above normal tailwater is built and utilized to impound water permanently up to elevation 591, which is commonly called minimum headwater elevation, but which has been denominated minimum "navigation level" by the ap-

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[1] The TVA dams on the main river are Pickwick Landing, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals and Gilbertsville which does not differ from these main stream projects in nature or function but does include a larger amount of flood control storage so its functions will be examined separately.

pellees for the purpose of this suit. (Comp. Ex. 328°, p. 82; Def. Exs. 44*, 45A.) This dead storage at Guntersville differs from the dead storage at Norris only in that this storage behind the Guntersville Dam incidentally provides a water surface which must be used by navigation in lieu of the navigation pools of the Federal Navigation Project which are submerged by the large power lake of the TVA power project. As shown by the evidence reviewed at pages 22-36, *supra*, the main stream reservoirs are power developments with merely incidental navigation facilities, but from the standpoint of flood control, it is immaterial whether this storage is regarded as dead storage or navigation storage; for in any event, it has no flood control value because it is always kept full of water and consequently can not be used to impound flood waters when floods occur. (Kurtz R. 1213; Wessenauer R. 2189; Creager, Offer to Prove, R. 2406-7; Add. Fdg. 70, R. 684.) However, this dead storage, by concentrating the fall of the river at the dam, produces firm or commercial power. (Kelly R. 1373; Kurtz R. 1210, 1213; Wessenauer R. 2189-90.) The volume of this dead storage is 709,000 acre feet. (Def. Ex. 45A.)

The next three feet of the Guntersville Dam, that is, between elevations 591 and 594, is built and utilized to create power storage. (Kelly R. 1373; Kurtz 1210, 1213; Wessenauer R. 2189-90.) The volume of this power storage is 177,000 acre feet. (Def. Exs. 54, 153†, p. 975.) This power storage will be filled after April 1st of every year. (Wessenauer R. 2190.) The only purpose of filling this power storage annually is to provide additional storage for the production of power. It would not be filled for navigation because the dead storage has already provided navigable depths. A contrary contention would admit that the incidental navigation facilities of the TVA Power Project are completely inadequate except when the power storage is entirely filled. It would not be filled for

flood control because flood control demands that flood control space be kept empty for the inevitable flood whenever it may occur. Floods may occur and have occurred at any time of the year. (Add. Fdg. 73, R. 684; Justin R. 2376-8; Comp. Ex. 941; Kurtz R. 1198, 1204; Kimball R. 1882; Minser, Offer to Prove, R. 2365-8, 2370.) The uncertain possibility that some unpredictable amount of this power storage, which is regularly filled annually, may happen to be empty at the time of a flood as the incidental result of power operations, just as in the case of any privately owned and uncamouflaged power reservoir, does not constitute flood control. The evidence thus shows that there is nothing incidental about the creation of water power which is created by purposefully building storage for that purpose. This power storage provides no genuine flood control. (Kurtz R. 1214.)

The top one foot of the Guntersville Dam, that is, between elevation 594 and 595, provides the only genuine flood control storage included in the Guntersville project. This storage will be kept empty at all times of the year in order to impound flood waters when the inevitable flood occurs and the impounded flood waters will be released as rapidly as practicable. The volume of this flood control storage at Guntersville is 65,000 acre feet, and because it is kept empty, like any *bona fide* flood control reservoir, it creates no firm or commercial power. (Def. Exs. 45A, 54; Kurtz R. 1213-15.)

The evidence thus shows that the Guntersville project consists of a power dam 39 feet high from its normal tailwater to its normal water surface at elevation 594, on top of which is superimposed a flood control dam one foot in height. The total storage up to normal pool level or the top of the power dam is 886,000 acre feet. (Def. Ex. 54.) The flood storage provided by the superimposed flood control dam is only 65,000 acre feet. This flood storage is too

insignificant in amount to be of any practical value and does not even compensate for the natural valley storage destroyed by the dead and power storage in a great flood. The evidence thus shows that the Guntersville project is the equivalent of a power dam 39 feet high (which produces all of the firm or comercial power), on which is superimposed an entirely separate flood control structure one foot in height[1] which creates no firm or commercial power.

The Gilbertsville project on the main stream does not differ from the other main stream projects in nature or function, but the flood storage at Gilbertsville[2] is much greater both in volume and in relation to its dead and power storage than in the case of the other main stream projects. (Def. Ex. 39.) The flood storage at Gilbertsville can provide no flood protection for the Tennessee Valley because this dam is located only a short distance above the mouth of the Tennessee River and because the land along the river below the Gilbertsville site has been and will continue to be subject to flooding by backwater from the Ohio River. On the contrary, it permanently floods 160,000 acres of valuable valley lands. (Def. Ex. 153†, p. 919.) While the evidence hereinafter reviewed shows that the flood storage at Gilbertsville does not provide any measurable or consequential flood protection on the Mississippi River, that is not material in this connection because whatever may be the volume of flood storage at Gilbertsville (and it has been repeatedly changed on paper even during the trial of this suit (Bowman R. 1726-7)), and whatever

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[1] The heights of the superimposed flood control structures on the remaining main river dams are as follows: Pickwick, 5 feet; Wheeler, 1 foot; Chickamauga, 3 feet; Watts Bar, 5 feet; Coulter Shoals, 5 feet. (Def. Exs. 42-54; Comp. Ex. 328°, p. 82.)

[2] The height of the superimposed flood control structure on top of the Gilbertsville power dam is 16 feet. (Def. Exs. 39, 54.)

may be its effect, if any, on flood stages in the Mississippi Valley, the flood storage at the Gilbertsville project creates none of the firm or commercial power to be created by the TVA Unified Plan. This is because the genuine flood storage at the Gilbertsville project would always be kept empty in order to impound flood waters when the inevitable flood occurs. As in the case of the other main stream projects, all of the firm or commercial water power at Gilbertsville will be created by the power dam which will provide no genuine flood control.

(b) *That flood control is a minor part and purpose of the main river projects also appears from the fact that the small flood control structures superimposed on them do not provide adequate or dependable flood control.* The trial court found that practically all damage from floods on the main stream occurs at and above Chattanooga, and that "a flood control program to achieve the maximum practical protection upon the Tennessee River and its tributaries should be directed primarily for protection at and above Chattanooga." (Fdgs. 81, 85, R. 619; Kurtz R. 1196-7; Comp. Ex. 349, R. 3084; Watkins R. 1582.) During large floods the main river dams above Chattanooga are wholly flooded out and provide no flood storage capacity.[1] (Comp. Ex. 359*; Kimball R. 1868-9; Add. Fdgs. 65, 83, R. 683, 686.) Any dependable reduction in the maximum flood stage at Chattanooga by the TVA Unified Plan is insignificant, and even the maximum undependable reduction in such stage which might be achieved under the most favorable conditions would not be sufficient to render practicable the construction of levees at Chattanooga for local protection. (Add. Fdg. 63, R. 683; Kurtz R. 1206-8; Comp. Exs. 356,

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[1] "The Chickamauga Dam is completely flooded out with the top of its gates under seven to nine feet of water by the maximum flood to be expected at Chattanooga." (Add. Fdg. 65, R. 683.)

R. 3088, 357*, 359*; see also Dr. A. E. Morgan, Comp. Ex. 895, excluded, R. 3908.) Protection by levees is the only practicable way to protect Chattanooga from floods. (Kurtz R. 1209; Kimball R. 1867-9.) The dams below Chattanooga do not protect property in the Tennessee Valley against flood damage but permanently submerge thousands of acres more land than is occasionally damaged by floods in a state of nature. (Fdg. 82, R. 619.) This results in destroying the roads, buildings and other improvements on the land permanently submerged. Flood damages below Chattanooga to cities and towns are relatively small in amount (approximately one per cent of the damage to cities and towns on the main river), and while there are some damages to railroads and highways (easily eliminated by relocation), such flood damages *consist largely of damages to farm land.* (Kurtz R. 1196-7; Comp. Ex. 105°, p. 734; Comp. Ex. 349, R. 3084; Fdg. 82, R. 619.) The main stream dams of the TVA Unified Plan *forever flood and therefore destroy* 415,700 acres of valuable farm land and the total land purchased by TVA along the main stream for flooding, exclusive of Watts Bar and Coulter Shoals, is 740,800 acres. (Def. Ex. 153†, pp. 919, 947.) This alleged flood control forever floods the very land that it should protect.

(c) *The main river projects of the TVA Unified Plan destroy a large volume of valley storage.* Valley storage is that storage which reduces the height of floods in a state of nature. (Kelly R. 1372-3; Comp. Ex. 411*; Watkins R. 1586; Clemens R. 1663-4; Kimball R. 1869, 1875-6; Comp. Ex. 914.*) Unless a reservoir or chain of reservoirs provides a sufficient amount of flood storage to offset this volume of destroyed valley storage, that reservoir or chain of reservoirs will accelerate and increase the flood heights below. The main river dams of the TVA destroy more valley storage than they provide flood storage. (Watkins R. 1562-5; Comp. Ex. 105°, p. 71, par. 39; Add. Fdg. 82, R. 686.)

(d) *The main river projects are likely to add to flood hazards by increasing flood heights on the river below.* The appellees must depend upon attempts to draw down the main river reservoirs in order to obtain any flood control or even partially to offset the destruction of valley storage. Prediction of the height and duration of floods is unreliable. (Woodward R. 1811.) Any attempt to draw down power storage in advance of floods will be likely to aggravate flood conditions (Watkins R. 1564-6) and in any event is impracticable. Such operation of the Wheeler Reservoir of the TVA system during the flood of 1937 increased the flood height on the Mississippi River over what it would have been had Wheeler Reservoir not existed. (Woodward R. 1807; Floyd R. 1901; Add. Fdg. 66, R. 683.)

(a) *That the achievement of flood control is neither the objective nor the result of the TVA Unified Plan appears from a comparison of its costs, physical aspects and ineffectiveness with the costs, physical aspects and the effectiveness of a genuine flood control system.* Had flood control been a primary, or even a coordinate, objective of the TVA Unified Plan, the evidence shows that a genuine flood control system could have been built which would have provided many times more dependable flood protection at a fraction of the cost of that Plan. (Add. Fdgs. 58, 60, 61, 67, R. 681-3; Kurtz R. 1200-10; Comp. Exs. 352*-359*, incl.) The greatest practicable protection in the Tennessee Valley area could have been obtained by a system of genuine flood control reservoirs for flood protection only at a cost of approximately $81,000,000, as compared to the cost of the TVA Unified Plan of $473,650,000.[1] (Kurtz R.

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[1] The significance of the facts that the structures in the TVA Unified Plan (with the exception of some minor flood control structures built on top of the power structures) are not adapted to or useful for flood control, that many times more flood control

(Continued on page 56)

1210; Comp. Ex. 361*.) This system of genuine flood control reservoirs would provide almost ten times as much flood storage in a great flood at and above Chattanooga (where practically all flood damage in the Tennessee Valley occurs) as the TVA Unified Plan (Kurtz R. 1205-7; Comp. Exs. 353, 355, 357*), and would in no way interfere with any navigation development on the Tennessee River. (Add. Fdg. 58, R. 681; Kurtz R. 1202; Kelly R. 1391.) It would provide an immeasurably greater ratio of protection to life and property. (Kurtz R. 1205-7; Comp. Exs. 353, 355, 357*.) It would provide protection on all of the principal tributaries of the Tennessee and would control 78 per cent of the drainage area above Chattanooga in comparison to 25 per cent by TVA. (Add. Fdgs. 46, 57, 60, 61, 67, R. 679, 681-3; Kurtz R. 1205-6; Kimball R. 1855.) The estimated reduction of more than 19 feet in stage of the maximum flood at Chattanooga by such a system of flood control reservoirs would be sufficient to render practicable the construction of levees at Chattanooga necessary for local protection, whereas any reduction which may result from the TVA Unified Plan is not sufficient to render practicable the construction of such levees. (Add. Fdgs. 62, 63, R. 682-3; Comp. Exs. 356, 357*; Kurtz R. 1207-9.)

The total average annual flood damages on the Tennessee River and all its tributaries (including estimated damages from a hypothetical 500-year flood) is only $1,784,000. (Comp. Ex. 105°, p. 734, col. 16.) The capitalized

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could be achieved by constructing bona fide flood control structures at a fraction of the cost of the TVA Unified Plan and that such relatively minor flood control structures as have been superimposed upon the main TVA power structures do not produce any commercial power, is not that a better flood control plan could have been designed (as the trial court erroneously assumes in disposing of this issue, Opinion R. 561) but that, with the minor exception above noted, the structures in the TVA Unified Plan are unrelated to flood control and that such minor flood control structures, as have been superimposed on the TVA power structures, produce no commercial power.

value of these flood damages at 4 per cent is less than $45,000,000. The projects of the TVA Unified Plan, costing over $473,000,000, eliminate only a portion of this average annual flood damage and permanently flood more land than is occasionally flooded in a state of nature. (Fdg. 82, R. 619.)

The TVA Unified Plan does not give adequate flood protection because TVA has spent its funds on large power reservoirs on a few tributaries rather than in building flood control reservoirs on all the important tributaries at much less cost and because all of the TVA dams have been, or are to be, built as power dams for the maximum production of power. (Crane R. 1284; Kurtz R. 1218.)

(b) *The TVA Unified Plan will not decrease the cost of the flood protection system on the Mississippi River or have any appreciable effect on the control of Mississippi floods.* The present system of flood protection and flood control on the Mississippi River below Cairo consists of levees, by-passes (floodways) and channel rectification known as the Jadwin Plan. (Comp. Exs. 409,* 410.*) It was adopted by Congress in 1928 following the great flood of 1927.[1] Recently General Markham, while Chief of Engi-

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[1] Prior to the Rivers and Harbors Act of May 15, 1928, Congress had never adopted a federal project to provide a complete levee and flood protection system along the Mississippi River from Cairo to its mouth. Previous to that time flood protection on the Mississippi had been a mixture of localized federal projects for navigation purposes and levees constructed by States and their political subdivisions. Due to inability or unwillingness to finance such work, the levee sections under state and local jurisdiction were frequently not built up to grade or properly maintained. (Okey R. 1928.) While not controverting the main facts herein stated, the appellees offered some testimony consisting, we think, of trifling and impracticable suggestions for improving or increasing the factor of safety of the Jadwin Plan without regard to the astronomically inverse relation between the cost of the suggested frills and the most optimistic prediction of benefits. The trial court refused to permit the appellants to offer any rebuttal on this point; and if any such criticism or suggestion be thought material, then the ruling of the court precluding the offer of rebuttal is plainly reversible error. (See Offers to Prove, Knappen R. 2350-60; Justin R. 2378-86; Creager R. 2402-13.)

neers, recommended certain modifications which included changes in the by-passes and channel rectification which experience had shown to be very effective in reducing flood heights within the levees. (Add. Fdg. 47, R. 679; Kelly [1] R. 1368-70, 1374; Comp. Ex. 410.*) The Jadwin Plan, as modified at the recommendation of General Markham, although not yet completed, has taken care of every flood which has occurred on the lower Mississippi since 1928, including the great flood of 1937. (Add. Fdg. 47, R. 679; Kelly R. 1379; Clemens R. 1672; Okey R. 1929.) Judge Gore further found in accordance with the manifest weight of the evidence that the completed Jadwin-Markham Plan would have been sufficient to control the Mississippi floods of 1912, 1913 and 1927 (Add. Fdg. 84, R. 687) and will be sufficient to control the maximum flood to be anticipated on the Mississippi River (Add. Fdg. 79, R. 685; Clemens R. 1672; Kelly R. 1374, 1378; Okey R. 1929, 1931) and that "the construction of the TVA Unified Plan would not avoid the necessity of completing the Jadwin-Markham Plan or decrease its cost by a single dollar." (Add. Fdg. 48, R. 679; Kelly R. 1367-8, 1374; Knappen, Offer to Prove, R. 2353.)

Even genuine flood control reservoirs on tributaries have no appreciable effect on Mississippi floods. Tributary reservoirs cannot be operated for local flood protection, requiring the release of flood water immediately after the passing of the local flood danger, and for the reduction of peak stages on a distant river into which the tributary flows, requiring the reservoirs to be kept empty regardless of local flood conditions until a dangerous stage approaches upon the main river. (Add. Fdg. 81, R. 686; Kelly R. 1372, 1371; Offers to Prove, Knappen R. 2350-1, Creager R. 2409.) Evidence in the record and official documents of which this

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[1] For statement of Colonel Kelly's experience in relation to Mississippi flood problems, see footnote, p. 25, *supra*.

Court may take judicial notice establish that for over fifty years the Chief of Engineers has held that storage reservoirs on tributary streams are of uncertain, negligible and undependable value for flood protection on the Mississippi and that their value for local flood protection, power development and other local uses far exceeds any possible value for flood protection on the Mississippi.[1] (Comp. Ex. 105°, p. 3, par. 12; Def. Ex. 32†, p. 2, par. 8; Add. Fdg. 49, R. 680.)

The record clearly shows that certain inner levees under the Jadwin-Markham Plan are designed to be overtopped when a Mississippi River flood reaches a certain height and behind those levees are provided spillways or by-passes, confined by natural elevations or outer lines of levees, to carry the flood water and reduce flood heights. (Kelly R. 1369-70; Comp. Ex. 410*; Clemens R. 1639-42; Okey R. 1906, 1931.) Such outer levees are an essential element of any system of flood protection on the lower Mississippi River. At most in peculiar, unpredictable and undependable conditions surrounding a flood falling within a narrow range of magnitude, the TVA Unified Plan might eliminate the operation of some of the floodways. This possibility is not only too remote and speculative for con-

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[1] Kimball offered Defendants' Exhibit 83* to show how it would have been possible to lower the peak of a moderate Mississippi flood occurring in 1929 (when the flood did not overtop the inner levees and had peaks of short duration and hence of small volume), by storing only a relatively small portion of the peak of the flood, if one only knew just exactly when the peak was to occur, how high it would be, and just exactly how to skim off the right amount of the peak and no more. Kimball admitted that this was purely an arithmetical computation made after the flood, which, apart from the question of the practicability of providing, or the availability of, facilities which could be operated in such a manner, required none of the prescience which would have been necessary to accomplish this astounding perfection by action worked out in advance of, or concurrently with, the flood. (Kimball R. 1876-7; Floyd R. 1901-2.)

sideration but also inconsequential in character. These floodways were not only flooded in a state of nature, but flowage rights have been or are being purchased under the Plan by the government and in any case they are only used once in ten or fifteen years with relatively small damage. (Kelly R. 1367; Clemens R. 1669-72; Okey R. 1931; Add. Fdg. 48, R. 679.)

As *General George B. Pillsbury, then Assistant Chief of Engineers,* said when testifying before the Committee on Military Affairs, House of Representatives, 74th Congress, 1st Session, with reference to any claimed flood benefits which might be anticipated from the construction of the TVA power dams, "*the effect on the Mississippi would be measured in inches and fractions of an inch in a high flood.*" And when pressed further, General Pillsbury said that *the construction of the TVA dams on the Tennessee River would not in his opinion "have an appreciable effect on the flood waters of the Mississippi.*" (Comp. Ex. 365†, p. 305.)[1]

(4) The creation of the water power by TVA is not, and will not be, an exercise of the war power.

The TVA projects constructed and proposed to be constructed on the tributaries and to some extent those upon the Tennessee River above Wilson Dam increase the firm capacity of Wilson Dam for power purposes. (Fdgs. 72, 74, 89, 90, 91, 92, R. 617-620.) The appellees contended below, and the trial court seems to have thought,

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[1] To the extent that Fdgs. 62, 63, 65, 66 (R. 613-4) state or imply that the flood protection works now nearing completion on the Mississippi are inadequate or that the TVA projects on the Tennessee River and its tributaries will have any appreciable effect on flood heights on the Mississippi, they are bare conclusions unsupported by findings of essential underlying facts or by evidence, are contrary to the clear weight of the evidence, and are based upon an erroneous conception of law. (See p. 128, *infra*.)

that the construction of Norris Dam was an exercise of the war power because it increased the firm power capacity of Wilson Dam. (Opinion R. 559.) Unless these findings may be regarded as having some bearing upon this issue, as we think they may not, there is no finding and no evidence to support any contention that the TVA Unified Plan is an exercise of the war power. The last Annual Report of TVA discloses that the maintenance of the idle nitrate plants at Wilson Dam is the only alleged national defense activity of TVA. (Def. Ex. 154°, p. 108.)

The entire amount of power produced or to be produced by TVA (except a negligible quantity used for the manufacture of fertilizer at Wilson Dam and presumably temporarily for dam construction (Karr R. 2222; Def. Ex. 147)) is to be transmitted, distributed and sold *for domestic, commercial and industrial uses in displacement of the facilities and businesses of the appellants and other existing utilities.* (See pp. 86-89, *infra.*) This does not result in any net increase in the electric facilities or power supply of the nation.

D. THE EXTENT, LOCATION AND NATURE OF APPELLANTS' PROPERTIES AND BUSINESSES.

The appellants are 16 public utility corporations engaged in supplying electricity to the public in territories in which the TVA is offering, or upon the completion of the TVA Unified Plan will offer, electricity for sale in quantities unlimited in relation to the available market. All, or a substantial part, of the service or market area of each appellant lies within 250 miles of the electric grid system or power pool which will be created under the TVA Unified Plan—a plan which is only a stage in the hydroelectric development authorized by the statute. (See Maps Comp. Exs. 7,* 12,* 27,* 29,* 33,* 37,* 41,* 45,* 49,* 74,* 82,* 89,* 101,* 327*; Fdgs. 1, 6-23, R. 585-598.) The appel-

lants have investments in property devoted to public service of more than $600,000,000. They have securities outstanding, exclusive of common stock, in the amount of more than $400,000,000. (Fdgs. 6-23, R. 585-598.) They have 11,000 miles of transmission lines and approximately 22,000 miles of distribution lines. They have more than 750,000 customers in 2650 communities. They sold approximately 5,000,000,000 kilowatt-hours of electricity in 1936. Approximately 75 per cent of their sales in kilowatt-hours are made to industrial consumers. They have more than 16,000 employees. In 1937 they paid approximately $16,000,000 in taxes to Federal, State, County and other local governments.[1]

The States in which they are rendering electric service are Tennessee, Mississippi, Alabama, Georgia, North Carolina, South Carolina, Virginia, West Virginia and Kentucky, which include all of the States of which any part lies in the Tennessee River basin. (Fdgs. 6-23, R. 585-598; Comp. Ex. 327.*) They are all engaged in the *local intrastate business* of distributing electricity, *and each is subject to State regulation as to its rates and service.* (Fdgs. 1, 26, R. 585, 599; Comp. Ex. 2, R. 2450.) Each of the appellants maintains and operates its utility system and facilities under State franchises granted pursuant to regulatory statutes of the State or States in which it carries on its business. (Fdgs. 1, 6-23, R. 585-598; Comp. Ex. 2, R. 2450.) The privilege of constructing, maintaining and operating such facilities has been granted to each of appellants subject to numerous restrictions, obligations and public duties imposed by State statute. (For illustration, see App. pp. 39-46.) Each of appellants also holds franchises (conceded for the purpose of this suit to be nonexclu-

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[1] Fdgs. 6-23, 25 (R. 585-599); Comp. Exs. 6, 10, 15, 17, 20, 23, 24, 28, 30, 31, 35, 36, 38, 40, 46, 47, 48, 55-60, 67, 68, 69, 73, 76, 80, 81, 84, 85, 86, 95, 96, 97, 100, 102, 104, 500.

sive) for the distribution and sale of electric energy within the corporate limits of the various municipalities and, in some instances, within the counties where it operates. (Fdg. 28, R. 599; Comp. Ex. 3, R. 2453.)

The businesses of the appellants have been built up over a long period of years.[1] Their facilities have been developed to meet the needs of the particular markets which they respectively serve. In that process of development, as illustrated by Complainants' Exhibits 54* and 336*, the properties of each of the appellants have become integrated units so that the loss of any part of their respective markets would seriously affect the economy and efficiency of the service to their remaining markets. (R. 830; 1106-1108.) Many of the appellants operate as adjuncts to their electric businesses such enterprises as transportation systems, water systems, ice plants and telephone systems. For many years these businesses have been operated under the same management with the electric operations as a single operation and the severance of the electric business from such other businesses would have an adverse effect upon such appellant. (Fdgs. 6, 8, 10, 11, 20, 21, 22, R. 585-597.)

Each of the appellants has played an active and important part in promoting and developing the economic growth of the territory which it serves. (Add. Fdg. 124, R. 708; Stanley R. 934-940;[2] Comp. Ex. 182*.) Not one of these companies has ever failed to supply the demands and requirements of the markets in which it operates. (Fdg. 116, R. 627.) The facilities of the appellants have been designed and constructed to permit extensions and provide

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[1] Fdgs. 6-23, R. 585-598; Comp. Exs. 10, 15, 23, 28, 30, 35, 38, 46, 55-63 inclusive, 76, 84, 85, 96, 104; R. 771-772, 787-788, 809, 822, 829-830, 846, 856, 885-886, 934-940.

[2] After part of this line of testimony had been given, the testimony concerning the Alabama Power Company was at the suggestion of the court accepted as typical. (R. 936, 965, 972.)

for future growth in business (Fdgs. 6, 8, 13, 16, R. 586-593), and each of the appellants has aggressively sought to stimulate and has stimulated the demand for and use of electric power in the territory which it serves both on the part of existing customers and on the part of potential customers. (Add. Fdgs. 124-127, R. 708-709; R. 772-3, 788, 796, 856, 934-940; Comp. Exs. 182*, 183*, 184*.) Each has maintained a department with the duty, among other things, of securing the location of new industries and businesses in its territory. (Add. Fdg. 125, R. 708; 935-936; Comp. Ex. 182*; R. 773, 778.)

The evidence is uncontradicted that in the territory served by the appellants there is no substantial unattached electric power demand. (Fdgs. 117-119, R. 627-8.) While there are a few industrial plants which still manufacture their own power, most of these do so because of the fact that they require steam in processing operations or because they have fuel by-products from which power may be produced at little or no cost, and not because central station electric service is not available. (Fdg. 117, R. 627-8.) The only unattached domestic demand for electric service beyond the reach of existing lines of the appellants, is of such a character,—for the most part widely scattered farm dwellings,—as not to justify line extensions at the present time, either under minimum requirements of applicable State regulations or *under the minimum requirements adopted by TVA in its rural development program.* (Add. Fdg. 106, R. 699-700; R. 978, 991, 1007, 1016, 1021, 1027, 1035, 1053, 835, 842; Offer to Prove R. 1001.) However, rural business is a comparatively new and gradually growing field; and has been and is assiduously cultivated by the several appellants. (Add. Fdg. 129, R. 709; 937-940; Comp. Ex. 184*.)

E. REVIEW OF THE FACTS RELATING TO THE METHOD OF DISPOSAL OF THE WATER POWER AFTER CONVERSION INTO ELECTRICITY.

(1) The execution of the TVA Unified Plan will establish the United States in the electric utility business with a virtual monopoly throughout the State of Tennessee and large parts of eight neighboring States.

The TVA Unified Plan includes ten high dams and hydro-electric plants [1] (constructed and to be constructed) all of which are, or will be, interconnected by high tension, heavy duty transmission lines so as to create one vast grid system or power pool. They will also be interconnected with Wilson Dam so as to bring into the TVA power pool not only the capacity of Wilson Dam as constructed under the National Defense Act of 1916, but also the increased capacity to be provided at Wilson Dam under the TVA Unified Plan. (R. 2124; Add. Fdg. 107, R. 700; Comp. Ex. 116†, p. 477; Fdgs. 179, 180, R. 640.) This TVA power pool will extend geographically from Hiwassee and Fontana in North Carolina on the *east* to the Mississippi River on the *west,* and from Guntersville and Wheeler in northern Alabama on the *south* to Gilbertsville near the Ohio River and Norris near the boundaries of Kentucky, West Virginia and Virginia on the *north.* (Add. Fdg. 107, R. 700; Comp. Ex. 327*; Def. Exs. 136A*, 137*.) The court excluded as immaterial an official TVA Press Release (Comp. Ex. 834, R. 3763, 3766, excluded), in which the appellees described their power development as follows:

> "The TVA *has under way,* as you know, a comprehensive program for the development of the power resource(s) of the Tennessee River and its tributaries.

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[1] Gilbertsville, Pickwick Landing, Wheeler, Guntersville, Chickamauga, Watts Bar, Coulter Shoals, Norris, Hiwassee and Fontana.

No more ambitious program of hydro-electric development has ever been actually undertaken in this country."

"We *are making provision* for one of the largest hydro-electric developments in the world, with a potential three million horse power available. We are expending, and expect to expend, millions upon millions of dollars in construction activities, *all looking toward the development of more and more power.*"

This grid system or power pool may be tapped at any point so as to draw upon the whole reservoir of power (Add. Fdg. 107, R. 700; Moreland R. 1452; Thomas R. 2125), and consequently the area of potential distribution is much greater than the area of the grid system. In the present state of the art it is commercially feasible to transmit electricity for approximately 250 miles, so that it will be practicable to transmit the electricity to be generated by the TVA to any point within 250 miles of any of the dams included in such electric grid system or power pool. (Add. Fdg. 110, R. 700; Sporn R. 1260; Moreland R. 1452; Dr. A. E. Morgan, Comp. Exs. 109†, p. 187, R. 2641; 114†, p. 525, R. 2685.) While economy would suggest that the electricity should be disposed of as close to the grid system or power pool as possible in so far as the market is able to absorb the power, it is plain that any area within a radius of 250 miles of any such dams is threatened with invasion by TVA so long as any of the TVA power remains unabsorbed. (Moreland R. 1452-3, Offer to Prove, R. 1483-5.)

Even in an extreme low water year, as repeatedly reported to the Congress by the TVA, this hydro-electric system will have a firm capacity of 660,000 kilowatts [1] at 100

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[1] Some of the findings submitted by appellees and signed verbatim by the majority of the trial court (Fdgs. 38, 40, 43, 230, R. 602-3, 650) omit reference to the Fontana project and may be urged as implying that Fontana is not part of the officially announced TVA construction program which because of

(Continued on page 67)

per cent load factor and of 1,100,000 kilowatts at 60 per cent load factor,[1] and will be capable of producing 5,780,000,000 kilowatt-hours of firm energy and 1,880,000,000 kilowatt-hours of secondary energy annually. (Add. Fdgs. 7, 11, 12, 13, 107, R. 672-3, 700; Kurtz R. 1215; Comp. Exs. 328°, p. 62; 115†, p. 279, R. 2697.) In a typical water year this huge federal utility will be capable of producing 10,000,000,000 kilowatt hours of energy per year (Add. Fdg. 14, R. 674; Kurtz R. 1216-17), and the uncontradicted estimate is that there will actually be produced for sale in a typical water year 7,670,000,000 kilowatt-hours of electrical energy. (Moreland R. 1449; Comp. Ex. 509, R. 3350.) This

[1] The typical load factor of large public utilities operating in the area where TVA has commenced and plans to expand its business is 60 per cent. (Kurtz R. 1212; Comp. Ex. 116†, pp. 402, 468, 515, R. 2726A.)

(Continued from page 66)

its very magnitude covers several years and involves the initiation of projects on a staggered construction schedule. The absence of any basis for such a contention is sufficiently shown by the fact that the Fontana project was again included with definite dates for initiation and conclusion of construction in the construction schedule officially reported by TVA to the Congress in the midst of the trial of this suit. (Def. Ex. 153†, p. 948; Add. Fdg. 8, R. 673.)

Another finding similarly submitted by the appellees and signed verbatim by the majority of the court (Fdg. 94, R. 621) purports to set forth the firm power capacity of certain TVA dams (not mentioning Fontana and Gilbertsville) without including the power capacity which will be added to the system by the Fontana and Gilbertsville projects, and without including a part of the power installations which the TVA Unified Plan provides will be added to the power installations that are now under way at other dams. Such computations, standing alone, in a suit to prevent irreparable damage from threatened acts are both insufficient and irrelevant. Except to the extent that such findings do have some relation as representing an admittedly incomplete stage of this federal development, the majority of the trial court failed or refused to make any findings upon the facts stated in this sub-section and essential to the determination of the scope of the enterprise, its effect on the reserved powers of the States and the rights of the people and the extent of the competition with which the appellants are threatened.

is exclusive of steam generating plants now owned or which may be constructed or acquired under the Act. TVA has estimated that the cost of the TVA Unified Plan, excluding Wilson Dam, will be $473,000,000 (Add. Fdg. 15, R. 674; Comp. Ex. 116†, p. 403, R. 2700A), and that the annual gross income from its power operations will be $23,000,000. (Comp. Ex. 115†, p. 279, R. 2697.) The foregoing estimate of cost includes nothing for the huge transmission system which will be necessary to market this power and according to the estimate of Professor Moreland, which was excluded, this would amount to more than $116,000,000. (Comp. Ex. 505, R. 3344, excluded.)

Something of the mammoth size of the enterprise in which the United States is attempting to embark under the statute even when measured by the TVA Unified Plan (which is far less than the sweep of the statute and includes none of the power to be developed at additional sites for which TVA has already requested appropriations for exploratory work) appears from the following facts. In 1936 the total amount of electricity, *both firm and secondary*, generated for public use by public utilities was only a little over 1,000,000,000 kilowatt-hours *in the entire State of Tennessee*, only about 3,700,000,000 kilowatt-hours *in the entire States of Tennessee, Alabama and Mississippi*, and only about 9,300,000,000 kilowatt-hours *in the entire States of Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama and Mississippi*,—the seven States of which any part lies in the Tennessee River basin. (Add. Fdg. 108, R. 700; Newton R. 1418-19; Comp. Ex. 486, R. 3329; Moreland R. 1451.) Large parts of five of these seven States lie more than 250 miles from the great electric grid system or power pool which will be created by the TVA Unified Plan, and hence beyond the area of practical distribution of the TVA power. (Comp. Ex. 327*.)

Further, in 1936 the *total sales* of electricity by utilities for consumption within the area lying within 100 miles

of any of the dams included in the TVA power system were only 3,660,000,000 kilowatt-hours. The *total sales* in the same year within the area lying within 150 miles of any of such dams were only 7,160,000,000 kilowatt-hours. (Add. Fdg. 109, R. 700; Comp. Ex. 327*; Moreland R. 1451; Comp. Ex. 499.) These sales in each instance *include both firm and secondary power.*

Something further of the size of the TVA electric system resulting from the TVA Unified Plan appears from the following facts. The present transmission system of the TVA Unified Plan consists of approximately 1500 miles of transmission lines and 69 substations purchased, constructed, under construction or authorized for construction.[1] (Hapgood R. 2146; Def. Ex. 136; Def. Ex. 153†, pp. 987-991; Fdg. 185, R. 641; Add. Fdg. 86, R. 687.) *This, however, is only about 10 per cent of the transmission lines which will be necessary to complete the vast federal electrical system included in the TVA plan.* The testimony is uncontradicted that a transmission system of from 12,000 to 15,000 miles will be required to market the electrical energy which will be produced by the current TVA Unified Plan. (Add. Fdg. 112, R. 701; Moreland[2] R. 1453.) In comparison, the total mileage of transmission lines of the 18 companies, which were parties to this suit at the time of trial, is only approximately 11,000 miles; and this figure includes their transmission lines in large areas lying more than 250 miles from the TVA dams and hence beyond the range of practical transmission. (Moreland R. 1453-4;

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[1] As at October 15, 1937, the total mileage of all kinds of lines purchased, constructed, under construction and authorized for construction by TVA was 4827. (Def. Ex. 136; Fdgs. 170, 174, 175, 179, 183, 187, 188, 194, R. 638-642; Hapgood R. 2160.)

[2] Edward L. Moreland: Senior Member, Jackson & Moreland, Consulting Engineers, Boston and New York; Head of the Electrical Engineering Department of Massachusetts Institute of Technology. (R. 1447-9.)

Comp. Exs. 500, 10, 15, 28, 30, 35, 38, 47, 58, 59, 60, 84, 85, 96, 104; Fdgs. 6-23, R. 585-598.) The total mileage of transmission lines (apart from TVA transmission lines) in the entire State of Tennessee is only a little over 2,000 miles. (Comp. Ex. 500, R. 3333.)

(2) The appellees have adopted and are carrying out a systematic program to take over the markets and businesses of the appellants by direct inducements offered to the consumers of electricity throughout the territory served by appellants.

The first step taken by the appellees to acquire a market for the tremendous pool of power to be developed under the TVA Act was the adoption and announcement, on August 25, 1933, of the TVA Power Policy. This Power Policy was reported to Congress in the First Annual Report of TVA (Comp. Ex. 113°, pp. 22-24, R. 2681-3), and is an administrative interpretation of the act as well as a definite declaration of the purpose of the appellees to engage in the electric power business and to bring about public ownership of distribution facilities for the distribution of TVA power.[1]

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[1] This Power Policy is set forth at length in Comp. Ex. 113° and in Add. Fdg. 90. (R. 688-9.) The trial court excluded, as irrelevant, incompetent and immaterial, an authenticated official TVA Press Release by which this Power Policy and the program for the TVA electric power business was publicized throughout the territory in which appellants operated. (Comp. Ex. 633, excluded, R. 3487.) The trial court subsequently received a resolution of the TVA Board (Def. Ex. 29, R. 4061) purporting to rescind this Power Policy but such resolution or purported rescission was never reported to the Congress nor disclosed to the public until it was offered in the trial of this cause; and the evidence clearly establishes that the program set forth in the Power Policy as originally announced, although not a complete statement of all of the things that TVA has sought to accomplish, has been, and is being aggressively pursued. Nevertheless the trial court, contrary to all of the facts adduced at the trial, found that this Power Policy was never put into effect. (Fdg. 215, R. 647.) For discussion of additional material evidence on this subject excluded by the court, see pp. 219-225, 229-233, *infra*.

Immediately following the announcement of its Power Policy and without any determination of cost factors, which were then indeed unascertainable, on September 14, 1933, the appellees adopted and announced the TVA rate schedules, including a schedule of wholesale rates to be charged municipalities and cooperatives[1] and a system of schedules embodying retail rates to be collected by municipal or cooperative "distributors" and to be incorporated in all contracts made by TVA with such distributors. (Add. Fdg. 111, R. 701; Comp. Ex. 113°, p. 34; Comp. Ex. 634, excluded, R. 3490.) Separate schedules of rates to be collected by such distributors were prescribed by TVA for residential customers, commercial customers and industrial customers.

While the trial court excluded evidence to show that these rate schedules to be charged by TVA distributors were and are between 25 and 60 per cent lower than the comparable rates fixed by the State regulatory bodies in the regulation of the businesses of the appellants (Offers to Prove, R. 949, 972; Comp. Exs. 192, 198, 339, excluded, R. 3002, 3007, 3073), *counsel for the appellees conceded at the trial that TVA rates, in all classes of service, are "substantially lower" than existing rates of any of the appellants.* (Fdgs. 120-123, R. 628; R. 943-4, 946.) The effect, and the manifest purpose, of the adoption and the repeated publication of these rates throughout the Tennessee Valley area long in advance of the construction of the dams, before plans or cost estimates could have been made and even before the number or location of any dams except Norris and Wheeler had been determined, was to promote a general demand for TVA power, to invite and solicit the cus-

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[1] These cooperatives, which are non-profit associations, are sometimes designated as "Electric Membership Corporations" or "Electric Power Associations."

tomers and businesses of appellants and to promote public ownership of local electric facilities.

These schedules of rates to be collected by TVA distributors have been embodied in the TVA contracts,[1] the standard provisions of which were adopted and approved by the directors as early as October 16, 1933. (Comp. Ex. 575, R. 3389.) Such contracts fix the retail price to the consumer. (Add. Fdg. 96, R. 692. See "Resale rates" in any TVA contract, R. 2731.) They are in the nature of franchises granted by TVA to distribute TVA power subject to regulations and restrictions which make the distributing agent a mere bill collector for TVA.[2] They are the type of contract which a manufacturer of a generally advertised product might make with a territorial agent. (For a discussion of the provisions of the contracts, see pp. 206-209, *infra*.) The TVA contracts subsequently made with some of its distributors even go so far as specifically to require TVA to render without compensation accounting, legal and engineering assistance (Comp. Exs. 125-127, 928-930, R. 2857, 2858, 3976, 3981, 3982), and to foster and promote the increased use of electricity within the municipality.[3]

After adopting this Power Policy and the rate schedules and contract provisions, which form the basis of the TVA activities in acquiring the markets served by the appellants, the appellees proceeded to give them the widest

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[1] These contracts are all in evidence. (Comp. Exs. 117-145, 196, 224, R. 2729-2888, 3004, 3026; Def. Exs. 144, 154°.) The terms of the contracts between TVA and municipalities and cooperatives are summarized in Add. Fdgs. 97-100. (R. 693.)

[2] In some instances even this function is performed by TVA under contracts to operate the property. (Comp. Exs. 176-180, R. 2938-50.)

[3] Comp. Ex. 117, contracts with Athens, R. 2732, Muscle Shoals, R. 2741, Pulaski, R. 2741, Amory, R. 2742, Okolona, R. 2749, New Albany, R. 2760; Comp. Exs. 126, R. 2857; 127, R. 2858; 928, R. 3975; 929, R. 3980.

possible publicity. A Publicity Bureau, an official department of the TVA, was created in 1933. (Comp. Ex. 113°, p. 56; Comp. Ex. 364, excluded, pp. 1982, 2022, R. 3101, 3103.) The court excluded evidence showing that through this department TVA has continuously issued "Press Releases" describing its power activities, its rates, the rapid expansion of its generating and transmission system, the acquisition of municipal and other customers, the success of these operations, the advantages of the uses of cheap electric power, the savings to consumers of TVA electricity and the alleged unreasonableness of state-regulated rates of private utilities. The effect of such Press Releases, and it is fair to say the manifest intention of them, has been to destroy the going businesses of the appellants by representing that TVA rates, fixed even without knowledge of TVA costs, constituted fair wholesale and retail rates and that the state-regulated rates of appellants and other privately-owned utilities are exorbitant and excessive.[1] This ruling of the court is discussed at pp. 219-225, *infra*.

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[1] These TVA Press Releases are Comp. Exs., excluded, 633, 634, 779-902 incl., R. 1510, 3673-3925. The TVA power activities are described in Comp. Exs., excluded, 633, 789, 790, 797, 800, 805, 809-11, 824, 845, 861, 884, 780, 786, 802, 807, 808, 816, 817, 820, 823, 825, 827-30, 832, 833, 835-41, 853, 857, 866, 880, 882, 886-89, 892, 902; the TVA rates in Comp. Exs., excluded, 634, 801, 817, 865, 891, 800, 803, 813, 839, 846-8, 859, 863, 873, 883, 901; the rapid expansion of the TVA generating and transmission system in Comp. Exs., excluded, 788, 812-14, 831, 852, 856, 878, 897, 781, 784, 785, 791 806, 849-51, 854, 855, 863, 864, 867, 870, 885, 890, 893, 896, 898-900; the acquisition of municipal and other customers and success of those operations in Comp. Exs., excluded, 790, 796, 821, 826, 874, 875, 881, 794, 804, 818, 819, 858, 869, 871; and the advantages of cheap TVA electricity in Comp. Exs., excluded, 793, 803, 823, 834, 879, 842, 860, 874-6, 891, 894, 901. TVA Press Releases also represent that TVA rates include all legitimate costs and that the state-regulated rates of private utilities are excessive and the result of financial abuses and mismanagement. (Comp. Exs., excluded, 790, 799, 800, 815, 839, 843, 891, 842, 862, 868.)

In addition to this publicity with which appellees have filled the newspapers throughout the entire area and beyond, the appellees have published and widely distributed among customers of appellants illustrated booklets of TVA activities and rates,[1] such as Comp. Ex. 188, R. 2969, and Comp. Exs., excluded, 187°, 189, R. 2977, and 190 R. 2987; have circulated for use at public meetings, without charge, motion picture films illustrating TVA rural electrification activities (Comp. Ex. 918, R. 3936); have prepared and distributed without charge complete sets of blanks to be used in making rural surveys, including forms of application agreements for use of TVA power, (Comp. Ex. 918, R. 3934; and Comp. Exs., excluded, 391, 392 and 393) and as appellants *offered to show*, have prepared material for hundreds of magazine articles, as illustrated by Comp. Ex. 635, excluded, R. 3493-3508.

Appellants further *offered to show* that supplementing these activities, the TVA directors, department heads and other TVA representatives as part of their duties, have made public addresses and radio broadcasts advocating municipal ownership of electric distribution facilities and explaining TVA contracts, rates and sales policies, and have assisted in the organization and promotion of TVA rural cooperative associations. (Add. Fdg. 102, R. 698; see testimony and Offers to Prove, R. 1321-3, 1395-7, 1441-2,

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[1] A fair sample of this is found in a widely distributed advertising pamphlet entitled "TVA Electricity Rates": "*Why TVA Electric Rates Are Low.* The TVA in its electric operations submits to all legitimate charges to which a private utility would be subjected. Its success in making available cheap electricity lies in the cost assumed by some private utilities which TVA does not pay. A few of these may be mentioned: The attempt to pay dividends on the $1,400,000,000 of write-ups exposed by the Federal Trade Commission; expensive campaigns to influence legislation; excessive fees to affiliated engineering and management companies, as well as the tremendous salaries paid to officers of both the holding companies and the operating companies." (Comp. Ex. 189, excluded, R. 2983.)

1327-8, 1324-6, 1358, 1359-60, 1439-40, 1360-1, 1361-2, 1086-8; Comp. Exs., excluded, 390, 817, 879, R. 3173, 3737, 3867.) These activities have constituted a continuous and systematic campaign. All testimony with reference to these activities was excluded by the trial court in a ruling which is discussed at pp. 229-233, *infra.*

In the promotion of their electric power business in rural areas the appellees, in many instances, have made surveys and constructed and operated distribution lines, the customers being later organized into a membership corporation to take over the title to such property and to purchase power under a standard TVA power contract. (Fdg. 134; R. 630.) In other instances purely dummy corporations have been organized by bringing so-called promoters to the TVA offices to execute contracts previously prepared. (R. 1338-9, 1344; Offer to Prove, R. 1356.) The methods employed by TVA in promoting its rural electrification development are described in its publication "The Neighborhood Plan." (Comp. Ex. 918, R. 3934.) As a result of these methods, at the time of trial TVA had contracts with eighteen membership corporations operating over 2700 miles of rural lines all of which with a few minor exceptions were constructed by TVA, the entire cost being provided from TVA funds or funds borrowed from Rural Electrification Administration,[1] (hereinafter referred to as REA). In some instances Civil Works Administration (hereinafter referred to as CWA) furnished labor for the construction of lines. (Comp. Ex. 570, R. 3382.) In all cases TVA supervises the financial, bookkeeping and engi-

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[1] For TVA financing of lines see Fdg. 194, R. 642; Fdg. 133, R. 630; Comp. Exs. 162-175 inclusive, R. 2895-2938; Def. Ex. 136, Table E, R. 4184A; for construction of lines with REA funds see Comp. Exs. 523, R. 3359; 529, R. 3360; 536, R. 3364; 537, R. 3365; 538, R. 3366; 540, R. 3367; 543, R. 3368; 545, R. 3370; 546, R. 3371; 549, R. 3372; R. 1518, 1519; 408, R. 2328; 385, excluded, R. 3158.

neering operations of such membership corporations. (Add. Fdg. 103, R. 699; Comp. Exs. 398-406 incl., R. 3201-3238.)

In the industrial field no standard rate was or has been adopted for industrial consumers such as Monsanto Chemical Company, the Aluminum Company of America, Victor Chemical Company, and other like customers with which TVA has since made long term contracts. (Comp. Ex. 118, R. 2828; Def. Ex. 154°, pp. 309, 313, 192, 302, 315.) Contracts of that type are apparently made upon the basis of whatever is necessary to take the business away from privately-owned utilities.[1]

(3) TVA has procured the cooperation and assistance of PWA and REA in financing and promoting the TVA Power Program.

The trial court made no findings on this subject. In the execution of the TVA Power Program, TVA has utilized

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[1] Something of the character of this competition is illustrated in the case of the Monsanto Chemical Company, which is now being supplied by TVA. The Monsanto Chemical Company purchased its power requirements for its phosphoric acid operations from appellant, the Alabama Power Company, the revenue from which business amounted to $387,000 per year. (R. 956.) Upon the removal of the phosphoric acid operations of such Company to Columbia, Tennessee, appellant, The Tennessee Electric Power Company, entered into negotiations with Monsanto Chemical Company to furnish it with 50,000 kilowatts of power at its Tennessee plant. After the terms of the proposed contract had been agreed upon and The Tennessee Electric Power Company had offered to secure performance by depositing $1,500,000 of its First Mortgage Bonds, the Monsanto Company declined to execute the contract (Willkie R. 1503-4; Add. Fdg. 117, R. 704) in a telegram which stated:

> "*Due to the unfortunate competitive conditions surrounding The Tennessee Electric Power Company,* our directors are unwilling to hazard a several million dollar investment whose success is entirely dependent upon the continuity of its power supply *at contract rates which we believe are insecure* without a guarantee from the Commonwealth & Southern." (Comp. Ex. 628, R. 3477.)

other agencies of the Federal Government. (Add. Fdg. 135, R. 711.) The aggregate amount which the Federal Government has contributed or agreed to contribute through the Public Works Administration (herein referred to as PWA), to municipalities for the construction of competing systems *to distribute TVA power* amounts to $13,995,883 of which $7,721,314 *represents an outright gift or subsidy.* (Def. Ex. 153†, p. 1009; Comp. Ex. 484, R. 3323, 3327.) Of all the cities having power contracts with TVA, which prior to the advent of TVA were served by one or another of the appellant companies, only two have not received financial aid from PWA, and those two were cities which already owned their distribution systems and purchased power at wholesale from one of the appellants.[1] *The TVA contracts with municipalities require the municipality to use all reasonable diligence in acquiring a distribution system by construction or purchase.* (Add. Fdg. 97, Sec. (b), R. 693; See "Acquisition of System" in any contract, R. 2803.)

At the time of the trial there were twelve other cities in Alabama, Mississippi and Tennessee, all being served by one or another of the appellant companies, which had voted to acquire municipal distribution systems for distribution of TVA power and for that purpose had been granted loans and gifts by PWA. (Add. Fdg. 114, R. 702; Comp. Ex. 484, R. 3322.) Although TVA lists no contracts with any of these twelve cities, obviously PWA had received assurances from TVA which it regarded as sufficient basis for making these loans and grants. PWA announced that these loans and grants were made for the construction of distribution systems to distribute TVA power; and the projects include no generating facilities. (Comp. Exs. 484, R. 3322;

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[1] Add. Fdg. 114, R. 701-2; Comp. Ex. 484. R. 3322; Fdg. 205, R. 645; Comp. Exs. 420, R. 3251; 422, R. 3270; 427, R. 3276; 438, R. 3283; 441, R. 3286; 460, R. 3305; 471, R. 3314, 473, R. 3315; 475, R. 3315; 478, R. 3316; and 466, excluded, R. 3312.

485†.) In the case of Bessemer and Tarrant City, Alabama, PWA, acting in cooperation with TVA, refused to approve their applications to include a steam generating plant in the municipal projects and required these cities to eliminate generating facilities from their projects and take TVA power as a condition of obtaining the federal loan and grant. (Comp. Exs. 442, 444, 449, R. 3286, 3290, 3300; Comp. Ex. 446, excluded, R. 3295.)

The aggregate amount which the Federal Government through REA has loaned or agreed to lend to non-profit membership corporations for distribution systems *for use of TVA power* at the date of the trial exceeded $1,400,000.[1] Director Lilienthal in the Hearings on the Second Deficiency Appropriation Bill for 1937 (Comp. Ex. 116†, p. 485, R. 2720) stated: "*We have a very cooperative arrangement with REA* by which they are furnishing by far the bulk of the financing through this area." (See also Dr. A. E. Morgan, Comp. Ex. 116†, p. 614; Add. Fdg. 135, R. 711.)

Appellants in addition *offered to prove* by correspondence between TVA, PWA and REA and by PWA and REA press releases and other documentary evidence[2] that the activities of these federal agencies in assisting in the development of a market for TVA power were an integral part of a definite National Power Policy to promote municipal ownership and regulate the electric utility industry, and the ruling of the trial court in excluding such proof is discussed at pp. 233-235, *infra*.

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[1] Comp. Exs. 536, R. 3364; 537, R. 3365; 538, R. 3366; 540, R. 3367; 543, R. 3368; 545, R. 3370; 546, R. 3371; 549, R. 3372; 550, R. 3372; 551, R. 3373; 552, R. 3374; and 565, R. 3378.

[2] R. 1402-8, 1515-16; Comp. Exs., excluded, 418, R. 3246; 428, R. 3276; 429, R. 3278; 446-450 incl., R. 3295-3301; 461-465 incl., R. 3305-3312; 469, R. 3314; 480-83, R. 3316-21; 637-648 incl., R. 3509-3554; 683-685 incl., R. 3599-3605; 385, R. 3158; 770-773 incl., R. 3659-3663; 776-778 incl., R. 3667-3673.

The alliance and cooperation between TVA, PWA and REA, disclosed by this evidence, represent a concentration of federal support to the promotion of public ownership, the federal control and regulation of electric power operations, the promotion of the power business of TVA and the destruction of the businesses of the appellants.

(4) In executing their Power Program, the appellees have contracted to sell and are now offering for sale electric power and electric service at rates far below the actual cost.

The trial court made no findings on this subject and excluded as immaterial the appellants' offer to prove that without capitalizing operating losses and deficits during the period of construction and business development, and assuming the sale of all the power to be produced by TVA under the TVA Unified Plan at TVA rates, the TVA "yardstick rates" will result in an annual operating deficit of more than $9,000,000 without taking into consideration either the cost of, or the revenue derived from, power produced at Wilson Dam at its maximum capacity as constructed under the National Defense Act of 1916.[1] (See Moreland, Offer to Prove, R. 1463-70 and statistical data in Comp. Exs. 504, 505, 506, excluded, R. 3343-3347.) This operating deficit amounts to approximately 39% of the

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[1] This loss is based upon actual out-of-pocket expense and does not take into consideration the subsidies and advantages such as substantial immunity from taxation, use of franking privileges and use of Government credit. No figures are available for the extent of many of these omissions from the "yardstick rates" which would be necessary to make them comparable to utility operation, but appellants offered to prove that the items for which figures are available would increase the annual operating loss to $19,516,000. The loans or gifts of federal funds by PWA and REA to wholesale contractors for the distribution of TVA power are likewise not considered. (Comp. Ex. 506, excluded, R. 3346 and Moreland, Offer to Prove, R. 1463-70.)

ultimate maximum annual revenue, which means that nearly 30% of the actual cost of every kilowatt-hour of power sold must be paid for by taxation and not by the consumers. For a discussion of the relevency of this evidence and its exclusion by the trial court, see pages 236-237, *infra.*

Whether purposeful or inadvertent, the effect of this is to accelerate the establishment and expansion of the TVA power business, the establishment of the policies and purposes of the TVA Act and the elimination of appellants from the field.

(5) Under the TVA Unified Plan, TVA will regulate its own rates, the rates of distributors of TVA power and all other local intrastate electric rates, including those of appellants.

TVA regulates and fixes its own rates. (Add. Fdg. 132, R. 710; Comp. Exs. 322-325; see also Conclusion 40, R. 661; and pp. 163-164, *infra.*) It also regulates the retail rates of distributors of TVA power for terms of 20 to 30 years. (See "Terms of contract," "Resale rates" and "Schedules of rates" in any TVA contract with its distributors, R. 2731; 2733-5; 2751-5; Add. Fdgs. 96, 97(e), 100(e), R. 692, 693, 697; Fdgs. 121, 221, R. 628, 648; also pp. 204-209, *infra.*) One finding of the majority of the trial court, in the nature of a conclusion of law, seems to imply a view that the fixing and control of retail rates by TVA over periods of from 20 to 30 years (in accordance with the TVA Act) through a system of contracts, is not a regulation of such rates. (Fdg. 222, R. 649; cf. Conclusion 45, R. 661.) However, that these retail rates are fixed and controlled by TVA is plain on the face of the contracts. The regulation of such rates is discussed at pages 163-175, *infra.*

However, the purpose and effect of the TVA Unified Plan is not limited to the regulation of local electric rates of distributors of TVA power but, like the TVA Act, is

designed to regulate, and in fact will regulate, the local electric rates of other utilities, including the appellants.[1] Under the TVA Unified Plan, TVA will, *in an extreme low water year,* generate for sale more than twice as much electricity, and *in an average water year* nearly three times as much electricity, as was sold in 1936 by utilities in the entire area lying within 100 miles of any of the dams included in the TVA power system. *In an extreme low water year,* it will generate for sale substantially more electricity than was sold by all utilities in 1936 w thin an area lying within 150 miles of any of such dams. (See pp. 66-69, *supra.*) This electricity will be offered for sale at rates "substantially below" the state-regulated rates of appellants in this limited market now adequately served. (Moreland R. 1451-3; Fdgs. 116-119, R. 627-8.)

While the trial court excluded as immaterial evidence offered through experts in the operation of utilities that the operation of the TVA Unified Plan will in fact regulate the rates of the appellants (Offers to Prove, Lefferson R. 1412-16; Newton R. 1419-22; Stanley R. 949-50), the uncontroverted facts above stated show that the appellants will be forced to fix their rates at the level established from time to time by TVA. (Opinion R. 555; Ford R. 1127;

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[1] This is in strict conformity with the appellees' interpretation of the TVA Act. This interpretation of the Act and purpose of the TVA Unified Plan has been repeatedly stated by the appellees in official Press Releases, excluded by the trial court as immaterial. Thus in an official TVA Press Release, the appellees stated in the words of Director Lilienthal: *"The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public utilities not by quasi-judicial commissions, but by competition."* (Comp. Ex. 815, excluded, R. 3732.) For similar interpretations of the Act by the appellees and statements of their purpose in administering the Act, see Comp. Ex. 799, R. 3698; Comp. Ex. 796, R. 3691; Comp. Ex. 800, R. 3703; Comp. Ex. 790, R. 3683, all similarly excluded. Also see *TVA Directors' Minutes,* Comp. Ex. 708, excluded, R. 3640.

see pp. 163-175, 237, *infra*.) However, the trial court declined to make any finding of fact on this point, although requested to do so by appellants (Proposed Fdg. X E 20, R. 462), excluded competent and relevant evidence on the subject (see pp. 236-237, *infra*) and then concluded as a matter of law that there will be no regulation of the rates or businesses of the appellants or of other private utilities. (Conclusion 40, R. 661.)

(6) The execution of the TVA Unified Plan will supersede the State regulation of local electric rates and service.

The only findings of the trial court which in any way bear upon this issue are Nos. 26 and 27 (R. 599) which, so far as relevant, sustain the statement in the title of this subsection. (R. 559.)

As to regulation of rates: In previous sections it has been pointed out that, under the operation of the TVA Unified Plan, TVA will regulate its own rates, the rates of distributors of TVA power and the rates of other utilities, including appellants, operating in the States through which the huge TVA electric power system will extend. (See pp. 80-82, *supra*.)[1] Thus State regulation of local intrastate electric rates will be displaced by TVA regulation of such rates.

As to extensions of service: In the States of Tennessee, Alabama, and other States in which one or another of

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[1] The trial court excluded as irrelevant evidence that TVA has expressly denied the power of a State to exercise any control over any of its rates or rate policies. This evidence consisted of a written statement filed with the Alabama Public Service Commission and signed by all three directors of TVA, in which TVA declined to submit for examination its cost books and records and stated: "*And since your Commission cannot directly determine the rates and rate policies of this national agency, it should not try to do this indirectly, by calling for testimony concerning matters clearly beyond your control.*" (Comp. Ex. 884, R. 3880-1, excluded.)

the appellant companies are now operating, the State Commissions have adopted regulations applicable to such appellants fixing the minimum requirements under which they may be compelled to construct line extensions to give service in areas not theretofore served. (Add. Fdg. 131, R. 710; Comp. Ex. 185, R. 2961; R. 835; 939; 972.) As pointed out at pages 88-89, *infra*, the result of actual and threatened competition by TVA is that privately owned public utilities in this area are unable to borrow money at reasonable interest rates, if at all, either for the purpose of refunding existing obligations or for the purpose of constructing new facilities to improve or extend existing service. This means the nullification in fact of State power to require or compel service extensions and plant additions or improvements. (Add. Fdg. 133,[1] R. 710.)

As to quality and continuity of service: The operation of the electric power businesses of the appellants has involved (and still involves) the development of new markets and the extension of service throughout the areas in which they have the right and the duty to serve under State franchises. (Add. Fdgs. 124-129, R. 708-9; Stanley R. 934-941; Comp. Exs. 182,* 183,* 184*; R. 772, 788.) This has required, on the part of each of the appellants, constant study of system planning, regular surveys of possible line extensions, promotion of new industries, continuous service to industrial, commercial and domestic consumers, promotion of electric power demand by sales of electric appliances, study and instruction in new uses for electric power by all classes of consumers, and necessarily an understanding of

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[1] "The competitive activities of TVA in making it impossible for the complainant companies to reduce their fixed charges through refinancing and in making it impossible for them to procure new capital *interfere with and limit the power* of the State regulatory bodies to require the complainant companies to reduce their rates and extend or improve their facilities and service."

the local conditions in the territory being served.[1] The performance of all of these functions requires the development and maintenance of a large and efficient organization. These functions have been carried on under State supervision and have contributed to the economic growth and development of the States themselves.

The elimination of these functions is an inescapable consequence of the facts stated at pp. 86-89, *infra*. As there pointed out, the City of Knoxville *was* only a part of the market served by the Tennessee Public Service Company. The City of Memphis is only a part of the market served by the Memphis Power & Light Company. The City of Chattanooga is only a part of the market served by The Tennessee Electric Power Company. The execution of the TVA Unified Plan will not only take away the markets embraced within the artificial boundaries of these cities, which are the load centers and focal points of electric power distribution in the surrounding areas, but will require the appellants to reduce their rates to the level of the TVA subsidized rates in the areas which appellants continue to serve. Whether this will result in a complete breakdown of service in these surrounding areas not receiving TVA power depends upon whether any of the individual appellants can continue to operate under such conditions, and since the trial court declined to receive any evidence as to the subsidized character of the TVA rates (Moreland R. 1463-6; Comp. Exs. 504-506, R. 3343-7)

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[1] Necessity for system planning. (Add. Fdg. 129, R. 709.) Regular surveys of possible line extensions. (Add. Fdg. 127, R. 709; R. 938, 976, 989, 1026, 1033, 1051, 1005, 1015, 1020.) Promotion of new industries. (Add. Fdg. 125, R. 708; R. 935, 773, 788; Comp. Ex. 182*.) Continuity of service. (Fdg. 116, R. 627.) Promotion of electric power demand. (R. 937-8, Comp. Ex. 183*.) Instruction in new uses for electric power. (R. 937-8.) Necessity for understanding local conditions. (R. 971.) The testimony of the Alabama Power Co. on these points was accepted by the trial court as typical of all the appellants. (R. 936, 965, 972.)

or as to the *extent* of the damages with which appellants are imminently threatened (Moreland R. 1480-5; Lefferson R. 1416-7; Newton R. 1424; Comp. Exs. 512-14, R. 3354-6), the trial court could not properly make any determination of that question. However, the undisputed facts appearing in the record establish that the execution of the TVA Unified Plan will seriously undermine, if not destroy, the ability of the States to enforce the obligation to render electric service, which state-regulated agencies must assume as a condition to their right to engage in the business at all, and will thus destroy the ability of the States to protect the economic needs of their citizens who have become dependent upon such service. (Add. Fdg. 134,[1] R. 710.)

The evidence hereinbefore reviewed shows that if anything remains of State regulation of the electric power business after the completion of the TVA Power Program, irrespective of the survival of some portions of the businesses now conducted by the appellants, it will be a small and degenerate vestige of the powers reserved to the States and the people under our Federal Constitution.

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[1] "The carrying out of the Tennessee Valley Program to take over the business and markets now served by the complainant companies will necessarily, in the case of such complainant companies whose business and markets are so taken, destroy their ability to maintain the organizations which they have developed, their ability to perform the functions which they have heretofore and which they are now performing in providing adequate electric power service, and will destroy the ability of the States and political subdivisions in which such complainant companies are now operating to regulate and control the electric power rates and service in such areas or to protect the economic needs represented by industrial, commercial, and domestic electric consumers who are now being served by such complainant companies." (R. 710.)

F. THE EXECUTION OF THE TVA UNIFIED PLAN IMMINENTLY THREATENS EACH OF THE APPELLANTS WITH IRREPARABLE DAMAGE.

The trial court found that each of the appellants is threatened with substantial irreparable damage through the execution of the TVA Unified Plan.[1] (Fdg. 125; R. 628; Opinion R. 555.) The TVA Unified Plan will generate for sale in an extreme low water year twice as much power as was sold in 1936 by all utilities within the area lying within 100 miles of any of the dams included in the TVA power system and in an average water year substantially more than the total amount of power which was sold in 1936 by all utilities within the area lying within 150 miles of any of such dams. (See pp. 66-69, *supra.*) This power will be offered for sale at rates "substantially below" appellants' rates and in such a manner as to promote the statutory policy of having the local electric business carried on by public and non-profit organizations. The service or market area of each of the appellants lies wholly, or in large part, within the territory lying within 150 miles of the dams included in the TVA power system. (See pp. 61-64, *supra.*) The appellants are thereby threatened with the loss of their businesses and markets.

The TVA transmission lines, even as constructed to date, substantially duplicate the transmission facilities of the appellants in the State of Tennessee and are designed so that they may be readily extended to all of the principal load centers in the areas served by appellants. (See Maps, Comp. Exs. 333A,* 335A,* 332A,* 334*; Add. Fdg. 113, R. 701; R. 1103-1106.) The distribution lines already built

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[1] In relation to damages Fdgs. 184, 186, 248, and 249, are bare conclusions not supported by underlying findings of essential facts or by evidence, and Fdgs. 106, 111, 151, 203-12, 216, 239-42 are based on an erroneous conception of law. (See pp. 199-201, *infra.*)

and serving TVA power have been constructed in the immediate vicinity of load centers now being served by appellants. (See Maps, Comp. Exs. 332-A,* 199,* 205*-210,* 326*; Add. Fdg. 122, R. 707.) These lines, all of which could be served by appellants without substantial changes in, or additions to, their present facilities (Add. Fdg. 119, R. 706; R. 1007, 1017, 1022, 1027, 1035, 1053, 978, 992), substantially restrict the normal growth of appellants' businesses and substantially impair the value of appellants' facilities designed and built to permit extension of service to new customers and territories at low increment cost as rapidly as the new business could be secured or the extensions of service justified. (Add. Fdg. 122, R. 707; R. 1109; 1007; 1022; 1027-8.) This duplication of appellants' facilities will increase as the TVA Unified Plan advances toward completion and causes and threatens loss of value of appellants' facilities.

The appellants are also threatened with great losses through TVA regulation of their rates. The trial court excluded evidence that the damage from loss of revenue which would result from TVA rate regulation, after making allowance for assumed increased customer consumption resulting from rate reductions, would exceed $21,000,000 per year. (Moreland, Offer to Prove, R. 1484; Comp. Ex. 514, excluded, R. 1127.)

At the present time TVA *is serving* six cities formerly served by one or another of the appellants. It has entered into *contracts to serve* seven other cities *which are now being served* by one or another of the appellants. (Add. Fdg. 114, R. 702; Def. Ex. 143, R. 4192.) It has *applications for service* from forty-one additional cities *which are now being served* by one or another of the appellants. (Add. Fdg. 115, R. 703-4; Comp. Ex. 116†, pp. 537-8.) In addition to these there are twenty-one cities which have

voted to acquire or construct municipal distribution systems to distribute TVA power. (Add. Fdg. 114, R. 702; Comp. Exs. 116†, pp. 536-7; 335A*, 191, R. 3001; R. 991, 795, 978, 804.) It also has contracts with eighteen "membership corporations" operating over 2700 miles of rural lines. (Add. Fdg. 92, R. 691.) Approximately 75% of appellants' businesses consists of industrial sales, and TVA already is serving many industrials, including some of the largest industrial consumers in the area. Manifestly, the loss of these markets will take away a very substantial part of the total gross income of the several appellants.

TVA has already entered into contracts to serve practically the entire territory of Memphis Power & Light Company. (R. 1126; Comp. Ex. 118, R. 2807-8; Fdg. 210, R. 646; Add. Fdg. 114, R. 702.) [1] TVA has entered into a contract to serve Chattanooga, which is the heart of the system of The Tennessee Electric Power Company and constitutes about 35 per cent of its load. (Comp. Ex. 129, R. 2859; R. 1106, 769.) TVA has entered into a contract to serve the city of Jackson which is the heart of the system of the West Tennessee Power & Light Company. (R. 480; Comp. Ex. 133, R. 2873.) Each of these appellants is obviously threatened with ultimate bankruptcy. (R. 1127.)

The testimony is uncontradicted that the threat of injury and destruction from TVA competition has caused great financial losses to each of the appellants, excepting Appalachian Electric Power Company, through inability to refinance outstanding securities at lower interest rates and

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[1] At the time of trial TVA also had entered into a contract (Comp. Ex. 118, R. 2808) with Knoxville to serve practically the entire service area of Tennessee Public Service Company; and since this appeal was taken, this company has turned over its electric facilities to TVA, and its nominee, the City of Knoxville.

through inability to finance extensions at reasonable rates, if at all. (Add. Fdg. 123, R. 707-8; Frothingham [1] R. 1307-1310, 1319-20.)

G. THE DECISION OF THE TRIAL COURT.

The trial court in its opinion repeatedly states or implies that the Bill is based in whole or in part upon a charge of fraud. (R. 542.) With the possible exception of the misrepresentations charged to have been made by appellees in their efforts to further the TVA power business in competition with appellants, the Bill raises no question of fraud, unless it can be said that a charge that federal officers or agents are acting under an unconstitutional statute or in excess of statutory authority is a charge of fraud. If that be so, all constitutional cases are fraud cases.

The holdings of the trial court upon the issues, *as conceived and stated by it,* are:

First: That all of the acts of the appellees are authorized by the statute. In this holding the court ignores the only points on which appellants contended the appellees had exceeded the scope of the statute. (Cf. Opinion R. 555-8 and Point IV, pp. 224-225, 233-235, 236-237, *infra.*)

Second: That all of the appellants are threatened with future irreparable damage and that the constitutionality of the TVA Act must be determined. (Opinion R. 555.)

Third: That the water power will be constitutionally created. (Opinion R. 558-562.) This holding is based upon a misconception of the applicable law and upon a failure

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[1] Francis E. Frothingham, then President of the Investment Bankers Association of America, with wide experience in the investment banking business. (R. 1304.) The trial court excluded as irrelevant other testimony showing this type of damage which was offered through Walter M. Robinson, an investment banker of Nashville, Tennessee, and Harry M. Addinsell, an investment banker of wide reputation and head of the First Boston Corporation. (See pp. 237-238, *infra.*)

to consider, or make any findings upon, essential facts. (See pp. 20-21, 37-38, *supra* and Point I, pp. 94-133, *infra.*)

Fourth: That the method of disposal of the water power is valid. (Opinion R. 562-5.) This holding also is based upon an erroneous conception of law and upon a failure to consider, or make any findings upon, essential facts. (See p. 143, *infra,* pp. 79, 82, *supra,* and Point II, pp. 133-190, *infra.*) The error is further aggravated by the holding that a citizen suffering irreparable injury from the operation of a federal statute regulating matters of intrastate concern may not challenge the act but that the act may only be challenged by a State. (Opinion R. 563.)

Fifth: That the charge of confederation between appellees and PWA has not been established. (Opinion R. 552-3.) The court made no findings on this subject. This result was reached by denying appellants the benefit of subpoena and the right to take depositions to prove the charge and by excluding, as immaterial, all evidence which the court recognized as bearing on the issue and by ignoring all pertinent evidence in the record. (See pp. 233-235, *infra.*) The court also failed to apprehend that the matters involved in this paragraph, as well as in paragraphs "*First*" and "*Fourth,*" were material and relevant as bearing upon the extent and imminence of the threat with which appellants are confronted and upon the steps which have been and are being taken to establish and place in operation the purposes and policies of the TVA Act and of the TVA Unified Plan.

Sixth: That the evidence does not establish that appellees have acted to force the sale of distribution systems of appellants at distress prices on threat of duplication with federal funds. (Opinion R. 544, 551.) Laying to one side the circumstance that this charge related to acts done in confederation with PWA and other federal agencies, the court's conclusion was reached by the simple process of

denying appellants the right of subpoena and the right to take depositions to support the charge (see pp. 216-217, 233-235, 238-240, *infra*) and of adopting the novel legal theory that a charge of threatened irreparable damage can only be established by proof that the damage has already been inflicted and the alleged wrong consummated. (Opinion R. 551-2.)

Seventh: That there is no proof of coercion of municipalities or cooperatives by TVA to take TVA power. (Opinion R. 553-4.) While the confederation between TVA and PWA did include the exercise of coercion on Bessemer and Tarrant City, Alabama, (evidence of which was ignored by the court), the court here misconceived or misstated the charge which was that appellees, in soliciting appellants' customers, had engaged in an aggressive campaign of soliciting municipalities and organizing cooperatives to use TVA power and of promoting the statutory policy of having the local electric business carried on by public or non-profit organizations. (See pp. 70-75, *supra*, 175-178, *infra*.) The court also excluded most of the evidence offered on this point, as immaterial (see pp. 229-233, 219-225, *infra*), but the record does nevertheless sustain the charge.

The trial court delivered its opinion several days before it filed an order purporting to adopt certain requested findings and conclusions by reference (R. 542, 566) and more than four weeks before it filed any formal findings and conclusions. (R. 542, 583.) Findings Nos. 1 to 28, describing the properties and businesses of appellants, were agreed upon between the parties. The majority of the trial court adopted (in nearly every instance verbatim) all the findings and conclusions submitted by appellees with the exception of Def. Proposed Fdg. 28 and Proposed Conclusions 62-64.[1] (R. 566, 490, 541.) The court required oral

[1] Cf. Order of January 25, 1938, R. 566, Fdgs. 29-251, R. 600-655 and Conclusions 1-62, R. 655-664, with appellees' Requested Findings and Conclusions, R. 477-541.

argument immediately after the close of the testimony and required that suggested conclusions and findings and all briefs should be submitted at the close of such argument (R. 1862, 1919, 2281-4, 2316, 2370-3), so that the appellants were precluded from commenting upon such findings or conclusions either in brief or oral argument. (Cf. *Morgan v. United States*, 304 U. S. 1.) These findings and conclusions are erroneous in the respects pointed out at appropriate places in the Statement of the Case and in the Argument. Judge Gore refused to adopt the conclusions of law submitted by appellees and made many additional findings of fact upon material issues upon which the majority had either failed or refused to make any finding. (R. 669-713.)

SPECIFICATION OF ERRORS.

Appellants urge each of the assigned errors[1] Nos. 1-42, 45-135, inclusive. (R. 715-759.) Without waiving or limiting any of said Assignments, more particularly the trial court erred:

1. In finding, concluding and decreeing that the water power being created and to be created by TVA is being and will be constitutionally created, and in failing to find, conclude and decree that such water power will not be created either as an incident to the exercise of the power to regulate interstate commerce or of the war or national defense power. (Assignments of Error 68-80, 104-113; see Point I, *infra*.)

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[1] Assignments of Error Nos. 1-42, 45-67, inclusive, relate to errors in procedure and rulings on evidence. Many of the other Assignments relate to findings and conclusions which are deemed plainly immaterial or inapplicable and have been assigned and are preserved to avoid any technical question should any of them be claimed to amount to material findings or conclusions by implication.

2. In finding, concluding and decreeing that the method of disposing of the water power being created and to be created by TVA, both as provided in the TVA Act and as being carried out by the appellees, is valid, and in failing to find, conclude and decree that both the statutory and the administrative method of disposing of such water power is in excess of the powers of the Federal Government and in violation of the Fifth, Ninth and Tenth Amendments. (Assignments of Error 81-107, 112, 114-125, 129, 131, 133, 134; see Point II, *infra.*)

3. In finding, concluding and decreeing that the appellants are not entitled to sue to enjoin the acts complained of in the Bill. (Assignments of Error 91, 92, 98-103, 105b, 105c, 125-134; see Point III, *infra.*)

4. In failing and refusing to receive evidence upon, or to consider or decide the questions (a) whether the sale of electric power by appellees at rates below the cost of production, distribution and sale is prohibited by the TVA Act; (b) whether under the TVA Act the appellees are authorized to confederate with other federal agencies to take over the business of the appellants or to force appellants to sell their electric systems at distress prices on threat of having the value of such facilities destroyed by duplications through loans and gifts of federal funds; and (c) whether the TVA Act, properly construed, authorizes the appellees to engage in a systematic campaign of misrepresentation for the purpose, and with the necessary effect, of destroying and appropriating the going businesses of the appellants. (Assignments of Error 104, 105, 107, 117; see Point IV, *infra.*)

5. In numerous rulings on matters of evidence, matters of procedure and in the conduct of the trial which deprived appellants of a full and fair trial and constituted a denial to appellants of due process of law as a matter of

procedure. (Assignments of Error 1 to 42, 45 to 67; see Point IV, *infra.*)

6. In entering its final decree dismissing the Bill of Complaint and in failing to find, conclude and decree that the appellants are entitled to the relief prayed for in said Bill. (Assignment of Error 135.)

SUMMARY OF ARGUMENT.

In view of the detailed nature of the Index of Argument at the beginning of this brief, it is believed that a Summary of Argument is not necessary.

ARGUMENT.

POINT I.

THE WATER POWER BEING CREATED AND TO BE CREATED BY TVA IS NOT BEING, AND WILL NOT BE, CONSTITUTIONALLY CREATED, SO THAT THE FEDERAL GOVERNMENT (TVA) WILL ACQUIRE NO TITLE TO SUCH WATER POWER.

Appellees concede that TVA or the Federal Government may not legally produce or acquire title to the electricity except in so far as such electricity[1] is produced in the exercise of some constitutional power of the Federal Government. The principle was stated by this Court in *Ashwander v. Tennessee Valley Authority,* 297 U. S. 288, as follows:

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[1] While the words "electricity" and "electric power" are sometimes used in this Section for brevity and convenience, the property with which we here deal, is not electricity but mechanical energy which is created by impounding water behind dams and which is generally known as raw water power. We do not here raise any question as to the manufacture of the raw water power or mechanical energy into electricity when and if it has been constitutionally created and has constitutionally become the property of the United States.

"* * * And the Government rightly conceded at the bar, in substance, that it was without constitutional authority to acquire or dispose of such (electrical) energy except as it comes into being in the operation of works constructed in the exercise of some power delegated to the United States." (loc. cit. 340.)

But the appellees seek to justify the creation of the electricity upon the grounds:

(a) That it is brought into being as an incidental result of an exercise of the power to regulate interstate commerce (Article I, Sec. 8, Clause 3); and

(b) That it is brought into being as an incidental result of an exercise of the war or national defense powers. (Article I, Sec. 8, Clauses 11, 12, 13, 14, 15 and 16.)

The appellants contend under the facts of this case, not only that the production of the electricity may not be justified upon either of the foregoing grounds, but also that the power scheme falls before the principle that Congress may not "in the execution of its powers, adopt measures which are prohibited by the Constitution," and may not "under the pretext of executing its powers, pass laws for the accomplishment of objects not entrusted to the Government." *McCulloch v. Maryland,* 4 Wheat. 316, 423; *Linder v. United States,* 268 U. S. 5, 17; *United States v. Butler,* 297 U. S. 1.

A.

The electricity will not be produced as an incident to the exercise of the power to regulate interstate commerce.

The generation of electric power constitutes no part of interstate commerce. *Utah Power & Light Co. v. Pfost,* 286 U. S. 165, 179-182; *South Carolina Power Co. v. South Carolina Tax Commission,* 52 F. (2d) 515, 524, affirmed 286 U. S. 525. Even apart from that consideration, there

is no contention that the power to regulate interstate commerce authorizes the United States to engage in any business merely because it is an interstate business. Thus, Congress has power to reach every subject of taxation, but "Congress cannot authorize a trade or business within a State in order to tax it." *License Tax Cases*, 72 U. S. (5 Wall.) 462, 471. The appellees' contention is—(1) that under the power to regulate interstate commerce the Federal Government has the implied power (a) to construct navigation facilities and to improve the navigable capacity of interstate navigable streams, and (b) to engage in the construction of works for flood control; and (2) that the power here in controversy comes into being as the incidental result of the exercise of one or both of these powers. We examine these contentions in the order stated.

1. The electricity will not be brought into being as the incidental result of an exercise of the implied power of the Federal Government to improve interstate navigable streams for navigation.

While commerce includes navigation (*Gibbons v. Ogden*, 9 Wheat. 1), the power to create interstate navigable waterways and to improve interstate navigable streams for navigation is *implied* from the power to regulate interstate commerce. Navigable waters and the soils under them belong exclusively to the States, subject only to the rights surrendered to the Federal Government under the Constitution. *Martin v. Waddell*, 16 Pet. 367, 410; *Shiveley v. Bowlby*, 152 U. S. 1, 15. The United States has no title or property right in the navigable streams or the lands over which they flow (*Port of Seattle v. Oregon & W. R. R. Co.*, 255 U. S. 56, 63; *United States v. Utah*, 283 U. S. 64; *Kansas v. Colorado*, 206 U. S. 46; *United States v. Cress*, 243 U. S. 316); and every property right of riparian owners on navigable streams is created by and flows exclusively

from State sovereignty. *United States v. Cress, supra; Packer v. Bird,* 137 U. S. 661; *Port of Seattle v. Oregon & W. R. R. Co., supra.* It is settled that the United States in general has no power to engage in the business of generating electricity. *United States v. Chandler-Dunbar Co.,* 229 U. S. 53, 73; *Ashwander v. Tennessee Valley Authority, supra*; *Alabama Power Co. v. Gulf Power Co.,* 283 Fed. 606, 613; *Missouri ex rel. Camden v. Union Electric Light & Power Co.,* 42 F. (2d) 692, 695.

"The right of the United States in the navigable waters within the several States is limited to the control thereof for purposes of navigation." *Port of Seattle v. Oregon & W. R. R. Co.,* 255 U. S. 56, 63. See also *Appleby v. New York,* 271 U. S. 364, 381, 402; *Scott v. Lattig,* 227 U. S. 229, 242-3. Any legislation ostensibly for the control or improvement of navigable waters which has no real or substantial relation to such control or improvement is unconstitutional and void. *United States v. River Rouge Improvement Co.,* 269 U. S. 411, 419; *Wisconsin v. Illinois,* 278 U. S. 367, 415.

In order that electricity may constitutionally "come into being in the exercise" of the power to make navigation improvements, it must be *incidentally* and *necessarily* produced by the works constructed for navigation and those works must be reasonably appropriate for, and have a real and substantial relation to, the improvement of navigation. In *United States v. Chandler-Dunbar Co.,* 229 U. S. 53, this Court said:

> "If the *primary* purpose is legitimate, we can see no sound objection to leasing any excess of power over the needs of the Government." (loc. cit. 73.)

This Court then, in explanation and support of its ruling, quoted with approval from *Kaukauna Water Co. v. Green Bay Co.,* 142 U. S. 254. In the *Kaukauna* case this Court

said, even with reference to a dam built pursuant to the more extensive State authority:

> "* * * if, in the erection of a public dam for a recognized public purpose, there is *necessarily* produced a surplus of water, which may properly be used for manufacturing purposes, there is no sound reason why the State may not retain to itself the power of controlling or disposing of such water as an *incident* of its right to make such improvement." (loc. cit. 273.)

But in that case this Court condemned the creation of "a wholly unnecessary excess of water" and confined its approval to "cases where the *surplus*[1] is a mere incident to the public improvement." (loc. cit. 275.)

It therefore follows that where large and costly additions are made to, or superimposed upon, constitutional structures, which additions serve no useful or consequential purpose of the constitutional objective but are plainly and directly adapted to create, and do create, large quantities of water power that would not otherwise be created, such additions to, or enlargements of, the constitutional structures are plainly in excess of federal power. Even more plainly, separate structures, which do not directly or consequentially serve or promote the improvement of navigation but are related to the constitutional objective only by the circumstances of embodiment in a single statutory or administrative scheme and which directly and plainly are adapted to create, and do create, large quantities of

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[1] "Surplus power" means the difference between the amount of power incidentally created by the navigation structure and the amount of power used for operation of navigation facilities or other government uses. It does not mean the difference between the amount of power used for operation of navigation facilities or other government uses and the maximum amount of power which could be developed from the stream by a project directed wholly, or in part, specially to the development of the power resources of the stream.

power, are beyond federal constitutional power. The real, substantial and *bona fide* relation to navigation improvement is lacking. *United States v. River Rouge Improvement Co.*, 269 U. S. 411, 419; *Wisconsin v. Illinois*, 278 U. S. 367, 415. *In both cases there is not merely a forbidden exercise of federal power, but a complete absence of federal power.*

This conclusion is reenforced by the settled rule that the interstate commerce power, from which power to improve navigable streams is implied, may not be extended so as to control matters reserved to the States or the people upon the basis of indirect, remote or insubstantial relationships between the things sought to be controlled and interstate commerce. *Schechter Corp. v. United States*, 295 U. S. 495, 546; *National Labor Relations Board v. Jones & Laughlin Steel Corp.*, 301 U. S. 1, 36-37; Dissenting opinion of Cardozo, *J.*, in *Carter v. Carter Coal Co.*, 298 U. S. 238, 327-8. While in the situations stated in the previous paragraph relationship between the structure and improvement of navigation is entirely lacking, this rule makes plain that an indirect, remote or inconsequential relation to the improvement of navigation would not supply constitutional power for the construction of such a structure. Federal power may not be extended on such a slender basis into the concerns of the State with the practical effect of vesting in the Federal Government the ownership of the power resources of the rivers of the States, the right to engage in the intrastate business of generating electric power, the right and power to oust the States' police power over such a local business, the power to deprive the States of tax resources arising out of such local business, the power to deprive the States of their right to determine when and how their natural resources shall be developed subject only to the paramount right of the United States to control the waters of their navigable

streams *for navigation alone*, or the power to destroy the right of the citizens of those States to engage in that business, subject only to State regulation. Otherwise, in a large and important field, this implied power "would absorb or imperil the powers reserved to the States" and the people.

Our inquiry is, therefore, confined to the question whether the creation of the raw water power (which is later manufactured into electricity) will be the *incidental* and *necessary* result of the operation of structures which have a real, substantial and *bona fide* relation to the improvement of the Tennessee River for navigation. *Kaukauna Co. v. Green Bay Co.*, 142 U. S. 254, 273; *United States v. Chandler-Dunbar Co.*, 229 U. S. 53, 73; *Ashwander v. Tennessee Valley Authority, supra.*

To be incidental to a navigation improvement, the raw water power must come into being through the operation of structures having a real, substantial and *bona fide* relation to the achievement of the constitutional purpose or objective. When additional structures are superimposed upon the navigation structures, when the navigation structures are greatly enlarged or when entirely separate structures are built, not for the purpose of carrying out the constitutional objective but to create the raw water power which would not otherwise be developed, then the creation of that power ceases to be incidental to the constitutional objective and becomes, depending upon the relative magnitude of the power development and the constitutional objective, either the primary purpose of the scheme or at least a separate and independent objective. In either case the scheme is outside the field of federal power. Obviously, where the production of power is the primary purpose, the whole scheme falls. Whether the whole scheme falls in the case where the production of power is merely an independent objective must depend upon whether the power

project is so intermingled with the navigation project that it cannot be extricated and leave the scheme effective to achieve the constitutional purpose.[1] *Retirement Board v. Alton Railroad Co.*, 295 U. S. 330, 362; *Carter v. Carter Coal Co.*, 298 U. S. 238, 312; *The Employers' Liability Cases*, 207 U. S. 463, 501.

We now consider the questions, *first*, whether the *power project authorized in the TVA Act* is incidental to navigation improvement; *second*, whether the *power project included in the TVA Unified Plan*, considered as a whole, is incidental to navigation improvement; *third*, whether in any event the *power to be produced by the tributary dams* included in the TVA Unified Plan is incidental to navigation improvement; and *fourth*, whether the statutory and administrative plans do not also plainly attempt to exercise power not granted but forbidden to the Federal Government in the guise of exercising an implied power to improve streams for navigation.

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[1] The appellees rely upon the rule that a constitutional project or structure is not rendered invalid because it also serves another purpose and perhaps one outside the field of federal power. *Arizona v. California*, 283 U. S. 423. That rule is subject to at least two limitations,—*First*, the rule applies only where there has been no enlargement of the project or structure beyond the scope of the constitutional objective, and no construction of additional structures outside the constitutional objective and related to it only by the circumstance of embodiment in a single scheme. Where, as here, the works or project has been enlarged and supplemented by additional structures beyond the scope of the constitutional objective, *the scheme may not be saved by inverting the principle invoked and asserting that the scheme is valid because, although exceeding constitutional power, it has elements which also serve constitutional objectives. Second*, the rule may not be pressed to the point where it permits Congress to exercise power not delegated but forbidden to it by the Constitution. The decision of this Court in *Arizona v. California* obviously may not be construed as in any way conflicting with these principles; for if that decision were susceptible of such a construction, then it would be to that extent in conflict with settled principles of constitutional law and with a long line of decisions of this Court running up to and including *Ashwander v. Tennessee Valley Authority, supra.*

(a) That power development is an independent, if not the primary, purpose of the TVA Act, is plain on the face of the Act.

In our analysis of the statute (pp. 12-14, *supra*) we have set forth with particularity many of the numerous provisions which, in our view, conclusively establish that on the very face of the Act the development of the power resources of the Tennessee River and its tributaries is not incidental to navigation improvement, but that the development of such power is at least an independent and separate, if not controlling, objective of the statute. TVA may condemn lands for the construction of "dams, reservoirs, transmission lines, power houses and other structures * * * at any point along the Tennessee River or any of its tributaries." (Sec. 4(i).) The Authority has "power to acquire or construct power houses, power structures, transmission lines, navigation projects and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines. (Sec. 4 (j).) The tributary projects, as shown by the extensive directions with reference to Norris Dam, are to be constructed "so that the maximum amount of primary power may be developed" at all other dams downstream. (Sec. 17.) TVA may issue bonds on the credit of the United States for the construction of steam electric generating plants or any other facilities for the generation or transmission of power. (Sec. 15.) The President is required from time to time to recommend such further legislation to Congress, if any, as he deems proper "to carry out the general purposes" stated in the Act, and "for the *especial purpose* of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said *general purposes*" among other things, the "*maximum generation of electric power* consistent with flood control and navigation." (Sec. 23.) When power development

is merely incidental to navigation improvement, no statutory admonition about its development is necessary—it follows as the shadow follows the substance; and when the statute admonishes the agency created not only to develop the power resources of the river system, but to develop them in such a way as to develop the maximum power resources of that system, the statute has passed far beyond the field of federal power.

The appellees take nothing by asserting that the statute contains declarations that the power shall be developed in recognition of the paramount rights of navigation. If any private corporation undertook the maximum development of the power resources of the Tennessee basin, it would, as a matter of course, have to develop them in recognition of the paramount rights of navigation. But it would not follow, nor does it follow in the case of TVA under the statute, that the private company would be, or that TVA is, engaged in making a navigation improvement with an incidental power development. The point, misstated by the appellees and misconceived by the court below,[1] is not whether the statute went so far as to say that TVA should develop the maximum power resources of the Tennessee basin *in disregard of* the rights of navigation on the Tennessee River *but whether the statute did direct the TVA to develop the power resources on the Tennessee River and its tributaries.* The statute says upon its face that what-

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[1] The trial court stated the issue on this point to be whether the generation of power was "inconsistent" with navigation. (Opinion R. 545.) If inconsistency, that is, conflict, were the test rather than whether the creation of energy is the "incidental" result of the operation of *bona fide* structures for the improvement of navigation, there would be no limit to the power of the Federal Government to engage in the manufacture of electricity so long as the federal power project did not actually obstruct navigation. In other words, the Federal Government would have the same power to engage in the manufacture of electricity as any private power company.

ever Congress intended to do with respect to navigation, and whatever Congress intended to do with respect to flood control, *it also definitely intended deliberately, separately, and purposefully to develop the power resources of the Tennessee River and its tributaries.*[1]

The legislative history confirms the face of the Act in this respect. The project adopted by Congress in the Rivers and Harbors Act of July 3, 1930, for the improvement of the Tennessee River for navigation from its mouth to Knoxville, provided for a 9-foot channel with 3 feet overdepths at critical points and locks 110 x 600 feet throughout. The channel and lock dimensions provided by this Act conformed to the channel and lock dimensions in the navigation improvements completed and in process of execution on the upper Mississippi, the Ohio, the Missouri, the Illinois, the Kanawha and, in general, the principal rivers of the great Mississippi inland waterway system. (See p. 26, *supra.*) When Congress adopted the TVA Act on May 18, 1933, to provide for the development of the power resources of the Tennessee basin, Congress did not by that

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[1] The trial court apparently thought that even though the statute requires the maximum development of the power resources of the Tennessee River and its tributaries, the statutory declaration (added in the Amendments of 1935) that the power project should be operated in subordination to the paramount rights of navigation (just as in the case of any private power project on a navigable stream), made the creation of the power incidental by legislative fiat. (Opinion R. 560.) Not only was this a complete misconstruction of the statutory language, as shown above, but it was an erroneous conception or application of the law on statutory declarations and findings. Both legislative declarations of purpose and legislative findings of fact must fall before the truth. It is plain that this must be so. Where, as in so many cases involving constitutional rights, finality of fact is finality of law, it is obvious that any principle which permitted legislative recitals or findings to be given controlling weight other than in cases where the fact remained in doubt upon the evidence in the record would eventually destroy the constitutional function of the courts. *Crowell v.*

(Continued on page 105)

Act adopt any navigation project for the improvement of the Tennessee.

Indeed, prior to the amendments of 1935 (which were adopted at the instance of TVA and, we think it is fair to say, in an attempt to provide protective coloring for its power development in the light of its experience in the *Ashwander* case), the TVA Act did not even require TVA incidentally to create a navigation channel of any particular depth, width or size of locks wherever it substituted a large power pool for one or more navigation pools contemplated by the Federal Navigation Project. TVA could have provided an incidental navigation channel with controlling depths of 3 feet, 6 feet, or 9 feet, with any minimum width and with locks only large enough for pleasure launches; and no one could have said that TVA had thereby violated the statute. And even the amendment of 1935 only brought into the statute *a single requirement* with reference to the navigation channel incidentally to be provided in connection with the development of the

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Benson, 285 U. S. 22; *Minnesota v. Barber*, 136 U. S. 313, 319; *Mountain Timber Co. v. Washington*, 243 U. S. 219, 237; *Near v. Minnesota ex rel. Olson*, 283 U. S. 697, 708. The determination of constitutional rights of citizens would be transferred to the legislative branch. Individuals and minorities would be powerless to defend their constitutional rights against legislative usurpation. This principle is especially important under the modern legislative practice of incorporating by legislative fiat purported findings of ultimate facts. In *Mugler v. Kansas*, 123 U. S. 623, 661, this Court said:

> "• • • *The courts are not bound by mere forms, nor are they to be misled by mere pretenses. They are at liberty—indeed, are under a solemn duty—to look at the substance of things, whenever they enter upon the inquiry whether the legislature has transcended the limits of its authority.* If, therefore, a statute purporting to have been enacted to protect the public health, the public morals, or the public safety, has no real or substantial relation to those objects, or is a palpable invasion of rights secured by the fundamental law, it is the duty of the courts to so adjudge, and thereby give effect to the Constitution."

power resources of the Tennessee River and its tributaries —that was a requirement that the incidental channel should be 9 feet (Sec. 4(j))—but there was no requirement with reference to widths, size and number of locks, or any other essentials of a navigable channel. This should be compared with the standard practice on federal navigation projects whereby these matters are specified in detail in the official War Department Report which is incorporated in the Rivers and Harbors Act by reference as a definition of the project adopted. On the other hand, the TVA Act did not entrust the operation of the incidental navigation facilities to TVA, but left their operation with the Corps of Engineers just as in the case of any private power development. (Secs. 7(a), 5(k).)

(b) Considering the TVA Unified Plan as a whole, it is plain that it is a power project and that the water power created is in no sense the incidental result of a navigation improvement on the Tennessee River.

In general either the Federal Navigation Project or the incidental navigation facilities to be provided in connection with the TVA power project will result in a 9-foot channel from the mouth of the Tennessee River to its head at Knoxville. However, a review of the facts shows that the structures embodied in the TVA Unified Plan are *entirely different in physical characteristics and purpose* from those in the Federal Navigation Project; that, apart from certain incidental and relatively minor navigation facilities *without which the TVA Unified Plan would completely bar through navigation,* the TVA structures are *plainly, directly and solely adapted to the creation of a vast amount of power* and are unnecessary and useless, if not actually detrimental, from the standpoint of navigation; that the incidental navigation facilities have been included in the TVA Unified Plan merely to replace the navigation channel of the Fed-

eral Navigation Project which is flooded out and destroyed by the TVA power project;[1] that the only relation between the TVA power structures on the main stream and the incidental navigation facilities provided on that stream is that the latter are necessary to preserve navigation which would otherwise be barred by the TVA power structures; that, stated most favorably to the appellees, *the TVA main stream structures* are power structures with some incidental navigation facilities and not navigation structures which incidentally create water power; and that the TVA tributary projects are related to navigation only by the circumstance of embodiment in a single statutory and administrative scheme and consequently are devoid of any relation to navigation improvement. (See pp. 22-36, *supra.*)

In short, these TVA structures have no real or substantial relation to the improvement of navigation. *Wisconsin v. Illinois,* 278 U. S. 367, 415, 418; *United States v. River Rouge Improvement Co.,* 269 U. S. 411, 419. Plainly therefore, these TVA structures are wholly outside the field of federal power. There is not merely an illegal exercise of federal power but a complete absence of that power.

To hold otherwise would be to overturn the established principle that the Federal Government may not create or acquire water power except as it comes into being in the operation of structures reasonably adapted, and having a real and substantial relation, to the improvement of navigation[2] and lay down the antagonistic principle that the

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[1] This is the precise requirement which the Rivers & Harbors Act of July 3, 1930, adopting the Federal Navigation Project for the Tennessee River, *imposed upon private interests, States or municipalities which might desire to undertake the construction of any of the power projects which are now being built by TVA.*

[2] This discussion deals specifically with the power to improve navigable streams. The same principle, of course, applies to constitutional structures built in the exercise of any other federal power. This discussion also deals with the creation of water power and not its conversion into electricity.

Federal Government may build any structures it chooses for the creation of water power so long as the power scheme includes some incidental facilities either to improve, or overcome obstructions created by the power project to, navigation. The right of the Federal Government to develop water power would thus be made coextensive with, but dominant over, the power of a State or a private power company to develop water power. This seems to have been the view of the trial court. (See footnote, p. 103, *supra.*)

The Federal Navigation Project would produce no commercial power. The TVA Unified Plan is designed to create and will create the largest hydro-electric system in the United States, if not in the world, with a capacity nearly as large as the total quantity of electricity generated by utilities in 1936 in the seven States any part of which lies within the Tennessee drainage basin. (See pp. 65-69, *supra.*)

There is no rational explanation of the fact that the TVA Unified Plan will cost approximately $473,000,000, (which is six and three-tenths times as much as, or approximately $400,000,000 in excess of, the cost of the Federal Navigation Project), except that the TVA Unified Plan is a vast power project while the Federal Navigation Project is a navigation improvement. This additional sum is so "grossly disproportionate" to the cost of the Federal Navigation Project and to any justifiable expenditure for the benefit of navigation (see pp. 28-29, *supra*), that the conclusion must be that the purpose is to promote some other result (*United States v. Constantine*, 296 U. S. 287, 289); and since this vast additional expenditure is for structures which are plainly adapted to, and do, produce a vast quantity of water power which would not otherwise be created, it is equally plain that that other result is power development.

This circumstance can not be explained on the ground that the TVA Unified Plan provides any superior naviga-

tion facilities. (See testimony of General Pillsbury before Congressional Committee, pp. 35-36, *supra.*) In the substantial and important characteristics of an inland waterway, such as capacity for carrying commerce, controlling depths, integration with the great Mississippi inland waterway system, cost or economic justification, prompt provision of a continuous 9-foot channel, duration of open river navigation, and adaptedness of structures to navigation and safety, the Federal Navigation Project is superior to the channel which will be incidentally provided in connection with the power project known as the TVA Unified Plan. (See pp. 22-31, *supra.*)

Other variations between the channel of the Federal Navigation Project and the incidental TVA channel are only in minor details which will offset each other so that (disregarding the superiority of the Federal Navigation Project in the foregoing consequential characteristics) there is no practical difference between them from the standpoint of practical navigation. (Putnam R. 1160, 1168; Kelly R. 1374; see Pillsbury pp. 35-36, *supra.*) Some of appellees' claims with respect to advantages of the TVA incidental channel in these minor details are without basis in fact. Others are offset by corresponding or more serious disadvantages. All are merely incidental results of maximum power development and not the result of any provision made for the benefit of navigation. As disclosed by the review of the facts, the balance is in favor of the Federal Navigation Project even in relation to these minor details, but in any event, such differences between the two channels are without significance from the standpoint of practical navigation even if they were not far outweighed by the superiority of the Federal Navigation Project channel in the consequential characteristics of an inland waterway. (See pp. 31-36, *supra.*)

We deal here with the question whether there exists a factual basis for the exercise of federal power and hence in the matter of finding the facts we are drawing the line between the federal power and the powers reserved to the States and the people and the rights retained by the people. When the determination of facts involves a delineation of the rights of the States and of the United States under our dual system of government, the findings of fact must be based upon substantial rather than fanciful, negligible or inconsequential things; and the power of the Federal Government is not to be extended and the reserved rights of the States and the people curtailed on the basis of negligible or inconsequential things. *Leovy v. United States*, 177 U. S. 621, 623; *United States v. Doughton*, 62 F. (2d) 936, 938.

Just as the interstate commerce power may not in other aspects be extended so as to control matters reserved to the States upon the basis of indirect, remote or inconsequential relationships between the things sought to be controlled and interstate commerce (*Schechter Corp. v. United States*, 295 U. S. 495; Dissenting opinion of Cardozo, *J.* in *Carter v. Carter Coal Co.*, 298 U. S. 238, at 327-8; *National Labor Relations Board v. Jones & Laughlin Steel Corp.*, 301 U. S. 1; *Steward Machine Co. v. Davis*, 301 U. S. 548), even more certainly the implied power to improve interstate navigable streams may not be extended on the basis of facts of inconsequential and negligible character,[1] strained inferences or attenuated relations of fact in order that the Federal Government may acquire water power. Otherwise, federal power may be indefinitely extended by a chain of progressive inferences which have lost all relation to the principal fact from which, as a center, the prog-

[1] Thus it would seem plain that Congress could not forbid farmers to cut their wood lots, tile a boggy meadow or cultivate their fields on the theory that such actions might in some degree affect the flow of navigable streams.

ress started with consequent destruction of all constitutional limitations.

Manifestly, when all of the claims of the appellees are put together, the alleged relationship between the creation of the water power and the improvement of navigation are non-existent or too attenuated and insubstantial to form a basis for the extension of federal power into a field of State sovereignty. The details upon which appellees rely are in fact not even remote incidents of a navigation improvement but merely remote incidents of a power project. There is, we submit, a complete absence of federal power to construct the power project known as the TVA Unified Plan.

(c) In any event the water power created by the tributary reservoirs in the TVA Unified Plan is not incidental to the improvement of navigation.

More than five-sixths of the water power to be created by the TVA Unified Plan is to be created by use of the tributary reservoirs. This includes the power created at the sites of the tributary reservoirs and the increase in firm power which the tributary reservoirs create at downstream plants. These tributary reservoirs are Norris, Hiwassee and Fontana. These tributary dams range in height from 265 to 450 feet. None of them has, or will have, any navigation facilities and there is no navigation on the tributaries where they have been or are to be constructed. With the completion of either the Federal Navigation Project or the navigation facilities which will be incidentally constructed in connection with the power project known as the TVA Unified Plan, these tributary reservoirs will contribute nothing to navigation on the Tennessee as *the low water flow of that river is more than sufficient to supply all requirements of navigation without the aid of low water releases; and the effect of such tributary reservoirs on navigation, if any, will*

be unfavorable. (See pp. 24-26, *supra.*) There can be no respectable pretense that these tributary projects have any real, substantial or bona fide relation to the improvement of navigation.

Some contention was made by the appellees that the increase in low water flow expected to be provided by the tributary reservoirs (which is the normal function of a power reservoir)[1] would increase the hydraulic gradient or backwater curve in the TVA lakes on the main stream with the result of slightly increasing the depths at the heads of such lakes.[2] However, *if the appellees are constructing their power projects so as properly to provide an incidental navigation channel,* as we believe they are, there will be no need for any artificial enrichment of flow to maintain adequate depths at the upper ends of the lakes. In fact there is no such need; and the only practical result of such increased flow is to increase the velocities at the heads of the lakes, the effect of which, if any, is unfavorable to navigation. (See p. 34, *supra.*)

But *if the appellees are not constructing their power project so as to provide an adequate incidental navigation channel,* then the suggestion comes to this: Normally the project depths in the few hundred yards of channel lead-

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[1] On this point, as on so many others, the appellees' witnesses took conflicting positions, depending upon which best served for the moment. Thus, in their efforts to build up flood control storage on the TVA main stream dams, appellees' witnesses used a flat pool which would mean no flow whatever, and hence no backwater curve. (Bowman R. 1727, 1730, 1733-4.)

[2] The court in its opinion states: "Norris Dam was built and is being operated to create extra head of water power at Wilson Dam." (R. 559.) This, while accurate, is only a half truth, for Norris Dam, as well as other tributary dams, was built and is being used to create additional firm power capacity at all high dams down stream. This, of course, is not, as the court says, through increase of head, which is negligible, but through increase of low water flow with consequent marked increase of firm or commercial power capacity.

ing to the locks at the upper ends of pools would be secured by excavation, at a cost of a few thousand dollars. However, if this contention were valid, the simple expedient of adopting a disingenuous plan to secure the last one or two feet of this depth by constructing three huge power reservoirs many miles away on the tributaries at a cost of approximately $120,000,000, may be made to serve to bring the construction of such huge power developments on the tributaries within the field of federal power as the incidental result of a navigation improvement. The mere statement of the proposition would seem to carry its own refutation. Where the means to the end are so irrational or pretensive that, in an unnatural, indirect, abnormal and excessively expensive fashion, they merely tend in some negligible degree to forward or promote a constitutional purpose in a manner and at a cost irreconcilable with reason or common sense (but do overwhelmingly, plainly and directly serve to forward an objective which is outside the constitutional power and which objective affords the only rational explanation of the means adopted or justification for the cost incurred), it will not do to say that such a course lies within the field of Congressional discretion as to choice of means. That would extend the federal power without any practical limits.

The only relation of these tributary dams to navigation suggested by the court in its opinion (R. 550) is that *temporarily*, during the construction period and owing to the order of construction adopted by TVA in the interests of speedy power development, releases of impounded water from the tributary reservoirs during a low water season will somewhat, but inadequately, increase the depths in the portions of the Tennessee River where TVA has as yet done nothing. These low water releases would be comparable to the low water releases of any power reservoir; they would not produce the project depths; and they would, of

course, be an incident of the operation of the TVA power system except in so far and so long as the TVA may not be able to wrest markets away from the appellants fast enough to keep pace with its rapidly expanding power system.[1]

Laying to one side the fact that the Federal Navigation Project could have been entirely completed before this time at a cost less than that of Norris and Wheeler Dams alone, and that TVA construction on the tributaries and at Wheeler and Pickwick has been dictated by a desire for speedy power development with consequent delay in providing even an incidental navigation channel (see pp. 29-31, *supra*), this contention, most broadly stated, would mean that the relation of these great tributary power projects to navigation consists of a temporary, insubstantial and inadequate benefit to an inconsequential commerce merely during a construction period.[2] (See Construction Schedule submitted by TVA to Congress in its report of March 31, 1936; Comp. Ex. 328°, p. 27, and at the recent Hearings be-

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[1] Even though long reaches of the Tennessee River remain wholly unimproved after five years of TVA operation and even though the TVA system is yet so underloaded as to make regulation of flow for power purposes relatively unimportant, the record of the operations of Norris Dam in the only year of its operation before the trial below, show daily and weekly fluctuations in flow and week-end and holiday shutdowns of flow, which are characteristic of operations for power production, but which are of no benefit, and may be detrimental, to navigation. (Woodward R. 1814, Barker R. 1994-5; Comp. Ex. 916.)

[2] The trifling character of this claim of even a *temporary* benefit to navigation is shown by the testimony of appellees' witness Woodward R. 1796-7. (See pp. 25-26, *supra*.) More than half of the traffic on the Tennessee River in 1935 and 1936 (the last years for which statistics were available at the time of trial) consisted of materials moved by TVA for its construction. (Alldredge R. 2071-2.) Over 80 per cent of the non-TVA traffic on the Tennessee River consists of short local movements of sand and gravel at several points on the river, which movements are independent of any improvement on the Tennessee River. (Putnam R. 1161, 1163; Comp. Exs. 344*, 345*; Alldredge R. 2072.)

for the House Committee, Def. Ex. 153°, p. 948.) There is no pretense that there would be any practical effect on the unnavigable conditions existing between Knoxville and Chattanooga.

To suggest that such an inconsequential and transient matter could bring these great power developments within the field of federal power, take away from the States control over their resources, remove the conduct of such a business from the field of State police power, and deprive the citizens of the State of the right to exercise their property rights and to carry on a local State business, subject only to State regulation, would seem quite to outrun the bounds of common sense.

(d) Both the statutory scheme and the administrative plan are plainly attempts, in the guise of exercising the implied power to improve streams for navigation, to exercise power not granted but forbidden to the Federal Government.

In the previous subsections of Point I, we have dealt with the circumstances that, under the TVA Act and under the TVA Unified Plan, the water power will not be created by the operation of structures built for the improvement of navigation so that there is a complete absence of federal power in the premises. But both the Act and the administrative plan also fall under the condemnation of another constitutional principle.

It is an established principle that the attainment of a prohibited end may not be accomplished under the pretext of exerting powers which have been granted to the United States. This principle has been frequently stated by this Court.

In *McCulloch v. Maryland*, 4 Wheat. 316, the Court said:

> "Should Congress, in the execution of its powers, adopt measures which are prohibited by the constitution; or should Congress, under the pretext of executing its powers, pass laws for the accomplishment of objects not intrusted to the government; it would become the painful duty of this tribunal, should a case requiring such a decision come before it, to say that such an act was not the law of the land." (Loc. cit. 423.)

In *Linder v. United States*, 268 U. S. 5, this Court stated the principle as follows:

> "Congress cannot, under the pretext of executing delegated power, pass laws for the accomplishment of objects not entrusted to the Federal Government. And we accept as established doctrine that any provision of an act of Congress ostensibly enacted under power granted by the Constitution, not naturally and reasonably adapted to the effective exercise of such power but solely to the achievement of something plainly within power reserved to the States, is invalid and cannot be enforced." (Loc. cit. 17.)

The foregoing principle is to be applied in the light of the great canon of construction laid down in *McCulloch v. Maryland, supra*:

> "Let the end be *legitimate*, let it be within the scope of the constitution, and all means which are appropriate, *which are plainly adapted to that end, which are not prohibited, but consist with the letter and spirit of the constitution*, are constitutional." (Loc. cit. 421.)

These principles apply to the exercise of an express power, and they should be applied even more rigorously where, as here, the alleged basis of federal action is the exercise of an *implied* power. Here it is plain that the end is not legitimate, that the means sought to be employed are prohibited, and that neither is consistent with the letter or the spirit of the Constitution. No realistic reading of the TVA Act, no realistic examination of the TVA Unified Plan, can result in any other conclusion than that the de-

liberate and purposeful creation of a great power development is the primary end and purpose sought to be achieved by both. "To a constitutional end many ways are open; but to an end not within the terms of the Constitution, all ways are closed." *Carter v. Carter Coal Co., supra,* 291. The creation of a great federal corporation for the purpose of developing the maximum power resources of the Tennessee River and its tributaries, just as the development of such power resources might have been undertaken by private interests, States or municipalities under the Rivers & Harbors Act of July 3, 1930, is an admission on the face of the Act that the maximum development of the power resources of the Tennessee River and its tributaries would not result from the mere improvement of the Tennessee River for navigation and that such objective can be achieved only by the adoption of plans and structures specially selected, located and adapted to the development of power.

Pursuant to the statutory purpose, the structures of the TVA Unified Plan are plainly and directly adapted to, and do accomplish, the maximum development of the power resources of the Tennessee River and its tributaries within the scope of the execution of the statute embodied in that plan which is merely a current construction program. While creating no superior navigation facilities, the TVA structures involve an expenditure six and three-tenths times as great as the cost of an equivalent, if not superior, navigation improvement—and in lump sum approximately $400,000,000 more than an equivalent or superior navigation improvement. No rational explanation of the selection, design, location and order of construction of these structures and of this vast additional expenditure appears except the adaptedness of such structures to power development and the fact that they will create the greatest hydroelectric power system in the United States, if not in the

world, whereas structures having a real and *bona fide* adaptedness to navigation improvement would produce no commercial power. These TVA structures include great tributary reservoirs, creating five-sixths of the water power, with dams ranging from 265 to 450 feet in height, located far from any navigation facilities and regardless of location, plainly and directly adapted to power development but wholly unsuited to, and indeed destructive of, navigation improvement even if the tributaries were susceptible of practical navigation. To say that the adoption of such a scheme falls within the power of Congress to select the means to an end would be plainly untenable. It is plain that the only end toward which these means are directed and for which they have any real or rational adaptedness, is electric power development—a subject outside the field of federal constitutional power. Any claim that the means have any real or substantial relation to the improvement of navigation is irreconcilable with reason, common sense or intellectual honesty. Their adoption is rationally explicable only upon the basis that the end is to promote the unconstitutional objective of a purposeful power development in the guise of exercising a constitutional power.

These conclusions inescapably follow from a reading of the provisions of the Act and an examination of the structures, nature and purposes of the TVA Unified Plan. (See pp. 12-14, 17-20, *supra.*) They are confirmed by the opinion of a distinguished officer of the Corps of Engineers, the traditional guardians of the preservation and improvement of the navigable waters of the United States, and by the admissions of the appellees themselves. Thus General Pillsbury, in his testimony before a Committee of the Congress, said of the TVA dams:

> "The high dams are very much more costly than low ones. They are not better for navigation but the

justification for their large expenditure can be found only in the power that they make available." (Comp. Ex. 365†, p. 302.)

Dr. Morgan, testifying before a Committee of the Congress as Chairman of the Tennessee Valley Authority, in response to an inquiry whether the purpose of the Tennessee Valley Authority dams is not the production of electrical energy, said:

"That is the major purpose." (Comp. Ex. 112†, p. 262, R. 2674.)

Numerous other statements of like tenor are found in the various Congressional Hearings on TVA appropriations. (Comp. Exs. 108†, p. 25, R. 2621-2; 112†, p. 287, R. 2680.) In an official TVA press release made public late in 1933 (excluded by the court as immaterial)[1] the appellees said:

"If we admit that the use of electricity can not be increased manyfold; if that is our mental attitude, then we must be logical and immediately stop construction of the Cove Creek (Norris) Dam and of the Joe Wheeler Dam." (Comp. Ex. 800, excluded, R. 3706.)

The appellees have never explained why they thought the construction of dams *now* alleged to have been constructed for the *improvement of navigation should be stopped because of an absence of a market for electric power.*[2]

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[1] The error of the trial court in excluding the official Press Releases referred to in this subpoint is discussed at pp. 219-225, *infra.*

[2] In other official TVA Press Releases made public in 1934 (likewise excluded by the court as immaterial) the appellees stated:

"*The Norris Dam is being built for power development,* but that is not an end in itself. • • • It is only a means to an end. The object of building a dam is to provide power; the object of providing power is to raise economic and social conditions of a region." (Comp. Ex. 863, excluded, R. 3829.)

"*The TVA has under way, as you know, a comprehensive program for the development of the power resources of the*

(Continued on page 120)

Indeed, every man in the street and every man in the countryside throughout the nation knows that TVA is primarily a power development. As Mr. Chief Justice Taft said in the *Child Labor Tax Case*, 259 U. S. 20, 37;

> "All others can see and understand this. How can we properly shut our minds to it?"

And in the language of Mr. Justice Field in *Ho Ah Kow v. Nunan*, 12 Fed. Case No. 6546, at 255:

> "* * * we cannot shut our eyes to matters of public notoriety and general cognizance. When we take our seats on the bench we are not struck with blindness and forbidden to know as Judges what we see as men * * *."

Otherwise our great constitutional questions will be decided upon the basis of solemn pretenses which every man in the street knows are at war with the facts, upon a kind of feigned issue; and respect for the law, for the courts and for our constitutional system, as well as the interest of public morals and public welfare, will gravely suffer. That would leave a wide field in which individuals and minorities could depend only upon the cold comfort of the ballot box for the protection of many constitutional rights and the maintenance of our dual system of government against the tyranny of political majorities or of those temporarily in power. In practical effect we would then have a constitution decreeing the rights of minorities and individuals and the separation of State and federal power under our dual system of government with no effective means of vindicating those rights.

Tennessee River and its tributaries. No more ambitious program of hydro-electric development has ever been actually undertaken in this country." (Comp. Ex. 834, excluded, R. 3763.)

Many similar statements of appellees are found in other official Press Releases excluded by the court (Comp. Exs. 796, R. 3689; 834, R. 3766; 786, R. 3679; 790, R. 3682; 815, R. 3732; 844, R. 3800.)

We respectfully submit that the facts in regard to the TVA Unified Plan *conclusively and indisputably* show exactly that *pretended* exercise of federal power, in fact outside the field of federal power, which has been uniformly condemned by this Court.

(c) The trial court failed to find or consider the controlling issue of fact and applied an erroneous principle of law.

Neither in the opinion nor in their findings do the majority of the trial court touch the controlling questions of fact and law on this issue. Nowhere do they recognize that the question is whether the water power is to be created as the incidental result of the operation of structures which have a real, substantial and *bona fide* relation to the improvement of navigation. The trial court apparently deemed the controlling question to be whether a federal power development is *"inconsistent"* with navigation or, in effect, whether it obstructs navigation, and that under the euphonious title of a "multiple purpose project" the Federal Government may yoke together constitutional and unconstitutional enterprises. (Opinion, R. 545, 549.) But the constitutional limitations upon the power of the Federal Government to create water power may not be thus escaped.

If by "multiple purpose project" is meant a structure which has a real, substantial and *bona fide* relation to the improvement of navigation, but in its operation necessarily creates some water power, then the TVA projects are not "multiple purpose projects." The facts hereinbefore reviewed disclose that the TVA structures on the main stream are power developments with merely incidental navigation facilities. (See pp. 20-36, *supra.*) The tributary projects are built at locations far removed from any navigation facilities and are completely devoid of relation to navigation improvement.

If by "multiple purpose project" is meant a single statutory or administrative scheme which includes a navigation project or improvement and also a separate power project or development, then such a scheme is beyond federal constitutional power. Thus defined the expression "multiple purpose" is not synonymous with "incidental result." It is the same as though the United States were to assert the right to construct a commercial office building, a department store or factory, and to engage in any business for which the structures were suitable, by making provision for a post office in one corner of the premises. The Federal Government can not escape constitutional limitations by yoking together an unconstitutional structure or objective with a constitutional structure or objective. In such cases, either the whole scheme falls or the unconstitutional structure or objective must be eliminated. *Retirement Board v. Alton R. Co.*, 295 U. S. 330, 362; *Carter v. Carter Coal Co.*, 298 U. S. 238, 312; *Employers' Liability Cases*, 207 U. S. 463, 501.

2. The creation of the water power may not be sustained under any constitutional power of the Federal Government over flood control.

The decision of this point does not require, and therefore under the decisions of this Court does not permit, a determination of the scope of federal power in the matter of flood control; for the facts clearly establish that none of the commercial water power will be created by the operation of flood control structures. *This consideration is conclusive upon this point.*

(a) None of the commercial water power is created by the operation of any flood control structures included in the TVA Unified Plan.

TRIBUTARY RESERVOIRS. The three tributary reservoirs, *which will create five-sixths of the firm or commercial water power,* severally consist of a large power reservoir upon which is superimposed a relatively small flood control reservoir. These power reservoirs and flood control reservoirs on the tributary projects are as separate and distinct as though they were built at entirely different locations. *These small flood control reservoirs do not and can not produce any firm or commercial power.* (See pp. 38-46, *supra.*)

MAIN STREAM RESERVOIRS. The main stream projects consist almost wholly of reservoirs to create head and store water for power with incidental navigation facilities necessary to prevent complete obstruction to navigation by the TVA power structures. The flood reservoirs superimposed on these power reservoirs other than at Gilbertsville are not only very small (for illustration, only one foot high at Guntersville), but from their very nature and purpose they can produce no firm or commercial power regardless of their size. And it would make no difference if these reservoirs below the power projects were navigation structures (as they are not); for in either event these lower reservoirs would provide no flood control and the superimposed flood control structures would produce no commercial power. (See pp. 49-53, *supra.*)

This is a suit to enjoin the creation, transmission and sale of water power (the water power being converted into electricity for some of these purposes) in competition with the appellants, and hence the foregoing considerations dispose of the issue without examination of the scope of federal power over flood control.

(b) The creation of water power is the primary purpose of the TVA Unified Plan and flood control is minor, if not pretensive, and any attempt to sustain that plan as a flood control project falls as an attempt to accomplish a forbidden object under the pretense of exercising a constitutional power.

A statement and discussion of the pertinent constitutional principle is found at pages 115-121, 96-101, *supra.*

It is a fundamental fact that flood control and power development are conflicting. The flood control reservoirs on the tributary projects are very small in relation to the power reservoirs upon which they are superimposed. Yet the amount of flood control provided at Chattanooga and above (where practically all flood damage in the Tennessee basin occurs) is so small as to be almost valueless in a great flood when flood protection is needed and valuable. The three tributary projects are located on the Clinch, Hiwassee and Little Tennessee Rivers. The TVA Unified Plan makes no pretense of providing any flood protection on the other important tributaries of the Tennessee River, including the Emory River, where the greatest loss of life and damage to property through floods in the Tennessee basin has been experienced. (pp. 46-49, *supra.*) Obviously, a *bona fide* flood control system would have taken care of this situation.

Furthermore, the cost of the flood control structures superimposed on top of these tributary power reservoirs is so small in relation to the cost of the power structures upon which they are built as also to establish that the creation of water power is the primary purpose and the provision of flood control incidental, if not pretensive. *United States v. Constantine,* 296 U. S. 287, 289. Thus, two and six-tenths times as much dependable flood storage could have been provided at the site of the Norris Dam for less than one-fourth the cost of Norris Dam and reservoir.

It is plain that the TVA Unified Plan, taken as a whole, does not materially benefit flood control on the Mississippi River. As General Pillsbury testified before the House Committee on Military Affairs, in reference to the TVA dams, "the effect on the Mississippi would be measured in inches and fractions of an inch in a high flood," and the construction of the TVA dams would not "have an appreciable effect on the flood waters of the Mississippi." (See p. 60, *supra.*) Moreover, it is conceded that the tributary reservoirs are beyond prediction distance (Woodward R. 1783-4, 1806-8) and hence could not be used for flood control on the Mississippi even though local flood protection were sacrificed. A *bona fide flood control system, giving ten times as much dependable flood storage and immeasurably more flood protection*[1] *where needed at and above Chattanooga could have been built for a fraction of the cost of the TVA Unified Plan and for much less than the cost of the three TVA tributary projects alone.* (See pp. 48, 55-57, *supra.*)

The flood control reservoirs superimposed on the main stream power reservoirs are (except at Gilbertsville) even smaller (for illustration, only one foot high at Guntersville) in relation to the power reservoirs upon which they are built. These main stream reservoirs destroy more valley storage than they provide flood storage; and no project may take credit for flood control until it has paid back the storage of which it has robbed nature. The main stream reservoirs above Chattanooga would be flooded out in any great flood when they are really needed. The TVA Unified Plan over-all would not furnish enough flood protection to

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[1] The ratio of increase in flood protection is much greater than the ratio of increase in dependable flood storage because the small amount of flood control provided by the TVA Unified Plan at and above Chattanooga would be almost wholly ineffective in a great flood when flood protection is the most needed and the most valuable.

make practicable the construction of levees necessary for flood protection at Chattanooga. (pp. 49-57, *supra.*) Indeed, more than two years after the TVA Unified Plan had been officially reported to the Congress, the Congress, in apparent recognition of the obvious lack of any material flood control features in that plan, passed the Act of June 28, 1938, directing the Secretary of War and the Corps of Engineers to make a preliminary examination, survey and report for flood control at Chattanooga.

The construction of the TVA Unified Plan will cause annual damages several times greater than the average annual flood damage on the Tennessee River and all its tributaries. The total area normally flooded by the TVA reservoirs (exclusive of Wilson) will be over 465,000 acres (Def. Ex. 153†, p. 919), which greatly exceeds the number of acres occasionally flooded in the Tennessee Valley in a state of nature. Indeed TVA is purchasing more than 912,000 acres for the TVA reservoirs (exclusive of Watts Bar, Coulter Shoals and Fontana projects, for which land has not yet been purchased) to provide the additional land which will be overflowed in time of flood with the necessary margin of shore land. (Def. Ex. 153†, p. 947.) The total average annual flood damages of all kinds *on the Tennessee River and all of its tributaries is only $1,784,000 including the estimated damages from a hypothetical 500 year flood.*[1] (Comp. Ex. 105°, p. 734.)

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[1] The total estimated average annual damage from all floods (including a hypothetical 500 year flood adopted by the Corps of Engineers for the purpose of its estimates) through flooded lands is only approximately $170,000 on the Tennessee River, excluding tributaries, and $291,000 including tributaries. The total estimated average annual damages to all kinds of property in all floods (including the hypothetical 500 year flood) is only about $981,000 on the Tennessee River (excluding tributaries) of which $211,000 occurs below Hales Bar (substantially at Chattanooga), and $770,000 at Chattanooga and above. (Comp. Ex. 105°, p. 734.)

The trial court excluded, as irrelevant and immaterial, evidence that the average annual value of crops standing in September and October (which, of course, did not include crops, such as hay and small grain, harvested earlier) on the land which will be flooded by TVA in the Chickamauga, Guntersville, Pickwick and Wheeler reservoir basins was $3,126,000 or an average of over $20.00 per acre. (Offer to Prove, R. 1244-50; Def. Ex. 153†, p. 947.) On the same basis, the total estimated value of crops on lands which will be flooded by TVA reservoirs at normal pool level (excluding Watts Bar, Coulter Shoals and Fontana for which figures as to the amount of land to be flooded are not yet available) would be over $6,498,000. In addition to the land to be flooded at normal pool level by the foregoing reservoirs, TVA is purchasing, and presumably retiring from production, nearly 600,000 acres more at such reservoirs.

The complete elimination of all flood damages on the Tennessee River and its tributaries (including estimated damages from a hypothetical 500 year flood) would not justify a capital outlay of $45,000,000; and the small TVA flood control reservoirs superimposed on the TVA power reservoirs would not eliminate any substantial part of these damages. It is a fundamental principle that expenditures for flood control structures may not exceed the capitalized value of the flood damages eliminated by those structures. (Compare Declaration of Policy in Omnibus Flood Control Act of June 22, 1936, 49 Stat. 1570, 33 U. S. C. 701a.) Where, as here, it is claimed that structures costing many times the capitalized value of any flood damages eliminated are built for flood control, it is plain that the contention is a pretense and subterfuge.

The facts herein reviewed and many other facts stated at pp. 38-60, *supra,* plainly show that flood control is a minor purpose, if not merely pretensive.

(c) It is plain on the face of the Act that power development is not incidental to flood control.

Earlier in this brief, we have analyzed the TVA Act and shown that power development is the primary purpose of the Act. (See pp. 12-14, pp. 102-106, *supra.*) Just as those analyses of the statute show that power development is not, under the Act, incidental to navigation improvement, so do they also show that power development is not incidental to flood control under the Act. Again the question is not, as the trial court seemed to think, whether the statute went so far as to say that TVA should develop the maximum power resources of the Tennessee basin in disregard of any federal constitutional power or duty in the field of flood control, but whether the statute did direct the TVA to develop the power resources of the Tennessee system. And the statute does say upon its face that whatever Congress intended to do with respect to navigation or flood control, it definitely intended also deliberately, separately and purposefully to develop the maximum power resources of the Tennessee River and its tributaries.

(d) Assuming a determination of the scope of federal power over flood control were involved (which it is not), that power does not extend beyond the power to protect navigation channels and navigation works.

Were the facts of this case such as to require or permit a determination of the scope of federal power over flood control (which they are not), we think it plain that the power of the Federal Government over flood control does not extend beyond the power to protect or improve navigable channels of interstate navigable streams. Cf. *Jackson v. United States,* 230 U. S. 1, 18, 23; *Cubbins v. Mississippi River Commission,* 241 U. S. 351. Navigable streams are natural instrumentalities of interstate commerce; and the Federal Government has been charged with their protection

and improvement. But flood control structures for that purpose may not constitutionally be undertaken by the Federal Government unless the structures have a real, substantial and *bona fide* relation, rather than an indirect, remote and insubstantial relation, to the protection of the navigation facilities. And no flood control benefits to navigation accrue from the TVA Unified Plan. (See pp. 36-37, *supra.*)

Subject to the paramount jurisdiction of Congress over the navigable waters of the United States, the power to protect lives and property from destructive floods is vested in the several States under their police powers. Cf. *Leovy v. United States,* 177 U. S. 621; *Manigault v. Springs,* 199 U. S. 473; *Orr v. Allen,* 248 U. S. 35; *Cubbins v. Mississippi River Commission,* 204 Fed. 299; *St. Louis Southwestern Ry. Co. v. Board of Directors,* 207 Fed. 338.

Such power as Congress may possess in the matter of flood control is implied from the interstate commerce power. Implied powers may not be treated as express powers so that federal power is indefinitely extended by a series of concentric circles of increasing diameter until all constitutional limitations are destroyed. Nor may factual relationships be extended by inference piled upon inference until federal power is made to embrace things having remote, indirect and insubstantial relations to the thing within the federal field. Federal power over flood control may not, therefore, reasonably be extended to include protection against flood hazards to life or property within the several States or to subjects and instrumentalities primarily falling within the jurisdiction and police power of the States. While the Federal Government may spend for the general welfare, it may not itself engage in activities not authorized by the Constitution merely because they may be deemed, or even in fact are, for the general welfare.

Protection of property and people is inherently a matter of local concern. Its relation to interstate commerce is

indirect. Its relation to the States is immediate and comprehensive. To extend the interstate commerce power to such matters, as distinguished from the exercise of the spending power, would be to displace the States in a field so wide that its limits cannot be foreseen. For if that be an appropriate exercise of the interstate commerce power, the matter does not end there. Thus, it would then logically follow, as asserted by the appellees below, that Congress may construct facilities for the protection against floods of any and all of the means of production because the produce or semi-finished and finished articles may subsequently move in interstate commerce. If such a relationship is sufficient to sustain the exercise of the interstate commerce power, then the Federal Government may engage in agriculture, manufacture, and practically all of the internal activities of a State upon the ground that by promoting them, there will be indirectly promoted a movement of interstate commerce. Every activity of production and consumption has some bearing upon interstate commerce, but plainly that power may not be so far extended. Otherwise Congress may, for illustration, forbid or regulate the cutting of wood lots, tiling of boggy meadows and the cultivation of fields, even though such things have only an indirect and negligible effect upon flood control.

B.

The electricity will not be produced as an incident of the exercise of the war or national defense power.

Section 1 of the Act defines the national defense aspects of the Act as follows:

> "That for the purpose of maintaining and operating the *properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense,* and for agricultural and industrial development * * *, there is hereby created

a body corporate by the name of the Tennessee Valley Authority."

It, therefore, appears that the only national defense aspect of the statute is the maintenance and operation of the plants in the vicinity of Muscle Shoals which were adapted for the manufacture of materials useful in making munitions. The evidence introduced by the appellees in this case establishes that the properties of the Government at Muscle Shoals require and utilize only a fraction of the firm power capacity of Wilson Dam as it was constructed under the National Defense Act of 1916. (R. 2223; Def. Ex. 147, R. 4237.)

The national defense powers of the Federal Government are found in the Constitution in Article I, Section 8, Clauses 11 to 16. In summary they include (1) the power to declare and wage war; (2) the power to raise and support armies and navies and call out State militia; and (3) the power to provide for the government of the army, navy and militia. The trial court erroneously assumed that the national defense powers are found in the *limitation* upon the *grant of the power of taxation* contained in Article I, Section 8, Clause 1 of the Constitution and entirely overlooked or ignored the only relevant grants of power in the Constitution. (Opinion R. 559.)

In the emergency of war, the power of Congress under these national defense powers is very extensive. *Northern Pacific R. R. Co. v. North Dakota*, 250 U. S. 135; *Dakota Central Tel. Co. v. South Dakota*, 250 U. S. 163; *United States v. Pennsylvania etc. Central Coal Co.*, 256 Fed. 703; *The Lake Monroe*, 250 U. S. 246. Undoubtedly in time of war these powers would permit the commandeering of any instrumentality necessary to supply the armed forces (Cf. *International Paper Company v. United States*, 282 U. S. 399; *Highland Co. v. Russell Car & Snow Plow Co.*, 279 U. S. 253) or would authorize the Government to enter

into the manufacture of any product essential to the successful prosecution of the war. But it has never been held that in time of peace the Federal Government may carry on all of the businesses which might be commandeered or which might produce articles essential or convenient in the prosecution of a war. In a modern war practically every business and commercial activity is essential to the successful prosecution of the war. But that does not mean that in time of peace the Constitution authorizes the Federal Government to take over or engage in all private industry and business.

However, apart from these controlling considerations, *the record makes plain that the TVA Unified Plan will not in fact augment the national defense assets of the nation.* The statutory and administrative purposes are that all of the power to be produced by TVA shall be sold for domestic, rural, commercial and industrial uses in displacement of the facilities, businesses and markets of existing utilities. The scheme is merely to substitute TVA facilities for privately owned facilities in the business of supplying electricity to the public. This merely makes domestic, rural, commercial and industrial consumers dependent upon TVA facilities rather than upon privately owned facilities; and manifestly private interests neither can nor will build or maintain facilities to serve a market which has been taken from them on the chance that it may be returned to them *temporarily* in time of war, should TVA find military outlets for its power.

While undoubtedly the facilities of any of these appellants or of any electric utility could be commandeered in time of war, just as the facilities of TVA may be commandeered by the Government in time of war, the fact is that the net total power assets of the nation will be in no wise increased by substituting TVA facilities for privately owned facilities in supplying the peace time needs of the

business, industry and population of the United States. In time of war the business, industry and population *which has been brought to a state of dependence upon TVA facilities,* can no more readily, or with any less severe consequences, be deprived of essential light, heat and power because they are dependent upon TVA facilities than if they had continued to be dependent upon privately owned facilities. Any appropriation of the TVA power facilities for war uses would leave Memphis, Chattanooga and Knoxville (to speak only of the large cities upon which TVA has already fastened its hold) just as dark as though they had continued to be served by private enterprise and it became necessary to appropriate their power supply for war uses.

POINT II.

NEITHER THE STATUTORY NOR THE ADMINISTRATIVE METHOD OF DISPOSING OF THE ELECTRICITY IS WITHIN THE CONSTITUTIONAL POWER OF THE FEDERAL GOVERNMENT AND EACH VIOLATES THE FIFTH, NINTH AND TENTH AMENDMENTS.

The appellees concede that the Federal Government has no power under the Constitution to engage generally in the business of supplying electricity to the public. The constitutional question is, therefore, whether the Federal Government may reach the same result through the exercise of its power to dispose of property, and if so, what if any, are the limitations upon that power which are expressed in our constitution or inherent in our constitutional system.

A.

The power to dispose of federal property does not include any power of regulation or the power to engage in the conduct or management of a business having no relation to the purposes for which the Federal Government was established; and any such purported exercise of that power is in excess of its scope.

We here deal with the *scope* of the power to dispose of property as measured by the terms of the grant and apart from the inherent limitations of our constitutional system. That power is found in Article IV, Section 3, Clause 2 of the Constitution, which, with the material portions italicized, reads:

> "*The Congress shall have power to dispose of* and make all needful rules and regulations respecting the territory or other *property belonging to the United States*; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States or of any particular State."

That there is a wide difference between the nature of the power to dispose of property and the nature of the great legislative and regulatory powers of the Federal Government (which are granted in Article I, Section 8 of the Constitution) is obvious. The power to dispose of property was granted merely to enable the Federal Government to dispose of the public lands and such other property as might be no longer needed for the governmental purposes for which it was acquired. (*Story, Commentaries on the Constitution,* 5th ed. Vol. II, pp. 202-6.) It is proprietary in nature; and in any event, it carries no grant of legislative or regulatory power over the States or the people.

In *Kansas v. Colorado,* 206 U. S. 46, this Court, after stating that the scope of the power had never been definitely settled, said:

> "* * * But clearly it (the power to dispose of property) *does not grant to Congress any legislative control over the States,* and must, so far as they are concerned, be limited to authority over the property belonging to the United States within their limits." (loc. cit. 89.)

And further:

> "We do not mean that its (United States) legislation can override State laws in respect to the general subject of reclamation." (loc. cit. 92.)

It therefore follows that any purported exercise of the power to dispose of property which is for the purpose, or which has the direct and necessary effect, of exercising or substantially interfering with the exercise of any of the powers reserved to the States, of destroying any functions of the States, of regulating the matters of intrastate concern or of disparaging or destroying any of the rights retained by the people, is *not merely an unconstitutional exercise of this power but is outside of the scope of this power.* While such an exercise of the power to dispose of property would also violate the inherent limitations of our constitutional system (see pp. 140-144, *infra*), the distinction is important; for if a federal act is not within the scope of the constitutional power invoked, it falls; and it is unnecessary to go further and determine whether the act would have violated the inherent limitations of our constitutional system in any event.

The great regulatory powers, such as the power to regulate interstate commerce, transfer a large segment of governmental power to the Federal Government and remove it from the powers reserved to the States and the people under the Tenth Amendment and the rights retained by the people under the Ninth Amendment. But, it can never be said that because of the existence of the power to dispose of property, some element of the police power,

some element of the legislative power, some governmental power or retained right has been taken away from the States or the people that has not been otherwise granted to the Federal Government. Any other conclusion would deprive the States of governmental power and the people of rights never delegated by them, and endow the Federal Government with power never granted but prohibited to it.

That the power to dispose of property is not the power to engage in business plainly appears from the language of the grant as well as from its history. That the clause could ever have been intended to vest such a power in the Federal Government is denied by the known character and purposes of the members of the Constitutional Convention, by the known understanding and atmosphere in which the Constitution was adopted by the States and by the established understanding of the functions of government at the date of the adoption of the Constitution. *Warren, "The Making Of The Constitution,"* 599-600, *South Carolina v. United States,* 199 U. S. 437, 457-9. The fact that the recognition of such a power in the Federal Government, as hereinafter more particularly pointed out, would create an irreconcilable conflict with the power of the States to regulate their internal concerns or to maintain their tax resources, and would destroy the essence of their statehood and the retained right of the people to own and carry on businesses, would seem sufficient to establish the unsoundness of such an interpretation.

"The United States do not and cannot hold property, as a monarch may, for private or personal purposes." *Van Brocklin v. Anderson,* 117 U. S. 151, 158. The United States owns oil reserves, forests, mineral deposits and vast public lands. It can dispose of these various kinds of property. May it, therefore, establish a federally owned and operated corporation to dispose of the oil with a system of pipe lines (high tension transmission lines) and tank farms (electric

substations) throughout the United States and establish United States filling stations at every crossroads in the land? And in establishing such an oil business, would it make any difference whether the Government sold it directly at the crossroad gas stations, or through agents, or through independent dealers, at prices fixed by the federal corporation or its employees? And if so, may it establish a national coal corporation and sell coal at retail in every village in the land? And if so, may it—because of its ownership of forests—establish a lumber company and sell lumber and establish lumber yards in every village? And if so, may it—because of its ownership of public lands—pack vegetables, meats and milk, mill flour and establish a system of super-groceries throughout the United States in order more profitably to "dispose of its property" or even with the altruistic purpose of supplying groceries at less than cost to all or some classes of the people?

If the power to dispose of property grants the Government the right to engage in business, it must necessarily follow that it has a right to do all these things and many more. It must inevitably follow that it has the right and power to establish a legal or *de facto* monopoly in all of the principal businesses generally carried on by private enterprise. It must necessarily follow that it has the right to deprive the States of tax revenues from substantially all of the businesses ordinarily carried on in the State by private enterprise. It must result that it has the power to deprive the people of owning or engaging in most of the businesses ordinarily carried on by private enterprise except as federal employees. It must follow that it has the power to deprive the States of all power to regulate the conduct of these businesses within their borders and to transfer that power of regulation to a group of federal agents working for a federal corporation. Plainly the argument that the power to dispose of property includes the power to carry on business proves too much.

Looking at the language of the grant in its common and accepted understanding, the power to dispose of property is not the power to carry on a business. No trustee or executor granted the power to dispose of, or sell, property would be permitted by any court to engage in the conduct of a business.[1]

The federal possession of property is not the equivalent of a grant of constitutional power. The circumstance of Government possession does not vest the Government with the power to use the property in any way, or as the basis for any business, that a private individual might use it. It does not authorize the Government to engage in activities for which it has received no grant of constitutional power and which may even have been expressly prohibited to it.

This conclusion is reenforced by the established principle that the intrusion of any federal power into a field normally reserved to the States may not be sustained unless the necessity therefor clearly appears. *Florida v. United States,* 282 U. S. 194, 211-12.[2] The same principle dictates that in construing the scope of a federal power (and particularly a power which is non-regulatory and merely a proprietary and implementing power), it should not be construed in a fashion which must inevitably bring it into collision with matters of intrastate concern involving the very

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[1] *Lovewell v. Schoolfield,* 217 Fed. 689, 704; *Fidelity & Deposit Co. v. Moshier,* 151 Fed. 806, 818; *Refling v. Burnet,* 47 F. (2d) 859, 861; *Digney v. Blanchard,* 226 Mass. 335; *Butler v. Butler,* 164 Ill. 171; *Willis v. Sharp,* 113 N. Y. 586; *Lucht v. Behrens,* 28 O. S. 231; *Hull v. Heimrich,* 138 Ore. 117; 3 Bogert, *Trusts and Trustees,* 1819, 2035.

[2] Cf. *Illinois Central R. R. Co. v. Public Utilities Commission,* 245 U. S. 493; *Railroad Commission of Wisconsin v. Chicago, Burlington & Quincy R. R. Co.,* 257 U. S. 563; *New York v. United States,* 257 U. S. 591; *Arkansas R. R. Commission v. Chicago, Rock Island & Pacific R. R. Co.,* 274 U. S. 597; *Schechter Poultry Corp. v. United States,* 295 U. S. 495, 546-8; *United States v. Butler,* 297 U. S. 1.

essence of their statehood and their very existence, or so as not merely to disparage but destroy one of the most valuable rights retained by the people, the right to carry on business and earn a livelihood, unless the language and the history of the provision compel such an interpretation. Here the history of the provision repels such an interpretation and the language can be made to cover the interpretation only by attributing to it an unusual and exaggerated meaning, which is neither commonly understood nor commonly used in everyday life or in legal instruments which are daily before the courts for construction.

The instant case not only fails to disclose any compelling reason for such an intrusion into the field normally reserved for the States, but the Court excluded evidence showing that the utilities had offered to purchase all of the power produced by TVA at prices fixed by arbitration, by competitive bidding or by the published rate schedules of TVA and give the electricity the widest possible distribution so as to bring the benefits, if any, of TVA power to the largest number of people. (Willkie R. 1504-7.) Thus the Federal Government would not only have realized the largest possible amount from the sale of its property (if that were its purpose), but would have secured the widest possible distribution of federal electricity, if that were its purpose.

B.

In any event the power to dispose of property may not be used for the purpose, or with the direct and necessary effect, of governing concerns reserved to the States and the people or of upsetting the balance of our dual system of government.

We here deal with the limitations upon the power to dispose of property which are expressed in the Constitution and which are inherent in our constitutional system, that is, the limitations upon the exercise of the power however its *scope* may be interpreted. It is plain that the power to dispose of property is at least subject to the express and implied limitations by which the great regulatory powers of the Federal Government are confined. *Ashwander v. Tennessee Valley Authority*, 297 U. S. 288. Even the great affirmative regulatory powers of the Federal Government are subject to the Fifth Amendment and may not be used to achieve prohibited ends, govern concerns reserved to the States and the people or so as to impair our dual system of government and upset the federal balance.[1] Whether a challenged statute or act violates this principle is not merely a question of legislative or administrative intent but also a question of fact. *Wisconsin v. Illinois*, 278 U. S. 367, 415; *Veazie Bank v. Fenno*, 8 Wall. 533, 541.

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[1] *McCulloch v. Maryland*, 4 Wheat. 316, 421, 423; *South Carolina v. United States*, 199 U. S. 437, 451; *Veazie Bank v. Fenno*, 8 Wall. 533, 541; *Collector v. Day*, 78 U. S. (11 Wall.) 113, 124; *Ambrosini v. United States*, 187 U. S. 7; *Pollock v. Farmers' Loan etc. Savings Bank*, 157 U. S. 429, 584; *Hammer v. Dagenhart*, 247 U. S. 251; *Carter v. Carter Coal Co.*, 298 U. S. 238; *Schechter Corp. v. United States*, 295 U. S. 495, 546; *National Labor Relations Board v. Jones & Laughlin*, 301 U. S. 1, 37; *Linder v. United States*, 268 U. S. 5, 17; *Monongahela Navigation Co. v. United States*, 148 U. S. 312; *Louisville Joint Stock Bank v. Radford*, 295 U. S. 555.

In *Ashwander v. Tennessee Valley Authority, supra,* this Court said:

"(3) We come then to the question as to the validity of the method which has been adopted in disposing of the surplus energy generated at the Wilson Dam. The constitutional provision is silent as to the method of disposing of property belonging to the United States. That method, of course, must be an appropriate means of disposition according to the nature of the property, it must be one adopted in the public interest as distinguished from private or personal ends, and we may assume that *it must be consistent with the foundation principles of our dual system of government and must not be contrived to govern the concerns reserved to the States.*" (loc. cit. 338.)

* * * * *

"The transmission lines which the Authority undertakes to purchase from the Power Company lead from the Wilson Dam to a large area within about fifty miles of the dam. * * * And the transmission lines for electric energy are but a facility for conveying to market that particular sort of property, and the acquisition of these lines raises no different constitutional question, *unless in some way there is an invasion of the rights reserved to the State or to the people.* We find no basis for concluding that the *limited undertaking* with the Alabama Power Company amounts to such an invasion." (loc. cit. 339.)

* * * * *

"We limit our decision to the case before us, as we have defined it. The argument is earnestly presented that the Government by virtue of its ownership of the dam and power plant could not establish a steel mill and make and sell steel products, or a factory to manufacture clothing or shoes for the public, and thus attempt to make its ownership of energy, generated at its dam, a means of carrying on competitive commercial enterprises and thus drawing to

the Federal Government the conduct and management of business having no relation to the purposes for which the Federal Government was established. The picture is eloquently drawn but we deem it to be irrelevant to the issue here. *The Government is not using the water power at the Wilson Dam to establish any industry or business.*" (loc. cit. 339-340.)

The foregoing quotations plainly establish:

1. That the power to dispose of property "must not be contrived to govern the concerns reserved to the States" (and we assume that the same principle must inevitably apply to the rights retained by the people); and
2. That the power to dispose of property must not be so exercised as to upset the balance of our dual system of government.

And they plainly imply,—what inevitably follows from the foregoing propositions—

1. That, among other things, there is a limit beyond which the Government may not go in the sale of a public utility commodity in the guise of exercising the power to dispose of property; and
2. That the Federal Government may not use the power to dispose of property to establish the Federal Government in a competitive commercial enterprise and draw to that Government the conduct and management of business having no relation to the purposes for which the Federal Government was established.

Obviously this must be so. The very size and nature of the enterprise may be such as necessarily to invade or destroy the rights and functions of the States and the rights retained by the people and to upset the balance of our dual system. If the Federal Government may engage in businesses within the State, it may do so only in the exercise of federal constitutional power and hence with immunity from State police power.

The trial court wholly failed to consider any of the controlling limitations pointed out by this Court in the *Ashwander* case (Opinion R. 562-5). The majority of the trial court declined to make the essential findings of fact upon which such legal questions must be determined. Some, but not all, of such essential findings were made by Judge Gore in his Additional Findings.

Thus the trial court wholly failed to consider or answer the questions: (1) whether a federally owned and operated electric system with 15,000 miles of transmission lines covering all, or large parts, of eight States, and with generating capacity more than adequate to supply this vast territory might be considered a "limited undertaking"; (2) whether a federal undertaking of that size, coupled with a specific and detailed regulation of the rates, services and practices of local electric distribution and the imposition of a policy of having the local electric business carried on by publicly owned or non-profit organizations constitutes an invasion of State rights; (3) whether such a vast undertaking upsets the balance of our dual system of government; (4) whether the taking over of the local electric business by the United States and the consequent deprivation of the right of the people to engage in that business, subject only to local regulation, violates the Ninth and Tenth Amendments; and (5) whether the *de facto* regulation of privately owned utilities, pending their acquisition or destruction by TVA, and the *de facto* prevention of State authorities from regulating them, or even compelling continued service where they had been bankrupted or dismembered by the activities of TVA constitutes an invasion of the rights reserved to the States or the people.

The trial court merely ignored the rights retained by the people. It disposed of the question of the invasion

of the reserved powers of the States by holding: (1) that federal usurpation of State powers is cured by State consent, and (2) that even if there is an unconstitutional invasion of the rights reserved to the States, only the State can object. These errors of the trial court are discussed later at appropriate points in this brief.

C.

The power of the State to authorize and regulate the business of supplying electricity to the public within the States is complete, unqualified, exclusive and inalienable.

The distribution and sale of electricity within the States is a local public service. That the business is subject to full and complete regulation by the States under their inherent police powers does not admit of doubt. *Union Dry Goods Co. v. Georgia Public Service Corp.*, 248 U. S. 372, 374; *Munn v. Illinois*, 94 U. S. 113, 124; *Nebbia v. New York*, 291 U. S. 502, 524; *Slaughter-House Cases*, 83 U. S. 36. It is one of the most characteristic and well established subjects of local police power. It is a subject as to which "the authority of the State is complete, unqualified and exclusive." *Nebbia v. New York, supra*, loc. cit. 524. Any Federal interference in this field "is plainly repugnant to the exclusive power of the State over the same subject," (*License Tax Cases*, 5 Wall. 462, 471); for the exercise of State police power "is not subject to national supervision." *South Carolina v. United States*, 199 U. S. 437, 453.

Acting under its police power to promote the health, welfare and prosperity of its people, a State in regulating this business, may:

1. require a franchise for carrying on the business;
2. define the area in which the holder of the franchise may carry on the business;

3. prohibit duplication of facilities to reduce costs, promote efficiency of service and protect investments made to provide the public service;
4. compel extensions of service;
5. prohibit abandonment of service or, stated conversely, enforce continued service at non-confiscatory rates;
6. determine the internal policy of the State as to public or private ownership and operation of local utilities;
7. regulate rates and rate policies;
8. regulate the quality, terms and conditions of the service other than rates; and
9. determine whether and to what extent the regulatory power of the State shall be exercised or held in abeyance.[1]

This partial enumeration of common forms of State regulation by no means exhibits the scope of the State's discretion in controlling this local public business as it deems best for the health, welfare and prosperity of its people. Thus in the matter of rates alone, the State may adopt a policy of favoring industrial use over commercial and domestic use, or the converse, as it deems best for the promotion of the prosperity of the State. It may adopt a policy of uniform rates throughout the State to promote dispersion of industry, decentralization of population and equality of opportunity, or it may require rates to be based

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[1] Among cases illustrating the exercise of these powers are: *New York ex rel. v. McCall*, 245 U. S. 345; *New York ex rel. v. Public Service Commission*, 269 U. S. 244; *Railroad Commission v. Eastern Texas R. R.*, 264 U. S. 79, 85-6; *Bullock v. Railroad Commission*, 254 U. S. 513; *Brooks-Scanlon Co. v. Railroad Commission*, 251 U. S. 396; *United Fuel Gas Co. v. Railroad Commission*, 278 U. S. 300, 309; *Union Dry Goods Co. v. Georgia Public Service Corp.*, 248 U. S. 372, 374; *Milwaukee Electric Ry. v. Wisconsin Railroad Comm.*, 238 U. S. 174; *Banton v. Belt Line Ry. Corp.*, 268 U. S. 413, 419; *Great Northern Ry. v. Washington*, 300 U. S. 154.

upon costs in each local area. It may regulate rates of publicly owned utilities or not as it sees fit. *Wisconsin Traction, Light, Heat & Power Co. v. Menasha,* 157 Wis. 1; *Wheeling v. Benwood-McMechen Water Co.,* 115 W. Va. 353; *Georgia Public Service Commission v. City of Albany,* 180 Ga. 355; See Note 76 A. L. R. 851. It may determine when and how its water resources may be developed for power and other non-federal uses. Full and complete discretion in the premises is reserved to the States under the Tenth Amendment.

No federal power whatever exists in the premises. There is *no vague or nebulous power* in the Federal Government to right supposed wrongs committed by the States. Thus, in *Carter v. Carter Coal Co.,* 298 U. S. 238, 291, this Court said:

> "The proposition, often advanced and as often discredited, that the power of the federal government *inherently extends* to purposes affecting the nation as a whole with which the states severally cannot deal or cannot adequately deal, and the related notion that Congress, entirely apart from those powers delegated by the Constitution, may enact laws to *promote the general welfare,* have never been accepted but *always definitely rejected by this Court.*"

And further:

> "* * * It is no longer open to question that the general government, unlike the states, * * * *possesses no inherent power in respect of the internal affairs of the states*; and emphatically not with regard to legislation. * * *
>
> "* * * And adherence to that determination is incumbent equally upon the federal government and the states. *State powers can neither be appropriated on the one hand nor abdicated on the other.* As this court said in *Texas v. White,* 7 Wall. 700, 725,—'the preservation of the States, and the maintenance of their governments, are as much within the design and care

of the Constitution as the preservation of the Union and the maintenance of the National Government. The Constitution, in all its provisions, looks to an indestructible Union, composed of indestructible States.' Every journey to a forbidden end begins with the first step; and *the danger of such a step by the federal government in the direction of taking over the powers of the states is that the end of the journey may find the states so despoiled of their powers, or—what may amount to the same thing—so relieved of the responsibilities which possession of the powers necessarily enjoins, as to reduce them to little more than geographical subdivisions of the national domain.* It is safe to say that if, when the Constitution was under consideration, it had been thought that any such danger lurked behind its plain words, it would never have been ratified." (loc. cit. 295-6.)

This police power of the States is inalienable. In *Northern Pacific R. Co. v. Minnesota ex rel. Duluth,* 208 U. S. 583, this Court said:

"* * * But the exercise of the police power cannot be limited by contract for reasons of public policy; nor can it be destroyed by compromise; and it is immaterial upon what consideration the contracts rest, as it is beyond the authority of the state or the municipality to abrogate this power so necessary to the public safety." (loc. cit. 598.)

An additional and insurmountable objection arises where the prospective alienee is the Federal Government; for a State may not contract with the Federal Government for its exercise of powers which are prohibited to it and reserved to the State. Both are constitutionally without power so to contract. A State is not only without power to contract not to exercise its police powers, but it is also without power to delegate the exercise of its police powers to another government. I *Cooley's Constitutional Limitations* (8th Ed.) 224.

D.

Under the Ninth Amendment, the people have the right to earn a livelihood, and acquire and use property by engaging in the electric business, subject only to State regulation.

Under the Tenth Amendment all powers not granted to the Federal Government are reserved to the States or the people. One of the rights thus reserved to the people is the right of local self-government, that is, to manage and control their internal affairs without supervision or interference by the Federal Government.

The Ninth Amendment provides:

> "The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people."

One of the rights which was not enumerated and which was retained by the people is the right to earn a livelihood and to acquire and use property by engaging in businesses in the various States, subject only to the regulation of the States and free from interference by the Federal Government. Cf. *Steward Machine Co. v. Davis*, 301 U. S. 548, 580. Both this view of the nature of the right and that it is one of the rights protected by the Ninth Amendment is supported by contemporary evidence. Virginia and other States ratified the Constitution with reservations, stating in part:

> "That there be a Declaration or Bill of Rights asserting and securing from encroachment the essential and unalienable rights of the people."

And further stating that:

> "there are certain natural rights of which men, when they form a social compact cannot deprive or divest their posterity, among which are the enjoyment of life and liberty, with the means of acquiring, possessing and protecting property, * * *." (Formation of the

Union, p. 1027, cited by Kelsey, "The Ninth Amendment to the Federal Constitution," 11 Ind. L. J. 309.)[1]

But whether or not properly designated as a natural right, it is in any event plainly a right retained by the people under our constitutional system. In the *License Tax Cases*, 5 Wall. 462, this Court said:

> "No interference by Congress with the business of citizens transacted within a state is warranted by the Constitution, except such as is strictly incidental to the exercise of powers clearly granted to the legislature. The power to authorize a business within a state is plainly repugnant to the exclusive power of the state over the same subject." (loc. cit. 471.)

In *Duke Power Company v. Greenwood County*, 91 F. (2d) 665, the court commented on this right as follows:

> "It is said that every person engaged in business which is subject only to State control has the right to pursue that business free from the regulation of the Federal Government. This is true; * * *." (loc. cit. 676.)

And the court might well have added that the people are protected against the greater invasion of this right which would be incident to the Government entering into and making a federal monopoly of such a business with the consequence of completely destroying the right of the people to engage in it.[2] Even the great substantive con-

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[1] See also remarks of Madison in House of Representatives, Monday, May 8, 1789, I Annals of the Congress of the United States, First Congress, The Debates and Proceedings in the Congress of the United States, 437, 439.

[2] For cases holding that the right to engage in business, acquire property and earn a livelihood are rights of individuals which are protected under our constitutional system, see *New State Ice Co. v. Liebmann*, 285 U. S. 262, 278; *Dent v. West Virginia*, 129 U. S. 114, 121; *Duplex Co. v. Deering*, 254 U. S. 443, 465; *Buchanan v. Warley*, 245 U. S. 60, 74; *Liggett Co. v. Baldridge*, 278 U. S. 105, 111; and *Truax v. Corrigan*, 257 U. S. 312, 327.

stitutional powers may not be exercised so as to "disparage" or "deny" this right. Much less may a mere proprietary power such as the power to dispose of property be so used.

When the Constitution was adopted there was no thought that it authorized the Government to usurp, or created the possibility of the Government usurping, "the ordinary business of individuals" and "driving them out of the market"; and if such a possibility had been envisioned it is plain that "the Constitution would not have been adopted, or an inhibition would have been placed among Madison's amendments." Then "all avenues of trade were open to the individual. The Government did not attempt to exclude him from any. Whatever restraints were put upon him were merely police regulations to control his conduct in the business, and not to exclude him therefrom. The Government was not a competitor nor did it assume to carry on any business which ordinarily is carried on by individuals." *South Carolina v. United States*, 199 U. S. 437, 457-9. By the Ninth Amendment this right of the people to engage in business within the States free from ouster by the Federal Government was specifically retained.

In this aspect of the case the fundamental question is also raised as to whether the Constitution assumes the local and private development, ownership and management of natural resources, or whether, on the contrary, it authorizes the Federal Government, a government of delegated powers, to develop and manage natural resources, even though not incidental to the exercise of some one or more of the delegated powers. We think it plain that constitutional amendment is necessary if the Federal Government is to obtain the great substantive power of developing and managing the water power resources of the watersheds of the great navigable streams.

E.

To the extent that statutory and administrative methods of disposing of property are constitutional, they are supreme; and consequently in case of conflict between a purported exercise of the power to dispose of property and the reserved powers of the States and the people and the retained rights of the people, such purported exercise of the federal power must be held unconstitutional or the reserved powers of the States and the people and the retained rights of the people are destroyed.

Any purported exercise of the power to dispose of property must be judged in the light of this principle. If the methods of disposal of the electricity authorized by the TVA Act and employed in the TVA Unified Plan are valid and constitutional, there can be no question, as will hereinafter appear, but that the method of distribution of electricity and consequently electric service to the public in the States, has been placed beyond State regulation. Whatever TVA may lawfully do, it is supreme in doing. There is no neutral ground. The Federal Government has no inherent powers, but only the powers given it in the Constitution and with respect to them the States must give way.

In *Butler v. United States,* 297 U. S. 1, it was argued that the Act was not compulsory on the States, since any State—

> "* * * may declare the contract void and thus prevent those under the State's jurisdiction from complying with its terms." (loc. cit. 74.)

Of that argument this Court said:

> "The argument is plainly fallacious. The United States can make the contract only if the Federal power to tax and to appropriate reaches the subject matter of the contract. If this does reach the subject matter, *its exertion cannot be displaced by State action.*" (loc. cit. 74.)

And so in the *Ashwander* case (297 U. S. 288), this Court said:

> "To the extent that the power of disposition is thus (in the Constitution) expressly conferred, it is manifest that the Tenth Amendment is not applicable." (loc. cit. 330.)

Or as phrased in *United States v. California*, 297 U. S. 175, 184:

> "The sovereign power of the States is necessarily diminished to the extent of the grants of power to the Federal Government in the Constitution."

It therefore follows that if, as hereinafter appears, the method of disposal of the electricity authorized by the TVA Act and employed in the TVA Unified Plan deprives the States of their power to regulate this local public service and deprives the people of their right to engage in this business, it must be held that this method of disposal of property is unconstitutional and void *or* it must be held that this proprietary and ancillary power has taken away the police powers of the States in this important and extensive field and has destroyed the right of the people to engage in this business. The issue is squarely made. It may not be avoided.

F.

Both the TVA Act and the TVA Unified Plan must be judged by their natural and reasonable effect in the situation in which they operate.

It is a fundamental principle of constitutional law that the validity of a statute must be judged by its natural and reasonable effect. The natural and reasonable effect of a statute must be determined both from a consideration of the language of the statute on its face and from a consideration of the practical operation of the statute in the situation

to which it applies.[1] In *Collins v. New Hampshire,* 171 U. S. 30, 33-34, this Court stated the rule in the following language:

> "*The direct and necessary result* of a statute must be taken into consideration when deciding as to its validity, even if that result is not in so many words either enacted or distinctly provided for. *In whatever language a statute may be framed, its purpose must be determined by its natural and reasonable effect.*"

In *Standard Oil Co. v. Graves,* 249 U. S. 389, 394, this Court said:

> "It (the statute) must be judged by its necessary effect, and if that is to violate the Constitution of the United States, the law must be declared void."

Obviously, administrative action in the execution of the statute must similarly be judged by its "direct and necessary result" and by its "natural and reasonable effect." The administrative agents of the Congress may not escape the limitations which bind Congress itself. *United States v. Reynolds,* 235 U. S. 133, 148; *Ho Ah Kow v. Nunan,* 12 Fed. Cas. (No. 6546) 252.

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[1] *Collins v. New Hampshire,* 171 U. S. 30, 33-34; *Hammer v. Dagenhart,* 247 U. S. 251, 275; *Western Union Telegraph Co. v. Kansas,* 216 U. S. 1, 27; *Stewart Dry Goods Co. v. Lewis,* 294 U. S. 550, 555; *Minnesota v. Barber,* 136 U. S. 313, 319; *Spradlin v. Royal Mfg. Co.,* 73 F. (2d) 776, 778; *Carolina & N. W. Ry. Co. v. Clover,* 46 F. (2d) 395, 398; *Atlantic Refining Co. v. Trumbull,* 43 F. (2d) 154, 159.

G.

The natural, reasonable, intended and inevitable effect of the operation of the method of disposal authorized by the TVA Act and employed in the TVA Unified Plan is to govern matters reserved to the States and to the people, upset the balance of our dual system of government, deprive the people of their rights under the Ninth and Tenth Amendments, and take property in violation of the Fifth Amendment.

We now examine the scope of the enterprise authorized by the TVA Act and established by the TVA Unified Plan, and their direct and necessary effect upon the powers reserved to the States and the people, and the rights retained by the people.

1. **The TVA Act authorizes, and the TVA Unified Plan establishes, a commercial business of such size and nature as necessarily to destroy the powers reserved to the States and the people, and the retained rights of the people, in all of Tennessee and large parts of six or more other States.**

The undertaking authorized by the TVA Act and established by the TVA Unified Plan consists of a federally owned and operated electric system to serve the public in all of Tennessee and large parts of six or more other States.

(a) The TVA Act authorizes TVA to develop all of the power resources of the Tennessee River and its tributaries. (See analysis of Act, pages 12-14, *supra.*) To augment and firm up this vast hydro-electric capacity, TVA is authorized to construct and acquire steam generating plants. (Sec. 4(j).) While no additional grant of power in respect to power development would seem necessary or possible, the scope of the power development is emphasized by the provision that the President shall recommend any additional legislation which he may deem proper for the

"especial purpose of bringing about in said *Tennessee drainage basin and adjoining territory* • • • *the maximum generation of electric power* consistent with flood control and navigation." (Sec. 23.)

In 1930, the Corps of Engineers reported to Congress that the maximum development of the power resources of the Tennessee River and its tributaries would produce a firm or dependable power capacity of 5,000,000 kilowatts and an annual firm or dependable energy output of 25,000,000,000 kilowatt-hours. (Comp. Ex. 105°, p. 3, par. 10; p. 88, par. 67.) At the same time the Corps of Engineers advised the Congress that the total annual output of both firm and secondary power in the entire Tennessee River basin was then approximately 1,180,000,000 kilowatt-hours and that the estimated demand for 1950 was only 5,900,000,000 kilowatt-hours.[1] (Comp. Ex. 105°, p. 16, par. 21.)

It is thus apparent that the amount of power which TVA was authorized to develop vastly exceeded the entire market for, or use of, electricity which then existed or could be expected to exist in the measurable future, if ever, within practicable transmission distance from the power sites authorized to be developed. However, a mere inspection of a map is sufficient to show that the area of practicable transmission of power covers the entire State of Tennessee and large parts of the six other States of which any part lies in the Tennessee basin, as well as parts of additional States. (Comp. Ex. 327*.)

The Act authorizes TVA "to unite the various power installations into one or more systems by transmission lines" (Sec. 4 (j)), so as to create one vast grid system or power pool. *This was not only to increase the firm power capacity but also so that the entire power capacity of this vast power pool could be drawn upon by tapping the trans-*

[1] This estimate was based upon a rate of increase which past experience indicated and subsequent experience has shown to have been far too great.

mission or grid system at any point. The Act thus provided for a power supply unlimited in relation to the market which would be physically accessible. It authorized a transmission system which would blanket this vast area physically accessible to the power to be developed. (Sec. 12.)

(b) *The TVA Unified Plan is only a stage in the execution of the statute—a mere current construction schedule*; and already TVA has sought and obtained funds for preliminary investigation of additional power sites. (See pp. 17-20, 68, *supra*.) As TVA has reported to Congress and as other evidence shows, *in an extreme low water year* the completed TVA Unified Plan (*without the aid of any TVA steam generating plants now existing*[1] *or which may be constructed under Sec. 15 of the Act*), will have a capacity nearly *eight times* as great as the total amount of electricity, *both firm and secondary*, generated in 1936 for public use by public utilities in the entire State of Tennessee, more than twice as great as the total generation of electricity, *both firm and secondary*, for public use by public utilities in the entire States of Tennessee, Alabama and Mississippi, and equal to more than 80 per cent of the entire generation of electricity, *both firm and secondary*, for public use by public utilities in the entire States of Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama, and Mississippi, the seven States of which any part lies in the Tennessee River basin.[2] *In an extreme low water year* the TVA Unified Plan alone will have a capacity more than *twice as great* as the total sales of electricity, both firm and secondary, by public utilities within the entire area lying within

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[1] In addition to the steam generating plants at Muscle Shoals, TVA now owns steam generating plants at Corinth and Tupelo, Mississippi. (Comp. Ex. 116†, pp. 464, 466, R. 2706A, 2706C.)

[2] An inspection of the map (Comp. Ex. 327*), will show that substantial parts of these States, with the exception of Tennessee and Kentucky, lie more than 250 miles from any of the TVA dams, and hence beyond practical transmission distance.

100 miles of any of the dams included in the TVA power system, and substantially greater than the total sales of electricity, both firm and secondary, by public utilities within an area lying within 150 miles of any of such dams. *In a typical or average water year* the capacity of the TVA Unified Plan will be nearly 33⅓ per cent greater than in an extreme low water year without the use of steam plants constructed[1] or which may be constructed. (See pp. 66-69, *supra.*)

All of the large power plants in the TVA power system are now interconnected, or are to be interconnected, to form one huge power pool so that the entire power resources may be tapped at any point. The TVA Unified Plan contemplates and requires a vast transmission system to market the electrical energy to be produced. (See statement of Dr. A. E. Morgan at Congressional Hearings, Comp. Exs. 109†, pp. 166, 187, R. 2635, 2641; 112†, pp.

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[1] Generating capacity, extreme low water year, under TVA Unified Plan—firm and secondary, without use of steam plants 7,660,000,000 kwh.

Average or typical water year (Comp. Ex. 509, R. 3350) 10,000,000,000 kwh.

Generated for public use by public utilities, 1936, entire State of Tennessee—firm and secondary (Comp. Ex. 486, R. 3329) 1,000,000,000 kwh.

Generated for public use by public utilities, 1936, entire States of Alabama, Tennessee and Mississippi—firm and secondary (Comp. Ex. 486, R. 3329) 3,700,000,000 kwh.

Generated for public use by public utilities, 1936, entire states of Virginia, North Carolina, Georgia, Kentucky, Tennessee, Alabama and Mississippi—firm and secondary (Comp. Ex. 486, R. 3329) 9,300,000,000 kwh.

Total sales by utilities, 1936, for consumption within 100 miles of TVA dams—firm and secondary (Comp. Ex. 499, R. 3332) 3,660,000,000 kwh.

Total sales by utilities, 1936, for consumption within 150 miles of TVA dams—firm and secondary (Comp. Ex. 499, R. 3332) 7,160,000,000 kwh.

262-3, 270, R. 2674-5, 2678-9; 114†, p. 525, R. 2685.) The testimony is uncontradicted that a transmission system of from 12,000 to 15,000 miles will be required for that purpose. The total mileage of transmission lines of the eighteen companies which were originally parties to this appeal, including their transmission lines in large areas lying more than 250 miles from any of the TVA dams, is only approximately 11,000 miles. The total mileage of transmission lines in the entire State of Tennessee, exclusive of TVA lines, is only a little over 2,000 miles. *It is thus apparent that the electric system provided by the stage in the execution of the TVA Act known as the TVA Unified Plan, will blanket the entire State of Tennessee and large parts of adjoining States.* (See pp. 65-70, *supra.*)

It is inconceivable that the TVA Unified Plan, and much less the statutory scheme, could be held to constitute a "limited undertaking." That such mammoth undertakings (free as they are from regulation by the States) must invade the powers reserved to the States, upset the federal balance, and destroy the rights retained by the people is, we think, a case of *res ipsa loquitur. If such mammoth federal undertakings are valid, the right of the State to regulate entry into this local public business and the right of the people to engage in that business, subject only to State regulation, will be effectively destroyed.*

In the *Ashwander* case, this Court sustained the transaction because it was a "limited undertaking" which did not "amount to such an invasion."[1] Both of the

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[1] The *Ashwander* case involved only power produced at Wilson Dam which was constructed under the National Defense Act of 1916, a short mileage of low voltage transmission line *suitable only for local service,* and a comparatively small mileage of rural and urban distribution lines. The firm capacity of Wilson Dam, as constructed under the National Defense Act of 1916, was only 28,000 kilowatts irrespective of load factor (Kurtz R. 1217;

(Continued on page 159)

quoted phrases are terms of degree. *Both plainly recognize the existence of a dividing line beyond which the TVA power operations will not be so "limited" but will "amount" to an invasion.* There are many occasions in the law for the application of the rule of reason expressed by Mr. Justice Cardozo in his concurring opinion in the *Schechter* case (loc. cit. 554) that—

> "The law is not indifferent to considerations of degree"

to which he added in his dissenting opinion in the *Carter Coal Company* case (loc. cit. 327):

> "It can not be indifferent to them without an expansion of the commerce clause that would absorb or imperil the reserved powers of the States."

Once it is understood that there is *a dividing line*, which protects the States in their power to regulate this public service and the people in their right to engage in this business, it is plain that if the power of the States and the right of the people are to have and retain any substance, that line has been definitely passed.

2. The TVA Act, as a purported exercise of federal power, authorizes TVA to exercise, and under the TVA Unified Plan, TVA is exercising, the authority to engage in the business of supplying electricity to the public within the States.

(a) The TVA Act, having authorized the creation of this vast electric system, then authorizes TVA to engage in the business of supplying electricity to the public without

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Putnam R. 1167) and such firm capacity would be insufficient to serve even one of the larger towns which TVA has now contracted to serve. Thus such firm power capacity is less power than TVA has contracted to supply to either Chattanooga (Comp. Ex. 129, R. 2859), or Knoxville (Comp. Ex. 118, R. 2808), and hardly more than half as much power as TVA has contracted to supply to Memphis (Comp. Ex. 118, R. 2807). The TVA Unified Plan has a firm capacity at 60% load factor, 40 times as great as that of Wilson Dam, as originally constructed (Kurtz R. 1215, 1217).

State franchise or regulation in any and all of the States within practicable transmission distance. (See analysis of TVA Act, pp. 14-17, *supra.*)

Although state-regulated utilities may not build competing lines without express authorization by the State and may not extend their lines into areas which will not justify the service and thereby impose what the State deems to be an unjustified burden upon public electric service to the industries and citizens of the State,[1] TVA may build duplicate lines at will. It may seize the cream of the territory and business of state-regulated agencies supplying this public service and thereby disable such agencies from supplying the service in the thin or scattered markets remaining or greatly increase the cost of so doing. Thus, TVA has attempted to take over the business of The Tennessee Electric Power Company in Chattanooga, which constitutes the heart of its integrated business and makes possible economical and efficient service throughout the sixty-four counties in the State of Tennessee in which it offers service.

At the time of the trial below the appellees were attempting to seize the markets of the Tennessee Public Service Company in the City of Knoxville and thereby leave that state-regulated agency with fringes of thin territory and an unprofitable transportation system so as to make virtually impossible the continuance of service in its territory outside of the City of Knoxville and the continuance of this transportation service in that City. Since

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[1] Cf. Tennessee Code, 1932, Sections 5502, 5504, 5451; Order of Tennessee Railroad and Public Utilities Commission, Jan. 1, 1937, Docket No. 2045; Acts of South Carolina, 1932, No. 871 Secs. 2(j), 2(w); Alabama Laws, 1920, p. 38, §49; Kentucky Laws 1934, c. 145, §4(l); West Virginia Laws, 1935, c. 115, Sec. 11; North Carolina Consolidated Statutes §2784; Virginia Laws, 1936, p. 1056; *State v. Nashville Railway & Light Co.*, 151 Tenn. 77.

this appeal was taken, the Tennessee Public Service Company has sold all of its electric properties in Knoxville and vicinity to TVA and the City of Knoxville,—rather obviously, we think it fair to say, in order to escape this economic destruction which threatened to become a *fait accompli* before this appeal could be heard.

All this TVA may do, if the Act is valid, without the consent or regulation of the State and in destructive competition with the agencies to which the State has granted franchises to provide and secure this local public service. And when TVA has driven out the state-regulated agencies, occupied the field and created a situation where the public is helplessly dependent upon the continuation of that service for the protection and promotion of public health, safety and prosperity, TVA may abandon or withdraw its service in whole or in part without State consent. Cf. *United Fuel Gas Co. v. Railroad Commission*, 278 U. S. 300, 309.[1] *It is manifest that to the extent that TVA takes over the business of supplying this public service, the*

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[1] For cases illustrating the power of the State to enforce continued service by utilities so long as the public supplies sufficient patronage to afford a fair return at reasonable rates, see also *New York ex rel. v. Public Service Comm.*, 269 U. S. 244; *Railroad Commission v. Eastern Texas R. R.*, 264 U. S. 79, 85-6. To the effect that a utility cannot pick and choose the localities in which it will serve and withdraw from given localities at will without the consent of the State, see *United Fuel & Gas Co. v. Railroad Commission*, 13 F. (2d) 510; *Peoples Natural Gas Co. v. Public Utilities Comm.*, 279 Pa. St. 252; *Fort Smith L. & T. Co. v. Bourland*, 267 U. S. 330, 336; *Public Service Corp. v. American Lighting Co.*, 67 N. J. Eq. 122; *Public Service Gas Co. v. Newark*, 86 N. J. Eq. 384, 388; *Southern R. R. Co. v. Hatchett*, 174 Ky. 463; *Colorado & S. R. Co. v. State Railroad Comm.*, 54 Col. 64; *Colorado Tel. Co. v. Wilmore*, 53 Col. 385; *Northern Ill. L. & T. Co. v. Ill. Comm. ex rel. Ottawa*, 302 Ill. 11; *Ches. & Ohio R. R. v. Public Service Comm.*, 242 U. S. 603; *Pittsburgh & Shawmut Coal Co. v. Delaware & N. R. Co.*, 289 Fed. 133, 134-5; *Hocking Valley R. Co. v. Public Utilities Comm.*, 92 O. S. 9; *Brownell v. Old Colony R. Co.*, 164 Mass. 29; *New York & Quebec Gas Co. v. McCall*, 245 U. S. 345, 351.

police power of the State to protect and promote the public health, general welfare and prosperity of the people in this vital and inherently local field is gone forever. And the slightest consideration of the size of the enterprise sought to be authorized by the Act shows that it will be gone in the entire State of Tennessee and in large parts of six or more neighboring States. (See pp. 82-85, *supra.*)

(b) The TVA, acting under this purported statutory authority, is already engaged in the intrastate business of supplying electricity to the public in four of these States, that is, Tennessee, Alabama, Georgia and Mississippi and has contracted to supply electricity in Kentucky. The size and nature of the TVA Unified Plan makes certain that upon its completion TVA will necessarily extend its business[1] into large areas of the other States of which any part lies in the Tennessee River basin. The size of the TVA Unified Plan alone (which is a mere stage in the execution of the statute) makes certain that its completion will result in TVA driving out state-regulated agencies, occupying the field and creating public dependence upon its service throughout practically all, if not all, of the State of Tennessee and large parts of six or more neighboring States.

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[1] That TVA is now engaging and under the TVA Unified Plan will further engage in a gigantic commercial business or industry can not be denied. To deny it would be to say that supplying electricity to the public is not a business or industry and that no public utility in the United States is engaged in business or industry. The TVA Act specifically refers to "*its (TVA's) business in generating, transmitting and distributing electric energy.*" (Sec. 26.) In official statements issued to the public through the press, all of which were excluded by the court as immaterial, the appellees have stated: "*The Act definitely puts the Federal Government into the business of rendering electric service.*" (Comp. Ex. 815, R. 3732.) "The Tennessee Valley Authority power program is not a taxpayers' subsidy. *It is a business undertaking.*" (Comp. Ex. 790, R. 3681.)

That to the extent that TVA takes over the business of supplying electricity to the public in these States, the States will be deprived of all police power over that peculiarly local public service is not open to debate. And it is equally clear that the right of citizens to earn a livelihood and to acquire and use property by engaging in that business will be gone forever.

3. The TVA Act authorizes TVA to regulate, and under the TVA Unified Plan, TVA is exercising the power to regulate, its own rates and service, the rates and service of distributors of TVA power and the rates of privately owned and state-regulated utilities operating in the area.

Regulation by TVA of its own Rates and of the rates of TVA distributors. (a) The TVA Act authorizes TVA to fix its own rates. (Sec. 14.) TVA is authorized to regulate the rates of distributors of TVA power by including "in any contract for the sale of power such terms and conditions, including resale rate schedules, * * * as in its judgment may be necessary or desirable for carrying out the purposes of this Act." (Sec. 10.) It is authorized to regulate all of the terms and conditions of service of distributors of TVA power by establishing "such rules and regulations" as it deems necessary or desirable. (Sec. 10.) Where TVA temporarily sells power to persons doing business for profit, it shall require that resale rates "shall not exceed a schedule fixed by the (TVA) board *from time to time* as reasonable." (Sec. 12.) [1] All of these rates are to be fixed by TVA without hearing and without appeal or review.

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[1] As hereinafter more particularly pointed out, the statutory scheme is to establish a policy of having the local electric business carried on by public agencies and non-profit organizations; and sales of power to corporations or persons supplying electricity to the public for profit is contemplated only as a temporary expedient for disposing of the surplus of TVA power in the interim while that policy is being fully established.

TVA is required to establish a policy in the various States of favoring domestic and rural use over industrial use. (Sec. 11.)[1] Whether the State believes that favoring industrial use will, by stimulating the development of the State, best contribute to the public prosperity is immaterial. This policy is fixed by the TVA Act without regard to the assent or non-assent of the States. TVA must require power marketed through municipalities and non-profit organizations to be "distributed without discrimination" according to the TVA theories in that field of rate regulation. (Sec. 12.) TVA "may make such rules and regulations governing the sale and distribution of such electric power as in its judgment may be just and equitable." (Section 10.) Again all of these regulations are to be made by TVA without hearing and without appeal or review.

(b) TVA, acting under the authority of the statute, has been and still is consistently exercising the power to fix its own rates, terms and conditions of service and to regulate the rates, terms and conditions of service of all distributors of TVA power. (See pp. 80-82, *supra.*) TVA expressly denies the power of the States to regulate its

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[1] The bald attempt to usurp State powers is strikingly illustrated by the fact that this declaration of policy in the TVA Act is taken literally from the declaration of policy in the Power Authority Act of the State of New York, where the State in the exercise of State powers, declared:

"• • • in the development of hydroelectric power therefrom, the said project shall be considered primarily as for the benefit of the people of the state as a whole and particularly the domestic and rural consumers, to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose to be utilized principally to secure a sufficiently high load factor and revenue return which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity." (Ch. 772, Sec. 5, (5), Laws of 1931, New York.)

rates, terms and conditions of service or the rates, terms and conditions of service of distributors of TVA power.[1] All of the contracts between TVA and distributors of TVA power require the distributors to observe resale rate schedules attached to the contract and to submit to such further regulation as TVA has seen fit to impose. (See pp. 206-209, *infra.*) Thus TVA is authorized, and claims the right, to fix its rates and the rates of distributors of TVA power as it chooses. *It may double its rates or cut them in two and, if the TVA Act is valid, the States are powerless in the premises.* It may discriminate between different localities in fixing rates. It may establish uniform rates throughout the States in which it operates or it may fix a different rate for every village. It may take over one-half of a State and establish an entirely different rate structure and policy from that established and enforced by the State in the remainder of its territory. And if the TVA Act is valid, then, as TVA has claimed, these are "matters clearly beyond your (State) control."[1] *Manifestly there is no relation between the regulation of the resale rates of distributors of TVA power, public, non-profit or private, and the disposal of Government property.*

If the TVA Act is valid, manifestly to the extent that TVA displaces state-regulated agencies and occupies the field of supplying electricity to the public, the power of the States to regulate rates and to impose any of the other regulations of this local public service commonly invoked in the public interest is taken away. And the right of the peo

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[1] The trial court excluded, as immaterial, a written statement filed with the Alabama Public Service Commission and signed by all three Directors of TVA, in which TVA declined to submit for examination by such Commission its cost records and books, and said: "*And since your Commission cannot directly determine the rates and rate policies of this national agency, it should not try to do this indirectly, by calling for testimony concerning matters clearly beyond your control.*" (Comp. Ex. 884, excluded; R. 3878, 3880-1.)

ple to engage in the business is destroyed. Again, we invite the attention of the Court to the fact that the size of the electric enterprise included in the TVA Unified Plan makes certain that this deprivation of the powers of the States and the rights of the people will extend throughout Tennessee and large parts of six or more neighboring States. Nor can the size of the enterprise properly be viewed apart from the fact that the power is to be sold at subsidized rates which do not meet the costs of production, transmission and distribution, and with which state-regulated agencies, which must bear all of these costs, obviously can not compete. (See pp. 79-81, *supra.*) The situation may be aptly illustrated by *paraphrasing* the language of this Court in *Walla Walla City v. Walla Walla Water Co.*, 172 U. S. 1, as follows:

> "The city (TVA) might fix such prices as it chose for its water (electricity) and might even furnish it free of charge to its citizens (the public) and raise the funds for maintaining the works by a general tax. It (TVA) would be under no obligation to conduct them for profit, and the citizens would naturally take their water (electricity) where they could procure it cheapest. The plaintiff (appellants), upon the other hand, must carry on its business (their businesses) at a profit, or the investment becomes a total loss." (loc. cit. 11.)

It is thus plain that the displacement of state-regulated agencies and the pre-emption of the field of supplying electricity to the public by TVA is inevitable. And, ironically, one of the major subsidies which makes this result inevitable is the deprivation of the States of their tax revenues which in 1937 amounted to many millions of dollars from these appellants alone. Nor may the situation properly be viewed apart from the facts (1) that, with the exception of one or two small municipalities which owned and operated their distribution systems at the time of the passage of the

TVA Act, every municipality now or formerly served by appellants with which TVA had a contract at the time of trial was the beneficiary of a PWA grant of 30 or 45 per cent of the cost of the distribution system, and in most cases of a loan for the cost of the balance, repayable only out of earnings, if any, to be derived from the distribution of TVA power, and (2) that the facilities of practically every non-profit organization distributing TVA power had been constructed by TVA and had been financed by TVA or REA and in some cases had been constructed with labor donated by CWA. (See pp. 75-79, *supra.*)

All of these factors, taken in connection with the unlimited character of the undertaking, are of the utmost importance in measuring the extent of the threatened invasion of the powers of the States and of the rights of the people; for inescapably, to the extent that TVA occupies the field, both the powers of the States and the rights of the people are displaced and destroyed.

Regulation by TVA of Rates of Existing Utilities Not Distributing TVA Power and Displacement of State Regulation. Not only the natural and reasonable effect, but the direct, necessary and intended effect, *of the Act and of the TVA Unified Plan* in the situation in which they operate, is to regulate the rates of all other utilities not distributing TVA power and operating in the TVA area. The statutory and administrative provisions for the regulation of the rates of distributors of TVA power is an integral and essential part of the statutory and administrative scheme to regulate all local electrical rates in the TVA area, including the rates of non-distributors of TVA power. (See analysis of statute, pp. 14-17, *supra.*) It is apparent that the standard contract provisions, prescribed and established in advance of any negotiations for sale of TVA power to, or through, municipalities and non-profit associations (fixing as they do what the ultimate consumer

shall pay in every classification of service, how his payments shall be collected and accounted for, and when collected, how they shall be expended and used) have no relation to the disposal of federal property and can have no object other than the establishment of a system of federal control over every operation in the electric power business. Such intention was affirmed by the TVA Directors themselves in their Minutes of October 13, 1933 [1] (excluded by the court as immaterial), and is borne out by all of their subsequent acts in the promotion of a market for the sale of TVA power.

The statute is specifically directed to bring about the sale of electricity in the territory "at the lowest possible rates" (Sec. 11) and specifically authorizes direct service by TVA where it "deems existing rates unreasonable." (Sec. 10.) Thus the threat of economic destruction hangs over the heads of the non-conforming. In this connection the vast size of the enterprise authorized by the Act and of the enterprise embodied in the TVA Unified Plan is again of controlling importance. It is plain that with electricity offered for sale in an amount which is unlimited in relation to the available market, a supply far greater than the demands of the area, at subsidized rates far below the rates of appellants under State regulation, the appellants can sell and continue in business at all only by adopting the rates from time to time promulgated by TVA and

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[1] "For the Authority's operations to provide a yardstick of public operation by which to measure private operations it is essential that the Authority engage not only in the generation but participate in the transmission and distribution of electricity, since these latter two phases of electric service represent the most important part of the cost of such service. A public yardstick to have value necessarily means public operation from power house to consumer's premises. (*It is for this reason that the Authority has adopted a policy of rate and accounting control of municipal distribution operations.*)" (TVA Minutes of October 13, 1933; Comp. Ex. 708, excluded, R. 3640.)

not by collecting the rates fixed by State authority. (See pp. 80-81, *supra*.) As this Court said in the *Walla Walla* case, *supra*, the public "would naturally take their water (electricity) where they could procure it cheapest." (loc. cit. 11.) The Federal Government can no more deny the intent to achieve, or the responsibility for achieving, a result flowing necessarily and inevitably from the operation of a statute upon an economic law, than it could deny an intent to achieve, or responsibility for achieving, a result naturally and inevitably flowing from the operation of a statute upon a law of nature.

The regulation of the rates of appellants and other utilities in the TVA area at the level fixed from time to time by TVA will be the natural and inevitable effect of that stage of the execution of the statute which will be represented by the completion of the TVA Unified Plan. This is patent from any consideration of the size of the enterprise in relation to the market (see pp. 80-81, *supra*) and of the circumstances that this unlimited quantity of electricity is being offered at rates conceded to be "substantially below" (and as shown by evidence excluded by the trial court as immaterial, from 25 to 60 per cent below) the state-regulated rates. While the trial court excluded, as immaterial, testimony of experts in the utility business that the operation of the TVA Act and of the TVA Unified Plan will directly and definitely so regulate appellants' rates, the uncontradicted evidence leaves no room for doubt on that point.

The court also excluded evidence that the appellees are so construing and administering the Act and the TVA Unified Plan. Thus the court excluded, as irrelevant, an official TVA Press Release stating in the words of Director Lilienthal:

> "The power policy written into the Tennessee Valley Authority Act represents an attempt to regulate public

utilities not by quasi-judicial commissions, but by competition." (Comp. Ex. 815, excluded, R. 3732.)[1]

While apparently admitting, as they must, that *de facto* the TVA Act and the TVA Unified Plan will regulate and fix appellants' rates, the appellees contend that that does not constitute regulation in law because neither the Act nor the TVA Unified Plan provides a penalty by fine or imprisonment for failure to adopt rates promulgated from time to time by TVA. The contention is plainly without substance in law or in fact for the following reasons:

First: The court below in its opinion referred to "the inevitable effect of the lower rates of the TVA within this area and the economic necessity forced upon the complainants of lowering their rates to meet the competitive rates of the Authority * * *." (R. 555.) The appellants must accept the rates promulgated by TVA or

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[1] This was not an isolated instance of this declaration of the administrative interpretation and administration of the Act. Other illustrations (out of a very large number published in official TVA Press Releases, all of which were excluded by the court as immaterial), are:

"Regulation by Commission had in many states proved ineffectual. * * * And so, to supplement regulation by Commissions, Congress passed the TVA Act." (Comp. Ex. 799, excluded, R. 3698.)

"The National Power Policy of the President and the Congress, written into the Tennessee Valley Authority Act, recognize that electric power, next to the soil, is our greatest resource. * * * And so, to supplement regulation by Commissions, Congress passed the Tennessee Valley Authority Act. * * * We believe that definite plans of the Authority now in process of execution afford the quickest means of accomplishing a thorough revision of rate schedules and rate theories throughout the country, and with it, an increase in the use of electricity. This is an essential part, as I see it, of the new national power program inaugurated by the Tennessee Valley Authority Act." (Comp. Ex. 800, excluded; R. 3703, 3707; see also Comp. Exs. 790, R. 3683; 796, R. 3691; 839, R. 3773.)

suffer the complete loss of their business and economic destruction. This control over the rates of appellants and other utilities in the area is plainly effected by economic coercion. Regulation effected by economic coercion is no less regulation than when effected by fine or imprisonment; and if the subject over which federal regulation is achieved through economic coercion does not fall within the field of federal regulatory power, such regulation is unconstitutional. *United States v. Butler*, 297 U. S. 1, 70-1.

Obviously, the regulation of appellants' rates under the TVA Act and under the TVA Unified Plan is much more direct, definite and certain, and the economic consequences of non-conforming are much more disastrous under the TVA Act and under the TVA Unified Plan, than was the regulation of the production of unwilling farmers under the Agricultural Adjustment Act. Regulation of the electric industry so as to bring about the sale of electricity "at the lowest possible rates" is the very heart of the TVA Act, just as the regulation of production was the heart of the old Agricultural Adjustment Act. And manifestly, the offer to purchase federal control of local electric rates with *unlimited amounts of subsidized power*, with *gifts* and *loans (repayable, if at all, only out of earnings)* for the construction of systems to distribute TVA power, *with loans carrying no personal obligation* to non-profit organizations for the construction of systems to distribute TVA power and with the *donation* of labor by the CWA (see pp. 75-82, *supra*), greatly exceeds the economic power and coercion exerted by the machinery provided for purchasing control of agricultural production under the Agricultural Adjustment Act.

Second: To say that the rates of existing utilities are not regulated upon the ground that they might stubbornly and wilfully choose destruction rather than submit to such federal regulation would be to remove the law from

the field of common sense and realities. It would be to place constitutional rights at the mercy of the disingenuous scrivener, the clever scheme, the sharp practice.

It has long been settled that to offer a citizen the choice between the rock and the whirlpool, between submission to unconstitutional regulation and economic destruction, is not the open sesame to the avoidance of constitutional limitations and that under such circumstances the citizen may restrain the unconstitutional exercise of power which he could only avoid by submitting to his own destruction.

Thus, in *Frost v. Railroad Commission*, 271 U. S. 583, the effect of a State statute was to compel private carriers for compensation to submit to regulation as public carriers or to cease to use the highways entirely. It was argued that the private carrier was not obliged to submit himself to the condition for he had a free choice. In dealing with this argument, this Court said:

> "If so, constitutional guaranties, so carefully safeguarded against direct assault, are open to destruction by the indirect but no less effective process of requiring a surrender, which, though in form voluntary, in fact lacks none of the elements of compulsion. Having regard to form alone, the act here is an offer to the private carrier of a privilege, which the state may grant or deny, upon a condition, which the carrier is free to accept or reject. *In reality, the carrier is given no choice, except a choice between the rock and the whirlpool,—an option to forego a privilege which may be vital to his livelihood or submit to a requirement which may constitute an intolerable burden.*" (loc. cit. 593.)

This regulation of appellants' rates is plainly forbidden by the Fifth Amendment for several reasons. It is a field in which the Federal Government has no jurisdiction. It establishes appellants' rates at a confiscatory level. It

fixes appellants' rates without hearing, appeal or review. And apart from these violations of the Fifth Amendment, there is manifestly an unconstitutional delegation of power to TVA, as there is no adequate standard set up in the Act and no reasonable statutory method for the determination or review of the rates prescribed. Cf. *Panama Refining Co. v. United States,* 293 U. S. 388; *Schechter Corp. v. United States,* 295 U. S. 494.

Third: If it could be held (as we think it can not) that the *de facto* regulation by TVA of the rates of the appellants does not constitute regulation in law, that would not remove the vice in this aspect; for it clearly prevents the State from exercising its power of regulation. We have already seen that through subsidies and even through disregard of the statutory direction to sell the electricity at rates above cost after allowing for the benefit of the statutory subsidies (see pp. 79-80, *supra*), TVA has established rates conceded to be "substantially below" the state-regulated rates. The court excluded proof that these subsidized rates are in fact from 25 to 60 per cent below such state-regulated rates. The trial court states (Opinion R. 555), and the facts inescapably establish, that the appellants must adopt the rates from time to time promulgated by TVA. The result is that the rates of appellants are to be regulated below a fair return upon the property devoted to the public use.

Since the States, in regulating utility rates, are by constitutional limitation required to allow a reasonable return, it is obvious that there is nothing which the States can do in the premises and that their power of regulation is completely ousted. To deny that there is a displacement of the jurisdiction of the State because the States may retain in form of law a power to regulate rates, which action of the Federal Government has in fact made it impossible

for them to exercise, would be to make a farce of the law and of our constitutional system. Plainly the necessary and inevitable result of the operation of the Act and of the TVA Unified Plan is to substitute federal regulation of the rates of privately owned utilities in the area for State regulation under constitutional limitations. Further, the inevitable effect of the operation of that plan is to prevent existing utilities from reducing fixed costs through refinancing and to prevent them from raising necessary capital at reasonable rates, if at all, for extensions. (See pp. 83, 88-89, *supra*.) These are obviously direct and substantial interferences with proper and efficient State regulation.

While the court excluded the evidence as immaterial, the appellants below offered to show that the savings which could be achieved by the appellants from refinancing alone, in the absence of the disastrous threat of TVA competition and regulation, would be on the order of millions of dollars (see pp. 88-89, *supra*); and obviously such savings would be passed on to the consumers in any rate proceeding before a duly constituted State body. We have already pointed out that one of the effects of the TVA Unified Plan, as it is being executed, is to dismember the highly integrated and efficient systems built up by the appellants by seizing the hearts of their markets and the cream of their businesses (such as Chattanooga in the case of The Tennessee Electric Power Company) and destroying the economy with which the service could otherwise be supplied to the public. (See pp. 84, 88, *supra*.) In some instances this dismemberment threatens some of appellants with bankruptcy unless they choose to abandon what they believe to be their constitutional rights and are concurrently able to sell their facilities to TVA,—and that sorry alternative is made more desperate still by the fact that the price offered by TVA must be accepted upon pain of duplication and de-

struction.[1] *Under such circumstances the power of the State fairly and constitutionally to regulate rates, to order extensions of service, to compel continuation of service, to establish uniform State-wide rates and otherwise to adopt policies deemed to be for the general welfare and prosperity of the State is set at naught.*

In the court below it was argued that the decision of this Court in the *Ashwander* case sustained the power of TVA to regulate rates. It seems sufficient to say that the opinion in the *Ashwander* case discloses no consideration, and much less any approval, of the claimed right of TVA to regulate rates; but on the other hand, the opinion of this Court in the *Ashwander* case does clearly establish that any invasion of the powers of the States or of the rights of the people by TVA is beyond the constitutional power of the Federal Government.

4. The TVA Act establishes, and TVA under the Unified Plan is carrying out, a policy of having the local electric business carried on by public bodies or non-profit organizations.

(a) The TVA Act, without regard to State policy, affirmatively and in detail provides for the establishment of a policy of having the local electric business carried on by public bodies or non-profit organizations. (See analysis of Act, pp. 14-17, *supra.*) The Act requires TVA to "give preference to States, counties, municipalities and cooperative organizations • • • not organized or doing business for profit." (Sec. 10.) TVA may enter into contracts for a term of thirty years with public bodies or non-profit organizations (but not with corporations or persons doing a utility business for profit) provided they will build

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[1] See statement of Chairman A. E. Morgan before Congressional Committee, Comp. Ex. 109†, pp. 162-3, R. 2633-4; also R. 1127, 1135.

transmission lines to TVA generating stations or transmission lines. (Sec. 12.) Indeed, the Act requires that all contracts for the sale of power to private companies or persons doing business for profit, which power is to be resold for profit, shall contain a cancellation clause so that TVA may recapture the power for use in promoting the statutory policy of having the local electric business in the several States carried on by public agencies or non-profit organizations. (Sec. 10.) Plainly sales to persons doing a utility business for profit are, under the statute, only a temporary expedient to be used to dispose of power not otherwise saleable pending the establishment of this statutory policy.

Further to forward this policy, TVA may extend credit for a period not exceeding five years to public bodies and non-profit organizations situated within transmission distance from any TVA generating station to acquire existing distribution facilities and incidental works, including generating plants and interconnecting transmission lines (Sec. 12a) and for that purpose may issue bonds in the amount of $50,000,000 on the credit of the United States. (Sec. 15a.) *The statutory purpose to establish this policy within the States could not be written more plainly on the face of the Act.*

When these provisions of the Act are read in the light of the fact that under the statute quantities of electricity unlimited in relation to the available market are to be offered for sale at subsidized rates with which no unsubsidized competitor can compete, it is plain that the establishment of such a policy within the States is *not only the natural and reasonable effect, but the inevitable effect, of the operation of the Act.* It follows under economic law that "citizens would naturally take their water (electricity) where they could procure it cheapest." *Walla Walla City v. Walla Walla Water Co., supra.* And as before pointed

out, *Congress can no more disavow a result inescapably following from the operation of a statute on an economic law than it can disavow a result inevitably following from the operation of a statute upon a law of nature.*

(b) TVA, as it must, has followed this statutory policy. While the trial court excluded the evidence as immaterial, the appellants offered to prove that privately owned and operated utilities had repeatedly offered to purchase the power being generated and to be generated under the TVA Unified Plan at a price fixed by competitive bidding, by arbitration or by the published rate schedule of TVA and to pass on any saving to the public. (Offer to Prove, Willkie R. 1505-7.) While only a small fraction of the total power capacity which will result from the completion of the TVA Unified Plan has yet been achieved, TVA has developed its power capacity far beyond the demand of its current customers due to the fact that it has taken some time to construct duplicate transmission and distribution systems or force the sale of existing distribution systems. In the meantime it refuses to sell power to privately owned utilities except with provision for recapture for use in promoting the statutory policy of having the local electric business carried on by public agencies and non-profit organizations in accordance with the provision of the Act to which reference has been made. That under the TVA Unified Plan appellees are acting to establish this statutory policy is therefore not open to debate.[1]

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[1] The effectiveness of the operation of the statutory and administrative scheme to have local electric business carried on by public bodies and non-profit organizations is strikingly illustrated by the situation in the territory served by the appellant Alabama Power Company which, to avoid duplication of testimony, was taken as typical. (R. 936, 965.) During the period between 1915 and 1930, thirty-three municipalities operating their own electric distribution systems voted to sell such systems to the Alabama Power Company and no municipality voted to acquire a distribution system for municipal operation. (R. 941, Comp. Ex.

(Continued on page 178)

5. There is no real or substantial relation between the power to dispose of federal property and the regulation of local electric rates or the establishment within the States of a federal policy of having the local electric business carried on by public or non-profit organizations.

The regulation of retail rates and federal control over the method of carrying on the local electric business is obviously unnecessary to the disposal of federal property. No justification appears except the desire to impose federal regulation and control over the local electric industry. (See pp. 138-139, *supra.*) No honest reading of the statutory scheme of disposal can result in a conclusion that it is merely a method of getting the property to market. In fact the provisions of the Act provide a limitation on the market. The method of disposing of the property provided by the Act is a method of promoting public or non-profit operation of the local electric business and federal regulation of that business. The very provisions of the Act which contrive to govern the concerns reserved to the State, likewise limit the market for the sale of power. It is not a market in which all buyers may participate on equal terms. And the TVA Unified Plan establishes in operation those statutory purposes.

6. The natural and reasonable effect of the operation of the Act, by bringing about a federal monopoly of the local electric business, is to deprive the States of important tax revenues.

It has long been an established principle of constitutional law that the Federal Government may not exercise its power of taxation so as substantially to burden or interfere with the functions of the States. *Collector v. Day,*

186, R. 2967-8.) Since the passage of the TVA Act in 1933, 18 municipalities, 13 of which received service from The Alabama Power Company, voted to acquire electric systems. Of the 13, 6 are now buying their electric requirements from or are under contract to buy from the TVA. (Comp. Ex. 191, R. 3001; R. 948.)

78 U. S. (11 Wall.) 113, 124; *Pollock v. Farmers Loan Co.*, 157 U. S. 429, 584; *Ambrosini v. United States*, 187 U. S. 1.

While the recent decisions of this Court in *Helvering v. Gerhardt*, 304 U. S. 405, and *Allen, Collector, v. Regents*, 304 U. S. 439, may be regarded (although we think it doubtful) as requiring a plainer showing of interference with State functions through exercise of the federal taxing power than had been the previously established rule, it seems plain that nothing in those decisions sanctions any substantial interference with or burdening of State functions through the exercise of the taxing power. And it would seem that if the traditional doctrine that the Federal Government may not use its power of taxation so as substantially to interfere with or burden State functions is not to be abandoned, the adoption by the Federal Government of a systematic course of conduct, which has the direct and necessary effect of depriving the States of large sources of taxation and revenue, must be equally inadmissible. Manifestly, if the Federal Government may take over vast industries within the States and operate them as federal monopolies, the tax resources of the States will in a large measure continue to exist only at sufferance of the Federal Government. The record here shows that in 1937 the 18 original appellants alone paid approximately $16,000,000 in taxes and the larger part of these taxes was paid to States and state agencies. (See p. 62, *supra*.) The inevitable effect of the operation of this Act is substantially to deprive the States of that source of taxation and of that important revenue.

H.

The objection that the statutory and administrative scheme for the disposal of the electricity is unauthorized by the Constitution and contravenes the Fifth, Ninth and Tenth Amendments cannot be cured by the consent of a State; and were the question one of release from inherent constitutional limitations, they could not be surrendered in the vital characteristics here involved except by constitutional amendment.

TVA denies the right of the States to exercise any power or control whatsoever over its business and activities. (See pp. 80-81, 164-166, *supra.*) Nevertheless six states, doubtless moved by the prospect of large federal expenditures or of distribution of electric power at rates subsidized by the Federal Treasury (Cf. *Butler v. United States, supra*), passed statutes exempting TVA from State regulation as a public utility or purporting to authorize municipalities and cooperative associations to distribute TVA power.[1] In Alabama and Tennessee these statutes were in varying degrees involved or mentioned in certain cases before the highest courts of those States. *Chattanooga v. Tennessee E. P. Co.*, 172 Tenn. 505; *Memphis P. & L. Co. v. Memphis*, 172 Tenn. 346; *Tennessee P. S. Co. v. Knoxville*, 170 Tenn. 40; *Alabama P. Co. v. Membership Corp.*, 234 Ala. 396; *Oppenheim v. Florence*, 229 Ala. 50. TVA was not a party to any of these cases, and in none of them did the court purport to pass upon the validity of the TVA Act or of TVA activities. In none of these cases was the validity of TVA regulation of rates of private utilities involved or considered. Nor did the courts in any of these cases pass upon the validity of TVA interference with the

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[1] Such statutes were passed in Alabama, Mississippi, Tennessee, Kentucky, North Carolina, and Georgia. These statutes are printed in the separate Appendix to this brief, pp. 47-66.

sovereign functions of the States in regulating local electric rates or the electric business generally. In each case the court assumed that the State police power must continue unimpaired.

However, the trial court, after citing the foregoing cases, said:

> "The actions which the complainants attack are authorized by the states themselves. It is strange doctrine that acts authorized by a sovereign state constitute interference with its sovereign rights because of the fact that they are also authorized by the Federal Government. We think that deliberate cooperation between the state and the United States, authorized in each case both by the state legislature and by the Congress, constitutes no abdication of any state right." (R. 563.)

Apart from the fact there there is no pretense of State consent in three of the States involved,[1] the trial court misconceives and misstates the point. There was no contention that "acts authorized by a sovereign State" are unlawful, "*because* of the fact that they are also authorized by the Federal Government." The contention—which is not a "strange doctrine"—is that the Federal Government may not appropriate police powers of the States and may not do that even with the State's consent.

Nor is it the contention that constitutional federal action is made unlawful by concurrent State action in the same field. Where federal power is being constitutionally exercised, assent or non-assent by the State is immaterial. As this Court said in *Butler v. United States, supra,* "if the federal power reaches to the subject-matter, its exertion cannot be displaced by State action." (loc. cit. 74.) But the question here is whether action of the Federal

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[1] Virginia, West Virginia and South Carolina.

Government otherwise unconstitutional because in excess of the powers granted under the Constitution and in contravention of the Fifth, Ninth and Tenth Amendments is brought within the scope of federal constitutional power by State consent. More precisely the question here is whether a State may confer constitutional authority upon the Federal Government to engage in and monopolize the business of supplying electricity to the public in the State, regulate the local electric business and deprive the people of the right to engage in that business or, if they can remain in business at all, to carry it on free from federal interference or regulation. This is a question which was not raised or considered in the State cases relied upon by the trial court and in any event the question is one of federal law upon which the determination must be finally made by this Court. And if the State cases could be construed, as we think they cannot, as holding that absence of federal power may be supplied and violation of federal constitutional limitations may be excused by the action of a single State, the holding would plainly be grossly erroneous. The problem involves on the one hand the granting of powers to the Federal Government *which are not found in the Federal Constitution,* and, on the other, the *abdication of powers reserved to the States and the people and the surrender of rights retained by the people* under the Federal Constitution. Neither may be done under our dual system of government without constitutional amendment.

In *Ashton v. Cameron County Water Improvement District,* 298 U. S. 513, this Court said:

> "Neither consent nor submission by the States can enlarge the powers of Congress; none can exist except those which are granted. *United States v. Butler,* 297 U. S. 1. The sovereignty of the State essential to its proper functioning under the Federal Constitution cannot be surrendered; it cannot be taken away by any form of legislation." (loc. cit. 531.)

In *United States v. Butler*, 297 U. S. 1, 72, this Court said:

> "But if the plan were one for purely voluntary cooperation it would stand no better so far as Federal power is concerned. *At best, it is a scheme for purchasing with federal funds submission to federal regulation of a subject reserved to the states.*"

And in *Carter v. Carter Coal Co.*, 298 U. S. 238, 295, this Court said:

> "* * * State powers can neither be appropriated on the one hand nor abdicated on the other."

There is an inherent lack of power in the Federal Government to "invade the rights reserved to the States or to the people" or "to govern the concerns reserved to the States." No want of federal authority can be supplied, no violation of federal constitutional prohibition can be cured by the consent of a State.

Here we have not a case of cooperation between the State and Federal Government in the exercise of their constitutional powers, *but a case of abdication by the State and usurpation by the Federal Government.* The situation is plainly distinguishable from that presented in *Steward Machine Co. v. Davis*, 301 U. S. 548. In that case the Federal Government was found to have the constitutional power to levy the federal taxes and to carry out the scheme of the statute. This federal power was not destroyed or limited by the cooperation of the States in the exercise of independent constitutional powers. The consent or cooperation of the State in the *Davis* case neither enlarged nor diminished the power of the Federal Government. That is the vital distinction overlooked by the trial court. While our constitutional system does not preclude the *cooperation* of the State and Federal Governments in the exercise of the constitutional powers of each, it does preclude the abdication of powers by the States and the usurpation

of powers by the Federal Government by collusion between them.[1] It does preclude the destruction or "disparagement" of the rights retained by the people by any action short of the amendment of the Constitution by constitutional processes.

But if it be assumed *arguendo* that the question here is whether the Federal Government may be relieved from the inherent limitations imposed by our dual system upon the exercise of its express powers by consent of a single State, the answer is equally plain. The limit of the doctrine that a State may, in some circumstances, by consent remove constitutional limitations upon the exercise of an express power, which exist only in the inherent limitations of our dual system of government, is that the States may not surrender the "essence of their statehood." *United States v. Bekins*, 304 U. S. 27, 53.

Here consent of the States requires that they shall strip themselves of their police power in one of the largest and most important fields of State government and that they shall delegate to the Federal Government their police power to regulate the business of supplying electricity to the public. This police power is inherent and involves the very essence of Statehood under our system of government. It has been consistently held by this Court that that power may not be abdicated or bartered away. *Northern Pacific R. Co. v. Minnesota ex rel. Duluth,*

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[1] In the court below the appellees made, and the trial court apparently accepted, the contention that there can be no federal invasion of State rights in the absence of interference with *affirmative regulation*. States may adopt a policy of non-regulation or a policy of most complete and detailed regulation. Thus, some States regulate rates of publicly owned utilities and some do not, but neither the conscious decision not to exercise, nor the inadvertent neglect to exercise, such State powers invites or permits the Federal Government to invade the States and exercise powers reserved to the States and forbidden to the Federal Government.

supra; *Atlantic Coast Line v. Goldsboro*, 232 U. S. 548; *Denver & Rio G. R. Co. v. Denver*, 250 U. S. 241. Nor may it be delegated to any other authority. *I Cooley's Constitutional Limitations*, 224 (8th Ed.)[1]; *Clark v. Washington*, 12 Wheat. 40. It has never been surrendered to the general government. *New York v. Miln*, 11 Pet. 102, 139; *Slaughter House Cases*, 16 Wall. 36, 63; *Keller v. United States*, 213 U. S. 138, 144.

If the States may surrender that sovereignty, no reason is apparent why the States may not surrender the power to regulate all of their internal affairs for a price. And if that is so, then the Federal Government, by the use of federal funds or by gifts of federal property or by "sales" of federal property at less than cost or even at less cost than it is possible to produce them without the use of the credit of the nation, may acquire all of the reserved rights of the States,—and as those rights are successively purchased, the States will be progressively weakened and less able or willing to defend their rights or discharge their duties. *Carter v. Carter Coal Co., supra*, 296.

In *United States v. Bekins, supra*, there was involved no surrender of State police power to the Federal Government; no surrender of the "essence of statehood." There was involved only State consent to a single and non-recurring action involving a release of a political subdivision of

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[1] "One of the settled maxims in constitutional law is, that the power conferred upon the legislature to make laws cannot be delegated by that department to any other body or authority. Where the sovereign power of the State has located the authority, there it must remain; and by the constitutional agency alone the laws must be made until the constitution itself is changed. The power to whose judgment, wisdom, and patriotism this high prerogative has been intrusted cannot relieve itself of the responsibility by choosing other agencies upon which the power shall be devolved, nor can it substitute the judgment, wisdom, and patriotism of any other body for those to which alone the people have seen fit to confide this sovereign trust." (p. 224.)

the State which the State desired and was powerless to give. *Here is involved the surrender of State police power for twenty or thirty years and, under the inexorable force of indisputable facts, a surrender forever.* "Not by arguments so divorced from the realities of life" (Dissenting Opinion of Cardozo, *J.*, *Ashton v. Cameron County District, supra*, p. 541) has our dual system been preserved for 150 years. There is an inherent lack of power in both the Federal Government and the State Governments to violate the "foundation principles of our dual system of government."

Nor should the rights retained by the people be overlooked. They include the right to carry on an intrastate business free from federal interference or regulation and the right to engage in a lawful business *without being ousted* by the Federal Government making a legal or *de facto* federal monopoly of that business. We deny the right of a single State, or the right of any group of States (less than enough to amend the Constitution by constitutional processes) to empower the Federal Government to "disparage" the rights of the people and much less to destroy them. No State Government acting in collusion with the Federal Government behind the backs of the people may take away the rights reserved and guaranteed to the people by the Constitution. Back of the power of both the State and Federal Governments stands the people as sovereign. Certain rights were reserved not to the States but to the people, and those rights can be surrendered only by the people acting through constitutional processes.

I.

The principles laid down in the Ashwander Case condemn the method of disposal authorized by the Act and adopted by the TVA Unified Plan.

In the court below the appellees contended that the validity of the method of disposal authorized by the Act and adopted by the TVA Unified Plan is sustained by the decision of this Court in the *Ashwander* case. The trial court, as before pointed out, declined to consider whether the reserved powers of the States or the rights of the people were invaded, or whether the undertaking upsets our dual system of government. Having thus disregarded the controlling limitations upon the power to dispose of property which were laid down by this Court in the *Ashwander* case, the trial court held that the *Ashwander* case sustains the disposal of property under examination because the *Ashwander* case involved "every kind of electric facility, many miles of distribution and transmission lines" and the continuous production of electric energy at Wilson Dam. (Opinion, R. 564.)

Thus a controlling point in the mind of the trial court was the *kind* of facilities rather than their extent or the effect of the undertaking upon reserved rights or upon our dual system of government. And even that statement was fundamentally unsound; for the transmission lines in the *Ashwander* case were only 44,000 volts, suitable for taking power to a small local market while here the large transmission lines are 154,000 volts (built for ultimate increase to 220,000 volts), *which are suitable only for the backbone of an immense electric system.* The *Ashwander* case only involved the purchase of facilities of very limited capacity and very limited extent. It did not involve any of the questions of rate regulation, substantial displacement of State police powers in the entire field of regulating the electric business, destruction of state-regulated agencies created to carry on this public service, or destruction of the right

of the people to engage in the business through displacement by a federal monopoly, all of which are present in this case.

The essence of the trial court's conclusion is that because this Court held in the *Ashwander* case that a "limited undertaking" (insignificant in comparison with the TVA Unified Plan or the power system authorized by the TVA Act) did not constitute an invasion of the rights reserved to the States and the people, did not upset the balance of our dual system of government, and did not constitute engaging in a business or industry, no method of disposal of property,—no matter how large, no matter what the effect upon the reserved rights of the States or the people, no matter whether it is branded inescapably as a competitive commercial enterprise by the mere fact that it inevitably takes over the entire business or industry of supplying electricity to the public in a large part of seven or more States, —could violate any of these limitations. The mere statement of the proposition is sufficient to refute it.

As the Court of Appeals said in *TVA et al. v. Tennessee E. P. Co., et al.*, 90 F. (2d) 885, 890-1, R. 274:

> "The Ashwander case was a derivative suit brought by preferred stockholders of the Alabama Power Company to set aside the contract as *ultra vires*. By limitations imposed upon the Court by the nature of the suit, and through limitations of the judicial process, *the Ashwander case was kept within very narrow compass.*"

Both special counsel for TVA and the then Solicitor General insisted in the *Ashwander* case that since the transmission lines involved ran from Wilson Dam and the electric energy generated at Wilson Dam was more than sufficient to supply all of the requirements of the contract,[1]

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[1] Indeed when the contract was made and for more than two years thereafter, there was no other source of electricity available to TVA.

the questions properly before this Court were limited to the constitutional authority for the construction of Wilson Dam and for the disposition, as provided in the contract, of the electric energy there generated;[1] and this Court accepted that factual hypothesis as the basis of its decision. (*Ashwander* case, loc. cit. 326.) The sole questions thus were (a) whether TVA could lawfully generate electric current at Wilson Dam as it had been constructed under the National Defense Act, and (b) whether TVA could lawfully acquire the transmission lines (*limited in capacity and length*) involved in that contract to carry such current to a local market. These were the only questions decided by this Court.

To avoid any possible misconception of the scope of its decision, this Court said:

> "* * * We express no opinion * * * as to the status of any other dam or power development in the Tennessee Valley, whether connected with or apart from the Wilson Dam, or as to the validity of the Tennessee Valley Authority Act or of the claims made in the pronouncements and program of the Authority apart from the questions we have discussed in relation to the particular provisions of the contract of January 4, 1934, affecting the Alabama Power Company." (loc. cit. 340.)

The Court of Appeals said in *TVA v. Tennessee E. P. Co., supra:*

> "* * * What then may have been merely tentative or speculative may now be approaching realization. What then was remote may now be imminent, and mere concept have fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of those complaining. This may only be determined by a full hearing on the merits." (loc. cit. 892, R. 277.)

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[1] This is apparent from the excerpt from the argument of the Solicitor General in this Court, which is printed in the separate Appendix to this Brief, pp. 67-69.

This statement of the Court of Appeals is abundantly sustained by the record. The record establishes that the stage of the execution of the TVA Act which is embodied in the current TVA Unified Plan involves the generation, transmission and distribution of electric power over an area embracing a large part of seven or more States and has so far progressed that the appellants are now face to face not merely with threatened subsidized competition,—already an accomplished fact,—but the appropriation of their businesses and the destruction of the value of their properties.

The execution of the statute has reached a stage which involves no "limited undertaking" but one so vast that it must be held beyond the constitutional power of the Federal Government or it must be held that the federal power to dispose of property does give the power to destroy the powers reserved to the States and the rights retained by the people, to upset the balance of our federal system and to engage in a competitive commercial business within the States. No intermediate ground remains; for as we have already shown, such is the inevitable effect of the TVA Unified Plan upon the rights of the States and the people, and upon our dual system of Government. If that stage of the execution of the statute involved in the TVA Unified Plan be not held to constitute an unlimited undertaking and be not held to be an unwarranted destruction of the reserved powers of the States and of the rights of the people in the field of supplying electric service to the public, then it is impossible to conceive of any undertaking of the Federal Government which is subject to those limitations.

POINT III.

THE RIGHT OF APPELLANTS TO SUE, IN THE SITUATION SHOWN ON THIS RECORD, IS PLAIN.

The opinion of the trial court, in so far as it bears upon the right of appellants to sue, states:

"* * * Whatever compulsion exists is the inevitable compulsion exercised by the fact that a *competitor* sells at lower rates than complainants. But if the *operation of the TVA is legal,* the complainants have no legal right not to be subjected to *such competition* even though it curtail or destroy their business. *Alabama Power Co. v. Ickes,* 58 S. Ct. 300, 82 L. Ed. ...., decided January 3, 1938." (R. 552.)

* * * * *

"In view of the inevitable effect of the lower rates of the TVA within this area, and the economic necessity forced upon the complainants of lowering their rates to meet the *competitive rates of the Authority,* we conclude that the record presents evidence of *substantial future damage* to these complainants. But such damage constitutes *damnum absque injuria unless sales of power by the TVA are unlawful.*" (R. 555.)

* * * * *

"* * * It therefore is essential to the decision of the case pleaded in the bill to determine the constitutionality of this statute." (R. 558.)

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"Moreover, no State has intervened as a party in this proceeding to protest that its laws are violated by the TVA, and no regulatory commission is a party to this action. These complainants are not authorized to object on behalf of the states. *Georgia Power Co. v. Tennessee Valley Authority,* 14 F. Supp. 673, 676. Questions of the conflict of the TVA statute with the sovereign power of the states are not properly raised until the interested parties are before the court." (R. 563.)

With the exception of the novel rule laid down with reference to the right of a citizen to resist the exercise of federal power over him in matters reserved to the States (hereinafter discussed), these excerpts from the opinion below seem clearly to recognize the obvious right of the appellants to sue in all aspects of the suit. But subsequent to the filing of this opinion, the majority of the trial court adopted verbatim conclusions of law drafted and submitted by the appellees without opportunity to the appellants to comment upon them or point out that many of them are plainly erroneous, others argumentative, others half truths and others wholly inapplicable.[1] Cf. *Morgan v. United States*, 304 U. S. 1.

The appellees' conclusions, thus adopted by the majority of the court, state that appellants have no standing (1) to challenge the right of TVA to sell to (more accurately *through*) municipalities and non-profit cooperative organizations because such entities have a legal right to engage in the electric business under State law (Conclusions 53-54, R. 663); or (2) to challenge the right of TVA to sell directly to rural customers or industrial customers "not previously served by any of the complainant companies" for lack of proof of actual or threatened damage. (Conclusions 55-56; R. 663.)[2]

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[1] Gore, *J.*, declined to adopt the Conclusions of Law submitted by the appellees. (R. 572.)

[2] The arbitrary character of these conclusions readily appears from the following facts. The court throughout the trial repeatedly sought to restrict not only the scope but also the *quantum* of proof offered by the appellants on any issue and in particular pressed the appellants not to offer any further proof of damage upon the ground that the court thought the threat of damage to appellants obvious and would assume substantial damage. (R. 1259-60, 1266, 1414, 1470, 1483.) In each such instance, counsel for the appellees made no protest or objection.

Furthermore, the record disclosed the keenest competition between TVA and appellants operating in the areas where the partial execution of the TVA Unified Plan already had made TVA

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And finally the majority of the trial court, in complete disregard of what they had said in their opinion, adopted the following Conclusion:

> "57. The complainant companies have no legal right to be free from competition, and they have no legal standing or right to challenge the statutory powers of the Authority to generate, transmit, and sell electric energy *in competition with them*, or some of them." (R. 663.)

This Conclusion is unsupported by principle or authority.

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power available. Indeed, one of the claims of appellees was that appellants had greatly accelerated their extensions of rural service in the areas in which TVA was offering such service. (R. 2147, 2149-52.) In the matter of industrial customers, the record disclosed the keenest competition (Add. Fdg. 117, R. 704), as illustrated by the competition for the business of the Monsanto Chemical Company (R. 955-6; 1503-4; Comp. Exs. 628, R. 3477; 118, R. 2828), Volunteer Portland Cement Company (R. 1133-5; Comp. Ex. 564, R. 3378; Def. Ex. 154°, p. 192), The L. N. Gross Company (R. 1031-2), The Victor Chemical Company (Def. Ex. 154°, p. 302) and The Aluminum Company. (Def. Ex. 154°, pp. 309, 313; Def. Ex. 147, pp. 4, 6.) This was all aside from the obvious fact (supported by evidence given by officers of the Alabama Power Company and omitted with reference to such of the other appellants as had not already offered proof on that point upon insistence of the court that the Alabama testimony should be taken as typical), that each of the appellants maintains a Sales Promotion Department which, among other things, is actively and aggressively engaged in attempting to sell electricity to companies now providing their own power by reason of ownership of pre-existing plants or by reason of by-product development of electricity and to secure the location of new industries in the territories served by them. (R. 936, 788, 801; see pp. 63-64, 83-84, *supra*.) Not only is the attempt to eliminate these phases of TVA activity upon the ground of failure to prove threatened damage unsupported and in the teeth of the record, but it can not be reconciled with a fair trial.

A.

One threatened with direct and special injury through the application of a federal statute or the act of a federal officer may maintain a suit to determine whether the statute is constitutional or the act is authorized.

It is an established principle that one threatened with direct and special injury—not common to the public generally—through the application of a federal statute or through the act of a federal officer, may invoke a judicial determination whether the statute is constitutional, or the act is authorized, by a suit for injunctive relief. *Frothingham v. Mellon,* 262 U. S. 447, 488; *Philadelphia Co. v. Stimson,* 223 U. S. 605; *Alabama Power Co. v. Ickes,* 302 U. S. 464. A citizen establishes his right to maintain such a suit if he is—

> "* * * able to show * * * that he has sustained or is immediately in danger of sustaining some direct injury as the result of its enforcement and not merely that he suffers in some indefinite way in common with people generally." (*Frothingham v. Mellon,* loc. cit. 488.)[1]

No better statement of the principle has been made than that found in *Philadelphia Co. v. Stimson, supra,* where this Court said:

> "Where the officer is proceeding under an unconstitutional act, its invalidity suffices to show that he is

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[1] The foregoing quotation omits the language "not only that the statute is invalid" which obviously is not a condition of the right to sue *but only a condition of the right to prevail*; for it is well settled that the constitutionality of a statute will not be determined except in a case where the complainant has a right to sue. Any other view would result in the circular reasoning that the right to sue may not be established without antecedent showing of unconstitutionality and that unconstitutionality may not be determined without antecedent establishment of the right to sue. If the citizen in addition to showing that he is threatened with direct and special injury, establishes that the statute is unconstitutional, he is entitled to relief upon the merits.

without authority, and it is this absence of lawful power and his abuse of authority in imposing or enforcing in the name of the State unwarrantable exactions or restrictions, to the irreparable loss of the complainant, which is the basis of the decree. *Ex parte Young,* 209 U. S. p. 159. And a similar injury may be inflicted, and there may exist ground for equitable relief, when an officer, insisting that he has the warrant of the statute, is transcending its bounds, and thus unlawfully assuming to exercise the power of government against the individual owner, is guilty of an invasion of private property." (loc. cit. 621-2.)

Alabama Power Co. v. Ickes, supra, involved merely the application of this principle. No new principle was laid down. The case chiefly emphasizes that the challenged action must invade "a legal right" of the person seeking to maintain the suit. *Damnum absque injuria* is not enough.

It remains only to inquire what are the rights which the appellants seek to protect and whether they are invaded by the statute or the official action challenged in this suit.

B.

The legal rights of appellants which are invaded or threatened with immediate invasion.

The legal rights of appellants which they seek to protect are: (1) the right to be free from illegal competition and (2) the right to engage in and carry on the business of supplying electricity to the public within the States free from displacement by the Federal Government and free from federal interference, regulation or control.[1] These

[1] The appellants also have a right to be free from the injury or destruction of their going businesses through slander or libel of their businesses, from the injury or destruction of their businesses brought about by an illegal concert of action between federal agencies and from the injury of their businesses through sale of TVA power at less than cost. While these circumstances

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rights are entitled to protection both from injury produced by the operation of an unconstitutional statute and from injury produced by unauthorized action of federal officials or agencies.

First: The appellants are severally engaged in the business of supplying electricity to the public under franchises (conceded to be non-exclusive for the purposes of this suit) granted by the States or their political subdivisions which have jurisdiction in the various territories in which appellants operate. (See pp. 61-63, *supra.*) A non-exclusive franchise is property. It is exclusive as against all persons attempting to engage in the business illegally, without a franchise or under a void franchise. It follows that, there being no adequate remedy at law, the holder of a non-exclusive franchise has a standing in equity to protect his property against such an injurious invasion.[1] This means that the holder of a non-exclusive franchise has a right to invoke a judicial determination of whether any

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[1] *Frost v. Corporation Commission*, 278 U. S. 515, 521; *Corporation Commission v. Lowe*, 281 U. S. 431, 435; *Alabama Power Co. v. Ickes*, 302 U. S. 464, 484-5; *City of Campbell v. Arkansas-Missouri Power Co.*, 55 F. (2d) 560, 562; *Gallardo v. Porto Rico Ry. L. & P. Co.*, 18 F. (2d) 918, 922; *Arkansas-Missouri Power Co. v. City of Kennett*, 78 F. (2d) 911; *Iowa Southern Utilities Co. v. Cassill*, 69 F. (2d) 703; *Kansas Gas & Elec. Co. v. City of Independence*, 79 F. (2d) 32.

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have a material bearing upon other issues in the case, they also would appear to be violations of the TVA Act. The trial court declined to receive the evidence on these issues in so far as it was offered to show violations of the Act and did not consider or decided whether such activities violated the Act. For that reason they are not discussed in this brief in relation to their apparent violation of statutory authority except in so far as they are referred to in Point IV dealing with errors in procedure and in rulings on evidence. In Point IV they are discussed only to the extent necessary to show the materiality of the excluded evidence from the standpoint of violations of the statute as well as in relation to other issues in the case.

actual or threatened competition with him is legal and, if that involves the constitutionality of a statute or the existence of official authority, then a determination of the constitutional question or of the extent of the official authority. And for the purpose of determining the rights of appellants to sue, it must be assumed that the appellees are attempting to engage in the business illegally, without a franchise or under a void franchise.

Second: The appellants have a right to engage in and carry on the business of supplying electricity to the public within the several States subject only to State regulation and free from ouster, interference, regulation or control by the Federal Government. (See pp. 148-150, *supra.*) They have a right to be free from displacement or supersession in carrying on that business by the operation of federal statutes or the action of federal agencies which results in taking over the business as a federal enterprise. It is plain, therefore, that if the appellees are displacing or interfering with the appellants in the conduct of such business, or if the appellees are exercising federal regulation or control over the appellants' operation of such business, they are invading that legal right. And appellants have a standing to invoke a judicial determination whether that invasion is legal.

C.

The right of appellants to sue to enjoin actual and threatened illegal competition is clear.

It is plain that the appellees are severally threatened with the most severe and destructive sort of competition. That a threat of competition is a threat of irreparable damage is established by the decisions of this Court. *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1, 12; *Frost v. Corporation Commission*, 278 U. S. 515, 521; *Alabama Power Co. v. Ickes, supra.*

The trial court in its opinion stated, with great moderation, that "*the record presents evidence of substantial future damage to these complainants.*" (R. 555.) The Opinion further states that:

> "* * * The Authority concedes that it sells, or intends to sell, power at substantially lower rates—residential, industrial and rural—than those of the complainants and *that some displacement of service will result.*" (R. 554.)

It is plain on the record that these statements, although conceding damages more than sufficient to sustain the right of appellants to sue, are gross understatements and that in fact the appellants are threatened with devastating subsidized competition, with duplication of their facilities and consequent injury to, if not destruction of, their value and in many instances with complete destruction of their businesses and the value of their properties. (See pp. 86-89, *supra.*)[1] Manifestly, the damage from the threatened competition in the case at bar is immeasurably more serious and destructive than that which threatened the complainant in *Frost v. Corporation Commission, supra*, or in *Walla Walla v. Walla Walla Water Co., supra.*

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[1] Damages arising from illegal competition include loss of business and markets, duplication and consequently destruction of value of facilities, loss of credit and inability to refinance or obtain new financing at reasonable rates, if at all. (See pp. 86-89, *supra.*) Damages arising from injury of appellants' going businesses through a campaign of misrepresentation among the customers of appellants to the effect that TVA rates fixed even below subsidized cost represent fair rates and that the state-regulated rates of appellants are unreasonable and unfair, and from confederation between PWA and TVA to compel existing utilities to sell facilities at prices fixed by TVA and retire from the field or suffer destruction of the value of their properties, also flow from competition, although it would seem that, as charged by appellants below, these activities are also violations of the TVA Act. The trial court did not consider or pass upon whether such activities violated the Act. However, such activities also sustain the right to sue.

It necessarily follows that the majority of the trial court erred when, in conflict with their opinion, they adopted appellees' Conclusion of Law 57 (R. 663) that appellants have no standing to challenge the right of appellees to "sell electric energy *in competition with them.*"

(1) The right to be free from illegal competition includes competition for future or unattached business.

The majority of the trial court, in complete disregard of its opinion, also adopted Conclusions of Law submitted by the appellees to the effect that appellants had failed to prove any damage in fact, actual or threatened, "resulting from the sales of power by the Authority direct to rural customers *not previously served by any of the complainant companies,*" or "resulting from the sales of power by the Authority direct to industrial customers *not previously served by any of the complainant companies*" (Conclusions 55, 56; R. 663.)

This anomalous holding, wholly unsupported by reason or authority, is that the holder of a non-exclusive franchise has no right to be free from illegal competition for unattached business. Manifestly the essence of competition is to secure the business of new or potential customers. It is in this very field that competition is necessarily the keenest. Thus, in *Frost v. Corporation Commission, supra,* this Court did not say that the appellant was only entitled to an injunction against the competition of the appellees for attached business, but that he was entitled to an injunction against the illegal competition of the appellees for any and all business then, or to become, available in the field of his operations. In the *Frost* case, this Court said:

> "That the immunity thus granted to the corporation is one which bears injuriously against the individual does not admit of doubt, since by multiplying plants without regard to necessity *the effect well may be to*

deprive him of business which he would otherwise obtain if the substantive provision of the statute were enforced." (loc. cit. 523.)

The injurious effect of competition for new business is aptly illustrated in the instant record by the competition for the business of The Monsanto Chemical Company, The Victor Chemical Company, The L. N. Gross Company and others now served by TVA or under contract to use TVA power. The keen competition for the business of rural customers, a relatively new and gradually expanding field, is also plainly established in the record. (See footnote pp. 192-193, *supra*; R. 1056-8.)

The court further refers in its opinion and findings to the circumstance that the execution of the TVA Unified Plan had not yet reached a stage where power is already being sold in the territory of all of the appellants. (R. 551-2; Fdg. 111, R. 625-6.) If this were a suit for damages, one could understand the purpose of the observation, but its relevancy in a suit to prevent the consummation of that very wrong is difficult indeed to perceive. It also attaches some unexplained significance to the fact that some of the existing service of TVA is in the so-called "ceded area"[1] under the contract of January 4, 1934, between certain of the appellants and TVA. (R. 552.) The court apparently overlooks the fact that the contract of January 4, 1934, has long since expired according to its terms and that, assuming its validity in elements not involved in

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[1] The use of the term "ceded area" is highly significant and instructive. It suggests the first step in the creation of a new federal province, which is neither the United States nor any State, and in which the Federal Government will carry out in disregard of the laws of the States an experiment in social, economic and political planning heretofore unknown to our law. Of course, the so-called "ceded area" is insignificant in comparison with the area of existing and threatened power operations of TVA.

the *Ashwander* case, *neither the restrictions upon TVA* nor the privileges granted to TVA are any longer in force or effect in so far as they refer to competition for existing of new business.

(2) The right to be free from illegal competition includes competition for business handled by TVA through municipal and cooperative distributors.

The majority of the trial court further, and again in disregard of its Opinion, adopted Conclusions of Law that the appellants have "no standing or right to challenge the legal right of the Authority to sell electric energy at wholesale to municipalities and cooperatives." (Conclusions 53, 54, R. 663.) It must be remembered that for purposes of determining the right to sue, we must assume that the appellees are engaged in this branch of their business, as in all others, without requisite legal authority. It is plain that in engaging in this business (even if it be assumed that the municipalities and cooperatives are entirely free and uncontrolled entities, which we shall hereinafter show is not the fact), the appellees are in active competition with the appellants.

In such instances, TVA is supplying exactly the same commodity and serving exactly the same market as that previously served or previously and presently sought to be served by the appellants in the conduct of their business; and TVA is displacing the commodity and service of the appellants in their markets. If that is not competition, then competition as it has been known for hundreds of years must be redefined. In such instances the appellants are competing for the business of supplying such municipalities at wholesale with electric energy or for supplying the municipalities and their inhabitants at retail, or both. Plainly, every municipality which has, acquires or builds a distribution system without generating facilities is a potential cus-

tomer of the appellants.[1] Obviously, TVA, in undertaking to supply the requirements of a municipality which does not generate its own electricity, is competing with the appellants who are serving that territory under their statutory duty to serve. The fact that in such instances TVA sells wholesale and distributes through retail distributors does not avoid the fact of competition, nor does it destroy the right of the appellants to protect their businesses and properties against damages from illegal competition.

Citizens El. Ill. Co. v. Lackawanna & W. P. Co., 255 Pa. 145, is squarely in point. In that case the complainant had a non-exclusive franchise to supply electricity to the public in the township of Jenkins. The Jenkins Electric Company likewise held a non-exclusive franchise to supply electricity to the public in Jenkins Township, but possessed no generating facilities and hence had to purchase such electricity as it distributed from outside sources. The defendant Electric Company holding no franchise to carry on the business in Jenkins Township entered into a contract to supply the Jenkins Electric Company with electricity at wholesale. The court held that this constituted illegal competition by the defendant with the complainant and that the complainant was entitled to an injunction to restrain such wholesale supplying of the other company competing with the complainant under a valid non-exclusive franchise. Plainly this must be so.

Chicago v. Mutual Electric Light Co., 55 Ill. App. 429, involved the validity of a contract entered into by the Hyde Park E. L. & P. Co., holding a franchise to supply electricity to the public in a designated area of the City of

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[1] For example, Tupelo, Mississippi, before taking service from TVA, was a wholesale customer of appellant, Mississippi Power Company, and Athens, Alabama, before taking TVA service, was served at wholesale by appellant, Alabama Power Company. (Def. Ex. 143; R. 4192.)

Chicago, to sell electricity at wholesale to the Mutual E. L. & P. Co., which held a franchise to supply electricity in an adjoining area of the City of Chicago in which the Hyde Park Company held no franchise. In holding that this contract had the effect of extending the service of the Hyde Park Company into the territory for which it held no franchise and was therefore illegal, the court said:

"The right to furnish and transmit electricity is the essence of the grant. That alone is the public and useful end to be subserved. The poles, conduits and strung wires, are mere means to attain the useful ends accomplished by transmitted electricity." (loc. cit. 435.)

* * * * *

"Possessing this grant, and operating under it, the Hyde Park Company, by contract with another corporation possessing a like grant and privilege within another and different territory, connects its wires at the line where the territories of the two corporations meet, with the wires of the other corporation, and proceeds to transmit electricity over the wires of that corporation into territory within which it has no power to operate, *with the same effect and for the same purposes that it operates within its own territory.*

In every essential the doing of that is the same as if it had strung its own wires within that foreign territory and had transmitted electricity over them for the lighting and heating of, and furnishing power for, that territory.

Such is a most palpable evasion of the limitations of its grant and is a flagrant excess of the due exercise of its powers." (loc. cit. 436.)

(3) While the existence of such a relationship is not an essential of appellants' right to sue, the municipalities and cooperatives are in reality mere agents for the distribution of TVA power; and in any event, TVA so far controls and participates in the sales by distributors that the validity of its participation may be tested at the suit of an injured party.

Since it is plain that illegal competition includes competition for the business handled by TVA through municipalities and cooperatives, it is unnecessary to determine this question. However, were its determination essential to a determination of the right of the appellants to sue *in any aspect* of this suit, an analysis of the TVA contracts with its distributors would alone compel the conclusion that the municipalities and cooperatives are mere agents for the distribution of TVA power. While, as hereinafter pointed out, some of the criteria which the courts have considered in determining whether the relationship between a producer and distributor is one of agency are plainly inapplicable and without significance in the factual situation here involved, a consideration of the applicable criteria does, we think, establish that the relationship between TVA and its distributors is one of agency.

The Legal Criteria of Agency. The terminology employed in the contracts is not conclusive (*United States v. General Electric Co.*, 272 U. S. 476; *Mitchell Wagon Co. v. Poole*, 235 Fed. 817) and that would be particularly true where, as here, the municipalities and cooperatives are variously designated as distributors and purchasers. (Cf. Rules and Regulations, R. 2794-9, and section "Power Supply" R. 2773.)[1] While a reservation of title, or of a right to demand the return of the goods, in the producer may (but does not necessarily) establish the relationship

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[1] For brevity, hereinafter references to particular sections of TVA contracts are designated merely by the title of the contract section and a record page where it may be found, viz. "Power Supply" R. 2773.

as one of agency, the absence of either or both does not establish that the relationship is not an agency. *Mitchell Wagon Co. v. Poole,* 235 Fed. 817.

Control by the producer of the price at which the goods shall be sold by the distributor to ultimate consumers has always been regarded as strong evidence that the relationship between the producer and distributor is that of agency. *In re United States Electrical Supply Co.,* 2 F. (2d) 378; *In re Wright-Dana Hardware Co.,* 211 Fed. 908; *Rudin v. King-Richardson Co.,* 37 F. (2d) 637; *In re Smith,* 192 Fed. 574. The reservation of control by the producer over the terms on which the distributor sells, is also evidence that the relationship is one of agency. *In re Thomas,* 231 Fed. 513; *In re Kruse,* 234 Fed. 470; *John Deere Plow Co. v. McDavid,* 137 Fed. 802.

Another element considered by the courts in determining the nature of the relationship between a producer and distributor is whether the distributor is bound to pay for the goods supplied to him regardless of whether such goods are sold and, under the ordinary conditions of merchandising *tangible* goods, such an absolute obligation is frequently held to establish the relationship as one of sale and not of agency. *In re United States Electrical Supply Co.,* 2 F. (2d) 378. However, where the distributor does not pay the producer until he has sold the goods (usually such contracts provide that the distributor will make monthly payments for goods sold by him during the previous month), the relationship is one of agency or consignment rather than of sale. *Ludvigh v. American Woolen Co.,* 231 U. S. 522; *McCallum v. Bray Robinson Clothing Co.,* 24 F. (2d) 35; *In re Renfro-Wadenstein,* 47 F. (2d) 238. And, of course, where the arrangement merely amounts to a guarantee of collections, that is, when the distributor assumes the risk of non-payment by the ultimate consumers,

it is well settled that the relationship is one of agency *del credere*. *United States v. General Electric Co., supra.*

Requirements for monthly or weekly reports by the distributor evidence an agency relationship.[1] Control by the producer over bookkeeping methods and details of sales, reservation of rights of inspection, requirements for separate accounts of transactions relating to the producer's goods and requirements that the distributor shall purchase all of such goods handled by him from the producer (which is in effect that he shall not purchase from others), have uniformly been held to establish the relationship as one of agency and not of sale. *McCallum v. Bray Robinson Clothing Co.*, 24 F. (2d) 35; *Butler Bros. Shoe Co. v. United States Rubber Co.*, 156 Fed. 1; *In re Renfro-Wadenstein*, 47 F. (2d) 238. In short, the reservation of control by the producer over the distributor goes far to establish that the relationship is one of agency.

Application of Pertinent Legal Criteria of Agency to the TVA Contracts. Under the TVA contracts delivery by the producer to the distributor is made only in the case of, to the extent of and simultaneously with, sale and delivery by the distributor to the ultimate consumer. That is, the distributor maintains no "stock of goods," but merely, as it were, withdraws the "goods" from the "warehouse" or supply of the producer when and as the distributor makes sale and delivery to the consumer. In this situation such criteria as "retention of title" or "right to demand return of the goods" are obviously inapplicable. However, when such of the foregoing criteria as are pertinent

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[1] *In re Renfro-Wadenstein*, 47 F. (2d) 238; *In re Thomas*, 231 Fed. 513; *McCallum v. Bray Robinson Clothing Co.*, 24 F. (2d) 35; *Rudin v. King-Richardson Co.*, 37 F. (2d) 637; *In re Warner-Quinlan Co.*, 86 F. (2d) 103; *In re Reynolds*, 203 Fed. 162; *Mitchell Wagon Co. v. Poole*, 235 Fed. 817; Cf. *United States v. General Electric Co., supra.*

in the situation are applied to the contracts between TVA and its distributors, it seems plain that such distributors are mere agents for the distribution of TVA power.

The distributor is obligated to take all electricity used or sold by it from TVA. ("Power Supply," R. 2730, 2773.) This, of course, is tantamount to a requirement that the distributor shall not distribute power from any other source. *Radio Corp. v. Lord*, 28 F. (2d) 257, 261.

The distributors are not obligated to make payment for energy delivered by the producer in any calendar month until the 15th day of the succeeding month, or 5 days after the receipt of a bill from TVA, whichever is the later. (Terms and Conditions "Billing," R. 2791.) The regulations imposed by TVA upon the distributors include a requirement that bills shall be rendered to ultimate consumers monthly and shall be paid within 10 days. (Rules and Regulations "Billing," R. 2796.) When these provisions are taken together, the effect is that the distributor is not obligated to remit to the producer until he has sold and collected for the goods delivered by the producer subject only to a liability for unpaid accounts as is usual in an agency *del credere*.

TVA fixes the price at which and the terms on which the distributor shall sell the energy to ultimate consumers. (Rules and regulations, R. 2794-9; "Resale Rates," R. 2731, 2766.) TVA prohibits the distributors from discriminating among customers ("Discrimination," R. 2777, 2815), and from selling electricity for sub-metering or resale. (Terms and Conditions "Sub-Metering," R. 2794.) In the case of cooperatives, it also prohibits the distributor from selling to any non-member unless such customer is approved by TVA. ("Non-Member Customers," R. 2767, 2822.)

The distributor is required to render a complete annual report to TVA in the form prescribed by TVA and

such other reports and information as TVA requests ("Reports," R. 2776, 2815) and to furnish promptly any operating and financial statements requested by TVA relating to the sales of electric energy. TVA prescribes the manner and method of bookkeeping and reserves the right at all times to inspect the books and records. The distributor is required to segregate the proceeds of the sale of electricity in a separate fund. (Terms and conditions "Accounting and Handling of Funds," R. 2787-8.) TVA requires that any of the distributor's employees who handle money shall be bonded. ("Bonding of Employees," R. 2769, 2815.) TVA also prescribes the manner in which the proceeds from the sale of goods shall be expended by the distributor. ("Disposition of Revenues," R. 2813, 2747, 2775.)

TVA prescribes the rules and regulations which the distributors must incorporate in any agreement with ultimate consumers. (Rules and Regulations, "Scope," R. 2799.) These regulations include such matters as applications for service, classification of customers, deposits from customers, standards for customers' wiring, inspection by the distributor, customers' liability for distributor's property, distributor's right of access to customer's premises, billing, termination of contract by customers, reconnection charges, discontinuance of service by distributors, service charges for temporary service, voltage fluctuations and additional loads, charges for non-standard service, meter tests and prohibition against resale by purchasers from distributors. (Rules and Regulations, R. 2794-9.)

TVA owns all of the property up to the point of delivery which is on the low voltage side of the sub-station. ("Point of Delivery," R. 2773, 2811.) TVA specifies how demand, energy and power factor shall be measured, how and when meters shall be tested, requires distributor's lines to conform to certain standards and reserves the right

of access to and inspection of distributor's property at all times. (Terms and Conditions, R. 2785-7.) TVA also supplies advisory services to Cooperatives in the problems of personnel and administration. ("Rendition of Advisory Services," R. 2768, 2814, 2826.) The contract is not assignable without TVA's consent. (R. 2732, 2827.)

A fair consideration of the arrangements between TVA and its distributors in the light of the facts on which they operate can, we think, leave no doubt that such distributors are mere agents for distribution of TVA power.

Liability of Appellees to Suit is not Dependent Upon Existence of Technical Legal Agency. Laying to one side *arguendo* the controlling fact that TVA sales through municipal and cooperative distributors are plainly competition by TVA with the appellants (see pp. 201-203, *supra*), the right of a person damaged by such action to test the validity of such TVA activities is not dependent upon the establishment of technical legal agency. In determining the right to sue, the question is not what is the precise legal relation through which the federal power is brought to bear, but whether in fact the federal agency has so far associated itself with, participated in, controlled or directed the activities damaging the citizen that it must be held accountable and required to justify its acts at the suit of the citizen. The foregoing review of the contract relations of TVA with its distributors, as well as other facts previously discussed, inescapably establish that TVA has not only completely associated itself with and fully participated in these activities but has also instigated, directed and controlled them. These circumstances plainly establish appellants' right to sue apart from their undeniable right to sue because TVA is in direct competition with them for this business. (See discussion of *Alabama Power Co. v. Ickes*, pp. 211-214, *infra*.)

D.

There is a clear right in appellants to sue to vindicate their right to engage in and carry on the local electric business free from federal interference, regulation or control and without being displaced by the Federal Government taking over the business.

We should not have thought this point open to discussion had not the trial court announced the novel doctrine that a citizen may not challenge the federal regulation or destruction of his business or legal rights, where or to the extent that the unconstitutionality of the federal action rests upon an invasion of the powers reserved to the States, even though the same action also invades the rights reserved to or retained by the people, but that the constitutionality of such statutes or action can be challenged only by the State. (R. 563.) Among the rights reserved to and retained by the people are the right of local self-government and the right to carry on local intrastate businesses (1) without being displaced by the Federal Government taking over and carrying on such businesses as federal enterprises and (2) free from federal interference, regulation or control. (See pp. 148-150, *supra*.) When either of these rights are invaded, the rights of the people are invaded although the same act may involve an invasion of the reserved powers of the States.[1]

Thus, no one would doubt the right of a utility to maintain a suit to enjoin actual or threatened federal regulation of its intrastate rates either on the ground that federal

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[1] Damages arising from invasion of this right include ouster of appellants from the business or occupation of supplying electricity to the public, regulation of appellants' rates by a Government without jurisdiction in the premises, vast losses through regulation of appellants' rates to a confiscatory level and the injurious effects of the imposition of a federal policy of having the local electric business carried on by publicly owned and nonprofit organizations.

regulation would be unconstitutional for lack of jurisdiction, or on the ground that the particular regulation would be confiscatory. And the right to maintain the suit would not be affected by the fact that the regulation would also invade the reserved powers of the States. But it is unnecessary to labor the point. There is no peculiar rule applicable to cases where the unconstitutional character of federal action rests upon an invasion of powers reserved to the States. That a private interest, individual or corporate, may sue where its legal rights are invaded by federal usurpation of State powers has been uniformly sustained by this Court. *United States v. Builer*, 297 U. S. 1; *Carter v. Carter Coal Co.*, 298 U. S. 238; *Bailey v. Drexel Furniture Co.*, 259 U. S. 20; *Hammer v. Dagenhart*, 247 U. S. 251; *Hill v. Wallace*, 259 U. S. 44.

E.

The right of appellants to sue is clear under the decision of this Court in Alabama Power Co. v. Ickes.

The appellees below contended, and the trial court apparently assumed, that the decision of this Court in *Alabama Power Co. v. Ickes*, 302 U. S. 464, precluded or, at least, greatly restricted the right of appellants to sue.[1] That the ruling of this Court in the *Alabama* case neither limits nor forecloses the right of appellants to sue is, we think, plain. *On the contrary, the instant case presents the precise antithesis of the circumstances which this Court deemed controlling in the Alabama case, and under that decision the right of appellants to sue is plain and undeniable.* This readily appears from a comparison of the circumstances set forth by this Court as controlling in its

[1] After the decision of this Court in the *Alabama* case was handed down during the course of the trial of this suit, the presiding Judge *sua sponte* announced, without hearing argument upon the point, that her mind was closed on the question. (R. 2165.)

opinion in the *Alabama* case and the factual situation existing in this suit with relation to the same points.

In the *Alabama* case the statute did not authorize the appellees to engage, and the appellees were not engaging or threatening to engage, in competition with the appellants. Here the TVA Act authorizes, if it does not command, the appellees to engage, and they are actually engaging and threatening further to engage on a greatly enlarged scale, in competition with the appellants. (See pp. 159-162, 12-20, 65-90, *supra.*)

In the *Alabama* case there was no effort or purpose to regulate plaintiff's rates or electric rates generally. (loc. cit. 477.) Here the regulation of appellants' rates and of local electric rates generally throughout a vast area is an integral part of both the statutory and administrative schemes. (See pp. 167-169, 14-17, 80-82, *supra.*)

In the *Alabama* case "the expenditures under the statute involved no purchase of, nor contract for, regulation by the United States." (loc. cit. 477.) Here both the statutory and administrative schemes provide expressly for the regulation of the rates and other terms and conditions of service of distributors of TVA power by contract and for regulation of appellants' rates by offering unlimited supplies of federally produced electricity at prices far below the state-regulated rates of appellants. (See pp. 167-169, 14-17, 80-82, *supra.*)

In the *Alabama* case the defendants had "not reserved any right or power to influence or control rates to be charged by the municipal power plants." (loc. cit. 477.) Here the statute requires, and the appellees are in fact exercising, complete federal control of the rates of distributors of TVA power, municipal and otherwise. (See pp. 206-209, 14-17, 80-82, *supra.*)

In the *Alabama* case neither the United States nor the defendants had reserved any right or power under con-

tracts, or in any other way, to eliminate competition or to designate the person or agency from which the municipality should purchase power. (loc. cit. 477.) Here the intended, inevitable and natural effect of the operation of the TVA Act and of the TVA Unified Plan is to eliminate competition,[1] and the United States through the appellees does not merely reserve the right to designate from whom the power shall be purchased but expressly reserves the right to furnish all of the power. (See pp. 207, 80-86, *supra.*)

In the *Alabama* case neither the United States nor the defendants had any power or control over the operation of the projects after construction. Each municipality was "left entirely free from federal control or direction in respect of the management and control of its plant and business." (loc. cit. 478.) Here the United States, through the appellees, has reserved the most minute and complete control over the business and property of distributors of TVA power—a control so complete as to make them mere agents. (See pp. 204-209, *supra.*)

In the *Alabama* case there was no effort or purpose to foster public ownership of public utilities. (loc. cit. 477.) Here the heart of both the statutory and administrative schemes is to establish a policy of having the local electric business carried on by public bodies and non-profit organizations. (See pp. 175-177, 14-17, 70-76, *supra.*)

In the *Alabama* case there was no "effort on the part of the defendants to * * * cause injury or financial loss to the plaintiffs." (loc. cit. 477.) Here the effort of the appellees to seize the markets of the appellants and drive them out of business is undeniable.

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[1] While there is much other evidence in the record of the purpose and effort of the appellees to eliminate competition by appellants or any other utilities, this purpose and effort is strikingly illustrated by the advice of the appellee Lilienthal to the City officials of Chattanooga to eliminate competition with TVA power in that City by "taxing hell" out of The Tennessee Electric Power Company, one of the appellants. (R. 1048, 1085, 1087.)

In the *Alabama* case "there was no solicitation • • • on the part of any of the defendants, their agents or subordinates." (loc. cit. 477.) Here the record, even though the trial court erroneously excluded the best evidence on the subject, establishes aggressive solicitation of business and of agents to distribute TVA power by the appellees. (See pp. 70-76, *supra.*)

In the *Alabama* case there was no conspiracy. (loc. cit. 477-8.) Here the record, without evidence erroneously excluded, shows confederation between PWA and TVA to secure the business of appellants. (See pp. 76-79, *supra.*)

It is, therefore, apparent that the decision of this Court in the *Alabama* case neither precludes nor limits the right of the appellants to sue, but on the contrary, *sustains their right to sue in every aspect of this case.*

POINT IV.

UNLESS, AS WE BELIEVE, APPELLANTS ARE ENTITLED ON THE RECORD AS MADE TO A REVERSAL OF THE DECREE WITH DIRECTIONS TO ISSUE AN INJUNCTION, THEN THE DECREE OF THE TRIAL COURT SHOULD BE REVERSED FOR SERIOUS ERRORS IN MATTERS OF PROCEDURE AND IN RULINGS ON EVIDENCE.

Erroneous rulings of the trial court respecting the admission and exclusion of evidence, the forms of procedure and the conduct of the trial are so numerous and of such grave import that their cumulative effect was to deprive appellants of a full and fair hearing.

A. The trial court applied generally certain erroneous principles of law which permeated the entire trial and its rulings on matters of evidence and procedure.

The trial court undertook to "expedite" the hearing by limiting the scope and quantum of appellants' evidence, by insisting upon submission of successive phases of the case by successive specified dates, and by requiring that

oral arguments be held immediately upon the completion of the evidence and that proposed findings of fact and final briefs be submitted at the close of the arguments. (R. 1862, 1919-20, 2281-4, 2316, 2370-3.) Subsequently, contrary to its previous rulings, the trial court refused to disregard two fact briefs filed by the appellees, without leave, two days after final argument, and overruled appellants' motion to strike such briefs from the files. (R. 396, 565.)

These rulings are attributable primarily to an erroneous conception by the trial court of the requirements of the Act of Congress of August 24, 1937, (50 Stat. 751-2, Sec. 3; 28 U. S. C. 380a) that the "hearing upon any such application * * * shall be given precedence and shall be in every way *expedited* and be assigned for hearing at the earliest practicable date." Manifestly, the statute only directs that this type of case be brought on for hearing with a minimum of delay and is not susceptible of the interpretation (R. 2282-3, 2390) that the hearing itself shall be rushed to a premature conclusion without due deliberation or regard for accepted rules of evidence and forms of practice and procedure. It cannot be supposed that Congress ever intended by this statute to direct that important constitutional cases should be disposed of on hasty and immature consideration or without receiving all competent and material evidence bearing upon the constitutionality of its acts.

The effect of the trial court's rulings was to deprive appellants of their right to make a full presentation of their case and to deny them the opportunity to examine and reply to the appellees' proposed findings of fact which, with one minor exception, were ultimately adopted by the majority of the trial court. The fact that the findings are incomplete, often irrelevant, and based on erroneous conceptions of law is in no small measure due to this circumstance. As this Court has recently stated, "the requirements of fairness (which are of the essence of due process in a proceed-

ing of a judicial nature) are not exhausted in the taking or consideration of evidence but extend to the concluding parts of the procedure as well as to the beginning and intermediate steps." *Morgan v. United States,* 304 U. S. 1, 19, 20. In the present case, the trial court consistently ignored the essentials of a fair hearing throughout the entire course of the trial and permitted "delusive interests of haste * * * to obscure substantial requirements of orderly procedure." *Duke Power Co. v. Greenwood County,* 299 U. S. 259, 268.

1. Before questions of constitutional law, both novel and of far-reaching importance, are passed upon, the facts essential to their decision should be definitely found by the trial court upon adequate evidence.

The trial court frequently departed from the usual procedure in an important constitutional case (or, for that matter, any case) and undertook, on rulings upon the admissibility or production of evidence, to decide ultimate questions of substantive law in the abstract, and, having prematurely reached its decision on these points of substantive law by anticipation, the trial court would then "adhere" to its previous rulings and hold that the evidence offered or sought to be produced was irrelevant or immaterial. Many of these rulings were announced *sua sponte* before any evidence of the character or on the point involved had been offered.

The most sweeping ruling of this character was announced by the trial court (R. 904-9, discussed at pp. 238-240, *infra*) in denying appellants' application for a subpoena *duces tecum* (Comp. Ex. 1, R. 2441), in which the trial court undertook to limit the scope of the issues made by the pleadings by ruling that it would not receive any evidence relating to (a) certain activities, statements, proposed actions and objectives of TVA and its directors in the development and promotion of its power business; (b) the solicitation of appellants' customers by TVA; (c)

TVA's efforts to undermine and destroy appellants' businesses and property; (d) the confederation between TVA, PWA, REA and other federal agencies to promote public ownership and to supplant State regulation of the electric power industry by federal regulation; and (e) the rates charged by TVA and appellants and the substitution of TVA regulation for State regulation of appellants' rates. All the evidence which appellants later offered, which the trial court recognized as being in support of any of such issues, was excluded.[1]

Rulings of this character are in direct violation of the established doctrine of this Court that before questions of constitutional law, both novel and of far-reaching importance, are passed upon, the facts essential to their decision should be definitely found by the trial court upon adequate evidence. *Chastleton Corp. v. Sinclair*, 264 U. S. 543, 548, 549; *City of Hammond v. Schappi Bus Line, Inc.*, 275 U. S. 164, 171, 172; *Borden Co. v. Baldwin*, 293 U. S. 194, 212, 213. In conformity with this principle the Circuit Court of Appeals on the appeal from the order granting the preliminary injunction in this case stated that "the ultimate rights of the plaintiffs should be decided only when the court is 'in possession of the materials necessary

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[1] Indeed, the trial court stated (ruling quoted p. 220, *infra*), that it had excluded certain of these issues more than six weeks in advance of the trial when the three-judge court first convened at Nashville to hear three motions that had been filed by appellants, i.e. (1) to produce and permit the inspection before trial of certain documents, drawings and maps of appellees (R. 327); (2) to require certain correspondence between TVA and REA to be produced or in the alternative to extend the time for taking testimony before the Special Master (R. 351); and (3) for leave to take the deposition of PWA Administrator Harold L. Ickes out of rule. (R. 343.) The court's rulings on these motions did not embrace any of the matters upon which the court stated in the above ruling it would receive no evidence (R. 374-6, 379-81) and appellants had no knowledge that any ruling had been made upon these matters until after the trial had commenced.

to enable it to do full and complete justice between the parties.' " (R. 278.)

In thus limiting the scope of the evidence, the trial court failed to recognize that a statute valid as to one set of facts may be invalid as to another (*Nashville, C. & St. L. Ry. v. Walters,* 294 U. S. 405, 415), and that the validity of many types of statutes must be determined by the manner in which they are administered, the facts upon or situation in which they operate and by their effect in actual operation. *Poindexter v. Greenhow,* 114 U. S. 270, 295; *Yick Wo v. Hopkins,* 118 U. S. 356, 373, 374; *Dobbins v. Los Angeles,* 195 U. S. 223, 240; *Norris v. Alabama,* 294 U. S. 587, 589; *Great Northern Ry. Co. v. Washington,* 300 U. S. 154, 161. Thus in *Retirement Board v. Alton R. Co.,* 295 U. S. 330, a full examination was made into the facts upon which the law operated to determine whether the purpose or effect of the statute there in question was to achieve purposes other than those delegated to the Federal Government by the Constitution.

From the discussion on the merits in earlier sections of this brief, it is plain that evidence falling into the five classifications embodied in this premature ruling of the court (see pp. 216-217, *supra*) had a material bearing upon substantial issues in this case. It therefore follows that the ruling, that no evidence falling within these classifications would be received by the court, was not only prematurely made, but also was plainly erroneous and highly prejudicial as excluding evidence, regardless of competency, which was properly admissible under the issues of this case which the court in this preliminary ruling misconceived.

Under well recognized rules of the law, any evidence which tends to support an issue between the parties is admissible. *Nelson v. United States,* 201 U. S. 92, 114; *Wade v. LeRoy,* 20 How. 34, 44. The court, in its attempt

to "expedite" the case, wholly disregarded this elementary principle.

B. The trial court erred in excluding evidence which was relevant and material to substantial issues of fact sought to be proved by appellants in support of their affirmative case on the merits.

To support various allegations in the Bill of Complaint that the generation of power is the primary purpose for which the TVA dams have been and are being constructed and that the method of disposition of the power is unlawful, appellants offered in evidence numerous Press Releases which had been *officially authorized, issued and published by TVA.* (Comp. Exs. 633, 634, R. 3487, 3490; 779-902, inclusive, R. 3673-3924.) Each of such Press Releases dealt with one or more of the following enumerated subjects:

(a) The wholesale, retail and industrial rates adopted and published by TVA applicable to all classes of consumers of TVA power;

(b) The progressive development of the TVA generating, transmission and distribution system;

(c) The purpose of TVA to construct and operate a vast electric generating and transmission system and to utilize the water power of the Tennessee River for that purpose.

(d) The primary purpose of various TVA projects to develop power.

(e) The purpose of TVA to construct and operate a vast federal electric utility system to serve the markets in which the appellant companies are now serving and offering electric service;

(f) The purpose of TVA to regulate the local rates charged by other electric utilities, including appellants, operating in the area;

(g) The assertions by TVA that its rates include all proper costs and that the rates of its competitors

are based upon improper capital write-ups, thereby representing that the rates of appellants are unreasonable;

(h) The assertions by TVA that the rates and practices of existing utilities, including appellants, are unreasonable and unfair, with the necessary and intended effect of destroying the going businesses of appellants and promoting the TVA power business;

(i) The solicitation of business, in areas served by appellants, by advertising the availability of TVA power, by advertising the availability of public funds through PWA, REA and other agencies to finance distribution systems for sale of TVA power, and by advertising the economies and savings to be secured by purchasers of TVA power;

(j) The threat and damage to the appellants and each of them from repeated announcements by appellees of their intended acts; and

(k) The refusal of TVA to submit to State laws or regulations in the conduct of its power business.

Long before any of these official Press Releases was offered in evidence, the trial court announced a ruling that it would not receive a variety of types of evidence, including Press Releases. Such ruling was made in connection with a ruling upon the admissibility of statements made by one of the appellees before a Committee of the House of Representatives in a Hearing upon a TVA appropriation bill.[1]

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[1] "JUDGE ALLEN: The Court has ruled upon this point at Nashville (i.e. that it would not receive in evidence speeches, releases to the newspapers, circulars or statements of TVA directors or representatives), the Court ruled again upon the point after the meeting at Nashville, the Court ruled upon this point upon arrival in Chattanooga, and the Court now rules upon this point, and it does so *in advance* in order that there may be no misunderstanding on the part of counsel and no waste of time to the inconvenience of all concerned, and you may have your exception." (R. 895.) By "in advance," the trial court meant in advance of the production of the documents in court and their offer in evidence and in advance of any argument. (R. 894-5.)

(R. 894-5.) Subsequently, the trial court excluded two Press Releases offered by appellants which embodied the announcement on August 25, 1933, of the TVA Power Policy (Comp. Ex. 633, R. 3487) and the announcement on September 14, 1933, of the proposed TVA wholesale and retail rates (Comp. Ex. 634, R. 3490). The sole ground for exclusion was that they were Press Releases and hence incompetent. (R. 1511.) Eventually, additional Press Releases (Comp. Exs. 779-902, R. 3673-3924), were offered by appellants and were all excluded by the trial court not as incompetent but as irrelevant and immaterial.[1] (R. 1532.)

When the substance of the things shown by these official Press Releases, as analyzed and enumerated at pp. 219-220, *supra,* is considered in the light of the issues of the case set forth and discussed in the portion of this brief devoted to the merits, it is plain that the relevancy and materiality of these excluded Press Releases appear on their face. Indeed, the ruling that they were irrelevant and immaterial was, significantly, made before the court had seen or examined them. (R. 894-5.) The initial ruling that official Press Releases are *per se* incompetent (R. 1511) appears to have been subsequently abandoned by the court (R. 1532), but in any event is plainly unsound.

The publication of official Press Releases, including those offered in evidence, was expressly authorized by the TVA directors and constitutes the official action of the TVA. (Comp. Ex. 113†, pp. 22-4, R. 2681-3; Comp. Ex. 704, R. 3631; Comp. Ex. 364, excluded, pp. 2022-3, R. 3103-4.) The dissemination of information through the issuance of Press Releases over a period of more than four years from the date of the organization of TVA comes squarely within the holding of this Court in *Xenia Bank v. Stewart,* 114 U. S.

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[1] All the Press Releases offered had been authenticated by stipulation of the parties and no question of their authenticity is involved. (R. 317.)

224, 229. Cf. *Columbia-Knickerbocker Trust Co. v. Abbot*, 247 Fed. 833, cert. den. 248 U. S. 558. There should be no question whatever as to the competency of these official Press Releases (authorized and published by TVA itself) as admissions against interest. *Chicago v. Greer*, 9 Wall. 726, 733; *Fidelity & Deposit Co. v. Courtney*, 186 U. S. 342, 349, 351; *Hitchman Coal & Coke Co. v. Mitchell*, 245 U. S. 229, 250; *Pan American P. & T. Co. v. United States*, 273 U. S. 456, 499.

The trial court sought to justify its exclusion of this type of evidence in part by the statement in the *Ashwander* case (at p. 324) that "The pronouncements, policies and program of the Tennessee Valley Authority and its directors, their motives and desires, did not give rise to a justiciable controversy save as they had fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of the persons complaining." The important factors overlooked by the trial court were (1) that this evidence was not offered to show the "motives and desires" of the appellees, but to show what appellees had done, were doing and were threatening to do and the nature, scope and imminence of the irreparable damage with which appellants are confronted, and (2) that the scope of the issues in the *Ashwander* case was expressly limited to the validity of the contract of January 4, 1934, and to the constitutional authority for the construction of Wilson Dam and for the disposition, as provided in the contract, of the electric energy there generated. The distinction between the present case and the *Ashwander* case is well pointed out in the opinion of the Circuit Court of Appeals in this case. (R. 274-7.) To deny appellants the right to show threatened injury by proof of appellees' declarations of the things they were doing and intended to do is to deny the existence of an entire field of equity jurisdiction. In equity, "dam-

age threatened, irremediable by action at law, is equivalent to damage done." *Hitchman Coal & Coke Co. v. Mitchell*, 245 U. S. 229, 256; see also *Vicksburg Waterworks Co. v. Vicksburg*, 185 U. S. 65, 82.

The trial court also attempted to justify its exclusion of this evidence under *Isbrandtsen-Moller Co. v. United States*, 300 U. S. 139, wherein it was held that the motives of an administrative officer are immaterial. That rule has no application here. Appellants were not interested in appellees' motives but rather were attempting to prove, by the appellees' own statements, the appellees' acts and actions that had been performed and which they were intending to perform. The propriety of such evidence was clearly recognized by this Court in *United States v. Rio Grande Dam & Irrigation Co.*, 174 U. S. 690. There the case was remanded for an inquiry into the question whether the *intended acts* of the defendants in constructing an irrigation dam on the Rio Grande would substantially diminish the navigability of the river. (Loc. cit. 709, 710.) Indeed, if proof of a defendant's intended acts were incompetent, the entire jurisdiction of equity to give relief against threatened irreparable injury would disappear.

The Press Releases and other official statements and declarations also illuminate the interpretation placed on the statute by the persons charged by law with its administration. Administrative interpretations of a statute are always relevant as bearing on the proper construction of the statute (*Wisconsin v. Illinois*, 278 U. S. 367, 413), and if the true intent and meaning of a statute is in any way obscure, great weight should be given to the construction placed upon it by the officials charged with its administration. *United States v. Cerecedo Hermanos y Compania*, 209 U. S. 337, 339; *United States v. Minnesota*, 270 U. S. 181, 205; *United States v. Jackson*, 280 U. S. 183, 193;

McCaughn v. Hershey Co., 283 U. S. 488, 492. A typical example of an administrative interpretation of the TVA Act, which was published in a Press Release issued January 5, 1934 (Comp. Ex. 815, R. 3732), is quoted *supra*, pp. 81, 169-170.

Finally, and perhaps most important of all, the official Press Releases and other advertising matter in general are highly relevant to prove solicitation by the TVA of the appellants' customers, its attempts to usurp the market and its unrelenting efforts, at any cost, to build up and promote its electric utility business at the expense of appellants and other utilities. On this issue the very fact of publicity being given the documents was as important as what they said. The very essence of this sort of advertising is the advertisement itself and the refusal to receive the documents in evidence denied to appellants the right to prove a phase of TVA's activities from which they were suffering extensive injury. In the light of the ruling of the trial court excluding all TVA publicity of a purely advertising character and even in the light of the record as it stands, the trial court's finding (Fdg. 228, R. 649) that there was no solicitation by TVA is indefensible. By making a finding on the subject the trial court impliedly admitted its error in holding this evidence to be immaterial.

Furthermore, in advertising and promoting its power business by means of Press Releases and otherwise, TVA has represented that its rates cover all legitimate costs of privately owned utilities, that private ownership and operation of utilities are corrupt, and that the state-regulated rates of appellants and other utilities are unreasonable and exorbitant. In fact the TVA rates do not cover the subsidized costs of promoting and distributing TVA power and much less the costs necessarily incurred by privately owned utilities. It is scarcely necessary to say that there is nothing in the TVA Act purporting to authorize any such

course of action. It falls clearly within the accepted definition of unfair methods of competition. Selling a product below cost while misrepresenting to the public the reasons for the cheap price has been held to be unfair competition. *Sears-Roebuck & Co. v. Federal Trade Commission,* 258 Fed. 307. Again, the publication of untrue statements about the business of another, which are intended or are reasonably likely to produce and in the ordinary course of things do produce a general loss of business, is an actionable wrong. *Ratcliff v. Evans,* [1892] 2 Q. B. 524 (Court of Appeals); *Mississippi Power Co. v. Starkville,* 4 F. Supp. 833. The conclusion is inescapable, there being nothing in the Act which even faintly suggests the contrary, that Congress did not intend to authorize methods of competition which if adopted by a private citizen would be condemned as unfair and unlawful. In addition, the attacks upon the businesses and integrity of appellants, quite apart from being unfair competition and a part of a campaign of misrepresentation and oppression and hence an independent violation of appellants' rights, bear upon the imminence of the threat to appellants and upon the fact that appellees are actually engaged in promoting the establishment of a great federal power business.

The court also ruled that statement of appellees made before Committees of the Congress and in the First TVA Annual Report (Comp. Exs. 108†, 109†, 112-16†, 365†, 366†), and offered as admissions of appellees to show that the primary purpose of appellees was the creation of a vast power supply and the construction and operation of a huge electric utility, the acquisition of appellants' markets for TVA power, the fostering of public ownership of electric distribution facilities and the "yardstick" regulation of electric rates, were not admissible without offering the entire testimony or the entire report, including self-serving

statements and declarations dealing with matters not related to or explanatory of such admissions. (R. 893-4, 910-27, 1236-43, 1530-1.)[1]

1. The trial court erred in excluding competent evidence bearing upon the question whether the water power being created or to be created by TVA is being, and will be, constitutionally created. (See Point I, supra.)

Many of the official TVA Press Releases, the exclusion of which has been already discussed at pp. 219-225, *supra*, were relevant and material upon this issue. The trial court also excluded other competent evidence material to this issue.

The court refused to receive the testimony of a number of qualified witnesses whose testimony was offered to show that the average annual value of agricultural crops on lands which will be permanently flooded by only four of the reservoirs constructed, under construction or proposed to be constructed (and these not the largest of such reservoirs) would be substantially in excess of the total estimated annual flood damages in the entire Tennessee

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[1] It is clear that extracts from documents may properly be offered and received in evidence. *Davis v. Forrest*, 7 Fed. Cas. No. 3634; *Priest v. Glenn*, 51 Fed. 400; *O'Hara v. M. & O. R. Co.*, 76 Fed. 718; *Crotty v. Chicago G. W. Ry. Co.*, 169 Fed. 593; *Bernhardt v. City & S. Ry. Co.*, 263 Fed. 1009. And, although it is generally recognized that the opposing party may read such additional portions of the document as may be explanatory of the portions offered, there is no rule which makes the explanatory portions affirmative evidence or which authorizes the opposing party to use everything else in the document, however irrelevant to the issue on trial or however it may violate other well-established principles of the law of evidence. *Tappen v. Beardsley*, 10 Wall. 427, 435. The most fundamental of these other well-established principles of the law of evidence is that which rigidly excludes self-serving declarations. *Pennock v. Dialogue*, 19 Fed. Cas. No. 10,941, at p. 174; *American T. & S. Bank v. Zeigler Coal Co.*, 165 Fed. 34.

Valley.[1] (R. 1244-50.) The testimony, as was clearly stated to the trial court, was plainly relevant to show that flood control is a minor purpose of the TVA Act and of the TVA Unified Plan, if not merely pretensive, in that the annual loss resulting from the permanent flooding of valuable farm lands alone by the TVA Unified Plan will greatly exceed the average annual flood damages in the entire Tennessee Basin. (See pp. 47-48, 126-127, *supra*.)

TVA had employed the Bureau of Reclamation to prepare plans for the construction of Norris Dam. (Comp. Ex. 113°, pp. 2, 7.) It appeared in evidence that a report, entitled "The Economic Height of Norris Dam," had been made to TVA by an officer in the Bureau of Reclamation, and further, that this report pointed out that a bona fide flood control dam with more than two and one-half times the genuine flood control storage of Norris Dam could have been built at the site of Norris Dam for approximately $7,150,000, or one-fifth the cost of Norris. (R. 1816.) Upon the request of the appellants and the order of the court, the appellees produced this report and turned it over to the court. The court, however, refused the appellants the opportunity either of examining the report or using it in cross examination of the appellees' witnesses, and further returned the report to the possession of the appellees and would not permit it to be filed as an exhibit for identification to show the prejudicial character of its ruling. (R. 1816-7, 2020-1, 2197, 2286.)

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[1] This testimony was excluded by the trial court as irrelevant and immaterial and on the curious ground that it would make the proof "multifarious." (R. 1246.) Laying to one side the fact that multifariousness is a rule of equity pleading and not a ground for the exclusion of evidence (*Nelson v. Hill*, 5 How. 127, 132) and is to be determined solely from the allegations of the Bill (*Kilgore v. Norman*, 119 Fed. 1006; *Paridy v. Tractor Co.*, 48 F. (2d) 166; *Bogert v. Southern P. Co.*, 211 Fed. 776), the court did not suggest, and we have been unable to conceive of any legal or factual basis for the suggestion of multifariousness.

2. The trial court erred in excluding competent evidence bearing on the issue whether the statutory and administrative method of disposing of the electricity is within the constitutional power of the Federal Government or violates the Fifth, Ninth and Tenth Amendments. (See Point II, supra.)

a. Evidence supporting the charge that the execution of the TVA Unified Plan will establish the United States in the electric utility business with a virtual monopoly throughout the State of Tennessee and large parts of eight neighboring States.

In order to present the full picture of the vast TVA power system and business, the appellants offered testimony and documentary evidence of the extent of the existing market in the State of Georgia, the fact that such market was then being adequately served, and that all of the municipal and industrial customers proposed to be served by TVA power had been for many years customers of the Georgia Power Company, a non-complainant company. (R. 995-1003, 1098-1101, 1104, 1120-1.) The trial court's ruling excluding such testimony and documentary evidence (which included Comp. Exs. 329*, 330*, 332*, 333†, and 335†) was made on a blanket objection by appellees to the receipt of any evidence of the TVA electric business in the State of Georgia or of the markets in that State served by the Georgia Power Company, for the stated reason that the Georgia Power Company had been enjoined by a Federal District Court of Georgia from further participating in this suit. (See footnote p. 4, *supra.*) It is obvious that such injunction against the Georgia Power Company was not intended to be, and could not lawfully have been, a limitation upon the scope of the evidence submitted in another court by other parties complainant, one of which also does business in Georgia. (R. 995-1003.) No question of competency was involved in either the objection to, or the ruling upon, this evidence other than as to the effect of

the aforesaid injunction, and the exclusion of the evidence was prejudicial error.

The size, nature and effect of the entire unitary scheme of TVA for the construction, development and operation of a huge integrated electric utility may be shown by proving the size, nature and effect of the parts and adding them together. The constitutionality of this unitary scheme and the scope of the injunction to which appellants are entitled may well depend upon its size, nature and effect when viewed as a whole. The importance of these considerations in relation to the effect of the unitary scheme on the reserved powers of the States and the people, the retained rights of the people and our dual system of government is manifest. This principle was recognized in the *Ashwander* case, where the issue before this Court was, under the facts, confined to the validity of the "limited undertaking" expressed in a single contract. (See pp. 140-144, 154-159, 187-190, *supra.*)

b. Evidence supporting the charge that the appellees have adopted and are carrying out a concerted program to take over the markets and businesses of the appellants by direct inducements offered to consumers of electricity throughout the territory served by appellants.

In addition to the excluded Press Releases, hereinbefore discussed, the appellants offered and the trial court excluded a variety of other evidence which plainly supports the charge that TVA has offered direct inducements to consumers and has otherwise carried on a concerted program to take over the markets and businesses of appellants. The excluded evidence bearing upon this issue includes: (1) *TVA corporate minutes* included in the record of the *Ashwander* case which was attached as Exhibit K to appellees' answer (Comp. Exs. 700, 702-720, R. 3628, 3630-3656) relating to things TVA had done, was doing and was

planning to do in the development and conduct of its electric operations and business (R. 1531-2); (2) statements of and admissions made by appellee Lilienthal appearing in his official capacity as a representative of TVA before the House Committee on Interstate and Foreign Commerce (Comp. Ex. 364, pp. 1981-2, 2022-3, R. 3099-3104), relating to the promotional and advertising activities of TVA (R. 1236-9); (3) the testimony of a number of qualified witnesses as to statements made at public meetings by TVA representatives which showed the activities of TVA in promoting its power business in areas served by appellants and related statements of, and admissions by, TVA representatives respecting the same subjects (R. 1087-8, 1129-30, 1321-2, 1325-8, 1330, 1396-7, 1441-2); (4) a memorandum (Comp. Ex. 339, R. 3073) used by a TVA representative in soliciting the business of the Yates Bleachery Company, showing the amount of annual savings under TVA rates which would be secured by substituting TVA service for service of one of the appellants (R. 1141-3); (5) testimony showing TVA's subsidies to municipal customers taking TVA service (R. 1443-7); (6) testimony (offered by deposition) showing TVA's domination, control and promotion of cooperative associations (R. 1329-30, 1337-8, 1355-62); (7) forms of "contingent power contracts" (Comp. Exs. 193, 197, 203 and 377, R. 3003, 3006A, 3016A, 3149), circularized among the people of municipalities who were about to vote on obtaining TVA service, showing the effect of TVA's campaign of advertising and solicitation (R. 951-5, 969-70, 981-3, 1323-4, 1396-7); (8) advertising publications and circulars (Comp. Exs. 187*, 189 and 190, R. 2977, 2985) widely distributed by TVA (R. 941-2, 944, 947-8); (9) a magazine article entitled "The Tennessee Valley Looks to the Future" (Comp. Ex. 635, R. 3493), and written by a man employed by TVA for the purpose (Comp. Ex. 364, pp. 1891-2, R. 3099-3100), of which 50,000

copies were purchased by TVA for circulation, publicizing TVA's power activities, rates, business and plans for extension of its power system (R. 1513-4); (10) a TVA questionnaire (Comp. Ex. 204, R. 3106B) by which TVA circularized municipalities, including those served by appellants, to secure information respecting electric service (R. 982-3); (11) testimony (R. 1434-7) and executive messages of the Governor of Tennessee (Comp. Exs. 686, 687, R. 3605-3617) showing that the TVA had prepared and sponsored special state legislation in Mississippi and Tennessee to promote public ownership of local electric facilities and to facilitate TVA power operations within those states (R. 1435-9, 1520); (12) testimony and letters received from appellants' customers (Comp. Exs. 194, 195, 200, 201, 202, 212, R. 3003, 3004, 3008-15, 3020) stating the reasons for such customers taking TVA service in place of that offered by appellants, or containing threats by municipalities to substitute TVA electricity and showing the adverse effect on the appellants' customer relations and business that resulted from the TVA power activities and its publicity campaign. (R. 950-6, 978-81, 1037-8.)

The trial court excluded all of this evidence as irrelevant and immaterial and excluded items 8 to 12 above and two of the four contracts described in item 7 above on the additional ground that the evidence was incompetent. That all of this evidence was relevant and material appears from its description. The competency of items 7 to 12 likewise appears from their description, with the possible exception of item 12 and the documents in item 7. Item 12 was plainly competent under *Lawlor v. Loewe*, 235 U. S. 522, 536, which sustains the admissibility of letters setting forth the reason given by appellants' customers for severing their connection with appellants in order to obtain power from TVA, or in threatening to sever their connections with appellants unless appellants reduced their rates to a level

equivalent to those of TVA. The appellees' advertising campaign having been made to appear, the excluded items in item 7 were plainly competent to prove the effect of that campaign. While the trial court in these instances used the stereotyped formula "incompetent, irrelevant and immaterial," we think it quite plain that in so far as the court gave any consideration to the question of competency, it really had in mind its erroneous and premature ruling in which it undertook to limit the scope of the issues upon which evidence would be received. (See pp. 216-219, *supra*.)

The trial court further refused to issue a subpoena *duces tecum* (Comp. Ex. 1, R. 2441) to require appellees to produce *TVA corporate minutes* relating to the development of its electric power business (R. 904-9); a subpoena (Comp. Ex. 497, R. 3331) to produce a telegram from TVA to the Governor of Alabama stating the terms of a proposed statute to be submitted to the Alabama legislature (R. 1437); a subpoena (Comp. Ex. 691, R. 3619) to produce surveys made by TVA of the business and customers of appellant companies (R. 1530); and subpoenas (Comp. Exs. 690-1, 693-7, R. 3618-25) to produce TVA correspondence with municipalities and with other federal agencies relating to the TVA power business, the construction of facilities and the securing of federal funds for the carrying out of the TVA Unified Plan. (R. 1528-30.)

This list of evidence excluded or denied is formidable. That it has a material bearing upon the extent of the actual and threatened invasion by TVA of the powers reserved to the States and the people, the rights retained by the people and the solicitation of appellants' markets and businesses is manifest. It plainly establishes that TVA is using every known promotional device to seize the territory of the appellants and destroy their markets. The exclusion of this evidence does not seem explicable even by the erroneous

conceptions of law which pervade the court's findings and conclusions. Thus, while TVA may not take appellants' customers by the "allurement of substantially lower prices" (Opinion R. 551) or otherwise, because TVA is engaged in this business unlawfully, the trial court could not in any event properly exclude this competent and material evidence and find that there was no proof of solicitation by TVA.

c. Evidence supporting the charge that PWA and REA have cooperated and are continuing to cooperate with TVA in financing and promoting the TVA power program and in establishing and placing in operation the purposes of the TVA Act.

That evidence tending to support the above charge bears upon material issues in this case and that the exclusion of competent evidence of this character was prejudicial error sufficiently appears from the discussion in earlier parts of this brief. (See pp. 76-79, 159-163, 166-167, *supra.*) Furthermore, there is nothing in the TVA Act that authorizes a confederation or concert of action between TVA, PWA and REA to promote the TVA power program by forcing appellants to sell their facilities at distress prices on threat of the destruction of their value through duplication by means of loans or grants of federal funds. It is not to be presumed that Congress intended to authorize such a guerilla warfare "upon legitimate creations of the States" in the absence of an express authorization. Cf. *American Bank & Trust Co. v. Federal Reserve Bank*, 256 U. S. 350, 359. However, the Bill charges such a common design and its execution, and appellants offered evidence to sustain the charge.

The trial court excluded a substantial part of this evidence, which included correspondence between TVA and PWA, PWA reports and memoranda in regard to particular projects, and PWA Press Releases and other documents,

showing the cooperation and concert of action between TVA and PWA in promoting the TVA power business and in establishing in operation the purposes of the TVA Act. (Comp. Exs. 418, 428, 429, 446-450, 461-466, 469, 480-483, R. 1405-8; 637-647, R. 1515.) Certain of this evidence consisted of correspondence between TVA and PWA included in "Exhibit K" attached to appellees' answer (Comp. Exs. 770-773, R. 3659-62), tending to establish the cooperation between PWA and TVA to acquire the business of appellants, and also applications to and correspondence with REA, and REA Press Releases, letters and reports (Comp. Exs. 683-685, R. 3599-3604; 385), by which appellants offered to prove the cooperation between TVA and REA in the financing and promotion of rural cooperatives and non-profit membership corporations.[1] (R. 1405-8, 1515-16, 1519-20, 1530-1.) The authenticity of the excluded documentary evidence was stipulated (R. 1403, 1515) and, being offered in connection with other evidence establishing the confederation, no question of competency arises.

The trial court also overruled successive motions by appellants, both before and during the trial, for leave to take the deposition of Harold L. Ickes, Administrator of PWA, in support of these allegations (R. 343, 364, 374-5, 379, 382, 385, 764, 1531), and refused to issue its subpoena (Comp. Ex. 1, R. 2441) to TVA to produce additional documents on this point. (R. 904-9.)

The basis of the trial court's rulings as to all evidence relating to this subject is found in its preliminary ruling denying the appellants' application for a subpoena *duces*

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[1] As stated by appellee Lilienthal in the Hearings on the Second Deficiency Appropriation Bill for 1937 (Comp. Ex. 116†, p. 485, R. 2720): "We have a very cooperative arrangement with REA by which they are furnishing by far the bulk of the financing through this area."

tecum. (R. 905-6; see pp. 216-219, *supra.*) The basic error underlying the court's ruling was the assumption that no confederation of federal agencies could be unlawful and that no use of federal power by such agencies could be an unlawful abuse of power or an unauthorized exercise of power so that the appellants were not entitled to show the facts with reference to such confederation or exercise of official power for the purpose of having their legality determined. Whether such a confederation existed and its scope, purpose and legality depended upon the facts. The trial court, in its opinion, states that if this confederation had been proved, "grave questions would have been presented" (R. 551); and yet ignored the evidence that was admitted, excluded the balance of the evidence offered and denied process to the appellants for additional evidence to establish the point. (See pp. 90-91, *supra.*)

The trial court also based its ruling on presumptions of the validity of statutes and of official action, but these are rebuttable presumptions of fact and not grounds for the exclusion of evidence. *Borden Co. v. Baldwin,* 293 U. S. 194, 209, 210. Such presumptions may always be overcome by evidence, for if irrebutable, it would never be possible to prove unlawful activities by a public officer or acts in excess of his authority.

In addition, this evidence should have been received because the gift of federal funds by PWA, the making of unsecured loans by PWA and REA and the donation of CWA labor all bear upon the imminence of appellants' damages and the inevitability of the destruction of the powers of State regulation and of the right of the people to engage in the power business.

The same principles apply with equal force to the exclusion of evidence as to cooperation between the TVA and Electric Home & Farm Authority or its predecessor Electric Home & Farm Authority, Inc., a wholly dominated adjunct of TVA. (Comp. Exs. 650-682, R. 1516-8.)

d. Evidence supporting the charge that the appellees have contracted to sell and are now offering for sale electric power and electric service at rates far below the actual cost, and that the inevitable effect of the operation of the TVA Unified Plan will be to regulate the rates of appellants.

Whether TVA is selling electricity below cost and whether the effect of the TVA Unified Plan is to regulate the rates of the appellants are plainly questions of fact. That these questions of fact are relevant appears from the discussion in earlier parts of this brief. (See pp. 79-80, 163-175, *supra.*) No question as to the competency of the testimony or documentary evidence offered on either of these issues is raised or exists. The evidence offered in support of the charge that TVA has contracted to sell electricity for less than cost includes the testimony of Professor Moreland (R. 1463-70), and Complainants' Exhibits 504-506 (R. 3343-6) which were offered to prove that the rates prescribed by TVA, when applied "to the normal capacity of the Authority's power facilities," will result in an annual operating deficit of $9,000,000 over and above the public losses arising out of the statutory subsidies. The court also refused to issue a subpoena *duces tecum* (Comp. Ex. 1, R. 2441) for documents showing the cost factors considered by TVA in fixing its rates. (R. 906.)

The evidence of sales below cost, material as bearing upon the subject of damage to appellants and upon appellees' intent to establish the statutory purpose to regulate electric rates, promote public ownership and take over control of the electric power business, is also material as showing a violation of the TVA Act in contravention of Section 14 thereof, which provides:

> "* * * It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating,

the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power * * *."

The court also excluded testimony of the witnesses Lefferson, Newton and Stanley (R. 1412-16, 1419-22, 949-50) and documentary evidence (R. 948-9, 972-3; Comp. Exs. 192, 198, R. 3002, 3007) showing that the inevitable effect of the operation of the TVA Unified Plan will be to regulate the local electric rates of the appellants. Manifestly, the exclusion of this testimony and documentary evidence was prejudicial error.

e. Evidence supporting the charge that the execution of the TVA Unified Plan imminently threatens each of the appellants with irreparable damage.

The trial court stated in its opinion (R. 555) that the appellants are threatened with substantial future damage. However, the trial court declined to receive any direct evidence of the nature, extent or imminence of such damage and subsequently signed Conclusions 55, 56 (R. 663), submitted by appellees, to the effect that damage had not been proved in some aspects of the TVA competition. This excluded evidence, which would have shown the necessary and inevitable effect of TVA sales below cost, includes testimony and tabulations (Comp. Exs. 512-514, R. 3354-5) as to damage to appellants from loss of revenue and from facilities being rendered idle (R. 1424, 1482-3); and testimony and exhibits (Comp. Exs. 487-496*) showing the impairment of appellants' credit by reason of the threat of TVA and their inability to borrow money or secure new capital for the purpose of financing extensions or for refunding. (R. 1264-7, 1427-34.) Much of this evidence was also material and relevant upon the extent of the inter-

ference with State regulation of rates and service. (See pp. 82-85, 144-147, *supra*.)

The court also rejected testimony showing the efforts made by some of the appellants to protect their markets and minimize their damages by absorbing the power generated by TVA. (R. 1504-7.) This testimony was also relevant upon the issue of whether the method of disposal embodied in the TVA Unified Plan is a *bona fide* exercise of the power to dispose of property and whether in any event, the disposal of the property, with maximum financial advantage to the United States and maximum dissemination of benefit to the people, requires or justifies TVA's interference with the powers of the States and the rights of the people. It, therefore, clearly appears that this evidence was material and relevant upon substantial issues in the case and that its exclusion was prejudicial error; for no question of competency is involved.

C. The trial court erred in its rulings on matters of practice and procedure during the conduct of the trial with the effect of denying appellants the opportunity to present their case fully and fairly.

1. The refusal to authorize the issuance of subpoenas duces tecum.

Before the start of the trial, appellants applied for the issuance of a subpoena *duces tecum* (Comp. Ex. 1, R. 2441) addressed to TVA requiring the production, among other things, of certain *corporate minutes of TVA* of certain specified dates in so far as they contained any reference "to the policies, activities, actions or enterprises of said Authority that involved or were related to or were in furtherance of the generation, transmission, distribution or sale of electric energy by said Authority," the production of other *TVA corporate minutes* relating to specified subjects described in the subpoena, all of which embraced

some phase of the TVA's power enterprise, and the production of certain described contracts and other described documents or classes of documents relating to subjects discussed at pp. 219-238, *supra*.

The court did not order the subpoena to issue and at the opening of the trial required appellants to submit verified statements as to the claimed materiality and relevancy of each of the documents described in the subpoena. (See Comp. Exs. 110, 111, R. 2643, 2660.) Thereafter it denied the subpoena, with a few minor exceptions, in an elaborate ruling (R. 904-9) dealing principally with ultimate questions of substantive law. (See pp. 216-219, *supra*.) In this ruling the court undertook to limit drastically the issues and the scope of the evidence *in vacuo*, without an opportunity for the appellants to show its purpose and relevancy when offered in its proper relation to the issues and other evidence as the trial progressed. Thereafter, the subpoena was broken down into separate subpoenas (Comp. Exs. 497, R. 3331; 689-697, R. 3618-25; 931, R. 3982; 954-956, R. 4002-4), and each of these was denied. (R. 1437-9, 1528-30, 2285-6, 2422-38.)

Each of the subpoenas applied for was directed to the TVA as permitted by *Wilson v. United States*, 221 U. S. 361, 372. The documents in each instance were specifically described so as to insure their identification, and although a number of documents were requested, the classes of documents described were more limited than the classes of documents described in the subpoena involved in *Brown v. United States*, 276 U. S. 134, 138, 143. The only requirement in the cases is that the documents be described "with reasonable detail" so as to indicate with sufficient clarity the particular documents desired. *Consolidated Rendering Co. v. Vermont*, 207 U. S. 541, 554; *Wheeler v. United States*, 226 U. S. 478, 483; *Santa Fe Pac. R. Co. v. Davidson*,

149 Fed. 603; *United States v. American Tobacco Co.*, 146 Fed. 557; *In re Storror*, 63 Fed. 564.

The original subpoena applied for (Comp. Ex. 1, R. 2441) was criticized by the trial court as to scope, but such criticism could not be made against the separate subpoenas subsequently presented. The more serious error of the court in attempting to decide fundamental questions of substantive law in ruling upon such an application persisted, however. (See pp. 216-219, *supra*.) Upon such an application the court should not undertake to determine ultimate questions of relevancy and materiality and the court need only be reasonably satisfied that such evidence, when produced, may be relevant and material in order to require its production. *Dancel v. Goodyear Shoe Mach. Co.*, 128 Fed. 753, 762; *United States v. Terminal R. Ass'n.*, 148 Fed. 486, 488, 489; 154 Fed. 268, 272. The ultimate question of admissibility should be determined by the court only with the proposed evidence before it, so that it may act intelligently, and an exception to the rejection of the evidence may be available on appeal. *Consolidated Rendering Co. v. Vermont*, 207 U. S. 541, 553; *Edison E. L. Co. v. United States E. L. Co.*, 44 Fed. 294, 296, 297. Here the trial court would not even order the documents produced for its own inspection so that it might intelligently pass upon their relevancy. That the evidence for which subpoena was sought, was relevant and material upon substantial issues in this case is apparent from its description and the denial of process for its production was plainly prejudicial error. There could, of course, be no question as to the competency of documents to be produced by the appellees and in any event that could not properly be decided in advance of their production and examination.

2. The refusal to limit the scope of cross examination to the subjects of direct examination and the limitation of the cross examination of appellees' witnesses by appellants in other respects.

The trial court early in the hearing (R. 848-9) ruled that it had "*deliberately and unanimously* decided to permit cross examination in this case, even upon matters not connected with the examination of any witness in chief. This right will be available on equal terms to each litigant." This ruling was more than a holding that in particular instances the trial court would exercise its discretion in determining whether cross examination was related to the examination in chief, but amounted to a declaration that the usual rules governing the examination of witnesses would not be applied in any instance whatever. The trial court adhered to this ruling over appellants' objection in the case of subsequent witnesses (R. 974-5, 1065-70) and applied it retroactively to the introduction by appellees of depositions taken by appellants of witnesses hostile to appellants. (R. 1329-34.)

The settled rule in the federal courts is that cross examination must be confined to the subjects of the direct examination; and if the cross examiner wishes to inquire as to other matters, he must make the witness his own. This rule is not discretionary except as to the scope of cross examination designed to affect the credibility of the witness or lay the foundation for his impeachment, and has been uniformly applied by this Court and in the federal courts generally. 2 *Cyc. Fed. Proc.*, 898; *Philadelphia and T. R. Co. v, Stimpson,* 14 Pet. 448, 461; *Houghton v. Jones,* 1 Wall. 702, 706; *Resurrection Gold Min. Co. v. Fortune Gold Min. Co.*, 129 Fed. 668; 674; *Minn. & Ont. Paper Co. v. Swenson Evaporator Co.*, 281 Fed. 622, 627; *Hill v. Wabash Ry. Co.*, 1 F. (2d) 626, 630; *Union E. L. & P. Co. v. Snyder Estate Co.*, 65 F. (2d) 297, 302. It also applies

in the Sixth Circuit where this case was tried. *Hendrey v. United States,* 233 Fed. 5, 15; *American Pub. Co. v. Sloan,* 248 Fed. 251, 254.

The court's ruling seriously prejudiced the appellants by depriving them of the right to call one of the appellees, or a hostile witness, for a limited examination on specific points and in such event to have the cross examination of such witness strictly limited to the subjects upon which he had been examined in chief.[1] Under the rule announced by the trial court, appellees could have "cross examined" without limit and appellants would have been bound by any statements that such hostile witness might have made, without opportunity, in their turn, to cross examine such witness. Normally if appellees had broadened the inquiry on cross examination of a witness hostile to appellants, appellees would have made the witness their own, would have been bound by his testimony, would have been limited in the type of question by the rules governing direct examination, and appellants who originally called the witness would thereafter have had the right to cross examine him on the subjects that had been first developed by appellees.[2]

The trial court also deprived appellants of substantial rights in refusing to permit appellants the right to cross examine expert witnesses called by appellees with reference to opinions expressed by them on direct examination in conflict with opinions expressed on the same subject by

---

[1] None of the individual appellees (constituting the Board of TVA) took the stand and submitted to cross examination. Their actions, programs and plans were defended only by subordinates upon the basis of assertions frequently at variance with TVA's official reports to Congress dealing with the same facts and with no proof that the TVA Board had adopted the personal suggestions or views expressed by these witnesses in this lawsuit.

[2] Cf. New Rules of Civil Procedure for District Courts of U. S., effective Sept. 16, 1938, Rule 43b.

other expert witnesses called by the appellees in this case (R. 1682), or by witnesses called by TVA in the *Ashwander* case (R. 2252), or by officers of the Corps of Engineers of the United States Army in testifying pursuant to their official duties before Committees of the Congress. (R. 1617-8.) In one instance the trial court sustained the objection upon the curious ground that the question was "personal." (R. 1682.) In another instance the court even went so far as to refuse to permit a question to appear in the record for the purpose of showing the prejudicial character of the ruling. (R. 2252.) The prejudicial effect of such a limitation upon the valuable right of cross examination for the purpose of showing the conflicting assumptions, opinions and conclusions upon vital issues of fact is patent.

3. The limitation of the scope of rebuttal.

The appellants' expert witnesses based their opinions in part upon the plans and specifications for the TVA projects and the method of their operation which had been officially reported by TVA to the Congress. During the presentation of appellees' case, various witnesses were permitted, over the objection and exception of appellants, to express personal suggestions for modifications in the design and specifications for certain structures and variations in their method of operation, which testimony was accepted by the court as showing what would ultimately be done by TVA and which was designed to place a somewhat greater emphasis upon the incidental navigation facilities and minor flood control structures than appeared from official TVA reports respecting the same subjects. These variations were, of course, in conflict with the official reports to the Congress and there was no showing that these variations, put forth in the midst of a prolonged litigation, had ever been adopted or approved by the TVA Board.

Appellants then offered evidence to rebut these conclusions (all of which were matters of opinion) and to show (1) that the factual hypotheses of such opinions were in error, and (2) that accepting such factual hypotheses, the conclusions were untenable in that the TVA projects would still be primarily for the production of power, any navigation features incidental and any flood control structures unrelated to the creation of firm water power. In substance, the trial court refused to permit appellants to rebut any of this testimony. In addition to this class of testimony, appellants sought to rebut certain opinion testimony given by appellees' witnesses which related solely to matters of defense, and which had been based in whole or in part upon erroneous assumptions of fact, and upon incomplete and inaccurate technical data or upon fallacious statements or applications of engineering principles, or which involved unfounded or fallacious criticisms of the opinions expressed by appellants' witnesses in chief, or insubstantial, and in some instances fanciful, claimed benefits to navigation and flood control from the TVA Unified Plan. (R. 2286-2331, 2339-60, 2363-70, 2375-6, 2378-86, 2402-13.) The trial court, however, excluded all rebuttal testimony involving any matter of opinion, even though it was limited to the same assumptions of fact and basic data upon which such appellees' witnesses' opinions were based. The trial court thereafter denied appellants' motions to strike from the record testimony of appellees' witnesses constituting new matter which the court had denied appellants the right to rebut. (R. 2350, 2359.)

Elsewhere in this brief, both in the Statement of the Case and in the Argument, we have referred to certain of the evidence that was offered by appellants' witnesses in rebuttal of such testimony of appellees' witnesses (see pp. 24, 26, 32, 33, 34, 38, 41, 50, 51, 57, 58, 109, 112, 123, 124, *supra*). The materiality and relevancy of such evidence

and the prejudicial character of the court's ruling excluding it abundantly appears. The court's ruling denied to appellants the opportunity to point out such errors and inaccuracies or show the trivial, and in some instances wholly unfounded, nature of such claims. The application of such a rule would require a plaintiff to anticipate and negative in advance every conceivable claim that might be advanced by his adversary or be left defenseless to show the fallacies or deny the claims, however unfounded, that the adversary might assert. And the practical impossibility of anticipating such claims or defenses would increase in direct ratio to their unsoundness or impracticability. Obviously, the law has never placed so high a premium on ingenuity.

The admissibility of opinion evidence on rebuttal was recognized by this Court in *Throckmorton v. Holt,* 180 U. S. 552, 564, in which a new trial was granted for failure to receive in rebuttal testimony of handwriting experts as to the genuineness of a signature to a will. The right to introduce expert evidence on rebuttal in a proper case is also recognized (*Limbeck v. Interstate Power Co.,* 69 F. (2d) 249; *Carson v. Jackson,* 281 Fed. 411) and an improper refusal of rebuttal testimony is reversible error. *Stanley v. Beckham,* 153 Fed. 152.

The court's limitation upon the scope of rebuttal evidence was particularly prejudicial to appellants, as the trial court had over objection and exception permitted TVA employees to give evidence and to identify exhibits (Def. Exs. 38-40, 42-48, 50, 52, 66, 87, 98 and 139) concerning the size, type of construction and possible methods of operation of TVA dams without showing that such matters had ever been approved or adopted by the TVA Board of Directors, and which were inconsistent with official statements of TVA to Congress (R. 1698-1704, 1707, 1709-10, 1712-20, 1722-25, 1753-6, 1782-3, 1791, 1823-4, 1841-2, 1848-9,

1949, 2174-77);[1] had permitted the introduction of documentary evidence (Def. Ex. 153†) consisting of self-serving declarations of appellees to the Congress which deprived appellants of the right to cross examine appellees on those subjects (R. 2279-80); had permitted employees of TVA to testify as expert witnesses on matters relating to navigation and flood control upon which subjects such employees had shown no qualifications by training or experience (R. 1705-6, 1708, 1761-2, 1789, 1851-2, 1892-4, 1913-22, 1965, 1971, 1973-8, 2041-4, 2047, 2049-51, 2054-6, 2058-64, 2234-5, 2237-8, 2241-7); had permitted appellees' witnesses to give opinion testimony of the comparative merits of the incidental navigation facilities embodied in the TVA Unified Plan and the Federal Navigation Project based upon an assumption that the Federal Navigation Project did not provide for overdepths beyond the nine-foot depth, which was contrary to the facts (R. 1973-6, 2025, 2029-31); and had permitted one of appellees' witnesses to give testimony by analogy[2] as to flood control and power projects by describing the construction and operation of a project in another part of the country. (R. 1674-81, 1687-9.)

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[1] The most startling example of this type of inconsistency was the testimony of the witness Bowman that the Gilbertsville Reservoir would provide 900,000 acre-feet more flood control storage than TVA Directors had reported to a Committee of the Congress two days prior to Bowman's testimony in this case. (R. 1726-31, 1735.) In this connection the trial court also excluded as immaterial TVA budget estimates (Comp. Ex. 926, R. 3974A) submitted to the Congress in December, 1937, offered to show such conflicts. (R. 2255-6, 2419-28.)

[2] This type of evidence by analogy, which raises collateral issues and tends to surprise opposing counsel, was clearly inadmissible. *Albany and R. Co. v. Lundberg*, 121 U. S. 451; *Union Pac. Ry. Co. v. O'Brien*, 161 U. S. 451; *Union E. L. & P. Co. v. Snyder Estate Co.*, 65 F. (2d) 297, 310; *Western Ins. Co. v. Tobin*, 32 Ohio St. 77; *Hand v. Catawba P. Co.*, 90 S. C. 267; *Lake Superior Co. v. Huttig L. & Z Co.*, 305 Mo. 130; *Sanitary Dist. v. Johnson*, 343 Ill. 11.

It is the position of the appellants that they are entitled to injunctive relief upon the record as made. But, if that were not so, it is plain that the errors of the trial court in matters of evidence and procedure reviewed in this Point would require a reversal of the decree with directions to take this competent and material evidence and make appropriate findings and conclusions based upon such evidence and the other evidence properly admitted in the record.

CONCLUSION.

Upon a fair consideration of the record and applicable law we submit that:

1. The water power being created and to be created by the main stream projects included in the TVA Unified Plan is not being and will not be constitutionally created.

2. The water power being created and to be created by the tributary projects included in the TVA Unified Plan (which tributary projects will create five-sixths of the water power which will be created by the execution of the TVA Unified Plan) is not being and will not be constitutionally created.

3. Neither the statutory nor administrative method of disposing of the water power (after its conversion into electricity) is within the constitutional power of the Federal Government and each is in contravention of the foundation principles of our dual system of government and violates the Fifth, Ninth and Tenth Amendments.

4. There is no real, substantial or *bona fide* relation between the disposal of federal property and the regulation of local electric rates and service or the establishment within the States of a federal policy of having the local electric business carried on by publicly owned or non-profit organizations.

5. Were any of the water power created or to be created by the execution of the TVA Unified Plan lawfully created or acquired (which it is not), the disposal of such property neither requires nor justifies the intrusion of federal power into a field normally and traditionally reserved to the States, and the destruction of the right of the people to engage in the electric business, all of which is involved in the method of disposal provided in the TVA Act and embodied in the TVA Unified Plan.

For all of the reasons hereinbefore set forth in this brief the decree of the District Court should be reversed and the cause remanded to said Court with directions to enter a decree for appellants permanently enjoining TVA and its Directors:

(1) From generating electricity out of any of the water power, created or to be created by the execution of the TVA Unified Plan or any enlargement or modification thereof, for sale in competition with the appellants or any of them;

(2) From transmitting, distributing, supplying or selling any of the water power (after conversion into electricity), created or to be created by the execution of the TVA Unified Plan or any enlargement or modification thereof, for consumption (other than for use by the Federal Government) in the areas in which the appellants or any of them is supplying, or offering to supply, electric service (and hence, in competition with the appellants or any of them);

(3) From constructing or financing the construction of electric generating stations (either steam or hydro), transmission lines or distribution facilities which would duplicate or compete with the facilities of appellants or any of them;

(4) From regulating the retail rates of the appellants or any of them through contracts or any other scheme or device;

(5) From aiding or abetting in establishing, or directly establishing, within the States in the areas in which the appellants or any of them is supplying, or offering to supply, electric service, the federal statutory policies (embodied in the TVA Act) of substituting federal regulation for State regulation of local electric rates and service and of having the local electric business carried on by publicly owned or non-profit organizations; and

(6) From incorporating in any contracts for the sale of electricity produced by Wilson Dam terms fixing the retail rates or otherwise regulating the operations of purchasers thereof in any of the areas in which appellants or any of them is supplying, or offering to supply, electric service, and thereby establishing within such areas the federal statutory policies (embodied in the TVA Act) of substituting federal regulation for State regulation of local electric rates and service and of having the local electric business carried on by publicly owned or non-profit organizations.

Respectfully submitted,

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In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

THE TENNESSEE ELECTRIC POWER COMPANY,
FRANKLIN POWER & LIGHT COMPANY,
MEMPHIS POWER & LIGHT COMPANY,
SOUTHERN TENNESSEE POWER COMPANY,
BIRMINGHAM ELECTRIC COMPANY,
MISSISSIPPI POWER COMPANY,
APPALACHIAN ELECTRIC POWER COMPANY,
CAROLINA POWER & LIGHT COMPANY,
ALABAMA POWER COMPANY,
KENTUCKY & WEST VIRGINIA POWER COMPANY, INC.,
KINGSPORT UTILITIES, INCORPORATED,
KENTUCKY-TENNESSEE LIGHT & POWER CO.,
WEST TENNESSEE POWER & LIGHT COMPANY,
MISSISSIPPI POWER & LIGHT COMPANY,
EAST TENNESSEE LIGHT & POWER COMPANY,
TENNESSEE EASTERN ELECTRIC COMPANY,

Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, and
ARTHUR E. MORGAN, HARCOURT A. MORGAN and
DAVID E. LILIENTHAL, each individually and as an Executive Officer and Director of Tennessee Valley Authority,

Defendants-Appellees.

ON DIRECT APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE.

APPENDIX TO BRIEF FOR APPELLANTS.

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APPENDIX A.

TENNESSEE VALLEY AUTHORITY ACT OF MAY 18, 1933 (48 STAT. 58) AS AMENDED BY ACT OF AUGUST 31, 1935 (49 STAT. 1075). AMENDMENTS ARE INSERTED FOLLOWING THE SECTIONS OF THE ORIGINAL ACT.

AN ACT

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority" (hereinafter referred to as the "Corporation"). The board of directors first appointed shall be deemed the incorporators, and the incorporation shall be held to have been effected from the date of the first meeting of the board. This Act may be cited as the "Tennessee Valley Authority Act of 1933." (16 U. S. C. §831.)

Sec. 2. (a) The board of directors of the Corporation (hereinafter referred to as the "board") shall be composed of three members, to be appointed by the President, by and with the advice and consent of the Senate. In appointing the members of the board, the President shall

designate the chairman. All other officials, agents, and employees shall be designated and selected by the board.

(b) The terms of office of the members first taking office after the approval of this Act shall expire as designated by the President at the time of nomination, one at the end of the third year, one at the end of the sixth year, and one at the end of the ninth year, after the date of approval of this Act. A successor to a member of the board shall be appointed in the same manner as the original members and shall have a term of office expiring nine years from the date of the expiration of the term for which his predecessor was appointed.

(c) Any member appointed to fill a vacancy in the board occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(d) Vacancies in the board so long as there shall be two members in office shall not impair the powers of the board to execute the functions of the Corporation, and two of the members in office shall constitute a quorum for the transaction of the business of the board.

(e) Each of the members of the board shall be a citizen of the United States, and shall receive a salary at the rate of $10,000 a year, to be paid by the Corporation as current expenses. Each member of the board, in addition to his salary, shall be permitted to occupy as his residence one of the dwelling houses owned by the Government in the vicinity of Muscle Shoals, Alabama, the same to be designated by the President of the United States. Members of the board shall be reimbursed by the Corporation for actual expenses (including traveling and subsistence expenses) incurred by them in the performance of the duties vested in the board by this Act. No member of said board shall, during his continuance in office, be engaged in any other business, but each member shall devote himself to the work of the Corporation.

(f) No director shall have financial interest in any public-utility corporation engaged in the business of distributing and selling power to the public nor in any corporation engaged in the manufacture, selling, or distribution

of fixed nitrogen or fertilizer, or any ingredients thereof, nor shall any member have any interest in any business that may be adversely affected by the success of the Corporation as a producer of concentrated fertilizers or as a producer of electric power.

(g) The board shall direct the exercise of all the powers of the Corporation.

(h) All members of the board shall be persons who profess a belief in the feasibility and wisdom of this Act. (16 U. S. C. §831a.)

Sec. 3. The board shall without regard to the provisions of Civil Service laws applicable to officers and employees of the United States, appoint such managers, assistant managers, officers, employees, attorneys, and agents, as are necessary for the transaction of its business, fix their compensation, define their duties, require bonds of such of them as the board may designate, and provide a system of organization to fix responsibility and promote efficiency. Any appointee of the board may be removed in the discretion of the board. No regular officer or employee of the Corporation shall receive a salary in excess of that received by the members of the board.

All contracts to which the Corporation is a party and which require the employment of laborers and mechanics in the construction, alteration, maintenance, or repair of buildings, dams, locks, or other projects shall contain a provision that not less than the prevailing rate of wages for work of a similar nature prevailing in the vicinity shall be paid to such laborers or mechanics.

In the event any dispute arises as to what are the prevailing rates of wages, the question shall be referred to the Secretary of Labor for determination, and his decision shall be final. In the determination of such prevailing rate or rates, due regard shall be given to those rates which have been secured through collective agreement by representatives of employers and employees.

Where such work as is described in the two preceding paragraphs is done directly by the Corporation the prevailing rate of wages shall be paid in the same manner as though such work had been let by contract.

Insofar as applicable, the benefits of the Act entitled "An Act to provide compensation for employees of the United States suffering injuries while in the performance of their duties, and for other purposes," approved September 7, 1916, as amended, shall extend to persons given employment under the provisions of this Act. (16 U. S. C. §831b.)

Sec. 4. Except as otherwise specifically provided in this Act, the Corporation—

(a) Shall have succession in its corporate name.

(b) May sue and be sued in its corporate name.

(c) May adopt and use a corporate seal, which shall be judicially noticed.

(d) May make contracts, as herein authorized.

(e) May adopt, amend, and repeal bylaws.

(f) May purchase or lease and hold such real and personal property as it deems necessary or convenient in the transaction of its business, and may dispose of any such personal property held by it.

The board shall select a treasurer and as many assistant treasurers as it deems proper, which treasurer and assistant treasurers shall give such bonds for the safe-keeping of the securities and moneys of the said Corporation as the board may require: *Provided,* That any member of said board may be removed from office at any time by a concurrent resolution of the Senate and the House of Representatives.

(g) Shall have such powers as may be necessary or appropriate for the exercise of the powers herein specifically conferred upon the Corporation.

(h) Shall have power in the name of the United States of America to exercise the right of eminent domain, and in the purchase of any real estate or the acquisition of real estate by condemnation proceedings, the title to such real estate shall be taken in the name of the United States of America, and thereupon all such real estate shall be entrusted to the Corporation as the agent of the United States to accomplish the purposes of this Act.

(i) Shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses, and other structures, and navigation projects at any point along the Tennessee River, or any of its tributaries, and in the event that the owner or owners of such property shall fail and refuse to sell to the Corporation at a price deemed fair and reasonable by the board, then the Corporation may proceed to exercise the right of eminent domain, and to condemn all property that it deems necessary for carrying out the purposes of this Act, and all such condemnation proceedings shall be had pursuant to the provisions and requirements hereinafter specified, with reference to any and all condemnation proceedings.

Amended by adding thereto: "*Provided*, That nothing contained herein or elsewhere in this Act shall be construed to deprive the Corporation of the rights conferred by the Act of February 26, 1931 (46 Stat. 1422, ch. 307, secs. 1 to 5, inclusive), as now compiled in section 258a to 258e, inclusive, of Title 40 of the United States Code." [From Sec. 1 of Amendment.]

(j) Shall have power to construct dams, reservoirs, power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines.

Amended: "(j) Shall have power to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins; and shall have power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines.

The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system." [Sec. 2 of Amendment.]

Amended by adding new section: "(k) At any time before the expiration of five years from the date when this section, as amended, becomes law may in the name of and as agent for the United States and subject to approval of the President, dispose of any of such real property as in the judgment of the Board may be no longer necessary in carrying out the purposes of this Act, but no land shall be conveyed on which there is a permanent dam, hydraulic power plant, fertilizer plant or munitions plant, heretofore or hereafter built by or for the United States or for the Authority." [Sec. 3 of Amendment.]

Amended by adding new section: "(l) Shall have power to advise and cooperate in the readjustment of the population displaced by the construction of dams, the acquisition of reservoir areas, the protection of watersheds, the acquisition of rights-of-way, and other necessary acquisitions of land, in order to effectuate the purposes of the Act; and may cooperate with Federal, State, and local agencies to that end." [Sec. 13 of Amendment.] (16 U. S. C. §831c.)

Sec. 5. The board is hereby authorized—

(a) To contract with commercial producers for the production of such fertilizers or fertilizer materials as may be needed in the Government's program of development and introduction in excess of that produced by Government plants. Such contracts may provide either for outright purchase of materials by the board or only for the payment of carrying charges on special materials manufactured at the board's request for its program.

(b) To arrange with farmers and farm organizations for large-scale practical use of the new forms of fertilizers under conditions permitting an accurate measure of the economic return they produce.

(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, for

the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction.

Amended: "(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, with farmers, landowners, and associations of farmers or landowners, for the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers and otherwise." [Sec. 4 of Amendment.]

(d) The board in order to improve and cheapen the production of fertilizer is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer.

(e) Under the authority of this Act the board may make donations or sales of the product of the plant or plants operated by it to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the board may direct, for experimentation, education, and introduction of the use of such products in cooperation with practical farmers so as to obtain information as to the value, effect, and best methods of their use.

(f) The board is authorized to make alterations, modifications, or improvements in existing plants and facilities, and to construct new plants.

(g) In the event it is not used for the fixation of nitrogen for agricultural purposes or leased, then the board shall maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency, until the Congress shall by joint resolution release the board from this obligation, and if any part thereof be used by the board for the manufac-

ture of phosphoric acid or potash, the balance of nitrate plant numbered 2 shall be kept in stand-by condition.

(h) To establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency.

(i) To request the assistance and advice of any officer, agent, or employee of any executive department or of any independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the services of such officers, agents, and employees, and the President shall, if in his opinion, the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided,* That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is hereby authorized to grant such licenses thereunder as shall be authorized by the board: *Provided further,* That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

(j) Upon the requisition of the Secretary of War or the Secretary of the Navy to manufacture for and sell at cost to the United States explosives or their nitrogenous content.

(k) Upon the requisition of the Secretary of War the Corporation shall allot and deliver without charge to the War Department so much power as shall be necessary in the judgment of said Department for use in operation of all locks, lifts, or other facilities in aid of navigation.

(l) To produce, distribute, and sell electric power, as herein particularly specified.

(m) No products of the Corporation shall be sold for use outside of the United States, its Territories and possessions, except to the United States Government for the use of its Army and Navy, or to its allies in case of war.

(n) The President is authorized, within twelve months after the passage of this Act, to lease to any responsible farm organization or to any corporation organized by it nitrate plant numbered 2 and Waco Quarry, together with the railroad connecting said quarry with nitrate plant numbered 2, for a term not exceeding fifty years at a rental of not less than $1 per year, but such authority shall be subject to the express condition that the lessee shall use said property during the term of said lease exclusively for the manufacture of fertilizer and fertilizer ingredients to be used only in the manufacture of fertilizer by said lessee and sold for use as fertilizer. The said lessee shall covenant to keep said property in first-class condition, but the lessee shall be authorized to modernize said plant numbered 2 by the installation of such machinery as may be necessary, and is authorized to amortize the cost of said machinery and improvements over the term of said lease or any part thereof. Said lease shall also provide that the board shall sell to the lessee power for the operation of said plant at the same schedule of prices that it charges all other customers for power of the same class and quantity. Said lease shall also provide that, if the said lessee does not desire to buy power of the publicly owned plant, it shall have the right to purchase its power for the operation of said plant of the Alabama Power Company or any other publicly or privately owned corporation engaged in the generation and sale of electric power, and in such case the lease shall provide further that the said lessee shall have a free right of way to build a transmission line over Government property to said plant paying the actual expenses and damages, if any, incurred by the Corporation on account of such line. Said lease shall also provide that the said lessee shall covenant that during the term of said lease the said lessee shall not enter into any illegal monopoly, com-

bination, or trust with any privately owned corporation engaged in the manufacture, production, and sale of fertilizer with the object or effect of increasing the price of fertilizer to the farmer. (16 U. S. C. §831d.)

Sec. 6. In the appointment of officials and the selection of employees for said Corporation, and in the promotion of any such employees or officials, no political test or qualification shall be permitted or given consideration, but all such appointments and promotions shall be given and made on the basis of merit and efficiency. Any member of said board who is found by the President of the United States to be guilty of a violation of this section shall be removed from office by the President of the United States, and any appointee of said board who is found by the board to be guilty of a violation of this section shall be removed from office by said board. (16 U. S. C. §831e.)

Sec. 7. In order to enable the Corporation to exercise the powers and duties vested in it by this Act—

(a) The exclusive use, possession, and control of the United States nitrate plants numbered 1 and 2, including steam plants, located, respectively, at Sheffield, Alabama, and Muscle Shoals, Alabama, together with all real estate and buildings connected therewith, all tools and machinery, equipment, accessories, and materials belonging thereto, and all laboratories and plants used as auxiliaries thereto; the fixed-nitrogen research laboratory, the Waco limestone quarry, in Alabama, and Dam Numbered 2, located at Muscle Shoals, its power house, and all hydroelectric and operating appurtenances (except the locks), and all machinery, lands, and buildings in connection therewith, and all appurtenances thereof, and all other property to be acquired by the Corporation in its own name or in the name of the United States of America, are hereby intrusted to the Corporation for the purposes of this Act.

(b) The President of the United States is authorized to provide for the transfer to the Corporation of the use, possession, and control of such other real or personal property of the United States as he may from time to time deem necessary and proper for the purposes of the Corporation as herein stated. (16 U. S. C. §831f.)

Sec. 8. (a) The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the northern judicial district of Alabama within the meaning of the laws of the United States relating to the venue of civil suits.

(b) The Corporation shall at all times maintain complete and accurate books of accounts.

(c) Each member of the board, before entering upon the duties of his office, shall subscribe to an oath (or affirmation) to support the Constitution of the United States and to faithfully and impartially perform the duties imposed upon him by this Act. (16 U. S. C. §831g.)

Sec. 9. (a) The board shall file with the President and with the Congress, in December of each year, a financial statement and a complete report as to the business of the Corporation covering the preceding governmental fiscal year. This report shall include an itemized statement of the cost of power at each power station, the total number of employees and the names, salaries, and duties of those receiving compensation at the rate of more than $1,500 a year.

(b) The Comptroller General of the United States shall audit the transactions of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all papers, books, records, files, accounts, plants, warehouses, offices, and all other things, property and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositaries. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the board, one for public inspection at the principal office of the corporation, and the other to be retained by him for the uses of the Congress. The expenses for each such audit may be paid from moneys advanced therefor by the Corporation, or from any appropriation or ap-

propriations for the General Accounting Office, and appropriations so used shall be reimbursed promptly by the Corporation as billed by the Comptroller General. All such audit expenses shall be charged to operating expenses of the Corporation. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties intrusted to the Corporation by law.

Amended: "(b) All purchases and contracts for supplies or services, except for personal services, made by the Corporation, shall be made after advertising, in such manner and at such times sufficiently in advance of opening bids, as the Board shall determine to be adequate to insure notice and opportunity for competition: *Provided,* That advertisement shall not be required when, (1) an emergency requires immediate delivery of the supplies or performance of the services; or (2) repair parts, accessories, supplemental equipment, or services are required for supplies or services previously furnished or contracted for; or (3) the aggregate amount involved in any purchase of supplies or procurement of services does not exceed $500; in which cases such purchases of supplies or procurement of services may be made in the open market in the manner common among businessmen: *Provided further,* That in comparing bids and in making awards the Board may consider such factors as relative quality and adaptability of supplies or services, the bidder's financial responsibility, skill, experience, record of integrity in dealing, ability to furnish repairs and maintenance services, the time of delivery or performance offered, and whether the bidder has complied with the specifications.

"The Comptroller General of the United States shall audit the transactions of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all pa-

pers, books, records, files, accounts, plants, warehouses, offices, and all other things, property, and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositaries. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the Board, one for public inspection at the principal office of the Corporation, and the other to be retained by him for the uses of the Congress: *Provided*, That such report shall not be made until the Corporation shall have had reasonable opportunity to examine the exceptions and criticisms of the Comptroller General or the General Accounting Office, to point out errors therein, explain or answer the same, and to file a statement which shall be submitted by the Comptroller General with his report. The expenses for each such audit shall be paid from any appropriation or appropriations for the General Accounting Office, and such part of such expenses as may be allocated to the cost of generating, transmitting, and distributing electric energy shall be reimbursed promptly by the Corporation as billed by the Comptroller General. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties entrusted to the Corporation by law." [Sec. 14 of Amendment.] (16 U. S. C. §831h.)

Amended by adding new section: "Sec. 9a. The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric

energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority." [Sec. 5 of Amendment.] (16 U. S. C. §831h-1.)

Sec. 10. The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members: *Provided*, That all contracts made with private companies or individuals for the sale of power, which power is to be resold for a profit, shall contain a provision authorizing the board to cancel said contract upon five years' notice in writing, if the board needs said power to supply the demands of States, counties, or municipalities. In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines the board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable: *Provided further*, That the board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the applica-

tion of electric power to the fuller and better balanced development of the resources of the region.

Amended by adding thereto: "Provided further That the Board is authorized to include in any contract for the sale of power such terms and conditions, including resale rate schedules, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act, and in case the purchaser shall fail to comply with any such terms and conditions, or violate any such rules and regulations, said contract may provide that it shall be voidable at the election of the Board: *Provided further,* That in order to supply farms and small villages with electric power directly as contemplated by this section, the Board in its discretion shall have power to acquire existing electric facilities used in serving such farms and small villages: And *provided further,* That the terms 'States,' 'counties,' and 'municipalities' as used in this Act shall be construed to include the public agencies of any of them unless the context requires a different construction." [Sec. 6 of Amendment.] (16 U. S. C. §831i.)

Sec. 11. It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties, and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. It is further hereby declared to be the policy of the Government to utilize the Muscle Shoals properties so far as may be necessary to im-

prove, increase, and cheapen the production of fertilizer and fertilizer ingredients by carrying out the provisions of this Act. (16 U. S. C. §831j.)

Sec. 12. In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power, it is hereby expressly authorized, either from appropriations made by Congress or from funds secured from the sale of such power, or from funds secured by the sale of bonds hereafter provided for, to construct, lease, purchase, or authorize the construction of transmission lines within transmission distance from the place where generated, and to interconnect with other systems. The board is also authorized to lease to any person, persons, or corporation the use of any transmission line owned by the Government and operated by the board, but no such lease shall be made that in any way interferes with the use of such transmission line by the board: *Provided,* That if any State, county, municipality, or other public or cooperative organization of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members, or any two or more of such municipalities or organizations, shall construct or agree to construct and maintain a properly designed and built transmission line to the Government reservation upon which is located a Government generating plant, or to a main transmission line owned by the Government or leased by the board and under the control of the board, the board is hereby authorized and directed to contract with such State, county, municipality, or other organization, or two or more of them, for the sale of electricity for a term not exceeding thirty years; and in any such case the board shall give to such State, county, municipality, or other organization ample time to fully comply with any local law now in existence or hereafter enacted providing for the necessary legal authority for such State, county, municipality, or other organization to contract with the board for such power: *Provided further,* That all contracts entered into between the Corporation and any municipality or other political subdivision or cooperative organization shall provide that

the electric power shall be sold and distributed to the ultimate consumer without discrimination as between consumers of the same class, and such contract shall be voidable at the election of the board if a discriminatory rate, rebate, or other special concession is made or given to any consumer or user by the municipality or other political subdivision or cooperative organization: And *provided further,* That as to any surplus power not so sold as above provided to States, counties, municipalities, or other said organizations, before the board shall sell the same to any person or corporation engaged in the distribution and resale of electricity for profit, it shall require said person or corporation to agree that any resale of such electric power by said person or corporation shall be made to the ultimate consumer of such electric power at prices that shall not exceed a schedule fixed by the board from time to time as reasonable, just, and fair; and in case of any such sale, if an amount is charged the ultimate consumer which is in excess of the price so deemed to be just, reasonable, and fair by the board, the contract for such sale between the board and such distributor of electricity shall be voidable at the election of the board: And *provided further,* That the board is hereby authorized to enter into contracts with other power systems for the mutual exchange of unused excess power upon suitable terms, for the conservation of stored water, and as an emergency or break-down relief. (16 U. S. C. §831k.)

Amended by adding new section: "Sec. 12a. In order (1) to facilitate the disposition of the surplus power of the Corporation according to the policies set forth in this Act; (2) to give effect to the priority herein accorded to States, counties, municipalities, and nonprofit organizations in the purchase of such power by enabling them to acquire facilities for the distribution of such power; and (3) at the same time to preserve existing distribution facilities as going concerns and avoid duplication of such facilities, the Board is authorized to advise and cooperate with and assist, by extending credit for a period of not exceeding five years to, States, Counties, municipalities and nonprofit organizations situated within transmission distance

from any dam where such power is generated by the Corporation in acquiring, improving, and operating (a) existing distribution facilities and incidental works, including generating plants; and (b) interconnecting transmission lines; or in acquiring any interest in such facilities, incidental works, and lines." [Sec. 7 of Amendment.] (§16, U. S. C. §831k-1.)

Sec. 13. Five per centum of the gross proceeds received by the board for the sale of power generated at Dam Numbered 2, or from any other hydropower plant hereafter constructed in the State of Alabama, shall be paid to the State of Alabama; and 5 per centum of the gross proceeds from the sale of power generated at Cove Creek Dam, hereinafter provided for, or any other dam located in the State of Tennessee, shall be paid to the State of Tennessee. Upon the completion of said Cove Creek Dam the board shall ascertain how much additional power is thereby generated at Dam Numbered 2 and at any other dam hereafter constructed by the Government of the United States on the Tennessee River, in the State of Alabama, or in the State of Tennessee, and from the gross proceeds of the sale of such additional power 2½ per centum shall be paid to the State of Alabama and 2½ per centum to the State of Tennessee. These percentages shall apply to any other dam that may hereafter be constructed and controlled and operated by the board on the Tennessee River or any of its tributaries, the main purpose of which is to control flood waters and where the development of electric power is incidental to the operation of such flood-control dam. In ascertaining the gross proceeds from the sale of such power upon which a percentage is paid to the States of Alabama and Tennessee, the board shall not take into consideration the proceeds of any power sold or delivered to the Government of the United States, or any department or agency of the Government of the United States, used in the operation of any locks on the Tennessee River or for any experimental purpose, or for the manufacture of fertilizer or any of the ingredients thereof, or for any other governmental purpose: *Provided*, That the percentages to be paid to the States of Alabama and Tennessee, as provided in this section, shall be subject to revision and change by the board,

and any new percentages established by the board, when approved by the President, shall remain in effect until and unless again changed by the board with the approval of the President. No change of said percentages shall be made more often than once in five years, and no change shall be made without giving to the States of Alabama and Tennessee an opportunity to be heard. (16 U. S. C. §831l.)

Sec. 14. The board shall make a thorough investigation as to the present value of Dam Numbered 2, and the steam plants at nitrate plant numbered 1, and nitrate plant numbered 2, and as to the cost of Cove Creek Dam, for the purpose of ascertaining how much of the value or the cost of said properties shall be allocated and charged up to (1) flood control, (2) navigation, (3) fertilizer, (4) national defense, and (5) the development of power. The findings thus made by the board, when approved by the President of the United States, shall be final, and such findings shall thereafter be used in all allocation of value for the purpose of keeping the book value of said properties. In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said board for the purpose of control and management shall be ascertained and allocated.

Amended by adding thereto: "The Board shall, on or before January 1, 1937, file with Congress a statement of its allocation of the value of all such properties turned over to said Board, and which have been completed prior to the end of the preceding fiscal year, and shall thereafter in its annual report to Congress file a statement of its allocation of the value of such properties as have been completed during the preceding fiscal year.

"For the purpose of accumulating data useful to the Congress in the formulation of legislative policy in matters relating to the generation, transmission, and distribution of electric energy and the production of chemicals necessary to national defense and useful in agriculture, and to the Federal Power Commission and other Federal and State agencies, and to the public, the Board shall keep complete accounts of its costs

of generation, transmission, and distribution of electric energy and shall keep a complete account of the total cost of generating and transmission facilities constructed or otherwise acquired by the Corporation, and of producing such chemicals, and a description of the major components of such costs according to such uniform system of accounting for public utilities as the Federal Power Commission has, and if it have none, then it is hereby empowered and directed to prescribe such uniform system of accounting, together with records of such other physical data and operating statistics of the Authority as may be helpful in determining the actual cost and value of services, and the practices, methods, facilities, equipment, appliances, and standards and sizes, types, location, and geographical and economic integration of plants and systems best suited to promote the public interest, efficiency, and the wider and more economical use of electric energy. Such data shall be reported to the Congress by the Board from time to time with appropriate analyses and recommendations, and, so far as practicable, shall be made available to the Federal Power Commission and other Federal and State agencies which may be concerned with the administration of legislation relating to the generation, transmission, or distribution of electric energy and chemicals useful to agriculture. It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power and in addition to the statement of the cost of power at each power station as required by section 9 (a) of the 'Tennessee Valley Act of 1933,' the Board shall file with each annual report, a statement of the total cost of all power generated by it at all power stations during each year, the average cost of such power per kilowatt hour, the rates at which sold, and to whom sold, and copies of

all contracts for the sale of power." [Sec. 8 of Amendment.] (16 U. S. C. §831m.)

Sec. 15. In the construction of any future dam, steam plant, or other facility, to be used in whole or in part for the generation or transmission of electric power the board is hereby authorized and empowered to issue on the credit of the United States and to sell serial bonds not exceeding $50,000,000 in amount, having a maturity not more than fifty years from the date of issue thereof, and bearing interest not exceeding 3½ per centum per annum. Said bonds shall be issued and sold in amounts and prices approved by the Secretary of the Treasury, but all such bonds as may be so issued and sold shall have equal rank. None of said bonds shall be sold below par, and no fee, commission, or compensation whatever shall be paid to any person, firm, or corporation for handling, negotiating the sale, or selling the said bonds. All of such bonds so issued and sold shall have all the rights and privileges accorded by law to Panama Canal bonds, authorized by section 8 of the Act of June 28, 1902, chapter 1302, as amended by the Act of December 21, 1905 (ch. 3, sec. 1, 34 Stat. 5), as now compiled in section 743 of title 31 of the United States Code. All funds derived from the sale of such bonds shall be paid over to the Corporation. (16 U. S. C. §831n.)

Amended by adding new section: "Sec. 15a. With the approval of the Secretary of the Treasury, the Corporation is authorized to issue bonds not to exceed in the aggregate $50,000,000 outstanding at any one time which bonds may be sold by the Corporation to obtain funds to carry out the provisions of section 7 of this amendatory Act. Such bonds shall be in such forms and denominations, shall mature within such periods not more than fifty years from the date of their issue, may be redeemable at the option of the Corporation before maturity in such manner as may be stipulated therein, shall bear such rates of interest not exceeding 3½ per centum per annum, shall be subject to such terms and conditions, shall be issued in such manner and amount, and sold at such prices, as

may be prescribed by the Corporation, with the approval of the Secretary of the Treasury: *Provided*, That such bonds shall not be sold at such prices or on such terms as to afford an investment yield to the holders in excess of 3½ per centum per annum. Such bonds shall be fully and unconditionally guaranteed both as to interest and principal by the United States, and such guaranty shall be expressed on the face thereof, and such bonds shall be lawful investments, and may be accepted as security, for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority or control of the United States or any officer or officers thereof. In the event that the Corporation should not pay upon demand, when due, the principal of, or interest on, such bonds, the Secretary of the Treasury shall pay to the holder the amount thereof, which is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, and thereupon to the extent of the amount so paid the Secretary of the Treasury shall succeed to all the rights of the holders of such bonds. The Secretary of the Treasury, in his discretion, is authorized to purchase any bonds issued hereunder, and for such purpose the Secretary of the Treasury is authorized to use as a public-debt transaction the proceeds from the sale of any securities hereafter issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under such Act, as amended, are extended to include any purchases of the Corporation's bonds hereunder. The Secretary of the Treasury may, at any time, sell any of the bonds of the Corporation acquired by him under this section. All redemptions, purchases, and sales by the Secretary of the Treasury of the bonds of the Corporation shall be treated as public-debt transactions of the United States. With the approval of the Secretary of the Treasury, the Corporation shall have power to purchase such bonds in the open market at any time and at any price. No bonds shall be issued hereunder to provide funds or bonds necessary for the performance of any proposed

contract negotiated by the Corporation under the authority of section 7 of this amendatory Act until the proposed contract shall have been submitted to and approved by the Federal Power Commission. When any such proposed contract shall have been submitted to the said Commission, the matter shall be given precedence and shall be in every way expedited and the Commission's determination of the matter shall be final. The authority of the Corporation to issue bonds hereunder shall expire at the end of five years from the date when this section as amended herein becomes law, except that such bonds may be issued at any time after the expiration of said period to provide bonds or funds necessary for the performance of any contract entered into by the Corporation, prior to the expiration of said period, under the authority of section 7 of this amendatory Act." [Sec. 9 of Amendment.] (16 U. S. C. §831n-1.)

Sec. 16. The board, whenever the President deems it advisable, is hereby empowered and directed to complete Dam Numbered 2 at Muscle Shoals, Alabama, and the steam plant at nitrate plant numbered 2, in the vicinity of Muscle Shoals, by installing in Dam Numbered 2 the additional power units according to the plans and specifications of said dam, and the additional power unit in the steam plant at nitrate plant numbered 2. (16 U. S. C. §831o.)

Sec. 17. The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct, either directly or by contract to the lowest responsible bidder, after due advertisement, a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so

that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam: *Provided, however,* That the President is hereby authorized by appropriate order to direct the employment by the Secretary of War, or by the Secretary of the Interior, of such engineer or engineers as he may designate, to perform such duties and obligations as he may deem proper, either in the drawing of plans and specifications for said dam, or to perform any other work in the building or construction of the same. The President may, by such order, place the control of the construction of said dam in the hands of such engineer or engineers taken from private life as he may desire: And *provided further,* That the President is hereby expressly authorized, without regard to the restriction or limitation of any other statute, to select attorneys and assistants for the purpose of making any investigation he may deem proper to ascertain whether, in the control and management of Dam Numbered 2, or any other dam or property owned by the Government in the Tennessee River Basin, or in the authorization of any improvement therein, there has been any undue or unfair advantage given to private persons, partnerships, or corporations, by any officials or employees of the Government, or whether in any such matters the Government has been injured or unjustly deprived of any of its rights. (16 U. S. C. §831p.)

Sec. 18. In order to enable and empower the Secretary of War, the Secretary of the Interior, or the board to carry out the authority hereby conferred, in the most economical and efficient manner, he or it is hereby authorized and empowered in the exercise of the powers of national defense in aid of navigation, and in the control of the flood waters of the Tennessee and Mississippi Rivers, constituting channels of interstate commerce, to exercise the right of eminent domain for all purposes of this Act, and to condemn all lands, easements, rights of way, and other area necessary in order to obtain a site for said Cove Creek Dam, and the flowage rights for the reservoir of water above said dam, and to negotiate and conclude contracts with States, counties, municipalities, and all State agencies

and with railroads, railroad corporations, common carriers, and all public utility commissions and any other person, firm, or corporation, for the relocation of railroad tracks, highways, highway bridges, mills, ferries, electric-light plants, and any and all other properties, enterprises, and projects whose removal may be necessary in order to carry out the provisions of this Act. When said Cove Creek Dam, transmission line, and power house shall have been completed, the possession, use, and control thereof shall be intrusted to the Corporation for use and operation in connection with the general Tennessee Valley project, and to promote flood control and navigation in the Tennessee River. (16 U. S. C. §831q.)

Sec. 19. The Corporation, as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers, shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulae, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation to be instituted and prosecuted on the equity side of the appropriate district court of the United States, for the recovery of reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided,* That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter, discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States. (16 U. S. C. §831r.)

Sec. 20. The Government of the United States hereby reserves the right, in case of war or national emergency declared by Congress, to take possession of all or any part of the property described or referred to in this Act for the purpose of manufacturing explosives or for other war purposes; but, if this right is exercised by the Government, it shall pay the reasonable and fair damages that may be suffered by any party whose contract for the purchase of electric power or fixed nitrogen or fertilizer ingredients is hereby violated, after the amount of the damages has been fixed by the United States Court of Claims in proceedings instituted and conducted for that purpose under rules prescribed by the court. (16 U. S. C. §831s.)

Sec. 21. (a) All general penal statutes relating to the larceny, embezzlement, conversion, or to the improper handling, retention, use, or disposal of public moneys or property of the United States, shall apply to the moneys and property of the Corporation and to moneys and properties of the United States intrusted to the Corporation.

(b) Any person who, with intent to defraud the Corporation, or to deceive any director, officer, or employee of the Corporation or any officer or employee of the United States (1) makes any false entry in any book of the Corporation, or (2) makes any false report or statement for the Corporation, shall, upon conviction thereof, be fined not more than $10,000 or imprisoned not more than five years, or both.

(c) Any person who shall receive any compensation, rebate, or reward, or shall enter into any conspiracy, collusion, or agreement, express or implied, with intent to defraud the Corporation or wrongfully and unlawfully to defeat its purposes, shall, on conviction thereof, be fined not more than $5,000 or imprisoned not more than five years, or both. (16 U. S. C. §831t.)

Sec. 22. To aid further the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development consequent to this Act, and to provide for the gen-

eral welfare of the citizens of said areas, the President is hereby authorized, by such means or methods as he may deem proper within the limits of appropriations made therefor by Congress, to make such surveys of and general plans for said Tennessee basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds, or through the guidance or control of public authority, all for the general purpose of fostering an orderly and proper physical, economic, and social development of said areas; and the President is further authorized in making said surveys and plans to cooperate with the States affected thereby, or subdivisions or agencies of such States, or with cooperative or other organizations, and to make such studies, experiments, or demonstrations as may be necessary and suitable to that end. (16 U. S. C. §831u.)

Sec. 23. The President shall, from time to time, as the work provided for in the preceding section progresses, recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said section, and for the especial purpose of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable or reforestation; and (6) the economic and social well-being of the people living in said river basin. (16 U. S. C. §831v.)

Sec. 24. For the purpose of securing any rights of flowage, or obtaining title to or possession of any property, real or personal, that may be necessary or may become necessary, in the carrying out of any of the provisions of this Act, the President of the United States for a period of three years from the date of the enactment of this Act, is hereby authorized to acquire title in the name of the

United States to such rights or such property, and to provide for the payment for same by directing the board to contract to deliver power generated at any of the plants now owned or hereafter owned or constructed by the Government or by said Corporation, such future delivery of power to continue for a period not exceeding thirty years. Likewise, for one year after the enactment of this Act, the President is further authorized to sell or lease any parcel or part of any vacant real estate now owned by the Government in said Tennessee River Basin, to persons, firms, or corporations who shall contract to erect thereon factories or manufacturing establishments, and who shall contract to purchase of said Corporation electric power for the operation of any such factory or manufacturing establishment. No contract shall be made by the President for the sale of any of such real estate as may be necessary for present or future use on the part of the Government for any of the purposes of this Act. Any such contract made by the President of the United States shall be carried out by the board: *Provided,* That no such contract shall be made that will in any way abridge or take away the preference right to purchase power given in this Act to States, counties, municipalities, or farm organizations: *Provided further,* That no lease shall be for a term to exceed fifty years: *Provided further,* That any sale shall be on condition that said land shall be used for industrial purposes only. (16 U. S. C. §831w.)

Sec. 25. The Corporation may cause proceedings to be instituted for the acquisition by condemnation of any lands, easements, or rights of way which, in the opinion of the Corporation, are necessary to carry out the provisions of this Act. The proceedings shall be instituted in the United States district court for the district in which the land, easement, right of way, or other interest, or any part thereof, is located, and such court shall have full jurisdiction to divest the complete title to the property sought to be acquired out of all persons or claimants and vest the same in the United States in fee simple, and to enter a decree quieting the title thereto in the United States of America.

Upon the filing of a petition for condemnation and for the purpose of ascertaining the value of the property to be acquired, and assessing the compensation to be paid, the court shall appoint three commissioners who shall be disinterested persons and who shall take and subscribe an oath that they do not own any lands, or interest or easement in any lands, which it may be desirable for the United States to acquire in the furtherance of said project, and such commissioners shall not be selected from the locality wherein the land sought to be condemned lies. Such commissioners shall receive a per diem of not to exceed $15 for their services, together with an additional amount of $5 per day for subsistence for time actually spent in performing their duties as commissioners.

It shall be the duty of such commissioners to examine into the value of the lands sought to be condemned, to conduct hearings and receive evidence, and generally to take such appropriate steps as may be proper for the determination of the value of the said lands sought to be condemned, and for such purpose the commissioners are authorized to administer oaths and subpoena witnesses, which said witnesses shall receive the same fees as are provided for witnesses in the Federal courts. The said commissioners shall thereupon file a report setting forth their conclusions as to the value of the said property sought to be condemned, making a separate award and valuation in the premises with respect to each separate parcel involved. Upon the filing of such award in court the clerk of said court shall give notice of the filing of such award to the parties to said proceeding, in manner and form as directed by the judge of said court.

Either or both parties may file exceptions to the award of said commissioners within twenty days from the date of the filing of said award in court. Exceptions filed to such award shall be heard before three Federal district judges unless the parties, in writing, in person, or by their attorneys, stipulate that the exceptions may be heard before a lesser number of judges. On such hearing such judges shall pass *de novo* upon the proceedings had before the commissioners, may view the property, and may take additional evidence. Upon such hearings the said judges

shall file their own award, fixing therein the value of the property sought to be condemned, regardless of the award previously made by the said commissioners.

At any time within thirty days from the filing of the decision of the district judges upon the hearing on exceptions to the award made by the commissioners, either party may appeal from such decision of the said judges to the circuit court of appeals, and the said circuit court of appeals shall upon the hearing on said appeal dispose of the same upon the record, without regard to the awards or findings theretofore made by the commissioners or the district judges, and such circuit court of appeals shall thereupon fix the value of the said property sought to be condemned.

Upon acceptance of an award by the owner of any property herein provided to be appropriated, and the payment of the money awarded or upon the failure of either party to file exceptions to the award of the commissioners within the time specified, or upon the award of the commissioners, and the payment of the money by the United States pursuant thereto, or the payment of the money awarded into the registry of the court by the Corporation, the title to said property and the right to the possession thereof shall pass to the United States, and the United States shall be entitled to a writ in the same proceeding to dispossess the former owner of said property, and all lessees, agents, and attorneys of such former owner, and to put the United States, by its corporate creature and agent, the Corporation, into possession of said property.

In the event of any property owned in whole or in part by minors, or insane persons, or incompetent persons, or estates of deceased persons, then the legal representatives of such minors, insane persons, incompetent persons, or estates shall have power, by and with the consent and approval of the trial judge in whose court said matter is for determination, to consent to or reject the awards of the commissioners herein provided for, and in the event that there be no legal representatives, or that the legal representatives for such minors, insane persons, or incompetent persons shall fail or decline to act, then such trial judge may, upon motion, appoint a guardian ad litem to act for

such minors, insane persons, or incompetent persons, and such guardian ad litem shall act to the full extent and to the same purpose and effect as his ward could act, if competent, and such guardian ad litem shall be deemed to have full power and authority to respond, to conduct, or to maintain any proceeding herein provided for affecting his said ward. (16 U. S. C. §831x.)

Sec. 26. The net proceeds derived by the board from the sale of power and any of the products manufactured by the Corporation, after deducting the cost of operation, maintenance, depreciation, amortization, and an amount deemed by the board as necessary to withhold as operating capital, or devoted by the board to new construction, shall be paid into the Treasury of the United States at the end of each calendar year.

Amended: "Sec. 26. Commencing July 1, 1936, the proceeds for each fiscal year derived by the Board from the sale of power or any other products manufactured by the Corporation, and from any other activities of the Corporation including the disposition of any real or personal property, shall be paid into the Treasury of the United States at the end of each calendar year, save and except such part of such proceeds as in the opinion of the Board shall be necessary for the Corporation in the operation of dams and reservoirs, in conducting its business in generating, transmitting, and distributing electric energy and in manufacturing, selling, and distributing fertilizer and fertilizer ingredients. A continuing fund of $1,000,000 is also excepted from the requirements of this section and may be withheld by the Board to defray emergency expenses and to insure continuous operation: *Provided*, That nothing in this section shall be construed to prevent the use by the Board, after June 30, 1936, of proceeds accruing prior to July 1, 1936, for the payment of obligations lawfully incurred prior to such latter date." [Sec. 10 of Amendment.] (16 U. S. C. §831y.)

Amended by adding new section: "Sec. 26a. The unified development and regulation of the Tennessee River system requires that no dam, appurtenant works, or other obstruction, affecting navigation, flood control, or public lands or reservations shall be constructed, and thereafter operated or maintained across, along, or in the said river or any of its tributaries until plans for such construction, operation, and maintenance shall have been submitted to and approved by the Board; and the construction, commencement of construction, operation, or maintenance of such structures without such approval is hereby prohibited. When such plans shall have been approved, deviation therefrom either before or after completion of such structures is prohibited unless the modification of such plans has previously been submitted to and approved by the Board.

"In the event the Board shall, within sixty days after their formal submission to the Board, fail to approve any plans or modifications, as the case may be, for construction, operation, or maintenance of any such structures on the Little Tennessee River, the above requirements shall be deemed satisfied, if upon application to the Secretary of War, with due notice to the Corporation, and hearing thereon, such plans or modifications are approved by the said Secretary of War as reasonably adequate and effective for the unified development and regulation of the Tennessee River system.

"Such construction, commencement of construction, operation, or maintenance of any structures or parts thereof in violation of the provisions of this section may be prevented, and the removal or discontinuation thereof required by the injunction or order of any district court exercising jurisdiction in any district in which such structures or parts thereof may be situated, and the Corporation is hereby authorized to bring appropriate proceedings to this end.

"The requirements of this section shall not be construed to be a substitute for the requirements of any

other law of the United States or of any State, now in effect or hereafter enacted, but shall be in addition thereto, so that any approval, license, permit, or other sanction now or hereafter required by the provisions of any such law for the construction, operation, or maintenance of any structures whatever, except such as may be constructed, operated, or maintained by the Corporation, shall be required, notwithstanding the provisions of this section." [Sec. 11 of Amendment.] (16 U. S. C. §831y-1.)

Sec. 27. All appropriations necessary to carry out the provisions of this Act are hereby authorized. (16 U. S. C. §831z.)

Sec. 28. That all Acts or parts of Acts in conflict herewith are hereby repealed, so far as they affect the operations contemplated by this Act. (16 U. S. C. §831aa.)

Sec. 29. The right to alter, amend, or repeal this Act is hereby expressly declared and reserved, but no such amendment or repeal shall operate to impair the obligation of any contract made by said Corporation under any power conferred by this Act. (16 U. S. C. §831bb.)

Sec. 30. The sections of this Act are hereby declared to be separable, and in the event any one or more sections of this Act be held to be unconstitutional, the same shall not affect the validity of other sections of this Act. (16 U. S. C. §831cc.)

Approved May 18th, 1933.

Amended by adding new section: "Sec. 31. This Act shall be liberally construed to carry out the purposes of Congress to provide for the disposition of and make needful rules and regulations respecting Government properties entrusted to the Authority, provide for the national defense, improve navigation, control destructive floods, and promote interstate commerce and the general welfare, but no real estate shall be held except what is necessary in the opinion of the Board to carry out plans and projects actually decided upon requiring the use of such land: *Provided,*

That any land purchased by the Authority and not necessary to carry out plans and projects actually decided upon shall be sold by the Authority as agent of the United States, after due advertisement, at public auction to the highest bidder, or at private sale as provided in section 3 of this amendatory Act." [Sec. 12 of Amendment.] (16 U. S. C. §831dd.)

Separability Provision of Amendatory Act of August 31, 1935:

Sec. 15. That the sections of this Act are hereby declared to be separable, and in the event of any one or more sections of this Act, or parts thereof, be held to be unconstitutional, such holding shall not affect the validity of other sections or parts of this Act. (16 U. S. C. §831cc.)

Approved, August 31, 1935.

APPENDIX B.

RIVERS AND HARBORS ACTS.

(1) Rivers and Harbors Act of March 3, 1925, c. 467, 43 Stat. 1186 (1190).

Sec. 3. The Secretary of War, through the Corps of Engineers of the United States Army, and the Federal Power Commission are jointly hereby authorized and directed to prepare and submit to Congress an estimate of the cost of making such examinations, surveys, or other investigations as, in their opinion, may be required of those navigable streams of the United States, and their tributaries, whereon power development appears feasible and practicable, with a view to the formulation of general plans for the most effective improvement of such streams for the purposes of navigation and the prosecution of such improvement in combination with the most efficient development of the potential water power, the control of floods, and the needs of irrigation: *Provided,* That no consideration of the Colorado River and its problems shall be included in the consideration or estimate provided herein.

(2) Rivers and Harbors Act of January 21, 1927, c. 47, 44 Stat. 1010 (1010, 1015).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following works of improvement are hereby adopted and authorized, to be prosecuted under the direction of the Secretary of War and supervision of the Chief of Engineers, in accordance with the plans recommended in the reports hereinafter designated:

* * *

Surveys in accordance with House Document Numbered 308, Sixty-ninth Congress, first session, and including in the streams mentioned in said documents[1] the following streams:

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[1] The streams mentioned in H. D. 308, 69th Congress, 1st session, included the Tennessee River and its tributaries.

(3) Rivers and Harbors Act of July 3, 1930, c. 847, 46 Stat. 918 (918, 927-8).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following works of improvement are hereby adopted and authorized, to be prosecuted under the direction of the Secretary of War and supervision of the Chief of Engineers, in accordance with the plans recommended in the reports hereinafter designated.

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The project for the permanent improvement of the main stream of the Tennessee River for a navigable depth of nine feet in accordance with the recommendations of the Chief of Engineers in House Document Numbered 328 of the Seventy-first Congress, second session, is hereby authorized: *Provided,* That an expenditure of $5,000,000 shall be authorized to be appropriated for the prosecution of work under this project: *Provided further,* That the Chief of Engineers is hereby directed to ascertain and report to Congress on the first day of the first regular session of the Seventy-second Congress, advising the prospective cooperation offered by responsible interests, under the Federal Water Power Act, in the program of construction recommended by the Chief of Engineers, providing for the nine-foot project by means of high dams.

APPENDIX C.

THE FEDERAL POWER ACT.

16 U. S. C. §791a et seq.

§803. Conditions of license generally.—All licenses issued under this Part shall be on the following conditions:

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(c) That the licensee shall maintain the project works in a condition of repair adequate for the purposes of navigation and for the efficient operation of said works in the development and transmission of power, shall make all necessary renewals and replacements, shall establish and maintain adequate depreciation reserves for such purposes, shall so maintain and operate said works as not to impair navigation, and shall conform to such rules and regulations as the commission may from time to time prescribe for the protection of life, health, and property. Each licensee hereunder shall be liable for all damages occasioned to the property of others by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto, constructed under the license, and in no event shall the United States be liable therefor. (Act of Congress, June 10, 1920, c. 285 §10(c), 41 Stat. 1068.)

§804. Project works affecting navigable waters; requirements insertable in license.—If the dam or other project works are to be constructed across, along, or in any of the navigable waters of the United States, the commission may, in so far as it deems the same reasonably necessary to promote the present and future needs of navigation and consistent with a reasonable investment cost to the licensee, include in the license any one or more of the following provisions or requirements:

(a) That such licensee shall, to the extent necessary to preserve and improve navigation facilities, construct, in whole or in part, without expense to the United States, in connection with such dam, a lock or locks, booms, sluices, or other structures for navigation purposes, in accordance with plans and specifications approved by the Chief of Engineers and the Secretary of War and made part of such license.

(b) That in case such structures for navigation purposes are not made a part of the original construction at the expense of the licensee, then whenever the United States shall desire to complete such navigation facilities the licensee shall convey to the United States, free of cost, such of its land and its rights of way and such right of passage through its dams or other structures, and permit such control of pools as may be required to complete such navigation facilities.

(c) That such licensee shall furnish free of cost to the United States power for the operation of such navigation facilities, whether constructed by the licensee or by the United States. (Act of Congress, June 10, 1920, c. 285, §11, 41 Stat. 1070.)

§811. Operation of navigation facilities; rules and regulations; penalties.—The Commission shall require the construction, maintenance, and operation by a licensee at its own expense of such lights and signals as may be directed by the Secretary of War, and such fishways as may be prescribed by the Secretary of Commerce. The operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure built under the provisions of this chapter, whether at the expense of a licensee hereunder or of the United States, shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure as may be made from time to time by the Secretary of War; and for willful failure to comply with any such rule or regulation such licensee shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished as provided in section 825o of this chapter. (Act of Congress, June 10, 1920, c. 285, §18, 41 Stat. 1073; Act of Congress, Aug. 26, 1935, c. 687, Title II, §209, 49 Stat. 845.)

APPENDIX D.

STATUTES REGULATING ELECTRIC UTILITIES IN THE STATE OF TENNESSEE.[1]

Section 5447. The railroad and public utilities commission shall have general supervision and regulation of, jurisdiction, and control over, all public utilities, and also over their property, property rights, facilities and franchises, so far as may be necessary for the purpose of carrying out the provisions of this Statute. (1919, Ch. 49, Sec. 3.)

Section 5450. The commission shall have power:

(a) *To Investigate,* upon its own initiative or upon complaint in writing, any matter concerning any public utility as herein defined.

(b) *From Time to Time to Appraise and Value the Property of Any Public Utility* as herein defined, whenever in the judgment of said commission it shall be necessary so to do, for the purpose of carrying out any of the provisions of this law, and in making such valuation the commission may have access to and use any books, documents or records in the possession of any department or board of the state or any political subdivision thereof.

(c) *Rates, etc., Fixed.*—After hearing upon notice, by order in writing, to fix just and reasonable individual rates, joint rates, tolls, fares, charges or schedules thereof, as well as commutation, mileage, and other special rates which shall be imposed, observed, and followed thereafter by any public utility as herein defined, whenever the commission

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[1] With the exception of Mississippi each of the States in which any of the appellants are now operating has a State regulatory commission with specified powers and duties, as provided by statute, for the control and regulation of the property, facilities and operations of electric and other utility corporations. Many variations exist in the statutory provisions which have been enacted by the various states, but the pertinent statutes of Tennessee are reproduced here as illustrating the general substance and scope of such State regulations. In Mississippi, although there is no State regulatory commission, municipalities are given regulatory powers within their territorial limits.

References herein cited are to the Tennessee Code of 1932.

shall determine any existing individual rate, joint rate, toll, fare, charge, or schedule thereof or commutation, mileage, or other special rates to be unjust, unreasonable, excessive, insufficient, or unjustly discriminatory or preferential, howsoever the same may have heretofore been fixed or established.

(d) *Schedules of Classifications and Rates.*—To require every such public utility to file with it complete schedules of every classification employed and of every individual or joint rate, toll, fare, or charge made or exacted by it for any product supplied or service rendered within this state as specified in such requirement.

(e) *Standards, Classifications, etc.*—After hearing, by order in writing, to fix just and reasonable standards, classifications, regulations, practices or services to be furnished, imposed, observed and followed thereafter by any public utility.

(f) *Standards for Measurements, etc.*—After hearing, by order in writing, to ascertain and fix adequate and serviceable standards for the measurement of quantity, quality, pressure, voltage, or other condition, pertaining to the supply of the product or service rendered by any public utility. And to prescribe reasonable regulations for examination and test of such product or service and for the measurement thereof.

(g) *Accuracy of Meters, etc.*—After hearing, by order in writing, to establish reasonable rules and regulations, specifications and standards, to secure accuracy of all meters and appliances for measurements.

(h) *Examination and Tests of Appliances for Measuring.*—To provide for the examination and test of any appliance used for the measuring of any product or service of public utility, and by its agents or examiners to enter upon any premises occupied by any public utility, for the purpose of making the examinations and tests provided for in this statute. (1919, Ch. 49, Sec. 4.)

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Section 5451. The commission shall have power, after hearing, upon notice, by order in writing, to require every public utility as herein defined:

(a) *Proper Service.*—To furnish safe, adequate, and proper service and to keep and maintain its property and equipment in such condition as to enable it to do so.

(b) *Extensions or Abandonment Thereof.*—To establish, construct, maintain, and operate any reasonable extension of its existing facilities where in the judgment of said commission such extension is reasonable and practicable, and will furnish sufficient business to justify the construction, operation, and maintenance of the same, and when the financial condition of the public utility affected reasonably warrants the original expenditure required in making such extension, or to abandon any service when in the judgment of the commission the public welfare no longer requires the same.

(c) *Depreciation Account for Protection of Stockholders, Bondholders, etc.*—To carry for the protection of stockholders, bondholders or holders of securities a proper and adequate depreciation account in accordance with such rules, regulations, and forms of account, as the commission may prescribe. The commission shall have power to ascertain and determine, and by order in writing, after hearing, fix proper and adequate rates of depreciation of the property of each public utility, and each public utility shall conform its depreciation accounts to the rates so ascertained, determined, and fixed, and shall set aside the moneys so provided for out of earnings and carry the same in a depreciation fund. The income from investments of moneys in such fund shall likewise be carried in such fund. This depreciation fund shall not be expended otherwise than for depreciation, improvements, new constructions, extensions, or additions to the property of such public utility, unless the commission shall by order in writing give permission to the public utility to divert the fund to purposes other than those herein named. (Modified.)

(d) *Change of Rates, Fares, Schedules, Classifications, etc.*—When any public utility shall increase any existing individual rates, joint rates, tolls, fares, charges, or schedules thereof or change or alter any existing classification, the commission shall have power, either upon written complaint, or upon its own initiative, to hear and de-

termine whether the said increase, change or alteration is just and reasonable. The burden of proof to show that the said increase, change, or alteration is just and reasonable shall be upon the public utility making the same. The commission shall have power upon such hearing and determination to order the suspension, not exceeding three months, of said increase, change, or alteration until the said commission shall have approved said increase, change, or alteration; provided, however, that if the investigation cannot be completed within three months the commission shall have power to extend the period of suspension for such further time as will reasonably enable it to complete its investigation of any such increase, change, or alteration. It shall be the duty of the commission to approve any such increase, change or alteration upon being satisfied after full hearing that the same is just and reasonable.

(e) *Uniform System of Accounting.*—To keep its books, records, and accounts so as to afford an intelligent understanding of the conduct of its business, and to that end to require every such public utility of the same class to adopt a uniform system of accounting. Such system shall conform, where applicable to any system adopted or approved by the interstate commerce commission of the United States. And to furnish annually, or at such other times as the commission may require, a detailed report of finances and operations as shown by said system of accounts. (1919, Ch. 49, Sec. 5.)

Section 5452. Public Utilities are prohibited from doing what.—No public utility shall:

(a) *Unjust Rate, Fare Schedule, etc.*—Make, impose, or exact any unreasonable, unjustly discriminatory or unduly preferential individual or joint rate, or special rate, toll, fare, charge, or schedule for any product, or service supplied or rendered by it within this state.

(b) *Unjust Classification, Schedule, etc.*—Adopt or impose any unjust or unreasonable classification in the making or as the basis of any rate, toll, charge, fare, or schedule for any product or service rendered by it within this state.

(c) *Unjust Practice and Unsafe Service.*—Adopt, maintain, or enforce any regulation, practice, or measurement which shall be unjust, unreasonable, unduly preferential or discriminatory, nor shall any public utility provide or maintain any service that is unsafe, improper, or inadequate, or withhold or refuse any service which can reasonably be demanded and furnished when ordered by said commission.

(d) *Issue of Stocks, Bonds, Debentures, Evidences of Indebtedness; Leases.*—Issue any stocks, stock certificates, bonds, debentures, or other evidences of indebtedness payable in more than one year from the date thereof, until it shall have first obtained authority from the commission for such proposed issue. It shall be the duty of the commission after hearing to approve any such proposed issue maturing more than one year from the date thereof upon being satisfied that the proposed issue, sale and delivery is to be made in accordance with law and the purpose of such be approved by the commission. No lease of its property, rights, or franchises, by any such public utility, and no merger or consolidation of its property, rights and franchises by any such public utility with the property rights and franchises of any other such public utility of like character shall be valid until approved by the Commission, even though power to take such action has been conferred on such public utilities by the State of Tennessee or by any political subdivision thereof. (1919, Ch. 49, Sec. 6.)

Section 5453. No privilege or franchise hereafter granted to any public utility by the State of Tennessee or by any political subdivision thereof shall be valid until approved by said commission, such approval to be given when, after hearing, said commission determines that such privilege or franchise is necessary and proper for the public convenience and properly conserves the public interest, and the commission shall have power, if it so approves, to impose such conditions as to construction, equipment, maintenance, service or operation as the public convenience and interest may reasonably require; provided, however, that nothing herein contained shall be construed as applying to the laying of sidings, sidetracks, or switchouts, by any

public utility, and it shall not be necessary for any such public utility to obtain a certificate of convenience from the commission for such purpose. (1919, Ch. 49, Sec. 7.)

Section 5463. Annually every such public utility doing business in this state shall file with the commission a statement under oath, in such form and substance as may be prescribed by said commission, setting forth accurately the amount of its gross receipts from all sources for the preceding calendar year, and any such public utility failing to file such statement as required, or failing to give such other information as may be reasonably required of such public utility, shall be guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not exceeding fifty dollars for each day of such failure to comply therewith. (1919, Ch. 49, Sec. 8.)

Section 5502.* Public Utility Not to Operate a Service Already Being Furnished by Another Public Utility, Nor Commence the Construction of a Plant or System Without a Certificate.—No public utility shall establish or begin the construction of, or operate any line, plant, or system, or route in or into a municipality or other territory already receiving a like service from another public utility, or establish service therein, without first having obtained from the railroad and public utilities commission, after written application and hearing, a certificate that the present or future public convenience and necessity require or will require such construction, establishment, and operation, and no person or corporation not at the time a public utility shall commence the construction of any plant, line, system, or route to be operated as a public utility, or the operation of which would constitute the same, or the owner or operator thereof, a public utility as defined by law without having first obtained, in like manner, a similar certificate: provided, that this section shall not be construed to require any public utility to obtain a certificate for an extension in or about a municipality or territory where it shall there-

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* Cited by the Supreme Court of Tennessee in *State v. Nashville Railway & Light Co.*, 151 Tenn. 77 (1925) as establishing a state policy in favor of regulation as against competition.

tofore have lawfully commenced operations, or for an extension into territory, whether within or without a municipality, contiguous to its route, plant, line or system, and not theretofore receiving service of a like character from another public utility, or for substitute or additional facilities in or to territory already served by it. (1923, Ch. 87, Sec. 1.)

Section 5503. *Upon Complaint of Interference, Commission May Grant or Refuse Certificate: Forfeiture of Certificate.*—If any public utility, in establishing, constructing, reconstructing, or extending its route, line, plant or system, shall interfere or be about to interfere with the existing route, line, plant, or system of any other public utility, the said commission, on complaint of the public utility claiming to be injuriously affected, may, after hearing, make such order and prescribe such terms and conditions in harmony with this statute as are just and reasonable. Such commission shall have power, after hearing involving the financial ability and good faith of the applicant, the necessity for additional service in the municipality or territory, and such other matters as it deems relevant, to issue a certificate of public necessity and convenience, or to refuse to issue the same or to issue it for the establishment or construction of a portion only of the contemplated plant, route, line, or system or extension thereof, or for the partial exercise only of such right or privilege, and may attach to the exercise of the rights granted by said certificate such terms and conditions as to time or otherwise as in its judgment the public convenience, necessity, and protection may require, and may forfeit such certificate after issuance, for noncompliance with its terms, or provide therein for an *ipso facto* forfeiture of the same for failure to exercise the rights granted within the time fixed by the commission; provided, that nothing in this law shall be construed as requiring such certificate for a municipally owned plant, project, or development. (1923, Ch. 87, Sec. 1.)

Section 5504.* *Certificate Not to be Granted Unless the Existing Plant or System is Inadequate; Notice of Hearing.*—The said commission shall not grant a certificate for a proposed route, plant, line, or system, or extension thereof, which will be in competition with any other route, plant, line or system, unless it shall first determine that the facilities of the existing route, plant, line, or system, are inadequate to meet the reasonable needs of the public, or the public utility operating the same refuses or neglects or is unable to or has refused or neglected, after reasonable opportunity after notice, to make such additions and extensions as may reasonably be required under the provisions of this statute. In all proceedings under this section, the commission shall give at least ten days' notice to the authorities of, and the public utilities operating in, the municipality or territory affected. (1923, Ch. 87, Sec. 2.)

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* See footnote p. 44, *supra*.

APPENDIX E.

STATE STATUTES PURPORTING TO EXEMPT TVA FROM STATE REGULATION AS A PUBLIC UTILITY OR PURPORTING TO AUTHORIZE MUNICIPALITIES AND COOPERATIVE ASSOCIATIONS TO ENTER INTO CONTRACTS WITH TVA FIXING RETAIL RATES.

Alabama Acts, Regular Session 1935, No. 1.

An Act To further limit and define the authority, powers, and jurisdiction of Alabama Public Service Commission so as to exempt therefrom certain Federal agencies, instrumentalities, and corporations; to define such Federal agencies, instrumentalities, and corporations as nonutilities and to authorize other utilities to sell, lease, or otherwise dispose of their property to such nonutilities.

Be it enacted by the Legislature of Alabama:

SECTION I. All Federal Agencies, instrumentalities or corporations, owned by the United States and all corporations or joint stock companies in which the United States or any of its departments, establishments or agencies own more than fifty per cent (50%), of the voting shares of stocks, are nonutilities within the meaning of this Act.

SECTION II. The Alabama Public Service Commission or like body shall not have any jurisdiction, authority, power, or control in any respect whatsoever, over any of the nonutilities as defined in this Act.

SECTION III. Any utility, as defined by Section 9742 of the Code of Alabama of 1923, may sell, lease, or otherwise dispose of any or all of its property, including without limitations, any franchise, right, contract, business, goodwill, capital stock, and all other assets to any nonutility as defined in this Act, without the approval or consent of the Alabama Public Service Commission, or like body or other agencies of the State of Alabama.

SECTION IV. If any section, clause, or other provision of this Act, or the application thereof, shall, for any reason be invalid, the same shall not affect the validity of any other section, sentence, or clause of this Act.

SECTION V. All the provisions of this Act shall become effective immediately upon the approval of the Governor.

SECTION VI. All laws or parts of laws in conflict with any provisions of this Act are hereby expressly repealed.

Approved January 24, 1935. (General Acts 1935, p. 1.)

Alabama Acts, Regular Session 1935, No. 155.

An Act to authorize Municipal Corporations, Counties, Towns, Cities, Public Power Districts, or Improvement Authorities owning and/or operating or authorized to acquire and/or operate, electric generation, transmission, and/or distribution systems to enter contracts with certain governmental agencies for the acquisition of such systems and/or for the purchase and sale of electric energy, providing for the covenants, terms, and conditions which may be stipulated or agreed to in any such contract, and validating any such contracts heretofore entered and any such covenants, terms, and conditions heretofore stipulated or agreed to.

Be it enacted by the Legislature of Alabama:

SECTION I. Any Municipal Corporation, County, City, Town, Power District, or Improvement Authority within the State, hereinafter called "Municipality," owning and/or operating or heretofore or hereafter authorized to acquire and/or operate any electric generation, transmission, and/or distribution system is hereby authorized to contract with any federal agency, or authority, or with any corporation owned by the United States for the acquisition of any such system or part thereof and/or the purchase or sale of electric energy, and in any such contract to stipulate and agree to such covenants, terms, and conditions as the governing body or board of the municipality may deem appropriate, including but without limitation, covenants, terms, and conditions in respect to the resale rates, financial and accounting methods, services, operation and maintenance practices and the manner of disposing of the revenues of any such system, and to comply therewith, and any such contract heretofore entered, and any such covenants,

terms, or conditions heretofore stipulated or agreed to are hereby expressly validated.

SECTION II. Nothing herein contained shall be construed as a restriction or limitation upon any authority, power, or right which any municipality may have in the absence hereof; this Act shall be construed as cumulative and shall be in addition and supplemental to any power, authority, or right conferred by any other law.

SECTION III. This Act is remedial in nature, and any power, authority, or right hereby conferred shall be liberally construed; and to this end every municipality shall have the power, authority, and right, in addition to those expressly conferred hereby, to do all things necessary or convenient in carrying out the purposes hereof.

SECTION IV. If any section, sentence, clause, or provision of this Act or any application thereof shall be held invalid, the validity of any other section, sentence, clause, or provision hereof or of any other application shall not be affected.

SECTION V. This Act shall become effective immediately upon its passage and approval.

Approved June 26, 1935. (General Acts 1935, p. 201.)

Alabama Acts, Regular Session 1935, No. 45.

An Act, providing For The Formation Of Non-Profit Membership Corporations To Be Known As Electric Membership Corporations For The Purpose Of Promoting And Encouraging The Fullest Possible Use of Electric Energy In The State By Making Electric Energy Available To The Inhabitants Of The State At The Lowest Cost Consistent With Sound Economy And Prudent Management Of The Business Of Such Corporation; Providing For The Rights, Powers And Duties Of Such Corporations; Authorizing And Regulating The Issuance Of Revenue Obligations By Such Corporations; And Providing For the Payment Of Such Obligations And The Rights Of The Holders Thereof.

* * * * *

SECTION 11. A corporation created under the provisions of this Act shall have power to do any and all acts or things necessary or convenient for carrying out the purpose for which it was formed, including, but not limited to: * * * (h) To make any and all contracts necessary and/or convenient for the full exercise of the powers in this Act granted, including, without limiting the generality of the foregoing, contracts with any person, federal agency, or municipality for the purchase or sale of energy; for the management and conduct of the business of the corporation, including the regulation of the rates, fees or charges for service rendered by the corporation.

* * * * *

Approved February 7, 1935. (General Acts 1935, pp. 100, 103.)

Alabama Acts, Regular Session 1935, No. 47.

An Act to authorize the creation of the Rural Electrification Authority of Alabama for the purpose of promoting and encouraging the fullest possible use of electric energy in the State by making electric energy available to certain inhabitants of the State at the lowest cost consistent with sound economy and prudent management; authorizing the Authority to sell and distribute electric energy and to construct or otherwise acquire a system or systems for the generation, transmission and distribution of electric energy to carry out the purposes of this Act; providing for the rights, powers and duties of the Authority; authorizing and regulating the issuance of bonds by the Authority; and providing for the payment of such bonds and the rights of the holders thereof.

* * * * *

SECTION 12: *Grant of Specific Powers.* Subject only to the constitution of the State of Alabama, the authority shall have power: * * * (12) To make any and all contracts necessary or convenient for the full exercise of the powers herein granted, including, but not limited to: (a) Contracts with any person, federal agency, or municipality for the purchase or sale of energy at wholesale. (b) Contracts

with any person, federal agency or municipality for the management and conduct of the business of the authority or any part thereof. (c) Contracts with any person, federal agency, municipality or bondholders, notwithstanding such contract may operate as limits on the right of the authority to exercise any of the powers herein granted.

• • • • •

Approved February 7, 1935. (General Acts 1935, pp. 110, 112-3.)

Georgia Laws, 1937, No. 503, p. 644.

An Act providing for the formation of cooperative nonprofit membership corporations to be known as Electric Membership Corporations for the purpose of engaging in rural electrification by furnishing electrical energy, wiring assistance and facilities, electrical and plumbing equipment and services, to its members; Providing for the rights, powers and duties of such corporations, including their classification with regard to the jurisdiction of the Public Service Commission; authorizing and regulating the issuance of obligations by such corporations; Providing for the payments of such obligations and the rights of the holders thereof, the classifications of such obligations and the membership certificates of such corporations with respect to regulation; authorizing existing corporations organized for the same general purpose to re-incorporate hereunder, and validating certain acts, covenants, contracts, and obligations of such corporations; and for other purposes.

• • • • •

SECTION 4. *Powers of Corporation.* Be it further enacted, That each corporation shall have power:

• • •

(13) To make any and all contracts necessary or convenient for the exercise of the powers granted in this Act; including, but not limited to, contracts with any person, federal agency, or municipality for the purchase or sale of energy, and in connection with any such contract to stipulate and agree to such covenants, terms, and conditions as

the board may deem appropriate, including covenants, terms, and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices, and the manner of disposing of the revenues of the system operated and maintained by the corporation.

• • • • •

SECTION 19. *Classification of Corporation With Respect to Jurisdiction of the Public Service Commission.* Be it further enacted that, corporations organized under this act shall not be deemed to be subject to the jurisdiction and control of the Public Service Commission of this State.

• • • • •

Approved March 30, 1937.

Mississippi Laws, 1936, Chapter 183, p. 335.

An Act creating the rural electrification authority of Mississippi for the purpose of promoting and encouraging the fullest possible use of electric energy in the state by making electric energy available to certain inhabitants of the state at the lowest cost consistent with sound economy and prudent management; authorizing the authority to sell and distribute electric energy and to construct or otherwise acquire a system or systems for the generation, transmission and distribution of electric energy to carry out the purposes of this Act; providing for the rights, powers and duties of the authority; authorizing and regulating the issuance of bonds by the authority; and providing for the payment of such bonds and the rights of the holders thereof.

• • • • •

Definitions.

SEC. 2.

(10) "Federal agency" shall mean and include the United States of America, the President of the United States of America, Tennessee Valley Authority, the Federal Emergency Administrator of Public Works, the Administrator of the Rural Electrification Administration, and any and all other authorities, agencies, and instrumen-

talities of the United States of America, heretofore or hereafter created.

• • • • •

Grant of Specific Powers.

SEC. 12. The authority shall have power:

• • •

(13) To make any and all contracts necessary or convenient for the full exercise of the powers herein granted, including, but not limited to, (a) contracts with any person, federal agency, or municipality for the purchase or sale of energy, (b) contracts with any person, federal agency, or municipality for the management and conduct of the business of the authority or any part thereof and (c) contracts with any person, federal agency, or municipality for the acquisition of all or part of any system or systems. And in connection with any such contract to stipulate and agree to such covenants, terms and conditions as the board may deem appropriate, including, but without limitations, covenants, terms and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices, and the manner of disposing of the revenues of the system or systems conducted and operated by the authority.

• • • • •

Approved March 26, 1936.

Mississippi Laws, 1936, Chapter 184, p. 342.

An Act providing for the formation of non-profit membership corporations to be known as electric power associations for the purpose of promoting and encouraging the fullest possible use of electric energy by making electric energy available at the lowest cost consistent with sound economy and prudent management of the business of such corporations; providing for the rights, powers and duties of such corporations; authorizing and regulating the issuance of obligations by such corporations; providing for the payments of such obligations and the rights of the holders thereof; authorizing existing corporations organized for the same general

purposes to re-incorporate hereunder and validating certain acts, contracts and covenants of such corporations and to repeal Chapter 28 of the general laws of the Extraordinary Session of 1935, granting certain tax exemptions.

• • • • •

Definitions.

SEC. 3.

(8) "Federal Agency" shall mean and include the United States of America, the President of the United States of America, Tennessee Valley Authority, the Federal Emergency Administrator of Public Works, the Administrator of the Rural Electrification Administration, and any and all other authorities, agencies, and instrumentalities of the United States of America, heretofore or hereafter created.

• • • • •

Specific grants of powers.

SEC. 12. A corporation created under the provisions of this act shall have power to do any and all acts or things necessary or convenient for carrying out the purposes for which it was formed, including, but not limited to:

• • •

(8) To make any and all contracts necessary or convenient for the full exercise of the powers in this act granted, including, but not limited to, contracts with any person, federal agency or municipality for the purchase or sale of energy and/or the acquisition of all or any part of any system, and in connection with any such contract to stipulate and agree to such covenants, terms and conditions as the board may deem appropriate, including covenants, terms and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices and the manner of disposing of the revenues of the system operated and maintained by the corporation.

• • • • •

Approved March 26, 1936. (Reenacted, Mississippi Laws, 1938, Chapter 251.)

Mississippi Laws, 1936, Chapter 185, p. 354.

An Act to authorize counties, incorporated cities and towns in the State of Mississippi to construct, purchase or otherwise acquire, and to operate and maintain electric generating or distribution systems, within or without the county or corporate limits, to construct, purchase or otherwise acquire, to operate, maintain or use, individually or jointly, an electric generating system or systems or a transmission line or lines, within or without the corporate or county limits, to make improvements, extensions, betterments or additions to such electric systems, and such transmission line or lines, to furnish electric power and energy to any consumer or consumers, to finance such acquisition, improvement, extension, betterment, or addition by the issuance of bonds and the acceptance of federal grants, or otherwise, without respect to present indebtedness, to provide for the supervision, management and control of such electric systems and such lines, to provide by contract, or otherwise, rules and policies to govern resale rates, disposition of revenue, and other operating and management practices of such systems, in order to promote the increased domestic use of electricity in rural and urban areas by enabling such counties, incorporated cities and towns to utilize the surplus power generated by the Tennessee valley authority, or the power generated by any other works or dams.

* * * * *

Definitions.

SEC. 2 (h) The term "federal agency" shall include the United States of America, the president of the United States of America, or the federal emergency administrator of public works, reconstruction finance corporation, Tennessee valley authority, the administrator of the rural electrification administration or any other similar agency, instrumentality or corporation of the United States of America, which has heretofore been or may hereafter be created by or pursuant to any act or acts or joint resolution of the congress of the United States of America.

* * * * *

Powers of Municipalities.

SEC. 3. Every municipality shall have power and is hereby authorized:

• • •

(j) To make any and all contracts necessary or convenient for the full exercise of the powers herein granted with any natural person, firm, association, corporation, business trust, partnership, body politic, federal agency, or municipality, including, but not limited to (a) contracts for the purchase or sale of electric energy or power, and (b) contracts for the acquisition or improvement of all or any part of an electric plant or plants. And in connection with any such contract the municipality may stipulate and agree to such covenants, terms and conditions as the governing body may deem appropriate, including, but without limitation, covenants, terms and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices, and the manner of disposing of the revenues of the system or systems conducted and operated by the municipality.

• • • • •

Approved March 26, 1936.

Mississippi Laws, 1936, Chapter 187, p. 370.

An Act providing for the creation of power districts; prescribing powers and duties of such districts; and authorizing such districts to conduct and operate utilities for the production, transmission or distribution of electric energy, and to issue bonds and providing for the payment of such bonds.

• • • • • •

SEC. 14. The board of directors of any district shall have power and authority:

• • •

(6) To make any and all contracts necessary or convenient for the full exercise of the powers in this act granted, including, but not limited to, contracts with any municipality, the United States of America, the President of the United States of America, Tennessee valley author-

ity, the federal emergency administrator of public works and any and all other authorities, agencies, and instrumentalities of the United States of America, (a) for the purchase or sale of electric energy, and (b) for the acquisition of all or any part of any utility or utilities. In connection with any such contract, the board may stipulate and agree to such covenants, terms and conditions as the board may deem appropriate including, but without limitation, covenants, terms and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices, and the manner of disposing of the revenues of the utility operated and maintained by the district.

* * * * *

Approved March 26, 1936.

Mississippi Laws, 1936, Chapter 271, p. 531.

An Act to authorize municipal corporations, counties, towns, cities, public power districts or immediate authorities owning and/or operating or authorized to acquire and/or operate electric generation, transmission and/or distribution systems, to enter into contracts with certain governmental agencies for the acquisition of such systems and/or for the purchase and sale of electric energy, providing for the covenants, terms and conditions which may be stipulated or agreed to in any such contract and validating any such contracts heretofore entered into and any such covenants, terms and conditions heretofore stipulated or agreed to.

SECTION 1. Be it enacted by the Legislature of the State of Mississippi, That any municipal corporation, county, city, town, or village, power district or improvement authority, hereinafter called "municipality," owning and/or operating or hereafter authorized to acquire and/or operate any electric generation, transmission and/or distribution system, is hereby authorized to contract with the United States of America, any agency thereof, or with any corporation owned by the United States for the acquisition of any such system or part thereof and/or the purchase or

sale of electric energy, and in any such contract to stipulate and agree to such covenants, terms, and conditions as the governing body or board of the municipality may deem appropriate, including but without limitation, covenants, terms and conditions with respect to the resale rates, financial and accounting methods, service, operation and maintenance practices, and the manner of disposing of the revenues, of any such system, and to comply therewith, and any such contract heretofore entered into and any such covenants, terms or conditions heretofore stipulated or agreed to are hereby expressly validated.

* * * * *

Approved March 26, 1936.

Kentucky Acts, Fourth Extraordinary Session, 1936-1937, Chapter 6, p. 25.

An Act relating to non-profit cooperative corporations and providing, but not by way of limitation, for the formation, operation, consolidation, and dissolution of non-profit cooperative corporations to be known as "Rural Electric Cooperative Corporations" for the purpose of manufacturing, purchasing, selling, distributing, and encouraging the fullest use of electric energy in the Commonwealth of Kentucky and for the purpose of making electric energy, services, and appliances and property operated by electricity available to the inhabitants of rural areas in the Commonwealth of Kentucky at the lowest cost consistent with sound business methods and prudent management; and providing for the rights, powers and duties of such corporations; and providing for the government of such corporations; and providing for the issuance of stock and membership in and by such corporations; and providing for the issuance of obligations by such corporations; and providing for the number of persons that may organize such corporations and the form of the articles of incorporation and the corporate charter and the respective fees therefor; and providing that said corporations may use a corporate seal, sue and be sued, contract and be contracted with and purchase and hold

property, real and personal, as may be proper and necessary for carryin on its legitimate business, and mortgage, sell or lease same; and providing that said corporations may receive property, including cash, and may charge fees, rates, tolls, or rentals for energy, services or appliances and property; and providing for the issuance of stocks or bonds or memberships and the purchase of corporate stock by said corporations; and providing for the transfer of stock and the payment of patronage dividends; and providing that stockholders or members shall not be liable for the debts of the corporations; and providing for penalties for refusal to supply electric energy to said corporations; and exempting said corporations from all state, county, municipal or local taxation other than an annual tax of $10.00 on each corporation formed hereunder; and providing that such corporations shall be subject to the general jurisdiction of the Public Service Commission of Kentucky; and exempting said corporations and the securities issued by them from the Act of March 23, 1926, known as the "Blue Sky Law," together with all amendments thereto; and conferring upon said corporations the power of eminent domain; and providing that if any provision of this Act is held invalid, it shall not affect the other provisions hereof; and repealing any and all acts or parts of acts and any and all laws or parts of laws in conflict herewith, and declaring an emergency to exist.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

* * * * *

§2.—(f) "Federal Agency" shall mean and include, but not by way of limitation, the United States of America, the President of the United States of America, the Federal Emergency Administrator of Public Works, the Rural Electrification Administration, the Tennessee Valley Authority, the Farm Credit Administration, the Central Bank for Cooperatives, any district bank for cooperatives formed under that Act of Congress known as the Farm Credit Act of 1933 (and any amendment thereto) including any suc-

cessor to any existing bank for cooperatives, and any and all other authorities, agencies and instrumentalities of the United States of America, heretofore or hereafter created, by whatsoever title designated.

* * * * *

§7. *Powers.*—

9. To make any and all contracts necessary or convenient for the full exercise of the powers in this act granted, including, without limiting the generality of the foregoing, contracts with any person, including, but not by way of limitation, any federal agency or instrumentality, the Tennessee Valley Authority, any corporation formed under this act, any cooperative association as defined in the Farm Credit Act of 1935, any municipality and/or the Commonwealth of Kentucky, including, but not by way of limitation, contracts for the purchase and sale of property of all kinds and character whatsoever, for the purchase and sale of energy and/or for the purchase and/or use of electrical devices, equipment, appliances, fixtures and supplies of all kinds and/or all kinds of tools, equipment and machinery operated by electricity or electric energy and deemed desirable by the corporation for its use or the use of its members; any accounting services, forms and supplies, bargaining services, business counsel and advice, engineering services, supervisory services, investment counsel, general purchasing services of all kinds, and any other service or services which may be requested, deemed advisable or desirable in the conduct of its business by any corporation formed under and for the purposes provided by subsection (a) of Section 3 of this act, for the management and conducting of the business of the corporation; for the fixing of rates, fees, or charges for service rendered or to be rendered by the corporation, subject, however, to the limitations provided in this act as to the fixing of rates; for any other corporate purpose.

* * * * *

Approved January 18, 1937.

Public Laws of North Carolina, 1935, Chapter 291, p. 312.

An Act providing for the formation of non-profit membership corporations to be known as electric membership corporations for the purpose of promoting and encouraging the fullest possible use of electric energy in the state by making electric energy available to the inhabitants of the state at the lowest cost consistent with sound economy and prudent management of the business of such corporations; providing for the rights, powers and duties of such corporations; authorizing and regulating the issuance of bonds by such corporations; and providing for the payment of such bonds.

The General Assembly of North Carolina do enact:

* * * * *

SEC. 2. (e) "Federal agency" shall mean and include the United States of America, the president of the United States of America, the federal emergency administrator of public works and any and all other authorities, agencies, and instrumentalities of the United States of America, heretofore or hereafter created.

* * * * *

SEC. 13. *Specific grant of powers.* Subject only to the Constitution of the State, a corporation created under the provisions of this Act shall have power to do any and all acts or things necessary or convenient for carrying out the purpose for which it was formed, including, but not limited to:

* * *

(h) To make any and all contracts necessary or convenient for the full exercise of the powers in this Act granted, including, but not limited to, contracts with any person or federal agency, for the purchase or sale of energy; for the management and conduct of the business of the corporation, including the regulation of the rates, fees or charges for service rendered by the corporation.

* * * * *

Ratified May 4, 1935.

Public Acts of Tennessee, 1935, Chapter 37, p. 78.

An Act to authorize municipal corporations, counties, towns and cities owning and/or operating or authorized to acquire and/or operate, electric generation, transmission and/or distribution systems, in contracts with certain governmental agencies for the acquisition of such systems or for the purchase of electric power and energy to stipulate and agree to certain covenants, terms and conditions; and to validate any such covenants, terms and conditions heretofore stipulated or agreed to.

SEC. 1. *Be it enacted by the General Assembly of the State of Tennessee,* That any municipal corporation, county, city or town, hereinafter called "municipality," owning and/or operating or heretofore or hereafter authorized to acquire and/or operate any electric generation, transmission and/or distribution system, is hereby authorized, in any contract or arrangement with the Tennessee Valley Authority or any similar governmental agency for the acquisition of any such system or part thereof and/or the purchase of electric power and energy, to stipulate and agree to such covenants, terms, and conditions as the governing body thereof may deem appropriate, including but without limitation, covenants, terms and conditions in respect to the resale rates, financial and accounting methods, services, operation and maintenance practices and the manner of disposing of the revenues, of any such system, and to comply therewith, and any such covenants, terms or conditions heretofore stipulated or agreed to are hereby expressly validated.

SEC. 2. *Be it further enacted,* That nothing herein contained shall be construed as a restriction or limitation upon any authority, power or right which any municipality may have in the absence hereof; this Act shall be construed as cumulative and shall be in addition and supplemental to any power, authority or right conferred by any other law.

SEC. 3. *Be it further enacted,* That this Act is remedial in nature and any power, authority or right hereby conferred shall be liberally construed, and to this end every municipality shall have the power, authority and right, in

addition to those expressly conferred hereby, to do all things necessary or convenient in carrying out the purposes hereof.

SEC. 4. *Be it further enacted,* That if any section, sentence, clause or provision of this Act or any application thereof shall be held invalid, the validity of any other section, sentence, clause or provision hereof or of any other application shall not be affected.

SEC. 5. *Be it further enacted,* That this Act shall take effect from and after its passage, public welfare requiring it.

Approved February 14, 1935.

Public Acts of Tennessee, 1937, Chapter 231, p. 882.

An Act providing for the formation of general welfare nonprofit membership corporations to be known as electric membership corporations for the purpose of promoting and encouraging the fullest possible use of electric energy by making electric energy available at the lowest cost consistent with sound economy and prudent management of the business of such corporations; providing for the rights, powers, and duties of such corporations, including their definition as a "nonutility" within the meaning of the laws of this state; authorizing and regulating issuance of obligations by such corporations; providing for the payments of such obligations and the rights of the holders thereof; authorizing existing corporations organized for the same general purpose to re-incorporate hereunder, and validating certain acts, covenants, contracts, and obligations of such corporations; and to repeal Chapter 32 of the Public Acts of the Extraordinary Session of 1935, and grant to and impose upon the corporations formed thereunder all the benefits, privileges, duties and obligations granted to or imposed upon any corporation organized under this Act, and validating certain acts, covenants, contracts, obligations, mortgages, deeds of trust, property rights, franchises, consents, and easements of such corporations.

* * * * *

SEC. 2. Formation authorized. *Be it further enacted,* That three or more natural persons may, by executing, filing, and recording a certificate as hereinafter provided, form a corporation not organized for pecuniary profit for the purpose of promoting and encouraging the fullest possible use of electric energy by making electric energy available at the lowest cost consistent with sound economy and prudent management of the business of such corporations. Any corporation created hereunder shall be held to be a general welfare corporation, not organized or doing business for profit and a non-utility within the meaning of the laws of this State. Provided that nothing herein contained shall be construed to exempt such corporation from the general property taxes, and assessment schedules for such property shall be filed with the appropriate county officials of the county in which such property is located, and the payment of such taxes shall be in lieu of all other taxes unless the legislature specifically provides that such tax or taxes shall be applicable to Electric Membership Corporations.

SEC. 3. *Definitions.*

(8) "Federal agency" shall mean and include the United States of America, the president of the United States of America, Tennessee Valley Authority, the Rural Electrification Administration, the Federal Emergency Administrator of Public Works, and any and all other authorities, agencies and instrumentalities of the United States of America, heretofore or hereafter created.

* * * * *

SEC. 12. *Specific grants of powers.* Be it further enacted, That each corporation shall have power to do any and all acts or things necessary or convenient for carrying out the purpose for which it was formed, including, but not limited to, though subject always to limitations contained in other sections of this Act:

* * *

(12) To make any and all contracts necessary or convenient for the full exercise of the powers in this Act granted, including, but not limited to, contracts with any person, federal agency or municipality, for the purchase

or sale of energy and/or the acquisition of all or any part of any system, and in connection with any such contract to stipulate and agree to such covenants, terms, and conditions as the board may deem appropriate, including covenants, terms, and conditions with respect to the resale rates, financial and accounting methods, services, operation and maintenance practices, and the manner of disposing of the revenues of the system operated and maintained by the corporation.

* * * * *

Approved May 21, 1937.

Public Acts of Tennessee, 1935, Chapter 42, p. 98.

An Act to define and limit the authority, powers and jurisdiction of the Railroad and Public Utilities Commission so as to exempt therefrom certain Federal and State Corporations, Agencies, Instrumentalities, and other public bodies and certain non-profit organizations herein defined as non-utilities; to authorize utilities to sell, lease or otherwise dispose of their property to non-utilities; and as a part hereof to amend Sections 5380 to 5508, inclusive, of the official Code of Tennessee, passed at the regular session of the General Assembly of the State of Tennessee in 1931, known as the Code of Tennessee of 1932, said section of the code defining the term "Public Utility."

SEC. 1. *Be it enacted by the General Assembly of the State of Tennessee,* That Section 5448 of the Code of Tennessee, passed by the regular session of the Legislature of Tennessee of 1931, known as the Code of Tennessee of 1932, which section defines the term "public utility" be, and the same is hereby amended by making said Section 5448 read, as follows:

SECTION 5448:

Public utilities are defined—The term "public utility" is defined to include every individual, copartnership, association, corporation, or joint stock company, their lessees, trustees, or receivers, appointed by any court whatsoever, that own, operate, manage or control, within the State of Tennessee, any street railway, interurban electric railway,

traction company, all other common carriers, express, gas, electric light, heat, power, water, telephone, telegraph, or any other like system, plant or equipment, affected by and dedicated to the public use, under privileges, franchises, licenses, or agreements, granted by the state or by any political subdivision thereof; provided, however, that the term "public utility" as herein defined shall not be construed to include the following (hereinafter called non-utilities): (a) any corporation owned by or any agency or instrumentality of the United States; (b) any county, municipal corporation or other subdivision of the State of Tennessee; (c) any corporation owned by or any agency or instrumentality of the State of Tennessee; (d) any corporation or joint stock company more than fifty per cent of the voting stock or shares of which is owned by the United States, the State of Tennessee or by any non-utility referred to in (a), (b) and (c) hereof; (e) any cooperative organization, association or corporation not organized or doing business for profit; (f) any of the foregoing non-utilities acting jointly or in combination or through a joint agency or instrumentality.

SEC. 2. *Be it further enacted,* That any public utility as defined in Section 1 of this Act, may, without the approval or consent of the State of Tennessee, or of the Railroad and Public Utilities Commission, or any other agency of the State of Tennessee, sell, lease, or otherwise dispose of any of its property, including but without limitation, franchises, rights, facilities, and other assets, and its capital stock, to any of the foregoing non-utilities.

SEC. 3. *Be it further enacted,* That if any section, sentence, clause or provision of this Act or any application thereof shall be held invalid, the same shall not affect the validity of any other section, sentence, clause or provision of this Act, or of any other application thereof.

SEC. 4. *Be it further enacted,* That this Act shall continue in force until expressly repealed by the specific provisions of a subsequent enactment.

SEC. 5. *Be it further enacted,* That this Act shall take effect from and after its passage, the public welfare requiring it.

Approved February 19, 1935.

APPENDIX F.

EXCERPTS FROM ARGUMENT IN THE SUPREME COURT IN ASHWANDER v. TENNESSEE VALLEY AUTHORITY, 297 U. S. 288.

"Mr. Justice Van Devanter: You are saying that we have a limited case before us, not one that is so broad as is contended. Do you mean by that that we should in this case consider what the purposes of the Wilson Dam were, as declared in the legislation under which it was constructed, and then that we should proceed upon the idea that the Government owned that property, and it may take some steps to realize on that property, to make it productive, and that that is all that is involved in this case so far as any concrete case is concerned? Is that your point?

Mr. Reed: No; I would not make that contention, because the TVA Act of course speaks of other dams. The point we make is that this contract does not take electricity from any place except Wilson Dam; that that produces sufficient electricity for this contract; and that if you will look at this contract as something for which the power is to be drawn from Wilson Dam, it is well within the limits of what Congress may produce in electricity, incidentally.

Now, it may be that Congress would produce electricity in the limitless amount that has been referred to, and then other questions would arise; but here we have only the question of disposing of a limited amount of this electricity that was produced at Wilson Dam.

Mr. Justice Van Devanter: My question was, what is the concrete case that you understand is before us, and to which you would suggest that we should confine our decision. Now I understand you to indicate that there are some things under this Tennessee Valley Authority which as yet have not come into being, and there is not a present concrete case about them.

Mr. Reed: That is correct.

Mr. Justice Van Devanter: That this contract, as I understood you, relates only to Wilson Dam, and that this contract would be fully maintained and carried out by resorting to nothing except Wilson Dam. Is that true?

Mr. Reed: That is correct. The latter statement is correct; and when you say that this contract relates only to

Wilson Dam, of course it is a contract for the purchase of transmission lines.

Mr. Justice Van Devanter: I understand that, but transmission lines to be supplied from the Wilson Dam.

Mr. Reed: Solely from the Wilson Dam."

"Mr. O'Brian: These transmission lines which are referred to repeatedly in the opinions of the lower courts and the findings are eight relatively short transmission lines. They extend from Wilson Dam and its substation at the nitrate plant to various municipalities in northern Alabama, and the farthest municipality away is 51 miles from the dam. So these are short transmission lines."

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In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

THE TENNESSEE ELECTRIC POWER COMPANY,
FRANKLIN POWER & LIGHT COMPANY,
MEMPHIS POWER & LIGHT COMPANY,
SOUTHERN TENNESSEE POWER COMPANY,
BIRMINGHAM ELECTRIC COMPANY,
MISSISSIPPI POWER COMPANY,
APPALACHIAN ELECTRIC POWER COMPANY,
CAROLINA POWER & LIGHT COMPANY,
ALABAMA POWER COMPANY,
KENTUCKY & WEST VIRGINIA POWER COMPANY, INC.,
KINGSPORT UTILITIES, INCORPORATED,
WEST TENNESSEE POWER & LIGHT COMPANY,
MISSISSIPPI POWER & LIGHT COMPANY,
EAST TENNESSEE LIGHT & POWER COMPANY,
TENNESSEE EASTERN ELECTRIC COMPANY,

Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, and
ARTHUR E. MORGAN, HARCOURT A. MORGAN and
DAVID E. LILIENTHAL, each individually and as an Executive
Officer and Director of Tennessee Valley Authority,

Defendants-Appellees.

On Direct Appeal from the United States District Court
For the Eastern District of Tennessee.

REPLY BRIEF FOR APPELLANTS.

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The Gilbert Legal Publishing Co., Cleveland, Ohio

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U. S. Water Supply Paper No. 234 15

ALL PLEADINGS, MOTIONS, ORDERS AND DECISIONS ARE PRINTED IN VOLUME I OF THE RECORD.

ALL TESTIMONY OF WITNESSES FOR APPELLANTS IS PRINTED IN VOLUME II, PAGES 769 TO 1533, AND VOLUME III, PAGES 2284 TO 2439, OF THE RECORD.

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* Original exhibit reproduced by appellants or appellees in two separately bound volumes of maps and charts, nine copies of which have been supplied to the Court.

° Original exhibit, nine copies of which have been supplied to the Court.

† Original exhibit not reproduced or printed except when followed by a record reference, cited for the convenience of the Court, which indicates that the portion of the original exhibit referred to was also offered and excluded as an excerpt, and as such is printed in the record.

ABBREVIATIONS USED IN REFERENCES.

Fdg.—Finding of Fact made by the trial court.

Add. Fdg.—Additional Finding of Fact made by Judge Gore.

In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

TENNESSEE ELECTRIC POWER COMPANY, *et al.*,
Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, *et al.*,
Defendants-Appellees.

ON DIRECT APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE.

REPLY BRIEF FOR APPELLANTS.

I.

PRELIMINARY MATTERS RAISED BY APPELLEES.

1. Change in Parties Appellant and Its Significance. In our original brief we stated the fact and the circumstances of the dismissal of the Georgia Power Company as a party below and of Tennessee Public Service Company and Holston River Electric Company as parties appellant. (Appellants' Br. 4.) The appellees state in their brief that since appellants' main brief was filed, the appellants Kentucky-Tennessee Light & Power Company and Memphis Power & Light Company have applied, or will apply before argument, for leave to withdraw as parties to this suit and to this appeal without prejudice to the rights of the remaining appellants. The circumstances of the withdrawal of these parties from this appeal are of great significance and are inadequately stated by appellees. (Appellees' Br. 5, 110.)

TVA is the sole purchaser of all of the facilities of Holston River Electric Company, which served Hawkins and Hamblen Counties, Tennessee, (see map, Comp. Ex. 29*) and TVA now owns and operates the distribution systems in one incorporated town and seven villages in these Counties. In general, the distribution facilities of the Tennessee Public Service Company located in Knoxville were conveyed to that city and the distribution facilities outside the corporate limits of the city were conveyed to TVA. (See map, Comp. Ex. 27*.) An examination of the maps (Comp. Exs. 327*, 27*, 29*) discloses these further areas now served by TVA, and that these rapidly expanding TVA power operations have now been extended to the edge of the market areas of appellants Kingsport Utilities, Incorporated, Carolina Power & Light Company, Tennessee Eastern Electric Company and Appalachian Electric Power Company.

Under two contracts all of the distribution facilities of Kentucky-Tennessee Light & Power Company in the service area, shown on the map (Comp. Ex. 327*) lying in Kentucky and Tennessee immediately north of Norris, are to be conveyed to the City of Clarksville "or its nominee" and all transmission lines, substations and similar property are to be conveyed to TVA. All other electric facilities used by this company in supplying electricity to the public in the remaining area served by it in Tennessee (except in one isolated municipality in which negotiations for sale to the municipality are pending) are to be conveyed to the Cities of Paris, Huntington and McKenzie, Tennessee, the incorporated town of Ridgely, Tennessee and Weakley County, Tennessee, *or to TVA* under a contract reciting that TVA and these political subdivisions "are sometimes herein collectively designated as 'the purchaser.'" TVA purchased directly transmission lines, substations and like facilities and also "all electrical distribution facilities located within and without the limits of the following com-

munities: Puryear, Whitlock, Cottage Grove, McKenzie, Henry, Huntington, Trezevant, Atwood, McLemoresville, Dyer, Rutherford, Kenton, Mason Hall, Bradford, Rives, Troy, Obion, Trimble, Newbern, Tiptonville, Wynneburg and Ridgely, Tennessee." An examination of the maps (Comp. Ex. 327*, 205*) discloses the scope of this extension of TVA operations. Both of these contracts provide that such property as is ostensibly to be transferred to the cities, towns and counties shall be transferable to their "nominee," but do not disclose whether the nominee may be TVA.

In addition TVA, and certain cities and towns, have made an agreement for the purchase of the electric properties of the West Tennessee Power & Light Company and we are informed that TVA and the City of Memphis are negotiating for the purchase of the electric properties of the Memphis Power & Light Company. The extent of the service area and market involved in this expansion of TVA power operations likewise appears from an examination of the map. (Comp. Ex. 327*.)

At the date of the trial TVA reported no contracts with any of these towns, cities or counties except the Cities of Knoxville, Memphis and Paris. (Fdg. 210, R. 646.) At the time of the trial, Memphis, Knoxville, Clarksville, Paris and Newbern had been allotted loans and grants by PWA for the construction of duplicate distribution systems to distribute TVA power. (R. 3327.) Whether PWA allotments had been made to other of the towns and cities involved during the intervening period is unknown to these appellants.

It is plain that these utilities are not suddenly retiring voluntarily from the businesses which they have created over a period of many years. It is plain that these appellants have retired from their businesses because their destruction threatened to become a *fait accompli* before this

appeal could be heard and determined. This has all taken place while the TVA power system is only fractionally developed. It has taken place in service areas where appellees assert no threat from TVA exists because at the date of trial the distribution of TVA power, although being rapidly extended, had not yet reached the market areas of certain of the appellants and had not yet inflicted the damages which this suit was brought to prevent. (Appellees' Br. 175-177; see pp. 101-103, *infra.*) It has brought the area of actual TVA operations to the doorstep of every appellant in whose service area the distribution of TVA power is not yet an accomplished fact. (See map, Comp. Ex. 327*.) Nothing could more eloquently illustrate the truth of appellants' position that TVA is actively engaged in taking over the electric business within transmission distance of its partially completed and constantly expanding power system, and that unless relief is secured from this Court the appellants speedily will be driven out of business by TVA.

2. Prayer for Relief. The appellees, after an inadequate summary of the Bill, assert that appellants, among other things, sought a "sweeping injunction" against the "national power policy" and against the construction of "dams in the Tennessee River and its tributaries." (Appellees' Br. 6.) No such relief was sought in the prayer. (R. 67-71.) The appellants have stated the relief which they seek and to which they believe they are entitled on this record at pp. 248-249 of their main brief.

3. Statutory Construction. The appellees assert that no question of statutory construction is involved. (Appellees' Br. 2-3.) While it is true that the scope of the TVA Act is so broad with respect to the development of the power resources of the Tennessee River and its tributaries and the establishment of a great federally owned

and operated electric utility system that it is difficult to conceive of any actions of that character which would be in excess of the terms of the statute, it is not true that no questions of statutory construction are raised in the record. The appellants do assert that the appellees are violating the statute (1) by selling electricity below subsidized cost (TVA Act, Sec. 14); (2) by confederating with the Public Works Administration, Rural Electrification Administration and Civil Works Administration to take over the businesses of appellants or to force appellants to sell electric distribution systems at distress prices on penalty of duplication with loans and gifts of federal funds; and (3) by engaging in a systematic campaign of misrepresentation, slander and libel of the businesses of the appellants for the purpose, and with the necessary effect, of destroying and appropriating their going businesses. Since the trial court excluded practically all evidence offered to support these charges and denied appellants the benefit of process to procure other evidence for the same purpose, they have been discussed only in connection with the errors of the trial court in excluding evidence. (Appellants' Br. 214-247.)

4. Procedure Below. Appellees seek to excuse the failure of the trial court to afford adequate time for preparation and submission of requested findings and its denial of an opportunity to examine and point out the errors in requested findings submitted by the appellees by asserting that the court had stated some time in advance of the close of the case that it would follow such a course. (Appellees' Br. 7-11.) Laying to one side the practical impossibility of preparing findings while counsel are fully occupied with a complicated trial, it is difficult to understand how proper findings could be prepared in advance of the presentation of the evidence. And if that impossibility were disregarded, it would not excuse the failure to afford an

opportunity to examine requested findings of appellees and point out their erroneous character, nor the subsequent *ex parte* acceptance of briefs thereafter filed by appellees criticizing and attacking the suggested findings filed by the appellants. This one-sided deviation from the announced procedure of the court only aggravated its prejudicial character. Cf. *Morgan v. United States,* 304 U. S. 1, 19.

5. Effect of the Findings. The appellees contend that findings, whether made unanimously or rejected by one of the three members of the trial court, are unassailable. (Appellees' Br. 11.) The effect of the findings will be more appropriately considered in our discussion of the contentions of appellees to which particular findings are claimed to apply. However, the rule in cases where findings have been previously sustained by two courts (*Alabama Power Co. v. Ickes,* 302 U. S. 464) has no application here. Here the appeal is direct to this Court. The findings have not been reviewed by any appellate court and, as we shall hereinafter point out more particularly, they fail to touch the controlling issues of fact, they are based upon erroneous conceptions of law, they are in some instances bare conclusions unsupported by findings of essential underlying facts, they are in some instances unsupported by any evidence and in other instances against the clear weight of the evidence. It is a settled rule that in equity cases the first reviewing court will examine the evidence and set aside findings of the trial court where they are against the weight of the evidence, based upon erroneous interpretations of documentary evidence, dependent upon the persuasive effect of facts not turning on the credibility of witnesses or based upon an erroneous conception of law. *Adamson v. Gilliland,* 242 U. S. 350, 352-3; *Laursen v. Lowe,* 46 F. (2d) 303, 304; *Uihlein v. General Electric Co.,* 47 F. (2d) 997, 1002-4; *Ins. Co. v.*

Simons, 60 F. (2d) 30, 32. The reviewing court will also disregard incomplete findings and bare conclusions unsupported by findings of essential underlying facts. *Interstate Circuit v. United States*, 304 U. S. 55.

In addition, it should be observed that the findings upon which the appellees principally rely in their brief are of a character and were made in a manner which is aptly described in *Process Engineers v. Container Corp.*, 70 F. (2d) 487, cert. den. 293 U. S. 588, where the court said:

> "It is urged that the court's findings should be sustained because supported by some evidence. The weakness of this argument lies in the fact that *the findings were not made by the court, but are the work of industrious counsel* who combined his argument and a partisan and unfair statement of facts into one and called it, 'Findings of Fact.' *It is difficult to distinguish these findings from the brief of counsel for appellee.*
>
> Such so-called findings do not help an appellate court. They reflect the views of counsel who submitted them and detract from the force and effect which are ordinarily given to findings made by the trial judge. When the abuse is aggravated (and the objectionable practice is growing), the assistance to the appellate court, which findings when carefully made by the trial court afford, is lost, and it becomes necessary for us to study the evidence as though no findings had been made by the District Court." (loc. cit. 489.)[1]

Moreover, it will be observed that the majority of the findings chiefly relied upon by the appellees were rejected or modified by Judge Gore, who made findings of evidentiary facts (R. 669-713) which squarely contradict the bare, and frequently confusing, conclusions upon which appellees rely. Under such circumstances, it is futile to say

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[1] Unless otherwise noted, throughout this brief, emphasis has been supplied.

that a few bare conclusions, not supported by adequate findings of evidentiary facts and against the clear weight of the evidence, should be determinative of questions involving the very foundations of our constitutional system—that findings of such a character should be given conclusive effect where finality of fact may be finality of law. If such were the rule, our constitutional system would depend wholly upon the industry, judgment or prejudice of a trial judge and the function of this Court in preserving our constitutional system and the constitutional liberties of the people would be substantially destroyed.

II.

THE APPELLEES WHOLLY FAIL TO SHOW THAT THE WATER POWER WILL BE INCIDENTALLY CREATED IN THE DISCHARGE OF ANY CONSTITUTIONAL FUNCTION, AND IN EFFECT CONCEDE THAT IT IS SEPARATELY AND PURPOSEFULLY CREATED UNDER THE CLAIMED RIGHT TO DEVELOP ALL OF THE ECONOMIC RESOURCES OF INLAND WATERS, NO MATTER HOW UNRELATED TO ANY FEDERAL FUNCTION. (Answering Appellees' Br. 12-53; 72-106.)

Stated most favorably to appellees, the TVA Unified Plan involves three objectives, that is, some navigation improvement, some flood control and the creation of a vast quantity of water power. At least one of these objectives, the creation of water power, is not within the field of federal power except to the extent that it is incidentally and necessarily created by the operation of structures built for, and having a real, substantial and *bona fide* relation to, the discharge of some constitutional function. That the creation of water power is a separate and independent objective, and not merely an incidental result, of the TVA Unified Plan is conceded by appellees:

> "If the improvement of navigation and control of floods *were the only ends in view,* appellants would not be here to object." (Appellees' Br. 104.)

An examination of the facts and applicable law makes plain that this concession is not improvident.

The issue is not, as appellees chiefly argue, whether the TVA Unified Plan includes any navigation or flood control facilities. The precise questions involved are (1) whether the water power is being, or will be, incidentally and necessarily created by the operation of structures (a) having a real, substantial and *bona fide* relation to the improvement of navigation, (b) having a real, substantial and *bona fide* relation to flood control so far as flood control falls within the field of federal power, or (c) in a *bona fide* and constitutional exercise of the war power; and (2) whether even if the structures creating the water power are in some degree related to navigation, flood control or national defense, the creation of the water power under the facts disclosed in this record is not an attempt to achieve a prohibited end in the guise of exercising a granted power.

We do not contend that the TVA Unified Plan includes no navigation or flood control features, although they are a very minor part of that Plan. We do contend that the main stream projects are primarily power reservoirs with incidental navigation facilities upon which flood control reservoirs (creating no firm water power) are superimposed and that the TVA tributary projects are large power reservoirs without any incidental navigation facilities, and without any relation to navigation, upon *some* of which relatively small flood control reservoirs are superimposed. We also contend that the gross disparity between the size, type and cost of the structures for the creation of water power (as distinguished from facilities for converting water power into electricity) and the size, type and cost of such naviga-

tion and flood control facilities as are included in the TVA Unified Plan emphasizes not only the lack of relation between the creation of water power and the functions of navigation or flood control, but also the attempt to achieve a prohibited end in the guise of exercising granted powers. (Appellants' Br. 115-121.)

The appellees do not meet these issues and attempt to obscure and screen them by intermingling a discussion of navigation, flood control and national defense in inextricable confusion. Indeed, they even seek to evade the whole question of the creation of water power. This is clear from the opening sentence at page 12 of their brief where they omit any reference to power and insist that the TVA Act contemplates a project only for the purposes of navigation, flood control and national defense. If, as we have shown, none of the firm water power is created as the incidental result of the exercise of any one of the constitutional powers invoked, it can not logically be said that, in some nebulous and undisclosed fashion, the creation of the water power may be sustained, by confused and unanalyzed references to these federal powers generally. The summation of three zeros is still zero. It is in fact obvious, as hereinafter shown, that the appellees' argument rests upon the erroneous conception of law that if *any part* of the statutory or administrative scheme or *any part* of a federal power structure or a series of power structures has any relation to a federal function, then the Federal Government may purposefully and deliberately create water power which is not the incidental result of the exercise of any constitutional function.

A. THE APPELLEES' CONTENTION THAT THE CONSTITUTIONAL AUTHORITY OF THE FEDERAL GOVERNMENT TO CREATE WATER POWER IS NOT LIMITED TO THAT INCIDENTALLY PRODUCED IN THE DISCHARGE OF A FEDERAL FUNCTION IS UNSUPPORTED BY PRINCIPLE OR AUTHORITY.

The appellees contend that the Federal Government has constitutional authority to create water power in unlimited amounts, so long as the statutory or administrative scheme at some point touches the periphery of some constitutional power, and that the Federal Government may create water power by building separate structures or enlarging structures for the purpose of creating water power, although such additional structures or enlargements are not reasonably adapted nor incidental to the discharge of a federal function. This contention is variously stated as coming within the "choice of means," as being a matter of congressional discretion, and finally as a bald right to develop all resources (that is, to make all uses of property, private or governmental and federal or non-federal) which could be achieved by any sort of structures which the Federal Government might choose to erect at the site of any federal undertaking.[1] (Appellees' Br. 74, 75, 95-106.)

These claims overlook the well-settled principle that "to a constitutional end many ways are open, but to an end not within the terms of the Constitution *all ways are closed,*" and that constitutional power is not a matter of congressional or administrative discretion. *Carter v.*

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[1] The appellees state (Appellees' Br. 103):

"The projects of the Authority are the only projects which adequately develop the available sites to conserve the water resources of the Tennessee River system for navigation, flood control, *power,* and *other beneficial uses* (fdg. 93, r. 621, app. I, 51). The Congress, we submit, *may authorize the full utilization* of the necessary *sites* wherever the projects are reasonably required for navigation and flood control. * * *"

Carter Coal Co., 298 U. S. 238, 291. They overlook the fact that means adopted under the constitutional power over navigable waters must have "some positive relation to the control of navigation and not otherwise (be) inconsistent with the Constitution," and that such means must have "a real or substantial relation to the control of navigation or appropriateness to that end." *Wisconsin v. Illinois*, 278 U. S. 367, 415.

In support of their novel propositions the appellees erroneously rely upon *Green Bay & Miss. Canal Co. v. Patten Paper Co.*, 172 U. S. 58; *United States v. Chandler-Dunbar Water Power Co.*, 229 U. S. 53; *Arizona v. California*, 283 U. S. 423, 456; and *Buchanan v. United States*, 78 Ct. Cl. 791. (Appellees' Br. 96, 74, 90.) The appellees' fundamental misconception of these cases is sharply brought out by their discussion of *Green Bay & Miss. Canal Co. v. Patten Paper Co.*, and *United States v. Chandler-Dunbar Water Power Co.*, at pp. 96-97 of their brief.

The navigation works involved in *Green Bay & Miss. Canal Co. v. Patten Paper Co.* were the same navigation works which were before this Court in *Kaukauna Co. v. Green Bay & Miss. Canal Co.*, 142 U. S. 254, on appeal from 90 Wis. 370. In the *Kaukauna* case this Court held that the "surplus of water" (that is, surplus water power) was "necessarily" created by the dam and sustained its validity by a decision in which it condemned the creation of "a wholly unnecessary excess of water" and confined its approval to "cases where the surplus is a mere incident to the public improvement" (loc. cit. 275). In the same case the Supreme Court of Wisconsin had expressly held that the water power created was "in a true sense incidental to the erection of the dam" (loc. cit. 401).

There was no suggestion that the dam had been enlarged for the purpose of providing a power reservoir and thus creating additional water power. The fact that only

one per cent of the flow of the water thus necessarily impounded to create the navigation level was needed for the operation of the navigation facilities in no way affected the fact that the remaining 99 per cent was incidentally and necessarily created by a *bona fide* navigation dam. When these navigation works passed to the United States, it naturally acquired the water power which was incidentally created, and that is all that was held by *Green Bay & Miss. Canal Co. v. Patten Paper Co., supra.* These cases plainly support the position of appellants. They could be apposite from the standpoint of appellees only if the appellants were contending (as appears to have been contended in the *Ashwander* case) that even in the case of a *bona fide* navigation dam the Federal Government does not own and can not develop any of the water power created by the dam beyond that used or reasonably anticipated to be required for navigation purposes. That such is not the issue here is too plain for misunderstanding. (Appellants' Br. 94-122.)

Similarly, appellees argue (Appellees' Br. 97) that because in the *Chandler-Dunbar* case only a small portion of the total flow of the river was necessary to operate the navigation facilities, that decision sustains the power of the Federal Government separately and purposefully to create water power not incidentally brought into being by the operation of *bona fide* navigation structures, and sustains a right in the Federal Government to create water power quite apart from the discharge of any constitutional function. In the *Chandler-Dunbar* case this Court quoted from and reaffirmed the principles laid down in the *Kaukauna* case and no claim was made, or could have been made, that the navigation works in the St. Mary's River had been built higher than necessary or appropriate for navigation purposes, or that any structures had been built for the creation of water power. All of the water power which was to be leased in the *Chandler-Dunbar*

case was incidentally created by the navigation works which had been built across the St. Mary's River. All the water used for power purposes was to be, and is, withdrawn from the waters impounded by the *bona fide* navigation structures. (See map opposite page 36, Statistical Report of Lake Commerce Passing Through Canals at Sault Ste. Marie During the Season of 1937, issued by the Corps of Engineers, United States Army.) Naturally the full flow of the St. Mary's River was not required to supply and operate the locks. If the dam involved in the *Chandler-Dunbar* case had been built so as to provide a power reservoir on top of a navigation project, or if that project had included large power reservoirs on tributaries, then the case might be cited by the appellees with some shadow of appositeness to the suit at bar. Under the facts of the case and the holding of this Court the decision plainly supports appellants and negatives the pretensions of power asserted by the appellees.

Appellees erroneously state (Appellees' Br. 98) that in *Buchanan v. United States* the navigation dam (Ohio River Dam No. 41) "had been constructed *several feet higher* than required for navigation" and that "compensation was sought for the taking of lands to the extent they were *overflowed* by the excess taking." The facts, however, are that "none of the plaintiff's fast lands" had been overflowed (which shows that the dam was not high enough to create a pool overflowing the banks even at the dam site), that the alleged excess height was only *two feet*, and that the plaintiff did not challenge the power of the United States in the premises but only sought to recover compensation upon the theory that the project exceeded the natural servitude of riparian property in favor of navigation on navigable streams. (loc. cit. 794.) Of course if, as stated in appellees' brief, any lands of the plaintiff had been "overflowed," he could have recovered compensa-

tion regardless of the validity of the federal project. *United States v. Cress*, 243 U. S. 316. The inappositeness of this case to support the contentions of appellees is manifest.

In *Arizona v. California*, 283 U. S. 423, the only two challenges as to the validity of the federal action were that the Federal Government had no power to proceed with the construction of the dam in the Colorado River because (1) the river was non-navigable and (2) even if the river were navigable, the dam would not be built in the exercise of any federal power to improve navigation as it was to be subject to the Colorado River Compact, which made navigation subordinate to the local uses of irrigation and water power. These two contentions were disposed of by this Court on motion to dismiss (1) by taking judical notice that the river was navigable, and (2) by holding that it was immaterial what the Compact provided as the Compact could not overrule the contrary provisions of the Boulder Canyon Project Act.

Therefore, on the state of the pleadings no further question as to the constitutionality of the construction of the dam was presented. In addition, as pointed out in the opinion, the Court had before it Congressional Documents and Reports of the Army Engineers which showed that the principal obstacles to navigation were the enormous amounts of silt brought down by the river (due to its great slope and location in a semi-arid region with little cover) and the insufficiency of the low water flow, which obstacles could only be removed by the construction of a dam with enormous capacity for storing silt and with sufficient capacity to store the entire flow of the river so as to provide necessary low water releases to make possible navigation.[1]

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[1] The Colorado River system carried more silt per square mile of drainage area than any other river in the United States, —more than 161 million cubic yards annually being carried past Yuma. (U. S. Water Supply Paper No. 234, pp. 78-98; H. Rep.

(Continued on page 16)

It was on that basis, with no evidence and indeed no claim to the contrary, that this Court in passing observed that the dam was not unrelated to the improvement of navigation and that any determination as to whether the particular structures were reasonably necessary was not before the Court for consideration.

It is not to be supposed that this Court in that decision intended to reverse the settled principle that the Federal Government has no constitutional authority to create water power except that which comes into being through the oper-

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(Continued from page 15)

918, 70th Cong. 1st Sess., p. 4.) Successive deposits of this silt caused the river bed to rise higher and higher each year and resulted in an extremely unstable channel. (S. Rep. 592, 70th Cong. 1st Sess., p. 6.) The low water flow of the river was only 1300 cubic feet per second, all of which was frequently diverted for irrigation, leaving no flow in the channel for periods as long as ninety days. (H. Rep. 918, 70th Cong. 1st Sess., p. 4; Report of Major R. R. Raymond in H. Doc. 1141, 63d Cong. 2d Sess.; S. Rep. 592, 70th Cong. 1st Sess., p. 23.) This unique situation could not be corrected either by open channel improvement or by canalization, for silt deposits would still destroy the channel and the low water problem would not have been solved. Only by the construction of a huge storage reservoir such as Boulder, with provision for the accumulation of silt for many years and with reservoir capacity sufficient to store the entire annual flow of the river, could a navigable channel be provided. (H. Rep. 918, 70th Cong. 1st Sess., pp. 17, 22.)

The conditions on the Tennessee River are precisely opposite. The only satisfactory method of improving the Tennessee for navigation is by canalization and its satisfactory improvement by tributary reservoirs is impossible. (H. Doc. 328, 71st Cong. 2d Sess., pp. 23, 65.) The Tennessee carries only about 2.2 per cent as much silt as does the Colorado, and has no silt problem. (H. Doc. 328, pp. 26, 39, 40.) Its low flow is more than three times that of the Colorado and none of it is diverted for irrigation. (H. Doc. 328, p. 31; H. Rep. 918, 70th Cong. 1st Sess., p. 4.) A 9-foot navigable channel could be provided only by canalization. (H. Doc. 328, p. 23.) Regulation of flow even by controlling all of the principal tributaries would not provide such a channel. (H. Doc. 328, p. 65.) Thus the Tennessee River may be improved for navigation only by canalization and the effect of storage projects on its tributaries, if any, is unfavorable to navigation. (Appellants' Br. 25.)

ation of structures having a real, substantial and *bona fide* relation to the discharge of some constitutional function. Appellees' contrary contention is negatived by the fact that the opinion in *Arizona v. California* cites *United States v. River Rouge Improvement Co.*, 269 U. S. 411, 419, and by the express holding of this Court in *Ashwander v. Tennessee Valley Authority*, 297 U. S. 288, 340.

As before pointed out, the existence of a constitutional power is not a matter of congressional discretion, nor is it a matter of choice of means to an end. If the principle urged by appellees and their construction of *Arizona v. California* were sound, then it would follow that any purported regulation of interstate commerce which in any way touched interstate commerce would be constitutional and immune from judicial review even though it undertook plainly to regulate matters of intrastate concern having no relation to, or effect upon, interstate commerce. It is familiar law that regulations of interstate commerce which include subjects not properly falling within that power may not escape constitutional condemnation because *in part* they deal with matters falling within that field. The power to improve navigable streams is merely implied from the power to regulate interstate commerce. It would be a strange situation indeed if it were the law that this implied power is free from all restraint and may be made to include subjects outside the scope of that power, upon the ground that they are immune from judicial review as mere matters of choice of means to an end or of congressional discretion.

The Federal Government undoubtedly has the power to provide, and in some cases does provide, Diesel or steam power to generate electricity for the operation of navigation locks. If the principles advanced by the appellees are sound, the Federal Government as a choice of means to an end may build at any navigation lock a steam generating plant sufficient in capacity to serve several States and,

so long as it devotes some fraction of the power to operating navigation locks, use the surplus to engage in a public utility business as a federal monopoly, regulate local electric rates and service, and establish a federal policy of public or non-profit operation of the electric business throughout the States within transmission distance.

A recognition of the appellees' claim would vest the Federal Government with the right to appropriate all beneficial uses, if not with the ownership, of all of the water resources in the United States, federal or non-federal and navigable or non-navigable.[1] In the last analysis, the appellees' claim rests upon an alleged necessity to prevent waste of potential water power resources. They state at page 106 of their brief that the "sole question is whether the resources of the Tennessee River may be developed by the Federal Government or not at all." While this circumstance would not furnish a substitute for constitutional power, it is without basis in fact.

The Reports of the National Waterways Commission and of the Inland Waterways Commission (upon which appellees place so much reliance), the history of the "308 Surveys" (reviewed at pp. 6-7 of our main brief), the his-

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[1] The scope and effect of appellees' claims are overwhelming. The total electric sales to ultimate consumers in the United States, as reported by the Edison Electric Institute, was approximately 95,000,000,000 kilowatt-hours for the year ending June 30, 1938. The Federal Power Commission has reported that the undeveloped hydro-electric resources of the United States will produce over 275,000,000,000 kilowatt-hours annually. (Fed. Power Comm. Interim Report, Power Series No. 1, 1935, p. 33, Table 14.) If, as appellees claim, the Federal Government has the authority to construct storage reservoirs upon any waters which ultimately drain through navigable channels to the sea upon the ground that low water releases for power operation will increase low water flow, and may deliberately develop all of the power resources at such sites "to avoid waste of potential water power," then it is plain that the Federal Government may at any time take over the entire business of supplying electricity to the public as a federal monopoly. Manifestly, the claims of the appellees prove far too much.

tory and form of the Federal Water Power Act, H. D. 328 and the provisions of the Rivers & Harbors Act of July 3, 1930, adopting the Federal Navigation Project for the Tennessee River (discussed in our main brief, pp. 6-10), all show *not* that the Federal Government owns and has the power to develop all of the water resources of the United States, *but a recognition of the fact that Congress should exercise its paramount power over navigation with due regard for the right of the States and their people to develop the water power and other non-federal resources of navigable streams.* That such cooperation is impossible, or even difficult and burdensome, is belied by the terms of the Rivers & Harbors Act of July 3, 1930 (see Appellants' Br. 7-10), by the report of the Corps of Engineers in H. D. 328 (Comp. Ex. 105°), by the Federal Power Act and by the fact that the State of New York has entered into an agreement with the Corps of Engineers pursuant to the policy declared in N. Y. Laws of 1931, ch. 772, sec. 1, under which all of the potential water power of the St. Lawrence River will be developed by the State of New York in the event of a federal improvement of that river for navigation. (Third Annual Report, N. Y. Power Authority, N. Y. Leg. Doc. (1934) No. 92, p. 62.) The quotation from the Federal Water Power Act at p. 100 of appellees' brief shows how the Federal Government may regulate the development of other water uses by the States and their people so far as necessary to preserve legitimate interests of navigation which is the source and limit of any constitutional concern of the Federal Government.

Whether the States and their people will develop the potential water power resources of the Tennessee basin, or of any other basin, depends upon economic feasibility. But their action or inaction in this respect, whether wise or unwise, does not vest any constitutional power in the Federal Government. If there is any potential water

power "wasted" by reason of failure of the States and the people to develop hydro-electric resources, that potential water power is not the property of the Federal Government and with it the Federal Government has no constitutional concern. Indeed, an economically unsound development of water power or a development of water power in the absence of any market is itself an economic waste.

The claim that the Federal Government may create water power, build power reservoirs and engage in the power business merely to defray the cost of some federal undertaking is plainly absurd. The Federal Government is granted power to raise money *by taxation and by borrowing* to carry out the functions of government. It has been granted no power to engage in businesses for the purpose or with the hope of making money either to build federal structures or to carry on the functions of government. Nor do the appellees take anything by referring to the power of the Federal Government to spend for the general welfare. We are not here concerned with an expenditure for the general welfare, but with the power of the Federal Government directly to engage in a continuous undertaking; and the power to spend for the general welfare is not a grant of power for the Federal Government directly to undertake anything, and much less to engage in undertakings not related to its powers, merely because they involve the expenditure of money. *United States v. Butler,* 297 U. S. 1; *Carter v. Carter Coal Co.,* 298 U. S. 238.

Appellees rely upon an alleged "intimate relation" between navigation and power development. (Appellees' Br. 99, 51, 52.) This is supposed in some fashion to extend the power of the Federal Government to create water power beyond that which is incidentally created by the operation of a *bona fide* constitutional structure. Under such circumstances there is no "intimate relation" beyond the fact that

both water power and navigation depend upon water but in decidedly different ways.[1] There is an intimate relation between the production of primary commodities or of goods and the flow of interstate commerce, but the Government could hardly engage in the production of primary commodities or the manufacture of goods upon the ground that there is an "intimate relation" between such production or manufacture and the flow of interstate commerce.

The appellees further assert that the Federal Government, having once constitutionally established a structure at which some water power is constitutionally created, may build power reservoirs in order to "maintain" and "improve" the property of the United States. (Appellees' Br. 95, 30.) This supposed principle is said to apply with peculiar force where the Federal Government has installed generating capacity or even provided emplacements for generators in excess of the amount of firm water power lawfully created. Every hydro-electric project has generating capacity which exceeds the low water flow and is less than high water flow; and the ratio between installed generating capacity and high flow is a matter of economic judgment. But the argument of appellees (Appellees' Br. 30, 95) comes to this. In a constitutional structure, such as Wilson Dam under the National Defense Act of 1916, the Government may not only install sufficient generators to utilize the water power created, but if it installs or even provides emplacements for more generators, then it may

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[1] Navigation attempts to overcome the fall of water by the creation of slack-water pools, by dredging, or by other means. Power seeks to increase, or concentrate, and to utilize the fall of water. Navigation is chiefly concerned with depths and widths of channels and is most benefited by the minimum low water discharge which will fill the channel and supply lockage. Power is not related to channel dimensions, and the development of firm or commercial power requires the maximum low water discharge obtainable.

build other power reservoirs to create enough water power to utilize the excess generating capacity; and then, if it makes another mistake and creates more water power than can be converted by the generating capacity already installed, the Government may install more generators; and if the Government happens to install too many additional generators, it may then build more power reservoirs in order to develop and maintain its property. In other words, the greater and more numerous the mistakes, the greater is the constitutional power.

The inappositeness of cases dealing with the power of the Federal Government to irrigate arid public lands to make them habitable and place them in condition for sale is manifest. Appellees rely upon such cases as *Irwin v. Wright*, 258 U. S. 219, 231; *United States v. Hanson*, 167 Fed. 881; *Kansas v. Colorado*, 206 U. S. 46, 92. At a constitutional dam the property, if any, which the Government has for sale is water power. The building of power reservoirs or other structures to create *other* water power (we are not here dealing with the conversion of water power into electricity) can not possibly be said to be an improvement of the property which the Government had for sale.

1. The Reports of the Federal Waterways and Conservation Commissions, relied upon by appellees, did not contemplate a federal development of the non-federal resources of inland waters such as water power.

The Reports of the National Waterways Commission, the Inland Waterways Commission and the National Conservation Commission did not contemplate a federal development of the resources of inland waters for power, navigation and flood control. (Appellees' Br. 99-100.) An examination of these reports discloses that the primary consideration was that federal navigation improvements should be made with due regard for the non-federal, private and

local purposes of power and flood control in exactly the same manner as H. D. 328 recommended that States, municipalities and private individuals be permitted to construct high power dams so long as they did not lessen the capacity of the waterway for navigation. (Appellants' Br. 6-10.)

The Preliminary Report of the National Waterways Commission (S. Doc. 469, 62nd Cong., 2nd Sess.) states:

> *"That improvements not essential to navigation should not be undertaken by the Federal Government."* (p. 82.)
>
> *"* * * It should always be borne in mind that the waterway improvements made by the Federal Government under the exercise of its authority should be restricted to navigation.* Whenever bank protection or flood prevention or the clarification of water is the sole object of improvements, the question presents little difficulty in its solution. Such projects are not a proper charge upon the Federal Treasury. A more difficult problem, however, is presented where the improvements just mentioned have as their object both navigation and the protection of private property. In such cases, in the opinion of the commission, the expense should be apportioned between the Federal Government and communities directly interested. In many instances proposed improvements have as their main object the protection or benefit of private property. In such cases there is a distinct benefit conferred upon individuals or localities which is only of a remote or very indirect benefit to the country as a whole. Lands subject to periodical overflow or lands of uncertain value because of the danger of erosion, when improved, are multiplied many times in value, and there is a constant danger that such improvements will be advocated under the guise of river and harbor legislation framed to benefit navigation, when the real object is the benefit which will accrue to individuals or localities." (p. 83.)
>
> *"* * * The commission would, however, repeat in this connection the recommendation made in No. IV,*

that improvements by the Federal Government be restricted to those essential to navigation." (p. 83.)

"*The control of the Federal Government over navigable streams has to do with navigation only.*" (p. 86.)

The final report of the National Waterways Commission (S. Doc. 469, 62nd Cong., 2nd Sess.) states:

"4. *The Federal Government has no constitutional authority to engage in works intended primarily for flood prevention or power development. Its activities are limited to the control and promotion of navigation and works incident thereto.* The commission is of the opinion that flood prevention is primarily a local problem, and the work of controlling floods should in the first instance be undertaken by the minor political subdivisions, but that the Federal Government may very properly participate with the localities in carrying out such works *on navigable streams, where a substantial and necessary improvement to navigation will result.* Unless some such policy as this is adopted and adhered to, there is grave danger that the *Federal Government may go outside its proper jurisdiction* and become involved in enormous expenditures which are for local benefit. It has sometimes been urged that the Federal Government should undertake works for flood prevention on non-navigable streams which happen to cross a State boundary line. *It is clear that in such a case, if navigation is not concerned, the Federal Government should have nothing to do with flood prevention. A method is provided in the Constitution by which the States may cooperate for this purpose.*

"5. The extent to which the Federal Government should *participate* in the expense of constructing a reservoir system at the headwaters of a navigable stream should be determined in each particular case by an investigation of Government experts possessing the necessary training and facilities for undertaking a study of this nature. If such investigation shows that the promotion of navigation will require the reenforcement of the flow of a stream during the dry season through the aid of storage reservoirs and shows the

number and cost of reservoirs necessary for this purpose, the Federal Government will have a satisfactory basis for sharing in the expense of constructing a larger system intended also for preventing floods. *In this connection it should be noted that the prevention of floods will indirectly benefit navigation, but this alone is not sufficient reason for the participation of the Federal Government in reservoir projects.*" (pp. 27-28.)

The Preliminary Report of the Inland Waterways Commission (S. Doc. 325, 60th Cong. 1st Sess. p. 25) and the Report of the National Conservation Commission (S. Doc. 676, 60th Cong. 2nd Sess. pp. 479) recognized the same principle and recommended that the Federal Government cooperate with States, municipalities, corporations, and individuals where navigation was also involved, but that the developments for power and flood control be undertaken only by States, municipalities and private agencies and not by the Federal Government.

2. The appellees' attempt to construe the TVA Act so as to limit the scope of the power development authorized by that Act is unsound.

The appellants have analyzed the nature, purposes and scope of the TVA Act in their principal brief. (Appellants' Br. 6-20.) In general the appellees have not challenged this construction of the Act. However, the appellees do attempt to minimize the scope of the Act with reference to the development of the power resources of the Tennessee River and its tributaries. (Appellees' Br. 34-72.) While the stage in the execution of the TVA Act, known as the TVA Unified Plan and comprising the current construction schedule of TVA, is far more than sufficient to bring it within the condemnation of the *Ashwander* case and applicable constitutional principles, the construction of the Act urged by the appellees is plainly untenable.

It is not open to debate that the TVA Act, prior to the amendments procured by TVA in 1935 after the decision of the lower court in the *Ashwander* case, did clearly and explicitly authorize TVA to develop all of the power resources of the Tennessee River and its tributaries. (See Appendix, p. 5, Appellants' Br.) Appellees now assert that this blanket power was curtailed by the amendment of 1935 and quote the first part of Section 4(j) as amended in support of their contention. (Appellees' Br. 34.) They omit the *cumulative* grant of power contained in Section 4(j) as amended, which reads:

> "; and shall have power to acquire or construct power houses, *power structures,* transmission lines, *navigation projects,* and *incidental works in the Tennessee River and its tributaries,* and to unite the various power installations into one or more systems by transmission lines." (Appendix, p. 5, Appellants' Br.)

Manifestly these "power structures" and "navigation projects" which may be constructed anywhere in the Tennessee River and its tributaries are in addition to those authorized in the portion of Section 4(j) as amended, to which appellees limit their quotation at page 34 of their brief. Manifestly this cumulative grant will permit the construction of any power development desired by the appellees at any point in the Tennessee River and its tributaries. But even the portion of Section 4(j) as amended, which is quoted by the appellees, will, if measured by appellees' theories of statutory and constitutional construction, include authority to construct power projects "not unrelated to navigation" upon every creek and up to every spring house in the Tennessee basin, upon the theory that the power operations may increase the low water flow with either no benefit to, or trifling effect upon, navigation.

It is also argued that the incidental character of power development under the Act is established by the direction

that the operation of the power projects shall be subordinate to the paramount right of navigation and of flood control so far as it falls within the field of federal power. (TVA Act, Sec. 9(a); Appellees' Br. 88.) *This is precisely the same kind of a provision which is included in the Federal Power Act for the regulation of the development by private interests of non-federal water resources in such a way as to prevent interference with the paramount right of navigation.* (Appellants' Br. 11.)

B. THE APPELLEES WHOLLY FAIL TO MEET THE ISSUE THAT NONE OF THE FIRM WATER POWER WILL BE CREATED BY THE CONSTITUTIONAL EXERCISE OF THE IMPLIED POWER TO IMPROVE NAVIGABLE STREAMS.

The arguments of the appellees are devoted to the proposition that these incidental navigation facilities will benefit navigation and consequently are entirely beside the point. Nowhere do they meet the controlling issue. This is apparent from an examination of their principal contentions in so far as they have not already been covered in our opening brief.

1. The appellees fail to show even an incidental relation between their tributary power projects and the improvement of navigation.

We have previously examined and shown untenable the appellees' contentions (Appellees' Br. 42, 49-50), that constitutional authority for the construction of their large tributary power projects may be rested upon the ground that low water releases incident to power operations will during the construction period to some extent temporarily increase the depths in portions of the main river where TVA has postponed navigation improvement in the interests of power development. (Appellants' Br. 25-6, 111-113.) The appellees apparently recognize the

untenable character of this claim and now for the first time boldly assert that low water releases which are incident to power operations, would provide the channel essential for navigation below Pickwick without canalization. (Appellees' Br. 16-17, 82.) Since both the Federal Navigation Project and the TVA Unified Plan provide for complete canalization of the Tennessee River, it is plain that *this alleged temporary benefit,* even if in accord with the facts, could not afford constitutional authority for the construction of large power projects on the tributaries at a cost of approximately $120,000,000. But the contention is not in accord with the facts.

Appellees in support of this contention rely solely upon a hypothetical question put to the witness Putnam, in which he in effect said that if the extravagant claims advanced by the appellees with reference to the enrichment of low water flows were true (for which, of course, he did not vouch), there would be no reason for the construction of the Gilbertsville Project. (Putnam R. 2312-3.) Any contention that the project depths could thus be created below Pickwick is refuted by the entire record.

Appellees' witness Barker testified that the Tennessee River could not be improved for 9-foot navigation except by canalization. (R. 1493.) In H. D. 328 (Comp. Ex. 105°), it is stated at page 12: "Improvement of the main river solely by regulation of flow by means of reservoirs would not be satisfactory, *because sufficient navigable depths can not be secured.*" And at page 33, the District Engineer, a witness for appellees, said: "The only satisfactory method of dev opment of the main stream and its tributaries is by canalization," and the same District Engineer shows in a Table, appearing at page 65 of H. D. 328, that with the construction of all reservoirs which he found possible on the entire Tennessee River system at an estimated cost of $1,200,000,000, the navigable depths in this portion

of the Tennessee River (Riverton to Paducah) would only be 8 feet. This falls four feet short of the depth required for a 9-foot waterway; for the evidence is uncontradicted that under the standard practice of the Corps of Engineers a 9-foot waterway is constructed with over-depths of 3 feet in order to provide adequate 9-foot navigation. (Putnam R. 1169, 1173-4; Watkins R. 1604-5; Barker R. 2009.)

In a further effort to find some relation between the tributary power projects and navigation, appellees assert in a footnote (Appellees' Br. 88) that the dead storage behind Norris Dam, plainly and solely adapted to the creation of water power, was necessary "to preserve existing navigation on the Clinch River," citing Finding 68. The fact is that there has been no navigation on the Clinch River since 1930 and such insignificant navigation as existed on the Clinch before that time was confined to a 2 to 1½ foot project on the portion of the river between its mouth and the head of navigation, 13 miles below the site of Norris Dam. (Annual Report of the Chief of Engineers, 1936, Part 2, p. 777; Fdg. 40.) Moreover, the testimony of appellees' witness Barker shows that the river was not practically navigable below Norris Dam and that barges could neither be brought to that point nor loaded at that point. (R. 1998.) The further assertion that the dead storage behind the dam was necessary "to prevent foreclosure of the river's future improvement for navigation" is answered by the fact that the dam 265 feet high has no navigation facilities, and by the further fact that it would not be practicable to provide any navigation facilities (Fdg. 80, R. 619) so that the dam itself constitutes a complete barrier to any possibility of creating navigability on that portion of the Clinch River.

In their search for some excuse other than power for the huge Hiwassee project and especially its dead storage, appellees assert that the maintenance of the dead storage

at Hiwassee (euphoniously termed "slack water pool") "would be of value for the preservation of *its* level by affording a capacity for the deposit of silt." (Appellees' Br. footnote, p. 88.) This claim (based upon Finding 68, rejected in this particular by Judge Gore) is fanciful. There is no evidence that silting creates any navigation problem on the Tennessee River or its tributaries, and much less that there is any silting problem on the Hiwassee with its headwaters in the timbered regions of the Great Smoky Mountains. In fact, silting in the Tennessee River Basin is relatively small (H. D. 328, p. 39) and it would be untenable to suggest that such a negligible matter might afford a constitutional basis for the construction of large power developments by the Federal Government. Manifestly this dead storage can have no value for flood control or low water regulation. Appellees do not, and can not, assert that this dead storage has any navigation value.

Finally, appellees try to minimize the dead storage in the Hiwassee project by making the obviously misleading comparison between the capacity of its dead storage and the capacity of the total storage (dead storage, power storage and flood storage) in all of the reservoirs of the TVA Unified Plan on the Tennessee River and its tributaries. In fact, the lower 135 feet of the Hiwassee reservoir, or from elevation 1280 to 1415, constitutes dead storage upon which is superimposed 111 feet of power storage. (Fdg. 43, R. 605; Def. Ex. 50.) No credible purpose for the creation of this dead storage, utilizing over one-half of the useful height of the dam, can be found except the creation of water power. An examination of Finding 43 (cf. Columns 5, 6, 10 and 11) also shows that the balance of the Hiwassee reservoir is entirely taken up with power storage (there called "low water regulation") and that *this project does not even have a small superimposed flood control reservoir.* It is wholly a power reservoir.

The attempt of appellees to deny that five-sixths of the firm or commercial power is created by the TVA tributary projects is wholly indefensible. (Appellees' Br. 51.) The testimony that five-sixths of the firm water power to be created under the TVA Unified Plan will be created by the tributary projects is uncontradicted in the record. (Appellants' Br. 28, 45-46.) The amount of firm or commercial water power is dependent upon low water flow. The effort of the appellees to cloud this issue by saying that at times (which are, of course, during periods of ample flow in the main river when the tributary reservoirs are filling up their power storage) the generators at the tributary projects may not be in operation and that the tributaries merely provide an increased water supply from which electricity is generated during the low water season is sheer quibbling. The short and simple answer is that if the tributary projects are eliminated from the TVA Unified Plan, the quantity of firm or commercial power to be created by that Plan will be reduced five-sixths.

Appellees assert that low water releases, which are the incident of power operations, would benefit navigation on the Mississippi through increasing low water flows. (Appellees' Br. 81.) Appellees concede that their authority under the Act, in so far as it has any relation to navigation, is limited to improvement of navigation on the Tennessee River or its tributaries. (Appellees' Br. 34.) Appellees rely upon Finding 52, which was rejected by Judge Gore and is contrary to the clear weight of the evidence. (Appellants' Br. 26.) Moreover, any suggestion that the construction of a huge power development costing hundreds of millions of dollars on the Tennessee River and its tributaries could be sustained as a constitutional choice of means for a trifling increase in low water flow on the Mississippi plainly falls of its own weight. (Appellants' Br. 113.) Thus, General Ferguson, President of the Mis-

sissippi River Commission, testifying with respect to the lower Mississippi River in the recent Hearings Before the House Flood Control Committee, said:

> "Mr. Chason. In that reach what do you do in order to keep a sufficient depth for navigation throughout that entire system? Is the river naturally of such a depth that you do not have to do any local works?
>
> General Ferguson. Very few. We have to confine the river in one channel that is sufficient to give the depth required." (Hearings, H. R. Com. on Flood Control, 75th Cong., 3rd Sess., p. 63.)

2. The appellees fail to show any constitutional relation between the improvement of navigation and the creation of the water power at the TVA projects over-all.

Most of appellees' claims do not relate to whether any of the water power is created by structures having a real, substantial, *bona fide* and primary relation to the improvement of navigation, but to whether the incidental navigation facilities do benefit navigation. Other claims relate to alleged benefits of no practical significance which, if they existed, would merely be incidental results of the construction and operation of a large power system which by no possibility could be regarded as falling within the range of constitutional choice of means for improvement of navigation.

The appellees' principal claim is that the waterway incidentally resulting from the construction of the TVA power project will be "superior" to the Federal Navigation Project adopted in the Rivers and Harbors Act of July 3, 1930. (Appellees' Br. 24, 76.) In our main brief, we have reviewed the evidence and shown that the advantage from the standpoint of navigation lies with the Federal Navigation Project costing substantially less than one-sixth of the estimated cost of the TVA Power Project. (Appellants' Br. 22-36.) The appellees rely upon Finding 52 (R. 610) which

was rejected by Judge Gore and upon Finding 54, which enumerates alleged superiorities of the TVA incidental navigation channel and facilities and which was modified by Judge Gore to a simple statement that the TVA channel would have greater depths and widths and fewer lockages than the Federal Navigation Project. (R. 666.) Judge Gore then made additional findings of evidentiary facts (not contradicted by findings of evidentiary facts by the majority), which plainly establish that the Federal Navigation Project would produce navigation facilities at least equal, if not superior, to the incidental TVA navigation facilities. (Add. Fdgs. 16-18, 20-22, 24, 26-28, 30, 34-38, 40, 44, 45, R. 674-9.)[1]

The statement in Finding 54 and in the opinion (R. 548-9) is that the superiority of the navigation channel resulting from the high dams was recognized by the Board of Engineers for Rivers and Harbors in H. D. 328, 71st Congress, 2nd Session, and rests upon a quotation from pages 11-13 to the effect that "such a waterway (with low dams) would be inferior to the high dam developments and would not permit the economical development of power." The appellees and the trial court overlooked the fact that this statement was embodied in that part of the Report of the Board of Engineers containing its summary of the Report of the District Engineer and constituted no part of the discussion or recommendations of the Board

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[1] The purpose of comparing the physical and functional characteristics and the costs of the projects in the TVA Unified Plan with the physical and functional characteristics in the case of the Federal Navigation Project is not, as appellees well know, to show that a comparable navigation improvement could have been obtained by the construction of a less expensive system of dams (as asserted in Appellees' Br. 75-6) but to demonstrate that the TVA projects are merely power projects with some incidental navigation facilities and an attempt purposefully to create a great federal power project in the guise of exercising power to improve navigation.

(H. D. 328, pp. 8-19), and the further fact that the Board of Engineers in its own analysis makes no statement to support such a conclusion. It seems apparent that the Board of Engineers made an error in attributing this statement to the District Engineer. No such statement appears in his Report. Indeed, the District Engineer stated:

> "The plan (referring to the Federal Navigation Project adopted in the Rivers & Harbors Act of July 3, 1930) however, will provide a waterway comparable in every way with the improved Ohio and adapted to incorporation with a consolidated inland waterway system of 9-foot depth. * * *
>
> The district engineer believes that no lesser project will provide an adequate waterway for modern barge traffic and therefore believes that *if there be any modification of the plan* by the substitution for any two or more low dams of *a high dam to develop power* or provide flood protection, *that the capacity of the waterway for the economical movement of modern barge traffic, should not thereby in any way be lessened.*" (H. D. 328, p. 100.)

At page 25 of their brief, appellees again quote *part* of a paragraph in the Report of the Chief of Engineers which again merely summarizes *part* of the Report of the District Engineer and does not express any opinion of the Chief of Engineers; and at the same time they omit the Chief's summary of the definitive recommendation of the District Engineer (H. D. 328, p. 5, par. 17) that the low dam plan should be adopted, which plainly shows that this truncated quotation is not subject to the construction sought to be placed upon it by appellees.

On page 26 of their brief, appellees quote an excerpt from the Report of the District Engineer as "the final recommendation in the Report." The final recommendation in the report and the one incorporated in the Rivers & Harbors Act of July 3, 1930 was, of course, the Report of the Chief of

Engineers (quoted, Appellants' Br. 9.) But appellees' quotation is not even the final recommendation of the District Engineer. Even the sentence quoted significantly omits the words "and subject further to such modifications as may be found necessary *in carrying out the provisions of the Federal Water Power Act.*" Obviously, a federal navigation project as distinguished from power developments to be made by States and private interests did not involve action under the Federal Water Power Act. But more inexcusable still, the appellees' quotation omits the final and definitive recommendation of the District Engineer *which expressly recommends the adoption of the low dam navigation project* with a proviso that other interests might construct high dams under the Federal Water Power Act, *provided that "the capacity of the waterway for the economical movement of modern barge traffic will not be in any way lessened."* (H. D. 328, pp. 100-101.) This recommendation of the Federal Navigation Project by the District Engineer is repeated by the Board of Engineers, p. 14, par. 15, and by the Chief of Engineers, p. 5, par. 17.

Any careful reading of the Reports of the Board of Engineers and the District Engineer in H. D. 328 makes perfectly plain (1) that the Federal Navigation Project adopted in the Rivers & Harbors Act of July 3, 1930 is equal, if not superior, to any navigation channel which might incidentally result from the construction of high power dams with incidental navigation facilities, and that it would "afford navigation facilities on a par with those now existing on the Ohio River" (H. D. 328, p. 97); (2) that the system of projects described in the report as essential or proper to the development of the maximum resources of the Tennessee River and its tributaries included non-federal development for the non-federal purpose of power development; (3) that all such plans "require the coopera-

tion of power companies" (H. D. 328, p. 97); (4) that such developments lay outside the field of federal power (H. D. 328, p. 2, par. 8; p. 19, par. 33); and (5) that the proviso in the final recommendation of the Chief of Engineers relating to the construction of power dams by private interests and States, which was embodied in the Act adopting the project, was in recognition of the policy, evidenced by the Federal Water Power Act and the Reports of the Waterways Commissions upon which appellees rely, that the Federal Government should exercise its paramount power over navigable streams for the benefit of navigation with due regard to the development and utilization of non-federal uses by States and private interests.

The statement that the recommendation was based "on fiscal considerations" (Appellees' Br. 26) is utterly without support in H. D. 328. That the high power dams are not better for navigation and that they can only be justified, with their great cost, for power development was stated in 1935 by General Pillsbury, Assistant Chief of Engineers, when testifying before the House Committee on Military Affairs with respect to proposed amendments of the TVA Act. (Appellants' Br. 35-36.) Appellees inexcusably attempt to create the impression that the testimony of General Pillsbury before this Committee was not received in evidence. (Appellees' Br. 80.) This is in the teeth of the record. (R. 3121.)

Apart from their misinterpretation of H. D. 328, appellees rely upon alleged advantages of an inconsequential character which, if they existed, would be mere incidental results of the construction and operation of a huge power project and ignore the clear superiority of the Federal Navigation Project in the important practical characteristics of an inland waterway, such as capacity for carrying commerce, cost or economic justification, prompt pro-

vision of a continuous nine foot channel and the advantages of open river navigation during a large part of the year. (Appellants' Br. 22-31, 108-9.)

The appellees do not deny that the TVA incidental navigation facilities will have overdepths of only 2 feet but assert that the Federal Navigation Project adopted in the Rivers and Harbors Act of July 3, 1930 made no provisions for overdepths. (Appellees' Br. 79.) They cite no finding in support of this statement and it is squarely contradicted by Additional Finding 4 made by Judge Gore, by the testimony of appellees' witness Watkins (R. 1604-5) and by the testimony of Major Putnam. (R. 1174-5.) They refer to a statement made by appellees' witness Barker on direct. On cross examination the witness Barker admitted that 3-foot overdepths are provided on 9-foot projects under the standard practice of the Corps of Engineers and that they had been provided on exactly similar 9-foot projects adopted and in part constructed on the Illinois, Ohio and Kanawha Rivers prior to the submission of H. D. 328 to Congress. (R. 2009.)

As to the hazard from wind and waves on the wide TVA lakes (Appellants' Br. 22, 26), the appellees do not attempt to make any answer other than that one of their witnesses stated that he preferred the wide TVA lakes (which he had never navigated) to the low dam channel. (Appellees' Br. 77-8.) The record, however, clearly discloses from the testimony of Col. Willson, based on his experience as a navigator on the Tennessee River and on the Wheeler and Wilson lakes, and from the testimony of Major Putnam, operator of commercial barge lines on the Green, Illinois and Ohio Rivers (R. 1150), that there would be a great hazard to the type of equipment with a low free-board normally operating on the inland waterways. (Appellants' Br. 22-26.) Finding 42, cited by the appellees, is clearly inapplicable, and Finding 54, to the extent

that it finds that the wide lakes of the high dams are preferred to the channels of the low dams by the practical navigator, and that craft normally operating on inland waterways will be able to navigate the Tennessee River without change of design or extent of loading, is contrary to the clear weight of the evidence and was rejected by Judge Gore, who specifically found that the wide TVA lakes would require a different type of transportation equipment from that commonly used on the Ohio and Mississippi Rivers. (Add. Fdg. 22.)

The statement in appellees' brief and in Finding 56 that the improvement of the Tennessee for modern commercial navigation would result in annual transportation savings of approximately $10,000,000 is plainly irrelevant because both the estimates in H. D. 328 and those made by appellees' witness Alldredge were entirely independent of whether the river was canalized by high or low dams. (R. 2055.) As bearing upon the reliability of these Findings, it should be noted that the actual estimate of savings was really a little over $7,000,000, that even this estimate was only the estimate of the District Engineer and although stated in the Finding as the estimate "of the Army Engineers," the Division Engineer and the Board of Engineers both expressed the opinion that the savings "would be much less" and that the estimates of the District Engineer were "excessively optimistic." (H. D. 328, p. 5, pars. 18, 19; p. 19, par. 31; p. 20, par. 34; see also Putnam R. 2322-3.)

The appellees' claim that the TVA projects are located at or near the sites selected for high (power) dams by the Army Engineers in H. D. 328, if true, merely confirms the fact, overwhelmingly shown by the entire record, that they are power dams. (Appellees' Br. 38.) These were the high dams outlined by the Corps of Engineers as necessary or appropriate for the maximum development of the

power resources of the Tennessee River and its tributaries and were in direct contrast with the navigation dams recommended by the Chief of Engineers, and indeed by the District Engineer, which were adopted in the Federal Navigation Project of July 3, 1930.

The appellees' claim that the sequence of construction has been determined according to the requirements of navigation and flood control and not of power (Appellees' Br. 38) would, if true, in no way establish that the projects do not include separate and independent power developments. However, the claim is unfounded. (Appellants' Br. 29-31.) After 5½ years of construction activity, TVA has failed to improve the lower part of the river below Pickwick or the section between Chattanooga and Knoxville, the two largest cities. (Appellants' Br. 30.) The appellees rely upon the testimony of the witness Crane. Mr. Crane testified that in his opinion the sequence of construction of the TVA projects was primarily for power. (R. 1283-4.) The appellees also cite Finding 75, which was rejected by Judge Gore and is contrary to the great weight of the evidence reviewed in appellants' brief.[1] (pp. 29-31.) Judge Gore found that the TVA

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[1] Dr. A. E. Morgan testified before the House Committee on Military Affairs, 74th Cong. 1st Sess. (Comp. Ex. 365†):

"Mr. May: What is the distance between Pickwick Dam and Wilson Dam?

"Dr. Morgan: Fifty miles, approximately. So that the possibilities of the present Government property at Wilson Dam cannot be realized until this Pickwick Dam is built below.

"Mr. Faddis: You mean the possibilities for navigation?

"Dr. Morgan: *The possibilities for power.* The possibilities for navigation of Wilson Dam can be realized." (p. 94.)

"Dr. Morgan: * * * The Wheeler Dam has storage for 2 weeks. It can take care there of a drop in power use over the week-end by storing the unneeded water, and if a little

(Continued on page 40)

Unified Plan is not primarily designed to promote navigation (Add. Fdg. 21), that it is being operated primarily for the purpose of power (Add. Fdg. 73), and that the TVA dams and their order of construction are designed primarily to produce a large amount of firm power for use on a utility system. (Add. Fdgs. 75, 76.)

The appellees' claim that each project has appropriate elements of design for navigation (patently untrue as to the tributary projects, see pp. 29-30, *supra*) and flood control and that each project will result in substantial benefit to navigation (Appellees' Br. 39-40) in no way shows that the creation of water power is incidental to navigation and flood control and the examination of the physical and functional characteristics of the projects in appellants' main brief shows that it is not. (Appellants' Br. 22-60.) Indeed, *Finding 93 makes it very clear that the creation of water power is an entirely independent objective and function of the TVA projects* and it is there sought to justify the provision for the maximum development of water power by the assumption that the use of the sites for navigation or flood control would waste the power resources of the river system, which is, of course, shown to be untrue by the Report of the Chief of Engineers in H. D. 328 and by his recommendations incorporated in the Rivers & Harbors Act of July 3, 1930.

(Continued from page 39)

freshet puts a lot of water into that reservoir, it can take care of such fluctuations in flow.

"So Wheeler Dam can regulate the flow for 2- or 3-week periods; Wilson Dam can regulate it day by day, and Pickwick Dam can be handled to let water out for navigation below.

"Taking the three dams together, we can smooth out that flow and save all of the fluctuations that are not longer than 2 or 3 weeks, and then the storage dams on the reservoirs can take care of the greater fluctuation between winter and summer. *Taking them all together, we will not have any secondary power. It will all be turned into prime power.*" (p. 101.)

In support of a similar proposition at pages 41-42 of their brief, appellees cite Findings 51, 53, 54, 56 and 57. Finding 51 is plainly irrelevant. Finding 53 simply states that each of the projects will result in improvement for navigation. Assuming this were true, it would in no way bear upon the question whether the power development is separate from and not incidental to navigation improvement. It is plainly untrue as to the tributary dams, already discussed, and Judge Gore modified the finding by excluding the tributary projects. (R. 665.) Finding 54 enumerates supposed elements of advantage in the incidental TVA channel and has been previously discussed. (See pp. 37-38, *supra.*) As there pointed out, it was modified by Judge Gore (R. 666) and the inference sought to be drawn by appellees is completely negatived by the findings of evidentiary facts made by Judge Gore and not controverted by any findings of evidentiary facts made by the majority. Finding 56 has been previously discussed and has been shown to be both irrelevant and erroneous. (See p. 38, *supra.*) Finding 57, while probably an overstatement, has no relevancy to the issue. The intangible benefits, whatever they are, would flow from a *bona fide* navigation project as well.

The appellants' assertion that "there is no basis for the contention that the projects have been enlarged beyond the needs of navigation and flood control" (Appellees' Br. 50) involves both a fallacy and a misstatement. The comparison of the Federal Navigation Project and the TVA Unified Plan shows that there is no relation between the size of the TVA projects and the requirements of navigation. There is no contention that the relatively small flood control reservoirs superimposed on the TVA power projects are too large for flood control purposes. The constitutional vice in the TVA Unified Plan is that the major part of the TVA projects are power reservoirs and we not

only assert, but appellees concede, that they do not provide adequate flood control. (See p. 49, *infra.*)

The appellees assert that the projects so far constructed have been operated primarily for navigation and flood control. (Appellees' Br. 47-8.) Even under normal conditions this would amount to nothing more than a statement that the power projects have been operated in recognition of the paramount rights of navigation, just as any private power project must be operated under the terms of the Federal Power Act. Finding 76, relied upon by appellees, is, therefore, without significance on the issue under examination. But the fact is that the operations of TVA up to the time of trial were wholly without significance. As testified by appellees' witness Karr (their Power Superintendent, whom the appellees forgot to identify in their brief), at all times prior to the date of trial the capacity of the TVA power system had so far exceeded any markets which the appellees had been able to wrest from utilities that no problem of regulation of water for power production was involved. (R. 2214, 2217-19.) Of like character is the statement in Finding 74, that approximately 85% of the water released from Norris during the year 1937 was not required or useful for the production of power. As Mr. Karr stated, the water would not have been wasted had there been any market for the sale of power. (R. 2217-18.) These findings still leave at large the question whether the TVA project is, or includes, a separate power development not incidental to navigation improvement.

Upon the basis of Finding 68 the appellees assert that the TVA projects are the only ones which will provide flood control for the Tennessee and Mississippi Rivers in combination with a 9 foot navigation channel on the main stream of the Tennessee. (Appellees' Br. 40, 88.) The portion of the finding here relied upon was rejected by Judge Gore and is plainly contrary to the clear weight of the evi-

dence. (R. 666.) The TVA projects include incidental navigation facilities (except at the tributary projects), superimposed flood control reservoirs (except at Hiwassee) and large power reservoirs which are separately and purposefully constructed and neither essential nor appropriate to navigation or to flood control; and manifestly it is unnecessary to construct these power projects, separately and deliberately included, to provide either navigation or flood control. (Appellants' Br. 36-60.)

C. THE APPELLEES WHOLLY FAIL TO MEET THE ISSUES THAT NONE OF THE FIRM WATER POWER IS CREATED BY FLOOD CONTROL STRUCTURES AND THAT ANY FLOOD CONTROL FEATURES ARE A MINOR PART OF THE TVA UNIFIED PLAN.

We do not contend that the TVA Unified Plan contains no flood control features, although they are a very minor part of that Plan. In our main brief we have shown that none of the firm or commercial power will be produced by any flood control structures incorporated in the TVA Unified Plan, and that in fact the projects in the TVA Unified Plan consist of large power reservoirs, purposefully and separately built, upon which are superimposed relatively small flood control reservoirs. (Appellants' Br. 38-44, 49-53.) It is a matter of common knowledge that flood control and water power development may not be attained at the same site (1) unless the storage capacity available at the site is sufficient to permit the construction of a power reservoir upon which is superimposed a flood control reservoir of sufficient capacity to meet the needs of flood control, or (2) unless, in cases where the storage capacity available at the site does not exceed the requirements for flood control storage, part of such storage capacity is deliberately appropriated for a power project at the expense, and in diminution, of necessary flood storage. Obviously in either situation, the power development is separate and

purposeful. The present Chief of Engineers, General Schley, stated this principle before the House Flood Control Committee in 1938, as follows:

> "Mr. Jarrett. Do you think an hydroelectric dam negatives flood control or helps it?
>
> General Schley. The two are essentially in conflict to this extent, that the flood control reservoir should be emptied as promptly as possible to make capacity for the next flood. For power or for irrigation, the water is impounded and the reservoir is kept full to the greatest possible extent, and for that reason the two are in conflict. *However, it is not at all uncommon to have one reservoir superimposed on the other, flood control capacity on top, impounding capacity below, where you have such a suitable site. You have so much impounded up to a certain plane for power and keep it full at all times, and on top of that you have space which is emptied down to that plane as rapidly as possible so that it will have capacity for the next flood—then you have a multiple purpose or two-purpose reservoir.* In some cases, the two reservoirs had better be separate where local conditions fit that plan best—one reservoir being kept full as much of the time as possible for power or for irrigation, its spillway being ample to let the flood pass on without damage to the structure, the other reservoir being operated to stay empty and retard the flood and prevent it doing damage to the valley below." (Hearings, H. R. Com. on Flood Control, 75th Cong. 3rd Sess., p. 24.)

General Tyler, Assistant Chief of Engineers, testified to the same effect in these hearings. (*Ibid.*, pp. 27-29.)

With the exception of the astonishing contention that the dead storage at Norris and Hiwassee is not an important issue (Appellees' Br. 89, 49; see pp. 29-30, *supra*) the appellees have avoided any discussion of the physical and functional characteristics of the TVA projects, their dead storage and power storage, the wide differences between the costs, physical aspects and effectiveness for

flood control of the TVA projects and the costs, physical aspects and effectiveness of a genuine flood control system. (Appellants' Br. 38-44.) They rely upon references to generalities constituting bare conclusions in findings which, although often erroneous, could have been made with reference to any power project upon which was superimposed a small flood control reservoir. The findings on this subject relied upon by appellees were prepared by them and signed verbatim by the court or a majority of the court. They reflect the infirmities of that procedure and of the erroneous conception of law that the Federal Government may create water power as a separate and independent objective. But even under these circumstances, the generalities and bare conclusions in the findings, upon which appellees rely, do not conflict with the conclusions established by appellants' review of the basic facts.

Finding 39 is in substance that the TVA projects provide some navigation improvement and some flood control and will create water power. This finding could be made with reference to any power project having incidental navigation facilities and a small superimposed flood control reservoir and is entirely consistent with the fact that water power is separately and purposefully developed. Finding 41 is that the TVA projects are like the high (power) dams outlined in H. D. 328; and when it is recalled that this reference is not to the navigation projects but to the projects there outlined for the *maximum development of the power resources* of the Tennessee River and its tributaries, it is plain that the finding is in accord with the fact that power development is a separate and primary objective of the TVA Unified Plan. The finding includes the statement that the projects in H. D. 328 were designed primarily for navigation and flood control, but this part of the finding was rejected by Judge Gore and an examination of the document makes plain that the majority fell into

grave error in accepting the interpretation provided for them by appellees. (See pp. 35-36, 60, herein.)

Finding 42 is in substance that each of the projects has properly designed facilities for navigation, flood control and generation of power. While, as previously shown, the tributary projects have no relation whatever to navigation and no navigation facilities, the finding is in no way inconsistent with the obvious fact that the TVA projects are primarily power developments and that the firm power is separately and purposefully created. While Finding 43 (rejected by Judge Gore) overstates the extent of the flood storage, it does not negative the separate power development and, in spite of the overstatement of flood storage, shows over 4,000,000 acre feet for low water regulation, which is the euphonious name the appellees use for power storage. Manifestly the release of water during periods of low flow is not for the purpose of flood control. We have previously shown that its effect upon navigation, if any, is detrimental. It is plainly a power operation.

While Findings 44 and 45, signed verbatim as submitted by the appellees, contain many statements contrary to the clear weight of the evidence, the filling of the tributary reservoirs during the high water season is a typical power operation and not a flood control operation. It is not the ambition of a flood control operator to achieve a full reservoir. Finding 47, signed verbatim as submitted by the appellees and rejected by Judge Gore, is not supported by the evidence, and is in the teeth of common knowledge.[1] (See pp. 43-44, 47, herein.) General Ferguson, Presi-

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[1] When the dams of the Miami Conservancy District, whose sole function was flood protection in the Miami Valley, were built under the direction of Dr. A. E. Morgan, a tablet was erected at each dam, which reads:

> "The dams of the Miami Conservancy District are for flood prevention purposes. Their use for power development or for storage would be a menace to the cities below." (R. 1804.)

dent of the Mississippi River Commission, in the recent Hearings before the House Flood Control Committee, stated:

> "Mr. Jarrett. Should reservoirs be empty or full when flood projects?
>
> General Ferguson. Empty.
>
> Mr. Jarrett. *Would that apply to the Tennessee Valley Authority?*
>
> General Ferguson. *The reservoirs designed for flood relief* would be covered by that." (Hearings, H. R. Com. on Flood Control, 75th Cong., 3rd Sess., p. 60.)

Indeed, Finding 47 recognizes that there is a conflict between the use of a reservoir for flood control for local protection and its use for power development. The weasel-worded reference in that finding to navigation is plainly irrelevant to the question of flood control storage and the latter part of the finding leaves one quite bewildered as to how a full reservoir can impound flood waters even though owned by TVA.

Finding 59 (rejected by Judge Gore) has no bearing on the issue. Finding 60 (rejected by Judge Gore) in no way shows that the TVA projects are not power reservoirs upon which are superimposed relatively small flood control reservoirs. While obviously flood control dams must be built high enough to provide the storage necessary for flood control, they need not, and should not, be built on top of power reservoirs. Thus Norris Dam might be much lower (as it obviously would have been under the design of the dam for flood control only by the Bureau of Reclamation, Appellants' Br. 45) if it did not consist of a 200 foot power reservoir upon which is built a 14 foot flood control reservoir. Whether the discharge of a flood control dam shall be automatically controlled or controlled by manual operations is irrelevant to the point at issue. (See pp.

50-52, *infra.*) Finding 65 can, of course, be made with respect to any power reservoir which has a small flood control reservoir superimposed upon it. Thus these and other findings, signed verbatim by the majority as submitted by the appellees, are entirely consistent with the fact, overwhelmingly established by indisputable evidentiary facts, that none of the water power is created by the relatively minor flood control structures included in the TVA Unified Plan. Indeed, *Finding 93 expressly states that the creation of water power is one of the separate objectives of the TVA Unified Plan* and seeks to justify its creation upon the untenable and constitutionally irrelevant claim that the use of the sites for constitutional functions alone would prevent the creation of water power.

Finding 94 does not show (as appellees assert at p. 89 of their brief) that the water power is created by the construction and operation of projects for navigation and flood control. The TVA projects are power projects with incidental navigation facilities (except at the tributary dams) and with small superimposed flood control reservoirs. The navigation facilities and the small flood control reservoirs superimposed on the large power reservoirs can, of course, be operated without interfering with the power development. That the appellees' construction of the finding is erroneous is further shown by the fact that Judge Gore, who joined in Finding 94, expressly found that the TVA Unified Plan is not primarily designed to promote navigation on the Tennessee River and its tributaries (Add. Fdg. 21), and that the proposed method of operation is primarily for power. (Add. Fdg. 73.)

It is thus plain that even the findings relied upon by appellees in no way negative, and in a large measure support, the fact that the water power is separately and purposefully created.

1. The appellees concede that the TVA Unified Plan provides no adequate flood protection for the Tennessee Basin; and the record establishes that none of the firm water power is created by flood control structures.

The appellees concede, and the court found, that the principal flood damages in the Tennessee Basin occur at and above Chattanooga and that a flood control program to achieve the maximum practicable flood protection upon the Tennessee River and its tributaries should be directed primarily to providing protection at Chattanooga and above. (Fdgs. 81, 83, 84, 85, 86; Appellees' Br. 17.)

The appellees concede that the TVA projects will not eliminate flood hazards at and above Chattanooga or reduce floods sufficiently to make feasible the construction of local flood protection works (Appellees' Br. 45) and, for another purpose, they assert that they do not intend to build any more projects. (Appellees' Br. 37.) They do not deny that a system of genuine flood control reservoirs on the tributaries above Chattanooga would achieve the greatest practical flood protection at Chattanooga and above and make feasible the construction of local flood protection works. They merely say that such a plan was never recommended "by any public authority" and does not "appear ever to have been proposed for the Tennessee by any one outside the present trial." (Appellees' Br. 87.)

The appellees overlook the fact that practically all of the sites selected by the witness Kurtz, after careful study in the field, were at or near the sites selected by the Army Engineers for genuine, i.e. empty, flood control reservoirs for local flood protection in House Document 259, 74th Cong. 1st Sess., and the fact that the court found that such a system could achieve flood control on the Tennessee.[1]

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[1] Appellees make the astonishing assertion that "the system of detention basins would preempt for the single purpose of

(Continued on page 50)

(Fdg. 70, rejected by Judge Gore obviously because it contains other statements plainly erroneous.)

The appellees also make the astonishing objection that such a system of genuine flood control projects on the tributaries would have no value for flood protection on the Tennessee River below Chattanooga. (Appellees' Br. 46.) Of course such a system would have some benefit even on the lower Tennessee. But, more importantly, it is uncontroverted that flood damages on the Tennessee River below Chattanooga are negligible (Fdgs. 81, 82, 83, 84), and that it is not practicable to relieve them beyond the extent that they would be relieved by such a system of flood control reservoirs on the tributaries. On the other hand the huge TVA power reservoirs on the Tennessee River below Chattanooga will permanently flood and destroy thousands of acres more land than is occasionally flooded in a state of nature, and will permanently destroy the usefulness of lands producing annually crops with a value from 30 to 50 times greater than the entire flood damages on that section of the river. (Appellants' Br. 54, 127; Fdg. 84.)

Appellees seek to cloud the issue by the claim that detention reservoirs may not be as effective as manually controlled flood reservoirs. (Appellees' Br. 87.) A detention flood reservoir may be constructed so that its discharge is regulated automatically or manually, the latter method being what appellees call "controlled storage." In either

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(Continued from page 49)

local flood protection the limited number of available sites and thus foreclose the development of the river for any other uses." (Appellees' Br. 87.) The only other uses for the available sites upon the tributaries is for the development of power, and appellees are therefore in the peculiar position of objecting to the construction of genuine flood control reservoirs because such reservoirs will not permit the non-federal function of purposefully and separately creating water power. This contention of appellees is also peculiarly inconsistent with their assertion that there is no conflict in the operation of projects for power and flood control. (Appellees' Br. 51.)

case a genuine flood control reservoir is kept empty except at time of flood and it is a matter of indifference (either from the standpoint of the practicability of providing flood protection on the Tennessee by genuine flood control reservoirs or from the standpoint of whether such flood storage creates water power), whether the genuine flood control reservoirs are constructed to operate automatically or by manual control at times of flood. In either case the genuine flood control reservoir produces no firm water power and the contention of the appellees on this point is an inconsequential quibble. (Offer to Prove, Justin R. 2383, 2385.)

The appellees are entirely silent upon the point that if flood protection on the Tennessee River had been a primary objective of the TVA Unified Plan, that objective could have been attained for a fraction of the cost of the Unified Plan. Nor do they explain the fact that two years after TVA had adopted a plan for the construction of projects costing over $473,000,000 the Congress in the Act of June 28, 1938, directed the Corps of Engineers to make a survey and report for flood control at Chattanooga. The professed concern of appellees for protection of life has a hollow sound in view of the fact that the only instance of loss of life in the Tennessee Valley from floods shown on this record occurred on the Emory River where appellees neither provide, nor plan to provide, any protection whatever. (Kurtz R. 1209.) The power possibilities on that river are small. (H. D. 328, pp. 51-2, 61-2.)

Of like character is appellees' reliance upon Finding 60 (rejected by Judge Gore) that for most effective flood control it is desirable to "provide high dams with controlled storage." The question of "controlled storage" from the standpoint of flood control has been shown to be a mere quibble. Proper flood control dams on the tributaries would of course be high enough to provide the necessary flood storage, but they would not be built higher in

order to create power storage, nor would any part of the storage necessary for flood control be diverted to a power reservoir, and if such dams are built higher to create a power reservoir, the water power thus created is separately and purposefully created and is in no sense incidental to flood control. (See pp. 43-45, 47-48, *supra.*)

2. The appellees' contentions that the flood control reservoirs superimposed on the TVA power projects make any material or consequential contribution to flood protection on the lower Mississippi is contrary to the great weight of the evidence; and in any event, appellees in no way show that the firm power is created by any flood control structures.

The appellees principally rely upon the claim that certain Government Reports, chiefly those of the Corps of Engineers, show that tributary flood control reservoirs have long been recognized as an essential part of a system to control floods on the lower Mississippi and on the basis of this claim they assert that the TVA projects (although only a small part of each project consists of a superimposed flood control reservoir) make a substantial contribution to flood control on the lower Mississippi. (Appellees' Br. 19, 21, 86, 28, 85, 43, 46.) Were this true it would in no way show that the firm power is created by flood control structures. But the claim is unfounded. It rests largely upon a misinterpretation of official documents incorporated in a requested finding of appellees which was adopted verbatim by the trial court. (Fdg. 67.)

It will be recalled that H. D. 328, 71st Cong., 1st Sess. (Comp. Ex. 105°) not only described the system of navigation dams (which was adopted in the Rivers & Harbors Act of July 3, 1930) but also a vast system of projects for the maximum development of the resources of the

Tennessee River and its tributaries for power, flood control and navigation, which might be constructed in its non-federal parts by State and private interests and in its federal parts by the United States at a total cost of $1,200,000,000. Of this grandiose combination of projects (containing immensely more flood storage than the TVA projects) the Mississippi River Commission said that *"Benefits to the lower Mississippi may be considered as practically immaterial."* (Comp. Ex. 105°, p. 101.) The Board of Engineers and the Chief of Engineers concurred with this conclusion of the Mississippi River Commission. (Comp. Ex. 105°, p. 19, par. 32, p. 23, par. 47.)

The following statement of General Ferguson, for the past 5½ years President of the Mississippi River Commission, shows that the construction of the Gilbertsville Project (the only TVA project which by location and size of its superimposed flood control reservoir could conceivably affect Mississippi River floods) would have no effect upon the Mississippi flood control system:

> "Mr. De Muth. Do your plans for the protection of the lower Mississippi take into consideration the fact that we are going to build the Gilbertsville Dam? Will that make any change in your plans?
>
> General Ferguson. No." (Hearings, H. R. Com. on Flood Control, 75th Cong. 3rd Sess., p. 57.)

After the great Mississippi flood of 1927, a Board of officers of the Corps of Engineers under the Chairmanship of Colonel Kelly (a witness for appellants) was appointed to study the problem of Mississippi flood control, and this Board in recommending against the inclusion of tributary reservoirs in the Mississippi flood control system, said:

> "The desirability of a system of reservoirs for use in controlling or assisting in the control of floods of the Mississippi has been discussed from many viewpoints since it was first proposed eighty-five years ago. The question was considered by Humphreys and Abbot in

> connection with their general Mississippi study in the late fifties of the last century and by the Engineering Commission of 1874. Since the establishment of the Mississippi River Commission, that body has several times given consideration to the desirability of incorporating a system of reservoirs into the general plans for the improvement of the river and the control of its floods. *In each of these former cases the final determination has been unfavorable,* * * *" (Com. Doc. 2, H. R. Com. on Flood Control, 70th Cong., 1st Sess., p. 1.)

This conclusion was based upon a system of genuine flood control reservoirs and not upon a system of power reservoirs with small flood control reservoirs superimposed.

H. D. 259, 74th Cong., 1st Sess., cited frequently in appellees' brief, was an exhaustive study of the effect of the construction of tributary flood control reservoirs at all available sites on all of the tributaries of the Mississippi River. It was found possible to provide approximately 100,000,000 acre-feet of genuine flood control storage and the effect of this vast system of reservoirs was considered under Plan I, whereby they were to be operated to secure the maximum benefits on the Mississippi at the expense of local flood protection, and under Plan II, whereby they would be operated primarily for local flood protection. The Corps of Engineers rejected Plan I and, with respect to Plan II, found:

> "The Commission finds that the direct benefits from the entire reservoir system set forth in Plan II at the present time are not commensurate with the cost." (H. D. 259, 74th Cong. 1st Sess. p. 5.)

This, of course, referred not merely to any indirect or incidental benefits to the Mississippi but to the local benefits as well. And it should not be overlooked that this was a system of genuine flood control reservoirs without any dead storage for power or power storage as clearly appears from

pp. 19, 20 and 29, of the Report, where it is shown that such reservoirs were only to be operated at certain times, and from pp. 32-3, where it is shown that the reservoir capacities provided in the plans were the minimum required to give the flood control benefits stated, but that at some sites it would be practicable to provide additional storage for navigation, water power, or local water supply uses.

H. D. 306, 74th Cong., 1st Sess., is a "308 Report" on the water resources of the Ohio River for navigation, water power and flood control. With reference to the possible effect of the reservoir system, the Chief of Engineers said:

> "These reservoirs control so relatively small a part of the total drainage area of the basin that they would have but small effect upon the Mississippi, * * *" (H. D. 306, 74th Cong. 1st Sess., p. 6.)

Committee Document 1 (H. R. Com. on Flood Control, 75th Cong. 1st Sess.) is a report made by the Chief of Engineers in the light of the experiences obtained in the great 1937 flood. *The Chief of Engineers does not recommend any reservoirs on the Tennessee River and does not even suggest that there will be any benefit to flood control on the Mississippi from the TVA system of power reservoirs on the Tennessee River and its tributaries.* The Chief of Engineers does recommend the construction of certain reservoirs on the tributaries of the Ohio, but concerning their effect on the Mississippi, says:

> "The reservoirs set up in this report *may* reduce to some degree the frequency with which they (floodways) must be used, but the floodways will still be requisite to assure the safety of the areas to be protected." (*ibid.* p. 10.)

And concerning their effect for local flood protection on the Ohio, which was their primary purpose, the Chief of Engineers said:

> "Despite their great cost, the reservoirs contemplated will not afford adequate protection to communities in the valley against such a flood as has just been experienced." (*ibid.* p. 5.)

It is thus plain that the official documents, relied upon by the appellees, negative the contention of the appellees and fully support the position of appellants.

Appellees' statement that the Tennessee River is one of the best rivers upon which to construct reservoirs for the reduction of floods in the lower Mississippi is misleading in so far as it implies that the TVA reservoirs on the Tennessee River are valuable for reduction of floods on the lower Mississippi. Appellees rely on a reference to part of the cross-examination of appellants' witness Kelly (Appellees' Br. 19, 21, 86) which does not support their statement. (R. 1382.) Colonel Kelly testified that storage reservoirs "are not practical or effective for the control of floods on the lower Mississippi" (R. 1370) and, with reference to the TVA Unified Plan, that "no expenditure is justified on the Tennessee River for flood protection on the Mississippi River at and below Cairo." (R. 1374.)

Appellees state that the TVA projects would have reduced the height of all floods since 1897 by two feet at Cairo on the Mississippi. (Appellees' Br. 43, 85.) This statement is not supported by any finding of the court. An examination of the record references of appellees will disclose that in practically every case, they are based upon hypothetical questions which were allowed frequently over the objection that there was no basis in the record for the hypothesis. (Kelly R. 1383; Clemens R. 1651.) It also appears that none of these witnesses had taken into consideration the fact that the TVA projects are largely power reservoirs, that most of the storage is dead and power storage and that under the official reports of TVA to Congress relative to the size of

its power projects, this storage could not be available for flood control purposes. (Watkins R. 1633; Clemens R. 1665; Sargent R. 1686; Bowman R. 1751; Woodward R. 1805; Kimball R. 1859; Floyd R. 1902.) In addition, the appellees' witnesses assumed a theoretical but practically impossible operation. (R. 1902; Appellants' Br. 55.)

The untenable character of the claim plainly appears from the fact that the Corps of Engineers reported that even the grandiose scheme described in H. D. 328 and involving about 200 dams would have no appreciable effect upon the Mississippi. (See pp. 52-53, *supra.*) Moreover, floodways are an essential part of any system for Mississippi flood control; and appellees' witness Clemens testified that with an expenditure of approximately $6,000,000 for right of way in addition to the levee, the Birds Point-New Madrid Floodway, practically completed since the 1937 flood, will reduce the flood stages in the Mississippi River at Cairo between 6 and 7 feet, which represents a cost of approximately one million dollars a foot. (Clemens R. 1669.) Hence, the claim of the appellees comes to a contention that the Federal Government might, as a choice of means, resort to the construction of a huge power system upon the ground that it would reduce Mississippi flood heights by two feet at a cost of over $235,000,000 a foot.

On page 21 of their brief appellees misquote a statement in appellants' brief by substituting the words "the existing levee system" for the words "the completed Jadwin-Markham Plan" in the following statement (Appellants' Br. 58):

> "The completed Jadwin-Markham Plan would have been sufficient to control the Mississippi floods of 1912, 1913 and 1927 and will be sufficient to control the maximum flood to be anticipated on the Mississippi River."

Nowhere in their brief do the appellees deny the truth of that statement or even consider it. They have deliberately

confined their consideration to the *present* levee system, whereas appellees' and appellants' witnesses agree that the completed Jadwin-Markham Plan on the Mississippi River, which is now nearing completion, will be sufficient to provide for any Mississippi River flood. (Kelly R. 1373-4; Clemens R. 1672.) Appellees' witness Clemens testified concerning the 1937 flood:

> "Jadwin Plan levees and recent cut-offs function perfectly under severe test. It is surprising that there should have been so much hysteria as the flood approached the lower Mississippi Valley. The country had enough confidence in the engineers to give them over $300,000,000 for the Mississippi River Flood plan. Why then did people become unstrung when the floods descended upon that plan? Now that the flood has subsided it is clear that the plan worked about as expected—and that the flood was considerably less than the protection provided against it." (R. 1672.)

Appellees also contend that the levees on the lower Mississippi have reached the practical limits of height. (Appellees' Br. 21.) However, the reports of the Army Engineers disclose that this would be immaterial if true, because the channel rectification has greatly lowered flood heights for given volumes in the Mississippi and the flood by-passes purchased by the Government are essential under any system and sufficient to meet any situation. (Com. Doc. 1, H. R. Com. on Flood Control, 75th Cong. 1st Sess. p. 11.)

Dr. A. E. Morgan, Chairman of TVA, testified before a Subcommittee of the House of Representatives, 75th Cong., 1st Sess., that Norris reservoir would be filled to elevation 1010 in January and would be at elevation 1020 (the top of the power storage) on or about April 1st. (Comp. Ex. 116†, pp. 374-5.) In the only year of actual operation of Norris reservoir before the trial (when TVA had surplus power capacity) Norris reservoir was filled to elevation 1010 or higher at all times from January 17th

at least up to the summer low water season. (Woodward R. 1815; Add. Fdg. 72, R. 684.) Even the program of filling, submitted by the witness Kimball on Def. Ex. 90 and never in fact used, showed that Norris reservoir would be filled yearly to elevation 1010 early in April and to elevation 1020 (the top of the power storage) late in April. (R. 1848.) It is conceded that, to have any effect on the control of Mississippi floods, the water from the Tennessee basin must be withheld from Mississippi floods at least during the period from February 15th to May 15th each year (passing for the moment that floods may occur and have occurred at any time in the year). (Comp. Ex. 105°, p. 78, par. 52; Kelly R. 1386-7.) This confirms the obvious fact that TVA has built at Norris (as elsewhere) a power reservoir upon which is superimposed a relatively small flood control reservoir and it is equally plain that any pretense that this power storage provides even incidental flood protection for the Mississippi is untenable.[1]

The appellees also assert that their method of operations conforms to the method of operation for navigation and flood control contemplated in H. D. 328 and H. D. 259. This argument is based upon Finding 46, which was rejected by Judge Gore but adopted verbatim by the majority as submitted by the appellees, and is a plain misinterpretation of these official documents. H. D. 328 in fact recommended no method of operation. It recommended the construction of a navigation improvement (adopted in the Rivers and Harbors Act of July 3, 1930) which was in no way similar to the TVA projects. The project, described in the report of the District Engineer as necessary or appropriate

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[1] The 1934 Annual Report of TVA to Congress states:

"The *power storage* between the minimum pool elevation of 948 and the spillway crest at elevation 1020, the maximum elevation for *power storage*, will be 1,700,000 acre feet." (Comp. Ex. 113°, p. 8.)

for the maximum development of the power resources of the Tennessee River and its tributaries, was in large part to be constructed by private interests, if at all, and the Chief of Engineers made no recommendation for its adoption, and much less any recommendation as to its operation. (See pp. 34-36, *supra.*) But the method of operation for this non-federal development was for maximum power development. To that extent it may be said that TVA methods resemble the methods described in the District Engineers' report for maximum development of the power resources of the Tennessee River. The Chief of Engineers stated:

> "The system (referring to a plan to develop 'the ultimate use that may be made of the waters of the Tennessee basin by the United States *and its citizens*') includes 149 hydroelectric *power developments*, together with certain auxiliary steam stations. The district engineer has worked out very completely the methods by which all these plans could be operated as a single system so as to effect the utmost economy and *produce the maximum amount of power.*" (Comp. Ex. 105°, p. 3, par. 10. See p. 2, par. 8 for parenthetical insertion.)

The "methods of operation" considered in H. D. 259 related to genuine flood control reservoirs with no power storage and have no relation to the operation of the TVA power projects. (See pp. 54-55, *supra.*)

3. The appellees' contentions with respect to the extent of federal constitutional power in the matter of flood control are erroneous.

In our principal brief we have pointed out that the scope of any power of the Federal Government in the matter of flood control is not presented for determination in this case, but that, if it were, the power of the Federal Government over flood control would not extend beyond the power

directly to improve or protect navigable channels of interstate navigable streams. (Appellants' Br. 122, 124-7, 128-130.) However, appellees suggest that the power of the Federal Government in the matter of flood control extends generally to the protection of private property and the safety, comfort and convenience of the people in their places of abode within the several States. This is upon the theory that the protection of property and the means of production and the promotion of safety and convenience of the people in their dwelling places will contribute to the flow of interstate commerce. (Appellees' Br. 84.)

While appellees cite *Jackson v. United States,* 230 U. S. 1, and *Cubbins v. Mississippi River Comm.,* 241 U. S. 351, those cases do not support appellees' claim for the only relation between those cases and any claimed advantage from TVA projects to navigation on the Tennessee and Mississippi Rivers relates to appellees' claim that low water releases from their power operations will benefit navigation through enrichment of low water flows (Appellees' Br. 81, 83), a contention examined elsewhere and shown to be both without substance and, as to the Mississippi, outside the scope of the TVA statute. In the *Jackson* and *Cubbins* cases, the flood control structures (levees) had an immediate, direct and obvious relation to the maintenance and improvement of the navigation channels in the Mississippi River along which they were constructed. Indeed, they might reasonably be said to constitute part of those navigation channels.

Appellees suggest that a sufficiently direct relationship to interstate commerce may be found to exist from the circumstance that agricultural products, commodities in course of being processed and goods in process of manufacture in areas subject to occasional floods may eventually find their way into interstate commerce. (Fdg. 58.) If such indirect and remote relations will sustain the exercise of the in-

terstate commerce power, then that power may be extended over all of the processes of production and manufacture within the several States and may be made to embrace all of the subjects of State police power to promote the health, prosperity and general welfare of the people of the States. Like so many other claims of the appellees, the result would be the complete centralization of government and the destruction of the States. Undoubtedly the Federal Government may appropriate money in suitable cases to aid works undertaken by a State or a group of States under its power to spend for the general welfare, but the Federal Government may not under its power to spend extend the scope of its own direct activities. This limitation upon the proper activities of the Federal Government is plainly stated in the final Report of the National Waterways Commission (S. Doc. 469, 62nd Cong. 2nd Sess.) upon which appellees so strongly rely. (See pp. 22-25, *supra.*)

Finding 59 (rejected by Judge Gore) in no way shows that the alleged flood control features of the TVA Unified Plan have any real or substantial relation to the preservation or improvement of navigation channels and the evidence shows otherwise. (Appellants' Br. 36-37.)

D. NEITHER THE FACTS NOR THE LAW SUPPORT APPELLEES' CLAIM THAT ANY OF THE WATER POWER IS CREATED IN THE EXERCISE OF THE WAR POWER.

The only ground upon which appellees base their contention that "the power produced *at the tributary dams*" rests upon an exercise of the war power is that the court found that Norris Dam, by storing water during the high water season and releasing it during the low water season (i.e. by the typical operation of a power reservoir) will create additional firm water power at Wilson Dam. (Appellees' Br. 94.) That neither the TVA Act nor the TVA Unified Plan provide for, or permit, the development of

power for national defense is plain. (Appellants' Br. 60-1, 130-3.) The appellees not only ignore the facts, but cite no law to support their contention and seek to invoke an alleged right of the Government to improve its property—a proposition quite distinct from an exercise of the war power and which has been examined and shown to be unfounded in fact and in law on this record at pp. 21-22, *supra*.

III.

THE APPELLEES GROSSLY UNDERSTATE THE SCOPE OF THE TVA ACT AND OF THE TVA POWER PROJECT, AND MISINTERPRET THE POWER OF THE FEDERAL GOVERNMENT TO DISPOSE OF PROPERTY. (Answering Appellees' Br. 53-58; 106-160.)

A. THE APPELLEES' ANALYSIS OF THE TVA ACT. (Answering Appellees' Br. 106-109.)

In our analysis of the TVA Act, we have shown that the TVA Act authorizes the development of all of the hydro-electric resources of the Tennessee River and its tributaries, the construction of steam generating plants and the creation of a vast electric utility system and that it affirmatively and in detail provides for the carrying on of the electric business within the States as a federal monopoly, for the regulation of matters of intrastate concern, including local electric rates, services and practices, and for the establishment of a federal policy within the States of having the local electric business carried on by public bodies or non-profit organizations. (Appellants' Br. 12-17, 154, 159-160, 163, 175-177.) Apart from appellees' attempt to restrict the scope of the power project authorized by the TVA Act (discussed and shown to be erroneous at pp. 25-27, *supra*), appellees merely refer to a few isolated sections of the statute (Appellees' Br. 107-109) and in no way attempt to controvert the plain meaning and effect of the Act set forth in appellants' brief.

B. IN CONTRAVENTION OF THE UNDISPUTED FACTS IN THE RECORD, APPELLEES SYSTEMATICALLY UNDERSTATE THE SCOPE OF THEIR POWER BUSINESS DEVELOPED AND IN CURRENT PROCESS OF DEVELOPMENT. (Answering Appellees' Br. 53-58, 109-112.)

1. The firm-power capacity created by the execution of the TVA Unified Plan. In our main brief (pp. 66-69) we have set forth the facts with reference to the power capacity of the TVA system under the Unified Plan. As was there pointed out these facts were not embodied in any findings made by the majority of the trial court although they stand undisputed in the record. Appellees repeatedly state (Appellees' Br. 54, 57, 109) that the firm-power capacity of all the dams of the Authority "now constructed or authorized for construction" is 570,000 kw. at 60% load factor with all the generating units installed or "authorized" for installation. In fact this statement merely refers to a stage in the execution of the TVA Unified Plan, has no meaning in relation to the firm power capacity which will be created by the execution of the TVA Unified Plan and is patently irrelevant in a suit for preventive relief. The statement is grossly misleading as to vital facts not open to dispute, and it is coupled with the charge that in our presentation of the facts we have misrepresented "the scope of the Authority's undertaking in so far as it relates to power" by assuming "unauthorized installations at unauthorized dams and unauthorized interconnections with privately owned plants." (Appellees' Br. 57, 109.) That there may be no misunderstanding as to what projects are embraced in the current TVA Unified Plan or as to what power will be produced by the operation of such projects, we review the facts as they have been publicly and officially reported by appellees themselves and as the record shows them.

The projects embraced in the current TVA program *with construction schedules* and provisions made for power

installations are shown in the statements filed by TVA with the Sub-committee of the House Committee on Appropriations on December 13, 1937, during the course of the trial of this case (Def. Ex. 153†, pp. 919, 948):

Completed Dams	*Date of Completion*		*Power Installation Provided For*
Wilson	By U. S. Army Engineers in 1925		444,000 kw.
Norris	Aug. 1, 1937		100,000 kw.
Wheeler	Sept. 1, 1937		256,000 kw.
Dams Under Construction	*Beginning Date*	*Proposed Date of Completion*	
Pickwick Landing	Dec. 1934	Jan. 1, 1939	216,000 kw.
Guntersville	Jan. 1, 1936	June 1, 1940	96,000 kw.
Chickamauga	Jan. 1, 1936	Jan. 1, 1941	108,000 kw.
Hiwassee	July 1, 1936	July 1, 1941	120,000 kw.
Proposed Dams	*Scheduled Starting Date*	*Scheduled Date of Completion*	
Gilbertsville	July 1, 1938	July 1, 1945	192,000 kw.
Watts Bar	July 1, 1939	July 1, 1943	150,000 kw.
Coulter Shoals	July 1, 1940	July 1, 1944	60,000 kw.
Fontana	July 1, 1942	July 1, 1946	180,000 kw.
		Total Installed Capacity:	1,922,000 kw.

The so-called "*unauthorized dams*" referred to in appellees' brief are those dams listed above as dams upon which construction has not yet been begun. None of these dams are included in appellees' figure of maximum firm power capacity. The first question is, do appellees intend to build them? The intention to do so is explicit in the whole defense that these structures are valuable if not indispensable to the purpose of Congress as expressed in the TVA Act. All of these dams have been listed in every report made to Congress since the adoption of the report of the Unified Plan. Each is an integral and inseparable part of the TVA development. Furthermore, Gilbertsville is now actually under construction with funds provided by Congress subsequent to the decision of the trial court. (Appellees' Br. 37.) Watts Bar and Coulter Shoals are main stream dams without which even an incidental navigable

channel could not be provided between Chattanooga and Knoxville under the TVA Unified Plan. So far as Fontana is concerned, the desire of appellees to eliminate it from consideration is understandable since it lacks even a pretextuous relation to navigation and is valuable only for power and power regulation, but the fact that it is definitely scheduled to be built nevertheless remains. In answer to a direct question on that subject Director Lilienthal stated before the House Appropriations Committee in April, 1937, (Comp. Ex. 116†, pp. 516, 518):

> "The Board's decision, as indicated by the minutes of the Board, which I think ought to be inserted in the record at this point, is that the position taken by the Board in the report called Unified Development of the Tennessee River System, filed last March, is that the Fontana Dam should be a part of the unified system, and that is still the position of the Board. • • •
>
> The Board still is of the opinion that Fontana should be a part of the unified development, and in its annual report filed as for the fiscal year ending June 30, 1936, and signed in November, 1936, reiterated that position, and that still is the position of the Board, as shown by its action of March 16, 1937.
>
> On page 27 of the report designated 'Unified Development of the Tennessee River System,' you will find table 3. That table shows a suggested program of dam construction which had the approval of the Board then, and, so far as I know, still has the approval of the Board. That schedule proposed the construction of the Fontana Dam on the Little Tennessee River, the construction to begin in the middle of 1938 and to be completed in 1941.[1]

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[1] Fontana was originally scheduled for construction ahead of Gilbertsville, Watts Bar and Coulter Shoals, which will incidentally provide a navigation channel at either end of the Tennessee River. Sometime later, for reasons described as "budgetary" its scheduled construction was postponed and precedence given to the main river dams. (See p. 760, United States Government budget for fiscal year 1939, submitted to Congress Jan. 3, 1938.)

There is no change in the Board's disposition as to the ultimate construction of that dam. Obviously, since the dam site is owned by the Aluminum Co. of America, it may be built by that company, but it definitely should be a part of the unified system.'"[1]

The so-called *"unauthorized installations"* (Appellees' Br. 57) applies to all generating units for which provision is made in the design and construction of the dams, excepting such units as had been actually installed or ordered, or for the purchase of which TVA had made provision in its last budget request to Congress. Under this definition a substation, constructed or purchased since the date of the trial for the service of Knoxville, would be an unauthorized substation. Accordingly, the second question is, do appellees intend to limit the installation of generating capacity to those units which had been installed or ordered for the service of TVA's existing market, or do they intend to make additional installations as rapidly as they can expand their business? Appellees themselves concede that each of the dams, both main stream and tributary, will produce a very large amount of water power (Appellees' Br. 36), and it is argued throughout their brief that this power will be forever lost unless it is converted into electricity and consumed. Under Section 9(a) of the TVA Act, appellees contend that they are authorized, if not required, "to provide for the generation and marketing of electric energy in order

[1] It may be assumed that Mr. Lilienthal was not suggesting seriously that Fontana might be constructed by the Aluminum Company of America for navigation or flood control. Its construction will greatly increase the firm power capacity at the lower dams which the Aluminum Company owns on the Little Tennessee River, as well as the firm capacity of the main stream dams in the TVA system. Therein lies its value and the explanation of Mr. Lilienthal's statement that whether built by the Aluminum Company or by TVA *"it definitely should be a part of the unified system."*

to avoid the waste of water power and * * * to assist in liquidating the cost or aid in the maintenance of the projects." (Appellees' Br. 54.)

It is true that TVA has not as yet installed in all dams which are in operation the full number of generating units for which they are designed. However, under the TVA method of operation certain things must precede the delivery of power. Markets must be acquired. Contracts must be negotiated with the municipalities and cooperatives. Arrangements must be made for financing and acquiring distribution facilities for such distributing agencies. High tension transmission lines, substations and other facilities must be designed and constructed and such facilities must be designed with the view to their use in serving other possible markets not yet acquired, in order to make an efficiently functioning system comparable to the systems of other integrated utilities serving in a wide area. The evidence establishes that TVA has been installing generating capacity not merely as rapidly as it could wrest, but in advance of wresting, markets from existing utilities. The number of generators actually installed or on order at the date of the trial is of no more significance in fixing the power capacity of the TVA system under the Unified Plan than would be the corresponding figures for the year 1936 or 1935.

This brings us to the ultimately vital question as to the productive capacity of this system as it is designed and is intended to be used. In the TVA report to Congress on the Unified Plan the statement is made that the system of dams recommended in that report, embracing Wilson, Wheeler, Norris, Pickwick, Guntersville, Chickamauga, Fowler Bend, Fontana, Watts Bar, Coulter Shoals and Gilbertsville, with full economical installation of generating capacity, will produce 660,000 kw. continuous power without the use of the Sheffield steam plant. (Comp. Ex. 328°,

p. 62.) This is the equivalent of 1,100,000 kw. at 60% load factor.

In the financial statement submitted to Congress in March, 1936 (Comp. Ex. 115†, p. 279, R. 2697), Director Lilienthal presented the following figures:

"Continuous capacity of integrated system .....kilowatts 660,000
Annual primary output...kilowatt hours 5,780,000,000
Estimated gross annual wholesale power revenue..... $23,120,000"

Appellees' witness Wessenauer testified (R. 2172 *et seq.*) that the figures given in the TVA Unified Plan were the result of calculations made by him, in the making of which he assumed integrated operation with the plants of the Aluminum Company on the Little Tennessee River below Fontana but deducted 90,000 kw. as being power which belonged to the Aluminum Company, and obtained a remainder of 660,000 kw. Referring to these calculations appellees' witness said:

> "This figure of 660,000 kw. represents, as I understand it, the power that would be available to the TVA if they constructed the particular plants listed in table 6 on p. 62 (of the Unified Plan)." (R. 2184.)

Appellants' witness Kurtz (R. 1215) testified that the eleven dams in the Unified Plan, with regulation only by the tributary dams, would have a prime capacity of 660,000 kw. at 100% load factor and 1,100,000 kw. at a utility load factor of 60% and that when supplemented by the Sheffield steam plant they would have a prime capacity of 1,200,000 kw. at a 60% load factor.

It will be noted that the figure of 660,000 kw. continuous power represents TVA's own estimate, officially adopted and reported to Congress, and is not, as baselessly asserted at p. 109 of appellees' brief, a "fanciful assump-

tion'' based upon an ultimate development of *''all possible dams at any of the 149 sites located on the Tennessee River system by the Corps of Engineers in House Document No. 328.''* As shown by H. D. 328 (Comp. Ex. 105°, pp. 14, 16, 67) the complete ultimate development of the Tennessee system will produce 5,000,000 kw. at 60% load factor and 25,000,000,000 kilowatt hours annually.

From this review of the record it is seen that the uncontradicted evidence fully corroborates the statements made in our original brief that the TVA hydro-electric system under the Unified Plan will have a firm capacity at 60% load factor of 1,100,000 kw. and will be capable of producing 5,780,000,000 kilowatt hours of firm energy annually. It is seen further that these figures do not represent an ultimate potential maximum of a theoretical development but the authoritative estimates as to the capacity of definite structures included in a definitely scheduled construction program. It is also seen that *appellees'* figure of 570,000 kw. at 60% load factor, taken from Finding 94 (R. 621), is, as that Finding on its face shows, *merely the capacity of an intermediate stage of the execution of the present construction program,* omitting completely the capacity of Gilbertsville, Watts Bar, Coulter Shoals and Fontana, and also the capacity of the additional generating units for which provision has been made at Wilson, Wheeler, Guntersville, Chickamauga, Pickwick and Hiwassee.

Thus to limit the consideration of the scope of TVA's undertaking with respect to the generation and disposal of power to the particular stage as it happened to exist at the time of trial puts the appellees in the position of contending that the claimed value of all of the above dams for navigation and flood control is a proper and indeed necessary subject for this Court to consider, but that the use and value of the very same dams for the production of

power is not. Further, to confine the scope of inquiry in an action for injunctive relief to the things which have already been done, may well mean that the determination of grave and important questions are made to depend upon whether the taking of particular proof occurred on Wednesday or Friday, and as applied to the facts in this case, that the right to challenge unconstitutional acts and the unlawful deprivation of property may not be exercised until the injury has been consummated, which is in effect a denial of the jurisdiction of equity and of the remedies of equitable relief.

2. The TVA power pool and transmission system. The principles just discussed apply with equal force to the TVA transmission system. At p. 56 of their brief appellees state: "In order to serve its purchasers, the Authority has constructed or acquired about 1,100 miles of marketing transmission lines, the largest of which is about 100 miles in length." Since no mention is made of any possible future construction of transmission lines, this statement conveys the misleading impression that the present 1,100 miles of so-called marketing transmission lines represent the completed TVA transmission system.

TVA's policy with reference to the construction of transmission facilities is set forth in its report to Congress:

> "The number of additional transmission lines required must be determined from time to time, as opportunities to secure revenues by 'conveying to market' arise and as contracts for sale to public and private agencies are negotiated." (Comp. Ex. 328°, p. 60.)

It is thus plain that appellees recognize no limitation upon the expansion of their power system other than the size of the market which they are able to acquire and supply.

The recent taking over of the businesses of several utilities by TVA, to which appellees invite the Court's attention in their brief, is an impressive illustration of the rapidity with which the TVA transmission system may be, and the extent to which it must be, extended to complete the TVA power system. The extent of the area over which the TVA transmission system must be extended to dispose of the commercial power created by the TVA Unified Plan establishes beyond dispute the size of the TVA transmission system which is an integral part of the TVA Unified Plan. (Appellants' Br. 65-70.)

Under the TVA Unified Plan all of the dams will be interconnected so that the power generated at each dam will flow into one vast pool and will be available at any point upon the interconnected system for convenient transmission to the nearest market. Some 400 miles of this primary grid system have already been built and these lines are not included in the 1100 mile figure mentioned in appellees' brief which merely represents the high tension "marketing" lines which have already been built as a part of the ultimate network to be supplied from the power pool.

The completion of the primary grid system necessarily means the construction of lines to Gilbertsville, Hiwassee and Fontana, in order to bring them into the power pool, and as soon as that has been done, the pool from which power is to be drawn will extend from western Kentucky to northern Alabama and across Tennessee to the western end of North Carolina. Thus the 400 miles of "inter-plant tie lines," so far constructed, represent only the beginning of a primary system which has for its object not "conveying to market" but the pooling of a vast supply of electric power, the whole justification of which involves the construction of a great network of transmission lines

extending from this grid system to the markets within economic reach of the pool itself.

Professor Moreland testified that the marketing of the power to be produced under the Unified Plan will require a transmission system of from 12,000 to 15,000 miles of high tension transmission lines. (R. 1453.) This testimony was not rebutted by appellees and its authoritative character is not questioned in appellees' brief, unless that intention may be inferred from the slighting reference to the witness himself as "prophet Moreland." (Appellees' Br. 112.) It is an engineering fact that to supply the markets which are capable of absorbing 5,780,000,000 kilowatt hours of firm power annually will require a vast, interconnected high tension transmission system, corresponding to the transmission systems now serving the area, and if there is any need for the assistance of occult science, it is on the part of those who claim that such a result may be accomplished without it.

3. The competitive and duplicating character of TVA's power system. Since, as pointed out in our main brief (p. 71), TVA rates are from 25% to 60% lower than the State-regulated rates of other electric utilities operating in this area, no serious doubt can exist but that the development of TVA's definitely scheduled program will engulf the markets and destroy the efficiency and value of every electric utility system serving any substantial area within economic transmission distance of the TVA power pool. That there is nothing in appellees' brief which seriously challenges that conclusion may be briefly pointed out.

(a) Unserved rural markets. Appellees state that there are unserved rural areas in this section which furnish an "obvious market" for TVA power. (Appellees' Br. 108, 116-17.) It is thus apparently argued that the un-

served rural market will absorb some substantial part of TVA's surplus power capacity. There is no substantial unserved rural demand in the territories served by the appellants which meets the minimum recommended requirements of TVA itself. (Appellants' Br. 64.) Although TVA has constructed and is now serving through cooperatives more than 2,230 miles of distribution lines in rural areas not previously served, the present demand of that entire system comes to the insignificant total of 7,000 kw.[1] (Comp Ex. 919, R. 3947, 3950.) Even by 1942, according to TVA's own optimistic estimate, this demand will not exceed 17,100 kw. (Def. Ex. 153†, p. 1001) which is about 1½% of the 1,100,000 kw. which will be produced by the TVA power system under the Unified Plan. As the record shows, and as anyone familiar with this region knows, electrification of the unserved rural areas is a practical objective only as the ultimate stage of an integrated system, interconnecting all of the cities, villages and communities in the area (Stanley R. 937-8; Longley R. 973) and even then the total demand represented by such rural markets will be an insignificant part of the total power demand essential to support such a system.

(b) New industrial consumers. Appellees also stress the claim that TVA's large industrial contracts represent a new demand not previously served by appellants and that

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[1] These rural systems, fostered, subsidized and served by TVA, have been made the excuse for extension of TVA transmission to or near the larger towns which are the load centers of appellants' systems (see Comp. Exs. 332-A*, 199*, 205* to 210* and 326*), and although such lines could be served by appellants without substantial changes in appellants' present facilities (Add. Fdg. 119, R. 706), their principal significance arises not from their importance as a market for power but from their effect in restricting the normal development of efficient and economical electric service in the areas involved (Add. Fdg. 122, R. 707) and from the damage caused through the establishment of subsidized rates throughout appellants' territories.

to have served these customers appellants would have had to provide additional generating and transmission capacity.[1] (Appellees' Br. 111, 117-119.) Ignoring the unwarranted assumption that appellants are not damaged by competition for new or unattached business, a matter discussed in our main brief (p. 199) and unanswered by appellees, the fact remains that such sales do not assist either in making the benefits of TVA power "widely available" or in preventing its exploitation by a privileged few, and unless it is intended to be argued that the major part of the power to be produced in the future is going to be consumed by large corporations which move into this area for the purpose of securing subsidized TVA rates, the contention has no significance.

(c) Previously unserved municipalities. Again, appellees argue (Appellees' Br. 110) that a number of the present TVA municipal distributors previously owned and operated their own distribution or generating and distribution facilities. The record shows that at the present time there are only a few small municipalities which are still operating municipally-owned facilities with local power generation. For example, in the territory of The Tennessee Electric Power Company there is now only one such municipality (R. 781-2) as against 450 towns taking Company service. (Fdg. 6, R. 585.) In the territory of the Alabama Power Company there are three such towns (R. 864) as against 594 towns taking Company service. (Fdg. 16, R. 592.)

Naturally towns having their own distribution systems were among the first to enter into contracts to secure cheap

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[1] It is not true, as claimed, that appellants did not previously serve some of this industrial load. (Add. Fdg. 117, R. 704.) In any efficiently operated system to avoid the cost and maintenance of idle capacity, it is always the practice to provide for the requirements of any large new industrial load after it is known where and when the customer will require it. (Miller R. 1119.)

TVA power, but the total present demand of all such TVA customers is only 11,461 kw. (Comp. Ex. 919, R. 3947), and it will not be claimed even by appellees that the scattered and relatively unimportant markets represented by the few remaining towns which still generate their own electric power would absorb more than a fraction of the power capacity of any *one* of the eleven TVA dams.

(d) Prospective increases in power demand on the part of appellants' customers. Another suggested source of demand for TVA power is the predicted increase in electric consumption on the part of appellants' present customers. Thus appellees state:

> "As shown by the evidence and found by the court, it is to be anticipated that the utilities within ready transmission distance of the Authority's run-of-river plants will require 310,000 kw. of additional capacity in 1939 and 787,500 kw. by 1943." (Appellees' Br. 54.)

The above figures are taken from Finding 231 (R. 650), based upon the testimony of appellees' witness Thomas, and the statement quoted from appellees' brief, as well as the use to which it is put, is a flagrant example of compounded errors.

No testimony was offered by appellees as to any existing or prospective power shortage within transmission distance of any of the TVA dams. The testimony of the witness Thomas was predicated upon an alleged study of four groups of affiliated electric utility companies operating in the Southeast, including not only the properties of the appellants which lie beyond a radius of 250 miles from any TVA dam, but also the properties of eight non-complainant companies, many of which lie partially or wholly outside of such area. (Def. Ex. 133, R. 4150.) In reaching the conclusion that there will be a power shortage of the magnitude referred to in the territories served by these complainant and non-complainant companies (and hence a power short-

age of an obviously lesser but unestimated magnitude in the territory capable of being served by the TVA power system), the appellees' witness made the following omissions and patently absurd assumptions. The witness omitted:

> All generating capacity added by any of the companies since 1936 (R. 2122) as well as all generating units now under construction or on order (R. 2120); all run-of-river hydro plants, without regard to firm capacity and existing regulation of stream flow, including such plants as Hales Bar on the Tennessee River between Guntersville and Chickamauga (R. 2112), and all stand-by steam plants, used only as reserve capacity and maintained for the very purpose of emergency use. (R. 2099, 2111.)

Having made the foregoing omissions the witness then assumed:

> That the companies under consideration, whether operating within the area threatened with TVA competition or operating wholly outside of that area, will not construct any additional generating capacity for the next six years (R. 2098, 2119-20); that electric demand would increase at the average rate of 7½% per year (R. 2119) and that the increase for 1937 would be 9½% although the demand for 1937 actually showed a decrease of 9% (R. 2118); that at the time of maximum peak demand, in an extreme dry year, there would be an outage of 1½ times the largest generating unit in each of the interconnected systems (R. 2128); that at the same time, all of the remaining steam plants could only be operated at 85% of their normal load carrying ability (R. 2099, 2128); that concurrently there would be a failure equivalent to 5% of the systems' transmission capacity (R. 2128), and that all of these coincidences would come at a time when all neighboring systems were also at peak and could not be required to deliver power over established interchange connections. (R. 2122-24.)

The witness did not say that it would be prudent or permissible under existing regulations for any operating company to maintain as a part of its rate base the surplus generating capacity suggested by the above omissions and assumptions, and the necessity for doing so is belied by the experience of all of the appellants, as shown by the testimony of those actually in charge of the operation of appellants' generating facilities. (Sporn R. 1259, 1252-3, 1257; Rankin R. 1296; Middlemiss R. 1271.) To that extent the court's finding as to future inadequacy is in direct conflict with its further finding that appellants have never refused additional business due to lack of facilities and that in the past appellants' facilities have always been adequate to meet their load requirements. (Fdg. 116, R. 627.)

These glaring errors of fact, assumption and interpretation are now sought to be turned to advantage by a pretended showing that as a result of the alleged impending power shortage the appellants will in some way be benefited, or at least will not be injured, by the TVA power program. In the absence of TVA competition and under normal business conditions, it is to be assumed that there may be some normal increases in the electric power demand within the systems of the appellants and that under such normal conditions, as in the past, additions and extensions will be provided to take care of such additional business. However, the repeated suggestion that the increased customer demand within the systems of the appellant companies is a factor to be considered as bearing upon the practical or legal questions involved in this suit, is irrational and specious, as a brief analysis will show.

The future power demands, represented by rural areas, new business enterprises and normal increases in customer consumption, are scattered over an area which is coextensive with the territories served by the appellants. If these power demands are to be served directly by TVA or its

distributors, TVA must construct a transmission system which duplicates and competes with the transmission facilities of the appellant companies themselves. If, on the other hand, these power demands are not to be served directly by TVA or its distributors, their significance depends upon the untenable assumption that TVA proposes to sell to the appellants the power now being generated and to be generated by it. No suggestion of that possibility could be made in good faith in view of TVA's competitive policy and the terms of the Act. (Appellants' Br. 177.)

It is thus seen that the court's findings with reference to potential power demands and unserved markets are only material in connection with the fact, confirmed thereby, that in order to dispose of the power which will be produced by TVA and in order to reach the markets where these demands exist, TVA must construct a competitive transmission system comparable with the combined systems of the appellants and extending over a large part of their territories. Certainly these findings have no relation to the subject of damages. It does not mitigate appellants' damages to say that since TVA will deprive appellants of a part or all of their present business, appellants will thereby be "saved" from the necessity otherwise arising of extending and enlarging their facilities to provide for the growth of the business so appropriated.

(e) Duplication of facilities. Appellees say that the existing TVA transmission lines do not duplicate transmission facilities of appellants (Appellees' Br. 111), which the majority of the trial court found (Fdg. 184, R. 640), upon the grounds that TVA's competitive facilities "*constitute useful and valuable additions to those (appellants') facilities.*" That they are neither useful nor valuable to appellants, whose facilities will be thereby displaced, is self-evident. (Add. Fdg. 121, R. 706.) By way of illustration,

the record shows that over one-third of the business of The Tennessee Electric Power Company is represented by the City of Chattanooga. The Company now has five high tension transmission lines serving it, and the loss of the business in Chattanooga will result in the destruction of over one-third of the usefulness of the Company's electric property. (Add. Fdg. 113, R. 701; Miller R. 1105-6.)

C. THE APPELLEES' CONTENTION THAT THE FEDERAL POWER TO DISPOSE OF PROPERTY IS IN EFFECT UNLIMITED AND SUBJECT TO NO RESTRICTION UNDER THE EXPRESS PROVISIONS OF THE CONSTITUTION, OR UNDER THE INHERENT LIMITATIONS OF OUR CONSTITUTIONAL SYSTEM, IS PLAINLY UNSOUND. (Answering Appellees' Br. 113-127; 134-160.)

The appellees do not discuss the meaning of the grant of power to dispose of property in the light of its history, in the light of its plain language or in the light of our constitutional system. They recognize no limitations upon this power either by virtue of its language, the express provisions of the Constitution or the inherent limitations of our constitutional system. They can not do so and still argue that the method of disposal authorized by the TVA Act and embodied in the TVA Unified Plan is within the constitutional power of the Federal Government. The effect of appellees' contentions is (a) that the power to dispose of federal property includes the power to engage in the conduct and management of any competitive commercial business so long as it in some degree utilizes Government property; (b) that in the conduct and management of such a business, it may enter the domain of the States and not only set aside, but itself affirmatively exercise, such State police powers as it chooses; (c) that engaging in such businesses and regulating intrastate concerns are not only within the scope of this federal power, but that the exercise of this authority and of these State police powers are not in any

degree circumscribed or controlled by the express or inherent limitations of our constitutional system or by the rights of the States and of the people under the Ninth and Tenth Amendments; (d) that it may take over as a federal monopoly the businesses in which the people have a right to engage and earn a livelihood within the States; and (e) finally, that in any event the consent of a State, whether purchased with *quasi* gifts of federal property or otherwise, confers powers on the Federal Government to engage in such businesses within State domain, condones the violation of the inherent limitations of our dual system of government, and sets at naught the rights which were retained by the people under the Ninth Amendment.

1. Appellees misinterpret the scope of the previous decisions relating to TVA. Notwithstanding the limited scope of the decision in the *Ashwander* case (a limitation insisted upon by the Solicitor General and counsel for TVA in argument before this Court) and the explicit statement of this Court that it expressed no opinion as to the status of any other dam or power development in the Tennessee Valley, whether connected with or apart from the Wilson Dam, or as to the validity of the Tennessee Valley Authority Act, or as to the power development promulgated by the Authority, appellees now insist that the *Ashwander* decision supports their revolutionary position. (Appellees' Br. 113-116, 139-141.) This contention is not based upon any principle laid down in the *Ashwander* case. Indeed, appellees ignore the limitations on the power to dispose of property pointed out in that opinion. They rest their contention solely upon the claim that the contract under examination in the *Ashwander* case involved every *kind* of electrical facilities and that such facilities were useful to serve a local market in which might be found customers falling within the usual classifications of utility service.

The unsoundness of this contention both in fact and law has been shown in our principal brief, pp. 187-190.

Appellees repeatedly cite the decision on motion for preliminary injunction in *Georgia Power Co. v. Tennessee Valley Authority,* 14 F. Supp. 673, to the effect that the disposal of electricity in new markets is "most considerate of existing interests." (Appellees' Br. 117, 119, 138.) Judge Sibley's remarks concerned a small rural line extended into an area not previously served. The attempted inference that the vast quantity of power being created and to be created by TVA is to be, or can be, sold to new markets, is indefensible. (See pp. 73-79, *supra.*) And if it were possible, as it is not, to market the TVA power by depriving appellants of all increment of business growth in their service areas for the next fifty years, it would not add a jot to the power of the Federal Government, nor would it avoid the irreparable injury to appellants. The opportunity for growth is the very life blood of any business and this is particularly true in the case of a natural monopoly such as the business of supplying electricity to the public.

2. Appellees misconstrue the cases relating to the power to dispose of government property as they apply to the utility business of TVA. The principal argument advanced by appellees to support the method of disposal authorized by the TVA Act and embodied in the TVA Unified Plan is that such method of disposal is necessary to avoid monopoly, to prevent waste and to secure wide distribution of the benefits of public property. (Appellees' Br. 120, 121, 122, 135, 137, 145.) In support of this proposition appellees cite *United States v. Trinidad Coal Co.,* 137 U. S. 160; *Camfield v. United States,* 167 U. S. 518; *United States v. Shryock,* 162 Fed. 790; *United States v. Hanson,* 167 Fed. 881; *United States v. Munday,* 222 U. S. 175;

Morton v. Nebraska, 21 Wall. 660; *United States v. Sweet*, 245 U. S. 563.

The *Trinidad Coal* case dealt with fraud in the entry of coal lands. The *Camfield* case dealt with the power of the United States to prevent individuals, not purchasers, from taking exclusive possession of unsold public lands "so long as such power is directed solely to its (the Government's) own protection." (loc. cit. 525-6.) The *Shryock* case dealt with liability of the defendant for rental on a lease of water power at a navigation dam. The *Hanson* case dealt with the power of the Federal Government to cooperate with private owners in a project involving the irrigation of public lands and held that this was valid "so long as it (the Federal Government) does not interfere with State legislation over waters of the State." (loc. cit. 884.) The *Morton* and *Sweet* cases merely illustrate the fact that the Federal Government in disposing of public lands has followed the policy of reserving known mineral deposits.

We have found, and appellees cite, no case which holds that a desire of the Federal Government to prevent monopoly, to avoid waste or to secure widespread distribution of actual or supposed benefits of federal property constitutes authority for the Federal Government to engage within State domain in business inconsistent with the functions of Government, to displace the police powers of the States in the regulation of local businesses affected with a public interest, or to establish within the States a federal policy of having such businesses carried on by public or nonprofit organizations. No case holds that such a desire authorizes the Federal Government to establish a federal province which is neither State nor nation, and in which the Federal Government exercises all of the powers of the nation, the States and the reserved powers of the people as the ultimate sovereign.

But the whole contention is patently unreal. "Don Quixote never waged battle against as unreal a foe as is this ghost" of monopoly of the State-regulated business of supplying electricity to the public. The business of supplying electricity to the public is a natural monopoly; and duplication of facilities and competition is inimical to the public interest. (Pond, *Public Utilities*, Secs. 271, 903; *State v. Kansas City Gas Co.*, 254 Mo. 515; *State v. Interstate Power Co.*, 118 Neb. 756.) And not only is the business a natural monopoly and necessarily so in the interests of the public, but it is a regulated business. It is primer law that a utility purchasing all or part of a utility commodity supplied to the public, whether electricity or other, may only include in its operating expenses the price which it paid for the commodity and may collect no profit upon its purchase. Its charges are limited to its operating expenses plus a fair return on the property used and useful in serving the public. The plain result is that if the electricity were sold to a utility, the advantages of the purchase price, if any, would necessarily be passed on to the consumers. It is further obvious that the benefits of the power, if any, would be distributed most widely by sale to existing public utility systems. There is no analogy between the sale of a commodity like electricity to a regulated public utility, which may make no more than a fair return for its services in transmission and distribution, and the sale of public lands or mineral deposits which are not natural monopolies and the benefits of which are not passed on to the public without profit. The argument is specious and utterly divorced from realities. Indeed, the TVA Act should be entitled: A Bill to Establish a Federal Monopoly of the Business of Supplying Electricity to the Public in the States touching the Tennessee River Basin.

There is no rational explanation of the method of disposal provided in the Act and in the TVA Unified Plan

except a desire to substitute federal regulation and federal operation of the electric business for private operation and State regulation. Unlike matters involving the sale of public lands, this is a permanent federal undertaking. The property does not pass into the domain of State control and the normal current of business within the States. On the contrary, the TVA Act provides for a continuing and permanent interference with the functions of the State. If, in the cases cited by appellees, the Federal Government had undertaken to say that public lands once owned by the United States should never be held within the States in larger tracts than 160 acres, that they should never be sold at a price exceeding that paid to the Government and that they should never be subject to the debts of the owner, they might with some plausibility be urged as bearing on the instant case. But if the Government had attempted to impose such a continuing and permanent interference with the powers of the States, the attempt would plainly have been unconstitutional.

The appellees also cite fragmentary phrases from various cases in which this Court has remarked that federal property is held in trust. (Appellees' Br. 120.) *United States v. Trinidad Coal Co.*, 137 U. S. 160, 170; cf. *Light v. United States*, 220 U. S. 523, 537; *United States v. Beebe*, 127 U. S. 338, 342; *Camfield v. United States*, 167 U. S. 518; *Ruddy v. Rossi*, 248 U. S. 104, 106-107; *United States v. Gratiot*, 14 Pet. 526, 538.

These cases plainly afford no legal precedents for the validity of the TVA enterprise. The fact that the Federal Government holds property in trust and not like a private individual or an absolute monarch, adds nothing to the things which it may do under its power of disposal. The Federal Government holds property in trust for the performance of governmental functions and for disposal when no longer needed for those purposes. A trustee for the

disposal of property is not a trustee for the establishment and management of a business and the United States is not a trustee for establishing and carrying on commercial enterprises at the risk and expense of the people of the United States. Moreover, the appellees insisted in the court below and now insist in their brief (p. 222) that they are authorized to sell electricity below the costs of production. If this property is "held in trust for *all* of the people," it is a peculiar innovation of the law of trusts which authorizes the trustee permanently to carry on a business at a loss for the benefit of part of the *cestuis* at the expense of the remainder. Among the people which the appellees contend the Federal Government is entitled, as trustee, to supply with electricity produced at a loss and at the expense of the taxpayers generally are the Aluminum Company of America, the Monsanto Chemical Company, the Electro-Metallurgical Company, Volunteer-Portland Cement Company and the Victor Chemical Company. The trial court, on the objection of appellees, excluded proof that the TVA power could have been sold to utilities for distribution over existing systems with the greatest possible financial advantage to the Government and the widest distribution of the benefits, if any, among the people. (Appellants' Br. 177.)

3. The power to dispose of government property does not authorize the entry into permanent commercial businesses unrelated to any governmental function. The appellees argue that the Federal Government can not be denied the right to engage in a competitive commercial business, citing cases involving the utilization of privately owned or government owned corporations for the purpose of carrying out some affirmative function of the Federal Government. (Appellees' Br. 124-5.) This manifestly is no answer to appellants' conten-

tion that the power to dispose of property in terms does not authorize the Federal Government to enter into competitive commercial businesses within the States, to exercise regulatory powers over matters of intrastate concern, or to control and regulate matters of State policy. None of the cases cited by appellees involved the establishment of the Federal Government in permanent commercial businesses within various States in competition with their citizens.[1] Here, as elsewhere, the appellees cite statutes which have never been the subject of judicial examination. While these may or may not be proper exercises of constitutional power, it is plain that the existence of statutes on the books, which have not been challenged either for lack of incentive or lack of a party to raise the question, can not be construed as destroying the constitutional rights of citizens under a proper interpretation of the Constitution.[2] *Myers v. United States*, 272 U. S. 52, 170-171; *United States v. Boyer*, 85 Fed. 425, 432.

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[1] *McCulloch v. Maryland*, 4 Wheat. 316; *First National Bank v. Fellows*, 244 U. S. 416; *Smith v. Kansas City Title & Trust Co.*, 255 U. S. 180, merely sustained the power of the Federal Government to charter banks as fiscal agencies of the Federal Government and in no way involved the entry of the Federal Government into a permanent commercial business and much less one unrelated to its constitutional functions. *King County v. Fleet Corp.*, 282 Fed. 950; *Sloan Shipyards v. Fleet Corp.*, 272 Fed. 132; *Fleet Corp. v. Western Union*, 275 U. S. 415 and *New Brunswick v. United States*, 276 U. S. 547, dealt merely with emergency exercises of the national defense powers in time of war or the *bona fide* liquidation of a *bona fide* war enterprise. *Wilson v. Shaw*, 204 U. S. 24, involved the construction and operation of the Panama Railroad in exclusive federal domain under the foreign commerce and national defense powers and involved no possible conflict with the reserved rights of the States. *Standard Oil Co. v. Lincoln*, 144 Neb. 243, involving the power of a municipality to establish a gasoline station obviously has no application to any power of the Federal Government.

[2] Appellees in particular assert that the method of disposition of power at Boulder Dam does not differ materially from

(Continued on page 88)

The appellees pass over the fact (pointed out in Appellants' Br. 136-7) that under appellees' contention the Federal Government could make its ownership of oil, coal, natural gas, forests and agricultural lands the basis of establishing nation-wide competitive commercial businesses free from State taxation, regulation and control and in displacement of the rights of the people to engage in such businesses with the statement that "it is unnecessary to elaborate the obvious distinctions (still concealed in the hearts of the appellees) between the instant case and those suggested by appellants." (Appellees' Br. 126.) The fact is that if the appellees' contentions are sound, the mere implementing power to dispose of federal property has substantially destroyed our dual system of Government. Thus, water power (before conversion into electricity) is merely mechanical energy. Coal is likewise merely energy which may be converted into electricity. If the appellees' contentions are sound, the Government by virtue of its ownership of coal deposits in the public domain may install equipment to convert the energy of the coal into electricity just as it may install generators to convert the water power into electricity, and having converted the energy of the coal into electricity, it may engage in the business of supplying electricity to the public throughout the nation.

In this connection, it should be observed that the appellees seek to create the impression that appellants merely argue that the power to dispose of property is limited only

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that involved in the instant case. (Appellees' Br. 141-145.) Were this true, it would be clearly irrelevant in view of the fact that this Court has never passed upon the validity of provisions of the Boulder Canyon Project Act (45 Stat. 1057) with respect to the disposition of power. However, a comparison of that Act with the analysis of the TVA Act (Appellants' Br. 14-17) discloses that appellees' contention is untrue; and a comparison of the TVA Unified Plan with the administrative action under the Boulder Canyon Project Act will disclose a similar lack of analogy.

by the Tenth Amendment. (Appellees' Br. 126.) The appellants have made clear in their main brief that they contend, *first*, that the grant of power to dispose of property according to its terms does not include any power to engage in a commercial competitive business within the States or to regulate matters of intrastate concern; and *second*, that regardless of the language of the power, it, like all granted powers, is subject to the limitations not only of the Tenth and other Amendments, but to the inherent limitations of our dual constitutional system. (Appellants' Br. 133-144.)

4. The power to dispose of government property does not authorize the supplanting of the State police power over electric rates and service. The appellees say that their control over the distribution of TVA electricity by municipalities and cooperatives, and their fixing of resale rates are a proper activity of the Federal Government because indirectly it increases the demand for TVA electricity. (Appellees' Br. 132.) The federal desire to regulate local rates can only be based upon either the assumption that State regulation of local electric rates is inadequate or does not suit the views of the federal agency, or upon the circumstance that the appellees are requiring distribution of their power at less than cost. But obviously the relationship is too remote to permit the intrusion of the Federal Government into State domain. On the oral argument in the *Ashwander* case, Mr. O'Brian, then and now counsel for the Tennessee Valley Authority, said:

> "Mr. Justice Butler: And how about the sale of appliances in order to provide a market for the electricity so incidentally produced?
>
> Mr. O'Brian: I do not think that is constitutional, your Honor." (Transcript of Argument 135-6.)

In support of this contention, appellees also cite *Oregon & California R. R. v. United States*, 238 U. S. 393 and *United States v. Gratiot*, 26 Fed. Cas. 12, aff'd. 14 Pet. 526.

The *Oregon & California Railroad* case involved a grant of land to promote the construction of a railroad and the settlement of an uninhabited area. The restrictions on the size of the tracts in which and price at which the donee might sell the land was a condition which could have been imposed by any private owner. It involved no continuing interference with the powers of the States and bears no colorable analogy to the TVA enterprise involving a permanent commercial business and permanent interference with the rights of the States and the people. *United States v. Gratiot* was a suit upon a bond securing a lease. The question certified to this Court was whether the President had power to make the lease, and the bond and the lease are accordingly printed in full in the report of the case in this Court. Neither contains any provision with reference to resale price and it seems quite obvious that the statement of Mr. Justice McLean on circuit was a dictum responsive to some argument made below. But in any event, it is plain that Mr. Justice McLean did not lay down the principle that the United States in the exercise of its power to dispose of property could engage in the business of regulating matters reserved to the States. Mr. Justice McLean said:

> "The argument is not sustainable, that if the United States may do this, they may engage in any other traffic, within a state, and regulate prices at pleasure. This consequence does by no means follow." (loc. cit. 13.)

Appellees also argue that the powers reserved to the States are not invaded because the distributors of TVA power, but not TVA, are subject to State control. (Appellees' Br. 134-139.)[1] But to the extent that TVA has the

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[1] Appellees' contention that appellants have no standing to challenge the validity of the resale rate provisions in the contracts between TVA and municipalities and cooperatives (Appellees' Br. 127-134) is answered in the section dealing with the right to sue at pp. 110-111, *infra*.

constitutional authority to engage in this business and in these activities, it is immune from State control. (Appellants' Br. 151-152; *Arizona v. California*, 283 U. S. 423, 451.) In *United States v. Butler*, 297 U. S. 1, substantially the same argument was advanced, that federal control of local crop production was proper because the States might forbid the farmers to enter into the contracts for crop restriction (p. 74), or that the farmers might voluntarily decline to enter into such contracts (p. 70), and the argument was rejected by this Court. In *Savings & Loan Association v. Cleary*, 296 U. S. 315, the Federal Government was not permitted to convert a State agency into a federal agency in contravention of State laws. In that case, the power of the Federal Government to establish such an agency was unquestionable. In this case, the Federal Government is plainly without power to do the thing it seeks to do; and it is immaterial whether or not State agencies might refuse to become an instrumentality of its unconstitutional enterprise. The appellees apparently concede that TVA, after creating a state of complete public dependence upon its service and facilities, may withdraw from the State and that the State is powerless to protect its citizens in the premises. (Appellees' Br. 136.) The only answer appellees are able to make is that in their judgment they have spent so much money, or will spend so much money, in the Tennessee Valley that they will permanently commit the Federal Government to carrying on the electric utility business.

Appellees also argue that their control of retail rates raises no constitutional question. (Appellees' Br. 146-154.) The real basis of their argument is that State consent, claimed to have been procured by various State Acts, cures this objection. In our principal brief we have examined this question and shown, *first*, that no State consent can grant power to the Federal Government; and *second*, no State

may waive the inherent limitations of our constitutional system in matters such as these which involve the very essence of Statehood. (Appellants' Br. 144-147, 180-186.) The appellees do not discuss these questions; they refer to the right of municipalities, under State authority, to make binding contracts with utilities for a reasonable time. (Appellees' Br. 151.) The obvious and controlling distinction is that if the United States is acting constitutionally, its power is paramount and not subject to State regulation, that the State may not delegate its power of regulation to another government (I *Cooley's Constitutional Limitations* (8th ed.) 224), and that the political agencies of the States, like the States themselves, may not contract away the inherent limitations of our constitutional system or grant constitutional power to the Federal Government.

In *Steward Machine Co. v. Davis,* 301 U. S. 548, the Federal Government had power to provide the social security benefits without regard to the States. The statute provided a method of State cooperation within State constitutional power. Here the Federal Government has no constitutional power to carry on the TVA enterprise, the TVA Act is not conditioned upon any action by the States, and contrary to the situation in that case (see quotation, Appellees' Br. 151), the restrictions are imposed by contract.

At page 153 of their brief, appellees argue that the statutory and administrative purpose to regulate appellants' rates is negatived by the fact that they have made contracts with consumers not served by appellants. Laying to one side the fact that in most cases this represents a taking of prospective customers of the appellants, the fact that the appellees' regulatory activities extend over a wider area than the service areas of appellants and include the service areas of other utilities in no way

negatives the plain and obvious fact that the purpose of both the Act and the administrative plan is to regulate appellants' rates. The fact that they also regulate other rates and that their ambitions are wider than the operations of appellants confirms rather than negatives the statutory and administrative purpose.

IV.

THE APPELLEES' CONTENTIONS THAT APPELLANTS HAVE NO RIGHT TO SUE ARE UNFOUNDED. (Answering Appellees' Br. 160-192; 127-134.)

Appellees challenge appellants' right to sue in all, or some, aspects of this suit upon the grounds (1) that appellants do not possess non-exclusive franchises to carry on the business of supplying electricity to the public; (2) that TVA has been granted valid franchises or exemptions under State law in *some* of the States in which appellants operate; (3) that the extension of the TVA power operations into the service areas of some of the appellants, inevitably involved in the execution of the unitary TVA Unified Plan, has not yet become a *fait accompli*; (4) that some of the appellants are estopped; (5) that appellants' damages flow from the legal competition of municipalities and cooperatives; and (6) that appellants have no standing to challenge the validity of the regulation of the retail rates of distributors of TVA power as an integral part of the statutory and administrative scheme to regulate local electric rates, including those of appellants. (Appellees' Br. 160-192, 127-134.)

We shall briefly examine these contentions in the order stated, but we here invite attention to the fact that appellees have made no attempt to deny the right of appellants to sue to vindicate their right to engage in and carry on the business of supplying electricity to the public within

the States free from displacement by the Federal Government and free from federal interference, regulation or control. (Appellants' Br. 148-150, 210-211.) Nor have they challenged the analogous right of appellants to sue to prevent destruction of their businesses through the establishment of a federal policy within the States of having the local electric business carried on by publicly owned and nonprofit bodies. (Appellants' Br. 175-177.)

A. APPELLEES' CONTENTIONS (1) THAT APPELLANTS DO NOT POSSESS NON-EXCLUSIVE FRANCHISES TO CARRY ON THE BUSINESS OF SUPPLYING ELECTRICITY TO THE PUBLIC AND (2) THAT TVA HAS BEEN GRANTED VALID FRANCHISES OR EXEMPTIONS UNDER STATE LAW, ARE WITHOUT SUBSTANCE.

1. *Each of the appellants is a public utility corporation duly qualified to engage as a public utility* in the business of generating, transmitting, distributing and selling electricity, or distributing and selling electricity, or transmitting and selling electricity as a public utility in the State or States in which it operates. (Fdgs. 1, 6-23; R. 585-598; Comp. Ex. 2, R. 2450.) These State franchises do not confer merely the right to do business as a corporation, as appellees assert at page 170 of their brief, but *they confer the right to do business "as a public utility."* In addition, each of the appellants holds franchises, licenses or easements (conceded for the purpose of this suit to be nonexclusive) for the distribution and sale of electric energy within the corporate limits of municipalities and, where required, within substantially all the counties in which it operates. (Fdg. 28, R. 599; Comp. Ex. 3, R. 2453.)

Appellees argue that municipal and county franchises confer only the privilege of occupying the streets and highways with electric facilities. (Appellees' Br. 166-170.) This is an utter misconception of the rights which appel-

lants enjoy. The power to grant local franchises resides primarily in the State and may be exercised directly [1] or delegated to political subdivisions of the State.[2] In the latter case, two things are essential to the local operation of an electric utility business: (a) a franchise from the State to engage in business "as a public utility" and (b) the consent of local authorities to the use of the streets and highways for facilities to carry on such business. *Owensboro v. Cumberland Telephone Co.*, 230 U. S. 58, 65; *Mayor of Knoxville v. Africa*, 77 Fed. 501, 507-8. In either case, that the franchise to carry on a public business is a property right, capable of assignment, sale and mortgage, and entitled to the guarantee of protection afforded property rights and contracts under the Constitution, has been sustained by an unbroken line of authorities in the federal courts[3] and in the courts of the States in which TVA is operating or threatening to extend its operations.[4]

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[1] Thus, while appellants operating in Mississipp. and Alabama have local franchises, both States have granted d: ectly the right to occupy streets and highways and such lo franchises are unnecessary. Miss. Code (1930) §§ 1505, 1506; Ala. Code (1923) § 7197.

[2] *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1, 9; *Owensboro v. Cumberland Telephone Co.*, 230 U. S. 58, 65, 67; *Wright v. Nagle*, 101 U. S. 791, 794; *Hamilton G. L. & C. Co. v. Hamilton*, 146 U. S. 258, 266; *New Orleans Water Works Co. v. New Orleans*, 164 U. S. 471, 481; *Mayor of Knoxville v. Africa*, 77 Fed. 501, 507; *City of Chattanooga v. Tennessee Electric Power Co.*, 172 Tenn. 524; *Railroad Co. v. Brigham*, 87 Tenn. 522.

[3] In addition to the cases cited at Appellants' Br. 196, see: *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1, 9; *Detroit v. Detroit Citizens St. Ry. Co.*, 184 U. S. 368, 394; *Owensboro v. Cumberland Telephone Co.*, 230 U. S. 58, 65; *Boise Water Co. v. Boise City*, 230 U. S. 84, 90; *Mayor of Knoxville v. Africa*, 77 Fed. 501, 507; *Georgia Power Co. v. Tennessee Valley Authority*, 14 F. Supp. 673.

[4] *Memphis Street Ry. Co. v. Rapid Transit Co.*, 133 Tenn. 99; *Tennessee Public Service Co. v. City of Knoxville*, 170 Tenn. 40; *City of Chattanooga v. Tennessee Electric Power Co.*, 172 Tenn.

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In *Owensboro v. Cumberland Telephone Co., supra,* this Court said:

> "That the grant in the present case was not a mere license is evident from the fact that it was upon its face neither personal, nor for a temporary purpose. The right conferred came from the State through delegated power to the city. *The grantee was clothed with the franchise to be a corporation and to conduct a public business, which required the use of the streets, that it might have access to the people it was to serve.* Its charges were subject to regulation by law and it was subject to all of the police power of the city.
>
> "* * * As a property right it (the franchise) was assignable, taxable and alienable. Generally it is an asset of great value to such utility companies and a principal basis for credit." (loc. cit. 65.)

Appellees argue that appellants do not come under *Frost v. Corporation Commission,* 278 U. S. 515, because the non-exclusive franchise there involved took the form of a certificate of convenience and necessity and that the application of the *Frost* case depends upon a matter of terminology and not upon the substantive question whether the plaintiff has a non-exclusive franchise to carry on a public service. (Appellees' Br. 164.) But this Court in the *Frost* case took pains to demonstrate that a certificate of convenience and necessity was a form of franchise equivalent to franchises such as those of appellants, which had been recognized as property rights long before certificates of convenience and necessity originated. (loc. cit. 520.) The suggestion that a non-exclusive franchise expressed in

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524; *Princeton Power Co. v. Calloway,* 99 W. Va. 157; *McInnis v. Pace,* 78 Miss. 550; *Harrison v. Big Four Bus Lines,* 217 Ky. 119; *Harrell & Croft v. Ellsworth,* 17 Ala. 576; *Alabama Power Co. v. Cullman County Electric Membership Corp.,* 234 Ala. 396; *Smith v. Harkins,* 38 N. C. 613; *Bridge Co. v. Flowers,* 110 N. C. 382; *Commonwealth v. Portsmouth Gas Co.,* 132 Va. 480.

the terms of a certificate of convenience and necessity is a property right, but that a non-exclusive franchise for public service expressed in other terminology is not a property right, is plainly absurd. See *Louisville v. Cumberland Telephone Co.*, 224 U. S. 649, 661.

While immaterial for the reasons above stated, appellants which operate in Alabama, Tennessee, Kentucky, North Carolina, South Carolina and West Virginia do have what amount to certificates of convenience and necessity. There are statutes in those States which require certificates of convenience and necessity for the initiation or extension of utility service into municipalities or other areas served by another utility. (Alabama Code (1923) § 9795; Tennessee Code (1932) §§ 5502-04; Carroll's Kentucky Statutes (1936) §§ 3952-25; Michie's North Carolina Code (1935) § 1037(d); Acts of South Carolina, 1932, c. 871, § 2(w); Michie's West Virginia Code (1935) § 2562 (1). (11).) The effect of those statutes was to confer upon appellants and other utilities operating in those States at the date of passage of the respective Acts, protection against the invasion of their territory by anyone not holding a valid certificate of convenience and necessity for that purpose.[1] There is and can be no claim that since the passage of these statutes any of the appellants operating in these States have failed to procure any necessary certificates of convenience and necessity for any subsequent extension of their lines or expansion of their businesses (R. 833, 862; Comp. Ex. 88); nor can it be claimed that any of the appellants have failed to comply with the applicable statutory provisions neces-

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[1] In addition, the approval of a franchise by the Tennessee Commission under §5453 of the Tennessee Code of 1932 constitutes a certificate of convenience and necessity (*Tennessee Eastern Electric Co. v. Hannah*, 157 Tenn. 582), and all franchises granted to appellants operating in Tennessee subsequent to the enactment of this statute have received the requisite approval. (R. 767-8, 797, 810, 833, 845, 851-2.)

sary to engage in and carry on the electric utility business in the territories in which they are operating. (R. 767-8, 788-9, 797, 806, 810, 83[illegible] 845, 851-2, 862; Comp. Ex. 3, R. 2453.)

2. We now deal with appellees' contention that TVA has been granted valid franchises or exemptions under State law.[1] Appellees erroneously assert that appellants do not contend that such alleged franchises or exemptions are invalid and imply that the only question is whether the alleged exemptions constitute a denial of equal protection of law under the Fourteenth Amendment. (Appellees' Br. 170, 172.) To the extent that such purported franchises or exemptions exist,[2] appellants challenge their validity upon even more fundamental grounds. Under our constitutional system, the States are without power to grant and the Federal Government is without power to accept a franchise or permit in the form of an exemption to engage in an undertaking within the States which is both unauthorized and forbidden by the Federal Constitution, which destroys the rights reserved to the people (and not the States) under the Ninth and Tenth Amendments, which is in violation of our dual constitutional system of government and which involves the surrender of the essence of Statehood. (Appellants' Br. 180-186.) These alleged franchises and exemptions are therefore void, just as was the exemption invoked by the defendants in the *Frost* case.

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[1] There is no pretense that TVA has acquired franchises or has any statutory exemptions in Virginia, West Virginia, Kentucky, North Carolina or South Carolina.

[2] Appellees claim to have franchises in certain of the municipalities and counties in which they operate. (Comp. Exs. 214-223, 225-264, R. 3022-3026, 3026-3037.) There is no evidence, however, that TVA has a municipal franchise in any of the municipalities outside the so-called "ceded area" with which it has contracts for the sale of power except Fayetteville. The rights of appellants to challenge competition by TVA in these municipalities is discussed at Appellants' Br. 201-209 and at pp. 108-109, *infra*.

The appellees can not plead alleged franchises and exemptions in justification of their invasion of the non-exclusive franchises of the appellants and then successfully assert that the appellants have no standing to invoke a judicial determination whether such alleged franchises and exemptions are valid or void. Yet that is precisely what appellees have attempted to do.

Manifestly *Railroad Co. v. Ellerman*, 105 U. S. 166, is inapposite. In that case the plaintiff was the operator of a wharf who sought to enjoin the execution of a lease of a rival wharf by the railroad company on the ground that the use proposed by the lease was beyond the corporate power of the railroad company to grant. It appears from the report of the case that the plaintiff, who was an individual, had no property right, in the form of a franchise or otherwise, which could be protected in a court of equity. He had acquired only such rights as had been assigned to him by the city, whose right to build wharves and collect tolls on the land of the railroad company had been revoked by the State legislature from which all rights of the city were derived. Such being the facts, the Court inquired whether the plaintiff had any "legal interest" which would entitle him to enjoin the railroad company from the consummation of an *ultra vires* act, and the Court merely held that since Ellerman had no legal interest to protect, he could not question the powers of the corporation, as only a stockholder or the State had sufficient legal interest to raise the question of *ultra vires* under these circumstances. The case is only one of many which hold that only the State, stockholders and, in some instances, creditors may question the violation of powers contained in a corporate charter. It plainly does not apply in a case where appellants have non-exclusive franchises which are entitled to protection from unlawful competition.

That *Alabama Power Co. v. Ickes*, 302 U. S. 464, lends no support and is indeed irrelevant to this contention of appellees is too clear to warrant discussion. Appellants' analysis of the *Alabama* case in their main brief, which appellees have not even attempted to answer, plainly sustains appellants' right to sue in all aspects of this case. (Appellants' Br. 211-214.)

B. APPELLEES HAVE MADE NO ANSWER TO THE RIGHT OF APPELLANTS TO SUE UNDER THE NINTH AND TENTH AMENDMENTS.

This right is discussed in our main brief at pp. 148-150, 210-211. It is an entirely separate right which does not depend upon the existence or validity of franchises, although franchises are one of the property rights which individuals are entitled to protect. It depends upon a direct invasion by the Federal Government of the right of the people to be protected in the rights of local self government and to engage in and carry on intrastate businesses free from being displaced by the Federal Government taking over the business as a federal monopoly and free from federal regulation or control. These rights were reserved to the people and not to the States under the Ninth and Tenth Amendments. The right to sue in these circumstances is supported by a long line of authorities in this Court which has sustained the right of individuals to sue to enjoin unconstitutional federal interference with, or regulation of, the rights and property of the people. No more here than in those cases can it be said that the individual is without right to sue because a State which has jurisdiction in the premises might conceivably impose regulations similar to those sought to be imposed by the Federal Government without jurisdiction and without constitutional authority.

C. APPELLEES' CONTENTION THAT SOME OF APPELLANTS ARE NOT THREATENED WITH DIRECT AND SPECIAL DAMAGE IS IN THE TEETH OF THE FINDINGS AND OF THE UNDISPUTED FACTS IN THE RECORD.

Appellees' contention (Appellees' Br. 175-177) that nine of the appellants are not threatened with direct and special damage is based on the circumstance that the extension of the TVA power operations into the service areas of some of the appellants, although inevitably involved in the execution of the TVA Unified Plan (Appellants' Br. 65-70; pp. 1-4, 71-80, *supra*), had not yet become a *fait accompli* at the time of the trial. The trial court expressly found that *"Substantial future damage to complainants will result from competition with TVA."* (Fdg. 125, R. 628.) Appellees have not appealed from this finding, and it makes clear (a) that the future damage will be substantial, (b) that the damage extends to all appellants and (c) that the damage will result from competition with TVA. Similar statements of the trial court in its opinion (R. 552, 555) are referred to at p. 191 of appellants' brief. (See also Add. Fdg. 120, R. 706.)

The size of this unitary enterprise, the vast quantity of power to be created, and the limits of the available market incontestably establish that the power can not be marketed, as directed by the TVA Act and as being administered by appellees, without invading substantial parts of the market areas of all of these appellants. The very purpose of this suit is to prevent this threatened invasion. The suggestion that the scope of the right to sue and the scope of the right to relief are to be measured by the extent to which the wrongdoer has accomplished the wrong at the date of trial of a suit for anticipatory relief is manifestly untenable.

The appellees can not in good conscience make this contention. One of the companies named in the finding

upon which appellees rely, Holston River Electric Company (Appellees' Br. 175), had had its entire facilities and business taken over directly by TVA before the TVA brief was written. If this company had not been so taken over, we may assume that appellees would have made the same claim as to it. Since the date of trial, TVA and the City of Knoxville have acquired all the facilities of the Tennessee Public Service Company and TVA has extended its existing operations to the very edge of the market area of every other appellant. (See pp. 2-4, *supra.*)

As another illustration, appellees are engaged in constructing the Hiwassee power project and have scheduled for construction the Fontana power project, both of which are located in the service area of the Carolina Power & Light Company, one of the appellants with respect to which this claim is made. It is conceded that all of the TVA power projects are to be interconnected into one large grid system or power pool, a part of which will lie in the service area of the Carolina Power & Light Company. Do the appellees intend to ask this Court to believe that the extension of this vast grid system into the very service area of the Carolina Power & Light Company is for some undisclosed purpose but not to market any power in that area? This is apart from the fact that TVA has already taken away business of the Carolina Power & Light Company through taking over the supplying of electricity to the Volunteer Portland Cement Company and to the entire area formerly served by the Tennessee Public Service Company, which obtained its electricity at wholesale from the Carolina Power & Light Company. (Yoder R. 824-5; Comp. Exs. 118, 157, 158, R. 2808, 2891-2.)

The court below, without protest or objection by appellees, sought to restrict not only the scope but also the quantum of the proof offered by appellants on any issue and in

particular pressed the appellants not to offer any further proof of damage, on the ground that the court thought the threat of irreparable damage obvious and would assume damage to the appellants (R. 1259-60, 1266, 1414, 1470, 1483), and in their brief appellees strongly urge that the trial court properly excluded evidence as to the extent of damage to particular appellants on the ground that it was purely cumulative. (Appellees' Br. 224, 225, 240-244.) This is clearly an admission of damage.

Finally, special counsel for the TVA in his final argument before the trial court expressly stated: "We have conceded that a continuance of those lower (TVA) rates will work in competition a degree of damage to the Complainants" (Tr. 6366) and that "We differ (with appellants) as to the amount and extent of that damage (to appellants), but we have frankly conceded that damage will result." (Tr. 6367.)

There can be no question upon the basis of the foregoing that each of the appellants is threatened with direct and special damage from TVA competition and that appellees' contrary contention is wholly without substance. It is firmly established that in equity, "damage threatened, irremediable by action at law, is equivalent to damage done" (*Hitchman Coal & Coke Co. v. Mitchell*, 245 U. S. 229, 256; see also *Vicksburg Waterworks Co. v. Vicksburg*, 185 U. S. 65, 82), and that a threat of competition is a threat of irreparable damage. *Walla Walla v. Walla Walla Water Co.*, 172 U. S. 1, 12; *Frost v. Corporation*, 278 U. S. 515, 521.

D. APPELLEES' CONTENTION THAT CERTAIN OF THE APPELLANTS ARE ESTOPPED TO MAINTAIN THIS SUIT IS UNTENABLE.

Appellees' contention (Appellees' Br. 177-182) that appellants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company and Southern Tennessee Power Company [1] are estopped to challenge the validity of the huge unitary scheme known as the TVA Unified Plan for the creation of a vast quantity of firm or commercial power and its utilization to establish and operate the largest unitary public utility system in the United States is plainly untenable.

The fact is that since January 4, 1934, no power has been purchased from TVA by any of these appellants except under the January 4 contract (Def. Ex. 143A, R. 4195) and the closing agreement hereinafter referred to. (Def. Ex. 150, R. 4255-8.)

In the *Ashwander* case it appeared that the Alabama Power Company had purchased large quantities of power at Wilson Dam both before and after the passage of the TVA Act, during the period extending from 1925 to 1935. This Court held that the Alabama Power Company was not estopped and proceeded to determine that Wilson Dam was a constitutional structure as it then existed under the National Defense Act of 1916. The appellees insisted before this Court that the contract of January 4, 1934, to which three of these appellants were parties and upon which appellees rely as a basis for an estoppel, involved only Wilson Dam power. (Appellants' Br., App. pp. 67-8.) This Court so construed the contract and Alabama Power Com-

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[1] Southern Tennessee Power Company is only a transmission company (Fdg. 112, R. 626) and was not a party to the January 4 contract. There is no evidence in the record to support appellees' assertion (Appellees' Br. 177) that it is an instrumentality of The Tennessee Electric Power Company.

pany necessarily accepted that construction. (Barry R. 873; Def. Ex. 150, R. 4258, 4261.) Both before and under the January 4 contract, the power taken by these appellants was taken at the dam [1] and involved no question of the validity of any other dam or of the method of disposal authorized by the TVA Act and now embodied in the TVA Unified Plan under which appellees are setting up a vast federally owned and operated electric utility system with the numerous invasions of the rights of the States and the people hereinbefore more particularly described. The absence of any relation between these transactions concerning Wilson Dam power delivered at the dam and the vast activities embraced in the TVA Unified Plan now in process of execution, is manifest.

The claimed excess in the quantity of power delivered to these appellants during the last 7 months of 1936 over the capacity of Wilson Dam as it was sustained by this Court is inconsequential (Def. Ex. 148, R. 4254), and moreover, if in accord with the facts, it is entirely due to conduct of appellees, over which these appellants had no control, in wrongfully increasing the capacity of Wilson Dam by the use of Norris storage and consequently forcing additional power over the inter-connection of these appellants at Wilson Dam. There is no evidence and not even a suggestion that these appellants ever consented, and much less requested, that TVA should use Norris storage to increase the capacity of Wilson Dam or should put Norris Dam power on the line. (Def. Ex. 150, R. 4258, 4261.)

Since the termination of the January 4 contract on February 3, 1937, the Alabama Power Company has been

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[1] The amount of power purchased prior to January 4, 1934, was 2,899,728,786 kwh. and the amount purchased under the January 4 contract to December 31, 1936, was 946,412,788 kwh. (Def. Ex. 150, R. 4256, 4257.) From January 1 to February 3, 1937, the date of the termination of the contract, the amount was 13,325,083 kwh. (Def. Ex. 147, R. 4243.)

purchasing an insignificant amount of power from TVA at Wilson Dam, *in accordance with the closing agreement under the contract of January 4,* in order to supply urban properties in the so-called "ceded area" supplied by the secondary or marketing transmission lines sold to TVA under the contract. (R. 4258.) This power was supplied on a free interchange basis until November 3, 1937, since which time, also pursuant to the closing agreement, it has been purchased at the standard TVA rate for municipalities. This represents a clear case of necessity, as the Alabama Power Company, because of conditions beyond its control, had no choice but to make the arrangement. Cf. *Abie State Bank v. Bryan,* 282 U. S. 765, 776; *Union Pac. R. R. Co. v. Public Service Commission,* 248 U. S. 67, 70.

Appellees assert that these appellants "have affirmatively contributed to the execution of many of the acts of the Authority now complained of." (Appellees' Br. 178.) What activities the TVA has been induced to undertake by the action of any of these appellants is not disclosed. Surely the appellees do not intend to tell this Court that despite their efforts throughout 175 pages of their brief, to create the impression that the TVA Unified Plan is solely a navigation and flood control project, they in fact were induced and misled into embarking on that project solely because the Alabama Power Company, under the pressure of circumstances created by TVA, had been compelled to purchase a small quantity of TVA power to serve the isolated communities which the January 4 contract would otherwise have left without any electric service. As this Court stated in the *Ashwander* case, "estoppel in equity must rest on substantial grounds of prejudice or change of position, not on technicalities." (loc. cit. 323.)

The fact is that the primary benefits under the January 4 contract were derived by TVA and not by appellants.

The power required to be taken under the contract was "surplus" power (R. 4201) and the record is clear that TVA had no other market for the power and that it would otherwise have gone to waste. (Fdg. 172, R. 638.) Certainly, appellees will not be so bold as to claim that they have reserved power for these appellants or any other utility at the expense of any opportunity to go into the business directly or through their controlled distributors.

It is clear, as the trial court stated in its opinion (R. 544), that "the record presents no essential difference from the situation covered by the ruling as to estoppel in the *Ashwander* case," and that that decision effectively disposes of appellees' attempt to renew the point in this Court. As in the *Ashwander* case the contract in suit manifestly had a "broader range" than the earlier transactions, so in this case the scope of the challenged activities of TVA has an immensely "broader range" than the "limited undertaking" expressed in that contract, and it can not be said that there was anything in the contract which precludes the contention that such activities "go beyond the constitutional power of the Authority." *Ashwander v. Tennessee Valley Authority*, 297 U. S. 288, 323; *cf. Frost v. Corporation Commission*, 278 U. S. 515, 527-528.

Appellees cite *Great Falls Mfg. Co. v. Attorney General*, 124 U. S. 581; *Wall v. Parrot Silver & Copper Co.*, 244 U. S. 407; *St. Louis Co. v. Prendergast Co.*, 260 U. S. 469; but these cases are plainly not applicable here. *Ashwander v. Tennessee Valley Authority*, loc. cit. 323.

E. APPELLEES' CONTENTION THAT THE DISTRIBUTION OF TVA POWER THROUGH MUNICIPALITIES AND CO-OPERATIVES DOES NOT CONSTITUTE COMPETITION WITH APPELLANTS AND INVOLVES NO LEGAL INJURY IS WITHOUT MERIT.

That sales through municipalities are not only direct competition for wholesale business but also direct competition in the distribution of electricity within the municipalities is not open to debate. *Citizens El. Ill. Co. v. Lackawanna & W. P. Co.*, 255 Pa. 145; *Chicago v. Mutual Electric Light Co.*, 55 Ill. App. 429; see Appellants' Br. 201-203; *Holston River Electric Co. v. Hydro Electric Corp.*, 17 Tenn. App. 122, cert. den. Tenn. Sup. Ct., 66 S. W. (2d) 217; cf. *Holston River Electric Co. v. Hydro Electric Corp.*, 166 Tenn. 662.

Indeed, the Government brief in *Alabama Power Co. v. Ickes, supra,* signed by the Attorney General and Mr. Freund, of counsel in the instant case, stated with reference to the *Citizens El. Ill. Co.* case:

> "• • • There the defendant, a utility company, with a franchise limited to a particular area, proposed to sell power, at wholesale, in a township in which it had no franchise to operate, and in direct unlawful competition therein with the plaintiff utility company which had a valid franchise covering that township. Plaintiff was granted an injunction. It happened that the proposed purchaser of the power from defendant was a third utility company which had a valid franchise to sell, at retail, in competition in that township with plaintiff. But the wrong complained of was the illegality of the *direct competition,* at wholesale, between plaintiff, having a valid franchise covering that territory and defendant, which had no such franchise."

Precisely the same principles apply to the distribution of TVA power through rural cooperatives. Hence the right to sue in this aspect exists apart from the fact that, while

the existence of such a relationship is not an essential of appellants' right to sue, the municipalities and cooperatives are in reality mere agents for the distribution of TVA power; and that in any event, TVA so far controls and participates in sales by distributors that the validity of its participation may be tested at the suit of an injured party. (Appellants' Br. 204-209.)

There is no need to elaborate upon the obvious fact that competition for industrial business is clear and direct. (Appellants' Br. 76, 192-193, 200.) The suggestion that the holder of a non-exclusive franchise may not enjoin illegal competition without showing that, but for the intervention of the illegal competitor, he could already have secured the business of each and every customer secured by the illegal competitor, is manifestly absurd and without support in any of the cases.

It is thus obvious that such cases as *Alabama Power Co. v. Ickes, supra; Duke Power Co. v. Greenwood County,* 302 U. S. 485; *United States v. Dern,* 68 F. (2d) 773; *Milwaukee Horse & Cow Commission Co. v. Hill,* 207 Wis. 420, have no application. There was no federal competition or direct invasion of the property or other rights of the complainants in those cases. Thus in the *Alabama* case the municipal competition was conceded to be lawful and the Court merely held that the relation between the alleged illegal action of PWA and the damage suffered by petitioner from the activities of PWA was too indirect and remote to be regarded as a proximate cause of the damage and hence to permit the examination of the validity of the PWA action.

F. APPELLEES' CONTENTION THAT APPELLANTS HAVE NO STANDING TO CHALLENGE THE VALIDITY OF THE REGULATION OF RETAIL RATES OF DISTRIBUTORS OF TVA POWER AS AN INTEGRAL PART OF THE STATUTORY AND ADMINISTRATIVE SCHEME TO REGULATE LOCAL ELECTRIC RATES (INCLUDING THOSE OF APPELLANTS), IS UNSOUND.

The fact that the regulation of local electric rates, including those of appellants, is not only the natural and inevitable but also the intended effect of the statutory and administrative scheme and that the regulation of retail rates of TVA distributors is an integral and essential part of that statutory scheme has been shown at pages 163-175 of appellants' brief. Indeed, appellees now assert that, to the extent that TVA power is made available in the service areas of appellants, the fact that appellants' rates would be regulated is "a self-evident conclusion" so that no exclusion of evidence on that point could be error. (Appellees' Br. 224.) Appellees assert that appellants nevertheless can not be heard upon the authority of *Hines Trustees v. United States,* 263 U. S. 143, and *Sprunt & Son v. United States,* 281 U. S. 249. (Appellees' Br. 127-134.) The cases are plainly inapplicable. They dealt with a subject matter falling within the field of federal power. The orders of the Interstate Commerce Commission amounted to a mere consent to voluntary action by the railroads and such orders were in no way the proximate cause of any damage suffered by the complainants.

Here we have *affirmative action by the Government itself,* which includes (1) direct competition by the Government or full participation by the Government in, and control over, the retailing of the power (Appellants' Br. 201-9); and (2) a statutory and administrative scheme of which these contracts are an integral and essential part to regulate all local electric rates in the TVA area, including those of appellants. (Appellants' Br. 167-175.) Appellees further claim that this conceded regulation in fact is not

regulation in law, citing *Standard Scale Co. v. Farrell,* 249 U. S. 571; *Pennsylvania R. R. Co. v. Labor Board,* 261 U. S. 72; *United States v. Los Angeles R. R.,* 273 U. S. 299. (Appellees' Br. 154.) These cases are also plainly inapplicable. The situation in the case at bar is governed not by those cases but by the principle enunciated in *United States v. Butler,* 297 U. S. 1, 70-1, and *Frost v. Railroad Commission,* 271 U. S. 583, 593, as shown in appellants' main brief. (Appellants' Br. 170-174.)

V.

THE RULINGS OF THE TRIAL COURT ON MATTERS OF EVIDENCE AND PROCEDURE CONSTITUTE PREJUDICIAL ERROR. (Answering Appellees' Br. 192-260.)

The trial court's procedure in the conduct of the trial has already been discussed in part at pp. 5-6, *supra.* For the most part the contentions in appellees' brief relating to the trial court's rulings on evidence are directed to the claim that the exclusion of evidence was not prejudicial, and as to that claim no extended answer is required. Although appellees' brief contains a number of misstatements and misinterpretations, to avoid undue extension of the argument they are discussed only in so far as they affect the contentions made by appellees which we now consider.

1. The trial court's refusal to require production of TVA minutes and other documents. (Answering Appellees' Br. 201-7, 235-40.)

Appellees' brief undertakes to justify the trial court's refusal to issue any subpoenas for the production of TVA corporate minutes on the grounds (a) that the error, if any, was largely cured by the voluntary production of TVA con-

tracts and Board resolutions (Appellees' Br. 203); (b) that appellants had numerous other sources of information including reports and data submitted to Congress (Appellees' Br. 202, 197); and (c) that since the resolutions voluntarily produced embodied, according to appellees' contentions, the only official acts of the Board, the information upon which they were based and the considerations upon which such acts were taken would be *prima facie* incompetent and immaterial. (Appellees' Br. 204, 235-39.)

(a) The first of these claims, that *all resolutions* were furnished, is contrary to the record. The resolutions actually furnished merely show Board approval of contracts, expenditures and other like matters of a routine and formal character. (Comp. Exs. 516-627, R. 3357-3476.) That appellees never proposed or intended to furnish anything more than the material which is set forth in these exhibits, appears from the statements made by counsel following the court's ruling refusing appellants' application for the production of TVA minutes.

> "Mr. Fly: May I add, your Honor, that it will be our attitude to enable complainants to get any and everything that pertains to the concrete facts which *we feel are within any bounds of reason, at issue here*, and we will be glad to confer with them to that end.
>
> "Mr. R. T. Jackson: We will of course be glad to confer with counsel for defendants. We, of course, will not be willing to substitute their judgment for the judgment of the Court as to what is competent and relevant. • • •
>
> "Mr. Fly: We are willing to give them the resolutions authorizing these contracts, and any other pertinent transactions of a concrete character. I cannot state with any degree of precision now, but I don't think there will be any difficulty on that.

"Judge Allen: It was the understanding of the Court that he offered, had offered to tender the resolutions enacted by the Authority. Was that not correct?

"Mr. Fly: *No, your Honor.* We do not endeavor to turn over to them all of the resolutions on any and every subject, but as to any transaction which *could properly be brought in issue here,* yes, without limitation as to those resolutions. We can give you all of the resolutions authorizing the contracts, transmission lines, sales and construction contracts and everything of that type." (R. 766-7.)

For the trial court to condition the denial of its subpoena upon any such offer as set forth above amounts to a delegation of the trial court's judicial duties to the partisan and unreviewable judgment of adverse counsel. No authority is cited in appellees' brief in support of any such procedure and the prejudicial effect of it can best be judged by the unwillingness of the appellees to produce even its formal resolutions other than those which in appellees' view related to "*pertinent transactions of a concrete character.*"

(b) Appellees' second contention is that appellants were not prejudiced because they had access to reports and data furnished to Congress. All appellees say by this argument is that appellants are not entitled either to controvert or supplement the statements which TVA has seen fit to make to Congress, but that appellees themselves are entitled to produce and use from their own official records any material of a self-serving nature which happens to serve their purposes in the present litigation,[1] even though such material controverts reports to Congress upon which they insist appellants are forced to rely.

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[1] On August 25, 1933 TVA publicly announced its "Power Policy." (Comp. Ex. 633, excluded, R. 3487.) Such policy was set forth in the TVA Annual Report to Congress in December,

(Continued on page 114)

(c) While appellees contend that the TVA corporate minutes, other than the mere formal resolutions relating to authorizations of contracts and authorizations of construction work, are not shown to be prima facie relevant or material, they do not consider the showing made as to relevancy in the applications for subpoenas and accompanying statements (Comp. Exs. 1, 110, 111; R. 2441, 2643, 2660), but rely upon the contention that such minutes constitute "intradepartmental" discussions and reports [1] and therefore are prima facie inadmissible as a matter of law. This contention leads to the result that even as to resolutions concededly relevant and material, explanatory discussions which may be recorded in the minutes, showing the facts and considerations upon which the Board action was taken, are irrelevant and immaterial. In other words, a resolution authorizing the construction of a high tension transmission line with a voltage of 220 kv. to be operated for the present at 154 kv. (practically all "marketing" lines are designed for higher voltage than present operation) would be relevant, but any statements in the minutes showing that the larger capacity was recommended and approved

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[1] Although none of appellants' assignments of error relate to the exclusion or production by subpoena of any "intradepartmental discussions, considerations, recommendations or reports" appellees have included in their brief a section so labelled (Appellees' Br. 235-9) and it is under that section that their discussion on this subject is found.

(Continued from page 113)

1934. (Comp. Ex. 113°, pp. 22-5.) Despite its refusal to require the production of TVA minutes, the trial court nevertheless received in evidence a certified copy of a resolution purporting to rescind the statement of the Power Policy. (Def. Ex. 29, R. 4061.) This claimed rescission had never been reported to Congress or otherwise publicly announced, and was introduced by TVA for the purpose of providing a colorable basis for Fdg. 215 (R. 647), prepared by TVA and adopted verbatim by a majority of the trial court.

to take care of certain prospective customers now served by appellants would be irrelevant.

Appellees offer no legal authority in support of this contention. So far as our examination of the cases has disclosed, it has never been applied in any suit against a private corporation and no principle of public policy justifies its application here.

> "* * * The responsibility of officials to explain and to justify their acts is the chief safeguard against oppression and corruption. Whether it is the relations of the Treasury to the Stock Exchange, or the dealings of the Interior Department with government lands, the facts must constitutionally be demandable, sooner or later on the floor of Congress. To concede to them a sacrosanct secrecy in a court of justice is to attribute to them a character which for other purposes is never maintained,—a character which appears to have been advanced only when it happens to have served the interest of some individual to obstruct investigation into facts which might fix him with a liability." 5 *Wigmore on Evidence,* 2nd Ed. 1923 § 2378.

None of the arguments of appellees justify the court's ruling in denying the production of TVA corporate minutes either as they relate to the resolutions voluntarily produced as relevant by appellees themselves or as they relate to the pertinent subjects set forth in the subpoena which the trial court denied.

2. The trial court's ruling in excluding all official TVA press releases and published advertising. (Answering Appellees' Br. 208-216.)

Appellees contend that in so far as the official press releases set forth facts, there is no prejudicial error in their exclusion because the facts are otherwise in the record, and that in so far as the press releases relate to "expressions of policies" and possible plans, they are incompetent as lack-

ing any authoritative or probative value. (Appellees' Br. 208-9.)

The objection to evidence as cumulative presupposes two things—first, that the facts for which the evidence is offered are otherwise in evidence, and second, that the additional evidence is unnecessary because the facts in question are sufficiently established. Throughout their brief appellees repeatedly make the argument that excluded evidence was merely cumulative, without considering either of these fundamentals. In claiming that press releases were merely cumulative, appellees entirely ignore our discussion of them in appellants' main brief. As there pointed out, the press releases show among other things that TVA has pursued unfair methods of competition (pp. 224-25), that TVA refused to submit to State regulation of its power business (pp. 220, 82), that TVA proposes and intends to regulate local electric rates of other utilities including appellants (pp. 219, 81) and that the primary object and purpose of the TVA projects is the production of power (p. 219, Comp. Ex. 846, R. 3803, Comp. Ex. 879, R. 3867). Upon all of these issues the trial court either failed to make any finding or made findings adverse to appellants. It is a curious version of the rule of cumulative proof that where evidence is offered to establish a particular contention but is insufficient to convince the trial court, the exclusion of other competent evidence upon the same subject will not be considered prejudicial error.

The claim that the press releases have to do with the subject of motives, personal opinions and views is an unsupported assertion not borne out by an examination of the releases themselves. The scope of their subject matter is set forth in our main brief (p. 219, footnote p. 73) and is therefore not repeated here. As also pointed out in our main brief, these press releases were expressly authorized and approved and their distribution to the press was made

an official function of the corporation itself. Further, there can be no basis for the contention that repeatedly published statements relating to TVA's plans and objectives, coming from official sources and never publicly denied, have no probative or evidential value.

The same contentions considered above are also made in appellees' brief (p. 213) with reference to certain excluded advertising pamphlets and circulars. (Comp. Exs. 187°, 189, 190.) In addition to the claim that these exhibits were merely cumulative (a ground of objection now made for the first time and not mentioned by the trial court in its rulings), appellees assert that "no proof was offered to show that the Authority had any connection with the distribution of the circulars and pamphlets referred to." This latter contention cannot be taken seriously in view of the fact that their authenticity is conceded under the stipulation filed August 14, 1937 (R. 317) and in view of the fact that appellants offered and the trial court excluded evidence relating to their circulation and use by TVA. (R. 947, 1008-09.)

3. The several rulings of the trial court concerning various types of rate testimony. (Answering Appellees' Br. 221-229.)

The appellants offered various types of evidence involving the subject of rates. None of this evidence, however, required the court to consider the reasonableness of the rates of State-regulated utilities, and that issue is not presented here.

(a) The first type of evidence relating to rates mentioned in appellees' brief involved comparisons between TVA rates and appellant company rates in the various classes of service. (Assignment of Error 13, R. 720.) This evidence was offered to show the differential between TVA rates and the corresponding rates under State regulation,

and it was clearly material for the purpose of showing that the difference in rates is so substantial as imminently to threaten the complete loss of appellants' customers and the financial ruin of their businesses, as well as the extent of TVA's regulation of appellants' rates. Appellees argue that such proof was merely cumulative. The error in that argument has been pointed out in another connection, p. 116, *supra*. Appellees also contend that the trial court properly ruled in excluding this evidence upon the sole ground that it was multifarious. As pointed out in our main brief (p. 227, footnote), multifariousness is a ground of objection to the pleadings and not to the admissibility of evidence.

(b) A second type of evidence dealt with in appellees' brief involved the presentation of the economic factors in rate making which, irrespective of competition, compel substantial rate uniformity in any given territory and which, where actual competition exists, result in the securing of all of the business by the company offering the lower rates. (Assignment of Error 16, R. 720.) As stated to the trial court, this evidence was offered to show the regulatory effect of the method of disposal under the TVA power program. (R. 1413-14.) Appellees contend that the exclusion of this evidence was not prejudicial for the reason that where competition exists the effect of regulation is "merely a self-evident conclusion." (Appellees' Br. 224.) Since the trial court found that competition does exist between TVA and the appellants (Fdg. 125, R. 628) but wholly failed to find that there was any regulation of appellants' rates, the statement referred to seems to be merely an admission that the court erred rather than a valid argument that the exclusion of self-evident facts was not prejudicial.

(c) A third type of evidence relating to rates mentioned in appellees' brief is the excluded evidence of TVA subsidies. (Assignment of Error 14, R. 720.) Such evidence, discussed in our main brief (p. 79), showed that, assuming

the sale of all the power to be produced by TVA under the TVA Unified Plan at TVA rates, there will still be an annual operating deficit of more than $9,000,000. As stated to the trial court, this proof was offered for the purpose of showing the violation of the TVA Act, as well as for the purposes which we have hereinabove discussed. (R. 1463-4.) With reference to this additional purpose, appellees call attention to Section 14 of the TVA Act (Appellees' Br. 226) which declares it to be the policy of the Act that—

> "power shall be sold at rates which, in the opinion of the board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power."

The argument of appellees is that the language of the above provision vests unqualified discretion in the TVA Board, but even accepting this narrow interpretation which not only misconstrues Section 14 but also ignores other provisions of the Act, there must at least be some showing that the TVA Board actually exercised discretion in the establishment of its rates and that to the end specified in Section 14 itself. By stressing the significance of the qualifying phrase "in the opinion of the board" appellees merely emphasize the error of the court in refusing to require the production of the TVA minutes which could only establish that the TVA rates were adopted without any knowledge or consideration of costs. (Appellants' Br. 71.) Appellees' further contention that it would not be a violation of the TVA Act for the Board to give away all of the electric power now being generated or which may in the future be generated is manifestly absurd.

4. The rulings of the trial court in excluding rebuttal evidence. (Answering Appellees' Br. 254-260.)

Appellees do not attempt to justify the grounds upon which substantially all rebuttal evidence offered by ap-

pellants was excluded by the trial court, namely, that it involved matters of opinion or of mixed fact and opinion on the part of the rebuttal witnesses and was therefore inadmissible as rebuttal evidence. They now rely upon the contention that all of the rebuttal evidence which was excluded related to matters which were a part of appellants' case in chief, and as a basis for that contention undertake to show that the evidence sought to be rebutted was related to certain general issues upon which evidence had been offered as a part of appellants' main case. Any such rule would effectively bar the introduction of any rebuttal proof except in a suit where affirmative defenses had been made, would substantially limit the function of cross examination, and, as pointed out in our main brief (pp. 243-246), would deprive the complainants in this case of the opportunity (which was afforded to the defendants) of showing any errors of fact and errors of assumption in their opponents' case. The claim that any such limitations, as applied to rebuttal evidence, come within the discretion of the trial court is plainly erroneous.

5. The rulings of the trial court on other matters of evidence and procedure. (Answering Appellees' Br. 212-21, 229-33, 234-5, 240-254.)

(a) *Conspiracy and cooperation with PWA and other federal agencies.* (Answering Appellees' Br. 216-21.) Appellees' contention that evidence on this subject was properly excluded and subpoenas properly denied because such evidence involved the activities of agencies not parties to the case, operating under valid statutes, entirely ignores appellants' main brief (pp. 233-5) and the significance of the evidence sought to be introduced. The financial assistance which has been and is being rendered by PWA and REA represents a concert of action to promote the un-

lawful objectives of TVA and directly bears upon the imminency of their fruition.

With reference to the propriety of the court's refusal to allow appellants to take the deposition of Harold L. Ickes, the claim that appellants had every reasonable opportunity to take that deposition is contrary to fact (R. 344); the claim that the evidence sought from Administrator Ickes was immaterial and irrelevant is manifestly erroneous as appears from a mere reading of the proposed testimony (R. 364); and the fact that the deposition of a subordinate was taken obviously does not cure the error.

(b) *TVA solicitation by press releases.* (Answering Appellees' Br. 212-16.) Appellees devote an entire section of their brief to the claimed cumulative character and irrelevancy of press releases as constituting solicitation of appellants' present customers. The attempted application of the rule of cumulative evidence completely overlooks the effect of *repeated* publication of TVA rates and activities; and the entire burden of the argument concerning the relevancy of the press releases is that instances of solicitation of individual customers are relevant, but that, for reasons not explained, wholesale solicitation of all of the consumers in the area through continuous advertising and publicity is irrelevant and immaterial.

(c) *Flood damages resulting from TVA power dams.* (Answering Appellees' Br. 243-4.) The trial court excluded as irrelevant and immaterial evidence that the average annual value of farm crops on the land which will be flooded by TVA upon the completion of only four of the TVA dams now under construction amounts to far more than the average flood damage in the entire Tennessee River basin. (Appellants' Br. 126-127.) Appellees seek to justify the exclusion of this evidence upon the ground that it calls for a comparison of the detailed costs of the TVA projects

with the benefits to be derived from one particular function. Since the testimony was offered for the purpose, as was clearly stated to the trial court (R. 1245), of showing the absence of merit in the claim that the TVA power dams have for their purpose, except as a pretext, the prevention of damage from floods, it is clear that appellees' attempted justification of the court's exclusion of this evidence is without substance.

(d) All other assignments of error relating to rulings on evidence and procedure are, we think, sufficiently covered in our main brief, to which we refer without further discussion.

Respectfully submitted,

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Counsel for Appellants.

FILE COPY

In the Supreme Court of the United States

OCTOBER TERM, 1938.

No. 27.

THE TENNESSEE ELECTRIC POWER COMPANY,
FRANKLIN POWER & LIGHT COMPANY,
MEMPHIS POWER & LIGHT COMPANY,
SOUTHERN TENNESSEE POWER COMPANY,
BIRMINGHAM ELECTRIC COMPANY,
MISSISSIPPI POWER COMPANY,
APPALACHIAN ELECTRIC POWER COMPANY,
CAROLINA POWER & LIGHT COMPANY,
ALABAMA POWER COMPANY,
KENTUCKY & WEST VIRGINIA POWER COMPANY, INC.,
KINGSPORT UTILITIES, INCORPORATED,
WEST TENNESSEE POWER & LIGHT COMPANY,
MISSISSIPPI POWER & LIGHT COMPANY,
EAST TENNESSEE LIGHT & POWER COMPANY,
TENNESSEE EASTERN ELECTRIC COMPANY,

Plaintiffs-Appellants,

vs.

TENNESSEE VALLEY AUTHORITY, and
ARTHUR E. MORGAN, HARCOURT A. MORGAN and
DAVID E. LILIENTHAL, each individually and as an Executive
Officer and Director of Tennessee Valley Authority,

Defendants-Appellees.

On Direct Appeal from the United States District Court
For the Eastern District of Tennessee.

APPENDIX TO REPLY BRIEF FOR APPELLANTS
State Statutes Relating to Utility Franchises and Duties.

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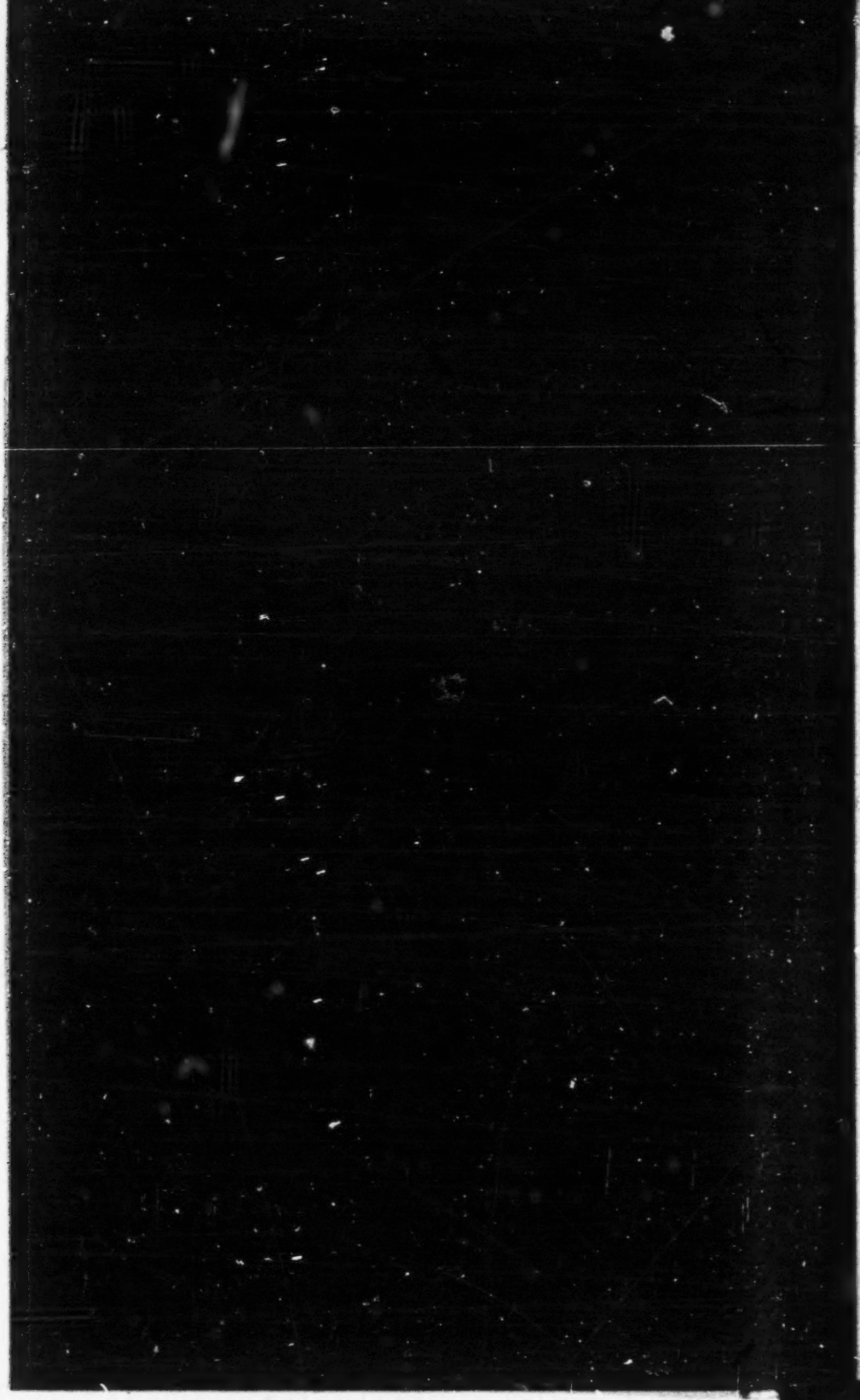

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APPENDIX TO REPLY BRIEF FOR APPELLANTS.

Appellants have printed herein those state statutes either conferring authority to occupy streets and highways, or requiring certificates of convenience and necessity for extensions into territories already served by another utility, which state statutes are referred to on pages 95 and 97 of appellants' reply brief.

Alabama Code, 1923, Sections 7193, 7197.[1]

SEC. 7193. *Power companies; additional powers conferred.*—All corporations organized under the general laws of this state, or heretofore under a special act of the legislature, and all corporations organized under the laws of any other of the United States, and which have complied with the constitution and laws of the State of Alabama as to foreign corporations, and which by their charter have the right to manufacture, supply, and sell to the public, power produced by water as a motive force, shall, after acquiring by purchase or otherwise than by condemnation, a dam site or power site comprising not less than one acre of land upon each and opposite sides of any watercourse, or after acquiring by purchase or otherwise than by condemnation a dam site comprising not less than one acre of land upon one side of any watercourse and (where the dam site on the other side of such watercourse is owned or controlled by the United States) shall have acquired this permission of the United States to attach to or use the lock, dam, or other property owned or controlled by the United States for an abutment site on the other side of such watercourse, in addition to other powers conferred by law, have the following rights, powers and authority.

* * * * *

SEC. 7197. *Use of public roads.*—Such corporations shall have the right and authority to erect and operate

---

[1] These sections of the code are a codification of an act approved March 12, 1907 (Alabama Acts, 1907, pp. 439 *et seq.*) which amended the act of October 1, 1903 (Alabama Acts, 1903, pp. 365 *et seq.*).

tower, pole and wire lines across, along, and on public roads, subject to the regulation of the court of county commissioners or board of revenue of the counties in which said roads are located.

Alabama Code, 1923, Section 9795.

9795. *Certificate of convenience and necessity.*—No plant, property or facility for the production, transmission, delivery, or furnishing of gas, electricity, water or steam, and no street or interurban railway shall be constructed except ordinary extensions of existing systems in the usual course of business, and no jitneys within the jurisdiction of the commission licensed, until written application is first made to the commission for the issuance of a certificate of convenience and necessity, and the issuance by the commission of such certificate. Upon the filing of any such application, and after a public hearing of all parties interested, the commission may, or may not in its discretion, issue such a certificate of convenience and necessity, and if issued, may prescribe such conditions upon the issuance as it may deem advisable. (1920, p. 38, §49.)

Carroll's Kentucky Statutes, 1936, Section 3952-25.

§3952-25. *Public convenience and necessity.*—No utility, person or corporation shall begin the construction, of any plant, equipment. property or facility for furnishing to the public any of the services enumerated in Section 1 of this act, except ordinary extensions of existing systems in the usual course of business, unless and until it shall have obtained from the commission a certificate that public convenience and necessity require such construction. Upon the filing of any application for such a certificate, and after a public hearing of all parties interested, the commission may, in its discretion, issue or refuse to issue, or issue in part and refuse in part, such a certificate of convenience and necessity. * * * Any person or group of persons may come before the commission and by petition ask that any utility be compelled to make any reasonable extensions, and the commission shall proceed to hear and determine the reasonableness of such an extension and whether the peti-

tion should be sustained either in whole or in part. * * * (1934, c. 145, §4(1).)

Mississippi Code, 1930, Sections 1505, 1506, 1508.

SEC. 1505. *Hydro-Electric Companies Authorized to Exercise Eminent Domain:*—All companies or associations of persons incorporated or organized for the purpose of improving and developing the water power of rivers and streams for generating, distributing and selling electricity and electro-mechanical power for any purpose for which electricity or electro-mechanical power is now or may hereafter be used or applied, are empowered and authorized to exercise the right of eminent domain as provided in the chapter on that subject to condemn and take such lands as may be necessary for the establishment of their reservoirs, ponds, dams, and works, and the right of way through all lands between such reservoirs, ponds, dams and works and cities, towns and other points where light, heat or power may be consumed, to place and extend their electric wires and conductors, either under ground or on poles overhead and to keep same in repair; provided that such wires, and conductors shall be so constructed and placed as not to be dangerous to persons or property, and to do as little injury as possible. (1924, Ch. 179.)

SEC. 1506. *Erect and Maintain Poles, Along, On, and Across Highways:*—All companies or associations of persons incorporated or organized for such purposes are authorized and empowered to erect, place, and maintain their posts, wires and conductors along and across any of the public highways, streets or waters and along and across all turnpikes, railroads and canals, and also through any of the public lands; but the same shall be so constructed and placed as not to be dangerous to persons or property; nor interfere with the common use of such roads, streets, or waters; nor with the use of the wires of other wire-using companies; or more than is necessary with the convenience of any landowner. (1926, Ch. 233.)

SEC. 1508. *Right of Eminent Domain Granted to Pipe Lines:*—All companies or associations of persons, incorporated or organized, for the purpose of building or con-

structing pipe lines and appliances for the conveying and distribution of oil or gas or for the purpose of constructing, maintaining and operating lines for transmitting electricity for lighting, heating and power purposes, are hereby empowered to exercise the right of eminent domain in the manner now provided by law, to build and construct the said pipe lines and appliances along or across highways, waters, railroads, canals, and public lands, above or below grounds, but not in a manner to be dangerous to persons or property, nor to interfere with the common use of such roads, waters, railroads, canals and public lands. The board of supervisors of any county through which any such line may pass, shall have the power to regulate, within their respective limits, the manner in which such lines and appliances shall be constructed and maintained on and above the highways and bridges of the county and all such companies or associations shall be responsible in damages for any injuries caused by such construction or use thereof. (1922, Ch. 291.)

Michie's North Carolina Code, 1935, Section 1037(d).

SEC. 1037(d) *Certificate of Convenience and Necessity.* That no person, no corporation, their lessees, trustees or receivers shall hereafter begin the construction or operation of any public utility plant or system or acquire ownership or control of, either directly or indirectly, without first obtaining from the Commissioner a certificate that public convenience and necessity requires, or will require, such construction, acquisition, or operation: Provided, that this section shall not apply to new construction in progress at the time of the ratification of this act, nor to construction into territory contiguous to that already occupied and not receiving similar service from another utility, nor to construction in the ordinary conduct of business.

The Commissioner is hereby empowered to make rules governing the application for, and the issuance of such certificates of public convenience and necessity. (P. L. 1931, c. 455.)

Acts of South Carolina, 1932, c. 871, Sections 2(j) and 2(w).

§2. *Duties and Restrictions Imposed Upon Electrical Utilities.*—

* * * * *

(j) When ordered by the Commission after due hearing any electrical utility may be required to establish, construct, maintain and operate any reasonable extension of its existing facilities. If any such extension, however, by any electrical utility of its existing facilities will interfere with the service or system of any other electrical utility, the Commission may on complaint and after hearing either order the discontinuance of such extension or prescribe such terms and conditions with respect thereto as may be just and reasonable.

* * * * *

(w) No electrical utility, except a municipality within its corporate limits, shall hereafter begin the construction or operation of any electrical utility plant or system, or of any extension thereof, except those ordered by the Commission under the provisions of subdivision (j) of this Section, without first obtaining from the Commission a certificate that public convenience and necessity require or will require such construction or operation: *Provided, however,* That unless such construction or operation has been commenced under a limited or conditional certificate or authority as hereinafter provided this subdivision shall not be construed to require any such electrical utility to secure a certificate for an extension within any municipality or district within which it has heretofore lawfully commenced operations, or for an extension within or to territory already served by it, necessary in the ordinary course of its business, or for an extension into territory contiguous to that already occupied by it and not receiving similar service from another electrical utility; but, if any electrical utility in constructing or extending its lines, plant or system unreasonably interferes or is about to unreasonably interfere with the service or system of any other electrical utility, the Commission on complaint of the electrical utility claiming to be injuriously affected may after hearing make such order and prescribe such terms and conditions in harmony with this Act as are just and reasonable. * * *

Tennessee Code, 1932, Sections 5502-5504, 5453.

SECTION 5502. *Public Utility Not to Operate a Service Already Being Furnished by Another Public Utility, Nor Commence the Construction of a Plant or System Without a Certificate.*—No public utility shall establish or begin the construction of, or operate any line, plant, or system, or route in or into a municipality or other territory already receiving a like service from another public utility, or establish service therein, without first having obtained from the railroad and public utilities commission, after written application and hearing, a certificate that the present or future public convenience and necessity require or will require such construction, establishment, and operation, and no person or corporation not at the time a public utility shall commence the construction of any plant, line, system, or route to be operated as a public utility, or the operation of which would constitute the same, or the owner or operator thereof, a public utility as defined by law without having first obtained, in like manner, a similar certificate; provided, that this section shall not be construed to require any public utility to obtain a certificate for an extension in or about a municipality or territory where it shall theretofore have lawfully commenced operations, or for an extension into territory, whether within or without a municipality, contiguous to its route, plant, line or system, and not theretofore receiving service of a like character from another public utility, or for substitute or additional facilities in or to territory already served by it. (1923, Ch. 87, Sec. 1.)

SECTION 5503. *Upon Complaint of Interference, Commission May Grant or Refuse Certificate: Forfeiture of Certificate.*—If any public utility, in establishing, constructing, reconstructing, or extending its route, line, plant or system, shall interfere or be about to interfere with the existing route, line, plant, or system of any other public utility, the said commission, on complaint of the public utility claiming to be injuriously affected, may, after hearing, make such order and prescribe such terms and conditions in harmony with this statute as are just and reasonable. Such commission shall have power, after hearing involving the financial ability and good faith of the appli-

cant, the necessity for additional service in the municipality or territory, and such other matters as it deems relevant, to issue a certificate of public necessity and convenience, or to refuse to issue the same or to issue it for the establishment or construction of a portion only of the contemplated plant, route, line, or system or extension thereof, or for the partial exercise only of such right or privilege, and may attach to the exercise of the rights granted by said certificate such terms and conditions as to time or otherwise as in its judgment the public convenience, necessity, and protection may require, and may forfeit such certificate after issuance, for noncompliance with its terms, or provide therein for an *ipso facto* forfeiture of the same for failure to exercise the rights granted within the time fixed by the commission; provided, that nothing in this law shall be construed as requiring such certificate for a municipally owned plant, project, or development. (1923, Ch. 87, Sec. 1.)

Section 5504. *Certificate Not to be Granted Unless the Existing Plant or System is Inadequate: Notice of Hearing.*—The said commission shall not grant a certificate for a proposed route, plant, line, or system, or extension thereof, which will be in competition with any other route, plant, line or system, unless it shall first determine that the facilities of the existing route, plant, line, or system, are inadequate to meet the reasonable needs of the public, or the public utility operating the same refuses or neglects or is unable to or has refused or neglected, after reasonable opportunity after notice, to make such additions and extensions as may reasonably be required under the provisions of this statute. In all proceedings under this section, the commission shall give at least ten days' notice to the authorities of, and the public utilities operating in, the municipality or territory affected. (1923, Ch. 87, Sec. 2.)

Section 5453. No privilege or franchise hereafter granted to any public utility by the State of Tennessee or by any political subdivision thereof shall be valid until approved by said commission, such approval to be given when, after hearing, said commission determines that such privilege or franchise is necessary and proper for the public

convenience and properly conserves the public interest, and the commission shall have power, if it so approves, to impose such conditions as to construction, equipment, maintenance, service or operation as the public convenience and interest may reasonably require; provided, however, that nothing herein contained shall be construed as applying to the laying of sidings, sidetracks, or switchouts, by any public utility, and it shall not be necessary for any such public utility to obtain a certificate of convenience from the commission for such purpose. (1919, Ch. 49, Sec. 7.)

Michie's Virginia Code, 1936, Sections 4057(24), 3716, 3774c, 4072, 4066.

SEC. 4057(24). *Extension in territory now being served.*—If, from any rural territory not now being served, application be made to the State Corporation Commission by a group of five or more persons, natural or artificial, to require an extension of electric service to such territory, the Commission shall, if necessary to accomplish the purposes sought, fix a time for hearing said application, on such terms and conditions as the Commission may prescribe, and, if it be established to the satisfaction of the Commission that a proper guaranteed revenue for a sufficient number of years will accrue to any company which may be required to construct the desired extension, and that a reasonable investment will accrue to the company constructing said extension, then the Commission is hereby authorized and empowered to require the nearest, or most advantageously located electric utility company to such territory to construct such extension to such point or points in such territory and to serve such customer or customers therein, as in its judgment is right and proper. (1936, p. 1056.)

SEC. 3716. *Powers of the Commission.*—The Commission shall have power and authority to require, by its rules, regulations, and requirements, all corporations chartered under the laws of this State, and all foreign corporations doing business in this State, and all persons, partnerships and associations exercising and performing the functions of public service corporations as defined in section thirty-

eight hundred and eighty-one of the Code of Virginia, to perform and discharge any public duty or requirement imposed upon such corporations, persons, partnerships and associations by the Constitution.

SEC. 3774c. *Certain contracts must be approved by Commission.*—No contract or arrangement providing for the furnishing of management, supervisory, construction, engineering, accounting, legal, financial, or similar services, and no contract or arrangement for the purchase, sale, lease or exchange of any property right or thing other than those above enumerated, or for the purchase and/or sale of treasury bonds and/or treasury capital stock hereafter made or entered into between a public service company and any affiliated interest as defined in this act shall be valid or effective unless and until it shall have been filed with and approved by the Commission. It shall be the duty of every public service company to file with the Commission a verified copy of any such contract and arrangements hereinabove described, regardless of amount, and said general rule herein referred to shall remain in full force and effect as to all other public service companies. (1934, p. 744.)

SEC. 4072. *The State Corporation Commission may change regulations, measurements, practices, services, or acts.*—If upon investigation it shall be found that any regulation, measurement, practice, act or service of any public utility operating in this State, complained of, is unjust, unreasonable, insufficient, preferential, unjustly discriminatory or otherwise in violation of law or if it be found that any service is inadequate or that any reasonable service cannot be obtained, the State Corporation Commission shall have power to substitute therefor such other regulations, measurements, practices, service or acts and to make such order respecting, and such changes in, such regulations, measurements, practices, service or acts as shall be just and reasonable. (1914, p. 673.)

SEC. 4066. *Public utilities required to file schedules of rates and charges; changes in schedules; appeal to Supreme Court of Appeals from ruling of State Corporation Commission; unless Commission suspends schedules when*

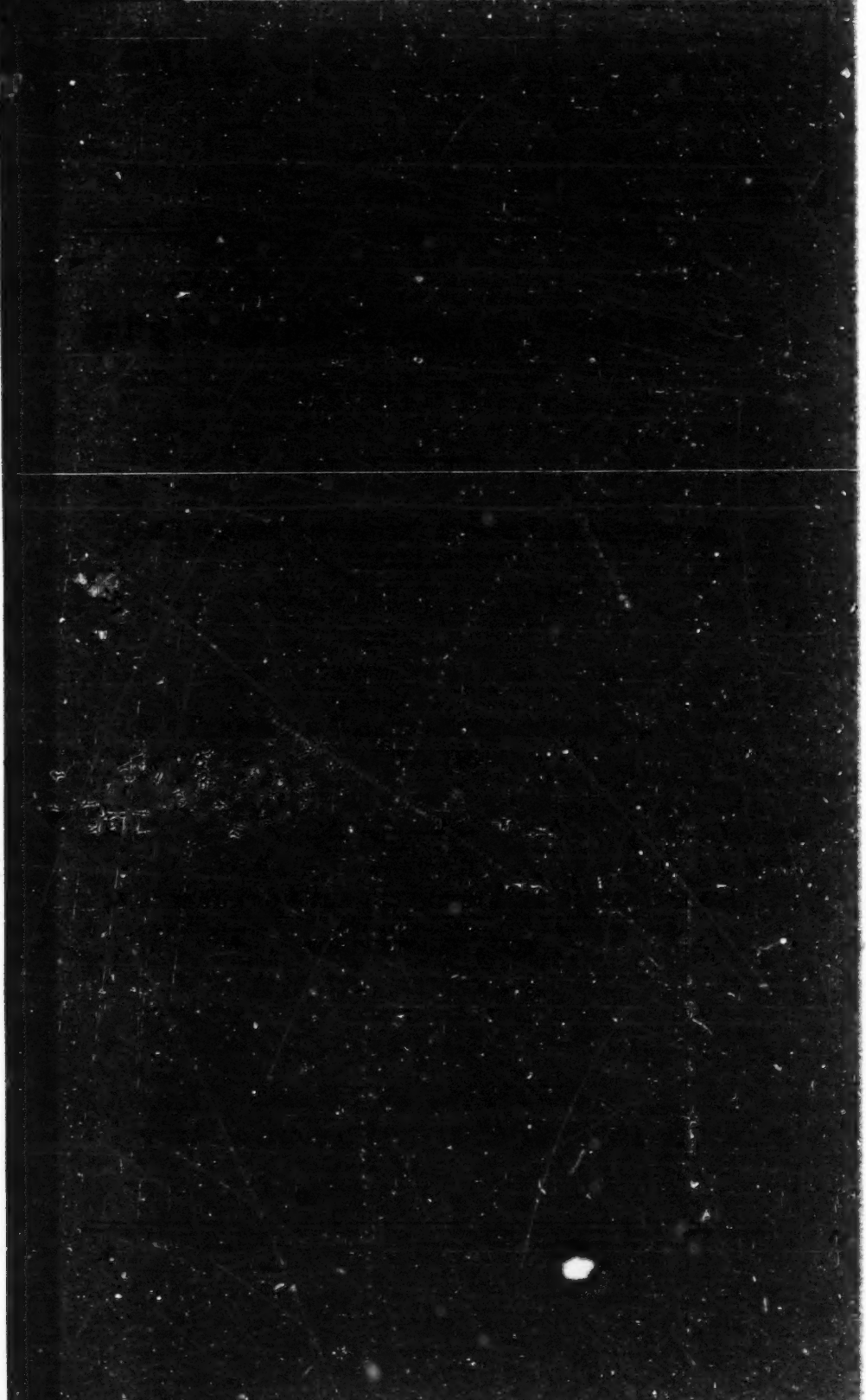
same effective; public utilities must furnish reasonably adequate service and facilities; further as to appeals.

* * * * *

It shall be the duty of every public utility to furnish reasonably adequate service and facilities at reasonable and just rates to any person, firm or corporation along its lines desiring same and not engaged in a similar business, and to charge uniformly therefor all persons or corporations using such product under like conditions, and not in competition with such furnishing company. * * *

Michie's West Virginia Code, 1935, Section 2562 (1). (11)

SEC. 2562-(1). (11) *Application for Certificate of Public Convenience and Necessity.*—No public utility, person or corporation shall begin the construction of any plant, equipment, property or facility for furnishing to the public any of the services enumerated in section one, article two (Sec. 2553) of this chapter, nor apply for, nor obtain any franchise, license or permit from any municipality or other governmental agency except ordinary extensions of existing systems in the usual course of business, unless and until it shall obtain from the public service commission a certificate of public convenience and necessity requiring such construction, franchise, license or permit. Upon the filing of any application for such certificate, and after hearing, the commission may, in its discretion, issue or refuse to issue, or issue in part and refuse in part, such certificate of convenience and necessity. The commission shall prescribe such rules and regulations as it may deem proper for the enforcement of the provisions of this section, and in establishing that public convenience and necessity do exist the burden of proof shall be upon the applicant. (1935, c. 115.)



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IN THE

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

THE TENNESSEE ELECTRIC POWER COMPANY ET AL.

APPELLANTS

v.

TENNESSEE VALLEY AUTHORITY ET AL.

APPELLEES

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TENNESSEE NORTHERN DIVISION

BRIEF FOR APPELLEES TENNESSEE VALLEY AUTHORITY ET AL.

OPINION BELOW

The opinion of the district court (r. 542, app. I, 113) was filed on January 24, 1938, and is reported in 21 F.Supp. at 947.

JURISDICTION

The judgment sought to be reviewed was entered on January 25, 1938. The jurisdiction of this Court rests on section 3 of the act of August 24, 1937 (50 Stat. 751).

QUESTIONS PRESENTED

1. Whether the complainant utility companies have standing to challenge the construction and operation by the Tennessee Valley Authority of certain dams in the Tennessee River and its tributaries, and the transmission and sale of the electric energy created by those dams.

2. If the first question is answered in the affirmative, then whether the construction of certain dams in the Tennessee River and its tributaries, as authorized by the Tennessee Valley Authority Act of 1933, as amended, and various appropriation acts subsequent thereto, is valid under the Federal Constitution; and whether the transmission and sale of the electric energy acquired in the operation of dams so constructed is valid under the Federal Constitution.

3. Whether the trial court committed reversible error in rulings on questions of evidence and procedure.

SCOPE OF THE ISSUES

In our view the above questions are the only ones presented for decision. The constitutional power of Congress in authorizing and directing the challenged activities is not affected by evidence submitted on the diverse allegations of the bill relating to charges of coercion and duress exerted upon complainants, of conspiracy and unfair propaganda against them, of solicitation of their customers, and of unfair competition generally. Upon analysis it will appear that these

charges amount to no more than a general claim of a right to be free from competition. All these charges will, of course, be treated in the argument, *infra*, but the basic constitutional questions in the case will not be confused with these collateral issues.

It is also important to note that no substantial question of statutory authority is raised. Although want of statutory power to engage in the challenged activities is alleged in general terms in the bill (r. 64), complainants have never specified what acts are in excess of statutory authority, nor have they seriously pressed this general claim of the bill (*cf.* r. 289).

If any doubt existed as to the statutory authority to perform the acts challenged in this case, such doubt would be removed by reference to the extensive annual congressional hearings and the committee reports pursuant thereto, upon the basis of which the Congress has enacted the annual appropriation measures dealing with the Authority. The history of these measures reflects the detailed supervision which the Congress has exercised over the Authority. For example, not only have the appropriation acts specified the particular dams upon which work should go forward, but they have also stated whether the work should be construction or merely preliminary investigation,[1] and they have specified the extent to which construction

[1] Second Deficiency Appropriation Act, fiscal year 1935, 49 Stat. 571; First Deficiency Appropriation Act, fiscal year 1936, 49 Stat. 1597; Second Deficiency Appropriation Act, fiscal year 1937, 50 Stat. 213; Independent Offices Appropriation Act, fiscal year 1939, Public, No. 534, 75th Cong., 3d sess. (See app. II, 71, 76, 83, 92.)

should go forward on particular projects;[2] and the committee reports[3] which accompanied the measures have earmarked, for the various activities, the total amounts appropriated for the Authority.

The same close supervision by the Congress over the work of the Authority is reflected in the history of the amendments to the Tennessee Valley Authority Act enacted in 1935.[4] The Authority's report of March 31, 1936, entitled *The Unified Development of the Tennessee River System* (comp. ex. 328 (original), r. 3068), submitted pursuant to a provision of these amendments, served further to define for the Congress the projects of the Authority both in progress and contemplated.

Perhaps no agency of the Government has given the Congress a fuller account of its activities, nor has any other agency been the subject of such direct and continuing supervision by the Congress. In a very real sense, therefore, it must be recognized that appellants' challenge of the Tennessee Valley Authority involves but one fundamental issue—the validity of congressional action.

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2 Second Deficiency Appropriation Act, fiscal year 1937, 50 Stat. 213 (app. II, 83).

3 H.Rept. 1261, 74th Cong., 1st sess.; H.Rept. 2591, 74th Cong., 2d sess.; H.Rept. 699, 75th Cong., 1st sess.; H.Rept. 1662, 75th Cong., 3d sess. (See app. II, 72, 77, 85, 94.)

4 Hearings before House Committee on Military Affairs, 74th Cong., 1st sess.; S.Rept. 453, 74th Cong., 1st sess.; H.Rept. 1372, 74th Cong., 1st sess.; H.Rept. 1846, 74th Cong., 1st sess.

STATUTES INVOLVED

The statutes involved are the Tennessee Valley Authority Act of 1933, as amended (hereafter referred to as the "act"), and the several acts making appropriations for the Tennessee Valley Authority. These statutes will be found in appendix II, separately printed.

STATEMENT OF THE CASE

A. THE PARTIES AND PROCEEDINGS BELOW

The bill of complaint was originally filed in the Chancery Court of Knox County, Tennessee, on May 29, 1936, and was removed by the defendants to the United States District Court for the Eastern District of Tennessee, Northern Division (r. 136). The appellants are fourteen[5] privately owned corporations engaged in some phase of the business of generating, transmitting, and selling electricity as public utilities in the States of Tennessee, Mississippi, Alabama, Georgia, Kentucky, North Carolina, Virginia, and West Virginia (fdg. 1, r. 585, app. I, 1). As discussed below (see *infra* pp. 175-177), the Authority has contracts or facilities in the claimed territory of only five of these complainants, namely, the four Commonwealth and Southern com-

[5] The bill was originally filed by nineteen complainants. One of them, however, was enjoined from maintaining this action. *Georgia Power Co.* v. *Tennessee Valley Authority*, 17 F.Supp. 769 (N.D.Ga., 1937), *aff'd*, 89 F. (2d) 218 (C.C.A. 5th, 1937), *cert. denied*, 302 U.S. 692. Three other complainants, Tennessee Public Service Company, Holston River Electric Company, and Kentucky-Tennessee Light & Power Company, have sold or arranged to sell certain of their facilities to municipalities or, in lesser degree, to the Tennessee Valley Authority, and have voluntarily withdrawn from this litigation. Memphis Power & Light Company is now negotiating the details of a similar transaction and will probably move to dismiss prior to argument.

panies and the West Tennessee Power & Light Company (fdgs. 99, 111, r. 623, 625, app. I, 54, 57). The bill joined as defendants the Tennessee Valley Authority and the individual members of its board of directors.

While the bill contained numerous allegations, many of which related to a so-called "national power policy" and an alleged "power program" of the Authority, its main claims were: (1) that the complainants were threatened with imminent destruction or serious injury from alleged competition in the sale of power by the Tennessee Valley Authority; (2) that the electric energy sold by the Authority was acquired by the construction and operation of dams unrelated to any federal function, and that to the extent that these dams were stated to be constructed for the improvement of navigation, the control of destructive floods, and the national defense, the declared purpose was "a sham and pretense" (r. 55); and (3) that even if the electric energy were lawfully acquired by the Authority, the method of disposition was in violation of the Federal Constitution. The prayer of the bill sought a sweeping injunction against the "national power policy" and "power program" of the Authority. Essentially, however, the relief sought was an injunction to restrain the Authority and its directors from constructing dams in the Tennessee River and its tributaries, from generating electric energy at the dams, and from marketing such energy in the claimed territory of the complainants (r. 67-71).

A motion to quash for want of jurisdiction (r. 139) and a motion to dismiss for misjoinder of causes and

parties and for want of a justiciable controversy (r. 156) having been overruled (r. 155, 159), defendants answered (r. 160). A preliminary injunction granted by the district court on motion of the complainants (r. 260) was reversed on appeal to the Circuit Court of Appeals for the Sixth Circuit, and the case was remanded for trial (90 F. (2d) 885; r. 267).[6]

In accordance with section 3 of the act of Congress of August 24, 1937, Senior Circuit Judge Moorman designated Circuit Judge Allen and District Judge Martin to sit with District Judge Gore to try the case. After a complete trial, the district court, on January 21, 1938, rendered its decision upholding the constitutionality of the Tennessee Valley Authority Act and the validity of the activities pursuant thereto challenged in the bill (r. 542, app. I, 113). The decision was unanimous.

Appellants have devoted a considerable portion of their brief to the claim that they were denied a fair trial by the rulings of the court below on the admission of evidence and on matters of procedure. The particular rulings of the court upon which this claim is based

[6] On appeal from the order of injunction the defendants requested the Circuit Court of Appeals not only to dissolve the injunction but also to dismiss the bill upon the grounds urged in the motion to quash and the motion to dismiss which had been overruled by the district court. The Circuit Court of Appeals, however, sustained the district court's rulings on these motions (r. 267), Judge Moorman dissenting on the ground that the bill should have been dismissed for lack of a justiciable controversy (r. 284). Defendants' petition for writ of certiorari to review the Circuit Court of Appeals' rulings insofar as they affirmed the district court's orders was denied (301 U.S. 710).

are discussed in detail in a separate section of this brief (*infra* pp. 192-260). In view of the appellants' effort to create a general impression of an atmosphere of prejudice and unfairness in the conduct of the trial, however, it seems in order to give a general description of the prior proceedings at this point.

At the time the case came on for final hearing, it had been in litigation for a year and a half. The several motions were extensively briefed and argued. At the hearing before the district court on the motion for preliminary injunction, scores of affidavits were presented and all of the questions of fact and issues of law were elaborately briefed and argued. This was necessarily true since the application for preliminary injunction depended upon the determination of whether the complainants had made a reasonable showing of probability of ultimate success on the merits. Again, on appeal to the Circuit Court of Appeals for the Sixth Circuit, the same questions of fact and of law were covered by the briefs and argument of counsel. An application for writ of certiorari was made to this Court and denied (301 U.S. 710). Several procedural motions calling attention to the scope of the issues immediately preceded the trial (r. 156, 263, 264, 288, 327).

It is thus apparent that by the time the cause was ready for final hearing, counsel were thoroughly familiar with the opposing theories and contentions, and no element of surprise was possible. The trial itself commenced on November 15, 1937, and closed on January 15, 1938. The presentation of testimony and

arguments of counsel upon rulings at the trial consumed approximately seven weeks of court time. Eighty-two witnesses testified on behalf of complainants and 957 exhibits were introduced. The presentation of their testimony consumed four and a half weeks of court time and occupied approximately 3,590 pages of the typewritten transcript, exclusive of exhibits. Fifteen witnesses testified for the Government. One hundred fifty-eight exhibits were introduced, two and a half weeks of court time were consumed in the presentation of the defenses, and the defense proof covered approximately 2,540 pages of the typewritten transcript, exclusive of exhibits. In addition to the court time consumed, extensive additional evidence on behalf of complainants was covered by long stipulations prepared outside of court and by depositions taken, in advance of trial, in Alabama, Georgia, Tennessee, and the District of Columbia.

Throughout the trial the court heard extensive arguments and received numerous briefs filed by both parties regarding the admissibility of evidence. Argument was heard and briefs were filed on every important ruling. Complainants filed seventeen lengthy briefs during the trial, defendants twelve. The record shows that the court gave these briefs careful study and attention (r. 1492). Weeks of advance notice were given as to the closing argument and the presentation of findings (r. 1861-1862, 1919). Argument began on the day after the conclusion of testimony.

On January 24, 1938, the trial court entered an order making findings of fact pursuant to Equity Rule

70½ (r. 566, 583-584). The findings are reprinted for this Court's convenience in appendix I hereto, separately printed, together with citations to the supporting evidence in the record. The decision and the opinion of the trial court were unanimous. The entire court joined in 205 of the findings and Judge Gore concurred with modifications in seventeen others, rejecting less than thirty (r. 664-669). In addition, in its opinion filed the same day upholding the constitutionality of the Tennessee Valley Authority Act (r. 542, app. I, 113), the court analyzed the record in detail and set forth the facts in regard to material questions in the case.

Each of the findings is supported by substantial evidence in the record, as will appear from an examination of the record references cited in support thereof in appendix I hereto. They were entered only after careful consideration of all the evidence. The extensive evidence was studied and sifted by the entire court in daily conferences throughout the period of the trial (r. 2439). As an aid to the court, counsel were advised and requested, prior to the Christmas recess, to submit suggested findings of fact, together with all supporting record references, on the day of the final argument, then set for January 15, 1938 (r. 1861-1862, 1919, 2281-2284, 2370, 2439, 398, 477). Nine days after the close of the final arguments, the trial court, consistently with its decision, adopted many of the findings requested by the Government and a considerable number requested by complainants (r. 566). In addition, Judge Gore stated his "opinion" that there "should also be adopted" other findings as suggested by the

complainants (r. 669). These are repeatedly cited by appellants as "Additional Findings," despite the fact that they were rejected by the trial court (r. 567).

The appellants have attacked all the contested findings of the court below without argument and by mere assertions that the trial court's findings are either unsupported by the evidence or contrary to the great weight of the evidence. (See, e.g., br. 20, 21, 38 (n. 1), 60 (n. 1).) Appellants choose to ignore all of the evidence in support of the findings, disregarding the elementary principle that the findings of the trial court will not be set aside by this Court whenever supported by any substantial evidence (*Alabama Power Co.* v. *Ickes*, 302 U.S. 464). The only "findings" which appellants cite on contested issues are the so-called "additional findings" which were suggested by Judge Gore. In the same spirit, appellants rely indiscriminately on both admitted and excluded evidence throughout their brief.

In the statement which follows, all statements of fact are supported by references to the findings of the court and to evidence in this record. Where findings are referred to they are the findings of the court and not the individual views of one judge. Where evidence is cited the reference is to testimony or exhibits admitted in evidence and not to material excluded by the court.

B. THE BASIC FACTS

The Tennessee Valley Authority Act contemplates a coordinated project for the combined purposes of creating and maintaining a nine-foot navigable waterway throughout the 650-mile length of the Tennessee River, the promotion of navigation on the Tennessee and its tributaries, the control of destructive floodwaters in both the Tennessee and the Mississippi River basins, and the improvement of the Wilson Dam properties in the interest of national defense (sec. 1, app. II, 1). Each of these functions has a background which illuminates the purposes and provisions of the act. Before recounting that background and describing the projects of the Authority in relation thereto, it should be pointed out that the nature of the navigation and flood-control problems concerning the Tennessee River system and the character of these projects as navigation and flood-control structures in design and operation were the subject of extensive testimony by experts uniquely qualified.

The witnesses for the Authority included Colonel Lewis H. Watkins, of the Corps of Engineers of the Army, who was the district engineer in charge of the studies of the Tennessee River system published in House Document No. 328, 71st Congress, 2d session (comp. ex. 105 (original), r. 2615; r. 1534-1536), hereinafter referred to as House Document No. 328, concerning which the Chief of Engineers said, "there has never been presented to Congress a more thorough and exhaustive study" (r. 1634);

George R. Clemens, senior engineer of the Mississippi River Commission, who was in charge of the preparation of the *Comprehensive Report on Reservoirs in the Mississippi River Basin*, published in 1936 as House Document No. 259, 74th Congress, 1st session (def. ex. 32 (original), r. 4062), made pursuant to section 10 of the Flood Control Act of 1928 (r. 1646-1647); Edward H. Sargent, chief engineer of the Hudson River Regulating District, who is in charge of the operations of the Sacandaga Reservoir, an outstanding multiple-use dam successfully operated for flood control and power (r. 1673-1679); O. N. Floyd, consulting engineer for the Army Engineers on a number of flood-control projects having relation to the lower Mississippi (r. 1887-1890); James S. Brodie, chief engineer and superintendent of maintenance of the Federal Barge Lines, the operating agency of the Inland Waterways Corporation, who is an expert on the practical aspects of inland waterway navigation (r. 2021-2023); Sherman M. Woodward, chief of the Authority's water-control division and in charge of the planning and operations of the Authority's projects, a distinguished hydraulic engineer of forty years' experience in teaching and practice (r. 1772-1775).

In addition, testimony was given by a number of the Authority's engineers who were particularly qualified to explain the studies undertaken in relation to navigation and flood control and the design and operation of the projects: J. S. Bowman, at one time construction engineer with the Miami Conservancy District, Dayton, Ohio, now head project-planning engi-

neer for the Authority (r. 1689-1690); J. H. Kimball, at one time assistant chief engineer with the Miami Conservancy District and later associated with Metcalf & Eddy, Boston, who is now in charge of the flood-control section of the planning department of the Authority (r. 1822-1823); and C. T. Barker, for eight years engaged by the Army Engineers, four years of which were spent in studying all aspects of navigation on the Tennessee and its tributaries and preparing data for the report in House Document No. 328, now engineer in charge of the navigation section of the Authority (r. 1940-1941).

1. THE PROBLEM OF IMPROVING NAVIGATION ON THE TENNESSEE RIVER AND CONTROLLING DESTRUCTIVE FLOODS IN THE TENNESSEE AND MISSISSIPPI RIVER BASINS

Navigation: The Tennessee River, a navigable river approximately 652 miles long, is formed by the junction of the French Broad River and the Holston River at Knoxville, Tennessee, and enters the Ohio River near Paducah, Kentucky. In its unimproved state there were numerous obstacles to commercial navigation, including shoals and bars, steep slopes, high velocities, and floods in many months of the year, and inadequate depths in a great portion of the river (fdg. 48, r. 609, app. I, 32).

The improvement of navigation on the Tennessee River, as this Court observed in the *Ashwander* case, has been a matter of national concern for over a century (*Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288, 328). It was there pointed out and has been

found herein that from 1852 Congress had repeatedly authorized projects to develop navigation on all portions of the river, both by open-channel improvements and by canalization (297 U.S. at 329; fdg. 49, r. 609, app. I, 32). From 1852 to 1933 Congress had expended on these surveys and projects approximately eighteen million dollars, exclusive of the amounts expended for Wilson Dam (fdg. 49, r. 609, app. I, 32).

Despite the unsatisfactory condition of its improvement, the traffic on the river over the last 40 years has varied between one and two million tons annually, necessarily confined in the main to short hauls over the improved sections (fdg. 56, r. 611, app. I, 36). It was estimated by the district engineer in House Document No. 328 that the improvement on the Tennessee for modern commercial navigation would result in transportation savings of approximately ten million dollars annually (H.Doc. 328, *supra*, comp. ex. 105 (original) pp. 496-497, r. 2615, 4274-4275), and this estimate was confirmed by his testimony in the present case (Watkins, r. 1551-1556). Subsequent studies by the Authority, as the court found, have shown this estimate to be reasonable and conservative (fdg. 56, r. 611, app. I, 36).

The importance of this navigation improvement to the national commerce is evident from the following facts as found by the trial court:

> The Tennessee River, as a tributary of the Ohio River, is interconnected with the inland waterway system of the Mississippi River, which connects the Gulf and the Great Lakes and taps the territory of about 15 States, including many important

traffic-producing industrial, commercial, and agricultural centers, and extends as far east as Pittsburgh, Pennsylvania, as far west as Kansas City, Missouri, and as far north as Minneapolis and St. Paul, Minnesota. Interstate railroads and highways interconnect with the waterway at numerous points, permitting joint land and water transportation. There are varied and substantial agricultural, mineral, and forest resources located in the Tennessee Valley within reach of the waterway. About 18.2% of the population of the United States, based on the 1930 census, is located within 25 miles of the banks of this interconnected waterway. This inland waterway system includes 5,700 miles of improved waterway of 9-foot depth or over, an additional 3,200 miles of 6- to 9-foot depth, and an additional 1,000 miles of 4- to 6-foot depth [fdg. 51, r. 610, app. I, 33; see def. exs. 116, 118, 119, 120, 121, 122, 123, 125 in *Reproductions of Certain Original Exhibits Submitted by Appellees*].

At the date of the passage of the Tennessee Valley Authority Act, however, the river had not been adequately improved for modern commercial navigation except for a few short stretches, the controlling depth at that time ranging from four and a half feet in the lower part of the river to one foot in the upper section (fdg. 50, r. 609, app. I, 32). The Tennessee River can be improved for modern nine-foot navigation by means of a series of seven high dams, or a system of thirty-two low dams, or a combination of the two. The lower 200-mile (and controlling) stretch of the river can also be improved to the same depth by means of

low-water releases in the dry season from storage projects (fdg. 71, r. 616, app. I, 44; Putnam, r. 2312-2313), an important fact overlooked by appellants in their attack on the Authority's tributary projects.

Flood control: The court below found, and indeed judicial notice could be taken of the fact, that the recurrent great floods on the Tennessee and Mississippi Rivers have long presented a grave flood menace of national importance:

> Thousands of miles of interstate railways and highways, and 20,000,000 acres of the richest cotton lands in the United States, the products of which are normally marketed in interstate and foreign commerce, lie within the flood plain of the Mississippi Valley. Located in the path of Mississippi floods also are the important commercial cities of Memphis, Cairo, and New Orleans, and other smaller communities, in which are located large cotton warehousing, compressing, and processing plants, and woodworking plants, engaged in the production, processing, and distribution of goods normally marketed in interstate and foreign commerce [fdg. 58, r. 612, app. I, 37].

The principal point of danger on the Tennessee River is the city of Chattanooga (def. exs. 72, 73, 81 in *Reproductions of Certain Original Exhibits Submitted by Appellees*), which is an important center of interstate railways and highways and a principal distributing center throughout the Southeast for commodities produced in other States (fdg. 58, r. 612, app. I, 37; def. ex. 66 in *Reproductions of Certain Original*

Exhibits Submitted by Appellees). The estimated annual damage of a tangible character caused by past floods to property at and above Chattanooga is $1,356,063 (fdg. 84, r. 619, app. I, 49). This amount does not include losses due to interruption of business and to disease and death and various other losses of an intangible character (Kimball, r. 1833-1834; Kurtz, r. 1230). Appellants take the average annual amount of physical damage to property along the Tennessee River alone and capitalize it to secure what is asserted to be the maximum amount of expenditure permissible for Tennessee flood control, on the ground that it is a "fundamental principle" that expenditures for flood-control structures may not exceed the capitalized value of the flood damages eliminated by those structures (br. 126-127). Without pausing unduly to inquire as to the constitutional source of this "fundamental principle," it should at least be pointed out that the figures employed ignore completely the more important losses due to interruption of business, deterioration, dispossession, insecurity, disease, and death, and, of course, wholly ignore the great losses from Mississippi floods.

In order to provide effective flood control on the Tennessee River, it is necessary to construct reservoirs to reduce maximum flood heights sufficiently to make feasible the construction of local protection works. There is no dispute between the parties on this point (Kurtz, r. 1208-1209; comp. ex. 328 (original)

p. 19, r. 3068). For most effective flood control on the Tennessee it is desirable to provide high dams with controlled storage on the main stream and on the tributaries (fdg. 60, r. 613, app. I, 38).

The gravity of the flood problem in the Mississippi Valley is too well known to require elaboration. The Tennessee River has always been a substantial factor in Mississippi River floods (fdg. 61, r. 613, app. I, 39). The Ohio River and its tributaries, of which the Tennessee is the largest, are the greatest contributors to such floods, accounting for from 52% to 90% of the total flood flows between Cairo, Illinois, and Helena, Arkansas (*ibid.*). Because it is the largest tributary of the Ohio and its mouth is closer to Cairo and the lower Mississippi than any other major tributary of the Ohio system, the Tennessee is one of the best rivers upon which to construct reservoirs for the reduction of floods on the lower Mississippi (fdg. 63, r. 613, app. I, 40). All of these facts were substantially conceded by the appellants' witness Kelly, who qualified as their expert on Mississippi flood control (r. 1381-1383).

The value of reservoirs for Mississippi flood control has been recognized for the better part of a century. In the past, however, the Army Engineers had hesitated to recommend proposals for flood-control reservoirs on the ground that construction of reservoirs for flood control alone would involve a prohibitive cost and would preëmpt the sites necessary for the development of the rivers for other economic uses. See *Final Re-*

port of National Waterways Commission, S.Doc. 469, 62d Cong., 2d sess., pp. 135, 185.[7]

It is now recognized that the present levee system on the Mississippi, supplemented by floodways and cut-offs, is inadequate to pass a flood which is reasonably probable without disastrous overtopping of the levees (fdg. 62, r. 613, app. I, 39). The levees on the lower Mississippi have reached the practical limits of height (*ibid.*). Additional protection must include the construction of reservoirs on the tributaries of the Mississippi (*ibid.*). Not only are these the facts found by the court and established by the testimony of George R. Clemens, senior engineer for the Mississippi River Commission, unquestionably the best-informed witness on the present flood situation in the Mississippi Valley to appear in this case (r. 1646), but they are also identical with the conclusions reached by the Chief of Engineers of the United States Army after the disastrous floods of 1937 (fdg. 67, r. 614, app. I, 41). This report states that the existing levee system was designed to pass a flood of only 2,250,000 c.f.s. at Cairo,[8] and concludes:

> A review of all data indicates, however, that due prudence should provide for a flood which without reservoir control would reach 2,600,000 cubic feet per second in the Mississippi between Cairo and the Arkansas. . . .

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[7] It was partly on these grounds that the Reservoir Board for Mississippi Flood Control of 1927 recommended against reservoirs for Mississippi flood control. Com. Doc. 2, H.R.Com. on Flood Control, 70th Cong., 1st sess. These considerations explain why so few flood-control reservoirs have been built in this country notwithstanding the great need for them in many sections. (See app. II, 106.)

[8] See also H.Doc. 259, *supra*, def. ex. 32 (original) pp. 6-7, r. 4062.

> The present levees on the Mississippi are about as high as it is desirable to construct them. An increase in the height accentuates the danger of a crevasse and its consequences, besides presenting a serious hazard of subsidence in the soft ground which they must occasionally cross. Additional safety should be sought rather in the continuation of the program for improving the flood discharge capacity of the river channel, and in reducing peak discharge by the construction of reservoirs [Com. Doc. 1, H.R.Com. on Flood Control, 75th Cong., 1st sess., p. 6].

These facts are confirmed by the testimony of appellants' own expert, Colonel Kelly (r. 1379-1382). In the face of this record appellants make the flat statement, on page 58 of their brief, that the existing levee system "will be sufficient to control the maximum flood to be anticipated on the Mississippi River" and cite in support thereof a so-called "additional finding."

That the best sites for flood-control reservoirs for the protection of the Mississippi are located on the lower tributaries of the Ohio, including the Tennessee, was explicitly recognized in the comprehensive report of the Army Engineers set forth in House Document No. 306, 74th Congress, 1st session, page 127 (r. 1382). This view was fully confirmed by the testimony of the experts Clemens, Kimball, Floyd, and Kelly (r. 1650, 1825-1826, 1891, 1381-1382), and was adopted by the trial court in its findings (fdg. 63, r. 613, app. I, 40).

A similar recommendation was made by the Mississippi River Commission, a body created by Con-

gress in 1879 and charged continuously thereafter with the duty of making recommendations for Mississippi River flood control. That Commission, in a comprehensive report to Congress, recommended that the Federal Government adopt a policy of encouraging the construction of reservoirs on the tributaries of the Mississippi for increased flood protection on the lower Mississippi (H.Doc. 259, *supra*, def. ex. 32 (original) p. 33, r. 4062; fdg. 67, r. 614, app. I, 41). The projects suggested in the report as "best suited for control of Mississippi River floods," included ten million acre-feet of storage located on the main stream of the Tennessee and on its tributaries, including the Clinch and Hiwassee Rivers (*ibid.*; r. 1384-1386). This recommendation was confirmed in detail by the witness Clemens, senior engineer of the Commission (r. 1647-1652).

2. RECOMMENDATIONS AND PRIOR EFFORTS TO SECURE A COORDINATED DEVELOPMENT OF THE WATER RESOURCES OF THE TENNESSEE RIVER IN THE INTEREST OF NAVIGATION AND FLOOD CONTROL

The problems of navigation improvement and flood control discussed above received intensive study by the Army Engineers and by Congress. In 1925 Congress directed the Secretary of War to prepare and submit to it estimates of the cost of detailed surveys of the navigable streams of the United States and their tributaries. The surveys contemplated were such as

> . . . may be required of those navigable streams of the United States, and their tributaries, whereon power development appears feasible and prac-

> ticable, with a view to the formulation of general plans for the most effective improvement of such streams for the purposes of navigation and the prosecution of such improvement *in combination* with the most efficient development of the potential water power, the control of floods, and the needs of irrigation . . . [43 Stat. 1186, 1190; app. appellants' br., 35].[9]

The obvious purpose was to provide for surveys in which all possible methods of conserving and utilizing all of the resources of the navigable rivers of the United States would be considered, to the end that plans might be devised under which all such resources would be conserved instead of wasted.[10] As stated by appellants, a report published as House Document No. 308, 69th Congress, 1st session, was made pursuant to the provisions of this statute. This report outlined a plan for making the surveys contemplated by the original statute, and those surveys shortly thereafter were authorized by the act of January 21, 1927 (44 Stat. 1010; see app. appellants' br., 35).

The survey of the Tennessee River, begun in 1922 (r. 1534) and continued pursuant to this authority, was completed in 1930 after five years of investigation, and the results were embodied in a report published as House Document No. 328, *supra* (comp. ex. 105 (original) pp. 1, 27-30, r. 2615). The report

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[9] Throughout this brief, emphasis supplied unless otherwise indicated.

[10] See app. II, 98-112. For a more extensive collection of historical materials on this subject, see Fly, *The Role of the Federal Government in the Conservation and Utilization of Water Resources*, 86 Pa.L.Rev. 274.

described a number of possible systems of structures for the Tennessee River, some of them capable of improving the river for navigation alone, others designed for flood control, and others for navigation improvement, flood control, and the conservation of water power. It was possible, the report showed, to secure a measure of navigation improvement by means of releases from storage reservoirs; a continuous nine-foot channel on the main stream could be secured through a series of thirty-two low movable-wicket dams; and a superior waterway could be secured through a series of seven high dams (H.Doc. 328, *supra*, comp. ex. 105 (original) pp. 11-13, r. 4272). The high-dam system would be more costly, but its superiority even for navigation alone was recognized in the report by the Board of Engineers for Rivers and Harbors, as the court below found (fdg. 54, r. 610, app. I, 34; comp. ex. 105 (original) pp. 11-13, r. 4272). The superiority of the high-dam system even for navigation alone was confirmed in detail at the trial by the testimony of Colonel Watkins, the district engineer in charge of the survey (r. 1536-1539, 1556, 1581-1582); of Barker, engaged for four years in studying navigation problems for the survey (r. 1958-1973); and of Brodie, chief engineer of the Federal Barge Lines (r. 2024-2031). The superiorities are summarized in finding 54 (r. 610, app. I, 34)—superior channel depths and widths; substantially fewer lockages; substantially less current

velocity; smaller pool fluctuations; less interruption from floods.[11]

But apart from the advantages for navigation alone, the salient fact is that the high-dam system provided substantial flood control for the Tennessee, while the low-dam system did not. This point is clearly made in the report and is not subject to dispute (comp. ex. 105 (original) pp. 64, 100, r. 4274; fdg. 70, r. 616, app. I, 44). The testimony of Colonel Watkins leaves no doubt that of the two systems the high-dam project was regarded as far preferable from every standpoint except that of original cost (r. 1536-1539, 1581-1582, 1620).

The report itself states, referring to the low-dam project:

> The district engineer does not think that such a project should be built. However, he uses the cost of such a project as a measure of the benefits to navigation which are secured by the construction of the high dams and locks, and considers that a series of low dams might be adopted as an alternative *in any section of the river on which, for some reason, the construction of a high dam was found to be impracticable at the present time* [comp. ex. 105 (original) pp. 4-5 (par. 16)].

And again:

> It is possible to provide a 9-foot waterway by means of low-lift dams, but such a waterway would

[11] The attempt of appellants to suggest offsetting disadvantages is renewed in this Court (br. 20-26), apparently in the view that the findings and the testimony of the best-qualified experts will be disregarded. Appellants' suggestions are answered more fully in the argument, *infra* pp. 76-77.

> be inferior to the high-dam developments and would not permit the economical development of power [*id.*, pp. 12-13 (par. 13), r. 4272].

The final recommendation in the report was stated thus:

> It is recommended that the general plan proposed for the combined development of the Tennessee River and its tributaries for navigation, power, and flood control be adopted as a general guide, subject to such modifications as may be found necessary and approved by the Chief of Engineers and Secretary of War, for navigation and flood control on the Tennessee River and its tributaries . . . [*id.*, pp. 100-101 (par. 80)].

It was concluded, on the basis of fiscal considerations, that a plan should be adopted providing for the creation of a nine-foot navigable channel throughout the length of the Tennessee River by a series of low movable-wicket dams to be constructed at the sole expense of the Federal Government or by a series of fixed high dams to be constructed by cooperation between private interests and the Federal Government. This recommendation was adopted in the Rivers and Harbors Act of 1930 (46 Stat. 918; app. appellants' br., 36).

The alternative plans thus embodied in the act of 1930 have been treated at some length because of the emphasis placed in appellants' brief on the low-dam alternative system, as if it were the *ultima thule* of engineering and constitutional endeavor on the part of the Federal Government. Nothing could be more misleading. "The Federal Navigation Project," as ap-

pellants term it, is little more than a slogan coined by appellants, with the aid of the definite article and capital letters, to describe what was in fact a hypothetical alternative method of improving the Tennessee River for navigation alone, which would preëmpt 32 sites on the main stream and would concededly provide an inferior waterway and no flood control. Appellants, in a remarkable statement, lament that these nonexistent "dams" will be "flooded out and destroyed" (br. 106-107). The hypothetical character of the low-dam alternative and the preference of the Army Engineers for the high-dam plan are demonstrated by the fact that, prior to the enactment of the Tennessee Valley Authority Act, the Army Engineers had already begun construction of a lock for a high dam at the site of the present Wheeler Dam, with provision for subsequent installation of power facilities (fdg. 41, r. 604, app. I, 25; Bowman, r. 1762-1766; Putnam, r. 1172-1173; Crane, r. 1285).

Prior to the act of 1930 and following the great Mississippi flood of 1927, Congress had passed a comprehensive act for further investigation of flood-control measures for the Mississippi basin (act of May 15, 1928, 45 Stat. 534). Section 10 of that act directed the Secretary of War, through the Corps of Engineers, to prepare reports on a number of relevant topics, including

> . . . the effect on the subject of further flood control of the lower Mississippi River to be attained through the control of the flood waters in

> the drainage basins of the tributaries by the establishment of a reservoir system . . . [p. 538].

Intensive investigation of the subject was undertaken for the Chief of Engineers by the Mississippi River Commission, the studies being under the direction of the witness Clemens (r. 1647-1648). The report of the Commission recommended a series of reservoirs on tributaries of the Mississippi, including some 10,000,000 acre-feet of storage on the Tennessee system (Clemens, r. 1649; H.Doc. 259, *supra*, def. ex. 32 (original) pp. 33, 46, r. 4062).[12] The subsequent recognition by the Chief of Engineers of the need for tributary reservoirs to reduce Mississippi floods has already been pointed out (see p. 20, *supra*).

The act of 1930, as has been observed, contemplated the possibility of cooperation between private interests and the Federal Government in the construction of the high dams on the Tennessee. Accordingly, the district engineer and the division engineer approached all the power companies that might be interested in the project. These efforts met with failure, as the district engineer testified (Watkins, r. 1541-1542). It is true, as appellants state (br. 9-10), that some of the companies acquired property holdings that enabled them to control certain of the tentative dam sites, but in the face of failure to begin construction, the acquisition of strategic sites can hardly have been regarded as

[12] The Commission's report set forth two plans, one primarily for Mississippi flood control and the other primarily for local flood control and secondarily for Mississippi flood control. The Commission recommended the second as a general plan (def. ex. 32 (original) p. 33, r. 4062), but, as Clemens testified, it was found practicable to combine both on the Tennessee (see Clemens, r. 1656-1657).

helpful in developing the river. The vice president of appellant The Tennessee Electric Power Company, a witness in this case, frankly admitted in testimony before a House committee in 1933 that "either the Government has to develop the Tennessee River, or it won't be developed at all" (r. 974).

The court found that neither at the time of the enactment of the Tennessee Valley Authority Act nor since that time has there been any reasonable prospect that a comprehensive development of the Tennessee River and its tributaries for the combined purposes of navigation and flood control in the Tennessee and Mississippi River basins could be obtained except by the construction of high dams by the United States or an agency thereof (fdg. 67, r. 614, app. I, 41; see H.Doc. 131, 72d Cong., 1st sess.).

3. THE PROBLEM OF IMPROVING THE USEFULNESS OF WILSON DAM

Even apart from the unified project for the development of the river, two of the dams—Wheeler on the main stream and Norris on the Clinch River—were long recognized to be particularly desirable as auxiliary to Wilson Dam.

In the hearings on the appropriation for the completion of Wilson Dam in 1922, and subsequently, the importance of Wheeler Dam, or Dam Numbered 3 as it was then designated, was emphasized in relation to the

completion of the improvement of the 37 miles comprising Muscle Shoals.[13]

The value of Norris Dam, or Cove Creek Dam as it had "by long custom become known and designated," for purposes of augmenting and regulating the stream flow at Wilson Dam was similarly recognized and is reflected in sections 17 and 18 of the Tennessee Valley Authority Act (app. II, 23-25). The construction of Wilson Dam, as established by the *Ashwander* case, was undertaken in part pursuant to the war powers of Congress, and the dam as completed constitutes a valuable national-defense asset and lawfully owned property of the United States. Wilson Dam was equipped with eight generating units with a total capacity of 184,000 kw (fdg. 43, r. 605, 607, app. I, 27, 29). At the time of its construction the stream flow at Wilson Dam, without the aid of stream-flow regulation, was sufficient to utilize only a small portion of the generating capacity originally installed for firm-power production. Yet emplacements were provided for ten additional generating units which would provide an additional generating capacity of 260,000 kw (*ibid.*). It was evident that increased stream flow through the release of stored waters on the upper reaches of the river during low-water season was essential if the usefulness of Wilson Dam as originally planned was to be achieved. It was essential that the large amount of secondary power

[13] Hearings on Sundry Civil Appropriation Bill, 1922, before Subcommittee of the House Committee on Appropriations, 66th Cong., 3d sess., pp. 14-18, 78-81; Hearings before the House Committee on Military Affairs, 70th Cong., 1st sess., p. 90; S.Rept. 831, 67th Cong., 2d sess. (pt. 2) pp. 14-15.

available at Wilson Dam be converted into more usable firm power by increasing and regulating the stream flow (fdg. 89, r. 620, app. I, 50). In addition, the special importance of Norris, or Cove Creek, Dam as a flood-control and navigation measure was emphasized both in the act (sec. 18, app. II, 24) and in the early consideration given the project.[14] President Hoover, although returning without his approval a bill providing for Government operation of the Muscle Shoals properties, recommended the construction by the United States of Cove Creek Dam (S.Doc. 321, 71st Cong., 3d sess., p. 8). It is this dam that appellants have singled out for special attack (br. 38-40).

4. THE TENNESSEE VALLEY AUTHORITY ACT: ITS PURPOSES AND RELEVANT PROVISIONS

In 1933 the Tennessee River was still unimproved for large-scale commercial navigation. The problem of the uncontrolled floodwaters of the Tennessee River and its tributaries was still unsolved. The potential benefits of the Government-owned Wilson Dam and the Muscle Shoals properties were largely unrealized. There was no prospect that private interests would undertake the development of the river for any purpose. In these circumstances, Congress enacted the Tennessee Valley Authority Act. Its purposes are clearly set forth in section 1:

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[14] S.Rept. 831, 67th Cong., 2d sess. (pt. 1) pp. 33-34; S.Rept. 19, 71st Cong., 1st sess., pp. 10-12; S.Doc. 21, 72d Cong., 1st sess., p. 5; S.Rept. 23, 73d Cong., 1st sess., p. 1; H.Rept. 48, 73d Cong., 1st sess., p. 8; 75 Cong. Rec., 72d Cong., 1st sess., p. 9655; 77 Cong. Rec., 73d Cong., 1st sess., pp. 2276, 2283, 2663. The Senate Committee Report on the Tennessee Valley Authority Act of 1933 refers to the building of "Cove Creek Dam, mainly a flood-control and navigation proposition" (see app. II, 35).

That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority" (hereinafter referred to as the "Corporation") [app. II, 1].

The same principles are repeated in section 4 (j), which deals specifically with authority for the construction of dams:

Sec. 4. Except as otherwise specifically provided in this Act, the Corporation—

* * *

(j) Shall have power to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins; and shall have power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by trans-

mission lines. The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system [app. II, 4-6].

The basic purposes are reiterated in section 23, which governs recommendations for future legislation:

Sec. 23. The President shall, from time to time, as the work provided for in the preceding section progresses [sec. 22, providing for making surveys and plans], recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said section, and for the especial purpose of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation; and (6) the economic and social well-being of the people living in said river basin [app. II, 27].

In addition to the power to construct dams under section 4 (j), each project has been authorized by name in the several appropriation laws dealing with the Authority.[15] Norris Dam (formerly designated as

[15] See Second Deficiency Appropriation Act, fiscal year 1935, 49 Stat. 571; First Deficiency Appropriation Act, fiscal year 1936, 49 Stat. 1597; Second Deficiency Appropriation Act, fiscal year 1937, 50 Stat. 213; Independent Offices Appropriation Act, fiscal year 1939, Public, No. 534, 75th Cong., 3d sess. (See app. II, 71, 76, 83, 92.)

Cove Creek Dam) was also authorized by sections 17 and 18 of the Tennessee Valley Authority Act. These provisions, authorizing that dam as part of the Authority's navigation and flood-control project, recognized also its special usefulness in improving Wilson Dam for national defense.

Appellants assert that the statute authorizes the Authority to develop all of the potential power resources of the Tennessee River and its tributaries, including the hypothetical series of purely power dams located on remote tributaries which were mentioned in House Document No. 328. This is a gross misconstruction of the statute. Section 4 (j), which contains the affirmative grant of power to construct dams, limits that power to

> . . . such dams, and reservoirs, in the Tennessee River and its tributaries, as . . . will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins . . . [app. II, 5-6].

By this language Congress has set up the legislative standard by which every dam proposed for construction must be measured. No dam can be constructed unless it will promote navigation or assist in the control of destructive floods on the Tennessee and Mississippi Rivers. It is established on this record that the number of sites upon which dams

meeting these specifications could be constructed is strictly limited (fdg. 93, r. 621, app. I, 51; Bowman, r. 2235). While House Document No. 328 refers to 149 potential sites on the Tennessee River system, Colonel Watkins, the district engineer, testified that in addition to the seven high dams on the main stream of the Tennessee, the only projects considered for navigation and flood control were a limited number of storage projects on the major tributaries similar to those under construction by the Authority (r. 1579-1580).

Specific directions to the Authority for the operation of its dams are contained in section 9a:

> Sec. 9a. The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority [app. II, 13].

Subject to the express limitations set forth in sections 4 (j) and 9a, the act authorizes the sale and transmission of surplus power according to the terms of sections 10, 11, and 12 (app. II, 13-17). The pertinent provisions of these sections are discussed *infra*, page 106 *et seq.*, in connection with the method of disposal of the power. There is no disposition to minimize these provisions. The availability of substantial amounts of power as a result of construction and operation of the high-dam projects is an important factor bearing on the economic soundness of the undertaking and was undoubtedly given appropriate weight in the determination of Congress to authorize the undertaking. But the fact that the Congress made adequate provision for the disposition of this power in no way reflects upon the purposes for which the dams were authorized.

5. THE PROJECTS OF THE AUTHORITY: THEIR LOCATION, DESIGN, AND ORDER OF CONSTRUCTION

Pursuant to the statute and the appropriation acts of Congress (*supra* pp. 31-34) the Authority has constructed, is constructing, and has recommended for construction, to serve the purposes prescribed in the statute, a series of seven high dams on the main stream of the Tennessee and two reservoir dams on two of the principal tributaries, the Clinch and Hiwassee Rivers (fdg. 40, r. 603, app. I, 23).

The dams *completed* are:

Norris Dam, on the Clinch River
Wheeler Dam, on the main stream

The dams *under construction* are:

Gilbertsville Dam[16]
Pickwick Landing Dam
Chickamauga Dam
Guntersville Dam
all on the main stream, and
Hiwassee Dam, on the Hiwassee River

The dams recommended by the Authority for construction and for which Congress has appropriated funds for project investigations are:

Watts Bar
Coulter Shoals, both on the main stream[17]

While the Fontana project on the Little Tennessee River was recommended in the report entitled *The Unified Development of the Tennessee River System* (comp. ex. 328 (original), r. 3068), submitted to Congress on March 31, 1936, pursuant to section 4 (j) of the Tennessee Valley Authority Act (app. II, 5), Congress has made no appropriation either for construction or investigation at that site, and neither construction nor preliminary investigation nor other work is in progress on it (fdg. 40, r. 603, 604, app. I, 23, 25). The Authority has no plans and has made no investigations of any substantial character for the construction of any other dams; no other projects have been recommended for construction by the Federal Government (fdg. 230, r. 650, app. I, 92).

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[16] The finding does not record Gilbertsville Dam under construction. Funds for beginning construction at Gilbertsville were appropriated subsequent to the trial (Independent Offices Appropriation Act, fiscal year 1939, Public, No. 534, 75th Cong., 3d sess. (see app. II, 92)).

[17] Second Deficiency Appropriation Act, fiscal year 1937, 50 Stat. 213 (app. II, 83).

The sequence of construction has been determined according to the requirements of navigation and flood control, and not of power. The complainants' witness Crane so testified and the court so found (Crane, r. 1285; fdg. 75, r. 618, app. I, 46; Bowman, r. 2244-2247, 1758; Barker, r. 1950-1951). This record furnishes the complete answer to appellants' contention on this point (br. 29-31).

The location of the nine projects of the Authority, constructed, under construction, or recommended for construction, is shown on the map of the Tennessee River drainage basin appearing as defendants' exhibit 36 in the volume entitled *Reproductions of Certain Original Exhibits Submitted by Appellees.*

Each of the dams of the Authority, already constructed, under construction, or recommended for construction, is located on or near the site selected for the high dams by the Army Engineers in their report in House Document No. 328 (comp. ex. 105 (original) p. 4, r. 2615). This was conceded by complainants' witness Crane, and the court below so found (r. 1285; fdg. 41, r. 604, app. I, 25). The close correspondence between the dams of the Authority and those projected in House Document No. 328 for navigation and flood control appears from the testimony of the district engineer in charge of the survey embodied in that report (Watkins, r. 1548, 1579-1580; fdg. 41, r. 604, app. I, 25).

The design of the several projects, showing the locks, the slack-water navigation pool, the flood storage, and the facilities for the generation of power, appears

graphically in defendants' exhibits 38, 40, 44, 49, and 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees.* A table containing data with respect to each dam, showing its location, drainage area, length of reservoir, elevation of gates, normal pool level, low pool level, and acre-feet of storage space, will be found in finding 43 (r. 605, 606, app. I, 27, 28).

As the court below found, each of the projects of the Authority has all the elements of design reasonably required for the combined purposes of navigation and flood control in accordance with accepted engineering standards (fdgs. 42, 68, r. 604, 615, app. I, 26, 42). Each has been designed to provide capacity for a slack-water pool behind the dam for navigation and a substantial additional storage capacity above the slack-water pool level for flood control. (See def. exs. 38, 40, 44, 49 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*) Each of the main-stream projects is equipped with a lock designed by the Corps of Engineers, with space for an additional parallel lock when commerce warrants. The locks which are being installed are of sufficient size and capacity to accommodate adequately the traffic which may be expected in the reasonably near future (fdg. 42, r. 604, app. I, 26). Each of the projects is equipped with large spillway gates to provide effective means for flood control and stream-flow regulation (*ibid.*). In addition, the tributary projects are equipped with sluiceways of large capacity, through which may be discharged for navigation and flood-control purposes several times as much water as may be passed through the generator turbines

(*ibid.*). Each of the projects can be operated to secure substantial benefits in the improvement of navigation, the control of destructive floods, and the production of electric energy (*ibid.*).

The testimony is uncontradicted that the projects of the Authority on the main stream and the tributaries of the Tennessee are the only projects which will provide flood control for the Tennessee and Mississippi Rivers in combination with a nine-foot navigation channel on the main stream of the Tennessee, and the trial court so found (Watkins, r. 1557; Clemens, r. 1651-1652, 1654-1655; Kimball, r. 1851-1852; Barker, r. 1977-1978; Bowman, r. 1759; fdgs. 60, 66, 68, r. 613, 614, 615, app. I, 38, 41, 42). The admissions of complainants' witnesses that the suggested alternative projects made no provision for Mississippi flood control leave no doubt on this point (Kurtz, r. 1229; Kelly, r. 1376-1377).

6. THE BENEFITS SECURED BY THE PROJECTS

It has been found unanimously, and it cannot be disputed, that the projects of the Authority when completed will provide a continuous nine-foot channel with appropriate overdepths over the entire distance from the mouth of the Tennessee River at Paducah, Kentucky, to Knoxville, Tennessee, approximately 650 miles, and will substantially alleviate the destructive floods in the Tennessee and Mississippi River basins (fdgs. 39, 52, 53, 65, 68, r. 603, 610, 614, 615, app. I, 23, 33, 34, 40, 42).

Navigation: The trial court found that *each* of the Authority's projects will result in substantial improvement to navigation (fdg. 53, r. 610, app. I, 34). The continuous nine-foot channel which will be created will make the Tennessee River an integral part of the great inland waterway system centering on the Mississippi (fdgs. 51, r. 610, app. I, 33). This channel will be physically integrated with that existing on the other sections of the interconnected Mississippi system. As the court found:

> The boats and barges which are now in general use on the interconnected inland waterways of the Mississippi River system will be able to navigate the Tennessee River where improved by the projects of the Authority without change of design or extent of loading [fdg. 54, r. 610, 611, app. I, 34, 36].

The importance of this achievement, in view of the century-old effort to accomplish it, would be difficult to exaggerate, though appellants now characterize the waterway as an "incidental channel" (br. 109). The geographical setting of the waterway and its significance to national commerce has been discussed *supra*, pages 15-16. The trial court found that the improvement provided by the projects of the Authority will cause a substantial development of waterway traffic between the Tennessee Valley region and other regions of the United States connected by water, rail, and highway (fdg. 56, r. 611, app. I, 36). It should be observed that the value of the improvement to navigation will not be limited to the reduction in the cost of trans-

portation to shippers but will include substantial intangible values, such as the stimulation of growth of industry and business and the promotion of the general prosperity of the region under the influence of the improved waterway (fdg. 57, r. 612, app. I, 37; Putnam, r. 1182-1183).

Even prior to completion of all the recommended projects on the main stream, navigation will be materially improved through the combined operation of the existing main-stream projects and the tributary dams. The completed Norris Dam is being operated to provide a navigation channel of seven-foot minimum depth in the 207-mile stretch between Pickwick Landing and the mouth of the Tennessee River (fdg. 71, r. 616, app. I, 44). Upon completion of the Hiwassee Dam on the Hiwassee River the depth below Pickwick will be increased to seven and a half feet (*ibid.*). Together with Wheeler and Wilson Dams on the main stream, already constructed, and Pickwick Landing and Guntersville Dams, under construction, these projects will provide a commercially feasible navigation channel between Chattanooga and the inland waterway system, a distance of 464 miles (*ibid.*). As a result of the completion of the dams now under construction, for the larger part of each year there will be a through navigation channel of nine feet from Chattanooga to the mouth of the river (*ibid.*). The court unanimously found that the tributary projects would substantially increase the navigation depths on the lower Mississippi River and on the shallow upper reaches of the navigation pools created by the main-

stream dams, and that this result would be of material benefit to navigation on the Tennessee and Mississippi Rivers (fdg. 69, r. 616, app. I, 43; see also fdg. 52, r. 610, app. I, 33).

Flood control: The court unanimously found that each of the projects is of substantial value for the reduction of flood heights in the Tennessee and Mississippi River basins (fdg. 65, r. 614, app. I, 40). A total of 8,925,000 acre-feet of controlled flood storage will be made available by the projects of the Authority (fdg. 43, r. 605, 606, app. I, 27, 28). Of this amount, 6,543,000 acre-feet will be available at the main-stream dams and 2,382,000 acre-feet at the two tributary dams (*ibid.*). The distribution of the space among the various projects is shown in the table in finding 43 (*ibid.*). In the operation of the dams as discussed *infra* (pp. 48-51), a total of 4,034,000 acre-feet of the same reservoir space is used both for storage in the flood season and releases during the low-water season (*ibid.*). The contention of appellants that the Authority's projects have merely displaced so-called "valley" or "natural" storage is absurd. So-called valley storage is simply the changing space occupied by the flood itself as it moves down the valley and spreads its destructive force (fdg. 66, r. 614, app. I, 41).

If the projects of the Authority had been in operation during the past floods since 1897, they could have reduced the height of all major Mississippi floods since that date by two feet or more from Cairo, Illinois, at least to Helena, Arkansas; and it is reasonable to expect that these projects will make possible a reduction

similar in extent in all probable floods in the future on the lower Mississippi. This is the conclusion set forth in the testimony of several highly qualified witnesses and supported by thorough studies and investigations (Kimball, r. 1838-1839; Clemens, r. 1650-1651; Floyd, r. 1890, 1891; Okey, r. 1933-1934; Kelly, r. 1381). The importance of this contribution to the control of Mississippi floods is sufficiently evidenced by the fact that the existing levee system for the control of Mississippi floods is now recognized as inadequate, and by the further fact that as originally designed the levee provided only a one-foot freeboard (Kelly, r. 1378-1382; fdg. 62, r. 613, app. I, 39). The reduction provided by the Authority's projects will provide substantial additional flood protection for the lower Mississippi, a substantial safety factor for the levee system, and reduce the frequency of the use of floodways and the flooding of backwater areas (Clemens, r. 1645-1646, 1650-1651, 1672; Okey, r. 1914-1919, 1922; fdg. 65, r. 614, app. I, 40).

While, as pointed out below, any one of the dams cannot be viewed in isolation if its benefits are to be adequately understood, nevertheless, in view of the attack made on the tributary dams, it is noteworthy that the court found that Norris Dam, even before the completion of the system, has been successfully operated to improve substantially the navigation channel of the Tennessee between Wilson Dam and its mouth, to prevent a probable flood at Chattanooga in the year 1936, and to hold off through the peak of the Mississippi flood of 1937 approximately 28,000 cubic

feet per second (fdg. 73, r. 617, app. I, 45). For a period of six weeks during the Mississippi flood of 1937, Norris Dam stored the entire flow of the Clinch River (*ibid.*), which itself may have saved the city of Cairo (r. 4315; *cf.* Kelly, r. 1383; Clemens, r. 1645).

In addition to their effect on the reduction of flood peaks on the lower Mississippi, the projects of the Authority are likewise important to serve the purpose of flood control on the Tennessee. The court found that for effective flood control in the Tennessee basin it is desirable to provide high dams with controlled storage both on the main stream and on the tributaries, including the Clinch and Hiwassee Rivers (fdg. 60, r. 613, app. I, 38). It is true that the projects will not alone eliminate the flood hazard at Chattanooga, but no series of reservoirs ever proposed would of themselves accomplish that end without the construction of local protection works (Kurtz, r. 1204; comp. ex. 328 (original) p. 19, r. 3068). It is also true that the projects would have to be supplemented by a project on each of the major tributaries of the Tennessee above Chattanooga, including the Little Tennessee, the French Broad, and the Holston, in order to reduce the height of the greatest possible flood sufficiently to make feasible the construction of the necessary levee works by the city of Chattanooga (Kimball, r. 1836; comp. ex. 328 (original) p. 18, r. 3068). But it cannot be denied that if the Authority's projects had been in operation in the past, they would have eliminated substantially all flood damage at Chattanooga for which adequate records are available (Kimball, r. 1835-1836; def. ex.

82, r. 4097). And in any system established for effective control of Tennessee floods, the projects of the Authority on the main stream and on the tributaries should be included (Kimball, r. 1834-1835; Watkins, r. 1539-1540; fdg. 60, r. 613, app. I, 38).

Appellants, while conceding that the projects of the Authority could be operated to obtain these benefits, set up an alternative system which they insisted would secure at least the same benefits at lesser cost. That system, projected for purposes of the case by appellants' witness Kurtz, consisted of a series of detention reservoirs on the Tennessee. That hypothetical system is discussed more fully *infra*, pages 86-87. It is enough here to state that, as the court found and as the appellants acknowledge, the system would have no value for flood control on the Tennessee below Chattanooga and none whatever for Mississippi flood control (fdg. 66, r. 614, app. I, 41). This hypothetical plan would thus plainly fail to conform to the legitimate interests of Congress. In fact, as the witness Clemens testified, the system might be a positive menace in conditions of flood on the Mississippi (r. 1654-1655; fdg. 70, r. 616, app. I 44). Furthermore, the system of detention reservoirs would involve the pre-emption of the limited number of sites available on the Tennessee for the construction of multiple-purpose projects; and since the detention reservoirs would have no value except for local flood protection above Chattanooga, they would forever preclude the utilization and development of the river by

anyone for the combined purposes sought to be realized by Congress (fdgs. 66-70, r. 614-616, app. I, 41-44).

Improvement of national-defense projects: There is no dispute in the record on the following finding of the court:

> The increase of the low-water flow by means of the storage of water during the high-water season at Norris Dam and the release of such water during the low-water period has increased and will substantially increase the continuous water power available at Wilson Dam and will increase the value of Wilson Dam for all purposes [fdg. 72, r. 617, app. I, 45].

7. THE OPERATION OF THE PROJECTS FOR NAVIGATION AND FLOOD CONTROL AND THE PRODUCTION OF POWER

Section 9a of the act (app. II, 13) makes explicit the requirement that the projects of the Authority be operated primarily in the interest of navigation and flood control. The detailed method of operation in conformity with this requirement must necessarily be determined on the basis of engineering experience and investigation. The engineers of the Authority in responsible charge have determined upon a method of operation for the projects, on the basis of a study of all available records, which in their judgment is the most effective method for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River basins (fdg. 44, r. 608, app. I, 30). The projects of the Authority which are com-

pleted and in operation have been and are operated primarily for navigation and flood control; the responsible officers of the Authority charged with the operation of the projects are required by instructions from the board of directors to operate them primarily for those purposes, and these instructions have been uniformly obeyed. This was the unanimous finding of the court (fdg. 76, r. 618, app. I, 47).

The method of operation determined upon and carried out by the engineers of the Authority may be described succinctly as follows. The reservoir levels of the main-stream dams below Chattanooga are held somewhat above low pool level during the flood season and drawn down to or below such level in advance of a flood; those above Chattanooga are to be held at about low pool level during flood season. As the flood season draws to a close, about the begining of April, reservoir levels on the main stream are allowed to rise. The reservoir levels of the tributary projects are maintained at about low pool level at the beginning of the flood season, and a substantial portion of the storage capacity below so-called normal pool level is gradually filled during and after the flood season. A sufficient capacity is held available at the close of the flood season to control the largest run-off that may be expected at that time. The water stored in the reservoirs on the tributaries and the main stream is released during the low-water season to augment the low-water flow (fdg. 45, r. 608, app. I, 30).

As the trial court found, the general method of operation set forth in finding 45 (r. 608, app. I, 30) con-

forms to the method of operation for navigation and for flood control contemplated in House Document No. 328 and House Document No. 259 (both *supra*; comp. ex. 105 (original), r. 2615; def. ex. 32 (original), r. 4062) and is reasonably calculated to provide most effectively for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River valleys without reduction in the effectiveness of the Authority's projects for either flood control or navigation (fdg. 46, r. 608, app. I, 31).

When operated for the improvement of navigation and the control of destructive floods, the dams of the Authority will provide, in addition to the benefits to navigation and flood control, a large amount of continuous power (fdg. 94, r. 621, app. I, 51). The amount of continuous power is determined by the available head and the minimum flow in low-water season (*ibid.*). The construction and operation of the projects of the Authority for navigation and flood control will concentrate the fall of the river at certain points, thus necessarily creating a head of water power, and will substantially augment the minimum flow in low-water season (*ibid.*). The so-called "dead storage" behind the dams is itself the navigation channel and necessarily forms a power head.[18] The floodwaters stored in the additional storage space during or after the flood

[18] The complainants' contention that the slack-water pools behind the tributary dams are valuable only for power is refuted by the findings of the court and the testimony of the witnesses Watkins and Barker (fdg. 68, r. 615, app. I, 42; Watkins, r. 1542, 1543; Barker, r. 1955-1957). It should be noted that this so-called "dead storage" at the tributary projects is only a small fraction of the total storage at these projects and in the entire system.

season may be released in low-water season, increasing power and the navigable depths in the stream below (Watkins, r. 1543-1544, 1633-1634). In this manner the same space used for flood control also serves the other functions. The power is thus acquired in the operation of the projects for flood control and navigation, and the trial court unanimously so found (fdg. 94, r. 621, app. I, 51).

There is no basis for the contention that the projects have been enlarged beyond the needs of navigation and flood control. The amount of storage in the Authority's projects over and above that required for maintenance of the nine-foot channel is somewhat less than the ten million acre-feet on the Tennessee River system recommended by the Mississippi River Commission for Mississippi and local flood control (H.Doc. 259, *supra*, def. ex. 32 (original) pp. 40, 46; Kelly, r. 1385-1386) and set forth in *The Unified Development of the Tennessee River System* as a guide to the Authority's objectives for Mississippi flood control (comp. ex. 328 (original) p. 19, r. 3068). Likewise, the total storage capacity of all the dams above Chattanooga, over and above the amount required for maintenance of the nine-foot channel, is less than the total recommended by the complainants' witness Kurtz for Tennessee flood control (*cf.* comp. ex. 353, r. 3086, with fdg. 43, r. 605, 606, app. I, 27, 28). The benefits to navigation and flood control described above could not be obtained by any alternative structures. The trial court found on the basis of the uncontradicted evidence that the high-dam projects of the Authority, both on the main stream and the tributaries of the Tennessee River, are

the only projects which will provide effective flood control for the Tennessee and Mississippi Rivers in combination with a nine-foot navigation channel on the Tennessee River (fdgs. 66, 68, r. 614, 615, app. I, 41, 42).

The appellants' sole claim is that the same flood storage cannot be operated both for flood control and power. It is sufficient answer that, as the trial court found, there is no such conflict in the operation of the projects of the Authority (fdg. 47, r. 609, app. I, 31). The Authority's method of operation is reasonably calculated to provide most effectively both for flood control and for navigation, and the trial court so found (fdg. 46, r. 608, app. I, 31). See argument, *infra* pages 90-94.

Appellants' statement that the tributary dams create five-sixths of the power has no basis in fact. As well might it be said that *all* the power is produced by the main-stream dams. The tributary dams produce no firm power whatever. For months their generators are nonproductive and no water is released (Woodward, r. 1786). These dams merely provide an increased water supply in the dry months, the main-stream dams producing practically all the power for the remainder of the year (def. ex. 139, r. 4186; Wessenauer, r. 2175-2180).

Appellants' basic error on this question and throughout their argument is their failure to recognize the necessary interrelationship of all of the projects of the Authority in the performance of the inseparable functions of navigation and flood control. Both of these related functions are served by each

project, and each is operated for both. But no dam is independent. Significantly, the river system itself is unitary, and a proper regard for its control in the interest of the combined functions of navigation and flood control requires that the operation of all the projects be coordinated. In general, storage and releases in the tributary reservoirs must be responsive to the needs of the main stream. The effective control of floods requires carefully coordinated operation of all the dams from day to day. Flood routing throughout the stream is a scientific problem. Each of the dams should be under effective control and operated with due regard for the status of the reservoirs at the other dams, and the operation of the system as a whole must meet the requirement of reducing the flood crest at the point of danger.

The Authority's projects must serve not merely Tennessee navigation and flood control but Mississippi flood control as well, a point virtually ignored in appellants' brief. There can be no doubt that for the most effective flood control a combination of both main-stream and tributary dams is necessary (fdgs. 60, 66, r. 613, 614, app. I, 38, 41). The function of the tributary dams is to reduce the volume of the floodwaters and enable the main-stream dams closest to the danger point to reduce the crest (Kimball, r. 1838, 1850; Clemens, r. 1651, 1652; Floyd, r. 1891-1894).[19] Whether

[19] The assertion that the main-stream dams above Chattanooga would be valueless in a great Tennessee flood because they would be drowned out simply ignores the fact that their effectiveness depends on a reduction in the volume of the flood by tributary projects, and that, this accomplished, the main-stream dams can operate most effectively to reduce the flood peaks at the exact place and time needed (Kimball, r. 1869).

the storage capacity at one of the dams is relatively small, as at Guntersville, or relatively large, as at Gilbertsville, is immaterial. It is the *total capacity* of the system that matters, provided only that there be a reasonable balance between main-stream and tributary storage (Clemens, r. 1657). The interrelationship and interdependence extends to navigation in combination with flood control. Thus, the navigation depths on the lower 200-mile (and controlling) stretch of the Tennessee River can be maintained by stream-flow regulation (fdg. 71, r. 616, app. I, 44), which permits substantial additional capacity to be made available at Gilbertsville (in close proximity to the Mississippi River) for the reduction of the flood crest without diminution of the necessary nine-foot navigable depth. The importance of this consideration is fully developed in the testimony of the witness Floyd (r. 1891-1894) and established by the findings (fdg. 69, r. 616, app. I, 43). The methods of coordinated operation are discussed more fully in the argument.

8. THE METHOD OF DISPOSAL OF THE POWER

With the complete generating units which have already been installed or are under contract for installation at Norris, Wheeler, Guntersville, Wilson, and Pickwick Landing Dams, the dams constructed or under construction by the Authority will have a firm-power capacity of 395,000 kw (fdg. 94, r. 621, app. I, 51). Together with the additional generating units at these dams and at Hiwassee and Chickamauga Dams

which have been authorized and for which appropriations have been made or requested, the dams of the Authority will have a firm-power capacity of 570,000 kw (*ibid.*). Of this amount, the Authority is already committed to supply 310,530 kw, as shown by the contracts in evidence (fdgs. 165-168, r. 637, app. I, 74-75). There is a steadily increasing demand for electric energy in this area, as well as unserved potential markets (fdgs. 233-235, r. 651, app. I, 94). As shown by the evidence and found by the court, it is to be anticipated that the utilities within ready transmission distance of the Authority's run-of-the-river plants will require 310,000 kw of additional capacity in 1939 and 787,500 kw by 1943 (fdg. 231, r. 650, app. I, 92). It appears without dispute that the amount of power which will be available at the projects of the Authority is less than the amounts necessary to meet the increases in demand in the area which were predicted by witnesses for both sides (fdg. 238, r. 652, app. I, 95).

Failure to generate and sell the power created by the operation of the Authority's dams for navigation and flood control (fdg. 94, r. 621, app. I, 51) would result in its complete waste (fdg. 172, r. 638, app. I, 76). Section 9a (app. I, 13), which requires that the dams be operated primarily for navigation and flood control, also authorizes the board, so far as may be consistent with these purposes, to provide for the generation and marketing of electric energy in order to avoid the waste of water power and, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects. Provisions for the generation

of power at each of the projects and installation of generating facilities at some of them have been made pursuant to this section. Sections 10 and 11 (app. II, 13-15) provide for sales of power to States, public agencies, corporations, and rural areas, preference to be given, in accordance with familiar precedent, to public agencies and quasi-public membership corporations. Section 12 (app. II, 15) authorizes the board to construct or acquire transmission lines "In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power."

A full discussion of the method of disposal of the Authority's power, pursuant to these statutory provisions, is contained in the argument (*infra* p. 106 *et seq.*). The salient facts may, however, be summarized here.

The market for the power at the dam sites is dominated by three affiliated companies of the Commonwealth and Southern system (fdg. 177, r. 639, app. I, 78), and the market for at least 100 miles from any of the dams is likewise controlled by that system and, to a much smaller degree, by the Electric Bond & Share Company (*ibid.*). The Authority has in fact sold large amounts of power to the Commonwealth and Southern companies (fdgs. 196, 213, r. 643, 646, app. I, 82, 87). Pursuant to the provisions of the statute, the Authority has entered into contracts for the sale of power at wholesale to municipalities and to rural cooperative associations serving consumers theretofore without electric service and has contracted for the sale of firm and secondary power to large electrochemical

and electrometallurgical industries constituting new electric business in the area (fdgs. 203-207, r. 644-645, app. I, 84-86; fdg. 151, r. 633, app. I, 69). The Authority does not own or operate any local or urban retail distribution systems[20] and does not attempt to control the operations of such systems (fdgs. 106, 140-147, 187, 193, r. 624, 631-632, 641, 642, app. I, 56, 66-68, 80, 82). The municipalities and cooperatives purchasing power from the Authority assume the responsibility at the point of delivery and sell and distribute the power over their own facilities with their own operating staffs and without assistance or direction from the Authority (fdg. 140, r. 631, app. I, 66). In order to serve its purchasers, the Authority has constructed or acquired about 1,100 miles of marketing transmission lines (fdgs. 183, 186, r. 640, 641, app. I, 79, 80), the largest of which is about 100 miles in length (def. ex. 136, r. 4175; def. ex. 136A in *Reproductions of Certain Original Exhibits Submitted by Appellees*).

The essential similarity of these facilities and classes of purchasers to those involved in the *Ashwander* case is evident. The similarity is analyzed in some detail in the argument *infra*, pages 114-116.

A word should be added regarding the size of the Authority's undertaking. The phase of the undertaking dealing with the disposal of power has been greatly magnified by appellants. Although, as has been pointed out, the firm-power capacity of all the seven dams of

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20 The Authority owns a small number of rural lines in the vicinity of Norris and Wilson Dams, some of which were purchased from the Alabama Power Company and The Tennessee Electric Power Company (fdgs. 106, 187, r. 624, 641, app. I, 56, 80). No question is raised as to these.

the Authority now constructed or authorized for construction is 570,000 kw at 60% load factor, with all the generating units installed or authorized for installation (fdg. 94, r. 621, app. I, 51), appellants persistently use a figure of 1,100,000 kw of firm capacity at the same load factor (see, e.g., br. 67), an amount almost twice as great. As is explained *infra*, page 109, the latter figure is based on hypothetical calculations which assume unauthorized installations at unauthorized dams and unauthorized interconnections with privately owned plants. The same fallacy is responsible for the tenfold ballooning by appellants of the Authority's 1,100 miles of transmission lines (plus about 400 miles of plant tie lines) into 15,000 miles of lines (br. 69). See *infra*, pages 111-112.

In pointing to these exaggerations, we do not seek to minimize the scope of the Authority's undertaking insofar as it relates to power. That undertaking is an impressive one, though it is not nearly so large as the historic undertaking of the Government in developing and marketing its real property, the public domain, and it is quite comparable to the disposal of power at the Government's Boulder Canyon project (see *infra* pp. 141-145). But the phase of the Authority's undertaking which is concerned with power must be viewed in relation to the other aspects of the project. A system of structures which will create and maintain a nine-foot navigable waterway throughout a distance of 650 miles and which will provide almost 9,000,000 acre-feet for controlled flood storage can be expected to make available a proportionate amount

of power. If the undertaking is large, it is large in all its aspects, all its functions, and all its benefits.

Since the legal issues concerning the validity of the dams and the property in the resulting power depend upon the application of settled principles to the engineering facts set out above, we have, for purposes of clarity, placed the argument on those issues immediately following this statement of facts and in advance of the argument on the right of the complainants to maintain their suit. Considerations of convenience seemed to dictate such a course. It is our position, however, adhered to throughout the case, that the complainants are without sufficient legal interest to maintain this suit, and that the case may be disposed of upon that ground.

SUMMARY OF ARGUMENT

I

Under the decision of this Court in the *Ashwander* case, electric energy which "comes into being in the operation of works constructed in the exercise of some power delegated to the United States" is the lawful property of the United States. *Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288, 340. The question for decision on this aspect of the case is whether the projects of the Authority were authorized for and substantially serve constitutional functions.

The Tennessee Valley Authority Act sets forth as its basic purposes the improvement of navigation, the control of destructive floods in the Tennessee and Mississippi River basins, and the promotion of national defense. The importance of these functions is attested by the fact that each was the subject of extensive investigation and endeavor by Congress, the Corps of Engineers of the Army, and other interested bodies prior to the consideration and enactment of the statute. The projects of the Authority are limited by the act to such as will serve these basic constitutional functions, and Congress has specifically authorized the several structures in that view. The whole record confirms the legislative judgment that the projects are appropriate means for the accomplishment of the functions prescribed in the statute.

1. Under any theory of constitutional authority, however narrow, the power generated at the projects

is lawfully acquired, since these are the only projects capable of providing flood control on the Tennessee and the Mississippi in conjunction with a nine-foot navigation channel on the Tennessee. That the projects will create and maintain a continuous nine-foot waterway throughout the 650-mile length of the Tennessee is undisputed. Not only the main-stream dams, but the two tributary dams as well, will provide substantial benefits to navigation both on the Tennessee and the Mississippi, by virtue of releases of stored water in low-water season. It is contended by appellants that a comparable navigation improvement could have been obtained by the construction of a less costly system of 32 low dams. While the relative advantages and disadvantages of the alternative systems are not legally material, the record demonstrates and the trial court found that the projects of the Authority will provide a navigation channel superior to that which could be provided by any alternative system.

The function of the projects in serving to control floods in the Tennessee and Mississippi River basins furnishes additional ground for their validity. Even if the power to construct flood-control works must be rested on the power to improve navigation, the test is met by these projects, since their operation for flood-control purposes results in substantial benefits to navigation. *Jackson* v. *United States*, 230 U.S. 1, 23; *Cubbins* v. *Mississippi River Comm.*, 241 U.S. 351, 368-369. But Congress has power to promote and protect interstate commerce on land as well as on water, and accordingly to engage in flood-control measures where,

as on the Tennessee and the lower Mississippi, there is a serious flood menace to all forms of interstate commerce. *Cf. Wilson* v. *New*, 243 U.S. 332; *National Labor Relations Board* v. *Jones & Laughlin Steel Corp.*, 301 U.S. 1. In addition, the power of Congress to cope with the recurring threat of floods can be rested on its power to make expenditures for the general welfare. *Cf. Steward Mach. Co.* v. *Davis*, 301 U.S. 548.

The interest of national defense is substantially served by the tributary dams which release water during the low-water season and so enhance the value and usefulness of the Government-owned properties at Muscle Shoals.

The construction and operation of the projects for the purposes of navigation and flood control will, as the court found, necessarily produce a large amount of continuous power. Pursuant to section 9a of the act, which directs that the Authority operate its projects primarily for the purposes of promoting navigation and controlling floods, the board of directors has instructed the responsible officers of the Authority to operate them primarily for those functions, and these instructions have been uniformly obeyed. In the operation of the projects there is no real conflict between the utilization of storage capacity for flood control and the production of power.

2. As has been stated, the Authority's projects are the only ones capable of providing flood control in the Tennessee and Mississippi River basins in conjunction with nine-foot navigation on the Tennessee,

and the operation of the projects for those purposes necessarily produces a large amount of continuous power. But even if the facts were otherwise, the property in the power would nonetheless be lawfully acquired by the United States. In providing works which appropriately serve as navigation and flood-control structures, Congress may determine the size of the projects and the mode and manner of their use, and the power which is thus acquired is the lawful property of the United States. *Arizona* v. *California*, 283 U.S. 423, 456; *Green Bay & Miss. Canal Co.* v. *Patten Paper Co.*, 172 U.S. 58, *rehearing denied*, 173 U.S. 179; *United States* v. *Chandler-Dunbar Water Power Co.*, 229 U.S. 53.

The development of the Tennessee River for navigation alone or for flood control alone by systems of structures such as those suggested by appellants would require that the development of the river for other legitimate purposes be abandoned. The number of sites for such structures on the river is strictly limited, and if they were preëmpted for any single function, the development of the river for other related uses would be permanently foreclosed.

II

The means of disposition of power authorized by the statute are lawful. As this Court held in the *Ashwander* case, the water power created by these projects is the property of the United States, may be converted into electric energy, and, under the property clause of the Constitution, all of the electricity so acquired may be disposed of by transmission to the market and by sales to municipalities, rural cooperatives, and industrial customers. *Ashwander* v. *Tennessee Valley Authority, supra.*

1. In the *Ashwander* decision this Court upheld the validity of a contract providing for sale to the Authority of certain transmission lines of the Alabama Power Company serving a number of municipalities in northern Alabama, as well as auxiliary lines serving rural and industrial customers. There is no distinction between the means of disposition set forth in this record and those approved in that decision. The Authority is now selling power to the same classes of customers as those served by the lines purchased under the contract approved in the *Ashwander* case. And, as found by the trial court, all of the marketing facilities constructed and operated by the Authority, namely, *transmission lines*, *substations*, and *rural lines*, are similar in character and function to the facilities purchased under that contract.

In this case, as in the *Ashwander* case, the method of disposition is necessary to avoid a private monopoly of the Government's property, to prevent waste, and

to secure a widespread distribution of benefits pursuant to the statute.

2. As authorized by the act, the Authority's contracts with municipalities and cooperatives establish the resale rates to be charged by the distributors (sec. 10). Appellants have no standing to challenge these provisions in the contracts, since the provisions were voluntarily entered into by the municipalities and cooperatives, which are empowered to do so by valid State law. Any advantage or disadvantage to appellants resulting from the rates adopted by the municipalities and cooperatives is merely the incidental result of the exercise of the rights vested in them by the laws of the States of their creation to set their own rates and to contract with respect to them. *Edward Hines Trustees* v. *United States*, 263 U.S. 143, 148; *Sprunt & Son* v. *United States*, 281 U.S. 249, 254-256; *Wilbur* v. *Texas Co.*, 40 F. (2d) 787 (App.D.C., 1930), *cert. denied*, 282 U.S. 843; *Georgia Power Co.* v. *Tennessee Valley Authority*, 14 F.Supp. 673 (N.D. Ga., 1936).

In any event, these provisions of the contracts are valid. They were adopted, as the contracts recite, "In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, and in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which municipality [cooperative] operates." In fact, these results have been secured (see, e.g., comp. ex. 118, r. 2771, 2802, 2804). The federal interests involved are apparent. The Gov-

ernment is selling at wholesale. The demand for the Government property will be influenced by the rates charged to the ultimate consumer. The Congress, in the position of a trustee of Government property, may therefore authorize this means to assure a widespread diffusion of the benefits to the people. It has long been established that in disposing of its property the Federal Government may contract with the purchaser with respect to the use of the property and to the price at which it may be resold. *Oregon & Calif.R.R.* v. *United States*, 238 U.S. 393; *United States* v. *Gratiot*, 26 Fed. Cas. 12 (C.C.D.Ill., 1839), *aff'd*, 14 Pet. 526.

3. There is no invasion of the rights reserved to the States under the tenth amendment, even if it be assumed that the amendment constitutes an independent limitation on the exercise of granted powers. The denial of the power of the Congress to construct the necessary transmission facilities and to enter into the necessary contracts for the sale of the power would limit the Authority's market to sales at the dam sites where the Commonwealth and Southern companies, in all practical effect, are the only available purchasers.

The conclusive answer to the invocation of the tenth amendment is that the means of disposition do not impair the exercise of the States' police power. The controlling fact is that the Authority is dealing with municipalities and cooperatives who are subject at all times to the complete control of the States, and the State courts have determined that there is no abdica-

tion of State powers. *Memphis Power & Light Co.* v. *Memphis*, 172 Tenn. 346 (1937); *Oppenheim* v. *Florence*, 229 Ala. 50 (1934). An arrangement by which the State authorizes its agencies, at their election, to purchase property from the Government, still retaining in the State the right of regulation and control, can give rise to no questions under the tenth amendment. *Cf. Steward Mach. Co.* v. *Davis, supra; United States* v. *Bekins*, 304 U.S. 27. The States may authorize municipalities to construct and operate electric plants in competition with the appellant companies even though the result is harmful to the business of the companies. *Alabama Power Co.* v. *Ickes*, 302 U.S. 464. To the extent that this competition is related to the wholesale service of the Authority, the case is one of the federal exercise of the granted power to dispose of public property by sales to local public agencies who themselves engage in an enterprise authorized by the States. Such cooperation is permitted by the Constitution and not forbidden by the tenth amendment. *Duke Power Co.* v. *Greenwood County*, 91 F. (2d) 665, 673 (C.C.A. 4th, 1937); *cf. Steward Mach. Co.* v. *Davis, supra; United States* v. *Bekins, supra.*

Moreover, any effect of competition upon appellants' rates does not constitute regulation and is only the collateral effect of the exercise of a granted power. *Duke Power Co.* v. *Greenwood County, supra; cf. Sonzinsky* v. *United States*, 300 U.S. 506, 513-514; *United States* v. *Carolene Products Co.*, 304 U.S. 144.

The federal power to dispose of Government property is not limited by the territorial scope of the project. The scope of the projects necessary for the disposition of public property is a question for Congress to determine (*cf. Arizona* v. *California, supra; United States* v. *Hanson*, 167 Fed. 881 (C.C.A. 9th, 1909)). In the *Ashwander* case, this Court rejected the contention that the amount of power which the Government may sell is limited by any consideration other than the amount lawfully available.

The resale-rate provisions of the contracts do not deprive the States of their power to regulate intrastate rates and are not in violation of the tenth amendment. The courts of the States in which these contracts are in force have held that there is no interference with State jurisdiction. *Oppenheim* v. *Florence, supra; Memphis Power & Light Co.* v. *Memphis, supra.* There cannot be said to be any impairment of State sovereignty where, as here, the States have authorized the contracts and have reserved a continuing power to revoke the authorization. *Cf. Steward Mach. Co.* v. *Davis, supra; United States* v. *Bekins, supra.*

4. The sale of power by the Authority and its wholesale customers does not constitute regulation, and the loss of appellants' business, if any, is not a "taking" of their property under the fifth amendment. *Sonzinsky* v. *United States, supra; Standard Scale Co.* v. *Farrell*, 249 U.S. 571; *Pennsylvania R.R.Co.* v. *United States R.R. Labor Board*, 261 U.S. 72; *United States* v. *Los Angeles R.R.*, 273 U.S. 299. *Cf. Walla Walla* v.

Walla Walla Water Co., 172 U.S. 1; *Joplin* v. *Southwest Mo. Light Co.*, 191 U.S. 150; *Helena Water Works Co.* v. *Helena*, 195 U.S. 383; *Puget Sound Co.* v. *Seattle*, 291 U.S. 619.

III

1. Appellants have no standing to maintain this suit. Their municipal and county street franchises, licenses, or easements, at the most, confer only the right to enjoin the use of the streets and highways by one competing with appellants without a like franchise, license, or easement. No showing has been made that the Authority's facilities occupy the public streets and highways. Moreover, whatever the nature of the rights conferred by local street franchises, licenses, or easements, it is conceded that the Authority has been granted such rights by the local authorities in the areas in which it operates.

The only so-called "State franchises" which appellants, as a class, possess are corporate privileges derived under the general State laws governing incorporation and the qualification of foreign corporations. Such corporate "franchises" obviously confer no immunity from competition. *Cf. Railroad Co.* v. *Ellerman*, 105 U.S. 166. Appellants have not been required to obtain certificates of convenience and necessity to serve in the area in which the Authority is operating. Consequently, appellants are not within the protection of *Frost* v. *Corporation Comm.*, 278 U.S. 515.

In any event, the State statutes in all the States in which the Authority is under contract to sell electricity within the claimed territory of appellants have exempted the Authority from the jurisdiction of the regulatory commissions and from the requirement of certificates of convenience and necessity. The validity of these exemptions is not challenged as unlawfully discriminatory. The decision of this Court in the *Frost* case merely holds that one who is required to obtain a certificate of convenience and necessity may enjoin competition by one who is subject to the same statutory provisions and has failed to comply with their terms. *Carolina Power & Light Co.* v. *South Carolina Public Service Authority*, 94 F. (2d) 520 (C. C.A. 4th, 1938), *cert. denied*, 58 Sup. Ct. 1048. It is insufficient answer that the powers of the Federal Government may not be enlarged by State enactments. The validity of these State statutory exemptions (which is not challenged by appellants) may be supported without regard to the constitutional validity of the Tennessee Valley Authority Act.

2. In addition to their lack of the necessary franchises, nine of the appellant companies are not shown to be threatened with damage by any concrete act of the appellees. In the claimed territory of these appellants the Authority neither owns electric facilities nor has it negotiated any contracts for the sale of power. As to these appellants, obviously no justiciable controversy is presented. *Ashwander* v. *Tennessee Valley Authority, supra.* Four other appellants, all members of the Commonwealth and Southern system, are es-

topped to deny that the power of the Authority is lawfully acquired and are likewise estopped from challenging the validity of the transmission and the marketing of the power. These companies have purchased a large proportion of the total amount of the power developed and generated at the projects of the Authority, both at the switchboard and, in the case of the Alabama Power Company, at the end of the Authority's transmission line; and all of them have received many other benefits under the provisions of the act now challenged. Acceptance of these benefits estops these appellants from questioning the validity of the provisions of the act under which the benefits were received. *Great Falls Mfg. Co.* v. *Attorney General*, 124 U.S. 581; *Wall* v. *Parrot Silver & Copper Co.*, 244 U.S. 407; *St. Louis Co.* v. *Prendergast Co.*, 260 U.S. 469. The decision in the *Ashwander* case held merely that the purchase of power at the dam site under the circumstances of that case did not preclude an attack on separable provisions of the statute authorizing the acquisition of transmission facilities and is clearly distinguishable from the case at bar.

3. Finally, the competition of which the appellants complain is the competition of the municipalities and cooperatives and not of the Authority, and under the decision in *Alabama Power Co.* v. *Ickes, supra,* the appellants cannot challenge the validity of the contracts between the Authority and these municipalities and cooperatives. Appellants' legal interest is the same whether the permanent electric supply of the

municipal and cooperative distribution systems is generated by facilities owned by the United States or by facilities owned by the distributor but constructed by means of federal loans and grants.

The potential damage alleged to result from the loss of the wholesale municipal and cooperative markets served by the Authority is wholly speculative and unreal. Neither the municipalities nor the cooperatives were potential customers of the appellants. The same is true of the large electrochemical and electrometallurgical industries under contract with the Authority which have located in the claimed territory of the Commonwealth and Southern companies.

On the whole record, appellants have failed to show a sufficient legal interest to maintain this suit, and the case presented does not admit of judicial determination.

IV

The trial was fair and exhaustive. On the whole record, it is clear that the rulings of the trial court on evidence and procedure were well within its discretion, and, in any event, appellants have failed to show any prejudicial error sufficient to justify or even to permit the remand of a case of this character.

ARGUMENT

I

THE POWER GENERATED BY THE AUTHORITY IS ACQUIRED IN THE OPERATION OF PROJECTS CONSTRUCTED PURSUANT TO THE CONSTITUTIONAL POWERS OF CONGRESS AND IS THE LAWFUL PROPERTY OF THE UNITED STATES.

As this Court held in the *Ashwander* case, the electric energy which "comes into being in the operation of works constructed in the exercise of some power delegated to the United States" is the property of the Government (*Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288, 340). It is clear, we submit, from the act, the evidence, and the findings that the power generated at the projects of the Authority is acquired in the operation of works lawfully constructed for the improvement of navigation and the control of destructive floods.

The Tennessee Valley Authority Act sets forth these basic purposes (see pp. 31-33, *supra*). There are important federal interests of navigation and flood control of accepted national significance which depend upon the improvement and control of the Tennessee River system. The act requires in section 4 (j) that the dams constructed by the Authority must be such as will best promote navigation and control destructive floodwaters in the Tennessee and Mississippi River basins; and section 9a prescribes that in the operation of the dams the stream flow must be regu-

lated primarily in the interests of navigation and flood control. The act is, therefore, plainly valid on its face. Moreover, the specific projects of the Authority have been authorized not only by the provisions of the basic statute but by particular appropriation acts pursuant thereto (see pp. 3-4, *supra*).

In the judgment of Congress, therefore, the projects serve the basic constitutional purposes which Congress has sought to promote. The burden is on appellants to show that on the whole record the legislative judgment is necessarily precluded. *Cf. South Carolina State Highway Dept.* v. *Barnwell Bros.*, 303 U.S. 177, 191-192. That this burden has not been discharged must be evident from the statement of facts already set forth. The evidence and the findings, so far from detracting from the force of the legislative judgment, furnish independent and overwhelming confirmation of the appropriateness of the projects for the basic constitutional functions. It follows that power created in the operation of the projects is the lawful property of the United States. *Ashwander* v. *Tennessee Valley Authority, supra.*

Appellants contend that the power must be unavoidably produced in the sense that no system of projects incapable of producing power could have been devised to accomplish the federal functions. Upon this theory, appellants seem to argue that since Congress could have obtained a certain degree of navigation improvement by the construction of low dams not capable of producing power (or of controlling floods) and could have obtained limited flood protection above Chattanooga (for

the Tennessee River alone) by the construction of detention basins deliberately designed to avoid the production of power, the legislative choice is limited to those alternatives. The Constitution, it is submitted, imposes no such limitations on the congressional choice of means. But even on appellants' view, the power generated by the projects of the Authority is the lawful property of the United States, since the projects of the Authority are the only ones which can provide flood control on the Tennessee and on the Mississippi in conjunction with a nine-foot navigation channel throughout the Tennessee.

Appellants suggest the further question whether the power is produced as a result of an increase in the size of the projects beyond that needed for navigation and flood control alone. As is fully explained elsewhere (see *infra* pp. 88-94), the facts refute appellants' contention, and the trial court so found (fdgs. 46, 47, 52, 60, 66, 68, r. 608-609, 610, 613, 614, 615, app. I, 31, 33, 38, 41, 42). It is our position, however, that even though the facts were as appellants maintain, the conclusion would nonetheless follow that the power is lawfully acquired. It has been uniformly held that where a project constructed by the United States substantially serves a lawful purpose, the size of the project is for Congress to determine. This Court has held that it will not determine whether the particular structures are "reasonably necessary." *Arizona* v. *California*, 283 U.S. 423, 456; *Green Bay & Miss. Canal Co.* v. *Patten Paper Co.*, 172 U.S. 58, *rehearing denied*, 173 U.S. 179; *United States* v. *Chandler-Dunbar Water*

Power Co., 229 U.S. 53. See also *Buchanan* v. *United States*, 78 Ct. Cl. 791 (1934), *cert. denied*, 294 U.S. 723.

The following discussion will be devoted first to showing that the power is necessarily acquired by the Authority in the operation of projects constructed for recognized constitutional functions (*infra* pp. 75-95). This is sufficient, on any view of constitutional authority, to establish the lawful ownership of the power of the Authority. We shall then show, in the alternative, that this is an unduly narrow view of the constitutional powers of the Federal Government; that it is for the Congress to determine the size and scope of the projects and the mode and manner of their use; and that the power so acquired is the lawful property of the United States (*infra* pp. 95-106).

1. THE PROJECTS OF THE AUTHORITY ARE SUBSTANTIALLY RELATED TO THE IMPROVEMENT OF NAVIGATION.

The substantial and indeed outstanding character of the navigation improvement which will be brought about by the Authority's projects is not open to dispute. In this regard the evidence and the findings in the present case go much beyond the facts in previously decided cases sustaining the power of Congress. *Cf. Arizona* v. *California, supra.*

While conceding that the main-stream dams will result in a substantial improvement of navigation, appellants contend that they are unconstitutional because a comparable improvement could have been obtained by the construction of a less expensive system of dams. The argument is that since Congress

could have obtained navigation improvements for less money, the fact that it elected to construct the more expensive projects, which are capable of producing power, establishes that the dams are power projects. Upon this theory appellants proceed with a consideration of the relative advantages and disadvantages of the alternative systems and reach the conclusion that the 32-low-dam system would produce a substantially similar channel. Then, ignoring the other major functions of the high dams, they conclude that the only purpose of expending the additional funds for the high-dam system was the production of power. The question of the relative advantages and disadvantages of the two systems is, of course, immaterial under any theory. It should be observed, however, as the trial court found, that the projects of the Authority will provide a navigation channel superior to that which could be provided by an alternative system (fdgs. 52, 54, r. 610, app. I, 33, 34).

The superiorities of the high-dam system are manifold and were recognized by the Board of Engineers for Rivers and Harbors in House Document No. 328, 71st Congress, 2d session (comp. ex. 105 (original) pp. 12-13, r. 4272). Among the substantial advantages inherent in the high-dam system are the superior channel depths, the fewer lockages, the smaller current velocities, the lesser pool fluctuations, and the elimination of interruptions from floods. The practical benefits accruing from these advantages, and particularly the substantial increase in economy and dependability of service upon which the success of any navigation de-

velopment depends, were fully canvassed in the testimony and are outlined in finding 54 (r. 610-611). This finding is supported by the testimony of several eminently qualified witnesses, including Watkins, Brodie, and Barker (see app. I, 34). It is of interest to note that the Corps of Engineers is now replacing movable-wicket dams of the type considered in House Document No. 328 with fixed dams of various heights and is generally avoiding the use of the movable-wicket structures (Barker, r. 1974; Putnam, r. 1174-1175; fdg. 55, r. 611, app. I, 36). Of particular significance is the fact that at the time of the passage of the Tennessee Valley Authority Act the Corps of Engineers was engaged in the construction of a lock at the site of the Wheeler Dam which was designed for a high navigation and power dam with fixed crest substantially similar in design to the present Wheeler Dam (Bowman, r. 1762, 1763, 1765-1766; fdg. 55, r. 611, app. I, 36; Putnam, r. 1172).

Appellants appear to suggest that these advantages are offset by an alleged lesser carrying capacity and lack of integration with the Mississippi River system, resulting, as they claim, from two factors: (1) the winds and waves which they claim will be created on the wide pools of the high-dam system, and (2) the size of the locks now being provided above Wilson Dam. The facts are contrary to these contentions, and the trial court so found (fdgs. 42, 54, r. 604, 610, app. I, 26, 34). As to the alleged danger of wind and waves, it is sufficient to say that the witness James S. Brodie, the superintendent of mainte-

nance of the Federal Barge Lines and the only witness in this case with practical experience in large-scale commercial navigation, preferred the high dams with the long, wide pools (r. 2027). He added that the wind-and-wave action would have no adverse effect on any of the equipment now in general use on the inland waterway system (r. 2023-2024).

There is no basis for criticism of the size of the Authority's locks. The locks being constructed in the dams located above the existing Wilson Dam are of the same size and capacity as the locks installed by the Army Engineers at Wilson and Wheeler, and are larger than the lock in the existing Hales Bar Dam (Barker, r. 1951-1952; Putnam, r. 1172-1173). Since these three locks must be used by any equipment engaged in through navigation, it was decided, after due consideration and consultation between the engineers of the Authority and representatives of the Corps of Engineers that for the present at least it would be uneconomical to construct the larger size locks in the upper portion of the river (def. ex. 112, r. 4111; Barker, r. 1951-1952, 1968). Below Wilson Dam larger locks are being installed. The locks as being constructed above Wilson are sufficient to accommodate the traffic to be anticipated there in the immediate future. Moreover, space has been provided at all of the dams for the construction of additional locks if and when the movement of traffic justifies them (fdg. 42, r. 604, app. I, 26; def. ex. 112, r. 4111).

Perhaps some mention should be made of appellants' present contention that the 32-low-dam system

as outlined in House Document No. 328 would have provided a minimum channel of nine feet with overdepths of three feet, whereas the channel being created by the Authority provides for overdepths of only two feet at the controlling points. The adequacy of the overdepths provided by the Authority's projects is fully established by the findings of the trial court, based upon direct evidence (fdgs. 54, 68, r. 610, 615, app. I, 34, 42). The assertion that the low-dam plan would have provided adequate overdepths is inferred solely from testimony that such was the practice of the Corps of Engineers, but the witness Barker, who had made a specific study of the engineering data upon which the low-dam plan was based, expressly testified that no provision was made for overdepths in the low-dam plan outlined in House Document No. 328 (r. 1973-1974). The failure to provide adequate overdepths in the plan as outlined in House Document No. 328, contrary to the usual practice of the Corps of Engineers, is, of course, explained by the wholly hypothetical character of the low-dam plan. The provision for overdepths would require a change in the low-dam project, and, of course, increased cost.

While appellants disregard the explicit findings of the trial court on the comparative benefits for navigation and ignore the supporting evidence, they emphasize a statement of General Pillsbury, excluded by the trial court (r. 1617-1618, 2252), to the effect that the additional cost of the high dams is justified only for power (br. 35-36). This statement is quoted from Hearings before the House Committee on Military

Affairs, 74th Congress, 1st session (comp. ex. 365 (original), r. 3121). The complete document (as well as others of a similar character) was admitted in evidence because it contained statements of the Authority's directors constituting a quasi-official report to the Congress (r. 894), and the excerpts introduced into the record as excerpts were all limited to statements of the directors only (r. 1239-1240, 4345-4348). When complainants sought to use this statement of General Pillsbury for cross-examination, the court properly sustained the Government's objection (r. 1617-1618, 2252). If it were permissible to introduce such statements without opportunity for cross-examination, it would even more clearly be proper for the Government to introduce General Pillsbury's contemporaneous testimony in the *Ashwander* case that "There is no question as to the superiority of high dams over low dams for navigation" (record, *Ashwander* case, 754), and perhaps even the resulting finding of the district court in that case that "The high dam type of development will furnish navigation facilities superior to those that would be provided by the alternative low dams or by a combination of the two" (*id.*, 1083).

It is unnecessary to burden this brief with further discussion of the comparative merits of the high-dam and low-dam plans for navigation since it is conceded that the low-dam projects have no value for flood control (fdgs. 66, 70, r. 614, 616, app. I, 41, 44).

Appellants contend (br. 111-114) that in any event the tributary projects of the Authority have no sub-

stantial relation to navigation. The validity of these projects is sufficiently rested on their benefits to Tennessee and Mississippi flood control, a question more fully discussed below. It should be observed here, however, that the storage of water in these projects during flood season for flood-control purposes (Watkins, r. 1543-1544, 1633-1634) and release in the low-water period will result in substantial benefits to Mississippi navigation (fdgs. 52, 69, r. 610, 616, app. I, 33, 43), and the benefits to Mississippi navigation from these flood-control structures amply sustain their validity. *Cubbins* v. *Mississippi River Comm.*, 241 U.S. 351, 368-369; *Jackson* v. *United States*, 230 U.S. 1, 23.

The benefits of the tributary projects to Tennessee navigation are likewise substantial (fdgs. 69, 71, 52, 53, r. 616, 610, app. I, 43, 44, 33, 34). While, as we have shown above (see *supra* pp. 51-53), it is impossible to consider these benefits apart from the coordinated operation of these projects with the main-stream dams for the combined purposes of navigation and flood control, a few facts may be stated here which sufficiently demonstrate the error of appellants' position. It is not true, as appellants contend, that the only substantial value of the tributary projects for Tennessee navigation is a temporary one which will cease on the completion of the main-stream dams, although this benefit alone would be sufficient to support their constitutionality. *Arizona* v. *California*, *supra* at 457. The fact is that the benefits of the tributary projects for Tennessee navigation are permanent and substantial. It is surprising to find appellants taking a dif-

ferent position, in view of the fact that through the testimony of their own witness Putnam they sought to establish that the nine-foot channel in the 200 miles below the Pickwick Dam could be maintained by means of stream-flow water releases, particularly from the tributary dams, together with a moderate amount of dredging, and that the Gilbertsville project (the most important project of the Authority for flood control) was therefore without substantial value to navigation (fdg. 71, r. 616, app. I, 44; Putnam, r. 2312-2313). The benefits are no less after the construction of Gilbertsville. The availability of water stored in the tributaries, as explained above, makes a large amount of flood storage available at Gilbertsville (where it is most needed and effective), which would otherwise have to be filled to maintain the navigation channel (Floyd, r. 1891-1894; Barker, r. 1958).

What has been said sufficiently indicates that the projects must be viewed not merely in relation to navigation but also in relation to flood control in the Tennessee and Mississippi River basins.

2. THE PROJECTS OF THE AUTHORITY ARE SUBSTANTIALLY RELATED TO THE FEDERAL FUNCTION OF THE CONTROL OF DESTRUCTIVE FLOODS IN THE TENNESSEE AND MISSISSIPPI RIVER VALLEYS AND ARE THE ONLY PROJECTS WHICH WILL PROVIDE SUCH FLOOD CONTROL IN COMBINATION WITH A NINE-FOOT NAVIGATION CHANNEL ON THE TENNESSEE RIVER.

Appellants state that "the power of the Federal Government over flood control does not extend beyond the power to protect or improve navigable channels of

interstate navigable streams" (br. 128). Even on this narrow theory the projects of the Authority are valid. As stated above, the tributary projects will substantially increase the low-water flow on the Mississippi River, which will be of substantial benefit to navigation on the Mississippi. The trial court so found, and its finding is amply supported in the testimony of the witnesses Watkins, Brodie, and Barker (see fdgs. 52, 69, r. 610, 616, app. I, 33, 43). Appellants contend that Congress has no power to control destructive floods unless such control results in a substantial benefit to navigation. Yet they attack the validity of the tributary projects as flood-control structures solely upon the ground that they are operated partially to increase depths in low-water periods in the interest of navigation.

Since the control of destructive floods on the Tennessee and Mississippi Rivers is in itself a substantial contribution to the improvement of navigation, the function of flood control may be regarded as an additional aspect of that power. Thus the validity of the construction by the United States of the levees on the Mississippi River as a legitimate aid to navigation was sustained by this Court with the observation that "the absence of merit in all the claims [to the contrary] is too clear to require anything but statement" (*Jackson* v. *United States, supra* at 23). In addition to increasing navigable depths in low-water periods, these dams protect navigation on both the Tennessee and Mississippi from interruption by floods (fdgs. 52, 59, 65, 69, r. 610, 612, 614, 616, app. I, 33, 38, 40, 43).

The validity of the projects as aids to flood control need not be rested, however, solely upon the effect of such aid in improving navigation. Congress has ample power to protect and promote the movement of interstate commerce on land as well as on the rivers. The menace of floodwaters on the Tennessee and lower Mississippi to the movement of interstate commerce by railway and highway is familiar (def. exs. 91, 66 in *Reproductions of Certain Original Exhibits Submitted by Appellees*). The great floods of the past on these rivers have caused complete interruption of commerce on the rivers and on the railroads and highways, as well as substantial damage to the facilities employed for these purposes (fdgs. 58, 59, r. 612, app. I, 37, 38). The obstructions to interstate commerce thus caused and threatened by floods bear even more direct and palpable relation to interstate commerce than the interferences held to be within the power of Congress in such cases as *Wilson* v. *New*, 243 U.S. 332, and *National Labor Relations Board* v. *Jones & Laughlin Steel Corp.*, 301 U.S. 1.

Finally, if additional support were needed for the power of Congress to take effective measures to cope with the recurring threat of floods, it could be found in the power to make expenditures to provide for the general welfare. Surely it is no less within the power of Congress to spend funds for the prevention of these national disasters than for the relief of the victims. *Cf. Steward Mach. Co.* v. *Davis*, 301 U.S. 548.

The substantial benefits of the Authority's projects for Tennessee and Mississippi flood control have been

sufficiently set forth in the statement (see *supra* pp. 43-47). Appellants ignore all the findings of the trial court on this subject and all of the supporting evidence. They dismiss without argument, for example, the unanimous finding that each of the projects of the Authority will be of substantial value in the reduction of flood heights on the Mississippi River (fdg. 65, r. 614, app. I, 40), and ignore the supporting testimony of Clemens, Kimball, Floyd, and Okey that the projects of the Authority alone could reduce the heights of all great Mississippi floods *two* feet or more from Cairo, Illinois, to Helena, Arkansas (Clemens, r. 1650-1651, 1637-1638); Kimball, r. 1838-1839; Floyd, r. 1890-1891; Okey, r. 1933-1934; *cf.* Kelly, r. 1381).

They rely, however, on a statement of General Pillsbury to the effect that the reduction of Mississippi flood heights by the projects of the Authority could be measured in inches (br. 60). This statement, like the one discussed above, was made in 1935 before the House Committee on Military Affairs, 74th Congress, 1st session (see comp. ex. 365 (original), r. 3121), at a time when none of the projects of the Authority had been completed and only a few authorized. The statement was not even called to the court's attention. Appellants ignore the fact that the Army Board of Engineers for Rivers and Harbors, when General Pillsbury was chairman, generally concurred in a contemporaneous report of the Mississippi River Commission finding that Mississippi flood heights could be reduced *seven* feet, sufficient to eliminate the use of the floodways, by a system of tributary reservoirs includ-

ing substantial storage on the Tennessee River system, and recommending that the Federal Government adopt a policy of encouraging the construction of such reservoirs (H.Doc. 259, 74th Cong., 1st sess., def. ex. 32 (original) pp. 11, 12, 33, 40, r. 4062). Appellants ignore the trial court's finding (fdg. 62, r. 613, app. I, 39) and the recent report of the Chief of Army Engineers (Com. Doc. 1, H.R.Com. on Flood Control, 75th Cong., 1st sess.; r. 1379-1380) that the existing flood-protection system is inadequate to protect the lower Mississippi Valley; that the Mississippi levees, designed with only one-foot freeboard (r. 1379-1914), have reached the limits of practicable height; and that tributary reservoirs are necessary for adequate protection; and complainants' witness, Colonel Kelly, agreed with each of these conclusions (r. 1379-1380). Appellants likewise ignore the trial court's finding (fdg. 63, r. 613, app. I, 40) and the recommendations of the Army Engineers in House Document No. 306, 74th Congress, 1st session (r. 1382), that the best available sites for Mississippi flood-control reservoirs are on the tributaries of the lower Ohio, including the Tennessee, a conclusion expressly concurred in by Colonel Kelly (r. 1382).

As an alternative to provide flood control complainants presented through their witness Kurtz a suggested system of nineteen automatically controlled detention basins (r. 1201-1209). Like the system of low dams proposed for navigation improvement, these basins would be incapable of producing power. They would, concededly, *have no value for the alleviation of floods on the Mississippi*, and hence their construction

would ignore one of the purposes expressly set forth in the Tennessee Valley Authority Act (Kurtz, r. 1222-1223). Indeed, as stated by the witness Clemens, they would constitute a positive menace to the Mississippi flood problem (r. 1654-1655). The court found as a fact that the complainants' hypothetical system of detention basins would be of no value for the control of floods on the lower Mississippi and might aggravate flood conditions there (fdgs. 66, 70, r. 614, 616, app. I, 41, 44). It was also conceded that these projects would be of no value for navigation (Kurtz, r. 1219). Finally, as already noted, the system of detention basins would preëmpt for the single purpose of local flood protection the limited number of available sites and thus foreclose the development of the river for any other uses (fdg. 93, r. 621, app. I, 51). The construction of a system of such detention basins was never recommended by any public authority or professional group, nor, indeed, does it appear ever to have been proposed for the Tennessee by anyone outside the present trial.[21]

[21] Even for its limited purpose of local flood protection on the Tennessee, the system appeared upon examination to be seriously deficient. The Authority's flood-control expert Kimball was convinced by his study of the proposal that the automatic control, considered essential by the sponsor of the plan, would render the project ineffective to control successive floods (r. 1843-1850). He was further of opinion that the failure to provide dams on the main stream, leaving without a reservoir the long stretch between Chattanooga and the nearest proposed tributary project, reduced the effectiveness of the projects as the distance increased (r. 1850). The trial court found that the detention basins would be of uncertain value even for Tennessee flood control (fdg. 66, r. 614, app. I, 41). At the trial complainants suggested as one of the benefits of the Kurtz system the protection afforded on the Emory River. The failure of the Authority's projects to provide such protection was suggested as a striking deficiency. Both of these contentions are renewed in appellants' brief (p. 124). As explained in the testimony of the witness Kimball, the damage on the Emory River was due to a single localized disturbance of the cloudburst variety. His testimony fully explains the impracticability of providing a sufficient number of reservoirs to protect against all of such local disturbances (r. 1827-1828, 1834). The figure of past damage on the Emory River, emphasized in appellants' brief, is without significance, since that damage resulted from one such local storm (r. 1827-1828, 1834).

The sufficient answer to all of appellants' contentions is that the projects of the Authority are the only projects which will provide flood control for the Tennessee and Mississippi Rivers in combination with nine-foot navigation on the Tennessee River (fdg. 68, r. 615, app. I, 42).

3. THE POWER PRODUCED AT THE PROJECTS OF THE AUTHORITY IS NECESSARILY ACQUIRED IN THE CONSTRUCTION AND OPERATION OF WORKS LAWFULLY CONSTRUCTED FOR THE IMPROVEMENT OF NAVIGATION AND THE CONTROL OF DESTRUCTIVE FLOODS.

Section 9a of the act directs the Authority in the operation of its projects "to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods." Pursuant to the mandate of the act, the Board of Directors of the Authority has instructed the responsible officers charged with the operation of the projects to operate them primarily for these functions. The trial court unanimously found that these instructions have been uniformly obeyed (fdg. 76, r. 618, app. I, 47).

The head for power produced at the Authority's projects is necessarily created by the maintenance of the slack-water pools behind the dams for navigation. So much even appellants concede.[22] Their contention

[22] The appellants' contention that the slack-water pools behind the tributary dams are valuable only for power is unfounded. The court unanimously found that the provision of a slack-water pool behind Norris Dam was necessary to preserve existing navigation on the Clinch River, a navigable tributary of the Tennessee, and to prevent foreclosure of the river's future improvement for navigation (fdg. 68, r. 615, app. I, 42), a finding fully supported by the testimony of the witnesses Watkins and Barker (r. 1542, 1956-1957). The court below also found that the maintenance of the slack-water pool at the Hiwassee project would be of value for the preservation of its level by affording a capacity for the deposit of

that the projects are larger than required for navigation and flood control, as we have shown above (see *supra* pp. 50-51), rests solely upon the alleged principle, unfounded in fact as the trial court found (fdgs. 46, 47, 64, 69, 94, r. 608-609, 614, 616, 621, app. I, 31, 40, 43, 51), that the same storage capacity cannot be operated for both flood control and power, and that to whatever extent the storage is used for flood control it can produce no power. The trial court unanimously found that the power produced at the projects of the Authority is created by the construction and operation of the projects for navigation and flood control (fdg. 94, r. 621, app. I, 51).

The decisions of this Court, we submit, do not permit appellants to challenge the method of operation which in the considered opinion of the engineers in responsible charge will most effectively serve the interests of flood control and navigation (fdg. 44, r. 608, app. I, 30). This Court will not assume that the provisions of section 9a requiring the Authority to operate its projects "primarily for the purposes of promoting navigation and controlling floods" are a sham and a pretense or that the mandate of the act will be disregarded. *Arizona* v. *California, supra* at 456-457. In that case it was contended that the purpose of navigation expressed in the act was a sham and a pretense upon the ground that the operation of the project for

silt (fdg. 68, r. 615, app. I, 42), a finding amply supported by the testimony of Watkins and Barker (r. 1543, 1955). The slack-water pool at the Hiwassee project, consisting of only 73,000 acre-feet (Bowman, r. 1724; see def. ex. 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Kimball, r. 1851)—out of a total of 12,959,000 acre-feet of all of the Authority's projects (fdg. 43, r. 605, app. I, 27)—is hardly an important issue in this case.

irrigation as authorized by the statute was in necessary conflict with its operation for navigation. That contention was dismissed by this Court. This Court has held that it is for the Government to determine by what engineering methods the mandate of Congress may best be carried out. At what time and in what amount water should be stored and released for flood control and navigation can only be determined by the agency charged with operating the facilities for flood control and navigation improvement. "In such matters there can be no divided empire." The "mode and extent of the use and enjoyment" of federal projects "fall within the sole control of the United States." *Green Bay & Miss. Canal Co.* v. *Patten Paper Co., supra* at 80.

Since, however, the evidence and findings deal fully with complainants' criticism of the Authority's method of operation, it should be pointed out that the criticism is without merit in fact. The trial court found that this general method of operation conforms to the method contemplated for navigation and for flood control in House Document No. 328 and House Document No. 259 and is reasonably calculated to provide most effectively for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River valleys (fdg. 46, r. 608, app. I, 31).

There can be no serious question that the storage capacity above the navigation level on the main-stream dams can be operated with complete effectiveness for both flood control and power (Woodward, r. 1783-1784; Kimball, r. 1850-1851; Floyd, r. 1891; Kelly, r. 1387). The water stored during flood season in the flood

storage of the main-stream dams below Chattanooga can be drawn down in advance of floods, as Kelly and other witnesses stated (Kelly, r. 1387; Woodward, r. 1782-1783; Kimball, r. 1850-1851; Floyd, r. 1891). The flood season on the Tennessee River definitely ends about April 1-15, and that on the Mississippi a month later (fdg. 64, r. 614, app. I, 40; Woodward, r. 1788; Kimball, r. 1828; Kurtz, r. 1235; Kelly, r. 1386-1387; Clemens, r. 1665), and as the flood season draws to a close some of the flood storage at all of the main-stream projects may be gradually allowed to fill (Woodward, r. 1784; Kimball, r. 1851).

The principal issue is with respect to the gradual filling of Norris Dam during flood season and the release of stored water during low-flow season. It is conceded that no other possible method of operation would serve the interests of navigation. The substantial benefit to navigation, both on the Mississippi and Tennessee Rivers, is sufficient justification, as we have shown above (*supra* pp. 80-83).

The case is no better for complainants if the interests of navigation are disregarded. Like all sweeping generalizations, the alleged conflict between storage for flood control and storage for low-water regulation is not absolute; its existence or extent depends on the facts of the particular project. It has a limited application to reservoirs designed for local protection only (Watkins, r. 1543-1544; Bowman, r. 1738-1739).

The alleged conflict has no application to the projects of the Authority, which must be operated for the protection of distant points on the lower Tennessee,

Ohio, and Mississippi Rivers, as well as for navigation and local flood protection, and the court so found (fdg. 47, r. 609, app. I, 31). Norris Dam must be operated for both Tennessee and Mississippi flood control (Woodward, r. 1786-1789; Watkins, r. 1543-1544) and is beyond prediction distance of the principal points of danger in Mississippi floods—that is, the time of water travel from the dam to Cairo, Illinois, is greater than the time of notice of flood stage (Woodward, r. 1783). The importance of this factor was brought out by the complainants' witness Kelly, who adhered to the view expressed by the Reservoir Board for Mississippi Flood Control of 1927, of which he was chairman, that the tributary reservoirs beyond prediction distance should be operated to store the water every year throughout the season of probable Mississippi floods,[23] while, on the other hand, the flood storage of dams within prediction distance should be brought into operation at the flood crest (r. 1386-1387). This conforms to the view expressed in the Authority's report to Congress entitled *The Unified Development of the Tennessee River System* (comp. ex. 328 (original) pp. 18-19, r. 3068). A similar view was expressed by Colonel Watkins both in this case (r. 1543-1544) and in House Document No. 328 (comp. ex. 105 (original) p. 78 (par. 52), r. 2615). That the distant tributary reservoirs like Norris should provide "seasonal" storage was contemplated in the *Comprehensive Report on Reservoirs in Mississippi River Basin,* House Docu-

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[23] While the Reservoir Board fixed this period as being from February 15 to May 15, Kelly testified that the season of Mississippi floods begins on the first of January (r. 1367). (See also Watkins, r. 1544.)

ment No. 259, 74th Congress, 1st session (def. ex. 32 (original), r. 4062), prepared under Clemens's direction (r. 1651, 1658, 1659). Clemens assumed that the Authority's flood-control storage would be available at the "beginning of the flood season" in his testimony as to the value of the Authority's projects for Mississippi flood control (r. 1659-1660), but that this storage would and could also be used for low-water regulation (r. 1665-1666). Specifically he testified that the flood storage at Norris Dam could be operated for flood control and at the same time to obtain large benefits for low-water regulation from the same storage capacity (r. 1654).

The Authority's engineers Woodward and Kimball testified that (without regard to the factor of prediction distance) the successful operation of Norris Dam for both Mississippi and Tennessee flood control required a large storage capacity, substantially larger than required for a single Tennessee flood alone, because of the difficulty of releasing floodwater (r. 1790), and that having such large capacity, Norris could be successfully operated for Mississippi and Tennessee flood control and at the same time for low-water regulation (Woodward, r. 1786-1788, 1790; Kimball, r. 1851, 1880-1881). The witness Woodward testified that it was the "best method for flood control" (r. 1788) and of particular value for Mississippi protection (r. 1790). The witness Sargent, who has operated the same storage space at Sacandaga with complete success in controlling floods and in increasing low-water flow (see Crane, r. 1286), confirmed the views of the Authority's engineers (r. 1678-1681).

This method of operation is thus in the interest of flood control when Norris Dam is considered separately. Moreover, as the witness Floyd testified (r. 1891-1894), the available water thus stored in Norris Dam to maintain navigable depths by low-water releases permits the Authority to maintain or draw down the flood-control reservoirs on the main stream to a substantially lower level than would otherwise be consistent with the requirements of navigation. Thus, by coordinated development, the effectiveness of the mainstream dams for flood control is substantially increased, and the court unanimously so found (fdg. 69, r. 616, app. I, 43).

4. THE POWER PRODUCED AT THE TRIBUTARY DAMS IS LAWFULLY ACQUIRED IN THE CONSTRUCTION OF WORKS FOR THE NATIONAL DEFENSE AND THE IMPROVEMENT OF GOVERNMENT-OWNED PROPERTY.

As pointed out in the statement (*supra* p. 47), the release of water from the tributary dams during the low-water season greatly enhances the value and usefulness of the Government properties at Muscle Shoals for the national defense (fdg. 72, r. 617, app. I, 45). Both under its war powers and under its power to maintain and improve the property of the United States, Congress was authorized to construct the tributary dams, even apart from the important function which they perform in the improvement of navigation and the control of floods. The trial court specifically held that the constitutional authority to construct Norris Dam exists under the national-defense powers in

addition to the other constitutional powers (r. 559, app. I, 133).

An analogous exercise of the power under the property clause is the improvement of the arid public lands of the United States pursuant to the Reclamation Act. For that purpose reservoirs have been constructed to store water during flood season and release it for irrigation during low-water season. This Court has recognized that "The Government incurs heavy liability in providing water for these lands" (*Irwin* v. *Wright*, 258 U.S. 219, 231). The validity of the extensive projects undertaken pursuant to the Reclamation Act for the improvement of the property of the United States cannot be doubted. See *United States* v. *Hanson*, 167 Fed. 881 (C.C.A. 9th, 1909); *Kansas* v. *Colorado*, 206 U.S. 46, 92.

5. APART FROM THE FOREGOING CONSIDERATIONS, THE WATER POWER IS LAWFULLY ACQUIRED; CONGRESS MAY DETERMINE THE SIZE OF THE PROJECTS REQUIRED FOR NAVIGATION AND FLOOD CONTROL AND THE MODE AND MANNER OF THEIR USE; AND ANY WATER POWER ACQUIRED IN THE OPERATION OF SUCH PROJECTS IS THE PROPERTY OF THE UNITED STATES.

What has been said above sufficiently demonstrates, we believe, that the power produced at the projects of the Authority is *necessarily* created in the operation of works having a bona fide and substantial relation to the improvement of navigation, the control of destructive floods, and the national defense. The power generated is thus the property of the United States, even on the narrow interpretation of the decisions advanced by appellants. It is clear, however, that no

such showing need be made. The decisions of this Court establish that in the construction of works for lawful purposes, it is for the Congress to determine the size of the project and the mode and manner of its use. And any water power acquired in the operation of such projects is the lawful property of the United States. *Green Bay & Miss. Canal Co.* v. *Patten Paper Co.*, 172 U.S. 58, *rehearing denied*, 173 U.S. 179; *United States* v. *Chandler-Dunbar Water Power Co.*, 229 U.S. 53; *Arizona* v. *California*, 283 U.S. 423, 456. See also *Buchanan* v. *United States*, 78 Ct. Cl. 791 (1934), *cert. denied*, 294 U.S. 723.

Appellants' principal reliance is a dictum in the opinion of this Court in *Kaukauna Co.* v. *Green Bay & Miss. Canal Co.*, 142 U.S. 254. Appellants ignore the subsequent decision in *Green Bay & Miss. Canal Co.* v. *Patten Paper Co., supra.* In that case this Court upheld the right of the United States, as owner of a dam and canal used for the storage and diversion of water through the navigation canal, to control and dispose of all the water power thereby created, even though it was established by findings of the State court, from which the case was appealed, that only 1% of the flow of the stream diverted through the navigation canal was required for navigation, the remaining 99% being diverted "ex industria, for the purpose of creating a water power" (*Green Bay & Miss. Canal Co.* v. *Kaukauna Water Power Co.*, 90 Wis. 370, 371 (1895)).[24] It was the power thus created which was

[24] It should be noted that in addition to creating a water power by the diversion of water through the navigation canal, the dam also created a slack-water pool for navigation. As to the power thus created by the slack-water pool, even the State court held that it was "in a true sense, incidental to the erection of the dam" (90 Wis. at 401).

held "incidentally created" (172 U.S. at 68; 173 U.S. at 190).

The same problem was presented in *United States v. Chandler-Dunbar Water Power Co., supra.* An act of March 3, 1909 (35 Stat. 815), authorized the Secretary of War to condemn property for navigation improvements and to lease any excess of water power over the needs of the Government resulting from the navigation works constructed. In condemnation proceedings by the United States the company claimed damages for the taking of water-power rights in excess of navigation needs, contending, among other things, that in authorizing the lease of the water power the act authorized a taking of private property for commercial use. The district court found as a fact that it was necessary to utilize only a small portion of the total flow of the river for existing navigation purposes in connection with the canal. (See record in No. 783, October Term, 1912, at 330, and the opinion of the district court, *id.* at 408.) This objection was disposed of by this Court in these words:

> If the primary purpose is legitimate, we can see no sound objection to leasing any excess of power over the needs of the Government. The practice is not unusual in respect to similar public works constructed by state governments [229 U.S. at 73, citing *Kaukauna Co.* v. *Green Bay & Miss. Canal Co.*, 142 U.S. 254, 273].

This settled principle was reaffirmed in *Arizona* v. *California, supra.* In that case it was urged that the

construction of Boulder Dam, with its reservoir and power house, was undertaken for the purpose of irrigating private lands and generating power, the project being larger than required for any legitimate purpose of the Government. Even the navigability of the river was denied by the averments of the bill and the interstate compact. Nonetheless, the project was upheld on demurrer to the bill, the Court taking judicial notice that the Colorado was navigable and observing that "the means which the Act provides are not unrelated to the control of navigation" (283 U.S. at 455-456). "Whether the particular structures proposed are reasonably necessary," the Court added, "is not for this Court to determine [citing authorities]. And the fact that purposes other than navigation will also be served could not invalidate the exercise of the authority conferred, even if those other purposes would not alone have justified an exercise of Congressional power" (*id.* at 456).[25]

In *Buchanan* v. *United States, supra,* it was alleged that a federal navigation and power dam had been con-

[25] The Boulder Canyon Project Act (45 Stat. 1057) imposed as a condition precedent to the construction of the project works the execution of contracts by the Secretary which would be adequate in his judgment to reimburse the United States for costs of the project. The bill of complaint filed by Arizona in that case pointed out that prior to the suit the Secretary had concluded a fifty-year contract with the Metropolitan Water District of California for the sale of electric energy (record in No. 19, Original, October Term, 1931, at 36). In an appendix to the bill of complaint were set out so-called "Power Regulations of the Secretary of the Interior," which described additional contracts between the Secretary and the city of Los Angeles and the Southern California Edison Company providing, among other things, that the company and city should act as "generating agencies" and transmit energy to certain prospective purchasers who would contract directly with the Secretary for the purchase of electricity (*id.* at 90-91, 108-109). Allocations for the purchase of electricity had been made by the Secretary to eleven municipalities (*id.* at 96). The bill of complaint urged that the purpose of the project was to put the Government in "the business of generating and selling electric power" (*id.* at 31).

structed several feet higher than required for navigation, and compensation was sought for the taking of lands to the extent that they were overflowed by the excess taking. Demurrer was sustained on the authority of the *Chandler-Dunbar* case (78 Ct. Cl. at 794-795). This Court denied certiorari (294 U.S. 723).

There is no occasion in this case to overturn a principle which has been settled for half a century. A narrower construction of the Constitution, we submit, would require the Congress to destroy the water resources of the great navigable rivers or abandon their development for legitimate federal purposes.

The development of the Tennessee, or any other river, for navigation and flood control cannot be divorced from its development for other and inseparable uses. This is a well-settled principle of conservation. The reports of the Inland Waterways Commission, the National Conservation Commission, and the National Waterways Commission, created by President Theodore Roosevelt and the Congress, all recognized the intimate interrelation between navigation and flood control and other water uses. They each recommended that every water-development project for any one use should be planned with relation to its potential use for other related functions in order to conserve the water resources. In this manner, projects which might be uneconomic when considered for one purpose may become economically justified when used to serve multiple functions. (See *Preliminary Report of the Inland Waterways Commission*, S.Doc. 325, 60th Cong., 1st sess., pp. 21-25; *Report of the Na-*

tional Conservation Commission, S.Doc. 676, 60th Cong., 2d sess., p. 27; *Preliminary Report of United States National Waterways Commission*, printed as appendix I to *Final Report of National Waterways Commission*, S.Doc. 469, 62d Cong., 2d sess., p. 82 (see app. II, 98-107)).

These principles have long been embodied in all federal legislation relating to water development under federal jurisdiction. The legislation respecting the licensing of private developments does not require extensive comment here, but it may be worth noting that under section 10 of the Federal Water Power Act of 1920 (41 Stat. 1063) all licenses are conditioned as follows:

> That the project adopted, including the maps, plans, and specifications, shall be such as in the judgment of the commission will be best adapted to a comprehensive scheme of improvement and utilization for the purposes of navigation, of water-power development, and of other beneficial public uses; and if necessary in order to secure such scheme the commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval [p. 1068].

The same principles are particularly appropriate where the Federal Government itself undertakes to develop navigable rivers for legitimate ends. Included in the *Final Report of the National Waterways Commission*, Senate Document No. 469, 62d Congress, 2d session, page 135, is a study of a suggested system of

reservoirs for Mississippi flood control based on the principle that while reservoirs for flood control alone may involve prohibitive costs, when used for navigation and power as well they may be economically justified. The Chairman of the Senate Committee on Agriculture and Forestry (from which the Tennessee Valley Authority Act was reported) defended the construction of the Cove Creek (now Norris) Dam for Mississippi flood control on these grounds. (See app. II, 102; *cf.* Tennessee Valley Authority Act, sec. 14). These views have gained general acceptance in practice.

While power possibilities were overlooked at the time of the passage of the Reclamation Act of 1902 (32 Stat. 388), the act was amended in 1906 to permit the development of power in connection with irrigation projects when "an opportunity is afforded . . . under any such project" (34 Stat. 116, 117), and in 1912 the Congress authorized the Secretary of War to make provision for the future development of electricity at all navigation dams whenever appropriate (37 Stat. 201, 233). The scope of the surveys of the Army Engineers was broadened by the act of March 3, 1925 (43 Stat. 1186), in order to permit consideration of potential river developments for navigation in combination with the other related uses, including water power and flood control.

The most significant illustrations of the adoption of these principles are the great multiple-use projects established in the last ten years, of which the Boulder Dam is, of course, the outstanding example. Eminent engineering authority may be cited for the view that

"the multiple-use reservoir is designed to play an increasingly important role in the future," and this for three related reasons: (1) reservoirs for flood control alone are too costly for any but the most densely populated and industrialized area; (2) the division of cost among several interests promotes the economic feasibility of reservoir projects; (3) the waste of floodwaters is at variance with the modern concept of water conservation. (See app. II, 98-113.)

These considerations are particularly applicable to the case at bar. The evidence shows that, as is true with respect to most rivers, in order to conserve the waters of the Tennessee for any beneficial use, storage reservoirs are required to regulate the sharp variations of stream flow from flood season to low-water period (fdg. 93, r. 621, app. I, 51). The central fact is that the sites essential for the necessary reservoirs are strictly limited in number, and those required for flood control frequently coincide with those necessary for the development of the river for other purposes (*ibid.*). To utilize these sites for "dry" reservoirs alone would foreclose their development for any other use (*ibid.*) and, so complainants' witnesses testified, would not be economically justifiable for flood control alone (Kelly, r. 1389). The construction of low movable-wicket dams on the main stream would prevent the use of high dams for flood control and other purposes (Watkins, r. 1547).

It was on these grounds that the district engineer made the following recommendation in House Document No. 328:

> Sites at which storage can be developed economically are limited. Some of these sites are in the navigable portion of tributaries and some are located in headwaters in the nonnavigable sections of streams. On account of the great importance of reservoir storage to the development of the Tennessee River and its tributaries for navigation, water power and flood control, steps should be taken to see that all available sites are conserved for the development of the river and its tributaries and that such sites are developed to the most economic height and drawdown required for the development of the entire system [p. 64].

The projects of the Authority are the only projects which adequately develop the available sites to conserve the water resources of the Tennessee River system for navigation, flood control, power, and other beneficial uses (fdg. 93, r. 621, app. I, 51). The Congress, we submit, may authorize the full utilization of the necessary sites wherever the projects are reasonably required for navigation and flood control. The acceptance of the narrow views advanced by the appellants would, in all practical effect, deny to the Congress the means of effecting the development of the Tennessee River for navigation and flood control.

Neither at the time of the enactment of the Tennessee Valley Authority Act nor since has there been any reasonable prospect that a comprehensive development of the Tennessee River and its tributaries for the combined purposes of navigation and flood control in the Tennessee and Mississippi River basins could be

obtained in any way except by the construction of high dams by the United States Government or some agency thereof. The court unanimously so found (fdg. 67, r. 614, app. I, 41). If the improvement of navigation and control of floods were the only ends in view, appellants would not be here to object. They insist, however, that the Congress must permanently commit the resources of the river to be destroyed for other uses or abandon the development of the river for any purpose. No such choice, we submit, is required by the Constitution.

The decisions of this Court establish that if the projects are not unrelated to navigation or flood control, the Congress may provide appropriate means to insure their practical execution; the courts will not inquire whether the means thus provided are reasonably required for navigation and flood control alone. *Arizona* v. *California, supra; United States* v. *Chandler-Dunbar Water Power Co., supra; Buchanan* v. *United States, supra.* (See pp. 96-99, *supra.*) The same principle has been recognized in other types of federal water developments, notably in relation to reclamation. Thus in *Burley* v. *United States*, 179 Fed. 1 (C.C.A. 9th, 1910), it was held that where the controlling object of the project is to reclaim public lands, the Government has the power to provide facilities for the reclamation of interrelated private lands in order to assure the practicability and economic feasibility of the project.

A consideration of the congressional power to make appropriations for the general welfare leads to the

same conclusion. The statute under consideration, as we have said, is not a regulatory measure but a public improvement carried into effect solely by means of the expenditure of public funds. The ends to be served are clearly for the general welfare of the Nation. The husbandry of our physical resources is second only to the protection of our human resources in the scale of national interests. *Cf. Steward Mach. Co.* v. *Davis, supra.* On this question, at least, the Nation speaks with one voice. The general interest would be indubitable if the Congress had sought to extend the present undertaking to all the major regions of the United States. The Tennessee Valley Authority project is nonetheless national and not local in character, though the Congress has conservatively determined to test its feasibility on one river draining parts of seven southeastern States.

No interests of the States are invaded. In the court below it was argued that the Government's contention disregarded the principle that the States held title to the waters of navigable as well as nonnavigable rivers, subject only to the paramount interests of the Federal Government for navigation purposes. *Cf. Pollard's Lessee* v. *Hagan*, 3 How. 212; *Shively* v. *Bowlby*, 152 U.S. 1; *Port of Seattle* v. *Oregon & W.R.R.*, 255 U.S. 56; *Wisconsin* v. *Illinois*, 278 U.S. 367. The same argument was urged and rejected in the *Ashwander* case, *supra* at 337-338. Any notion of a conflict between the National Government and the States in the utilization of the resources of the river is illusory. The development of the Tennessee River and its tributaries

by the State or its licensees for power or for any other purpose is dependent on the utilization of sites which the Federal Government must necessarily preëmpt in providing the necessary flood-control and navigation facilities. If the Federal Government were to develop these sites for flood control or navigation alone, it would be physically impossible for the State or its licensees to develop the river for any other purpose, even if they could obtain the necessary license from the Federal Government. (See *supra* pp. 102-103.) There is thus no question of conflict in this case between the interests of the Federal and State Governments. The sole question is whether the resources of the Tennessee River may be developed by the Federal Government or not at all.

II

THE MEANS CHOSEN BY CONGRESS IN THE TENNESSEE VALLEY AUTHORITY ACT FOR THE DISPOSITION OF POWER ARE VALID.

The water power created by the projects of the Authority is the property of the United States, may be converted into electric energy, and all of the electricity so acquired may be disposed of under the property clause of the Constitution. *Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288. It is the position of the Government that under the decision in the *Ashwander* case and under the settled principles of constitutional law, the Congress may lawfully authorize the sale of such property to municipalities, rural cooperatives, and

industrials, as well as to private utilities, and may lawfully authorize the acquisition of the necessary facilities for the generation, transmission, and sale of the power. Separate and subordinate questions are raised with respect to the provisions in the contracts between the Authority and the municipalities and rural cooperatives concerning resale rates and related conditions of service. The Government contends that the appellants have no sufficient legal interest to question the validity of these provisions, and that, in any event, the provisions in question are valid. Neither the sale of power nor the terms of the contracts, it will be shown, impair the exercise of the States' police power or in any way invade the rights reserved to the States under the tenth amendment.[26]

1. THE CONGRESS MAY LAWFULLY AUTHORIZE THE SALE OF GOVERNMENT-OWNED POWER TO MUNICIPALITIES, RURAL COOPERATIVES, AND INDUSTRIALS, AS WELL AS TO PRIVATE UTILITIES, AND MAY LAWFULLY AUTHORIZE THE ACQUISITION OF THE NECESSARY FACILITIES FOR THE GENERATION, TRANSMISSION, AND SALE OF SUCH POWER.

The statute: The Act declares it to be the policy of the Government, so far as practical, to distribute and sell the surplus power generated by the Authority "equitably among the States, counties, and municipalities within transmission distance" (sec. 11), a policy incorporated in this act after years of mature de-

[26] No question is raised as to the power to acquire or operate steam plants. The steam plant at Muscle Shoals is not in operation (fdg. 197, r. 643, app. I, 83). As in the *Ashwander* case, no question is presented as to the operation of local distribution systems (fdgs. 106, 187, 193, r. 624, 641, 642, app. I, 56, 80, 82).

liberation[27] and in accordance with the traditional principle that the benefits of public property should be broadly distributed. It is further declared to be the purpose of Congress to obtain revenues from the sale of the power which might otherwise be wasted and thus to liquidate some part of the cost of the projects (sec. 9a), an established Government policy in the disposition of power produced at federal water developments.[28]

The board is accordingly authorized to contract for the sale of surplus power to States, public agencies, corporations, and others, and is required to give preference to public agencies and quasi-public membership corporations in accordance with familiar precedent (sec. 10).[29] Special provision is made for the service of rural areas "not otherwise supplied" at reasonable rates (*ibid.*), presumably for the reason that the rural areas in the Tennessee Valley were almost entirely without the benefit of electric energy prior to the enactment of the Tennessee Valley Authority Act (Hapgood, r. 2147) and furnished an obvious market for the Government's surplus power (fdgs. 234,

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27 See H.Con.Res. 4, 69th Cong., 1st sess.; Hearings before Senate Committee on Agriculture and Forestry, 68th Cong., 1st sess., pp. 301-309, 340-345, 373-386, 949-950; S.Rept. 831, 67th Cong., 2d sess. (pt. 1) pp. 31-32; S.Rept. 678, 68th Cong., 1st sess., p. 12; S.Rept. 672, 69th Cong., 1st sess., p. 12; 67 Cong. Rec., 69th Cong., 1st sess., p. 4986.

28 See veto message of President Theodore Roosevelt, 30 Cong. Rec., 57th Cong., 2d sess., p. 3071; *Annual Report of the Commissioner of Reclamation* (1932) pp. 12-17; H.Doc. 395, 73d Cong., 2d sess., p. 54; *cf.* Boulder Canyon Project Act (45 Stat. 1057).

29 For other examples of similar preference provisions regarding power, see section 5 of the Reclamation Act of 1906 (34 Stat. 116, 117) and section 5 of the Boulder Canyon Project Act (45 Stat. 1057, 1060). The employment of such provisions to assure "a sound competitive condition" and to prevent the power from being "monopolized" was noted in the committee reports on the Boulder Canyon Act (see H.Rept. 918, 70th Cong., 1st sess., p. 22; S.Rept. 592, 70th Cong., 1st sess., pp. 26-27).

235, r. 651, app. I, 94). Sales to industry are made a secondary purpose in order to secure revenue and a high load factor and "permit" rural and domestic consumption at low rates which will encourage increased use (sec. 11). The board is authorized to acquire transmission lines "In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power" (sec. 12).

The power supply of the Authority: The firm-power capacity of all the dams of the Authority now constructed or authorized for construction is 570,000 kw at 60% load factor with all the generating units installed or authorized for installation (fdg. 94, r. 621, app. I, 51). This amount, as has been noted, is less than the potential shortage of the private utilities in this area predicted for the date of the installation of the Authority's generating facilities (fdg. 238, r. 652, app. I, 95). The statements in appellants' brief (see, e.g., pp. 154-157) as to the amount of power to be generated at the projects of the Authority are based on fanciful assumptions of complete installations (whether or not authorized) at dams not constructed or even authorized, including Fontana, and unified operation with the plants of the Aluminum Company of America (Wessenauer, r. 2172, 2179-2181), and (apparently) all possible dams at any of the 149 sites located on the Tennessee River system by the Corps of Engineers in House Document No. 328, whether or not any such dams would be of any value for navigation and flood control.

The market for power at the dam sites: As complainants' witness Miller testified, the market for the Authority's power at the dam sites is limited to the demand of complainant utilities and such industries as might locate there (r. 1114; *cf.* fdg. 178, r. 640, app. I, 78). The only transmission lines (other than those of the Authority) connected with any of the Government dams are owned by the Alabama Power Company, The Tennessee Electric Power Company, and the Southern Tennessee Power Company, all subsidiaries of the Commonwealth & Southern Corporation (fdg. 177, r. 639, app. I, 78). Not only is the market at the dam sites thus dominated by three affiliated Commonwealth and Southern companies, but the market for at least 100 miles from any of the dams is likewise exclusively controlled by the Commonwealth and Southern companies and, to a much smaller degree, the Electric Bond & Share Company (*ibid.*).[30]

Contracts executed by the Authority for the sale of power: Under these circumstances and pursuant to the preference provisions of the act, the Authority has entered into contracts with a number of municipalities, many of which have maintained their own distribution or generating and distribution facilities (fdgs. 203-205, r. 644-645, app. I, 84-85), and a group of rural cooperatives serving customers which had theretofore

[30] Since the trial, the Tennessee Public Service Company has sold its facilities to the city of Knoxville and the Authority and has withdrawn from this litigation. The Memphis Power & Light Company is now negotiating the details of a similar contract with the city of Memphis and the Authority and may have withdrawn from this litigation at the time this appeal is heard. These two companies were the principal members of the Electric Bond and Share system in this area affected by the operations of the Authority.

received no electric service of any character (fdgs. 206, 207, r. 645, app. I, 85, 86). In addition, the Authority has contracted for the sale of large amounts of power, both firm and secondary, to certain private utilities (fdgs. 128, 157, r. 629, 634, app. I, 62, 70) and large electrochemical and electrometallurgical industries representing new electric business in this area not heretofore served by any of appellants (fdg. 151, r. 633, app. I, 69). The Authority has sold large amounts of power to the Commonwealth and Southern companies (fdgs. 196, 213, r. 643, 646, app. I, 82, 87) and is even now transmitting and selling power to the Alabama Power Company for distribution in northern Alabama (fdg. 128, r. 629, app. I, 62; Barry, r. 870).

Electric facilities acquired and constructed by the Authority: The Authority has installed or provided for the installation of generating facilities (r. 2180) and has constructed about 400 miles of plant tie lines to interconnect several power plants in order to promote economy of operation and make the power available wherever needed (fdgs. 179-181, r. 640, app. I, 78-79). In addition, the Authority has constructed or acquired about 1,100 miles of marketing transmission lines (fdg. 183, r. 640, app. I, 79). All of these lines are necessary to serve the customers of the Authority (fdg. 186, r. 641, app. I, 80); and while it is not material, it may be noted that they do not constitute duplications of existing facilities (fdg. 184, r. 640, app. I, 79). Appellants' repeated statement (br. 158) that the Authority will require 15,000 miles of marketing transmission lines is not only of no legal significance but is

based on their erroneous assumption as to the potential power and, necessarily, on arbitrary assumptions as to the possible location and character of possible future customers of the Authority which have neither executed nor even negotiated contracts for service (Moreland, r. 1453; *cf.* Hapgood, r. 2146, 2148). It may be pointed out that appellants' contention as to the potential length of the Authority's lines is likewise grossly exaggerated. While 250 miles is a technically feasible transmission distance, even complainants' prophet Moreland did not predict any line for the Authority longer than "somewhat beyond the 150 mile zone" (r. 1452-1453), and, in fact, the Authority's largest marketing line *now* is only about 100 miles in length (see def. ex. 136, r. 4175, and def. ex. 136A in *Reproductions of Certain Original Exhibits Submitted by Appellees*).

Character of the Authority's method of disposition: It is of fundamental importance that the Authority's power contracts provide primarily for service at wholesale to municipalities and cooperatives. With minor exceptions the only ultimate consumers served directly by the Authority are a few large electrochemical and electrometallurgical industries (fdgs. 106, 187, r. 624, 641, app. I, 56, 80) purchasing large blocks of primary and secondary power (fdgs. 148-154, r. 632-633, app. I, 68-70), which cannot be served through any distributor or intermediary (fdgs. 155, 157, r. 634, app. I, 70).[31]

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[31] The minor exceptions are a few rural and industrial customers in the so-called ceded area covered by the contract of January 4, 1934, in the vicinity of Norris and Wilson Dams, which are served either by rural lines purchased from the Alabama Power Company and The Tennessee

The Ashwander decision: The decision of this Court in the *Ashwander* case, we submit, fully sustains the power of Congress to authorize such sales of power and the acquisition of the necessary electric facilities. In that case the Court upheld the validity of a contract (dated January 4, 1934, and sometimes referred to in the record and in this brief as the contract of January 4) providing for sale to the Authority of certain transmission lines of the Alabama Power Company serving a number of municipalities in northern Alabama, as well as auxiliary lines serving rural and small industrial customers. This Court held (1) that the power lawfully acquired by the Government is the property of the United States and *all* of it may be sold, and (2) that the Government may acquire the transmission and other facilities necessary to market the power; it is not required to waste the power or to sell it only to private utilities at the dam site.

This Court said:

> The United States owns the coal, or the silver, or the lead, or the oil, it obtains from its lands, and it *lies in the discretion of the Congress, acting in the public interest, to determine of how much of the property it shall dispose.*
>
> We think that the same principle is applicable to electric energy [297 U.S. at 336].

Electric Power Company or lines of identical character constructed by the Authority (fdgs. 106, 187, r. 624, 641, app. I, 56, 80). The only electric service provided by the Authority under its contracts with municipalities and cooperatives is a wholesale service. The distribution service is performed by the municipalities and cooperatives with their own facilities (fdgs. 130, 131, 138, 140, 146, 147, r. 629, 631, 632, app. I, 63, 66-68).

With respect to the method of disposition, this Court held:

> The transmission lines which the Authority undertakes to purchase from the Power Company lead from the Wilson Dam to a large area within about fifty miles of the dam. *These lines provide the means of distributing the electric energy, generated at the dam, to a large population. They furnish a method of reaching a market.* The alternative method is to sell the surplus energy at the dam, and the market there appears to be limited to one purchaser, the Alabama Power Company, and its affiliated interests. *We know of no constitutional ground upon which the Federal Government can be denied the right to seek a wider market* [*id.* at 339].

It is difficult to discover any ground of distinction between the means of disposition set forth in this record and those approved by this Court in the *Ashwander* case. As the Circuit Court of Appeals for the Sixth Circuit observed in its opinion dissolving the preliminary injunction granted by the district court:

> . . . the case presents the extraordinary situation in that the authority of the Congress to enact the statute in certain of its aspects, and to authorize thereby certain important transactions in respect to the construction of Wilson Dam, and to the sale and distribution by means of transmission lines of the electric energy there generated, has already been sustained by the Supreme Court, and that other acts and transactions here alleged to illustrate the sweep of the challenged power

> program are not readily to be distinguished from those heretofore validated [90 F. (2d) 885 at 892].

After exhaustive consideration of the evidence, the trial court reached the same conclusion. A specific analysis of the facts amply confirms the conclusion of these two courts.

The customers with whom the Authority has contracts include only the classes of customers served by the properties in Alabama transferred under the contract of January 4 (def. ex. 143, r. 4192-4193). The record in this case shows that the Authority has contracted to sell power to

(a) private utilities
(b) municipalities and rural cooperatives
(c) industrial customers
(d) rural residents in the vicinity of the dams

(fdgs. 129, 198, 199, r. 629, 643, app. I, 62, 83) and that it is using transmission lines, substations, and rural lines, which it has constructed or acquired, to deliver the electricity to these customers (fdgs. 183, 185, 187, r. 640, 641, app. I, 79, 80). The contract of January 4 provided for

(a) the sale and delivery of power to *private utilities* (def. ex. 143A, secs. 8, 9, r. 4201-4202)
(b) the conveyance of "all franchises, contracts and going business . . . with all present customers attached" (*id.*, sec. 4, r. 4197-4198) to transmission lines and substations serving *va-*

rious municipalities (*id.*, ex. B at sheet 2, r. 4215) and

(c) the assignment of contracts with certain *industrial customers* (*id.*, ex. B at sheets 2, 3, r. 4215-4216)

(d) the conveyance of rural lines serving a number of *rural residents* and communities (*id.*, ex. B at sheet 5, r. 4217)

In addition to this complete parallel as to the types of customers, it is beyond question that all of the marketing facilities constructed and operated by the Authority for the disposition of electric energy, namely, *transmission lines, substations,* and *rural lines* (*cf.* fdgs. 183, 185, 187, r. 640, 641, app. I, 79, 80), are similar in character and function to those classes of facilities purchased by the Authority under the contract of January 4 from the Alabama Power Company (fdgs. 174, 192, r. 639, 642, app. I, 76, 81).[32] The facilities in the *Ashwander* case were used for the transmission of power to municipal distribution systems in 12 cities, 1,000 rural customers, and 48 industrial customers (fdg. 174, r. 639, app. I, 76).

A large part of the Authority's power is being sold to serve new electric demand. The trial court found that there are unserved potential markets for electric energy in unserved rural areas near the projects of the

[32] A reference to the chart which is defendants' exhibit 137 (see *Reproductions of Certain Original Exhibits Submitted by Appellees*) will disclose the similarity between the electrical facilities now owned by the Authority and the properties sold to it in Alabama under the contract of January 4. For a precise summary of the lines purchased under the contract of January 4 and those constructed by the Authority, see exhibits B, C, and E to defendants' exhibit 136, which is a stipulation by the parties (r. 4177-4179, 4180-4183, 4184).

Authority; that the percentage of rural electrification in the States which make up the Tennessee River basin is small, and that in 1933 it ranged from 0.8% in Mississippi to 7.9% in Virginia; that a great majority of the so-called rural customers on lines of complainants are in towns of a population of a hundred or more, or within six miles of a transmission substation; and that there was little area-wide rural electrification (fdgs. 234, 235, r. 651, app. I, 94). The trial court found that only two customers of the total number of 16,108 rural customers receiving service as of October 31, 1937, from the fifteen rural cooperatives purchasing power at wholesale from the Authority had ever received electric service of any kind from the complainant companies, except for customers located in the ceded area and served by lines sold to the Authority (fdg. 206, r. 645, app. I, 85). As Judge Sibley observed in denying an injunction to restrain the construction of rural lines by the Authority,

> Thus to encourage the development of a new market for electricity rather than to invade an old one seems to be most considerate of existing interests and not of any detriment to the state [*Georgia Power Co.* v. *Tennessee Valley Authority*, 14 F.Supp. 673, 676 (N.D.Ga., 1936)].

The industrial concerns with which the Authority has contracts, apart from those in the "ceded area" served by the lines acquired under the contract of January 4, are certain new industries that have recently constructed new plants in the area or expanded their

prior operations (fdgs. 150, 151, r. 633, app. I, 69). The Authority is selling large blocks of firm and secondary power to these customers, which is delivered at voltages comparable to those at which delivery is made to the municipalities (fdgs. 149, 157, 158, r. 633, 634, 635, app. I, 68, 70, 71). The reasonableness and, indeed, the practical necessity of these sales as a means of disposing of the surplus power is apparent from a consideration of section 11 of the statute, together with the findings of the court (fdgs. 153-156, r. 633-634, app. I, 70). Section 11, among other things, provides that

> . . . sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity.

The trial court found upon the basis of the undisputed testimony that all of the large industrial customers have contracted to purchase large amounts of secondary power, which is that class of power the delivery of which the seller may interrupt during periods specified in the contract (fdgs. 153, 154, r. 633, app. I, 70). These sales of secondary power will increase the load factor and hence the efficiency of the Authority's operations (fdg. 154, r. 633, app. I, 70). It is not feasible to sell this class of power to such industrial customers through a retailer or intermediary (fdg. 155, r.

634, app. I, 70). It was further found that the market for this class of power is limited to such large manufacturing plants and utility companies (fdgs. 153-156, r. 633-634, app. I, 70), and that the complainants do not maintain excess capacity and facilities for service to loads of the large and unusual size of these industrial concerns (fdg. 152, r. 633, app. I, 69).

It would be difficult to suggest a more obvious market for the disposition of Government power. As Judge Sibley said with respect to the unserved rural areas, the sales to these industries are "most considerate of existing interests" (14 F.Supp. at 676). In the many years during which the question of the disposition of the Muscle Shoals power was under consideration by the Congress, numerous bids were submitted by similar industries to lease the Wilson Dam power,[33] and no doubt was ever expressed as to the constitutional validity of the proposals. Indeed, all of the representatives of the Commonwealth and Southern companies testified during the hearings before the House Committee on Military Affairs that they would be willing to see the Government sell its power to such industries, although their suggestion was limited to industrials located along the river which could be served without construction of transmission facilities which might be used to compete for the power companies' existing markets. See Hearings before the House Committee on Military Affairs, 73d Cong., 1st

[33] See offer of Henry Ford, H.R. 518, 68th Cong., 1st sess., sec. 16; offer of Union Carbide Co., S.Doc. 105, 68th Cong., 1st sess., sec. 13, p. 8; offer of American Cyanamid Co., H.R. 16,614, 69th Cong., 2d sess., sec. E (3); offer of Farmers Federated Fertilizer Corporation, S. 4632, 69th Cong., 2d sess., sec. 84.

sess., pp. 129, 136, 155, 177, 199. The denial of constitutional authority to dispose of the Government's power to such industries would, as this Court observed in the *Ashwander* case, lead to absurd consequences (297 U.S. at 336-337).[34]

In this case, as in the *Ashwander* case, the method of disposition is necessary to avoid a private monopoly of the Government's property. As this Court held in the *Ashwander* case, the Government is not required to sell its power to the Commonwealth and Southern companies or allow it to waste. That case did not establish a novel precedent. The decisions of this Court uniformly sustain the power of Congress to prevent the waste or monopoly of public property and to make a widespread distribution of the benefits.

The prior decisions: The water power created by dams of the Government, like other property of the United States, is "held in trust for all of the people" (*United States* v. *Trinidad Coal Co.*, 137 U.S. 160, 170; *cf. Light* v. *United States*, 220 U.S. 523, 537; *United States* v. *Beebe*, 127 U.S. 338, 342; *Camfield* v. *United States*, 167 U.S. 518). And "how that trust shall be administered . . . is for Congress to determine" (*Light* v. *United States, supra* at 537; *cf. Ruddy* v. *Rossi*, 248 U.S. 104, 106-107). "The disposal must be left to the discretion of Congress" (*United States* v. *Gratiot*, 14 Pet. 526, 538). The administration of this trust to avoid monopoly and permit a widespread utilization of public proper-

[34] The sale to industries has been an important market for the disposition of power produced at the federal irrigation projects (see *Annual Report of the Commissioner of Reclamation* (1932) p. 13).

ties has been repeatedly sustained by this Court. The Congress is clothed with the power and charged with the duty to protect its properties against monopoly and waste (*United States* v. *Trinidad Coal Co., supra; Camfield* v. *United States, supra; United States* v. *Shryock,* 162 Fed. 790, 793 (C.C.S.D. Ohio, 1908); *United States* v. *Hanson,* 167 Fed. 881 (C.C.A. 9th, 1909)). As this Court observed in the *Camfield* case, *supra,* "it [Congress] would be recreant to its duties as trustee for the people of the United States to permit any individual or private corporation to monopolize them [public lands] for private gain" (167 U.S. at 524).

These principles govern the disposition of all natural resources owned by the United States. To enable the settlement of public lands in small tracts, the Congress may limit the size and sale price of tracts sold by the Government's grantees (*Oregon & Calif.R.R.* v. *United States,* 238 U.S. 393; *cf. Causey* v. *United States,* 240 U.S. 399; *Ervien* v. *United States,* 251 U.S. 41), and may undertake extensive reclamation projects to make the public lands "marketable and habitable" for small settlers (*United States* v. *Hanson, supra* at 883-884; *Kansas* v. *Colorado,* 206 U.S. 46, 92). This Court has recognized that "The Government incurs heavy liability in providing water for these lands" (*Irwin* v. *Wright,* 258 U.S. 219, 231). The capital for these great projects could have been supplied by private enterprise if the Government had been willing "to abandon our time-honored policy of inviting and encouraging small individual land hold-

ings" and to turn over the public lands to private interests in sufficiently large tracts to render private projects economically feasible. But "no one contemplates so stupendous a price as this for irrigation development."[35] The Reclamation Act in this view represents a choice of means, the refusal of Congress to resort to private agencies, and a determination that the Federal Government must undertake these projects in order to insure the success of its long-established policy.

Equally broad is the power of Congress to prevent such monopoly of mineral or other Government natural resources. From the beginning of our Government, the Congress has reserved valuable mineral lands from ordinary grants (*Morton* v. *Nebraska,* 21 Wall. 660; *United States* v. *Sweet,* 245 U.S. 563). In making specific disposition of mineral and timber lands, Congress has strictly limited the area open to entry by any one individual or association (13 Stat. 529; 16 Stat. 217; 17 Stat. 91; 17 Stat. 607; 29 Stat. 526). The purpose of these restrictions, as this Court has observed, "was, manifestly, to prevent monopolies" (*United States* v. *Trinidad Coal Co., supra* at 169; *United States* v. *Munday,* 222 U.S. 175, 181). The Congress may promote this policy by reserving the minerals from public lands and disposing of them by limited leases (*United States*

[35] The majority report accompanying the Reclamation Act declared: "If we were willing to abandon our time-honored policy of inviting and encouraging small individual land holdings and were prepared to turn over all of the public lands under a large irrigation system to the control of a single individual or a corporation, we could undoubtedly secure the construction of extensive works which cannot be profitably constructed by private enterprise under present conditions, but no one contemplates paying so stupendous a price as this for irrigation development" (H.Rept. 794, 57th Cong., 1st sess. (pt. 1) p. 3).

v. *Gratiot, supra*), or it may mine and market the minerals directly (*Ashwander* v. *Tennessee Valley Authority, supra*).

These principles are clearly applicable in the instant case. The acquisition of generating and transmission facilities to serve municipal, rural, and industrial customers is no less reasonable than the construction and operation of dams, reservoirs, and canals and the appropriation of waters under State laws to make marketable the arid public lands. And, as this Court recognized in the *Ashwander* case, such method of disposition of Government-owned power does not differ in principle from the mining and marketing of minerals owned by the United States.

The scope of the property clause cannot be limited as appellants attempt to do by describing it as a "proprietary power." In the days of the settlement of this country it was the property clause that empowered the Congress "to convert waste places into permanent homes" (*Ruddy* v. *Rossi, supra* at 105), and by which "Empire was given a path westward and prosperous commonwealths took the place of a wilderness" (*Oregon & Calif.R.R.* v. *United States, supra* at 416). And when, at the turn of this century, the need for conservation gained national recognition, the property clause conferred the necessary powers to fashion the instruments needed for the husbandry of our Government-owned natural resources (*Kansas* v. *Colorado, supra; Light* v. *United States, supra*).

Nor is the appellants' argument advanced by calling the activities of the Authority a "business."

The argument is reminiscent of the contention made by the opponents of the Reclamation Act that "the United States is not a dealer in real estate . . . [or] a real estate improvement society, and has not the constitutional power to become such" (H.Rept. 794, 57th Cong., 1st sess. (pt. 2) p. 10). The mere fact that one of the incidental results is governmental activity in a field more commonly occupied by private corporations is not a reason for denying the existence of the power, *a fortiori* when the field is frequently occupied by other public agencies. "The conduct of business in competition with private interests may of course, be for a public purpose" (*Emergency Fleet Corp.* v. *Western Union Tel. Co.*, 275 U.S. 415, 424-425; *cf. Standard Oil Co.* v. *Lincoln*, 114 Neb. 243 (1926), *aff'd*, 275 U.S. 504).

Examples of governmental activity which in their commercial aspects are similar to those now challenged are numerous and familiar. Among these, in addition to the establishment of banks (*M'Culloch* v. *Maryland*, 4 Wheat. 316; *First National Bank* v. *Fellows*, 244 U.S. 416; *Smith* v. *Kansas City Title Co.*, 255 U.S. 180), are the leasing of lead mines on the public lands (*United States* v. *Gratiot, supra*); the ownership and operation of merchant ships (*King County* v. *United States Shipping Board Emergency Fleet Corp.*, 282 Fed. 950 (C.C.A. 9th, 1922); *Sloan Shipyards Corp.* v. *United States Fleet Corp.*, 272 Fed. 132 (W.D.Wash., 1921); *cf. Emergency Fleet Corp.* v. *Western Union Tel. Co., supra*); the establishment of a federal housing corporation (*New Brunswick* v. *United States*, 276 U.S.

547); the establishment and operation of the Panama Railroad (*Wilson* v. *Shaw*, 204 U.S. 24); and the establishment of the parcel post in competition with private express companies (37 Stat. 557-559) and the postal savings system in competition with banks (36 Stat. 814).

In the disposal of its *real property*, the Government has long undertaken a "business" of great magnitude. It is worth recalling that the disposal of the public domain has involved an enterprise so extensive that it has given a now-familiar phrase to the language—"a land-office business."

The contention that the sale of power by the Government constitutes a "business" and is therefore unlawful was advanced in the *Ashwander* case and rejected by this Court:

> The argument is earnestly presented that the Government by virtue of its ownership of the dam and power plant could not establish a steel mill and make and sell steel products, or a factory to manufacture clothing or shoes for the public, and thus attempt to make its ownership of energy, generated at its dam, a means of carrying on competitive commercial enterprises and thus drawing to the Federal Government the conduct and management of business having no relation to the purposes for which the Federal Government was established. The picture is eloquently drawn but we deem it to be irrelevant to the issue here. The Government is not using the water power at the Wilson Dam to establish any industry or business. It is not using the energy generated at the dam to manu-

> facture commodities of any sort for the public. The Government is disposing of the energy itself which simply is the mechanical energy, incidental to falling water at the dam, converted into the electric energy which is susceptible of transmission. The question here is simply as to the acquisition of the transmission lines as a facility for the disposal of that energy [297 U.S. at 339-340].

The hypothetical cases suggested as analogies in appellants' brief (pp. 136-137) raise questions as to the extent to which the Government may process Government-owned property as a means to disposition. Since appellants concede that the Government may lawfully convert water power into electricity if the power is lawfully acquired, it is unnecessary to elaborate the obvious distinctions between the instant case and those suggested by appellants.

Appellants insist that the power to dispose of Government property is limited by the provisions of the tenth amendment. The relation of this amendment to the details of the methods of disposition is discussed fully *infra*, pages 134-154. In general, it should be observed, as this Court said in the *Ashwander* case:

> To the extent that the power of disposition is thus expressly conferred, it is manifest that the Tenth Amendment is not applicable. And the Ninth Amendment (which petitioners also invoke) in insuring the maintenance of the rights retained by the people does not withdraw the rights which are expressly granted to the Federal Government [297 U.S. at 330-331].

The Authority's method of disposition is not invalidated by the tenth amendment.

> Certainly, the Alabama Power Company [and its affiliates of the Commonwealth and Southern system] has no constitutional right to insist that it shall be the sole purchaser of the energy generated at the [Government dams] . . . that the energy shall be sold to it or go to waste [*id.* at 339].

2. THE APPELLANTS HAVE NO STANDING TO CHALLENGE THE VALIDITY OF THE RESALE-RATE PROVISIONS CONTAINED IN THE CONTRACTS BETWEEN THE AUTHORITY AND MUNICIPALITIES AND COOPERATIVES; BUT IN ANY EVENT, THESE PROVISIONS ARE VALID.

The act authorizes the Authority to include in contracts with municipalities and cooperatives provisions establishing resale rates to be charged by the distributor (sec. 10). The authority of the statute is of general application, and, in fact, resale-rate provisions have been included in *all* such contracts (whether or not the distributor operates in a territory served by complainants), including those with municipalities which had theretofore owned and operated their own electric plants and cooperatives serving consumers theretofore without any electric service (fdg. 221, r. 648, app. I, 90).[36] In general, the municipality or cooperative and the Authority agree upon the resale rates set forth in the contract. The Authority is required to agree to such modification as may be neces-

[36] The contracts also contain provisions respecting such matters as the municipal accounting system and the collection of bills. There is no suggestion anywhere in appellants' brief that any of the contract provisions in question (other than those with respect to resale rates) have any regulatory effect on appellants' operations.

sary to maintain the contractor's distribution system on a "self-supporting and financially-sound basis," and the contractor agrees to use all surplus revenues to reduce rates. The rates may be changed at any time by agreement of the parties. (See, e.g., contract between the Authority and the city of Sheffield, Alabama, secs. 6, 7, comp. ex. 118, r. 2802, 2804-2805).[37]

The appellants do not and cannot challenge the validity of these contract provisions under State law. *Oppenheim* v. *Florence*, 229 Ala. 50 (1934); *Memphis Power & Light Co.* v. *Memphis*, 172 Tenn. 346 (1937). The argument is, however, that the contract rates, which are substantially lower than those of appellants, in effect determine the rates which appellants may charge, and that appellants have a right to operate free from federal regulation and may, therefore, question the power of Congress to contract with municipalities and cooperatives with respect to the resale rates to be charged by the distributor.

The argument overlooks the fundamental fact that the muncipalities and cooperatives may charge whatever rates they please and are at liberty to put into effect the rates set forth in the contracts with the Authority even in the absence of any agreement. So

[37] In a few of the early contracts it was provided that the initial rates set forth in the contracts could be modified by the Authority. In all the contracts, however, the Authority is required to agree to such rates as may be required to maintain the distribution system on a "self-supporting and financially-sound basis," and the contractor agrees to use all surplus revenues to reduce rates. The rate schedule set forth in the contracts is thus in all cases merely an initial rate schedule, the continuing obligation of the parties being to maintain rates which are neither higher nor lower than those necessary to maintain the distribution system on a financially sound basis. See, e.g., contract between the Authority and the city of Athens, comp. ex. 117, r. 2729, 2731.

far as appears, not only do the municipalities and cooperatives approve the rates they propose to charge under the contracts with the Authority but they do not wish to change them. Any advantage which complainants might have derived if the municipalities and cooperatives had formulated higher rates in the absence of the agreement with the Authority would have been a mere incident of the right of municipalities and cooperatives to charge such rates in their discretion. Any disadvantage to complainants by virtue of the fact that the municipalities and cooperatives have put into effect rates lower than complainants is likewise a mere incident of the same right of the municipalities and cooperatives. Appellants cannot insist upon the possible advantage or complain of the disadvantage. *Edward Hines Trustees* v. *United States*, 263 U.S. 143, 148; *Sprunt & Son* v. *United States*, 281 U.S. 249, 254-256.

It is immaterial that the resale rates are put into effect pursuant to agreement with the Authority. Stated most favorably for appellants, the case is no different from that which would be presented if the municipalities and cooperatives promulgated these rates pursuant to, or with the approval of, an invalid order of a regulatory commission. In such a situation, it is settled, appellants would have no right to complain. In *Edward Hines Trustees* v. *United States, supra*, the plaintiffs, manufacturers and shippers of lumber, brought suit to annul an order of the Interstate Commerce Commission which abolished a penalty charge on lumber held by carriers at reconsignment

points. The penalty charge had been of substantial benefit to the plaintiffs because of the burden which it placed upon its competitors, and its removal threatened a substantial loss of business. The order was challenged on the ground that it exceeded the power of the Commission. This Court held, however, that the plaintiffs were without standing to challenge the validity of the order. The Court said:

> It is not alleged that the carriers wish to impose such charges and, but for the prohibition contained in the order, would do so. For aught that appears carriers are well satisfied with the order entered. Cancellation of a charge by which plaintiffs' rivals in business have been relieved of the handicap theretofore imposed may conceivably have subjected plaintiffs to such losses as are incident to more effective competition. But plaintiffs have no absolute right to require carriers to impose penalty charges [263 U.S. at 148].

Sprunt & Son v. *United States, supra,* is to the same effect. In that case certain shippers brought suit to set aside an order of the Commission establishing a new rate structure which eliminated, to plaintiffs' disadvantage, a rate differential previously existing. This Court reaffirmed the rule of the *Hines Trustees* case and held that the plaintiffs were without standing to sue, saying:

> The appellants' position is legally no different from what it would have been if the carriers had filed the rates freely, pursuant to an informal sug-

gestion of the Commission or one of its members; or if the filing had been made by carriers voluntarily after complaint filed before the Commission, which had never reached a hearing, because the rate structure complained of was thus superseded. The carriers who were respondents before the Commission filed the new rates presumably because they now desire them. Nothing to the contrary is shown. So far as the carriers are concerned, it is as if the new rates had been filed wholly of their own accord and as if there had never been a controversy before the Commission. Since the appellants' economic advantage as shippers was an incident of the supposed right exercised by the carriers, the appellants cannot complain after the carriers are satisfied or prefer not to press their right, if any [281 U.S. at 256].

A close analogy is found in the decision of the Court of Appeals of the District of Columbia in the case of *Wilbur* v. *Texas Co.*, 40 F. (2d) 787 (App.D.C., 1930), *cert. denied*, 282 U.S. 843, in which it was held that the purchaser of oil from a producer operating under a Government lease had no standing to challenge an order of the Secretary of the Interior setting a minimum price at which the lessee would be permitted to sell such oil.

The precise question was presented in *Georgia Power Co.* v. *Tennessee Valley Authority*, 14 F.Supp. 673 (N.D.Ga., 1936), where Circuit Judge Sibley, in denying an application for preliminary injunction in a case involving an attack upon the validity of the resale-rate provision, took the position that that question

could not properly be raised by the complainant utility.[38]

In any event, these provisions of the contracts are valid. They were adopted, as the contracts recite, "In order to facilitate the disposition of surplus power generated by Authority and not needed by it in its operations, and in order to carry out the intention of Congress to encourage the more abundant use of electricity throughout the area in which municipality [cooperative] operates" (see, e.g., comp. ex. 118, r. 2802, 2804). *Cf. Isbrandtsen-Moller Co.* v. *United States*, 300 U.S. 139. The relation of the means to the end is evident, but if proof were needed, it is amply furnished by the findings of the trial court as to the ever-increasing electric demands of the Authority's customers (fdgs. 223-226, r. 649, app. I, 91). There are definite federal interests of a traditionally accepted character involved in this situation that should not be ignored. Here the Government is selling at wholesale. To a large extent the demand by the distributor for the Government property will be influenced by the rate charged to the ultimate consumer. The Congress, as trustee of Government property, may use means to assure a widespread diffusion of the benefits to the people.

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[38] "Whether if TVA rather than North Georgia Membership Corporation and the several towns shall be found retailing power to individual consumers, it will be subject to have its rates fixed by the Georgia Commission, and whether if TVA wholesale power to the Membership Corporation and the towns under contracts which undertake to fix the rates to consumers, such rates will be governed by the contracts or by the action of the Georgia Public Service Commission, are questions that must wait until they take concrete form with all interested parties before the court. . . . Several distinctions are here urged. One is that the state of Alabama had there consented to what was done and here Georgia has not. But Georgia is not objecting, and the Georgia Power Company cannot object for it" (14 F.Supp. at 676).

It has long been established that in disposing of public property the Federal Government may contract with the purchaser as to the purposes for which the property is to be used and also as to the price at which it may be resold. In *Oregon & Calif.R.R.* v. *United States*, 238 U.S. 393, this Court had before it the problem of construing a statute providing that all land that had been granted to the railroads and that remained unsold at the time of the passage of the statute should be sold only to actual settlers, in quantities not greater than a quarter section to each purchaser and for a price not exceeding $2.50 per acre. In a decision construing and enforcing the provisions of the statute, the Court made it clear that there could be no legitimate doubt as to the power of Congress to attach such conditions to the subsequent resale of property originally granted by it. In *Ervien* v. *United States*, 251 U.S. 41, this Court interpreted and enforced a similar grant to a State for public improvements. *Cf. Ruddy* v. *Rossi*, 248 U.S. 104; *Causey* v. *United States*, 240 U.S. 399; *Wilbur* v. *Texas Co.*, *supra*.

In one of the leading cases, *United States* v. *Gratiot*, 26 Fed. Cas. 12 (C.C.D.Ill., 1839), *aff'd*, 14 Pet. 526, which was an action by the United States to recover rent under a lease of certain lead mines, defendants in the lower court attacked the validity of the lease because of a provision fixing the price which the defendants were permitted to charge for smelting the ore mined on the property. This Court did not pass upon this point, as it was not renewed on appeal. But

Mr. Justice McLean, who rendered the opinion in the lower court, flatly rejected the contention in the following terms:

> The limitation imposed on the price of the manufactured article is a very proper regulation in the lease; as it prevents monopolies, and other consequences injurious to the public, by a combination of the lessees. . . .
>
> . . . And it [the United States] has a right to stipulate with the lessee, as one of the conditions of his lease, that he shall sell the ore he digs, or the lead he manufactures, at a fixed price. I can see no possible objection to such a regulation [26 Fed. Cas. at 13-14].

3. THE POWERS RESERVED TO THE STATES UNDER THE TENTH AMENDMENT ARE NOT INVADED BY THE STATUTE OR THE ACTIVITIES AUTHORIZED THEREUNDER.

The appellants argue that the statute and the activities of the Authority pursuant thereto will result in the displacement of the State-regulated utilities and the creation of a federal utility free from State control and must therefore be held an unlawful invasion of the rights reserved to the States under the tenth amendment. Appellants' argument proceeds on an erroneous view of the limitations imposed by the tenth amendment on the power granted to the Congress, a point which was fully discussed in the Government's brief in *United States* v. *Bekins*, 304 U.S. 27. The argument is untenable even though the tenth amendment be construed to limit the powers otherwise granted to the Congress by the Constitution.

It should be observed at the outset that the consequence of the acceptance of appellants' argument is to confer upon the Commonwealth and Southern companies a constitutional monopoly of the Government's power, or, indeed, to commit all the power to waste. The denial of authority in the Congress to construct the necessary transmission facilities to serve municipalities, cooperatives, and industries would limit the Authority's market to the dam sites where the Commonwealth and Southern companies are, in all practical effect, the only available purchasers. Appellants' argument would require the Government to waste the power entirely. If the Authority can sell at all, it may, as appellants argue, fix the terms. If this amounts to an invasion of the power reserved to the States, as appellants urge, the Authority may not dispose of any power. For these reasons alone the contention should be rejected. See *Ashwander* v. *Tennessee Valley Authority, supra* at 339.

There is another and conclusive answer. The Authority's method of disposition does not impair the exercise of the States' police power.

(*a*) *The sale of power to municipalities, cooperatives, and industries is not invalid under the tenth amendment:* Appellants ignore the obvious fact that the Authority is dealing with municipalities and cooperatives who are subject at all times to the complete control of the States. While the States in which the Authority operates have exempted municipalities and cooperatives from the jurisdiction of their respective regulatory commissions, if the States should elect to

remove this exemption the Authority's sale of power to municipalities and cooperatives at wholesale would in no way prevent State regulation of the distribution to the ultimate consumer. *Memphis Power & Light Co.* v. *Memphis, supra; Oppenheim* v. *Florence, supra.* Under the decisions of this Court, such an arrangement by which the State authorizes its agencies at their election to purchase property from the Government can give rise to no questions under the tenth amendment. *Cf. Steward Mach. Co.* v. *Davis*, 301 U.S. 548; *United States* v. *Bekins, supra.*

What has been said above indicates the answer to the claim that the Authority may invade appellants' markets without State consent and, having destroyed the appellants' business, *can* withdraw without State permission (see br. 160-161). The States are under no obligation to contract with the Authority. The municipalities, which are mere agents of the States, may be forbidden to do so, and the same is true of the quasi-public electric membership corporations. *Hopkins Fed. Sav. & Loan Ass'n* v. *Cleary*, 296 U.S. 315. During the period of the contract the Authority is bound according to the terms of its agreement. *Cf. Lynch* v. *United States*, 292 U.S. 571. The conjecture that the Authority thereafter may abandon the costly facilities it has constructed for wholesale service and withdraw its service without State permission is without substance.

The appellants contend that the Authority's method of distribution should be held invalid because, if lawful, the Authority may fix its own terms. The

sufficient answer is that, as this Court held in the *Ashwander* case, the Authority may "sell and fix the terms." See *Ashwander* v. *Tennessee Valley Authority, supra* at 338. If these terms are unsatisfactory to the States, they may refuse to contract and, it would seem, forbid their public agencies and quasi-public corporations to do so. *Cf. Hopkins Fed. Sav. & Loan Ass'n* v. *Cleary, supra.*

Any effect on the customary regulation of appellants which may result from the competition of State agencies as authorized by States themselves is immaterial. The States concerned may authorize municipalities to construct and operate electric plants in competition with appellants, though the result is harmful to appellants' business. *Alabama Power Co.* v. *Ickes,* 302 U.S. 464. To the extent that this competition is related to the wholesale service of the Authority, the case presented is one of the federal exercise of a granted power to dispose of public property by sales to local public agencies, who, themselves, engage in an enterprise which the States have lawfully authorized. Such cooperation is permitted by the Constitution and not forbidden by the tenth amendment. See *Duke Power Co.* v. *Greenwood County,* 91 F. (2d) 665, 673 (C.C.A. 4th, 1937); *cf. Steward Mach. Co.* v. *Davis, supra; United States* v. *Bekins, supra.*

The conclusion is the same with respect to the Authority's contracts for the sale of firm and secondary power to certain electrochemical and electrometallurgical industries. The sale of the Government's power in this market, as we have pointed out above, "is of no

detriment to the state" (*Georgia Power Co.* v. *Tennessee Valley Authority*, 14 F.Supp. at 676). It cannot seriously be suggested that the Authority's industrial customers are in need of protection against exorbitant rates, and the contention that the sale of the Authority's power to industries may conflict with State policy with respect to the geographic distribution of industry is without substance. The policy of rate uniformity, repeatedly emphasized in complainants' testimony, is, in fact, applied only to the extent of requiring nondiscrimination by any individual utility. The trial court found that as between the complainant companies operating within a State there is no requirement of uniformity of rates (fdg. 27, r. 599, app. I, 19). No such policy could be enforced on a State-wide basis applicable to all utilities, in view of the constitutional requirement that each separate utility must be allowed an adequate return necessarily varying with the particular investment of the individual company, and obviously no State could prohibit its neighbors from adopting a policy in conflict with its own.

It should be finally observed that competition is not regulation. Appellants' contention that the sale of power by the Authority results in the unauthorized regulation of their intrastate business is based in part upon the theory that in order to meet such competition they will be forced to lower their rates. This effect is characterized as "regulation." This Court has repeatedly held that an exercise of a delegated power is not rendered invalid by reason of its incidental effects.

Cf. Duke Power Co. v. *Greenwood County*, 91 F. (2d) 665; *Sonzinsky* v. *United States*, 300 U.S. 506, 513-514; *United States* v. *Carolene Products Co.*, 304 U.S. 144. And it follows that any effect upon business which may indirectly result from competition of municipalities in the distribution of power purchased from the Authority (as well as from sales to industrials) may not be deemed in any legal sense an impairment of regulation.

(*b*) *The size of the Authority's projects presents no question under the tenth amendment:* The appellants' principal contention is that the *physical size* of the Authority's projects for the disposition of power must necessarily result in the impairment of the rights reserved to the States. The facts in this regard, as we have previously observed, are exaggerated by the appellants. The conclusion is the same, however, though the facts were as stated by the appellants. As we have shown above, the Authority's wholesale service to municipalities and cooperatives and its sales to industry do not interfere in any way with the exercise of the State's police power because of the limitation in the *nature of the service*, and it cannot be material, therefore, what amount of power may be sold by the Government in this manner.

This conclusion is clear in principle, but it should be further observed that appellants' position is in conflict with the relevant decisions of this Court. Appellants rely on a phrase from the opinion of this Court in the *Ashwander* case describing the challenged contract of January 4 as a "limited transaction." But appellants quote this Court's language out of context and

omit language of decisive significance. What this Court said was that

> The transmission lines which the Authority undertakes to purchase from the Power Company lead from the Wilson Dam to *a large area* within about fifty miles of the dam. These lines provide the means of distributing the electric energy, generated at the dam, to *a large population.* They furnish a method of reaching a market. The alternative method is to sell the surplus energy at the dam, and the market there appears to be limited to one purchaser, the Alabama Power Company, and its affiliated interests. We know of no constitutional ground upon which the Federal Government can be denied the right to seek a wider market. We suppose that in the early days of mining in the West, if the Government had undertaken to operate a silver mine on its domain, it could have acquired the mules or horses and equipment to carry its silver to market. And the transmission lines for electric energy are but a facility for conveying to market that particular sort of property, and the acquisition of these lines raises no different constitutional question, unless in some way there is an invasion of the rights reserved to the State or to the people. We find no basis for concluding that the limited undertaking with the Alabama Power Company amounts to such an invasion. *Certainly, the Alabama Power Company has no constitutional right to insist that it shall be the sole purchaser of the energy generated at the Wilson Dam; that the energy shall be sold to it or go to waste* [297 U.S. at 339].

We construe the words "limited transaction" as referring to the nature of the service contemplated, not to its territorial scope. Earlier in its opinion this Court rejected the contention that the amount of power which the Government may sell is limited by any consideration other than the amount lawfully available. This Court said:

> The United States owns the coal, or the silver, or the lead, or the oil, it obtains from its lands, and it *lies in the discretion of the Congress, acting in the public interest, to determine of how much of the property it shall dispose.*
>
> We think that the same principle is applicable to electric energy [*id.* at 336].

The lack of merit in appellants' contention becomes apparent when measured by its application to other projects which have heretofore been deemed within the constitutional powers of the Congress. The amount of power generated at the Boulder Canyon project alone, for example, is almost equal to the amount to be produced at *all* of the dams constructed, or authorized for construction or investigation, by the Authority. (See Wilbur and Ely, *The Hoover Dam Power and Water Contracts* (U.S.Dept. Interior, 1933) p. 16; *cf.* def. ex. 140, r. 4187). The method of disposition in the case of Boulder Dam does not differ materially from that involved in the case at bar. The Boulder Canyon Project Act (45 Stat. 1057) gave the Secretary of the Interior a wide choice of means to dispose of power (secs. 4, 5, 6). He was authorized

to make contracts for the sale of electrical energy or the use of water for power purposes. He was authorized to install generating equipment and operate it. Or he could, in his discretion, enter into contracts of lease of a unit of any Government-built plant, with the right to generate electrical energy or, alternatively, enter into contracts of lease for the use of water at the dam for the generation of electrical energy. The Boulder Canyon Project Act provided for the means of transmission as well as generation (sec. 5 (d)). It provided that any agency which should receive a contract for electrical energy in a large bulk (100,000 firm horsepower) could be required by the Secretary to permit purchasers of smaller amounts of power to use their transmission lines upon the payment of a reasonable share of the cost of construction, operation, and maintenance.

The significance of these provisions in the Boulder Canyon Project Act becomes obvious when the legislative history of that act is examined. The construction of a power plant by the United States at Boulder Dam had been strongly urged by the Secretary of the Interior, who disapproved a previous bill for a project there on the ground that it included no provision for such a plant. (See S.Rept. 592, 70th Cong., 1st sess., p. 31.) In the utilization of the electric power to be generated by this plant, the objectives of Congress were clearly stated. The report of the Senate committee on the project explained that the allocation of power which was contemplated would avoid danger of monopolization:

> The plan of the Boulder Canyon project, as expressed in the bill, contemplates allocation of the power or power rights at Boulder Canyon amongst various agencies, including States, political subdivisions, municipalities, domestic water-supply districts, and private companies.
>
> * * *
>
> With such a distribution of power or power rights at the dam, all danger of monopolization will be avoided, and there will be created a sound competitive condition between these various agencies which will insure the consuming public protection in the form of reasonable rates and good service [*id.* at 26-27].

The report of the House committee enunciated the same objective:

> There were many indications in the testimony adduced before the committee that there would be considerable competition to secure this very desirable power. The committee has so framed the legislation to guard as fully as might be against this asset, created by Federal initiative, being monopolized by any one agency. The bill contemplates that the power will be fairly and equitably distributed amongst the various agencies applying therefor, thus insuring the widest and fairest possible distribution of the benefits [H. Rept. 918, 70th Cong., 1st sess., p. 22].

As actually consummated prior to the appropriation for the project, the Secretary of the Interior entered into contracts with the city of Los Angeles (hav-

ing a population of more than twice the combined population of the three large cities under contract with the Authority) and with the Southern California Edison Company which established them as generating agencies to satisfy the requirements of contracts made and to be made by the Secretary with other purchasers. At the outset, the Secretary contracted with the Metropolitan Water District as such a purchaser. Later, in 1933, it was stated that five additional purchasers had entered into contracts with the Secretary which the generating agencies were obligated to satisfy. (See Wilbur and Ely, *supra* at 45.) The generating costs attributable to the energy delivered to these allottees are to be repaid to the generating agencies by the United States in the form of deductions upon their obligations to the Government, and the United States undertakes to collect these costs from the allottees (*id.* at 50).

The Secretary of the Interior, in reporting on the original contracts to the Senate Committee on Appropriations in 1930, explained that "a wide regional benefit from this power was desired and obtained" (*id.* at 601). He stated that *ninety-one percent* of the firm energy was allocated *to public agencies* to be generated at the dam by the city of Los Angeles; and that the remaining *nine percent* was allocated to "*four public utilities* who alone can serve the great agricultural back-country" (*ibid.*).

The statute provided and the contracts required that the generating agencies should permit the use of their transmission lines by allottees of small amounts

of power, on suitable conditions. See Wilbur and Ely, *supra* at 146-147.

The limitation suggested by appellants would defeat the declared policy of Congress to distribute and sell the surplus power "equitably among the States, counties, and municipalities within transmission distance" (sec. 11). We submit that the physical size of the projects which the Congress may lawfully undertake to dispose of public property must be measured by the need, and the question of the need, this Court has held, is one primarily for the Congress to determine. *Cf. United States* v. *Gratiot, supra* at 533, 538; *Light* v. *United States, supra* at 537. It would be difficult to imagine any undertaking of broader territorial scope than the federal reclamation projects authorized by the Reclamation Act of 1902. Pursuant to the authority of this act, federal reclamation projects have been constructed in many parts of all the States of the arid West in which the Government owned substantial tracts of land.

The Authority's method of distribution substantially serves a legitimate federal objective and impairs no substantial interest of the States. The Constitution permits, and the tenth amendment does not forbid, the Congress to authorize the execution of power contracts and the acquisition of the necessary electric facilities in such number and extent as, in the reasonable exercise of its discretion as trustee "for all of the people" (*United States* v. *Trinidad Coal Co., supra* at 160), the Congress may deem necessary to distribute *all* the Government's power in the public interest. The territorial scope of

the project cannot be limited on any rational legal principle. As well might it be said that the Government's authority to dispose of power may extend to the entire State of Delaware, "limited" in size, but not throughout the vast expanse of Texas. It would seem clear that the Federal Constitution—the grants of power no less than the limitations—has application in all the States and all the counties of the United States, in the entire States of Tennessee, Mississippi, and Alabama as well as in the six northern counties of Alabama (and the ten northeastern counties of Mississippi) to which the contract in the *Ashwander* case related.

(*c*) *The resale-rate provisions of the contracts present no question under the tenth amendment:* It is suggested by appellants that these provisions deprive the States of their power to regulate the rates at which electricity shall be sold in intrastate transactions. There is in fact in the contractual arrangements of the Authority no interference with State jurisdiction. The fact that the States, pursuant to what they deem a wise public policy, have seen fit to exempt these agencies from the rate and commission regulation to which private utilities such as appellants are subject does not mean that the power has been abandoned or bartered away.

Enabling legislation expressly authorizing municipalities to purchase electricity from the Authority and to contract with respect to the terms and conditions upon which such electricity is to be resold has been enacted in the States in which the Authority is under contract to sell power in the claimed territory

of any appellant.[39] This legislation has been sustained by the courts against attacks challenging its validity under State law upon every conceivable ground, including the charge that such contracts deprived the States of their power of regulation. *Oppenheim* v. *Florence*, 229 Ala. 50 (1934); *Memphis Power & Light Co.* v. *Memphis*, 172 Tenn. 346 (1937); *Tennessee Elec. Power Co.* v. *Fayetteville*, 114 S.W. (2d) 811 (Tenn., 1938); *Kentucky-Tennessee L. & P.Co.* v. *Clarksville*, Tenn. Sup. Ct., 1937 (app. II, 132). Similarly, the Supreme Court of Alabama has upheld the validity of the Alabama statute authorizing the organization of rural cooperative associations, empowering such associations to contract with the Tennessee Valley Authority for the purchase and resale of electricity, and exempting them from the jurisdiction of the State regulatory commission. *Alabama Power Co.* v. *Cullman County Elec. Membership Corp.*, 234 Ala. 396 (1937). In the above-cited cases the State courts have sustained the validity of the identical contract provisions that are here under attack and have expressly declared that such contracts do not abrogate or invade the regulatory power of the States.

In *Oppenheim* v. *Florence, supra,* the Supreme Court of Alabama was dealing with a test suit brought for the purpose of determining the validity under State law of the loan-and-grant agreement between the city of Florence and the Public Works Administration and the power contract between the city and the Au-

[39] See app. II, 113; see also app. appellants' br., 47-66.

thority. The contract there involved contained covenants similar to those included in the contracts here under attack. After sustaining the validity of the Carmichael Act (Alabama Acts (ex. sess. (1933) No. 107)) authorizing Alabama municipalities to construct and operate electric distribution systems and to contract with the Authority for a supply of power, the court disposed of the contention that the resale-rate provisions of that contract surrendered to the Authority sovereign powers of the State. Referring to the Carmichael Act under which the contract was made, the court said:

> Instead of granting an uncontrolled and irrevocable right to the cities, it unmistakably reserved its supervision inherent in its police power to pass upon the reasonable aspect of such rates. Within those limits cities have had thereby conferred on them a reasonable latitude to exercise a discretion, but with the right of supervision reserved to the state.
>
> * * *
>
> The effect of the Carmichael Act is that the city cannot bind itself as to rates and regulations for the distribution of electricity in such manner that the court cannot review them to determine if they are reasonable and legal. As we interpret this entire set-up, it is not here so proposed [229 Ala. at 57].

In the case of *Memphis Power & Light Co.* v. *Memphis, supra*, the bill sought to enjoin the city of Memphis from proceeding with a contract to purchase power at wholesale from the Tennessee Valley Au-

thority. This contract contained all of the covenants and conditions which appellants insist constitute an unlawful regulation of intrastate rates. One of the principal questions argued before the court was the validity of the resale-rate provisions. In the words of the court:

> The primary insistence of complainant is that the contract of the city with TVA confers governmental powers upon the latter by delegating to it authority to fix resale rates . . . [172 Tenn. at 353].

In upholding the validity of the contract with particular reference to these covenants, the court first determined that the power of a municipality to contract with reference to the rates to be charged for electric service within its borders was in the nature of a private business power and not governmental. It then proceeded to hold:

> In the instant cause such power was delegated to the city, and it has exercised the authority so conferred upon it and has not, in our opinion, delegated the making of resale rates to TVA. . . . The TVA is a public instrumentality and holds the electric energy generated at its dams in trust for the people of the whole country. . . .
>
> One of the objects of TVA is to supply the inhabitants within its territory with cheap electric current. It does not operate for profit. The contract which it has entered into with the city is predicated upon reasonable rates, and there can be little doubt but that in order to effectuate the purpose to protect the public against unjust

> charges, it reserved the right to approve any increase in rates. There is no provision in the contract authorizing TVA either to increase or reduce the rates agreed upon. The reserved right to approve any increase in charges is a merely supervisory privilege that must be exercised reasonably and not arbitrarily, and, being a servant of the general public, it is presumed that in exercising this right it will conform to the spirit of the contract. . . . But the regulation of rates, *however accomplished, is subject to the continuing police power of the state* [*id.* at 359-361].

In this opinion the Supreme Court of Tennessee squarely met and answered every objection to the contracts that is here urged. The contracts involve no delegation of the sovereign power of the State: (1) because the power to contract with reference to rates is not governmental; (2) because there has been no delegation but, on the contrary, an exercise of the power by the contracting municipality; and (3) because the operations of the municipality under the contract remain subject to the reserved police power of the State. The decision in this aspect was in accord with established Tennessee precedents. *Memphis* v. *Enloe*, 141 Tenn. 618 (1919); *Lewis* v. *Nashville Gas & Heating Co.*, 162 Tenn. 268 (1931). The court further recognized the important fact that in disposing of Government property created at the dams, Congress has the undoubted right to prescribe conditions that are designed to guarantee a widespread and equitable distribution of this property for the general welfare.

There would be no basis for objection, we submit, if the municipalities and cooperatives were authorized to make resale-rate contracts binding on the States. The States may authorize municipalities to enter into binding contracts with private utilities, fixing the utilities' rates for the duration of the contract. *Detroit* v. *Detroit Citizens St. Ry. Co.*, 184 U.S. 368; *Detroit United Ry.* v. *Michigan*, 242 U.S. 238; *St. Cloud Public Service Co.* v. *St. Cloud*, 265 U.S. 352, 355. In any event, there cannot be said to be any impairment of State sovereignty where, as here, the States reserve a continuing power to revoke their consent.

The decision in *Steward Mach. Co.* v. *Davis*, 301 U.S. 548, would seem conclusive on this point. In that case, this Court sustained the constitutional power of Congress to make the enactment of State legislation a condition precedent to receiving the benefits of the Social Security Act. In rejecting the contention that this condition was in violation of the tenth amendment, this Court said:

> We are to keep in mind steadily that the conditions to be approved by the Board as the basis for a credit are not provisions of a contract, but terms of a statute, which may be altered or repealed . . . The state does not bind itself to keep the law in force.
>
> * * *
>
> The inference of abdication thus dissolves in thinnest air when the deposit is conceived of as dependent upon a statutory consent, and not upon a contract effective to create a duty. By this we do

> not intimate that the conclusion would be different if a contract were discovered. Even sovereigns may contract without derogating from their sovereignty. *Perry* v. *United States*, 294 U. S. 330, 353; 1 Oppenheim, International Law, 4th ed., §§ 493, 494; Hall, International Law, 8th ed., § 107; 2 Hyde, International Law, § 489. The states are at liberty, upon obtaining the consent of Congress, to make agreements with one another. Constitution, Art. I, § 10, par. 3. *Poole* v. *Fleeger*, 11 Pet. 185, 209; *Rhode Island* v. *Massachusetts*, 12 Pet. 657, 725. We find no room for doubt that they may do the like with Congress if the essence of their statehood is maintained without impairment [301 U.S. at 594-597].

This principle was affirmed and extended by this Court in sustaining the constitutionality of the amended Municipal Bankruptcy Act, even though the consent of the State to any particular composition, once given, could not be withdrawn. In *United States* v. *Bekins*, 304 U.S. 27, this Court said:

> It is of the essence of sovereignty to be able to make contracts and give consents bearing upon the exertion of governmental power. . . .
>
> Nor did the formation of an indestructible Union of indestructible States make impossible cooperation between the Nation and the States through the exercise of the power of each to the advantage of the people who are citizens of both [304 U.S. at 51-53].

There is no merit in appellants' contention that the resale-rate provisions must be held invalid because,

if lawful, the Congress may reach the same end without State consent. It is settled that the States may withhold from municipalities authority to execute rate contracts or may authorize such contracts subject to a continuing power in the States to set the contract aside. *Puget Sound Traction L. & P.Co.* v. *Reynolds*, 244 U.S. 574; *cf. Home Telephone Co.* v. *Los Angeles*, 211 U.S. 265. The States enjoy the same power with respect to the quasi-public electric membership corporations created under State laws. *Hopkins Fed. Sav. & Loan Ass'n* v. *Cleary*, 296 U.S. 315.

The argument is advanced that the sale of the Authority's power for distribution in competition with appellants, when coupled with agreements as to resale rates, has the necessary effect of regulating appellants' rates, or at least impairing the powers of the States to regulate them. It cannot seriously be urged that the Authority's method of disposition has been "contrived" for this purpose and that it serves no other or no legitimate federal purpose. These provisions are contained in contracts with many municipalities and cooperatives serving consumers which appellants either do not serve or have no franchise to serve (fdgs. 220, 221, r. 648, app. I, 90). It is not even claimed that the Authority has made or rejected any contracts with municipalities depending upon appellants' rates or any offer of appellants to reduce their rates (*cf.* fdg. 221, r. 648, app. I, 90).

What has been said with respect to the claimed regulation of the municipalities through the resale-rate provisions sufficiently disposes of the contention

as to the claimed regulation of the appellants. A similar contention was rejected in the *Duke Power* case, where the court observed that the exercise of a claimed power cannot be defeated because of its incidental effect on complainants' rates. *Duke Power Co.* v. *Greenwood County*, 91 F. (2d) 665, 673, 676; *cf. United States* v. *Carolene Products Co.*, 304 U.S. 144, 147; *Sonzinsky* v. *United States*, 300 U.S. 506, 513-514.

4. THERE IS NO MERIT IN THE CHARGE THAT THE AUTHORITY'S METHOD OF DISPOSITION CONSTITUTES "UNFAIR COMPETITION" IN EXCESS OF STATUTORY POWERS OR IN VIOLATION OF THE FIFTH AMENDMENT.

Appellants argue that the rates of sale by the Authority and its wholesale customers are at such low levels that they cannot be met in competition by the appellants, and hence the enforcement of the policy of the statute necessarily results in violation of the fifth amendment. A sufficient answer to this contention is furnished by the decisions of this Court in *Standard Scale Co.* v. *Farrell*, 249 U.S. 571; *Pennsylvania R.R.Co.* v. *United States R.R. Labor Board*, 261 U.S. 72; *United States* v. *Los Angeles R.R.*, 273 U.S. 299. Since the appellants are not forced by any compulsion of law or regulation to meet this scale of rates, a consideration of whether such rates would be confiscatory if imposed upon the appellants is clearly irrelevant. Completely ignoring the principle of the above authorities that the release of information and the comparison of standards does not constitute regulation by law, ap-

pellants would have this Court treat this case exactly as if the rate schedules at which Government power is sold had been imposed upon them by the order of a regulatory commission.

In addition to the fact that there is no regulation and therefore no confiscation, this argument ignores the settled doctrine that where a public body is otherwise authorized to sell water, gas, or electricity it can make such sales at any level of rates that it desires, even though such rates may be below the cost of production and may be at such a level that a private utility cannot compete. That this is true as to the State and its agencies, acting pursuant to statutory authority, is now too clear for argument. The due process clause of the fourteenth amendment does not prohibit the State or its properly authorized agencies from engaging in competition with a private utility operating in the same area, and where such a competitive situation exists the State or its agencies may perform utility services at rates below those of the private utility and even at rates which the utility cannot meet without the destruction of its business. *Walla Walla* v. *Walla Walla Water Co.*, 172 U.S. 1; *Skaneateles Water Co.* v. *Skaneateles*, 184 U.S. 354; *Joplin* v. *Southwest Mo. Light Co.*, 191 U.S. 150; *Helena Water Works Co.* v. *Helena*, 195 U.S. 383; *Knoxville Water Co.* v. *Knoxville*, 200 U.S. 22; *Madera Water Works* v. *Madera*, 228 U.S. 454; *Springfield Gas Co.* v. *Springfield*, 257 U.S. 66; *Vicksburg* v. *Henson*, 231 U.S. 259; *Puget Sound Co.* v. *Seattle*, 291 U.S. 619.

In these cases this Court has repeatedly held that even where a utility's business is destroyed as a collateral effect of otherwise authorized competition by a public body, there is no deprivation of property within the meaning of the due process clause. It must be equally true that any damage from sales of power by the Government is the indirect result of an exercise of the paramount power of Congress and is not a "taking" within the terms of the fifth amendment.

Both at the trial and in their brief (pp. 233-235) appellants have emphasized what they term "unfair competition." It is difficult to catalogue the charges grouped under this general term. It is still more difficult to determine whether appellants mean to insist that the charges if established would invalidate the statute and the acts done pursuant to it or merely that proof of the charges would entitle them to some form of limited relief against the specific acts claimed to constitute "unfair competition."

Regardless of the legal theory upon which these ill-defined charges of "conspiracy with the PWA," "duress," "coercion," "malice," and "solicitation" of appellants' customers are advanced, none of them are supported by the record.

As the trial court pointed out in its opinion, the facts in this record "do not evidence acts deemed coercion under settled legal principles," and "No malice in law is shown on this record" (app. I, 124). The allegations in the bill were that defendants had conspired to coerce complainants to sell their plants at distress figures and had coerced municipalities and coopera-

tives to set up their own distribution systems for the Authority's power.[40] The proof offered to support the charge of coercion of complainants to sell consisted of evidence that complainants were unable to compete with municipalities and cooperatives receiving grants and loans from the Public Works Administration and selling power at Tennessee Valley Authority rates. As the trial court pointed out, the municipalities and cooperatives being lawfully engaged in the business of selling electricity, the complainants have no legal right to be free from such competition even though it curtail or destroy their business, and complainants have no standing to challenge the validity of loans and grants to them. *Alabama Power Co.* v. *Ickes, supra.* Such competition, therefore, does not amount to legal coercion or duress.

The court found that no coercion was exercised by the Authority upon the municipalities and cooperatives. The evidence amply supports this finding. The facts are succinctly summarized in the court's opinion:

> Certain officials and employees of the TVA gave information, counsel and encouragement to municipalities and co-operatives at the request of such municipalities and co-operatives with respect to the general feasibility of setting up distribution systems for TVA power. The decision on such matters was made by the municipality or co-opera-

[40] So far as can be ascertained, the alleged "conspiracy" was to the effect that the Public Works Administrator would undertake to make loans and grants for the purpose of assisting the Authority in marketing its power. The only question which could be thus raised was the validity of the action of the Public Works Administrator. This is the very question adjudicated in *Alabama Power Co.* v. *Ickes, supra.* The Administrator was not a party in the case at bar. See *infra* pp. 216-220.

tive concerned. Under the statutes of Alabama, Tennessee and Mississippi, hereinafter cited, both municipalities and rural co-operatives are authorized to construct generating plants and distribution systems for the purpose of creating and distributing electric energy. Georgia has a similar statute concerning co-operatives. These cities and co-operatives were free to obtain information and counsel from any source. In each case the decision of the municipality involved was made either by the citizens at an election, or by its duly elected officers. The decision of the co-operatives involved was made by its lawful representatives. Presentation by the Authority of facts as to TVA rates and contracts for power given to citizens or officers of a city or rural co-operative at their request do not constitute intimidation or coercion [app. I, 127].

Cf. Steward Mach. Co. v. *Davis, supra; United States* v. *Bekins, supra.*

The attempt to show malice on the part of the Authority similarly failed. The record amply demonstrates that the marketing activities described above provide a market for widespread use of the surplus power developed at its navigation and flood-control dams, and that the means used to dispose of this power are reasonably appropriate to that end. The Authority has not utilized the preference provisions to favor those municipalities previously served by the appellant companies to promote public ownership in such municipalities. No effort has been made to limit the negotiation of contracts to those municipalities

previously receiving service from the appellant companies. On the contrary, most of the contracts executed by the Authority provide for service to municipalities which owned and operated their own municipal distribution systems prior to the passage of the Tennessee Valley Authority Act (fdgs. 219, 220, r. 648, app. I, 89, 90).

The facts brought out in the record abundantly support the following findings of the court:

> 186. The transmission lines substantially as constructed by the Authority are essential for service to the customers of the Authority now being served or under contract [r. 641, app. I, 80].
>
> 217. The officials of the Authority have taken the position in correspondence with municipal officials that the question of whether a municipality shall own and operate its own distribution system is one for the sole determination of the municipality [r. 648, app. I, 89].
>
> 227. The Authority has not induced the breach of any power contract between any complainant and any of its customers [r. 649, app. I, 92].
>
> 228. In marketing the power generated at its dams the Authority has not engaged in any solicitation of customers, coercion, duress, fraud, or misrepresentation in procuring contracts with municipalities, cooperatives, or other purchasers of power [r. 649-650, app. I, 92].

In view of this record, the court's conclusions that "no malice in law" was shown necessarily followed. It cannot seriously be suggested that the sole purpose of

the Authority in marketing the Government's power has been to injure the complainants. *Isbrandtsen-Moller Co.* v. *United States*, 300 U.S. 139, 145; *Beardsley* v. *Kilmer*, 236 N.Y. 80 (1923); *Passaic Print Works* v. *Ely & Walker Dry-Goods Co.*, 105 Fed. 163 (C.C.A. 8th, 1900); *cf. American Bank & Trust Co.* v. *Federal Reserve Bank*, 256 U.S. 350, 262 U.S. 643.

III

APPELLANTS HAVE NO STANDING TO MAINTAIN THIS SUIT.

The gravamen of appellants' case on the issue of their legal standing is, and must be, that they are threatened with substantial and irreparable injury from the competition of the Authority. It is in competition by the Authority, if anywhere, that there is to be found "action of a definite and concrete character constituting an actual or threatened interference with the rights of" the appellants (*Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288, 324). Our position on this issue is threefold: (1) Appellants' "franchises," if any, afford no basis for the maintenance of this suit; (2) most of the appellants lack standing to maintain this suit either because they are estopped or because the Authority is not engaged in or threatening any activities in their claimed territories; and (3) the only competition which will cause damage to any of the appellants is the competition of the

municipalities and cooperatives, and such competition does not involve legal injury.

1. APPELLANTS' "FRANCHISES," IF ANY, AFFORD NO BASIS FOR THE MAINTENANCE OF THIS SUIT.

Assuming that the Authority itself is to be regarded as in competition with appellants,[41] appellants have no standing by reason of their franchises or otherwise to challenge the validity of the grant of power to the Authority.

We consider first the status of appellants apart from franchises which they may possess. None of appellants are entitled to be free of competition. As they are not entitled to immunity from competition, they have no standing to question the authority of a rival to compete. This is made clear in *Railroad Co.* v. *Ellerman*, 105 U.S. 166. There the Court treated the question as one involving the standing of a wharfinger to enjoin competition by a railroad company having no charter power to engage in such a business. In rejecting the claim that damage from unauthorized competition affords a basis for injunctive relief, the Court said:

> But if the competition in itself, however injurious, is not a wrong of which he could complain against a natural person, being the riparian proprietor, how does it become so merely because the author of it is a corporation acting *ultra vires? The damage is attributable to the competition, and to that*

[41] It will be shown *infra* (pp. 182-192) that the only damage, actual or threatened, to any of appellants is properly attributable to the competition of the municipalities and rural cooperatives, and that such competition is *damnum absque injuria*.

> ***alone. But the competition is not illegal. It is not unlawful for any one to compete with the company, although the latter may not be authorized to engage in the same business.*** The legal interest which qualifies a complainant other than the State itself to sue in such a case is a pecuniary interest in preventing the defendant from doing an act where the injury alleged flows from its quality and character as a breach of some legal or equitable duty. A stockholder of the company has such an interest in restraining it within the limits of the enterprise for which it was formed, because that is to enforce his contract of membership. The State has a legal interest in preventing the usurpation and perversion of its franchises, because it is a trustee of its powers for uses strictly public. In these questions the appellee has no interest, and he cannot raise them in order, under that cover, to create and protect a monopoly which the law does not give him [pp. 173-174].

The same principles are applicable where the defendant is a public agency or officer and where the alleged lack of authority lies in an excess of constitutional rather than charter powers. Although the contrary position was strenuously advanced in the *Alabama Power* case, the argument was rejected, and necessarily so. To have held otherwise would have been to establish a novel doctrine of public law. For "Suitors may not resort to a court of equity to restrain a threatened act merely because it is illegal or transcends constitutional powers" (*United Gas Co.* v. *Railroad Comm.*, 278 U.S. 300, 310). Allegations of unconstitutionality do not dispense with the requirement that one who seeks

an injunction must show some " 'direct injury suffered or threatened, presenting a justiciable issue,' " the concept of "direct injury" meaning "a wrong which directly results in the violation of a legal right" (*Alabama Power Co.* v. *Ickes*, 302 U.S. 464, 479). Only where an injury of this character, which would otherwise be justiciable, is presented does occasion arise to consider the justification of the defendants' conduct founded on an act of the Legislature. The power of the courts to declare an act unconstitutional, it was said in *Massachusetts* v. *Mellon*, 262 U.S. 447,

> . . . amounts to little more than the negative power to disregard an unconstitutional enactment, which otherwise would stand in the way of the enforcement of a legal right. . . . If a case for preventive relief be presented the court enjoins, in effect, not the execution of the statute, but the acts of the official, the statute notwithstanding [p. 488].

The whole history of suits against Government officers, with the requirement in such suits that an actionable injury be shown apart from the alleged unconstitutionality, demonstrates the firmness of this principle. The right which will support a "case for preventive relief" may be founded on contract,[42] or on an interest entitled to protection from tortious invasion,[43] or on a

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[42] E.g., *Walla Walla* v. *Walla Walla Water Co.*, 172 U.S. 1.

[43] E.g., the seizure of property, *In re Ayers*, 123 U.S. 443; *Lipke* v. *Lederer*, 259 U.S. 557; *Hamilton* v. *Kentucky Distilleries Co.*, 251 U.S. 146; the placing of a cloud on title, *Scully* v. *Bird*, 209 U.S. 481, 488-490; *Lane* v. *Watts*, 234 U.S. 525, 540; vexatious and oppressive litigation, *Ex parte Young*, 209 U.S. 123, 160; threats of coercion, *Pierce* v. *Society of Sisters*, 268 U.S. 510; *Truax* v. *Raich*, 239 U.S. 33.

statute conferring a privilege.[44] Only if such a case is presented does it become necessary or appropriate to inquire into the validity of the statute set up by the defendant in justification. Putting aside the question of franchise rights, which will be dealt with separately, it seems plain enough that no case for preventive relief is made out merely by coupling a showing of competition with an allegation that the competition is beyond the constitutional power of the Authority.

Appellants contend, however, relying upon *Frost* v. *Corporation Comm.*, 278 U.S. 515, that as holders of franchises they are entitled to challenge the validity of the Authority's competition. In the *Frost* case the plaintiff held a certificate of public convenience and necessity to operate a cotton gin, the certificate having been issued by a State commission under a statute which provided that the commission "may authorize a new ginning plant only after a showing is made that such plant is a needed utility" (p. 519). A majority of the Court in the *Frost* case were of opinion that as the holder of such a certificate of convenience and necessity the plaintiff was entitled to enjoin the issuance of a certificate to a competing cooperative on the ground that the amendment to this statute, granting to cooperatives the privilege of engaging in the same business without similar limitations, was an unconstitutional discrimination under the fourteenth amendment. In short, as explained in subsequent decisions, that case decided that a franchise of the character there con-

[44] E.g., the use of the mails, *American School of Magnetic Healing* v. *McAnnulty*, 187 U.S. 94, 110; *Baldwin Co.* v. *Robertson*, 265 U.S. 168.

ferred under State law entitled the holder to attack the competition of another seeking to operate without a similar franchise or under a void franchise. In *Corporation Comm.* v. *Lowe*, 281 U.S. 431, the principle was thus stated:

> In *Frost* v. *Corporation Commission of Oklahoma*, 278 U. S. 515, the Court concluded that one who had complied with the statutes of Oklahoma and had obtained a permit to operate a cotton gin, held a franchise which constituted a property right, and that while this right did not preclude the State from making similar valid grants to others, it was an exclusive right as against attempts to operate a competing gin without a permit or under a void permit [p. 435].

See also *Alabama Power Co.* v. *Ickes, supra* at 484-485.

The *Frost* case did not hold that a franchise holder has the right to question generally the charter or constitutional powers of a competitor, as appellants seek to do in this case. Appellants do not base their attack upon the lack of similar franchises by the Authority. This suit is neither for the protection of any particular franchise nor for the annulment of a void franchise. Appellants frankly state their position to be that the "holder of a non-exclusive franchise has a right to invoke a judicial determination of whether any actual or threatened competition with him is legal" (br. 196-197). This contention that a franchise holder has the right to contest the legality of competition generally and on *any* grounds goes far beyond the holding of the *Frost* case and is in direct conflict with this Court's decision in the *Ellerman* case, *supra*.

The appellants here have no franchises, so far as appears, which confer protection against unauthorized competition. Two classes of so-called franchises are relied upon by appellants (br. 61-63, 196). One type is granted by the municipalities and counties, the other by the States. Each class will be considered in turn, with respect to its nature and its relevance to the operations of the Authority.

Municipal and county easements or "franchises": The municipal and county franchises, so called by appellants, have been carefully described in finding 28 (r. 599, app. I, 19) based on a stipulation of the parties (r. 2453). It appears that appellants have been issued "franchises, licenses, or easements by most but not all of the municipalities and by most but not all of the counties in which they respectively operate electric facilities" (fdg. 28, r. 599, app. I, 19). Concerning these franchises, licenses, or easements the court found, on the basis of the stipulation:

> Said franchises, licenses, or easements vary in original term and in unexpired term from a few months to more than 50 years, and many are unlimited in term. Most of the said franchises, licenses, or easements purport to be nonexclusive. Most of said franchises, licenses, or easements grant rights not limited within the respective municipalities or counties, but some are limited to particular streets or highways or to portions of the respective counties or municipalities. Some of the franchises, licenses, or easements purport to grant the right to construct and occupy the streets and highways with electrical facilities; some

of said franchises, licenses, or easements purport to grant, for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the streets and highways; and some of said franchises, licenses, or easements purport to grant the right to occupy the streets and highways with electrical facilities and to engage in the business of selling and distributing electricity within the respective municipalities and counties [fdg. 28, r. 599-600, app. I, 19-20].

These local franchises, licenses, or easements merely confer the privilege of occupying streets and highways with electrical facilities in connection with the carrying on of the utility business. They are not franchises or certificates of convenience and necessity to engage in the business of selling electricity. This fact appears from the record and also from the constitutions and statutes and from the decisions of the States. The pertinent constitutional and statutory provisions confer on the municipalities and counties only the power to withhold consent to the use of public streets and highways or to grant such consent upon appropriate conditions (see, e.g., Alabama Const., art. XII, sec. 220; Alabama Code (1928) secs. 2016, 7017, 7024, 7035; Kentucky Const., sec. 163; Mississippi Code (1930) secs. 2400, 2401, 2414; Williams' Tenn. Code (1934) secs. 3326 (5), 3326 (6)).

The nature of such street and highway franchises was explained in *Bland* v. *Cumberland Tel. & Tel. Co.*, 33 Ky. Law 399, 109 S.W. 1180 (1908). In that case the defendant was sued for breach of contract and fail-

ure to provide and maintain connecting facilities as required by the contract in question. The defense was made that the complainant was operating without a franchise to occupy the streets and highways. The complainant replied that none of its lines occupied the public streets. The court held that the reply was good, and explained the nature of a municipal street franchise as follows:

> It is not, as sometimes seems to be thought, the right to operate a telephone exchange in a city. That right is not one to be granted or denied by the municipality any more than it could grant or refuse a franchise to conduct a dry goods store within the city. The franchise under discussion is the permission to do something which the city has the right of control over—that is, the occupancy of some part of the public streets [109 S.W. at 1181].

Cf. Mayor of Knoxville v. *Africa*, 77 Fed. 501, 507 (C. C.A. 6th, 1896).

A case which did not arise in any of the States here involved but which has been widely cited and is perhaps the leading authority on the subject is *Bartlesville Elec. L. & P.Co.* v. *Bartlesville I.Ry.Co.*, 26 Okla. 453, 109 Pac. 228 (1910). There the court said, in explaining the nature of a franchise to use the streets and highways:

> The general subject of the ordinance is the granting of the franchise to construct, maintain, and operate an electric light and power plant. The

> statement of this purpose in the language of the title carries with it the suggestion that the ordinance gives to the grantee the right to use the streets and public grounds for that purpose, and it would occur to any one from the title that such was the object of the ordinance, *for the granting of the right to construct and operate a light and power plant in fact conveys no other right than the right to use the streets and public grounds. Unless the grantee desires the use of the streets and public grounds, a franchise is not necessary;* but it would be difficult, if not almost impossible, to construct and operate such a plant without the use of the streets and public grounds, and the right to do the former suggests the latter as a necessary incident thereto [109 Pac. at 230].

Such is the limited scope of the local franchises, licenses, or easements of appellants. At best they may be claimed to confer protection against the exercise of a similar privilege—the occupancy of streets and highways—without a similar grant or under a void grant. *Cf. Memphis Street Ry. Co.* v. *Rapid Transit Co.*, 138 Tenn. 594 (1917); *Montgomery* v. *Orpheum Taxi Co.*, 203 Ala. 103 (1919); *Consolidated Elec.L.Co.* v. *People's Elec.L. & G.Co.*, 94 Ala. 372 (1892); *People's Transit Co.* v. *Louisville Ry. Co.*, 220 Ky. 728 (1927); *Bland* v. *Cumberland Tel. & Tel. Co., supra; McInnis* v. *Pace*, 78 Miss. 550 (1901). No case has been cited by appellants, and we know of none, in the courts of the States in question which extends the protection of the local franchise beyond this point.

It is therefore of the utmost significance that appellants have not alleged or attempted to prove that the Authority is in fact occupying the streets or highways of counties or municipalities with electrical facilities. In fact, with insignificant exceptions, no such use could be shown.[45] Furthermore, whether necessary or not and whatever the nature of the street franchises or easements, the Authority has in fact secured permission from the municipalities and counties for use of the streets and highways, as the proof introduced by complainants shows (comp. exs. 214-223, 225-264, r. 3022-3026, 3026-3037). And appellants have made no effort to establish the invalidity of any easement in use by the Authority.

State "franchises": The facts with respect to the so-called State "franchises" upon which appellants rely (br. 61-63) are set forth in a stipulation entitled "Stipulation Respecting Incorporation and Domestication of Complainant Companies" (comp. ex. 2, r. 2450; *cf.* fdgs. 1, 6-23, r. 585-597, app. I, 1, 2-16). These so-called "franchises" confer, of course, only the right to do business as a corporation; indeed, practically all of the appellants were incorporated in States other than those in which they operate and have merely qualified under the general laws with respect to the do-

[45] The occupancy by the Authority of streets within city limits is and will be practically negligible in view of the fact that the cities own and operate the distribution facilities. Practically all of the Authority's lines are built on its own rights-of-way. For example, in Tennessee the Authority owns altogether only about ten miles of transmission lines which occupy public streets or highways, and most of these were sold to the Authority by appellant The Tennessee Electric Power Company. In Alabama the Authority has less than five miles of line occupying public streets or highways. As pointed out in the text, for this limited use of the streets and highways the Authority has obtained county and municipal licenses.

ing of business by foreign corporations (fdgs. 6-23, r. 585-597, app. I, 2-16; see, e.g., Public Acts of Tenn. (1877) ch. 31, as amended by Public Acts of Tenn. (1891) ch. 122, and Public Acts of Tenn. (1895) ch. 81). *Cf. Tennessee Eastern Elec. Co.* v. *Hannah*, 157 Tenn. 582 (1928). Surely it cannot be contended that such qualification affords the basis for an action to restrain competition. *Cf. Railroad Co.* v. *Ellerman, supra.*[46]

The appellants, so far as appears, have obtained no certificates of convenience and necessity such as would entitle them to enjoin unauthorized competition under the doctrine of the *Frost* case. At the time the appellants entered into the utility business in the respective States no such certificates were required. In short, the States did not hold out to appellants any grant of immunity against competition on the part of others. Statutes in Alabama, Kentucky, and Tennessee have established requirements for certificates of convenience and necessity for extensions of existing systems (Alabama Code (1928) sec. 9795; Carroll's Ky. Stat. (1936) sec. 3952-25; Williams' Tenn. Code (1934) secs. 5502-5503). The only evidence submitted with

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[46] The pertinent statutory provisions are the following: *Tennessee:* Public Acts of Tenn. (1875) ch. 142 (providing for incorporation for mining and manufacturing purposes), as amended by Public Acts (1909) ch. 127 (authorizing incorporation for the purpose of carrying on certain utility businesses); Public Acts (1877) ch. 31 (providing for the qualifying of foreign corporations to do business in the State of Tennessee), as amended by Public Acts (1891) ch. 122, and Public Acts (1895) ch. 81; *Mississippi:* Mississippi Code (1930) sec. 4130 *et seq.*; *Alabama:* Alabama Code (1928) secs. 6964, 7036, 7193 *et seq.*; *Kentucky:* Carroll's Ky. Stat. (1936) sec. 538 *et seq.*

None of the appellants, except the Franklin Power & Light Company (comp. ex. 21, r. 2498), have been required to obtain commission approval of their charters required under section 5453 of Williams' Tennessee Code (1934), and the Franklin Power & Light Company is not threatened with any competition (fdg. 111, r. 625, app. I, 57).

respect to the seeking of certificates of convenience and necessity consists of certain orders of the Public Service Commission of Alabama approving certain extensions of lines by the Alabama Power Company (comp. ex. 88, r. 2559). So far as appears, however, the certificates of this one company do not involve the territory outside the ceded area in which the Authority is alleged to be competing with the company.[47]

The case is no better for appellants even assuming the appellants have certificates of public convenience and necessity in the same category and conferring the same rights as the type of franchise involved in the *Frost* case. Appellants themselves have pointed to the statutory exemption of the Authority from the jurisdiction of the public service commissions but have not attacked the validity of such exemption as being discriminatory under the fourteenth amendment. It is only by showing that this statutory exemption is discriminatory under the fourteenth amendment that appellants can challenge the Authority's failure to secure similar franchises or licenses. No such constitutional objection has been advanced in the bill of complaint or in the appeal to this Court. The validity of such statutory exemption and the classification by the States might well rest on the distinctive character of the Authority as a public, nonprofit undertaking.

[47] The appellant companies operating in Tennessee may have received commission approval (under sec. 5453 of Williams' Tenn. Code (1934)) of street franchises or easements granted by some counties and municipalities in which they claim to be threatened with competition. Since, as pointed out *supra* (p. 170), the Authority does not use the streets and highways so as to require the municipal and county franchises or licenses, it would not require commission approval irrespective of the statutory exemption of the Authority.

quite apart from any question of the validity of its operations under the Federal Constitution.[48] *Cf. Alabama Power Co.* v. *Cullman County Elec. Membership Corp.*, 234 Ala. 396 (1937). But since the question has not been presented, it is unnecessary to pursue it further.

It was held in the *Frost* case that the grant of a franchise by a State confers protection against similar but invalid grants made to others.[49] It has never been supposed that such a State franchise confers or purports to confer protection against actions of the Federal Government. The principle of the *Frost* case was, it is submitted, correctly interpreted by Judge Parker in *Carolina Power & Light Co.* v. *South Carolina Public Service Authority*, 94 F. (2d) 520 (C.C.A. 4th, 1938), *cert denied*, 58 Sup. Ct. 1048:

> Plaintiffs rely upon the case of Frost v. Corporation Commission, 278 U.S. 515, 49 S.Ct. 235, 73

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[48] The only contention appellants have made concerning this exemption is that the States may not enlarge the powers granted the Federal Government (*cf.* br. 180-186). So far as the right to sue is concerned, the only pertinent question would be whether, apart from the constitutional validity of the Tennessee Valley Authority Act, the States may exempt the Authority from commission jurisdiction.

[49] The cases of *Campbell* v. *Arkansas-Missouri Power Co.*, 55 F. (2d) 560 (C.C.A. 8th, 1932); *Arkansas-Missouri Power Co.* v. *Kennett*, 78 F. (2d) 911 (C.C.A. 8th, 1935); *Kansas Gas & Elec. Co.* v. *Independence*, 79 F. (2d) 32 (C.C.A. 10th, 1935), cited on page 196 of appellants' brief, represent the limits to which any federal court has extended the holding of the *Frost* case. In these cases it was held that a company holding a municipal franchise may attack the legality of acts of the municipalities in making contracts or borrowing funds for purposes of competition. It is unnecessary in the present case to consider whether those decisions improperly extended the rule of the *Frost* case, since here no action of the States or municipalities is attacked. (*Cf. Carolina Power & Light Co.* v. *South Carolina Public Service Authority*, 94 F. (2d) 520, 525 (C.C.A. 4th, 1938), *cert. denied*, 58 Sup. Ct. 1048, in which the soundness of these decisions is questioned.) None of these cases went so far as to hold that a municipal franchise holder may attack the validity under federal law of acts of a federal agency.

L.Ed. 483; but the extent of the holding there was that the *holder of a nonexclusive franchise was entitled to enjoin the competition of one who was subject to but did not comply with the franchise requirements of the same statute.* The rationale of the decision is that a state statute regulating a business affected with a public interest and requiring a determination of public convenience and necessity creates a quasi monopoly for those engaged therein and gives them a right *to enjoin competition by those who have not complied with its provisions* [94 F. (2d) at 524].

There is no attack in the present case on the acts of the Authority under State law or upon the State laws themselves under the fourteenth amendment. The attack is directed solely at the acts and the power of the Federal Government. Against such acts, local easements and franchises to use public ways obviously confer no standing to complain.

The conclusion seems inescapable that appellants have no greater standing to complain of competition than would any ordinary corporation engaged in any business; and in such circumstance, the *Ellerman* case is controlling.

2. MOST OF THE APPELLANTS LACK STANDING TO MAINTAIN THIS SUIT EITHER BECAUSE THEY ARE ESTOPPED OR BECAUSE THE AUTHORITY IS NOT ENGAGED IN OR THREATENING ANY ACTIVITIES IN THEIR CLAIMED TERRITORIES.

Even assuming that the appellants, as a class, may challenge alleged competition by the Authority, most of the particular appellants are not entitled to maintain this suit. For the record in this case dis-

closes facts that, upon accepted principles of equity, preclude all or some of the appellants from asserting any rights against the appellees.

(a) *Complainants in whose claimed territory the Authority is not carrying on or does not threaten to carry on any activities:* As to nine of the complainants, it is undeniable on the record that in no part of their territory has the Authority built or authorized any transmission line, sold or authorized the sale of any electricity, or contracted for or authorized contracts for the sale of any electricity by others in that territory. The district court found on the testimony of witnesses for the complainants, representing each of the companies mentioned, the following:

> The Tennessee Valley Authority is not now constructing and has not authorized the construction of any transmission line, has not sold or authorized the sale of any electricity, and has not entered into or authorized any contracts for the sale of electricity in any part of the territory claimed by the complainants Franklin Power & Light Company, Appalachian Electric Power Company, Carolina Power & Light Company, Holston River Electric Company, Kingsport Utilities, Inc., Kentucky & West Virginia Power Company, Tennessee Eastern Electric Company, Birmingham Electric Company, East Tennessee Power & Light Company, and Mississippi Power & Light Company, except that it has constructed a transmission line at the expense of the War Department connecting the Authority's lines to the site of Sardis Dam in the claimed territory of the Missis-

sippi Power & Light Company [fdg. 111, r. 625, app. I, 57].[50]

A court of equity will not enjoin the carrying out of a great public enterprise at the instance of complainants so situated. As this Court said in *McCabe* v. *Atchison, T. & S.F.Ry.Co.*, 235 U.S. 151:

> The desire to obtain a sweeping injunction cannot be accepted as a substitute for compliance with the general rule that the complainant must present facts sufficient to show that his individual need requires the remedy for which he asks [p. 164].

Insofar as these complainants are concerned, it is clear that the following language of the opinion in the *Ashwander* case is applicable:

> The pronouncements, policies and program of the Tennessee Valley Authority and its directors, their motives and desires, did not give rise to a justiciable controversy save as they had fruition in action of a definite and concrete character constituting an actual or threatened interference with the rights of the persons complaining. The judicial power does not extend to the determination of abstract questions. *Muskrat* v. *United States*, 219 U. S. 346, 361; *Liberty Warehouse Co.* v. *Grannis*, 273 U. S. 70, 74; *Willing* v. *Chicago Auditorium Assn.*, 277 U. S. 274, 289; *Nashville, C. & St. L. Ry. Co.* v. *Wallace*, 288 U. S. 249, 262, 264 [297 U.S. at 324].

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[50] The Holston River Electric Company is not a party to this appeal, its motion to dismiss having been granted by this Court.

It is enough to say of the case of these complainants that:

> Claims based merely upon "assumed potential invasions" of rights are not enough to warrant judicial intervention. *Arizona* v. *California*, 283 U. S. 423, 462 [*id.* at 324-325].

(b) *Complainants who are estopped to challenge the legality of activities of the Authority in their claimed territories:* Of the remaining complainants, four are subsidiaries of the Commonwealth & Southern Corporation, namely, Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company, and Southern Tennessee Power Company (fdg. 99, r. 623, app. I, 54; def. ex. 135, r. 4171, 4174-4175). The record shows that the great bulk of the transmission lines belonging to the Authority are located in the territory claimed by these complainants (*cf.* comp. ex. 327 in *Reproductions of Certain Original Exhibits Submitted by Appellants* with def. ex. 136A in *Reproductions of Certain Original Exhibits Submitted by Appellees*).

The Alabama Power Company, the Mississippi Power Company, and The Tennessee Electric Power Company[51] were parties to the contract of January 4, 1934. Under this contract these complainants voluntarily accepted and received many benefits from the

[51] The complainant Southern Tennessee Power Company operates only as a transmission company transmitting electric energy from Wilson Dam to the Alabama-Tennessee line, thereby connecting Wilson Dam and the transmission system of The Tennessee Electric Power Company. It is not presently engaged either in the distribution, generation, or sale of electric energy (fdg. 112, r. 626, app. I, 58). It is acting solely as an agency and instrumentality of The Tennessee Electric Power Company.

Tennessee Valley Authority Act and from the acts of defendants pursuant thereto which are challenged here; they have affirmatively contributed to the execution of many of the activities of the Authority now complained of; they have purchased over one billion kilowatt-hours of electric energy from the Authority (fdg. 196, r. 643, app. I, 82; fdgs. 102-110, r. 623-625, app. I, 54-57).

Insofar as the sale of power is concerned, these complainants have continued their purchases, since the *Ashwander* decision, in a greater degree and from additional sources operated by the Authority. Norris Dam began generating power on July 28, 1936, and Wheeler Dam on November 9, 1936 (fdg. 250, r. 654, app. I, 98). All power purchased by the Alabama Power Company and The Tennessee Electric Power Company after these dates was supplied from an interconnected pool, including the power generated at each of these dams (*ibid.*). In the last seven months of 1936 the sales to the Commonwealth and Southern system constituted 83% of the total Tennessee Valley Authority sales (fdg. 251, r. 654, app. I, 98). Furthermore, in those seven months, during which the stream flow of the Tennessee River was abnormally low, the total amount of power so purchased by the Commonwealth and Southern companies (552,562,368 kwh) was more than the total which could have been generated at Wilson Dam without the benefit of releases of stored water from Norris Dam (*ibid.*), and in three months of that period these companies purchased more power from the Authority than could have been gener-

ated by Wilson Dam alone, even with the benefit of the stored releases from Norris Dam (*ibid.*).

In the *Ashwander* case four members of the Court were of the opinion that the mere purchase of power from the Authority before and after the signing of the contract of January 4 was sufficient to estop the Commonwealth & Southern Corporation and its subsidiaries from attacking the validity of the sale of power by the Authority, under the familiar principle that one who avails himself of the benefits of a statute will not be heard to assail its validity. (See 297 U.S. at 341.) The majority of the Court apparently confined its consideration to the purchase of electric energy by the power company prior to its entrance into the contract in question, holding that, while this prior purchase "may have a bearing upon the question before us," "it is by no means controlling" since "The contract in suit manifestly had a broader range" (*Ashwander* v. *Tennessee Valley Authority, supra* at 323). We construe the decision to mean that the acceptance of benefits under one provision of an act of Congress does not preclude an attack on the validity of separable provisions, but we do not understand this Court to have held that the provisions under which the benefits were acquired may likewise be challenged. The decision would otherwise be difficult to reconcile with the settled precedents which were accepted as authoritative in the *Ashwander* case itself. *Cf. Great Falls Mfg. Co.* v. *Attorney General*, 124 U.S. 581; *Wall* v. *Parrot Silver & Copper Co.*, 244 U.S. 407; *St. Louis Co.* v. *Prendergast Co.*, 260 U.S. 469.

The purchase of power has an important bearing upon the question in this case, since one of the primary contentions of the complainants in this suit is that the electricity at the dams is illegally acquired and that the Authority has therefore no right either to sell the power at the dam or to transmit it to the market. It is difficult to see how these complainants, who have purchased such a large proportion of the electricity generated by the Authority, can be heard to challenge the legality of the sale of such electricity by the Authority to others. Indeed, it should be observed that the Alabama Power Company is even now purchasing power from the Authority which is transmitted to the company and delivered at the city gates for distribution in several municipalities in northern Alabama served by the company. The sale and method of disposition of power to the Alabama Power Company is not different in any material respect from the sale and method of disposition of such power to other purchasers (fdg. 128, r. 629, app. I, 62; Barry, r. 870-871). Here the record shows a complainant seeking to challenge the legality of the sale and delivery to municipalities of electricity from the same source as that delivered to the complainant and over the same transmission facilities used to serve the complainant.

The complainant members of the Commonwealth and Southern system have not only purchased power from the Authority but have accepted the benefits and assisted in the execution of the "broader range" of activities contemplated by the contract of January 4, which are of the identical type challenged here. Under

that contract the Alabama Power Company and the Mississippi Power Company sold to the Authority the transmission lines, substations, and rural lines of those companies in six counties in Alabama and ten counties in Mississippi, together with the franchises, contracts, and going business attaching to those properties, in return for valuable considerations (fdgs. 102, 103, 105, r. 623-624, app. I, 54-56). That absolute conveyance necessarily precludes these companies from attacking the sale of power by the Authority in this so-called "ceded" area. Further, the contract by its express terms contemplated the very types of activity and indeed some of the same actual deliveries as those now sought to be challenged.

These appellants have accepted the benefits of the Authority's agreement under the contract to refrain from selling to other customers outside of a particular specified area (def. ex. 143A, sec. 7, r. 4195, 4199). As part of the consideration they consented under provisos of this contract to the Authority's sale of power to many municipalities and rural areas outside the territory served by the facilities conveyed, and the Authority is now serving such municipalities and rural areas and has provided facilities therefor (fdgs. 107, 108, 109, r. 625, app. I, 56, 57). They have sold lands to the Authority for the Wheeler Dam site (see *Ashwander* v. *Tennessee Valley Authority, supra* at 316). They have delivered power essential to the construction of other projects, including Norris and Chickamauga Dams (fdg. 110, r. 625, app. I, 57).

This record, it is submitted, serves to make the present case a more clearly appropriate one than was the *Ashwander* case for the application of the principle that a party who avails himself of the benefits of a statute may not attack its validity. *Great Falls Mfg. Co.* v. *Attorney General, supra; Wall* v. *Parrot Silver & Copper Co., supra; St. Louis Co.* v. *Prendergast Co., supra.* To grant the relief requested by the bill would secure to these very complainants the same monopolistic position with reference to the benefits of power at these dams that they enjoyed at Wilson Dam before the passage of the Tennessee Valley Authority Act.

3. THE ONLY COMPETITION WHICH WILL CAUSE DAMAGE TO ANY OF THE COMPLAINANTS IS THE COMPETITION OF THE MUNICIPALTIES AND COOPERATVES, AND SUCH COMPETITION DOES NOT INVOLVE LEGAL INJURY.

Apart from the considerations discussed in the previous section, none of the complainants are entitled to challenge the validity of the Authority's activities because the character of the service does not give rise to competition between complainants and the Authority.

The claims of the West Tennessee Power & Light Company,[52] the only complainant not discussed in the preceding section, are typical of the claims of the limited number of complainants in whose claimed territory the Authority is selling power, and hence a discussion of the problem in terms of that company's

52 Other parties to the action in the trial court, namely, the Tennessee Public Service Company, the Holston River Electric Company, and the Kentucky-Tennessee Light & Power Company, have withdrawn from the appeal on their own motion. The situation as to the Memphis Power & Light Company is discussed *supra*, p. 5.

situation may be helpful even though other complainants may be concerned.

Competition by municipalities: The first question presented is whether or not the West Tennessee Power & Light Company (and any other complainant similarly situated) may challenge the validity of the Authority's delivery of power at wholesale to the city of Jackson, Tennessee, for distribution by the municipality in competition with complainant. The complainant can show a threat of substantial damage due to the loss of customers to the municipal distribution system. But the competition will be that of the city and not of the Authority. As shown by the findings of fact, the Authority stands in the relation of a wholesaler to municipalities and cooperatives, which are autonomous public bodies (fdgs. 135-147, r. 630-632, app. I, 65-68) owning and operating their own distribution systems (fdgs. 130-131, r. 629, app. I, 63). The municipal competition is not here challenged as unlawful, nor could it be in view of the decisions of the State courts. See *Oppenheim* v. *Florence*, 229 Ala. 50 (1934); *Tennessee Public Service Co.* v. *Knoxville*, 170 Tenn. 40 (1936); *Memphis Power & Light Co.* v. *Memphis*, 172 Tenn. 346 (1937); *Kentucky-Tennessee L. & P.Co.* v. *Clarksville*, Tenn. Sup. Ct., 1937 (see app. II, 132).

This situation presented by the threatened competition of the city is in all essential respects similar to that presented in *Alabama Power Co.* v. *Ickes, supra,* and *Duke Power Co.* v. *Greenwood County*, 302 U.S. 485 (*cf. West Tennessee P. & L.Co.* v. *Jackson*, 97 F.

(2d) 979 (C.C.A. 6th, 1938), *cert. denied*, Oct. 10, 1938, No. 239). As was there pointed out, the loss of business due to lawful municipal competition, even though the competition is made possible by grants of federal funds challenged as invalid and even though the complainants are franchise holders, constitutes no legal injury. It is immaterial whether the United States furnishes funds for the construction of a competitive municipal system or the wholesale supply of electric energy to such a system. In neither case is the United States threatening to compete with the existing utility for its power business. Indeed, the similarity of the present case to the *Duke Power* case is particularly marked, for there the federal funds were furnished to construct not merely a municipal distribution system but a municipal generating system as well, and thus the permanent supply of electric energy was made possible by the challenged federal grant.

It may be argued by appellants that the cases should be distinguished because here the activity of the Authority in selling energy to the municipal system is more continuous than in the case of the grant of funds for the construction of such a system. But the essential feature in both cases is that the threatened competition is that of the municipality and not of the United States. Moreover, the *Alabama Power* and *Duke Power* decisions rested on prior decisions involving a relationship to the competition which was more continuous than the giving of funds. *Railroad Co.* v.

Ellerman, supra, was cited by the Court as "directly in point." There the plaintiff sought unsuccessfully to enjoin the execution of a lease of property by a railroad for use as a wharf on the ground that such a use was *ultra vires*. There the railroad was continuously the owner and supplier of the property used in competition, no less than the Authority will be the continuous wholesale supplier of the electricity to be used by the municipalities in competition. Similar cases are *United States* v. *Dern*, 68 F. (2d) 773 (App.D.C., 1934), *cert. denied*, 292 U.S. 642, and *Milwaukee Horse & Cow Comm. Co.* v. *Hill*, 207 Wis. 420 (1932), both cited in the *Alabama* decision. No different question is raised with respect to complainants' standing to challenge the Authority's contracts with any other municipality.

Competition by rural cooperatives: The West Tennessee Power & Light Company (and any other complainant similarly situated) may not challenge the validity of the power sales contract between the Tennessee Valley Authority and the Southwest Tennessee Electric Membership Corporation. This Southwest Tennessee Electric Membership Corporation, like the other cooperatives to whom the Authority is selling electricity, is a State-chartered organization which purchases its power at wholesale from the Authority, owns and operates its own rural distribution system, and sells to the rural residents the power which it purchases at wholesale from the Authority (fdgs. 132, 136-141, r. 629-631, app. I, 63, 65-66).

The legality of competition by these rural cooperatives with complainant power companies is settled. See *Alabama Power Co.* v. *Cullman County Elec. Membership Corp., supra.* As in the case of the municipalities, any competition with appellant is that of the cooperatives. The decisions in the *Alabama* and *Duke Power* cases are directly applicable.

Any contention that competition by these rural cooperatives is in fact competition by the Authority because of the allegation that the Authority is instrumental in establishing them is in the teeth of the findings of the court: that these cooperatives have been established by the residents of the various communities on their own initiative (fdg. 142, r. 631, app. I, 67); and that whatever part the Authority has taken in the construction of distribution facilities (see fdgs. 133-134, r. 630, app. I, 64), it has not continued to participate in the conduct of the affairs of the cooperatives except to supply power to them at wholesale under the contracts (fdgs. 144, 145, 147, r. 632, app. I, 67-68).

Contracts with industrial concerns: If the Commonwealth and Southern companies are permitted to maintain this suit despite their acceptance of benefits under the Tennessee Valley Authority Act, an additional question will be presented with respect to them. That question is the right of those companies to challenge the Authority's contracts with industrial concerns for the sale of power in bulk lots for industrial use. All of these industrial customers are located either in the area ceded by the Commonwealth and Southern companies under the contract of January 4, con-

sidered in the *Ashwander* case, or in the claimed territory of the Commonwealth and Southern companies.

None of the industrial customers outside the ceded area, purchasing or under contract to purchase power from the Authority, were previously served by any of the complainants (fdgs. 208, 212, r. 645, 646, app. I, 86, 87). All the industrial customers outside the ceded area are large electrochemical or electrometallurgical companies which constitute new loads in the territory (fdgs. 150, 151, r. 633, app. I, 69). Their requirements include a large amount of secondary power, for which the operations of such industrial plants are peculiarly adapted (fdgs. 153, 154, 156, r. 633-634, app. I, 70). The complainants do not maintain excess capacity and facilities for meeting such large and unusual loads as those of these industrial customers but must construct facilities required for service to such companies (fdg. 152, r. 633, app. I, 69). No showing was made by complainants that any of these new industrial loads, with one exception, would have constituted a probable market for complainants' power.[53] The one exception is the Monsanto Chemical Company, which had negoti-

[53] The references in footnote 2 at pages 192 and 193 of appellants' brief relating to alleged competition for industrial contracts should receive a careful examination. There was no evidence offered that complainants wanted, tried to secure, or were able to serve the new loads brought in by the Victor Chemical Company, the Aluminum Company, or the Electro-Metallurgical Company. The record references cited on these contracts are merely to the reprints of the contracts in the recent annual report of the Authority.

The Volunteer Portland Cement Company contract is not involved. The company (the Tennessee Public Service Company) serving that concern has withdrawn from the appeal.

The reference to the competition for the business of the L. N. Gross Company has no significance in view of the fact that the Authority has no contract with that concern, which buys its power from the Lincoln County Electric Membership Corporation, a wholesale purchaser from the Authority (Karr, r. 2203).

ated with The Tennessee Electric Power Company (Willkie, r. 1503-1504). The complainants' own witness testified that the company did not have facilities available from which the load of the industrial concern could have been supplied (Miller, r. 1115).

The only proof offered by the complainants bearing directly upon the question of damage to them because of these industrial contracts was that they maintained large staffs whose duty it was to interest industrial concerns to locate on the lines of the companies, and that they had made substantial sales to new industries over a period of years. They did not connect this effort to any industrial contract of the Authority, save that of the Monsanto Company. This evidence, in a record where it is undisputed that the complainants, and particularly the Commonwealth and Southern companies, are faced with a shortage of power in the next few years unless new generating capacity is acquired (fdgs. 236-237, r. 652, app. I, 94-95; comp. ex. 372 in *Reproductions of Certain Original Exhibits Submitted by Appellants*; Middlemiss, r. 1272-1274), is not a sufficient showing of legal injury to entitle the complainants to challenge the legality of these industrial contracts. *Cf. Alabama* v. *Arizona*, 291 U.S. 286, 292.

What has been said sufficiently demonstrates that the threatened damage of which appellants complain will not be due to competition by the Authority. The alleged threat of a loss of rural business illustrates the point. Complainants even now assert that there is little or no unattached rural demand now unserved

which could be served economically. (See, e.g., Street, r. 978; Ostermueller, r. 991; Bonner, r. 1006-1007; Jacobs, r. 1016). This is the position complainants have always taken with reference to rural service, and it explains why the rural residents served by the cooperatives under contract with the Authority have been heretofore without any electric service. The record shows that, apart from the customers served by the lines acquired under the contract of January 4, only two of the rural residents served by the cooperatives under contract with the Authority had ever been served by complainants (fdg. 206, r. 645, app. I, 85). Complainants cannot reasonably complain of damages by reason of the loss of a market which they have heretofore regarded, and still consider, unprofitable (fdg. 249, r. 654, app. I, 98).

Complainants' case is no better with respect to the alleged competition for the wholesale municipal markets under contract with the Authority. Complainants never offered to prove that, but for the Authority, these municipalities would have purchased their power supply from complainants, the municipalities' competitors. The alleged competition with the Authority for the wholesale business of the municipalities is in fact wholly theoretical and unreal. The Authority's sale to certain large industrials may appear to constitute direct competition with certain of the complainants. But even this industrial demand is of a specialized type for use in electrochemical and electrometallurgical industries representing new business in the area which, for all that appears, became

economically feasible only because of Tennessee Valley Authority rates. Surely complainants cannot demand a monopoly of a market created by the Authority itself.

Complainants' franchises confer no right to sue without a showing of special damages. *Memphis Street Ry. Co.* v. *Rapid Transit Co.*, 138 Tenn. 594, 605-606 (1917); *Northern Pac. Ry. Co.* v. *Bennett*, 83 Mont. 483 (1928). If, as complainants assert, the threat of the loss of potential future markets may constitute a sufficient showing of damage, the fact nevertheless remains that the customers served by the Authority were not potential customers of complainants, and the service of such customers by the Authority constitutes no loss or damage to complainants.

Should the Court decide that none of these contracts, whether they be with municipalities, rural cooperatives, or industrial concerns, present a definite and specific transaction which is a proper subject of controversy between the parties to this case, appropriate for an exercise of judicial power, it will be decisive of this whole litigation. For if the complainants cannot challenge the validity of these contracts, surely they cannot challenge in the abstract the validity of the construction and operation of the generating plants, the transmission lines, and the substations being used to deliver power thereunder. The Authority's so-called "power program" does not present a justiciable controversy. See *Ashwander* v. *Tennessee Valley Authority, supra* at 324. There must be some specific subject

or transaction which is susceptible of judicial determination. See *United States* v. *West Virginia*, 295 U.S. 463; *New Jersey* v. *Sargent*, 269 U.S. 328. This was the holding in the *Ashwander* case in limiting the decision to the contract of January 4 between the Authority and the Alabama Power Company.

Regardless of this Court's decision on the merits, the importance of a careful delineation of the standing of the various complainants to challenge the validity of varied types of transactions need hardly be emphasized. The gravity of constitutional questions has led this Court to formulate special rules governing the scope and character of the inquiry in constitutional cases. The application of these special salutary rules is sought to be blurred by the sweeping, multifarious character of complainants' case. Complainants' bill of complaint was designed to obscure the fact that acts challenged have no specific application to many of the parties complaining, to discourage careful analysis of the right to sue, and to elicit general sweeping rulings.

It was in recognition of the principles governing the presentation of constitutional issues for adjudication that the Government sought to have the bill dismissed on the ground that it was nonjusticiable and fatally multifarious. See Government's petition for certiorari, 301 U.S. 710.

The paramount public importance of restricting the scope of the federal judicial power to actual cases or controversies based upon definite allegations of specific injury to particular parties is self-evident. If the important rules so carefully established by this

Court to govern the scope and character of inquiry into constitutional questions are to be preserved and given practical application, the rights of the complainants in a suit of this nature should be clearly delineated.

IV

THERE IS NO REVERSIBLE ERROR IN THE RULINGS OF THE TRIAL COURT ON EVIDENCE AND PROCEDURE.

The rulings of the court below on evidence and procedure were unanimously concurred in by three judges sitting as a court of equity (r. 2439). Appellants have nevertheless devoted a substantial part of their brief (pp. 214-247) to the contention that the case should now be sent back for a new trial because of errors in such rulings.

There are 135 numbered assignments of error in all, about half of which relate to rulings on evidence and procedure. Appellants have made no attempt to limit their assignments. They indiscriminately press practically every exception they took during the course of the long trial, even to the extent of assigning error to the exclusion of documents which were actually admitted into evidence, and to the refusal to order production of documents authentic copies of which were admittedly in complainants' possession. (See, e.g., assignment 4, r. 717; br. 221; *cf.* comp. ex. 113 (original) p. 22, r. 2684; assignment 59, r. 733; br. 246 (n. 1); *cf.* r. 2421.)

The numerous assignments are vague and general in stating the grounds of error and are careless and unreliable. The treatment of the assignments in appellants' brief only adds to the confusion. The method is to group the various rulings under general subject-matter headings and, without any explanation of the particular circumstances surrounding each of these rulings, to state in conclusory language that the proffered proof was relevant to one of the myriad allegations in the bill whether or not they presented a material issue.

The assignments are directly in violation of Supreme Court Rule 9 (28 U.S.C. 862) and of the repeated and emphatic admonitions of this Court. The confusion resulting from appellants' failure to make the assignments clear and explicit justifies a complete disregard of them. See *Phillips and C.Const.Co.* v. *Seymour*, 91 U.S. 646, 648; *Central Vt. Ry. Co.* v. *White*, 238 U.S. 507, 508; *Chesapeake & D. Canal Co.* v. *United States*, 250 U.S. 123, 124; *Seaboard Air Line R.Co.* v. *Watson*, 287 U.S. 86, 91; *Local 167* v. *United States*, 291 U.S. 293, 296. Far from tending to "define the issues," the assignments of error merely present "bewildering" and "prolix" confusion. See *Local 167* v. *United States, supra* at 296; *Phillips and C. Const. Co.* v. *Seymour, supra* at 648.

Appellants' general basic contention is that they were deprived of their right "to make a full presentation of their case" by the court's rulings. An attempt is made to build up a picture of hasty, ill-considered, and unfair treatment. An examination of the volume

and content of the record conclusively refutes this contention.

As pointed out in the statement (*supra* pp. 7-10), the facts concerning the conduct of the case and the trial indicate the full and fair character of the hearing. The extensive proceedings and arguments in connection with earlier motions and appeals, the scope of the stipulations and depositions, together with the length of court time consumed in the presentation of proof, the voluminous record of testimony and exhibits, and the lengthy arguments heard and numerous briefs filed throughout the trial (r. 2371), all reflect the opportunity afforded the parties to make a full presentation of the case. Appellants' contention that the court unduly expedited the case (br. 214-215) is answered by the statement of counsel made in open court:

> Mr. R. T. Jackson: I did not mean to imply that there had been any undue expedition of the case. I was concerned and am concerned about the question of oral argument, and I thought it my duty to frankly state that to the Court, because it seems to me that is a matter of importance [r. 2284].

Appellants' assignments of error to the fixing of dates for arguments and presentation of findings of facts and briefs (assignments 63-66, r. 735-736) are indicative of the complete lack of merit, if not indeed the frivolousness, of the contention that they were denied a fair trial. There clearly can be no doubt of the court's discretion in these matters. But the record leaves no doubt of the court's reasonableness. On De-

cember 20, that is, almost a month in advance, the court notified counsel that it expected to proceed promptly with the arguments and findings upon the close of the testimony. The court made this announcement just prior to a twelve-day adjournment at the Christmas season (r. 1861). The court stated that it felt justified in asking counsel to use part of this holiday period in preparation of arguments, briefs, and findings so that the case could be disposed of promptly at the conclusion of the testimony (r. 1862, 1919). The judges had come from distant points, and none of them were at or near their regular places of court duty. Attention was drawn to the facts that the case had been pending for almost two years; extensive proceedings had been held over a long period of time; most of the issues had already been thoroughly analyzed and argued by counsel; and both sides had ample counsel representing them, three large firms actively appearing for complainants (r. 1861-1862, 2282-2284).

The record shows that the trial court adopted the liberal policy of admitting evidence even when there was grave doubt as to its admissibility (r. 1492, 2284). The district court repeatedly accepted on behalf of complainants evidence of highly doubtful competence or relevance. (See, e.g., the voluminous exhibits regarding applications to, and loan and grant agreements with, the Public Works Administration, comp. exs. 419-434, r. 3249-3331; the highly speculative testimony of the witnesses Frothingham, r. 1304-1310, and Moreland, r. 1470-1480; the testimony and excerpts regarding applications to and licenses from the Federal

Power Commission, r. 864-865, comp. exs. 91-94, r. 2560-2602.)

Complainants attempted to secure court orders for the production of numerous documents, and some of these requests were denied for reasons which are discussed below in disposing of particular assignments of error. But it may throw light upon the court's rulings generally to consider the documents and data that were given complainants or that were available to them.

The partial denial of complainants' main subpoena duces tecum was expressly conditioned upon delivery by defendants of all contracts relating to the disposition of power and all records of official action of the Board of Directors of the Authority relating to the dams and to the transmission lines or other facilities for the disposition of power or relating in any way to the sale of power (r. 766, 896-897). In compliance, defendants delivered to complainants 367 separate items of board action, constituting the complete record of the action taken by the Authority from its inception to date in regard to the generation and disposition of electric energy (r. 896). The numerous board exhibits, incorporated by reference in nearly all these items, were made available for the examination of complainants, and copies of any that they desired were given to them (r. 897). Every contract which the Authority had ever entered into involving or in any way relating to the disposition of power was likewise delivered to complainants (r. 764, 766, 897).

Complainants were also furnished, by stipulation, with a complete description of every line that the Authority had ever built or authorized for construction, including location, capacity, and places to be served, and a description of every substation that the Authority ever built or authorized, including its capacity, location, and places intended to be served by it (def. ex. 136, r. 4175). This stipulation contained maps and tables showing all of the lines and substations of the Tennessee Valley Authority, in service, under construction, and authorized as of October 15, 1937. (For map see def. ex. 136A in *Reproductions of Certain Original Exhibits Submitted by Appellees.*) The stipulation further contained a map showing all rural lines owned by municipalities and cooperatives purchasing power from the Authority, and rural lines owned by the Authority, together with tables containing the detailed information concerning all of such rural lines. (For map see def. ex. 136B in *Reproductions of Certain Original Exhibits Submitted by Appellees.*)

The foregoing documents and data were not only delivered to complainants; all of them were admitted in evidence (comp. exs. 117-181, r. 2729-2959; comp. exs. 516-627, r. 3357-3477; def. ex. 136, r. 4175). In addition to the contracts, board resolutions, allotment releases, and other information furnished complainants by the defendants, complainants had numerous other sources of information regarding the Authority's plans for the construction and operation of dams and the disposition of power. The pertinent facts concern-

ing the Tennessee River system were exhaustively set forth in the comprehensive report of the Army Engineers in 1930, House Document No. 328 (comp. ex. 105 (original), r. 2615). Detailed information as to the scope, design, location, general methods of operation, and functions of the dams, as well as details regarding the transmission lines, substations, and power contracts, were fully set forth not only in the Authority's regular annual reports and in the report entitled *The Unified Development of the Tennessee River System* (comp. ex. 328 (original), r. 3068) but also in the ten volumes of published hearings held before committees of the Congress on appropriations for the Authority and amendments to the act. Such hearings, held annually by at least one House of the Congress and in several years by both, have been characterized by the exhaustive examination and cross-examination to which committee members subjected officials of the Authority concerning all its plans and operations. Exhibits which the Authority was required to file in connection with such hearings and the detailed testimony given in them covered every phase of the Authority's activities. All these materials were available to complainants long before the trial, and they were offered and admitted in evidence on their behalf (comp. exs. 108, 109, 112, 113, 114, 115, 116, 364, 365, 366 (originals), r. 2623, 2643, 2681, 2684, 2691, 2699, 2727, 3109, 3121, 3125; comp. exs. 117, 118, r. 2729, 2771).

Finally, in considering the character of the trial, it is relevant to note the nature of the case which com-

plainants attempted to make out in the bill. The bill of complaint occupied 71 printed pages (r. 1) and the exhibits thereto 66 pages (r. 72). The bill contained sweeping allegations challenging the validity of a "national power policy" and "the power program of the defendants," attacking not only specific acts allegedly done or threatened but also mere prospects or suggestions for the indefinite future, and involving numerous diverse complainants in whose claimed territory defendants had neither done nor threatened any action of a definite or concrete character (fdg. 111, r. 625, app. I, 57). The Government's motion to dismiss for multifariousness was overruled (r. 158), but at the time of that ruling (over a year before the trial), and frequently thereafter, the district court pointed out that there was much surplusage in the bill (r. 904, 1492, 1532). Complainants, however, took the position throughout the trial that they were entitled to introduce evidence on all and any of the sweeping allegations made in the bill. The contention, as baldly stated in appellants' brief, is that "any evidence which tends to support an issue between the parties is admissible" (p. 218). The possibility that some of the allegations might relate to immaterial issues is disregarded, and the function of the trial court to determine the materiality of and intelligently delineate the issues is ignored. This function is of particular importance in a case tried before a special three-judge court from which a direct appeal is prosecuted to this Court.

Appellants have repeatedly cited such cases as *Chastleton Corp.* v. *Sinclair*, 264 U.S. 543; *Hammond*

v. *Schappi Bus Line*, 275 U.S. 164; and *Borden's Farm Products Co.* v. *Baldwin*, 293 U.S. 194, for the proposition that in constitutional litigation an adequate hearing requires the trial of all the issues and the admission of all evidence deemed material or relevant by the party tendering the proof (br. 217-218). This novel contention finds no support in the cases cited. In each of the cases the trial court took decisive action without any trial. There is no suggestion in these authorities that because a case involves constitutional questions the trial court's important function of ruling on the scope of the issues and admissibility of evidence shall be abandoned. In the instant case complainants were accorded the fullest trial to which any litigant may be entitled. The rulings on evidence and procedure assigned as error were all a part of the important process by which the trial court delineates the issues and sifts the evidence.

As the volume of admitted evidence demonstrates, there was abundant concrete evidence to show the action of the Authority. Most of the excluded evidence consisted of discussions, arguments, informal speeches, press releases, informal communications, informal correspondence, reports from subordinates, and the like. All of the excluded evidence was incompetent, irrelevant, or purely cumulative, having no legal bearing on the issues before the court. In any event, appellants have failed to show any prejudicial error which would justify the remanding of a case of this character.

Any effort to answer fully the assignments of error will consume space and attention disproportionate to their importance. Nevertheless, the incomplete and, in many instances, inaccurate discussion in appellants' brief necessitates consideration in this brief of some of the particular rulings which are emphasized by appellants.

1. THERE IS NO REVERSIBLE ERROR IN THE RULINGS OF THE COURT RELATING TO COMPULSORY PRODUCTION OF DOCUMENTS AND SUBPOENAS DUCES TECUM (assignments 1, 2, 5, 15, 25, 27, 28, 37, 38, 42, 44, 47, 59).

All of the above assignments of error relate to the rulings of the court denying the motion for the production of documents in advance of trial and the numerous applications for subpoenas duces tecum presented throughout the trial. In their brief appellants have apparently abandoned those assignments relating to the denial of the motion to produce documents in advance of trial. A general understanding of that motion and the ruling of the court thereon is essential, however, to an understanding of the rulings on subpoenas duces tecum, since all of the subsequent applications for subpoenas were based upon the original motion and were clearly directed to the same ends.

The purpose of the original motion to produce, as well as of the subsequent applications for subpoenas, was to procure as much detailed information as possible to assist complainants in the preparation of their case prior to trial. Laying aside for a moment the fact that neither a motion to produce documents nor a subpoena duces tecum was designed for this purpose, the

fact is that complainants were not handicapped in their efforts to procure such information. As already pointed out, all of the information and sources of information that could be regarded as even remotely competent—the contracts, board resolutions, allotment releases, reports to the Congress, and the published hearings before congressional committees—were available to complainants either before or at the trial and appear in the record as exhibits.

The fact is that by the motion to produce and the various subpoenas complainants were not seeking material evidence but were asking blanket permission to ransack the files and records of the Authority in the hope of unearthing something that might prove helpful to them or embarrassing to the Authority.

In addition to these considerations, the rulings of the trial court upon the preliminary motion to produce documents and the various applications for subpoenas were well within its discretion and are supported by independent procedural grounds. A brief examination of the particular motions, together with the rulings of the court, is sufficient to show that the discretionary action taken on these matters need not be disturbed upon appeal.

Motion to produce documents in advance of trial and applications for subpoenas duces tecum (assignments 1, 2, 5, 15, 47, r. 715-717, 720, 728). The motion to require the production of documents in advance of trial (assignment 1, r. 715) was a preliminary motion supposedly filed under Equity Rule 58. The reasons for the denial of that motion are dis-

cussed in the opinion of the trial court upon the subject (r. 379), which is fully supported by the authorities. *Fidelity & Deposit Co.* v. *Central Bank*, 48 F. (2d) 477 (C.C.A. 8th, 1931); *Pressed Steel Car Co.* v. *Union Pac.R.Co.*, 241 Fed. 964 (S.D.N.Y., 1917).

The application for blanket subpoena duces tecum and the various separate applications for subpoenas for the minutes of meetings of the Board of Directors of the Authority (assignments 2, 5, 15, r. 716, 717, 720) were in large measure complied with by stipulation. At the time the original application was made the court heard argument only with respect to the items listed in the first paragraph of said application. At the time of that argument counsel advised the court that the defendants had already agreed to furnish copies of all contracts described in paragraph 2 of the subpoena, as well as the maps of transmission and distribution lines and substations described in paragraphs 8 and 9 thereof, and that therefore those items need not be considered (r. 764-765).

After the argument on paragraph 1 of the subpoena, which called for all minutes of the Board of Directors of the Authority, the court denied the request for subpoena for these minutes upon condition that counsel for the defendants should deliver to opposing counsel all contracts made by the Authority and all resolutions authorizing or relating to contracts for the sale of power, the construction or authorization of dams, the construction or authorization of transmission lines, distribution lines or substations, and all resolutions dealing with sales and construction contracts (r. 766-767).

The remaining paragraphs of the original blanket subpoena called for intra-Authority "discussions," "considerations," "memoranda," or "notes" (r. 2441).

As to these and similar documents the original application was properly denied on the ground that there was no prima facie showing that the documents called for were competent, relevant, and material, which is a condition precedent to the issuance of a subpoena duces tecum. *Hale* v. *Henkel*, 201 U.S. 43, 77; *Federal Trade Comm.* v. *American Tobacco Co.*, 264 U.S. 298, 307; *General Finance Corp.* v. *New York State Rys.*, 1 F.Supp. 381 (W.D.N.Y., 1931); *Miller* v. *Mutual Reserve Fund Life Ass'n*, 139 Fed. 864 (C.C.S.D.N.Y., 1905); *Schuricht* v. *McNutt*, 26 F. (2d) 388 (D.Conn., 1928); *Dancel* v. *Goodyear Shoe Mach. Co.*, 128 Fed. 753 (C.C.D.Mass., 1904). Moreover, the sweeping and burdensome breadth of this particular application justified its denial. The practical effect of the issuance of such a subpoena would have been to sweep out the files of the Authority. This Court, as well as the lower federal courts, has consistently condemned sweeping subpoenas of this type. *Hale* v. *Henkel, supra; Federal Trade Comm.* v. *American Tobacco Co., supra; Miller* v. *Mutual Reserve Fund Life Ass'n, supra; Jones* v. *Securities Comm.*, 298 U.S. 1, 26; *Hoppe* v. *Ostrander & Co.*, 183 Fed. 786 (C.C.S.D. N.Y., 1910); *Rawlins* v. *Hall-Epps Clothing Co.*, 217 Fed. 884 (C.C.A. 5th, 1914); *In re American Sugar Ref. Co.*, 178 Fed. 109 (C.C.S.D.N.Y., 1910).

After the denial of the original application, complainants, in an effort to meet the ruling of the court re-

quiring a prima facie showing of relevance and materiality, broke the original application into separate subpoenas (comp. exs. 497, 689-697, 931, 954-956, r. 3331, 3618-3625, 3982, 4002-4004). The first of these would have required the production of a copy of a telegram from the Authority to the Governor of Alabama with reference to certain legislation then pending before the Legislature of Alabama (r. 1437). The materiality and relevance of this document as evidence is discussed *infra*, page 239.

The second of these subpoenas (comp. ex. 689, r. 3618) would have required the defendants to produce documents and records showing the number of employees in the department of electricity as of October 1, 1937, the headquarters or offices of each of said employees, and the names of any additional employees in that department other than those published in the annual report of the Authority for the fiscal year ending June 30, 1937. In response to this application the court required the defendants to state in the record the number of employees in the department of electricity and denied the remainder of the subpoena upon condition that that information be furnished (r. 1528).

The remaining applications for subpoenas, except for the particular instances considered hereinafter, related to letters, memoranda, intradepartmental communications, and board minutes, identical with the items listed in the original subpoena (r. 1529-1531). The immateriality of this type of evidence, which is the ground upon which the rulings of the trial court were based, is considered *infra*, pages 235-239.

The application for subpoena duces tecum for the report on a proposed dam at the Norris site, made by an employee of the Bureau of Reclamation of the Department of the Interior (assignment 47, r. 728) calls for special consideration in view of appellants' inaccurate statement of the facts in this regard. The record shows that this report was delivered by the Authority to the court at the court's request in order that it might inspect the same and determine whether or not any sufficient showing had been made to justify its compulsory production as material evidence in the case. Appellants state in their brief (p. 227) that the Tennessee Valley Authority had employed the Bureau of Reclamation to prepare plans for the construction of Norris Dam, and that this report was made to the Authority by an officer of the Bureau of Reclamation. This statement is inaccurate and contradicted by the record. The nature and status of this report is fully explained by the testimony of the witness Woodward (r. 1816-1818). As pointed out in the unanimous opinion of the trial court denying this application, it appears from that testimony that this report was in no sense an official report of the Bureau of Reclamation to the Authority but was merely a report or recommendation of a subordinate member of the staff of that Bureau to its own chief engineer, setting out the personal opinions and estimates of this particular employee (r. 2197). The witness Woodward, the chief water-control planning engineer of the Authority who was active on the design work of Norris Dam, testified

that so far as he knew the Authority had never requested that this report be made, and that no use had been made of it. He also stated that he personally never did agree with the report, and that he did not think it had any official standing (r. 1816-1817). There is nothing in the record tending to show that this report was ever adopted by the Board of Directors of the Authority or relied upon in any way. If complainants desired to rely upon opinions of the writer of this report, they could have complied with the requirements of judicial procedure by eliciting his testimony under oath, either on the witness stand or by deposition.

The application for subpoena duces tecum for certain tentative and confidential budget estimates submitted to the Appropriations Committee of the House of Representatives in executive session on December 13, 1937 (assignment 59, r. 733), was denied on the ground that complainants had in their possession at the trial a complete photostatic copy of these estimates (r. 2419-2422). Counsel for the Authority had conceded the authenticity of that copy. In response to the assertion that the subpoena for the board resolutions and administrative directions for the operation of the Authority's dams (comp. ex. 956, r. 4004) was denied (br. 239), it should be noted that all of the documents so described were submitted and received in evidence (r. 2418-2419, 2428-2433, 2437-2438; see comp. exs. 923, 924, r. 3955-3975; comp. ex. 957, r. 4004; def. ex. 41, r. 4065; def. ex. 65, r. 4078).

2. THERE IS NO REVERSIBLE ERROR IN THE RULINGS OF THE TRIAL COURT ON THE ADMISSIBILITY OF SPEECHES, PRESS RELEASES, PAMPHLETS, ETC. (assignments 4, 8-12, 17, 24, 29, 30, 43, 44).

The materials included in this group of assignments of error are (a) press releases which either reproduce speeches of individual directors, announce the terms and conditions of contracts for the sale of the Authority's power, or refer to plans or policies of the Authority (assignments 4, 8, 12, 44, r. 717, 718, 719, 728); (b) testimony of witnesses to the effect that individual directors and employees of the Authority made certain statements regarding power contracts and policies at public meetings (assignment 11, r. 719); (c) the testimony of Director Lilienthal at the congressional committee hearings on the Holding Company Act (assignment 10, r. 719); and (d) contract forms and pamphlets purporting to give information on the Authority's power contracts and sales (assignments 9, 17, 24, 29, 30, 43, r. 719, 721, 723, 724, 727). Appellants in their brief devote a whole page to an attempt to show that the court acted arbitrarily in excluding the press releases (pp. 220-221). The record shows that the court heard and considered arguments and briefs on the admissibility of these items (r. 894) and "examined and considered each and all of the press releases offered" (r. 1532).

This type of evidence was excluded on the ground that it was incompetent or cumulative, as well as on the ground that it was irrelevant (r. 894, 1532). Insofar as any of these materials contain facts, as distin-

guished from opinion, they were purely cumulative, since better evidence of the same facts was available and was introduced in the form of the contracts actually executed, the official board resolutions, and the Authority's clear and complete official reports to Congress, all of which were admitted into evidence. These materials were clearly the best evidence "to show what appellees had done" and "were doing" (br. 222) and had authorized to be done. For example, on page 221 of their brief appellants complain of the action of the trial court in excluding two press releases embodying the announcement of the Authority's so-called power policy (comp. ex. 633, r. 3487) and the announcement of the Authority's proposed wholesale and retail rates (comp. ex. 634, r. 3490). The record shows that the complete statement of the power policy, as well as the rate schedules, are fully set out on pages 22 and 35 of the annual report of the Authority for the fiscal year ending June 30, 1934, which was offered and received in evidence as complainants' exhibit 113 (r. 919-920, 2684). What individual directors, subordinate employees, or press releases had to say about these matters could hardly add anything to the facts themselves. Thus, even assuming that these press releases contained relevant evidence, at best they were merely secondary and cumulative evidence which the court in its discretion properly excluded.

Insofar as these materials related to expressions of policies and possible plans, their lack of probative value rendered them incompetent. The speculative and remote character of the inferences sought to be drawn

from them is obvious. The only evidence which has any probative value consists of the official acts of the board of directors as such. The fact that publication of the speeches and opinions of the individual directors was generally authorized does not alter their character as expressions of individual opinion. In preserving to the complainants their right to place before the court all evidence of official acts of the board of directors, the trial court freely admitted in evidence not only the official acts of the board but also all of the testimony of members of the board of directors before various committees of the Congress, which testimony contains the fullest possible discussions of all of the policies and plans, both actual and projected (comp. exs. 108, 109, 112, 114, 115, 116, 364, 365, 366 (originals), r. 2621, 2623, 2674, 2684, 2691, 2700, 3092, 3110, 3121). The speeches and press releases intended for public consumption can only suggest the give and take that is necessarily involved in the formulation of policy and in the making of ultimate decisions by the board. They cannot be taken to represent official action.

It seems apparent that complainants' only purpose in seeking to introduce such evidence was to reflect upon the motives and subjective mental attitudes of the individual directors and employees of the Authority. The trial court properly held the evidence irrelevant on this ground. It was the position of the court that the trial should be limited to concrete and definite action taken or authorized by the Authority and should not go into "motives, declarations, pronouncements, desires," and "policies" (r. 894, 1532). This posi-

tion was clearly in accord with, if not required by, the decisions of this Court in the *Ashwander* and *Isbrandtsen* and other cases. *Ashwander* v. *Tennessee Valley Authority*, 297 U.S. 288; *Isbrandtsen-Moller Co.* v. *United States*, 300 U.S. 139; *Dakota Cent. Tel. Co.* v. *South Dakota*, 250 U.S. 163; *West* v. *Hitchcock*, 205 U.S. 80; *Anicker* v. *Gunsburg*, 246 U.S. 110. See also *Duke Power Co.* v. *Greenwood County*, 91 F. (2d) 665 (C.C.A. 4th, 1937); *South & N.A.R.Co.* v. *Railroad Comm.*, 171 Fed. 225 (C.C.M.D.Ala., 1909). If the concrete official acts done—in the case at bar the construction of dams, the execution of contracts, and the construction and acquisition of facilities for the sale of power—are, viewed objectively, authorized by a constitutional statute, they are valid. As aptly stated by Judge Sibley in his concurring opinion in the Circuit Court of Appeals in the *Ashwander* case:

> This case is not to be decided by the purposes and plans of the board, but by the validity of what is about to be done under the attacked contracts [78 F. (2d) 578 at 583].

In their brief appellants tacitly concede that evidence of the motives and purposes of the members of the board of directors would have been immaterial and contend that the evidence herein questioned was offered for other purposes (br. 223). Yet an examination of the argument which follows in appellants' brief makes it clear that the only real purpose of the proffered proof was to establish those motives and purposes.

In their brief appellants argue that the release of any information regarding the activities of the Authority is "advertising," and that "advertising" is in turn "solicitation" of customers (pp. 224-225), and that "solicitation" is in some way unlawful. All of the press releases, pamphlets, and public statements are claimed to be relevant on this tenuous basis. Appellants have placed so much emphasis on this contention that it is here discused at some length.

3. THE TRIAL COURT DID NOT COMMIT REVERSIBLE ERROR IN EXCLUDING CERTAIN EVIDENCE PURPORTING TO SHOW SOLICITATION (assignments 8-12, 17, 24, 29, 30, 43).

Appellants' theory apparently is that every statement ever made by any director or employee of the Tennessee Valley Authority, and any information published, constituted solicitation of appellants' customers. Even if it be conceded that the ultimate conclusion of this reasoning—the fact of solicitation—is a proper issue in a case in which the court is asked to determine the constitutional power of the Federal Government to construct dams and to generate and distribute electricity at such dams, the reasoning is clearly fallacious. The dissemination of information to the public concerning the activities of a public agency would seem to be obviously proper and indeed necessary. Insofar as the release of such information may have reacted unfavorably upon the appellants, no legal injury has been inflicted. *Cf. Standard Scale Co.* v. *Farrell*, 249 U.S. 571; *Pennsylvania R.R.Co.* v. *United*

States R.R. Labor Board, 261 U.S. 72; *United States v. Los Angeles R.R.*, 273 U.S. 299.

Such of the statements as might have evidenced any pertinent fact would have proved no more than that the Authority and its employees were informing the public generally that the Authority had power available and, in a general way, of the rates, terms, and conditions on which the sales would be made. As the court pointed out, counsel for the Government conceded that the Authority announced to the public that there was a certain amount of power available at certain rates (r. 1134), and further conceded that when requests or applications were received from persons or communities, information was sent out in reply to the requests received (r. 982-983).

The excluded evidence would have added nothing to the fact as found by the court that the Authority's rates have been published generally and are well known throughout the valley (fdg. 124, r. 628, app. I, 61). None of the evidence offered was at variance with the finding to the effect that advice and information was sent out "upon request" (fdg. 143, r. 632, app. I, 67; see also op., r. 553, app. I, 127; comp. ex. 412, r. 3244).

All of this evidence, however, was also clearly incompetent. No proof was offered, for example, to show that the Authority had any connection with the distribution of the circulars and pamphlets referred to in assignments 9, 24, 29, and 30. The statements in appellants' brief (p. 230) that these materials were circulated and distributed by the Authority are unsup-

ported by the record. Complainants' own witnesses testified that they had not at any time seen any Tennessee Valley Authority employee circulate them (Stanley, r. 951, 955; Street, r. 981-982, 983; Green, r. 1008; Woodall, r. 1323-1324), and counsel for the complainants conceded that they had no evidence that the Authority was connected with the distribution of them (r. 952-954). So far as the speeches and statements referred to in assignment 11 (r. 719) are concerned, most of them were statements made by subordinate employees of the Tennessee Valley Authority in informal conferences or at public meetings (Bass, r. 1087; Woodall, r. 1321; Mastin, r. 1327; Burleson, r. 1395-1396; Armington, r. 1357-1358; Gause, r. 1359; Kittredge, r. 1361; Mouldin, r. 1324; McWhorter, r. 1441). *Cf. United States* v. *Martin*, 26 Fed. Cas. 1186, 1187 (C.C. N.D.N.Y., 1832); *Lee* v. *Munroe*, 11 U.S. 366, 368-369; *Waters* v. *United States*, 4 Ct. Cl. 389, 390 (1868); *Allen* v. *United States*, 28 Ct. Cl. 141, 146 (1893); *Carroll* v. *East Tenn., Va. & Ga. Ry. Co.*, 82 Ga. 452 (1889); *West Jersey Traction Co.* v. *Camden Horse-Railroad Co.*, 53 N.J.Eq. 163 (1895).

The other statements referred to in assignment 11 consisted of public speeches made by individual directors. (See Lamar, r. 1130.) On the principles established by the above-cited cases, what individual board members discussed or stated in unofficial public speeches cannot be regarded as competent proof against the Authority. Insofar as it appeared that an individual board member was negotiating in an official capacity, the court admitted into evidence statements

made by such director. Thus, the witnesses Wilkerson and Bass were permitted to testify regarding statements made by Director Lilienthal in conferences concerning the city of Chattanooga (r. 1086, 1047).

Where complainants offered any evidence which purported to show that any customers or potential customers had been induced to contract with the Authority, as distinguished from evidence showing the release of information for publication, the evidence was admitted. But in this respect complainants' case failed completely. In the few instances where complainants purported to show specific solicitation, they merely demonstrated that their charge was groundless. The Yates Bleachery instance referred to on page 230 of appellants' brief (assignment 17, r. 721) is illustrative. While the court excluded as incompetent a pencil memorandum made by a subordinate employee of the Authority on a piece of scratch paper, it admitted almost the entire deposition into evidence (r. 1140, 1143). It appeared from this deposition that the Yates Bleachery Company was not purchasing power from any of the complainant power companies at the time of the conversation with the Tennessee Valley Authority employee and had not been purchasing power from them or from anyone for almost a year prior to the time of such conversation (r. 1141, 1145, 1147). It further appeared that this company had only taken supplementary service from a Tennessee Electric Power Company subsidiary and its load had been only about 30 kw (r. 1144). And finally, the deposition showed that the bleachery company had never had a contract to take power from

the Authority and the Authority never sold any power to it.

Another example of the weak character of the evidence on which the complainants' charges of solicitation were based is the resolution of the city of Moulton, Alabama, referred to in assignment 43 (r. 727-728). Aside from the fact that the city of Moulton is in the "ceded area" under the contract of January 4, 1934, the witness McWhorter testified that the city of Moulton did not have any contract with the Tennessee Valley Authority (r. 1442).

These representative examples offered by complainants can scarcely be regarded as proof of the "high-pressure solicitation" charged. Certainly complainants failed to prove any damaging effects in these trivial instances since in each instance it appeared that the Authority had secured no contract. It is significant that these numerous complainants had to resort to such trifling individual instances to support their charge. The failure to procure substantial evidence establishes that the claimed fact does not exist; and the trial court so found (fdgs. 227, 228, r. 649, app. I, 92).

4. THE TRIAL COURT DID NOT COMMIT REVERSIBLE ERROR IN EXCLUDING ITEMS OF EVIDENCE PURPORTING TO PROVE COERCION, DURESS, FRAUD, OR CONSPIRACY (assignments 12, 31, 32, 33, 38, 39).

(a) *Evidence relating to correspondence between the Authority and other Government agencies* (assignments 12, 31, 32, 33, 38, 39). Appellants assign as error the exclusion of a voluminous mass of correspon-

dence and communications between the Authority or its employees and the Federal Emergency Administration of Public Works, the Rural Electrification Administration, the Electric Home and Farm Authority, and the National Power Policy Committee; the correspondence between these agencies and numerous municipalities and rural cooperatives; and various reports, memoranda, and press releases concerning these various agencies. These rulings are argued on pages 233 to 236 of appellants' brief. The trial court excluded this material on the grounds that the case should be limited to the validity of the activities of the Tennessee Valley Authority and could not be concerned with the activities of other Government agencies and local public agencies, none of whom were parties to the case (r. 906). No extended argument is needed to demonstrate the soundness of this position. It was a practical necessity in this case. If complainants had been permitted to introduce their proposed evidence on the activities of other Government agencies and of the various local agencies, the case would have involved a trial on the legality not only of the Tennessee Valley Authority Act and the activities thereunder, but also of the statutes governing and the activities of the Public Works Administration, the Rural Electrification Administration, the Electric Home and Farm Authority, the National Power Policy Committee, and the local agencies. It is clear that as to these matters the real complaint is against action alleged to be in excess of the powers of these other agencies, questions which the trial court properly re-

fused to consider in a case already overburdened with diverse issues.

This evidence is claimed to be relevant to prove "cooperation" or "confederation or concert of action" to injure appellants (br. 233-234). This is the same "conspiracy" charge made in numerous other suits by power companies and sought to be supported by the identical documents and evidence proffered here by complainants. The identical conspiracy charge made here was advanced in the *Ashwander* case and was rejected by District Judge Grubb on the ground that if the Tennessee Valley Authority was authorized by its statute to do what it was doing, and the Public Works Administration was authorized by its statute to do what it was doing, there could be no illegality in the cooperation between them:

> If the T.V.A. has the right to engage in the business of making and selling electric current . . . for final distribution to consumers, the P.W.A. has the right and power to loan, to the municipal corporations, money to construct distributing plants for electric power to be furnished by the T.V.A. to them [9 F.Supp. 800 at 801].

In the case of *Memphis Power & Light Co.* v. *Memphis,* 172 Tenn. 346 (1937), the Supreme Court of Tennessee similarly disposed of the same conspiracy charge as follows:

> It is further charged that these federal agencies, the state, and the city of Memphis have entered into a conspiracy to injure or destroy the business

of complainant. If the involved contracts are valid, necessarily there is no basis for such a charge [p. 366].

The charge of conspiracy is really an attempt to show that the Public Works Administration was improperly motivated in making loans and grants by a desire to provide a market for the Authority's power. This charge was tried out in the cases brought to enjoin the making of loans and grants, and the charge was found to be without basis in fact. *Alabama Power Co.* v. *Ickes*, 302 U.S. 464. The same company, with its co-complainants here, now seeks to retry the issue in a suit to which the Public Works Administration is not a party.

The repeated efforts on the part of complainant power companies to draw substance from matters relating to the Electric Home and Farm Authority (br. 235) should be disposed of once and for all. This Court over two years ago recognized that the agency referred to in this case was dissolved (*Ashwander* v. *Tennessee Valley Authority*, 297 U.S. at 316). All of the correspondence, memoranda, and press releases which were excluded related to this defunct agency (assignment 12, r. 719). Obviously, these materials can have no bearing on the validity of the Tennessee Valley Authority Act or the Authority's activities.

It may be noted that the court admitted in evidence a mass of material bearing upon these irrelevant questions, including all of the applications and contracts of the Public Works Administration in the Tennessee Valley area; the contract between the Author-

ity and the Electric Home and Farm Authority; and all of the construction loan contracts between rural cooperatives and the Authority pursuant to projects of the Rural Electrification Administration offered by the complainants (comp. exs. 419-434, 649, 162-181, r. 3249-3331, 3554, 2895-2960), as well as the depositions of the officers of the cooperatives explaining the details of their relationship with the latter agency (r. 1334, 1353, 2258, 2269). The only evidence excluded consisted of letters exchanged between individual employees of the various agencies and intradepartmental communications.

(b) *The trial court acted within its discretion in denying complainants' motion for leave to take the deposition of the Public Works Administrator* (assignment 32). Appellants, on page 234 of their brief, have pointed to the rulings of the trial court denying leave to take this deposition as another example of prejudicial error. Significantly, appellants omit all reference to the circumstances under which these rulings were made. The significant facts are: (1) The complainants had every reasonable opportunity to take this deposition and indeed far more opportunity than that afforded by law; (2) the deposition of the Deputy Administrator, who had full access to the files of the Public Works Administration, was taken and admitted into evidence, along with numerous exhibits identified and authenticated by him; and (3) the evidence complainants proposed to secure from Administrator Ickes was wholly irrelevant. The grounds upon which the ruling of the court was based are

stated in its opinion (r. 381). The ruling is supported by the authorities. *Glades County* v. *Detroit Fidelity & Surety Co.*, 65 F. (2d) 252 (C.C.A. 5th, 1933); *Meyers* v. *Occidental Oil Corp.*, 283 Fed. 703 (D.Del., 1922). See *Duke Power Co.* v. *Greenwood County*, 91 F. (2d) 665 (C.C.A. 4th, 1937); and also the record in *Alabama Power Co.* v. *Ickes*, 302 U.S. 464.

5. NO REVERSIBLE ERROR WAS COMMITTED IN THE RULINGS OF THE TRIAL COURT EXCLUDING CERTAIN OFFERED EVIDENCE ON RATES (assignments 13-16, 18, 19, 34).

The excluded evidence referred to in this group of assignments, and argued on pages 236 to 238 of appellants' brief, includes (1) a comparison of the Tennessee Valley Authority rate structures with those of complainant power companies (assignments 13, 34, r. 720, 725); (2) the "regulatory" and damaging effects, however remote, of the Tennessee Valley Authority rates (assignments 14, 16, r. 720, 721); and (3) an inquiry into Tennessee Valley Authority costs, which would necessarily have involved the court in an investigation of the costs of the dams and in the difficult and intricate problem of allocating costs among the different functions such as navigation, flood control, national defense, fertilizer, and power (assignments 15, 16, r. 720, 721).

The record demonstrates that the court had great difficulty in securing from complainants any clear statement as to the relevancy of this testimony. Complainants shifted time and again from one ground to another as the weakness of their position became apparent. Toward the close of their affirmative case,

complainants finally attempted some definite statement of the various grounds on which they regarded this evidence as pertinent. They stated that it was offered for the purpose of showing (1) the nature, extent, and imminence of damage; (2) the regulatory and confiscatory character of the rates; and (3) that the Tennessee Valley Authority has announced rate schedules below cost, in violation of its governing statute. This is the substance of the argument made in appellants' brief (p. 236).

The trial court excluded the evidence on the grounds (a) that the extensive proof proffered by complainants would show no more than the type of damage and the type of "regulation" implicit in the concessions of the Authority, noted below, regarding their rate schedules, and therefore such evidence would be purely cumulative and would unnecessarily involve the court in protracted, complicated, collateral inquiries (r. 946, 1414); and (b) that the detailed proof offered in regard to each independent company and in regard to specific instances relating only to particular complainants did not support the common cause of action (r. 945-946). The statutory point raised by appellants does not affect the soundness of the court's ruling. Since there is no mandatory provision in the Tennessee Valley Authority Act that the Authority's rates be fixed to cover costs, there can be no violation of any duty owed to appellants.

There is ample evidence in the record showing the schedule of rates at which the Authority's power has been sold. The rates are set out in all the contracts

admitted into evidence. And the Government conceded on the record that:

> . . . (1) the wholesale rates of the Tennessee Valley Authority are substantially lower than the wholesale rates of any of the complainants [r. 943].
>
> (2) The retail rates charged by the municipalities and cooperatives purchasing power from the Authority are substantially lower than the retail rates of any of the complainants [r. 944].
>
> (3) The rates charged by the Authority to the rural customers which it serves are substantially lower than the rates for rural service of any of the complainants [*ibid.*].
>
> [4] . . . the Authority's rates to the industrials are substantially lower than the published rates of the complainants [r. 946].

This concession is incorporated in the findings of fact (fdgs. 120-123, r. 628, app. I, 61). The court further found:

> Tennessee Valley Authority has published these rates generally, and they are well known throughout the Tennessee Valley area [fdg. 124, r. 628, app. I, 61].
>
> Substantial future damage to complainants will result from competition with TVA [fdg. 125, r. 628, app. I, 62].

The testimony offered by complainants was intended to prove that (1) in consideration of the amount of power available at the projects of the Authority, the

power would have to be marketed in substantial parts of the territory served by complainants (r. 1415-1416), and (2) to the extent that the power generated at the Authority's projects would be distributed in competition with complainants, the latter would have to meet the rates at which such power was sold (by the municipalities and cooperatives, it should be noted) in order to retain their business (r. 1416). The trial court received all the evidence offered by complainants on the first point (r. 1253-1259, 1268-1274, 1291-1300, 1451-1463, 1470-1480), as well as the testimony offered by the Government in rebuttal (r. 2087-2107; see also fdg. 238, r. 652, app. I, 95), and the second point was merely a self-evident conclusion.

Moreover, complainants' witnesses Moreland, Frothingham, and others were permitted to give extensive and speculative opinion testimony regarding the effects of the Authority's rates on complainants generally. The court admitted into evidence the opinions of these witnesses as to whether and how the sale of Tennessee Valley Authority power at the Authority's rates would result in curtailing the market of the complainants generally, in reducing the values of their physical properties, in depressing their securities, and in impairing their ability to refinance (r. 1303-1320, 1470-1480; comp. exs. 507-511, r. 3347-3352).

The court drew the line against detailed evidence regarding the different complainant companies singly, such as that offered by the witnesses Longley (r. 972), Stanley (r. 935-957), Newton (r. 1419), Robinson (r. 1265), Addinsell (r. 1427), and Lefferson (r. 1412).

The soundness and reasonableness of the court's position appears from the following statement:

> . . . the Court has in mind constantly in this case that there are a large number of complainants here; the fact that an attack is made upon the bill upon the ground it was multifarious.
>
> . . . the court considers that to pursue this question of rates with reference to the rates of the TVA and the rates of the various, multifarious complainants, would be going into an infinite amount of detail, whereas the ultimate conclusion would be fairly expressed with reference to these complainants by the concession made that the rates are substantially lower, both wholesale and on resale.
>
> . . . the Court is endeavoring to carry out the holding of the District Court and of the Circuit Court of Appeals, that you all have a common interest, and we are endeavoring not to go into the diversities of the peculiar situations, except in so far as may be competent, material and relevant under this bill in which you allege that you have a common interest [r. 945-946].

Apart from the cumulative and multifarious character of the evidence, the Government submits that the argument on the merits of this case demonstrates its irrelevancy. It is, of course, irrelevant to the issues of the validity of the dams and the acquisition of power therefrom; and in the disposal of that power, as has been shown, broad discretion is vested in Congress to fix the terms. See pages 106 *et seq., supra.* Appellants'

argument on relevance is that the methods of disposition authorized by the statute have the inevitable effect, through competition and example, of "regulating" the intrastate operations of the appellant companies and are therefore beyond the power of Congress. This notion of regulation finds no support whatever in the authorities, as appears from the argument on the merits (*supra* pp. 138-139, 154 *et seq.*).

Having failed to lay a proper basis for presenting this minute and extensive material on cost and rates, complainants finally, toward the close of their affirmative case, introduced for the first time the contention that the evidence was relevant to show a violation of a statutory requirement. The following provision of section 14 of the act is said to be violated (br. 236-237):

> It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power . . .

It is difficult to see how this provision could be construed to impose a mandatory duty upon the Authority to charge any particular rate. According to the terms of that section the fixing of the rates is clearly within the discretion of the board. The statute creates no duty toward appellants (sec. 14). These provisions were added to section 14 of the act by amendment in

1935. It is plain on the face of section 14 that it contains no mandatory direction to the board. Language could hardly express more clearly the intention of Congress that the rates were to be determined at the sole discretion of the board. Furthermore, any possible construction that the directions of the Congress are mandatory and the exercise of the board's authority to fix rates is subject to review by the courts is clearly repudiated by the legislative history of the provision.

As the legislative history shows, the language in question was adopted as a substitute for language previously proposed which appeared to be mandatory and to invite litigation. The language finally adopted in the statute was, according to the stated purpose of its sponsors, designed to preclude any possibility of litigation and to constitute merely a declaration of policy, with the determination of rates in the sole discretion of the board.

As originally proposed to the House by the Committee on Military Affairs (H.R. 8632, 74th Cong., 1st sess.), this section was to have read:

> After July 1, 1937, the Authority shall not sell the surplus power or chemicals produced by it anually below the cost of the aggregate production for each year [p. 8].

In this form the provision was obviously mandatory. This provision, however, was attacked vigorously within the committee as an "invitation" to "protracted litigation" by "private-utility interests," and it was pointed out that unless revised it would "open the door

to endless litigation involving all the perplexing and vexatious questions of fair value" and "as to the allocation of relative costs on the various projects as between navigation, flood control, national defense, and surplus power" (*id.* at 31).

The sharp division among the committee on this provision precipitated a lively controversy on the floor of the House and it was finally stricken out in favor of the clause now appearing in the act. In the debate on the amendment finally adopted, it was emphasized that the express purpose of the amendment was to leave the determination of rates within the discretion of the board and to avoid subjecting its discretionary action to judicial review (79 Cong. Rec., 74th Cong., 1st sess., pp. 10961-10966).

The remarks of Chairman McSwain of the Military Affairs Committee of the House in responding to questions on the floor plainly revealed the general understanding of the effect of the amended section 14:

> Now, we realize, I think, that we are not now in a position to say what the cost is. We do not have the information. We are not in a position now to say that it shall go on a cost basis right now. I submit that we are not in a position now to say exactly at what definite date in the future we can go on a cost basis . . .

In conference the House amendment was still further liberalized by the insertion of the phrase "in the opinion of the board." The Congress fully appreciated that the guiding purpose and effect of the amendment

was to avoid any possibility of litigation over rates, and, at least for the time being, to leave their determination in the discretion of the board, subject only to the advisory declaration of policy by the Congress and such review as it might care to make.

Far from affording any reason for admitting this evidence, section 14, viewed in the light of the legislative history, conclusively illustrates the soundness of the trial court's rulings excluding detailed evidence on rates and costs. Common-sense considerations of orderly trial administration demanded the exclusion of such an endless and futile inquiry. Particularly is this true since, as has been noted, the rates of the Authority were introduced in evidence and were acknowledged to be lower than the rates of complainants. The admission of this voluminous detail on cost, valuation, allocation, and rate structure would have confused the issues, and would have had the effect of shifting the focus of the inquiry from the basic issues of constitutional authority to irrelevant or collateral matters.

6. NO REVERSIBLE ERROR WAS COMMITTED IN THE RULINGS OF THE TRIAL COURT EXCLUDING CERTAIN ITEMS OF EVIDENCE OFFERED TO SHOW THE RELATION OF THE AUTHORITY TO RURAL COOPERATIVES AND MUNICIPALITIES (assignments 34, 35, 36, 41, 42).

These assignments are discussed together for the reason that they all purport to relate to the exclusion of evidence concerning the nature of the relationship existing between the Authority and the municipalities

and cooperative associations purchasing electricity from it at wholesale (br. 230). In particular, appellants complain of the exclusion of the testimony of the witness Smith (r. 1443-1447). which they claim would have shown subsidies to municipal customers of the Authority (br. 230); testimony taken by depositions of the witnesses Bandy and Pittman dealing with the activities of the North Georgia Electric Membership Corporation, which they claim would have shown the Authority's domination, control, and persuasion of cooperative associations (r. 1329-1330, 1337-1338, 1355-1362; br. 230); testimony of the witness Eaton (r. 1434-1437); and executive messages of the Governor of Tennessee (comp. exs. 686-687, r. 3605, 3617), which they claim would have shown that the Authority had prepared and sponsored special State legislation in Mississippi and Tennessee (br. 231). A reference to the record is sufficient to show that even if otherwise competent this evidence was purely cumulative and unnecessary to the decision of any of the issues in the case.

A large portion of the record is taken up with testimony and documentary evidence designed to set out in complete detail the history, background, and actual mechanics of the relationship between the Authority and its wholesale customers. The best evidence of these facts would appear to be contained in the contracts between the Authority and these customers, and the other related documents and records setting forth in detail the story of how the transmission facilities serving these customers were constructed and financed, as well as evidence as to the manner in which such facilities

were operated by such customers. The record contains all of the power contracts between the Authority and its wholesale customers, including both municipalities and cooperatives (comp. exs. 119-145, 196, 224, r. 2846-2889, 3004, 3026). The record also contains all of the construction contracts, as well as sale and loan contracts, under which the facilities of the cooperative associations were constructed and financed (comp. exs. 162-181, r. 2895-2960). Complainants had access to and offered in evidence the charters, franchises, certificates of incorporation, bylaws, and minutes of meetings of the various cooperative associations (comp. exs. 267-321, 380-384, 387-389, 398-408, 943-953, r. 3040-3066, 3153-3173, 3189-3238, 3996-4002). Furthermore, the record contains all of the resolutions of the Board of Directors of the Authority authorizing or approving the construction, leasing, or sale of facilities and the execution of contracts with the various municipalities and cooperatives (comp. exs. 516-570, 575-577, 582-589, 592-616, 618-626, r. 3357-3384, 3389-3401, 3421-3476). The trial court's extremely liberal attitude in the admission of documentary evidence with even the remotest bearing upon this issue is further illustrated by the fact that all of the Public Works Administration applications and loan-and-grant agreements involving municipalities within the Tennessee Valley were admitted in evidence over the objection of counsel for the defendants (comp. exs. 419-427, 430-445, 451-460, 467, 468, 470-479 r. 3249-3316).

It is further to be noted that the complainants were engaged in the taking of depositions almost entirely devoted to this subject from the middle of July until

August 1, 1937. The selection of the witnesses and the subject-matter to be covered by the depositions were matters entirely within the control of complainants. They had full and complete opportunity to obtain by deposition the testimony of all persons familiar with the facts. They took five depositions of the persons in responsible charge of operating these corporations (Pittman, r. 1334; Carmack, r. 1353; Bandy, r. 1356; Cowley, r. 2258; Hutchinson, r. 2269). These depositions contained detailed evidence on the subject, and all of them were admitted, either on behalf of complainants or on behalf of defendants, except the portions relating exclusively to the Georgia Power Company.

The above general summary of the state of the record is sufficient to show the lack of substantial merit in this group of assignments. However, a brief reference to the items specifically mentioned in appellants' brief may be in order.

With respect to the exclusion of the testimony of the witness Smith, appellants now claim much more for this testimony than was claimed by counsel at the trial in his offer to prove. As appears from the record the excluded testimony related solely to the contention that the Authority, under the terms of the contract between it and the city of Athens, Alabama, which had long owned its own distribution system and is served by the Authority through facilities purchased in the contract of January 4, had rendered certain advisory services as to the method of keeping the accounts of electrical operations of the city and had engaged in

certain promotional activities during the early stages of the contractual relationship. As stated by counsel in his offer to prove, the purpose of this testimony was to show "that the so-called yardstick set up is a sham" (r. 1446). The record shows that none of the complainants had any facilities in this city (r. 1443, 1446). Certainly they have no standing to complain of the rate structure of such a municipality or its contractual relations with others.

The deposition of the witness Bandy and the portion of the deposition of the witness Pittman excluded by the court related exclusively to the competitive situation existing between the North Georgia Electric Membership Corporation and the Georgia Power Company. The trial court throughout the trial consistently ruled that since the Georgia Power Company had been effectively enjoined by a decree of the United States District Court for the Northern District of Georgia from taking any part in these proceedings, all evidence relating solely to the operation of that company should be excluded. *Georgia Power Co.* v. *Tennessee Valley Authority*, 17 F.Supp. 769 (N.D.Ga., 1937), *aff'd*, 89 F. (2d) 218 (C.C.A. 5th, 1937), *cert. denied*, 302 U.S. 692. Furthermore, the evidence contained in these depositions was almost identical with and purely cumulative of the evidence contained in the other depositions admitted in evidence with respect to the organization and operation of the various rural cooperatives in the area.

7. THE TRIAL COURT DID NOT COMMIT REVERSIBLE ERROR IN ADMITTING IN EVIDENCE PORTIONS OF THE TESTIMONY OF DIRECTORS OF THE AUTHORITY BEFORE CONGRESSIONAL COMMITTEES OFFERED BY DEFENDANTS TO EXPLAIN AND COMPLETE FRAGMENTARY EXCERPTS FROM THE SAME DOCUMENTS OFFERED IN EVIDENCE BY COMPLAINANTS (assignment 7).

This assignment offers another example of the type of rulings which appellants regard as unfair. While claiming for themselves the right to offer excerpts from the testimony of the directors before congressional committees, appellants objected to the admission of any portions of these same hearings when offered by the defendants (assignment 7, r. 717; br. 225). The trial court received these hearings in evidence over the Government's objection on the theory that they were in the nature of official reports of the Authority to Congress (r. 894). The refusal of the court to admit "fragments" or "isolated or garbled" excerpts, and its requirement that the complete hearings be introduced, was clearly proper (r. 915, 918). A comparison of the excerpts offered in evidence to show the motives of the Authority's directors with those offered by the Government from the same statements demonstrates the necessity of these rulings (*cf.* br. 43-44, 65-66 with r. 4276-4279, 4287-4288, 4290-4291, 4297-4298, 4321-4322, 4343).

Moreover, it is obvious that no harm was done complainants by the admission of the whole document, since they were permitted to draw the court's attention to the particular excerpts which they considered pertinent (r. 919). There was thus no danger that

the court would mistakenly think that complainants endorsed the entire hearings.

Appellants seem to contend that because their theory of offering these excerpts was that they were admissions against interest, the court erred in considering any portions not offered by complainants (br. 225). This position is untenable, for the rule of documentary completeness would require the admission of other portions of the document, even under appellants' theory of admission against interest. The law is settled that "the opponent, against whom a part of an utterance has been put in, may, in his turn, complement it by putting in the remainder, in order to secure for the tribunal a complete understanding of the total tenor and effect of the utterance" (4 Wigmore on *Evidence* (2d ed., 1923) sec. 2113). *Security Trust Co.* v. *Robb*, 142 Fed. 78 (C.C.A. 3d, 1906); *Davis* v. *Forrest*, 7 Fed. Cas. 129 (C.C.D.C., 1811).

8. THE COURT DID NOT COMMIT REVERSIBLE ERROR IN EXCLUDING EVIDENCE OF INTRADEPARTMENTAL DISCUSSIONS, CONSIDERATIONS, RECOMMENDATIONS, AND REPORTS (assignments 2 (a), 2 (b), 6, 25).

In this group of assignments of error appellants object to the exclusion of various excerpts from corporate minutes relating to "consideration" of "plans" and "policies" (assignments 2 (b), 6, r. 716, 717; br. 229) and to various correspondence between Director Lilienthal and the President of the United States and the Federal Power Commission discussing the situation in regard to rural electric service in the Tennessee Valley (assignment 25, r. 723; br. 232).

As noted above, the court admitted into evidence all resolutions of the Board of Directors of the Authority authorizing action and all records of action actually taken or authorized. It drew the line between discussions, recommendations, negotiations, preliminary plans, and preliminary reports on the one hand, and official action and authorization on the other hand (r. 905). As in the case of the speeches and press releases, the grounds for this distinction were found in the speculative and remote character of this type of evidence and in the rulings of this Court to the effect that the validity of executive action of public officials must be determined by their official acts and not by what they say, consider, or hope.

A brief reference to the items under consideration is sufficient to demonstrate that they do not represent any concrete or official action taken by the Tennessee Valley Authority. Appellants' own description of them is in terms of "consideration," "plans," "objectives," and "policies." (See assignment 2 (b), r. 716.) The excerpts from the "corporate minutes" referred to on page 229 of appellants' brief consist of discussions in board meetings during the early months of the existence of the corporation. None of these excerpts authorized any action. The suggestion that these excerpts were introduced into the instant case by defendants' answer is misleading (br. 229). These excerpts appear as evidence offered by the complainants in the *Ashwander* case, the entire record of which was attached as an exhibit to defendants' answer in this case for the limited purpose of supporting the special

defense of *res judicata* set up against the Alabama Power Company (r. 251). The correspondence referred to in assignment 25 (r. 723), as already stated, was of a purely informational and advisory character. Here again the only purpose that such materials can serve is to indicate the motives and mental attitudes of their authors.

At most, such discussions and communications constitute only some of the many considerations leading to board action. There can be no doubt that the trial court was well within its discretionary powers in refusing to become involved in the volume of intradepartmental discussions and individual reports requested by petitioners. The court's ruling was in accord with the decision of this Court in the recent case of *Baltimore & O.R.Co.* v. *United States*, 298 U.S. 349, in which case complainant attacked the reasonableness of certain rates established by the Interstate Commerce Commission and sought to go behind the findings of the Commission on the basis of the examiners' report. This Court sustained the refusal of the trial court to consider the examiners' official report stating:

> That report is not a part of the record. At the trial appellants offered it in evidence. The commission objected to it on the ground that it is "a mere recommendation of an employee of the commission to the commission." The court sustained the objection. The report of the commission does not disclose the examiners' recommendations but states that its conclusions differ somewhat from those proposed by the examiners. For the reason

> given in the commission's objection, upon which the court excluded what the examiners proposed to the commission, the appellants would not have been justified in raising the question of confiscation upon the proposed report [pp. 370-371].

See also *United States* v. *Fox River Butter Co.*, 61 Treas. Dec. 1047, *cert. denied*, 287 U.S. 628, wherein the United States Court of Customs and Patent Appeals held the report made by the Tariff Commission to the President irrelevant and inadmissible to show the basis of the President's change in rates, on the ground that the action contemplated by the statute was to be taken by the President and not by the Commission.

There is something more involved than the lack of probative value of this type of evidence. Practical reasons of policy requiring its exclusion have been recognized even where intraoffice memoranda of private corporations are concerned. See *Carroll* v. *East Tenn., Va. & Ga. Ry. Co.*, 82 Ga. 452 (1889); *Missouri, K. & T.Ry.Co.* v. *Want & Co.*, 179 S.W. 903 (Tex. Civ. App., 1915); *Patterson & Roberts* v. *Quanah, A. & P.Ry.Co.*, 195 S.W. 1163 (Tex. Civ. App., 1917). Where the action of a public agency is in issue, the practical reasons for exclusion are greatly enhanced by considerations of public policy. A rule subjecting all intraoffice discussions and conferences to use as formal evidence in litigation would stultify preliminary inquiries and would hinder the free expression and consideration of different points of view vital to sound judgment on important public questions. See

Smith v. *The East India Co.*, 1 Ph. 50, 41 Reprint 550 (1841); *Kurrle* v. *Mayor of Baltimore*, 113 Md. 63 (1910); *Texas Utilities* v. *Ickes* and *Alabama Power Co.* v. *Ickes*, record, vol. II, p. 435 (per Wheat, C.J.). *Cf. Carroll* v. *East Tenn., Va. & Ga. Ry. Co., supra.*

The executive messages of the Governor of Tennessee (assignment 41, r. 727) and the telegram from the Authority to the Governor of Alabama (assignment 42, r. 727) setting forth certain suggested legislation recommended by the Authority are referred to on pages 231 and 232 of appellants' brief. As stated in the assignments, the purpose of this evidence was to show that the enabling legislation enacted by the legislatures of Alabama, Tennessee, and Mississippi was prepared and sponsored by representatives of the Authority. The court correctly held that complainants would be permitted to show the enactment of the legislation and what had been done under it, but that the court would not receive testimony as to what was said by supporters or opponents of the legislation at legislative hearings (r. 1435-1438). The soundness of this ruling would not seem open to question. When the legislation in question was duly enacted by the properly constituted legislative bodies of the respective States, it became the law of those sovereignties, and any inquiry by the courts into the nature of the support or opposition of such legislation would be clearly improper under the settled doctrines of this Court. *Cf. Fletcher* v. *Peck*, 6 Cranch 87, 130-131; *American Banana Co.* v. *United Fruit Co.*, 213 U.S. 347.

9. THERE WAS NO REVERSIBLE ERROR IN EXCLUDING CERTAIN DETAILED EVIDENCE PURPORTING TO SHOW EXTENT OF DAMAGES (assignments 18-23, 26, 49).

Some eight or ten of the assignments of error relate to the exclusion of evidence purporting to show the extent and nature of the damages to complainants as the result of the Authority's activities. Apart from the obvious cumulative nature of this evidence, which in itself would justify its exclusion, all of it is so speculative and remote as to be entirely valueless and irrelevant.

Complainants were permitted to introduce ample evidence on the question of actual damage. At least one representative from each of the eighteen companies was permitted to testify regarding the facilities of each company and to facts implying that the Authority's power sales would displace complainants' markets. In addition, the witness Frothingham freely testified regarding the damage which, in his opinion, would result to complainant companies generally by reason of their inability to borrow money at low interest rates (r. 1303-1319). Such evidence as that offered through the witness Addinsell was excluded because it was either merely repetitious of Frothingham's testimony or consisted of details regarding specific individual complainants (r. 1425-1434). The witness Moreland was permitted to testify extensively on the likelihood that the Authority would displace the facilities and service of complainants (r. 1470-1480). While his specific estimates on the money value of damage were excluded, he was permitted to testify at length on the extent and

character of the damage which would result to complainants from the marketing of the Authority's power (r. 1470). The witness Ford testified generally as to the effect upon complainants should they be forced to reduce their rates to meet those charged by the Authority (r. 1126-1127). And finally, the court found that "Substantial future damage to complainants will result from competition with TVA" (fdg. 125, r. 628, app. I, 62). As the court stated during the course of the trial, this finding "is the only ultimate fact which could be established by entering in detail into the evidential facts as to rates" (r. 1414) or by going into "estimates of money damage" (r. 1480):

> . . . to go into these details would lead us into a remote and collateral inquiry which would not affect the ultimate result [r. 1414].

The excluded evidence consisted merely of exhaustive detail concerning every remote possibility of damage and estimates in dollars of the damages expected to result to each individual complainant. Appellants' theory, as frankly stated in their brief, is that anything tending to show "the size, nature and effect of the entire unitary scheme of TVA" (br. 229) should have been admitted into evidence.

A brief summary of this proposed testimony is sufficient to demonstrate its inadmissible character as well as the confusion that would have resulted if the court had given free rein to complainants' broad theory of admissibility of evidence: estimates as to the amount of money damages to each of complainants, assuming

they were forced to reduce their rates (assignment 18, r. 721); detailed charts estimating the money damages to each of complainants due to expected loss of use of facilities (assignment 19, r. 721); estimates of damage due to inability to borrow money at low interest rates (this testimony including some ten detailed charts showing a comparison of the yield of the bonds of each of complainant power companies with Standard Statistics Company's average yields of public-utility bonds) (assignment 20, r. 721); testimony as to the depressed value of dams that the Government might possibly acquire sometime in the future under the Federal Water Power Act, including detailed accounts of the work done by complainants on these dams and the cost of such work, the theory being that such depressed values may affect the price the Government will pay if it shall ever exercise its right to acquire such dams (assignments 22, 23, r. 722, 723). It should be noted that the theory upon which this proof was offered was that by the grant of a license under the Federal Water Power Act the Federal Government granted a special privilege to sell the electricity generated at the dam which could not be impaired by future action of the Federal Government—in short, a discredited theory of perpetual estoppel against the Government by its grant of a license. (See *Tennessee Elec. Power Co.* v. *Ickes*, 22 F.Supp. 639 (D.C., 1938), *aff'd*, 58 Sup. Ct. 947; *Carolina Power & Light Co.* v. *South Carolina Public Service Authority*, 94 F. (2d) 520 (C.C.A. 4th, 1938), *cert. denied*, 58 Sup. Ct. 1048.

Equally incompetent and irrelevant was the proposed testimony of Willkie offered to establish efforts of some of the complainants to minimize their damages (assignment 21, r. 722; Willkie, r. 1505), and the proposed testimony of the witness Collier regarding the situation in the State of Georgia (Miller, r. 1110; Longley, r. 995). If this testimony of the witness Willkie had been admitted on the stated theory of showing the willingness of the Commonwealth and Southern companies to purchase power from the Authority, the court would have had to consider such collateral questions as the action of the complainant The Tennessee Electric Power Company in electing to construct an expensive steam plant at Nashville, Tennessee, rather than to purchase power from the Authority (r. 974). As the court pointed out in regard to the collateral and remote character of the Collier testimony, complainants' theory for its admission would have opened the door to evidence concerning any other noncomplainant power company within possible transmission distance of any of the Authority's projects (r. 997-998).

On pages 226-227 of their brief appellants complain of the ruling of the trial court excluding proposed testimony offered to show the average annual value of agricultural crops on lands which had been acquired by the Authority as a part of the reservoir projects. It is clear that the sole purpose of this testimony was to initiate a comparison of the detailed costs of the Authority's projects with the benefits to be derived from one particular function. The fallacy of attempting to determine the constitutionality of the

dams constructed under the statute by this method of comparative costs has been fully discussed in the argument on the constitutional question.

The letters from municipalities offered by the witness Stanley (assignment 26, r. 723), containing statements that they were proposing to construct their own distribution systems in order to secure power from the Authority, were ruled out as incompetent hearsay since the persons who wrote them did not appear to testify to them (r. 956); and they were also irrelevant, there being no legal damage to a private utility by reason of the fact that an authorized public plant draws its customers away by lower rates (r. 1037-1038). *Cf. Walla Walla* v. *Walla Walla Water Co.*, 172 U.S. 1; *Springfield Gas Co.* v. *Springfield*, 257 U.S. 66.

10. OBJECTIONS TO THE QUALIFICATIONS OF AUTHORITY'S WITNESSES WERE FRIVOLOUS (assignments 50, 51, 52, 58).

Appellants refer to most of these assignments in the section of their brief on "the limitation of the scope of rebuttal" (br. 243-247). Appellants' objections to the qualifications of the Government's witnesses on flood control and navigation can hardly be taken seriously (assignments 50, 51, r. 729; br. 246). A review of the record on the qualifications of these witnesses conclusively shows their high degree of training and experience in the subjects on which they testified (Bowman, r. 1689; Woodward, r. 1772; Kimball, r. 1822; Floyd, r. 1887; Alldredge, r. 2039; Barker, r. 1940; Okey, r. 1902; Brodie, r. 2021).

Appellants' insistence that the testimony of these witnesses varied in substantial respects from the official reports and statements previously made by the directors of the Authority is not supported by the record. The fact is that in all essential respects the testimony of the witnesses, both with respect to the design of the structures and the methods to be followed in their operation, was identical with the plans previously outlined in documents available to the complainants at the trial. The only variations involved matters of detail, such as the additional height of the Gilbertsville Dam, which could in no way affect the contentions of the parties (see *infra* pp. 256-258).

The objection that the witnesses testifying in regard to defendants' dam-construction program, plans and designs for dams, and methods of operation were incompetent to prove official action (assignment 58, r. 732; br. 246) is likewise without substance. As the trial court pointed out, these witnesses were the very men actively engaged in and in charge of the work and qualified by experience to testify on these matters (r. 1791, 2238). They were acting within the duties specifically and duly conferred upon them by board resolution (def. ex. 65, r. 4078). As appears from the record, the witness Woodward had been charged by board resolution with the duty of supervising and controlling the operation of all of the reservoirs (r. 1776; def. ex. 41, r. 4065), and the witness Bowman was directly in charge of the preparation of the plans and tentative figures upon which the design of the projects is based (r. 1717).

Complainants' objection that the witnesses could not testify to definite and final decisions arose not from the fact that the witnesses were not competent but from the fact that in the very nature of things they could testify only as to the present status of the Authority's dam-construction program. The position of complainants was that since the witnesses could not guarantee as definite and final the data they gave regarding the design and operation of dams not yet completed, the court should accept estimates and proposed plans stated in early published reports of the Authority, irrespective of the fact that it could be proved that such estimates and some details had been changed with continued investigations and studies. In other words, complainants insisted upon the right to challenge the legality of specified dams still in the exploratory and blueprint stage, but denied the right of the Authority to produce the only available evidence as to the existing status of the dams. The indefiniteness was inherent in the effort to litigate the validity of dams on which construction had not yet commenced and the preliminary plans of which had not yet been finally decided.

The objection to the evidence of the witness Sargent regarding the design and construction of the Sacandaga Reservoir in the State of New York (assignment 52, r. 730; br. 246) is also groundless. This testimony was offered and admitted for the purpose of showing the past experience of the witness Sargent in operating dams, in order to qualify him (r. 1674-

1680), and it was clearly proper and pertinent for this purpose.

11. THERE WAS NO REVERSIBLE ERROR IN THE COURT'S RULINGS AS TO THE SCOPE OF CROSS-EXAMINATION (assignments 3, 53-57).

Appellants' assignments of error on the rulings on cross-examination are of two types (br. 241-243): (a) the ruling of the court that the cross-examination would not be limited to matters brought out on the examination in chief (assignments 3, 57, r. 716, 732; br. 241); and (b) the rulings of the court refusing to permit cross-examination of the Authority's witnesses regarding the testimony of other witnesses given in other cases or other proceedings (assignments 53-56, r. 730-732; br. 242).

(a) With respect to the scope of cross-examination of complainants' witnesses it should be noted that the assignments of error are much broader than the actual rulings of the court. It is true that the trial court did state in an oral opinion delivered from the bench that it would not limit cross-examination to matters brought out in chief "in view of the number of complainants, the number of witnesses, and the fact that the witnesses are drawn from widely scattered points from a number of several states" (r. 848). In this oral opinion the court pointed out:

> A strict adherence to the rule [that cross-examination shall be limited] . . . without the qualifi-

> cation laid down by the Supreme Court, would compel many witnesses to travel many miles for direct examination, and either to remain here in Chattanooga in attendance upon the trial for an uncertain number of days, or to come back again for the purpose of examination by opposing counsel. We believe that this decision which we have arrived at in the interests of economy and of the convenience of all parties and the witnesses, which will be carried out for the equal benefit of every litigant, lies within our sound discretion as defined by the Supreme Court of the United States [r. 848-849].

Counsel were informed that this ruling should not be regarded as a general ruling, but that specific objections should be made to each question which counsel regarded as being beyond the proper scope of cross-examination (r. 779). This practice was consistently followed throughout the trial. It should be further noted that, with the exception of the cross-examination on depositions, all the examination to which error is assigned was directed to witnesses who were officials of the complainant companies testifying in general terms to the businesses and facilities of those companies and the alleged effect of the Authority's activities upon those businesses and facilities.

Furthermore, it is difficult to understand how appellants can claim any great prejudice from the position taken by the court with respect to cross-examination, since the benefits of these rulings were extended to both parties alike (r. 848). In fact, when the actual rulings are examined, it appears that prac-

tically all of the questions propounded on cross-examination to which complainants' objections were overruled were, in fact, related to the subject of the direct examination within the meaning of the decisions of the federal courts. For instance, in taking the depositions of certain officers of rural electric membership cooperatives the complainants identified and offered in evidence a large volume of documentary proof, including the charters and contracts of the membership corporations. It is clear that the purpose of the examination of these witnesses and the identification of these documents was to prove the theory of the complainants that these cooperatives were, in fact, organized by the Authority for the purpose of competing with the complainants in the rural areas, and that the cooperatives have no independent existence but are merely creatures of the Authority, operated and controlled by it. There is no other theory upon which this evidence, adduced upon direct examination, could be relevant to any of the issues in this case. The testimony brought out by defendants on cross-examination of these witnesses was purposely directed toward a rebuttal and explanation of the inferences which were inherent in the evidence developed upon direct examination (r. 1328-1347).

Even if it were true that the so-called strict federal rule limiting the scope of cross-examination to the subject-matter of the direct is to be applied rigidly in all classes of cases and with reference to all classes of testimony without any discretionary power in the trial courts, the decisions of the federal courts make it clear

that the rule is not to be applied to prevent searching cross-examination with respect to all matters opened up on direct examination, and under the decisions such cross-examination may extend to details never specifically mentioned on direct so long as it appears that such subjects are related to the general subject-matter of the testimony in chief. It is well settled that where the testimony of a witness on direct examination tends to create an inference as to the existence of facts not directly testified to, cross-examination properly extends to any matters tending to rebut such inferences. *Davis* v. *Coblens*, 174 U.S. 719.[54]

Even if the record supported the proposition that the trial court consistently permitted the cross-examination of complainants' witnesses upon matters having no relation to the direct examination, such action would clearly not constitute reversible error under the decisions of this Court. The rule invoked by appellants is one of administrative convenience, designed to expedite the business of the court and to avoid the unnecessary confusion of issues. The decisions make it clear that where a rigid adherence to the rule would defeat rather than accomplish these purposes, it is sufficiently flexible to permit of an application which will avoid defeating the very purpose for which the rule was designed. The reasons stated by the trial court,

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[54] See also *Meyer* v. *United States*, 220 Fed. 822 (C.C.A. 5th, 1915); *Hardy* v. *United States*, 256 Fed. 284 (C.C.A. 5th, 1919); *Resurrection Gold Min. Co.* v. *Fortune Gold Min. Co.*, 129 Fed. 668 (C.C.A. 8th, 1904); *Commercial State Bank* v. *Moore*, 227 Fed. 19 (C.C.A. 8th, 1915); *Austin* v. *United States*, 4 F. (2d) 774 (C.C.A. 9th, 1925); *Minner* v. *United States*, 57 F. (2d) 506 (C.C.A. 10th, 1932); *Tinkoff* v. *United States*, 86 F. (2d) 868 (C.C.A. 7th, 1936).

quoted above, were ample to support a relaxation of the rule in this case.

It would be difficult to conceive of a set of circumstances more clearly justifying the exercise of the discretion of the court. The wide latitude of that discretion was clearly stated by this Court in *Wills* v. *Russell*, 100 U.S. 621. In that case the appellant had assigned error to the rulings of the trial court overruling objections to questions propounded upon cross-examination. This Court conceded in the opinion that the particular cross-examination involved related to matters not covered by the direct examination but overruled the assignment, stating:

> Cases not infrequently arise where the convenience of the witness or of the court or the party producing the witness will be promoted by a relaxation of the rule, to enable the witness to be discharged from further attendance; and if the court in such a case should refuse to enforce the rule, it clearly would not be a ground of error, unless it appeared that it worked serious injury to the opposite party [p. 626].

All of the rulings of the trial court upon this question are well within the rule of discretion as above stated and reiterated in *Davis* v. *Coblens, supra*, where this Court said:

> The question of plaintiff's counsel was a general one and opened many things to particular inquiry. The extent and manner of that inquiry was necessarily within the discretion of the court, even

though it extended to matters not connected with the examination in chief [174 U.S. at 727].

The reasons for strict adherence to the limited rule of cross-examination in cases tried before a jury are scarcely applicable to a trial of an equity case before three experienced judges. As the presiding judge stated at the trial: "This court is capable of following the proof and sifting it out, and to decide what proof is offered by what party, and what constitutes the complainants' case, and what constitutes the defendants' case" (r. 1333).

The claim of appellants that they were seriously prejudiced by the rulings of the court upon cross-examination in that they were thus prevented from calling the directors or employees of the Authority as witnesses on their behalf (br. 242) cannot be taken seriously. The record shows that no effort was made to take the testimony of any of these witnesses either by deposition or by subpoena. In a trial before a court of this character there was no danger that appellants, if they had called adverse witnesses to the stand, would have been held responsible for or bound by the testimony of any such witness. There is no reason to believe that the appellants in such event would not have been permitted to show the hostility or bias of such witnesses and to cross-examine them, as well as to secure protection against broad cross-examination by defendants.

(b) The court ruled that it would not permit cross-examination of a witness on testimony of *other* witnesses in *other* litigation or proceedings (r. 1682) regarding the effect of a different project with which the witness on the stand was not familiar, or on the statement of other witnesses in the *Ashwander* case (r. 2252). These rulings are referred to on pages 242-243 of appellants' brief and are covered by assignments of error 53-56 (r. 730-732). The purpose of the rulings was obviously to prevent the introduction of extraneous hearsay. It should be noted that the court's ruling was not as broad as the partial excerpt from the record quoted in assignment 53 (r. 730) might indicate. None of the instances relied upon by appellants involved cross-examination on testimony of the same witness in any proceeding or on any testimony offered by the defense in this case even through other witnesses.

The attitude of the trial court in regard to such instances as those referred to in assignments 52, 54, and 55 (r. 730, 731) was summed up in the following statement:

> The Court considers the injection into this record of testimony of a witness in another case, between different parties, as offering totally incompetent testimony, a different witness, not this witness [r. 1603].

That this position was within the li ts of the trial court's discretion in a case of this character seems obvious. *Cf. Western Union Tel. Co.* v. *Ammann*, 296

Fed. 453 (C.C.A. 3d, 1924); *Dupont de Nemours & Co.* v. *White*, 8 F. (2d) 5 (C.C.A. 3d, 1925); note 82 A.L.R. 440.

12. THE LIMITATIONS ON REBUTTAL EVIDENCE WERE WITHIN THE TRIAL COURT'S DISCRETION (assignments 61, 62).

The appellants allege error in the exclusion of the testimony of certain witnesses offered on rebuttal (br. 243, 246). An examination of the whole record shows that complainants sought to withhold a part of their main case until the Government had rested and thus to deprive the Government of an opportunity to defend. The nature of the Authority's projects, their general method of operation, and their benefits to navigation and flood control on the Tennessee and Mississippi Rivers were fully set forth in the Authority's "Unified Report" in 1936 (comp. ex. 328 (original), r. 3068), in numerous congressional hearings, and in the Government's answer in this case. Much of the basic supporting data, including the reports of the Army Engineers on the Tennessee River (H.Doc. 328, 71st Cong., 2d sess. (comp. ex. 105 (original), r. 2615), and on Mississippi flood control (H.Doc. 259, 74th Cong., 1st sess. (def. ex. 32, r. 4062); Com. Doc. 1, H.R. Com. on Flood Control, 75th Cong., 1st sess.), were likewise available to complainants prior to the trial. As the trial court observed, there was little element of surprise in this case (r. 1861, 2372-2373). It is evident that the rebuttal testimony was not offered to contradict new

and affirmative matter introduced in the defendants' case, but rather to reassert and amplify contentions which were made or should have been made in the case in chief or to contradict the admissions of complainants' own witnesses on cross-examination. The exclusion of such rebuttal testimony was entirely proper. *Carver* v. *United States*, 160 U.S. 553; *Throckmorton* v. *Holt*, 180 U.S. 552; *Goldsby* v. *United States*, 160 U.S. 70.

Only three issues raised by complainants' offers to prove on rebuttal deserve any attention: first, the offer to prove (r. 2348) that the Mississippi levees could be raised and that the Authority's reservoirs would not appreciably reduce Mississippi flood heights; secondly, the offers to prove (r. 2356, 2378, 2410) that the Authority's method of operation was for power and not for flood control; and finally, the offer to prove (r. 2309, 2349) that any increase in low-water stream flow provided by the Authority's projects would be of no value to Mississippi navigation.

The court properly excluded the testimony offered on rebuttal with respect to Mississippi flood control. As part of complainants' case in chief the witness Kelly testified on this subject at great length and sought to show (a) that the existing protection works for Mississippi flood control were adequate without the addition of the projects of the Authority, and (b) that no tributary flood-control reservoirs, whether those of the Authority on the Tennessee or any others, would have an appreciable effect in the reduction of Mississippi flood heights (r. 1370, 1374-1375). This is the position

which appellants now take in their brief (br. 58-59). On cross-examination, however, the witness Kelly expressly acceded to the views set forth in the report of the Chief of Army Engineers following the great flood of 1937 (see *supra* pp. 20-21) to the effect that the existing Mississippi flood-control protection works were inadequate for the greatest Mississippi floods, that the levees had reached the limits of practicable height, and that additional protection should be sought in part in the construction of reservoirs on the tributaries (Kelly, r. 1379-1380). Thus the testimony offered with respect to the feasibility of raising the levee system not only dealt with the same subject already discussed in the testimony of the witness Kelly on direct examination in their case in chief, but was in fact offered to rebut the admissions of Kelly on cross-examination.

There was even less justification for the offer of rebuttal testimony on the effect of the Authority's projects in reducing Mississippi flood heights. The pretext advanced at the trial was that the preliminary design of the Gilbertsville Dam had been changed subsequent to the last congressional appropriation hearings so as to provide more flood storage (r. 2340-2341). The offer of the Authority's counsel to withdraw any objection to rebuttal testimony limited to the effect of the additional storage at Gilbertsville was unsatisfactory to complainants' counsel (r. 2341). In fact, the change in preliminary design did not materially affect the issue. As we have said, Kelly's previous testimony on direct examination in complainants' case in

chief was based on the impracticability of reservoirs for flood control in principle, and the testimony was not in any way affected by the precise amount of storage space available at the particular projects of the Authority, which was well known to be substantial. The Government's principal witness on Mississippi flood control, Clemens, based his conclusions on the figures of flood storage set forth in congressional hearings available to the complainants (r. 1651). Here again the offer of rebuttal testimony was in truth for the purpose of rebutting the admissions of complainants' witness Kelly on cross-examination.

The court's ruling rejecting rebuttal testimony on the propriety of the Authority's method of operation was equally sound. The Authority's general method of operation, the seasonal filling of the tributary projects during flood season, and the drawdown in advance of floods on the main-stream projects, was set forth in the Authority's "Unified Report" (comp. ex. 328 (original) pp. 18, 19, r. 3068). Complainants' pretext in justification of the rebuttal testimony (r. 2344) was that the *details* of the method of operation of the Norris Dam as testified to by the defendants' witness Woodward (r. 1820-1821) differed in some degree from those tentatively given in a previous congressional hearing (comp. ex. 116 (original) pp. 374-375, r. 2700). The difference in detail, however, was wholly immaterial so far as the complainants' case was concerned. Complainants' witness Kurtz had testified on direct examination in the case in chief that there was a conflict in

the use of a reservoir for power and flood control and that *to whatever extent* a reservoir were used for power, it would have no dependable value for flood control, and conversely (Kurtz, r. 1213).

It is this alleged conflict in principle which complainants now advance as their principal reliance (br. 40). This alleged principle would apply equally whether the Norris Dam were to be filled to elevation 1010 on April 1 (as was stated in one congressional hearing (comp. ex. 116 (original) pp. 374-375, r. 2700)), or only to elevation 1005 on April 15 (as testified to in this trial, r. 1820-1821). This change in detail was the result of further studies, and further studies will undoubtedly produce other changes in detail (fdg. 44, r. 608, app. I, 30). But the principle of operation of the same storage capacity for multiple purposes remains the same, and it is this issue (and not the details) which appellants discuss at such length in their brief. This is obvious from the fact that appellants contend that the alleged conflict has application not merely to the Norris Dam (the only dam as to which detailed testimony was given) but to all the other dams as well (br. 50-51). In fact, the true purpose of the offer of rebuttal on this issue was that, on cross-examination, complainants' witness Kelly admitted (r. 1386-1387) that for Mississippi flood control the dams beyond prediction distance (like the tributary projects) should be operated so as to store water throughout each flood season (as the Authority plans to do) and that the main-stream dams within

prediction distance may be drawn down in advance of flood peaks and additional capacity made available to reduce the crest (as the Authority also plans to do).

The question of the value of the increased stream flow in low-water season for Mississippi navigation was likewise raised by complainants in their case in chief. The complainants' witness Putnam expressly testified on direct examination that, in his opinion, any increase in low-water flow provided by the Authority's projects would be of no value to Mississippi navigation, although he advanced no detailed justification for this opinion (r. 1168). On rebuttal complainants offered to prove that the witness Putnam was "still of the same opinion" (r. 2309-2310). The first time that complainants offered any evidence in support of this opinion was on rebuttal (r. 2355-2356). This evidence was available to complainants in advance of the trial and did not in any way turn on the details of the defendants' testimony. It is obvious that complainants cannot be permitted to withhold part of their case in chief for rebuttal.

All of the remaining testimony offered in rebuttal concerned matters of detail regarding which there was conflicting opinion. For example, the witness Putnam in rebuttal offered testimony which was merely supplementary to his testimony in the case in chief in which he had given a detailed comparison of the relative merits of the low-dam and the high-dam plans, and detailed estimates of the prospective traffic on the improved waterway. He had covered the

same questions before, and the defendants' witnesses Watkins, Alldredge, Barker, and Brodie had disagreed with him (Putnam, r. 1152-1170, 1176-1178; *cf.* r. 2286-2308, 2320-2330; Watkins, r. 1536-1538, 1549-1551; Alldredge, r. 2055-2063; Barker, r. 1959-1973; Brodie, r. 2023-2031). As ruled by the court, certainly the proffered testimony could not properly be received in rebuttal (r. 2288-2289, 2295-2296). The exclusion of such evidence lies within the discretion of the trial court. *Johnston* v. *Jones*, 66 U.S. 209; *Marande* v. *Texas & P. Ry.Co.*, 124 Fed. 42 (C.C.A. 2d, 1903); *Stone* v. *Chicago, M., St.P. & P.R.Co.*, 53 F. (2d) 813 (C.C.A. 8th, 1931). As this Court ruled in the case of *Philadelphia & Trenton R.R.Co.* v. *Stimson*, 14 Pet. 448, concerning the proper order of proof,

> The mode of conducting trials, the order of introducing evidence, and the times when it is to be introduced, are, properly, matters belonging to the practice of the circuit courts, with which this court ought not to interfere . . . [p. 463].

The present case demonstrates the wisdom of this policy, for without such a power vested in the trial court there would have been no end to the multiplication of minutiae.

For all of the foregoing reasons, the decree of the court below should be affirmed.

Respectfully submitted,

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APPENDIX I

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SECTION A

FINDINGS OF FACT OF TRIAL COURT[1]

STATUS OF THE PARTIES[2]

1. Complainants are eighteen privately owned public utility corporations duly qualified to engage as public utilities in the States of Tennessee, Georgia, Mississippi, Alabama, Kentucky, North Carolina, South Carolina, Virginia, and West Virginia, and are engaged principally in the business of generating, transmitting and distributing and selling electricity, or distributing and selling electricity, or transmitting and selling electricity as public utilities in said States. [Undisputed.]

2. The defendant Tennessee Valley Authority is a body corporate created by an act of Congress approved May 18, 1933, and has an office in Knoxville, Knox County, Tennessee. [Undisputed.]

3. The defendants Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal are, severally, residents of Knox County, Tennessee, and are the three chief executive officers and constitute the Board of Directors of the Tennessee Valley Authority. [Undisputed.]

4. This is an action of a civil nature, in equity, originally filed in the Chancery Court of Knox County, Tennessee, and thereafter duly removed by the defendants to this Court. [Undisputed.]

5. This is a suit in equity and involves questions arising under the Constitution and laws of the United States, and the amount in controversy exceeds, exclusive of interest and costs, the sum or value of $3,000. [Undisputed.]

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[1] Filed February 23, 1938, ordered by the court to be effective as of January 24, 1938. Reprinted in the record at pages 584-655.

[2] Findings 1 to 37, inclusive, are adoptions by the court of suggested findings of appellants (see r. 566). Naturally, appellants do not assign error on the making of these findings. Therefore, citations to the record for these findings have been omitted.

6. The Tennessee Electric Power Company is a public utility corporation organized under the laws of the State of Maryland, is duly qualified to carry on its business as a public utility in the States of Tennessee and Georgia, and has its principal place of business in the city of Chattanooga, Tennessee. For more than twenty years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in 66 counties in Tennessee, 4 counties in Georgia, and 455 communities in Tennessee and Georgia, including the cities of Chattanooga and Nashville, Tennessee. All of the operating territory of the company, with the exception of a small area north of Nashville, Tennessee, is located within a 100-mile radius of one or more TVA generating plants constructed, under construction, or authorized to be constructed. Said company owns and operates 1,559 miles of transmission lines and 5,226 miles of distribution lines, of which 2,677 are classified as rural distribution lines, in said States of Tennessee and Georgia. It owns generating facilities with a total installed capacity of 244,009 kilowatts and leases generating facilities with a total installed capacity of 6,500 kw. In addition to these facilities the company is preparing to begin construction of a steam generating plant at Bordeaux, Tennessee, with an initial installed capacity of 25,000 kw. and provision for future increase to 150,000 kw. The company's steam plant at Hale's Bar was constructed to provide for expansion of its present capacity of 40,000 kw. to an ultimate capacity of 100,000 kw. Said company also owns hydro sites capable of producing, when developed, 76,000 kw. and has interconnections with other utilities, the total capacity of the interconnections being 160,000 kva. Said company also owns and operates transportation systems in the cities of Chattanooga and Nashville, Tennessee, water systems in 11 municipalities, ice plants in 7 municipalities, and a telephone system in one municipality. For a period of years these

businesses have been operated under the same management with the electric operations and as one business, and the severance of one from the other would have an adverse effect upon the company.

In the year ending September 30, 1937, the company served 136,470 customers, of which 38,399 were classified as rural customers, and, exclusive of sales to other utilities, sold 767,646,665 kilowatt hours, of which 496,923,761 kwh., or 64.7% represented sales to industrial customers. The company has issued an[d] outstanding $49,313,300 in bonds, 241,296 shares of $100 par value preferred stock, and 425,000 shares of no par common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee; and it has 3,500 employees. [Undisputed.]

7. Franklin Power & Light Company is a public utility corporation organized under the laws of the State of Tennessee, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Franklin, Tennessee. Ever since the organization of the company in 1929 it has been engaged in the electric-power business, distributing electricity in and around the city of Franklin, Tennessee. Its operating territory lies approximately 80 miles from Wilson Dam. The company owns and operates a distribution system consisting of 15 miles of line. It also owns a steam generating plant with an installed capacity of 1,800 kw., which is maintained as a standby plant for The Tennessee Electric Power Company, from which company the Franklin Power & Light Company purchases its power requirements. In the year 1936 the company served 901 customers and sold a total of 3,219,758 kwh. Said company has issued and outstanding $100,000 in bonds and 1,900 shares of $100 par value stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee. [Undisputed.]

8. Memphis Power & Light Company is a public utility corporation organized under the laws of the State of New Jersey, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Memphis, Tennessee. For more than 20 years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in Shelby County, Tennessee, and in 37 towns and communities therein, including the city of Memphis. The operating territory of the company is from 74 to 105 miles from Pickwick Dam. Said company owns and operates 319 miles of transmission lines and 905 miles of distribution lines. It owns a steam generating plant with an installed capacity of 54,000 kw., has interchange facilities with Arkansas Power & Light Company and Mississippi Power & Light Company, and owns a site for the erection of additional generating facilities with an installed capacity of from 20,000 to 30,000 kw. It owns and operates a natural-gas distribution system throughout its territory, from which approximately 37% of the total gross revenues of the company are derived. The gas and electric properties are jointly operated under the same management, and a loss of all or a substantial part of its electric business would increase the cost of operating the gas department. In the year ending July 30, 1937, the company served 56,952 customers and, exclusive of sales to other utilities, sold 191,888,000 kwh., of which 61,841,000 kwh., or 32.23%, represented sales to industrial customers. The company has issued and outstanding $22,275,000 in bonds, 30,000 shares of no par value $7 preferred stock, 32,000 shares of no par value $6 preferred stock and 7,200 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee. [Undisputed.]

9. Southern Tennessee Power Company is a public utility corporation organized under the laws of the State of

Delaware, is duly qualified to carry on its business as a public utility in the States of Alabama and Tennessee, and has its principal place of business in the city of Chattanooga, Tennessee. The company owns and operates a high-tension transmission line from Wilson Dam, Alabama, to Iron City, Tennessee, a distance of approximately 15 miles, and is engaged in the business of transmitting electric energy over said transmission line, which constitutes a connection between the Alabama Power Company and the Tennessee Electric Power Company. The company has outstanding a note amounting to $380,000 and 10 shares of no par stock. [Undisputed.]

10. Birmingham Electric Company is a public utility corporation organized as such under the laws of the State of Alabama and has its principal place of business in the city of Birmingham, Alabama. For many years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in the city of Birmingham, Alabama, and the metropolitan district thereof, including the towns of Bessemer, Jonesboro, Brighton, Lipscomb, Fairfield, Irondale, Homewood and Tarrant City, as well as in Jefferson County, Alabama, all of which territory was set aside to it by order of the Alabama Public Service Commission. The company's operating territory is located approximately 66 miles from Guntersville Dam. Said company owns and operates 1,057.52 miles of distribution pole lines. It purchases at wholesale from the Alabama Power Company the electricity which it distributes and owns a steam generating plant with an installed capacity of 11,300 kw., which is used as a standby station. It also owns and operates a transportation system throughout its territory, which contributes about 33% of the total gross revenues of the company, and a steam heating system serving a substantial portion of the business district of the city of Birmingham, which contributes approximately 1% of the company's total gross revenues.

These several businesses have for a period of years been jointly operated. The company served 68,110 customers, and in 1936, exclusive of interdepartmental sales, sold 208,113,400 kwh., of which 116,429,366 kwh., or approximately 56% of its total sales, represented sales to industrial customers. [Undisputed.]

11. Mississippi Power Company is a public utility corporation organized under the laws of the State of Maine, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the City of Gulfport, Mississippi. For more than 12 years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in 34 counties and in 147 towns and communities in the State of Mississippi. Most of the operating territory of the company is located within 250 miles from Pickwick and Guntersville Dams, and much of the operating territory lies within 100 and 150 miles from said TVA generating plants. Said company owns and operates 857.41 pole miles of transmission lines and 1,080.5 pole miles of distribution lines. It owns generating facilities with a total installed capacity of 18,702 kw., and it has, subject to lease or contract, generating facilities with an installed capacity of 6,450 kw. The company, however, purchases substantially all its power requirements from the Alabama Power Company at 4 interchange points having a combined capacity of 66,300 kw. As a part of its business the company owns and operates a transportation system in the city of Hattiesburg, Mississippi, the total gross revenues from which in the year 1936 were less than 1% of the total revenues received by the company from all sources. In 1936 the company, within a 100-mile radius of Pickwick Dam, served 1,247 customers, sold 2,102,086 kwh., and derived a revenue therefrom of $88,254.39; within a 150-mile radius of said dam it served 6,068 customers, sold 14,816,009 kwh., and derived a revenue therefrom of

$484,839.85; within a 250-mile radius of said dam it served 20,772 customers, sold 87,936,552 kwh., and derived a revenue therefrom of $1,768,553.86. The total kwh. sales to regular customers in that year amounted to 121,160,760 kwh., of which 64,216,059 kwh., or 53%, represented sales to industrial customers. The company has issued and outstanding $10,690,500 in first mortgage bonds, 39,092 shares of preferred stock, and 450,000 shares of common stock; and it has 512 employees. [Undisputed.]

12. Appalachian Electric Power Company is a public utility corporation organized under the laws of the state of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and West Virginia, and has its principal place of business in the city of Roanoke, Virginia. Said company is engaged in the electric-power business and distributes electricity in 29 counties in Virginia, 20 counties in West Virginia, and 522 towns and communities in Virginia and West Virginia. Most of the operating territory of the company is located within 250 miles of Norris Dam; much of its territory is located within 150 miles of said dam, and some of its territory is located within 100 miles of said dam. Said company owns and operates 1,767.88 pole miles of transmission lines, 4,663.79 pole miles of distribution lines, of which 2,527 miles are classified as rural lines, and in addition, on August 31, 1937, had 452 miles of rural lines under construction. The company owns generating facilities with a total installed capacity of 381,390 kw. and has a purchased capacity of 43,500 kw. In 1936 within a 100-mile radius of Norris Dam the company served 439 customers, sold 337,500 kwh., and derived a revenue therefrom of $16,236; within a 150-mile radius of said dam it served 8,171 customers, sold 69,263,102 kwh., and derived a revenue therefrom of $1,312,443; within a 250-mile radius of said dam it served 126,700 customers, sold 1,283,307,996 kwh., and derived a revenue therefrom of $17,690,540. The to-

tal kwh. sales to regular customers in that year amounted to 1,351,653,286 kwh., of which 1,153,567,845 kwh., or 85.34%, represented sales to industrial customers. The company has issued and outstanding $80,774,000 in bonds, and preferred and common stock aggregating $53,500,167.27, and has 3,366 employees. [Undisputed.]

13. Carolina Power Co. & Light Company is a public utility corporation organized under the laws of the State of North Carolina, is duly qualified to carry on its business as a public utility in said State and in the State of South Carolina, and has its principal place of business in the city of Raleigh, North Carolina. For more than 20 years said company and its predecessors have been engaged in the electric-power business. It is now distributing electricity in the States of North and South Carolina and 272 incorporated towns and communities therein. A portion of the company's operating territory is located within a radius of 100 miles of Norris and Fowler Bend Dams and Fontana Dam site, a part of its territory is located within a radius of 150 miles of Fowler Bend Dam and Fontana Dam site, and a part of it is located within a radius of 250 miles of Fowler Bend Dam and Fontana Dam site. Said company owns and operates 1,256 pole miles of transmission lines and 5,921 pole miles of distribution lines. It owns generating facilities with a total installed capacity of 249,050 kw., which are capable of being enlarged so as to produce an additional 80,000 kw. It owns a hydro site capable of producing, when developed, 40,000 kw. and has interconnections with other utilities, the total capacity of such interconnections being 384,000 kw. As a part of its business the company owns and operates transportation systems in Raleigh and Asheville, the gross revenues from which are less than 4% of the total gross revenues of the company. In 1936 the company served 83,836 customers and, exclusive of sales to other utilities, sold 536,521,801 kwh. In said year the company, within a radius of 100 miles

from Norris and Fowler Bend Dams and Fontana Dam site, sold, exclusive of sales to other utilities, 115,802,557 kwh., of which 83,553,403, or approximately 61%, represented sales to industrial customers; within a 150-mile radius of Fowler Bend Dam and Fontana Dam site it sold, exclusive of sales to other utilities, 118,167,621 kwh., of which 85,530,602 kwh., or approximately 72%, represented sales to industrial customers; and within a 250-mile radius of Fontana Dam site it sold, exclusive of sales to other utilities, 309,197,905 kwh. The company has issued and outstanding $46,000,000 in bonds, 165,162 shares of no par value preferred stock entitled to $6 and $7 annual dividends, and 2,500,000 shares of no par common stock, and had as of August 1937, 1,434 regular employees and 57 temporary employees. [Undisputed.]

14. Tennessee Public Service Company is a public utility corporation organized under the laws of the State of Maine, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Knoxville, Tennessee. For many years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in Knox, Jefferson, Cocke, Sevier, Union, and Grainger Counties, Tennessee, and 37 towns and communities therein, including the city of Knoxville. The entire operating territory of the company is located within a distance of from 25 to 75 miles of Norris Dam. Said company owns and operates 180.58 miles of transmission lines and 1,063.77 miles of distribution lines. It purchases practically all of its power requirements from the complainant Carolina Power & Light Company and also owns generating facilities with an installed capacity of 3,150 kw. Said company also owns and operates a transportation system in the city of Knoxville, Tennessee, which contributes approximately 21½% of the company's total gross revenues. Both the transportation and electric properties are op-

erated under the same management and as one business. In the year ending September 30, 1937, the company served 30,074 electric customers and, exclusive of interdepartmental sales and sales to other utilities, sold 131,404,000 kwh., of which 73,269,000 kwh., or 55.76%, represented sales to industrial customers. The company has issued and outstanding $7,780,000 in bonds, 50,000 shares of no par preferred stock entitled to a $6 annual cumulative dividend per share, and 1,000,000 shares of common stock, all of which were issued with the approval of the Railroad and Public Utilities Commission of Tennessee. [Undisputed.]

15. Holston River Electric Company is a public utility corporation organized as such under the laws of the State of Tennessee with its principal place of business in the city of Knoxville, Tennessee. Said company is distributing electricity in the incorporated town of Rogersville, Tennessee, and 8 communities in Hawkins and Hamblen Counties, Tennessee, and to rural customers in said counties. The entire operating territory of the company is located within 75 miles of Norris Dam. Said company owns and operates 98.54 miles of distribution lines and purchases at wholesale power, which it distributes, from the complainant Tennessee Public Service Company. For the year ending September 30, 1937, the company sold 1,560,000 kwh. [Undisputed.]

16. Alabama Power Company is a public utility corporation organized under the laws of the State of Alabama, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Attalla, Alabama. The company is engaged in the electric-power business and distributes electricity in 65 of the 67 counties of the State of Alabama and in 594 communities in the same State. Practically all of the operating territory of the company is located within 250 miles of Guntersville and Wilson Dams; most of the operating territory is located within 150 miles of said dams, and much of the territory is

located within 100 miles of said dams. Said company owns and operates 3,435 circuit miles of transmission lines, 2,810 miles of distribution lines within incorporated municipalities, and 4,519 miles of line classified as rural. It owns generating facilities with a total installed capacity of 571,744 kw. and has made provision for the expansion of its existing plants such that their capacities may be increased by 321,500 kw.

In 1936, exclusive of sales to the Birmingham Electric Company, the company sold within a 100-mile radius of TVA dams constructed or under construction 711,835,625 kwh. and derived a revenue therefrom of $7,384,969,48; within a 150-mile radius of said dams it sold 961,720,184 kwh. and derived a revenue therefrom of $11,147,768.38; and within a 250-mile radius of said dams it sold 1,018,-109,064 kwh. and derived a revenue therefrom of $12,346,-658.72. In that year the total kwh. sales, exclusive of sales to utilities, amounted to 1,145,267,755 kwh., of which 948,-565,825, or 82.8%, represented sales to industrial customers. The total number of customers served in that year was 123,739. The company has issued and outstanding $96,-771,600 in bonds, 367,178 shares of $5, $6 and $7 preferred stock at a stated value of $35,751,258, and 3,775,000 shares of common stock at a stated value of $48,961,300, all of which securities issued subsequent to the creation of the Alabama Public Service Commission were issued with its approval; and it has 2,850 employees. [Undisputed.]

17. Kentucky and West Virginia Power Company, Inc., is a public utility corporation organized under the laws of the State of Kentucky, is duly authorized to carry on its business as a public utility therein, and has its principal place of business in the city of Ashland, Kentucky. Said company is engaged in the electric-power business and distributes electricity in 14 counties and in 100 towns and communities in the State of Kentucky. All of the operating territory of the company is located within 250 miles of Nor-

ris Dam; most of its territory is located within 150 miles of said dam, and some of its territory is located within 100 miles of said dam. Said company owns and operates 435.53 pole miles of transmission lines, 553.01 pole miles of distribution lines, of which 131 miles are classified as rural distribution lines, and in addition, on August 31, 1937, had 31 miles of rural distribution lines under construction. The company owns generating facilities with a total installed capacity of 19,500 kw. In 1936 within a 100-mile radius of Norris Dam the company served 3,713 customers, sold 30,078,589 kwh., and derived a revenue therefrom of $685,969; within a 150-mile radius of said dam it served 9,919 customers, sold 87,946,055 kwh., and derived a revenue therefrom of $1,700,159; within a 250-mile radius of said dam it served 21,170 customers, sold 254,600,861 kwh., and derived a revenue therefrom of $3,314,345. The total kwh. sales to regular customers in that year amounted to 254,600,861, of which 232,243,229 kwh., or 91.32%, represented sales to industrial customers. The company has issued and outstanding $8,499,000 in bonds, and preferred and common stock aggregating $4,147,525, and has 435 employees. [Undisputed.]

18. Kingsport Utilities, Inc., is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Kingsport, Tennessee. The company is engaged in the electric-power business and is distributing electricity in the counties of Sullivan and Hawkins in the State of Tennessee. All of the operating territory of the company is located within a 100-mile radius of Norris Dam. Said company owns and operates 5.75 pole miles of transmission line, 133.53 pole miles of distribution lines, of which 49 miles are classified as rural distribution lines, and in addition, on August 31, 1937, had 6 miles of rural distribution lines under construction. It also owns generating

facilities with a total installed capacity of 11,400 kw. In the year 1936 the company served 4,358 regular customers and sold 37,468,385 kwh., of which 30,356,870 kwh., or 81%, represented sales to industrial customers. The company has issued and outstanding $1,044,000 in bonds and $1,000,000 of preferred and common stocks and has 98 employees. [Undisputed.]

19. Kentucky-Tennessee Light & Power Company is a public utility corporation organized under the laws of the State of Kentucky, is duly qualified to carry on its business as a public utility in said State and in the State of Tennessee, and has its principal place of business in the city of Bowling Green, Kentucky. The company is engaged in the electric-power business and distributes electricity in many counties in Tennessee and Kentucky. All of the operating territory of the company is within a 250-mile radius, and most of the operating territory is within a 100-mile radius, of one or more TVA generating plants constructed, under construction, or authorized to be constructed. Said company owns and operates many miles of transmission and distribution lines in the States of Tennessee and Kentucky. [Undisputed.]

20. West Tennessee Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a public utility in the State of Tennessee, and has its principal place of business in the city of Jackson, Tennessee. For more than 30 years said company and its predecessors have been engaged in the electric-power business, and it is now distributing electricity in 9 counties in west Tennessee and 24 incorporated towns and communities, including the city of Jackson, Tennessee. All of the operating territory of the company is from 40 to 75 miles of Pickwick Dam. Said company owns and operates 90.6 miles of transmission lines and 193.6 miles of lines classified as rural. It owns generating facilities with a total installed capacity of 5,228

kw. and also has interconnections with Memphis Power & Light Company, from whom it purchases power at wholesale. It owns and operates natural-gas distribution systems in 6 municipalities, ice plants in 2 municipalities, waterworks systems in 3 municipalities, and a transportation system in the city of Jackson, Tennessee. For a period of years these businesses have been operated under the same management with the electric operations and as one business and are closely intermingled. For the year ending July 31, 1937, the company served 10,050 customers and, exclusive of interdepartmental sales, sold 19,322,248 kwh., of which 8,080,659 kwh., or 38.74%, represented sales to industrial customers. [Undisputed.]

21. Mississippi Power & Light Company is a public utility corporation organized under the laws of the State of Florida, is duly qualified to carry on its business as a public utility in the State of Mississippi, and has its principal place of business in the city of Jackson, Mississippi. For many years said company has been engaged in the electric-power business and at present is distributing electricity in 40 counties in Mississippi and 312 incorporated towns and communities therein, including the cities of Vicksburg, Natchez, Jackson, and Greenville. Most of the operating territory of the company is located within 250 miles from Pickwick Dam, and a substantial portion of its operating territory is within 150 miles of Wheeler and Guntersville Dams. Said company owns and operates 456.8 miles of transmission lines and 2,628.2 miles of distribution lines. The company purchases substantially all of its power requirements from the Louisiana Power & Light Company, and also owns generating facilities with an installed capacity of 19,146 kw. As a part of its business the company owns and operates transportation systems in the cities of Jackson, Greenville, and Vicksburg; natural-gas distribution systems in 24 municipalities; ice manufacturing systems in 5 municipalities; water systems in 6 munic-

ipalities; and leases and operates water systems in 4 municipalities. The total gross revenues from such operations in 1936 were 29% of the total gross revenues received by the company from all sources. All properties of the company are operated together as a unit, and the destruction of the whole or a substantial part of its electric business would seriously hamper the company's ability to efficiently operate its other properties. In 1936 the company, within a 150-mile radius of Pickwick Dam, served 7,779 customers, sold 18,734,247 kwh., and derived revenue therefrom of $743,744.92; within a 250-mile radius of said dam it served 29,454 customers, sold 117,792,338 kwh., and derived revenue therefrom of $3,063,194.36. The total kwh. sales to regular customers in that year amounted to 157,608,000 kwh., of which 87,673,000 kwh., or 55.6%, represented sales to industrial customers. The company has issued and outstanding $16,000,000 in bonds, 69,000 shares of no par value first preferred stock entitled to a $6 annual cumulative dividend, 35,000 shares of no par value second preferred stock entitled to a $6 annual cumulative dividend, and 1,000,000 shares of no par common stock. [Undisputed.]

22. East Tennessee Light & Power Company is a public utility corporation organized under the laws of the State of Virginia, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and North Carolina, and has its principal place of business in the city of Bristol, Tennessee-Virginia. For many years said company and its predecessors have been engaged in the electric-power business, and today it is distributing electricity in Carter, Johnson, Sullivan, Unicoi and Washington Counties, Tennessee; in Scott and Washington Counties, Virginia; in Avery County, North Carolina; and in 32 incorporated towns and communities, including the city of Bristol, Tennessee-Virginia. All of the operating territory of the company is within a radius of 135 miles of Norris Dam, the larger part of it being within a radius of

100 to 115 miles of said dam. Said company owns and operates 66.5 miles of transmission lines and 354.4 miles of distribution lines in said States of Tennessee, Virginia, and North Carolina. It owns generating facilities with a total installed capacity of 3,828 kw. Said company also owns a hydro site near Elizabethton, Tennessee, and has interconnections with Appalachian Electric Power Company and Edmondson Electric Company. The company also owns and operates a gas distribution system in the city of Bristol, Tennessee-Virginia, from which operation approximately 10% of the total gross revenue of the company is derived. In the year ending July 31, 1937, the company served 10,312 customers, of which 1,572 were classified as rural customers, and in 1936, sold 22,904,648 kwh., of which 9,243,729 kwh., or 40.4%, represented sales to industrial customers. The company has issued and outstanding $2,731,000 in bonds, 2,635 shares of no par preferred stock entitled to a $6 annual cumulative dividend, and 35,000 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee; and it has 204 employees. [Undisputed.]

23. Tennessee Eastern Electric Company is a public utility corporation organized under the laws of the State of Massachusetts, is duly qualified to carry on its business as a public utility in the States of Virginia, Tennessee, and North Carolina, and has its principal place of business in the city of Bristol, Tennessee-Virginia. For many years said company and its predecessors have been engaged in the electric-power business, and at present it is distributing electricity in Carter, Greene, Johnson, Unicoi, and Washington Counties, Tennessee, and in 57 towns and communities therein, including the cities of Johnson City and Greenville, Tennessee. The operating territory of the company is located within a radius of from 50 to 100 miles of Norris Dam. Said company owns and operates 65.7 miles

of transmission lines and 442.7 miles of distribution lines. It owns generating facilities with a total installed capacity of 19,060 kw. and has done preliminary work at hydro sites which it owns capable of producing, when developed, in excess of 51,000 kw.; and the capacity of its Watauga steam plant is capable of being enlarged. In the year ending July 31, 1937, the company served 8,642 customers, of which 2,304 were classified as rural customers, and in 1936, exclusive of sales to other utilities, sold 24,548,569 kwh., of which 11,049,650 kwh., or 45%, represented sales to industrial customers. The company has issued and outstanding $2,669,500 in bonds, 6,000 shares of $100 par value preferred stock entitled to an annual $6 cumulative dividend, 5,105 shares of no par value preferred stock entitled to a $7 annual cumulative dividend, and 15,000 shares of no par common stock, all of which were issued with the approval of the Railroad & Public Utilities Commission of Tennessee; and it has 125 employees. [Undisputed.]

24. Installed capacity is not a measure of the dependable capacity available for electric service. In the case of hydroelectric plants the limiting factor is the water available and not the amount of machinery installed. Of the dependable steam and hydro capacity in a low-water year a reserve is required to take care of various contingencies. [Undisputed.]

25. Complainants, and each of them, are subject to a special tax to which taxpayers generally are not subject, the tax being upon electrical energy sold for domestic and commercial consumption, in an amount equal to 3% of the price for which complainants sell the same, which is imposed by section 616 of the Federal Revenue Act of 1932, as amended. Complainants also severally pay large sums of money in the form of general taxes to the Federal Government, including Social Security taxes and taxes for unemployment relief imposed by sections 211 to 219 inclusive of the National Industrial Recovery Act. Complain-

ants severally are subject to and pay special and general taxes levied upon privately owned utilities by the several States and their political subdivisions in which complainants severally carry on business or own property.

Following is a table of the taxes paid by each of the complainant companies, with the exception of Kentucky-Tennessee Light & Power Company, for the year 1936, with an estimate of the taxes to be paid by each company for the year 1937. The taxes paid by complainants for the year 1936, exclusive of Kentucky-Tennessee Light & Power Company, averaged in excess of 12.7% of complainants' gross revenue, and for the year 1937, exclusive of Kentucky-Tennessee Light & Power Company, it is estimated that such taxes will be in excess of 14.4% of the total gross revenues of the companies.

Name of Company	1936	1937 (Est.)
The Tennessee Electric Power Company....	$2,278,880.60	$2,613,895.00
Franklin Power & Light Company.....	5,681.77	.....
Memphis Power & Light Company.....	1,071,794.82	1,321,527.00
Southern Tennessee Power Company.....	5,896.77	5,953.00
Birmingham Electric Company.....	828,953.47	1,009,329.00
Mississippi Power Company.....	396,286.26	437,891.00
Appalachian Electric Power Company.....	2,817,013.07	3,069,047.97
Carolina Power & Light Company.....	1,607,877.58	2,035,440.00
Tennessee Public Service Company.....	471,335.33	590,733.00
Holston River Electric Company.....	5,414.47	5,611.00
Alabama Power Company.....	2,380,556.45	3,126,400.50
Kentucky & West Virginia Power Company, Inc.	344,104.06	350,919.03
Kingsport Utilities, Incorporated.....	59,697.46	85,437.89
West Tennessee Power & Light Company...	119,670.44	140,122.88
Mississippi Power & Light Company.....	738,463.61	918,832.00
East Tennessee Light & Power Company....	87,431.38	105,687.57
Tennessee Eastern Electric Company.....	130,419.90	190,390.40
	$13,349,477.44	$16,007,217.24

[Undisputed.]

26. The rates and services of each of the complainant companies in the States of Alabama, Tennessee, Kentucky, Virginia, Georgia, West Virginia, North Carolina, and South Carolina are regulated by State commissions in the respective States. There is no State commission in Mississippi. The rates and services of the complainant companies in that State are regulated by municipalities within their corporate limits. [Undisputed.]

27. The rates charged by the several complainant companies in the States of Alabama, Tennessee, Georgia, Virginia, North Carolina, and South Carolina are uniform for the different classes of service throughout their respective operating territories. As between the complainant companies operating within a State there is no requirement of uniformity of rates. [Undisputed.]

28. The respective complainants have been issued franchises, licenses, or easements by most but not all of the municipalities and by most but not all of the counties in which they respectively operate electric facilities. Said franchises, licenses, or easements vary in original term and in unexpired term from a few months to more than 50 years, and many are unlimited in term. Most of the said franchises, licenses, or easements purport to be nonexclusive. Most of said franchises, licenses, or easements grant rights not limited within the respective municipalities or counties, but some are limited to particular streets or highways or to portions of the respective counties or municipalities. Some of the franchises, licenses, or easements purport to grant the right to construct and occupy the streets and highways with electrical facilities; some of said franchises, licenses, or easements purport to grant, for the purpose of engaging in the business of selling and distributing electricity, the right to occupy the streets and highways; and some of said franchises, licenses, or easements purport to grant the right to occupy the streets and highways with electrical facilities and to engage in the business

of selling and distributing electricity within the respective municipalities and counties. The validity of one of the municipal franchises, licenses, or easements claimed by complainants is now being contested in a State court by the municipality concerned. [Undisputed.]

Status of Projects of the Tennessee Valley Authority

29. On October 3, 1933, TVA began the construction of Norris Dam and power plant on the Clinch River, a tributary of the Tennessee River, located 79.8 miles above its mouth, and completed such construction in March 1936, at a total cost of $36,310,370, and began generating power in July 1936. The dam is 265 feet high; 1,872 feet in length; has a normal reservoir area of 34,200 acres; a reservoir shore line of 705 miles; and has an installed generating capacity of 100,800 kw. [Undisputed.]

30. On November 30, 1933, TVA began construction of Wheeler Dam and power plant located 15.5 miles above Wilson Dam on the Tennessee River, and construction was completed in November 1936, at a total cost of $35,317,964, exclusive of the cost of the lock built by the War Department, at a cost of $1,939,693. Wheeler Dam began to generate power in November 1936. The Corps of Engineers in 1932 proposed to construct this dam with a lift of 15 feet as an integral part of the low-dam navigation plan. The estimated cost of said dam in its ultimate stage will be $42,817,964, exclusive of the lock built by the War Department. The dam is 72 feet in height; 6,335 feet in length; has a normal reservoir area of 64,300 acres; a reservoir shore line of 1,063 miles; has an initial installed generating capacity of 128,000 kw. and an ultimate generating capacity of 256,000 kw. [Undisputed.]

31. In March 1935 TVA began construction of the Pickwick Landing Dam and power plant located on the Tennessee River 52.7 miles below Wilson Dam and 100 miles

east of Memphis, Tennessee, and the construction will be completed in June 1938, at an initial cost of $33,199,497 and estimated ultimate cost of $42,431,497. The dam will be 110 feet in height; 7,715 feet in length; have a normal reservoir area of 41,600 acres; a reservoir shore line of 496 miles; an initial installed generating capacity of 72,000 kw. and an ultimate generating capacity of 216,000 kw. [Undisputed.]

32. On December 4, 1935, TVA began the construction of Guntersville Dam and power plant located on the Tennessee River above Wheeler Dam, near Guntersville, Alabama, and construction is estimated to be completed in December 1938, at an estimated initial cost of $34,123,660 and an estimated ultimate cost of $38,524,860. The dam will be 89 feet in height; 4,000 feet in length; have a normal reservoir area of 63,300 acres; a reservoir shore line of 660 miles, with an initial installed generating capacity of 50,000 kw. and an ultimate generating capacity of 100,000 kw. [Undisputed.]

33. On January 13, 1936, TVA began construction of Chickamauga Dam and power plant on the Tennessee River about 6 miles upstream from Chattanooga, Tennessee, and it is estimated that construction will be completed in December 1939, at an initial cost of $40,435,645 and an estimated ultimate cost of $45,333,645. The dam will be 104 feet high; 6,025 feet long; have a normal reservoir area of 32,000 acres; a reservoir shore line of 502 miles; an initial installed generating capacity of 50,000 kw. and an ultimate generating capacity of 100,000 kw. [Undisputed.]

34. On July 15, 1936, TVA began construction of Fowler Bend Dam and power project located on the Hiwassee River in North Carolina about 75.8 miles above the confluence of said river with the Tennessee River, and it is estimated that construction will be completed in October 1940, at an initial cost of $17,296,061, and an estimated

ultimate cost of $22,491,561. The dam will be 292 feet high; 1,250 feet long; have a normal reservoir area of 6,240 acres; 150 miles of reservoir shore line; and an ultimate generating capacity of 80,000 kw. [Undisputed.]

35. TVA has announced its intention to construct Watts Bar Dam and power plant on the Tennessee River, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been selected and which is located approximately 530 miles above the mouth of said river. Preliminary work has been done, and construction is scheduled to begin in the near future. The estimated initial cost of the dam and power plant is $29,200,000, and the estimated ultimate cost is $39,800,000. The dam will be 2,900 feet long and have a normal reservoir area of 42,600 acres and will have an ultimate installed generating capacity of 150,000 kw. [Undisputed.]

36. TVA has announced its intention to construct Coulter Shoals Dam and power project on the Tennessee River, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site which has been tentatively selected approximately 30 miles below Knoxville, at which site some preliminary work has been done. The dam will be 2,070 feet long and will have a normal reservoir area of 11,900 acres, and the estimated initial cost of such dam and power plant is $25,000,000, and the estimated ultimate cost is $30,000,000. The ultimate installed generating capacity will be 60,000 kw. [Undisputed.]

37. TVA has announced its intention to construct the Gilbertsville Dam and power plant on the Tennessee River in Kentucky 22.5 miles above the mouth of said river, and Congress has allocated in its appropriations specific funds for preliminary investigation of a site. Preliminary work has been done at the dam site, and construction is scheduled to begin within the near future. The dam will be 150 feet in height; 8,500 feet in length; have a normal reservoir

area of 160,000 acres; and have an ultimate generating capacity of 192,000 kw. Its estimated initial cost is $95,000,000, and the estimated ultimate cost is $112,000,000. [Undisputed.]

38. The Tennessee Valley Authority has constructed or has under construction or has under investigation for construction a series of high dams and reservoirs, 7 on the main stream of the Tennessee River and 2 on principal tributaries of the Tennessee: the Clinch and the Hiwassee Rivers. [Bowman, r. 1690-1725; see def. exs. 36-38, 40, 44, 49, 50 in volume entitled *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. exs. 39, 41-43, 45-48, 51, 52, r. 4064-4074.]

39. These dams, when completed, will provide a continuous 9-foot navigable channel with adequate overdepths for boats of 9-foot draft over the entire distance from the mouth of the Tennessee at Paducah, Kentucky, to Knoxville, Tennessee, a distance of approximately 650 miles [Barker, r. 1949, 1951; Watkins, r. 1557; Putnam, r. 1189; see def. ex. 98 in *Reproductions of Certain Original Exhibits Submitted by Appellees*]; will substantially alleviate the destructive floods in the Tennessee and Mississippi Valleys [Clemens, r. 1650, 1651; Kimball, r. 1837-1839; Floyd, r. 1890-1891; Watkins, r. 1546]; and will also create a substantial amount of water power [Wessenauer, r. 2175-2180; Watkins, r. 1545; def. ex. 139, r. 4186].

40. Beginning at the mouth of the Tennessee River at Paducah, Kentucky, and extending upstream, the dams under control of the Authority already constructed or under construction or active investigation for construction are as follows [Bowman, r. 1691-1696; see def. exs. 36, 37 in *Reproductions of Certain Original Exhibits Submitted by Appellees*]:

Gilbertsville Dam, which is located in Kentucky 22.7 miles from the mouth of the river, and on which preliminary investigations by the Authority are in progress.

[Bowman, r. 1696-1701; see def. ex. 38 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 39, r. 4064.]

Pickwick Landing Dam, which is located in Tennessee 206.7 miles from the mouth of the river and which is under construction by the Authority and almost completed. [Bowman, r. 1704-1705; see def. ex. 40 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 42, r. 4066.]

Wilson Dam, which is located at Muscle Shoals, Alabama, 259.4 miles from the mouth of the river, which was constructed by the United States Army Engineers and transferred to the Authority under the Tennessee Valley Authority Act and which is now in operation. [Bowman, r. 1693.]

Wheeler Dam, which is located in Alabama 15.5 miles above Wilson Dam and 274.9 miles from the mouth of the river, and construction of which was commenced by the United States Army Engineers, completed by the Tennessee Valley Authority, and which is now in operation. [Bowman, r. 1705-1708; see def. ex. 40 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 43, r. 4067.]

Guntersville Dam, which is located near Guntersville, Alabama, 349 miles from the mouth of the river and which is under construction by the Authority. [Bowman, r. 1709, 1710; see def. ex. 44 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 45A, r. 4069.]

Chickamauga Dam, which is located near Chattanooga, Tennessee, 471 miles from the mouth of the river and which is under construction by the Authority. [Bowman, r. 1709-1716; see def. ex. 44 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 46A, r. 4071.]

Watts Bar Dam, which is located in Tennessee 529.9 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress. [Bowman, r. 1716-1719; see def. ex. 47, r. 4072.]

Coulter Shoals Dam, which is located in Tennessee 602 miles from the mouth of the river and on which preliminary investigations by the Authority are in progress. [Bowman, r. 1719-1720; see def. ex. 48, r. 4073.]

The dams constructed or under construction on tributaries are as follows:

Norris Dam, located in Tennessee on the Clinch River 79.8 miles from the mouth of that river and 647.5 miles from the mouth of the Tennessee River, constructed by the Authority, now completed and in operation. [Bowman, r. 1720-1724; see def. exs. 49, 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 51, r. 4074.]

Hiwassee Dam, located in North Carolina on the Hiwassee River 75.8 miles from the mouth of that river and 560.3 miles from the mouth of the Tennessee River, under construction by the Authority. [Bowman, r. 1722-1725; see def. ex. 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 52, r. 4074.]

The Tennessee Valley Authority has also recommended to the Congress the future construction of a third tributary project at the Fontana Dam site in North Carolina on the Little Tennessee River, but the Congress has appropriated no funds for this purpose, and neither construction nor preliminary investigation or other work is in progress on this project. [Bowman, r. 1694.]

41. Each of the dam projects of the Authority is located on a site at or near the site selected by the United States Army Engineers in their comprehensive report on the Tennessee River system, set forth in House Document No. 328, Seventy-first Congress, second session. [Watkins, r. 1548; Bowman, r. 1760-1761; Barker, r. 1949; Crane, r. 1285.] The projects so described in that report were designed primarily for navigation and flood control. [Watkins, r. 1547-1548.] Prior to the passage of the Tennessee Valley Authority Act the United States Army Engineers

in fact had plans for a high dam at the site of the present Wheeler Dam. Their design made provision for intakes for the later installation of power facilities. Prior to the passage of the Tennessee Valley Authority Act they had commenced construction of the lock for this project. The lock and dam as completed by the Authority are substantially similar in design to the project as designed by the Army Engineers. [Bowman, r. 1762-1763, 1765-1766; Putnam, r. 1172-1173; Crane, r. 1285.]

42. Each of the projects of the Authority has all elements of design reasonably required for navigation and flood control in accordance with accepted engineering standards. [Watkins, r. 1545, 1548; Bowman, r. 2238-2243; *cf.* Bowman, r. 1695-1696, 1720-1722.] Each of the projects has been designed to provide storage capacity for a slackwater pool behind the dam and a substantial additional storage capacity above the slackwater pool level. [Bowman, r. 2237; see def. exs. 38, 40, 44, 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] Each of the main-stream projects is equipped with a lock prescribed and designed by the Corps of Engineers, with space for an additional parallel lock when commerce warrants. [Barker, r. 1951, 1968; def. exs. 111, 112, r. 4110, 4111; Bowman, r. 2243.] The locks which are being installed are of sufficient size and capacity to accommodate adequately the traffic which may be expected in the reasonably near future. [Putnam, r. 1173; def. ex. 112, r. 4111.] To provide effective means for flood control and stream-flow regulations, each of the projects is equipped with large spillway gates, and in addition, the tributary projects are equipped with sluiceways of large capacity. [Bowman, r. 2239-2241; Sargent, r. 1676.] At each of the projects facilities have been provided or construction and design are such that facilities may be provided for the generation of power. [Bowman, r. 1696, 1721, 1722; comp. ex. 328 (original) pp. 57-58; def. ex. 141, r. 4188.] Each of the projects

of the Authority can be operated to secure substantial benefits in the improvement of navigation and the control of destructive floods, and consistently therewith, the production of electric energy. [Watkins, r. 1545, 1548; Woodward, r. 1780-1789, 1820-1821, and in connection therewith Wessenauer, r. 2173-2175, and def. ex. 139, r. 4186; Bowman, r. 1738-1739, 1742; Sargent, r. 1679-1681, *cf.* r. 1687-1689; Clemens, r. 1654, 1655; *cf.* Crane, r. 1286.]

43. The following tables set forth the principal engineering features of the projects of the Authority, Lock and Dam No. 1 constructed by and under the control of the War Department, and the privately owned Hales Bar Dam: [The information shown in these tables appears in def. exs. 39, 42, 43, 45, 45A, 46, 46A, 47, 48, 51, 52, 53, 54, r. 4064, 4066-4073, 4074-4076; def. ex. 152, r. 4263; def. exs. 36, 38, 40, 44, 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 153 (original); comp. ex. 116 (original); comp. ex. 328 (original); except for the lock sill elevations, which appear in Barker, r. 2014, 2015, 2016.]

(1) Project	(2) Miles above River Mouth	(3) Drainage Area Sq. Mi.	(4) Length of Res. Miles	(5) Elev. Top of Gates	(6) Normal Pool Level	(7) Low Pool Level at Dam	(8) Low Pool Level at Dam Upstr.	(9) Reservoir Volumes acre-feet Total to Top of Gates	(10) Low Water Regulation	(11) Flood Control
Gilbertsville	22.7	40,000	184.0	375	359	350	354	6,150,000	750,000	4,600,000
Pickwick	206.7	32,870	52.7	418	413	408	408	1,032,000	191,000	416,000
Lock & Dam No. 1	256.8			416	416					
Wilson	259.4	30,800	15.5	505.8	505.1	503	503	600,000	43,000	43,000
Wheeler	274.9	29,600	74.1	556	555	548	550	1,100,000	280,000	440,000
Guntersville	349.0	24,300	82.1	595	594	591	593	951,000	62,000	242,000
Hales Bar	431.1	21,800	39.9	629.2	626.2			100,000		
Chickamauga	471.0	20,800	58.9	685.0	682.0	673.5	675	639,000	196,000	325,000
Watts Bar	529.9	17,460	72.1	745	740	736	736	1,132,000	140,000	337,000
Coulter Shoals	602.0	9,600	50.0	815	810	805	805	370,000	60,000	140,000
	79.8		71-Cl.							
Norris	647.5	2,950	52-Po.	1034	1020	955		2,567,000	1,500,000	2,020,000
	75.8									
Hiwassee	576.3	977		1526	1526	1415		435,000	362,000	362,000
								Total	4,034,000	8,925,000
								Tributary	1,862,000	2,382,000
								Main River	2,172,000	6,543,000

Col. (7) is the lowest elevation to which the reservoir will usually be drawn for flood control and, at the main-stream dams is the usual allowable drawdown with normal wet season flow to give the elevation shown in col. (8) at the next dam upstream, resulting in a minimum navigable depth of 9 feet, with 2 feet over-depth. This elevation is sometimes also referred to as "minimum drawdown elevation" or "minimum navigation level" or "maximum drawdown."

Col. (10) is the difference in the volumes for elevations in columns (6) and (8).

Col. (11) is the difference in the volumes for elevations in columns (5) and (7).

Normal pool level in column (6) is an arbitrary level generally defining the maximum level to which the pool will be raised in low-water season except for possibly a temporary rise of one foot above this caused by malarial control fluctuations.

[The information shown in this table appears in def. exs. 39, 42, 43, 45, 45A, 46, 46A, 47, 48, 51, 52, 53, 54, r. 4064, 4066-4073, 4074-4076; def. ex. 152, r. 4263; def. exs. 36, 38, 40, 44, 50 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* comp. ex. 328 (original).]

Project	Elev. Spillway Crest	Number & Size Spillway Gates	Spillway Disch. Capacity c. f. s.	Elev. Lower Lock Sill	Elev. Upper Lock Sill	Size of Lock Chamber Feet	Power Units Installed or Authorized	Ultimate Power Units Provided For
Gilbertsville	330	24–45 x 40	850,000			110 x 600		6–32,000 KW
Pickwick	378	22–40 x 40	820,000	342.2	398.0	110 x 600	2–36,000 KW	6–36,000 KW
Lock & Dam No. 1	416			394.1	406.6	60 x 300		
Wilson	487	58–18 x 38	629,000			60 x 300	4–20,000 KW	4–20,000 KW*
						60 x 300	4–26,000 KW	14–26,000 KW*
Wheeler	541	60–15 x 40	687,000	491.0	534.0	60 x 360	4–32,000 KW	8–32,000 KW
Guntersville	545	18–40 x 40	625,000	538.0	578.0	60 x 360	3–24,000 KW	4–28,000 KW
Hales Bar	626.2	Flash boards 3 ft. high				60 x 287		
Chickamauga	655	20–40 x 40	600,000	618.2	663.0	60 x 360	3–27,000 KW	4–27,000 KW
Watts Bar	720	21–25 x 40				60 x 360		4–37,500 KW
Coulter Shoals	790	20–25 x 40				60 x 360		3–20,000 KW
Norris	1020	3–14 x 100	205,000				2–50,000 KW	2–50,000 KW
Hiwassee	1503.5	7–23 x 32	130,000				1–60,000 KW	2–60,000 KW

*Provision for the ultimate installation of all these units was made by the United States Army Engineers in Wilson Dam as originally constructed. The dam as completed by them included the completed power house, with 8 generating units installed and provision made for installation of the additional 10 generating units.

[The information shown in this table appears in def. exs. 39, 42, 43, 45, 46, 47, 48, 51, 52, r. 4064, 4066-4068, 4070, 4072-4075; def. ex. 153 (original); comp. ex. 116 (original).]

44. The engineers of the Authority in responsible charge have determined, on the basis of a study of all available records, upon a method of operation for the Authority's projects which in their opinion is the most effective method of operation for the improvement of navigation and the control of destructive floods on the Tennessee and Mississippi River Valleys. [Woodward, r. 1775; def. ex. 41, r. 4065; r. 1777-1790, 1820-1821; Kimball, r. 1850-1851, 1880-1881.] This is the method of operation which in their opinion is best adapted for the combined purposes of improvement of navigation and the control of destructive floods without reduction in the effectiveness of the Authority's projects for either navigation or flood control. [Woodward, r. 1777-1790, 1820-1821; Kimball, r. 1850-1851, 1880-1881.] The general method of operation is set forth in the report of the Board of Directors of the Tennessee Valley Authority entitled, "The Unified Development of the Tennessee River System," pages 18-19, which is complainants' exhibit 328 in this case. Some details of operation have been changed in the past, and according to the Authority's engineers in responsible charge, other changes may be necessary in the future as further investigations and experience may require. [Woodward, r. 1779, 1780, 1781, 1783, 1784, 1792; Wessenauer, r. 2173.]

45. The engineers of the Tennessee Valley Authority in responsible charge operate the projects of the Authority substantially as follows: The reservoir levels of the mainstream dams below Chattanooga are held somewhat above low pool level during the flood season and drawn down to or below such level in advance of a flood; those above Chattanooga are to be held at about low pool level during flood season. [Woodward, r. 1783-1784; Kimball, r. 1850-1851; Wessenauer, r. 2175.] As the flood season draws to a close, about the beginning of April, reservoir levels on the main stream are allowed to rise. [Woodward, r. 1784; Kimball, r. 1851.] The reservoir levels of the tributary projects

are maintained at about low pool level at the beginning of the flood season, and a substantial portion of the storage capacity below so-called normal pool level is gradually filled during and after the flood season. A sufficient capacity is held available at the close of the flood season to control the largest run-off that may be expected at that time. [Woodward, r. 1784-1785, 1786-1790; Kimball, r. 1851.] The water stored in the reservoirs on the tributaries and the main stream is released during the low-water season to augment the low-water flow. [Woodward, r. 1780-1782; Barker, r. 1954-1956; def. ex. 142, r. 4189; Karr, r. 2195-2199.]

46. The general method of operation set forth in finding 45 conforms to the method of operation for navigation and for flood control contemplated in House Document No. 328 and House Document No. 259 [see comp. ex. 105 (original) pp. 63-64 (par. 31), p. 71 (par. 41), p. 74 (par. 46), p. 78 (par. 52), p. 95 (par. 77); *cf.* Clemens, r. 1658-1660, in regard to def. ex. 32 (original)] and is reasonably calculated to provide most effectively for the improvement of navigation and the control of destructive floods in the Tennessee and Mississippi River Valleys without reduction in the effectiveness of the Authority's projects for either flood control or navigation [Woodward, r. 1779-1780, 1788-1790, 1821; Kimball, r. 1850-1851, 1880-1881; Clemens, r. 1658-1660, 1665-1666, *cf.* r. 1654-1655, 1658-1659; Floyd, r. 1894; Sargent, r. 1678-1681, 1687; Bowman, r. 1738-1739, 1742; Barker, r. 1958; Watkins, r. 1543-1545, 1548].

47. While dams and reservoirs of limited capacity designed for local flood protection only should, according to some engineering opinion, be kept empty in advance of floods and emptied immediately after floods, those principles govern the design and method of operation of dams and reservoirs established for local protection alone and do not apply to the projects of the Tennessee Valley Authority, which are designed and operated for the protection of points

on the Tennessee, the lower Ohio, and the lower Mississippi, and for navigation, as well as for local flood protection. [Watkins, r. 1543-1544, 1633-1634; Kimball, r. 1880-1881; Woodward, r. 1786-1787, 1790; Kelly, r. 1386-1387; Floyd, r. 1894.]

STATUS OF NAVIGATION ON THE TENNESSEE RIVER

48. The Tennessee River, a navigable river approximately 652 miles long, is formed by the junction of the French Broad River and the Holston River at Knoxville, Tennessee, and enters the Ohio River near Paducah, Kentucky. In its unimproved state there were numerous obstacles to commercial navigation, including shoals and bars, steep slopes, high velocities, and floods in many months of the year, and inadequate depths in a great proportion of the river. [Watkins, r. 1549-1550; Barker, r. 1942-1943; see def. exs. 93, 97 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. ex. 94, r. 4100.]

49. The problem of improving navigation on the Tennessee River has been a matter of national concern for more than a hundred years. From 1852 to 1933 Congress authorized and made appropriations for numerous navigation surveys and navigation projects covering all portions of the Tennessee River and certain of its tributaries, at a total expenditure of approximately $18,000,000, exclusive of Wilson Dam. [See def. ex. 95 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Barker, r. 1943.]

50. Prior to the passage of the Tennessee Valley Authority Act the Tennessee River was not adequately improved for modern commercial navigation except for short stretches behind the Government-owned Dam No. 1 and Wilson Dam, and the privately owned Hales Bar Dam. The controlling depth of the river at that time ranged from

4½ feet in the lower part of the river to 1 foot in the upper section. [See def. ex. 97 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Barker, r. 1949; Watkins, r. 1549-1550; Putnam, r. 1152.]

51. The Tennessee River, as a tributary of the Ohio River, is interconnected with the inland waterway system of the Mississippi River, which connects the Gulf and the Great Lakes and taps the territory of about 15 States, including many important traffic-producing industrial, commercial, and agricultural centers, and extends as far east as Pittsburgh, Pennsylvania, as far west as Kansas City, Missouri, and as far north as Minneapolis and St. Paul, Minnesota. [See def. exs. 116, 118, 123 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Alldredge, r. 2044-2045.] Interstate railroads and highways interconnect with the waterway at numerous points, permitting joint land and water transportation. [See def. ex. 66 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] There are varied and substantial agricultural, mineral, and forest resources located in the Tennessee Valley within reach of the waterway. [Alldredge, r. 2046-2051; def. exs. 120, 121, 122 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* comp. ex. 105 (original) pp. 512-514.] About 18.2% of the population of the United States, based on the 1930 census, is located within 25 miles of the banks of this interconnected waterway. [Alldredge, r. 2045-2046; see def. ex. 119 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] This inland waterway system includes 5,700 miles of improved waterway of 9-foot depth or over, an additional 3,200 miles of 6- to 9-foot depth, and an additional 1,000 miles of 4- to 6-foot depth. [See def. exs. 116, 118 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*]

52. The dams constructed, under construction, or authorized for construction or investigation by the Tennes-

see Valley Authority will provide a navigation channel throughout the length of the Tennessee River substantially superior to that which could be provided by any alternative method of navigation improvement. [Watkins, r. 1536-1539, 1541-1542, 1547-1548, 1556, 1581-1582, 1620; Barker, r. 1958, 1958-1973; Brodie, r. 2024-2031; comp. ex. 105 (original) pp. 12-13 (see appendix A at r. 4272); def. exs. 104, 109, 110 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. exs. 106, 107 (original); def. exs. 105, 108, 115, r. 4108, 4109, 4133.] They will also provide substantial navigation improvement on a number of the tributaries of the Tennessee River [Barker, r. 1963-1964; def. ex. 109 in *Reproductions of Certain Original Exhibits Submitted by Appellees*] and will provide an increased water supply, which will substantially improve navigation on the Mississippi River in the low-water season [Barker, r. 1955-1956; Watkins, r. 1545, 1634; Brodie, r. 2027-2029].

53. Each of the dams constructed, under construction, or authorized for construction or investigation by the Tennessee Valley Authority will result in a substantial improvement for navigation. [Barker, r. 1949, 1950-1951, 1955-1956; def. ex. 98 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Watkins, r. 1539, 1545, 1557; Putnam, r. 1183-1185; Bowman, r. 1693-1694, 1699, 1704-1706, 1709-1710; def. exs. 47, 48, r. 4072, 4073; def. exs. 38, 40, 44 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*]

54. The high-dam projects of the Authority will provide a navigation improvement substantially superior to that which could be provided by the system of low dams set forth in House Document No. 328. [See references in support of fdg. 52.] The superiority of high dams for navigation was recognized by the Board of Engineers for Rivers and Harbors in House Document No. 328. [Comp. ex. 105 (original) pp. 11-13 (see appendix A at r. 4272);

Watkins, r. 1581-1582, 1620.] The Authority's projects will provide superior channel depths and widths [Watkins, r. 1536-1537; Barker, r. 1958, 1974; def. ex. 108, r. 4109; r. 1961, 1968-1970], substantially fewer lockages [Watkins, r. 1536; Barker, r. 1958, 1959 (see def. ex. 105, r. 4108); def. ex. 115, r. 4133; def. ex. 104 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Putnam, r. 1177], substantially less current velocities [Barker, r. 1958, 1959-1961; def. ex. 106 (original); Watkins, r. 1537], pool fluctuations [Barker, r. 1955, 1958, 1965-1966; def. ex. 110 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Watkins, r. 1537], and interruptions from floods [Watkins, r. 1537; Barker, r. 1955, 1961]. The elimination of lockages will substantially reduce the time consumed in lockages [Brodie, r. 2024-2025; Barker, r. 1958, 1959 (see def. ex. 105, r. 4108); def. ex. 115, r. 4133; Watkins, r. 1536]; the superiority of channel depths and reduction of current velocities will substantially increase the speed of movement and reduce the amount of motive power required [Barker, r. 1958, 1959-1963, 1968-1970; def. ex. 108, r. 4109; def. ex. 106 (original); def. ex. 115, r. 4133; def. ex. 107 (original); Watkins, r. 1536-1538, 1556; Brodie, r. 2025, 2026-2027]; and the wider and longer pools of the high dams are preferred by the navigator to the narrow, crooked pools of the low dams [Brodie, r. 2027; Barker, r. 1967, 1970; Watkins, r. 1537-1538]. The reduction in pool fluctuations will greatly encourage the development of terminal facilities necessary to the development of commercial navigation. [Brodie, r. 2025-2026; Barker, r. 1965-1966; Watkins, r. 1537.] The advantages of the Authority's projects in these respects will insure a substantially greater efficiency of the navigation channel, substantially greater dependability of service, and may reasonably be expected to attract a substantially greater volume of traffic on the improved river. [Watkins, r. 1556; Brodie, r. 2029-2031.] The high dams will also provide substantial im-

provement of navigation on the tributaries which would not be provided by the low-dam projects. [Barker, r. 1963; def. ex. 109 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] The advantages of high dams cannot be accurately measured in monetary terms. [Brodie, r. 2037-2038; Putnam, r. 1182, 1183.] The boats and barges which are now in general use on the interconnected inland waterways of the Mississippi River system will be able to navigate the Tennessee River where improved by the projects of the Authority without change of design or extent of loading. [Brodie, r. 2023-2024; Barker, r. 1976-1977.]

55. On other tributaries of the Mississippi the United States Army Engineers are now replacing certain low dams with high dams, with provision for the development of power [Putnam, r. 1174-1175; Watkins, r. 1538; Barker, r. 1974], and at the time of the creation of the Tennessee Valley Authority they were engaged in the construction of a lock for a high navigation dam at the Wheeler Dam site, with provision in their design for the development of power [Bowman, r. 1762-1763, 1765-1766; Putnam, r. 1172-1173; Crane, r. 1285].

56. The improved navigation channel provided by the projects of the Authority will cause a very substantial increase and development in waterway traffic between the Tennessee Valley region and other regions of the United States connected by water, rail, and highway. [Watkins, r. 1550-1556; Alldredge, r. 2053-2056; def. ex. 126, r. 4136; r. 2063-2064; Barker, r. 1977; Brodie, r. 2029.] Despite the numerous obstacles in the past to commercial navigation on the Tennessee River, the traffic on the river over the last 40 years has been between 1,000,000 and 2,000,000 tons annually, but due to lack of adequate depths the traffic has consisted largely of short hauls. [Def. ex. 96 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* comp. ex. 105 (original) pp. 205-233; Watkins, r. 1549-1550; Barker, r. 1944-1946.] It was estimated by the Army

Engineers in House Document No. 328 that there would be an increase of traffic of approximately 7,000,000 tons per annum at a saving of about $10,000,000 annually (or a saving of approximately 25% of the present freight charges; if the Tennessee River were adequately improved for commercial navigation. [Watkins, r. 1552, 1550-1556; comp. ex. 105 (original) p. 497.] Subsequent studies since the creation of the Tennessee Valley Authority have confirmed the reasonableness and conservative character of this estimate. [Def. ex. 126, r. 4136; Alldredge, r. 2053-2054, 2055-2061, 2063-2064.] On the basis of the growth of traffic experienced on the comparable improved waterways of the interconnected Mississippi River system it is reasonable to expect an ever increasing growth in the volume of traffic on the river. [Alldredge, r. 2061-2064; def. ex. 130 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Watkins, r. 1549, 1554; def. ex. 30 (original).]

57. The value of the improvement to navigation provided by the projects of the Authority is not limited to the reduction in the cost of transportation to shippers, but includes substantial intangible values, such as the stimulation of the growth of industry and business and the promotion of the general prosperity of the region within the influence of the improved waterway. [Putnam, r. 1182-1183; Watkins, r. 1553-1554; Alldredge, r. 2063.]

The Flood Problem on the Tennessee and Mississippi Rivers

58. The recurrent great floods on the Tennessee and Mississippi Rivers have long presented a grave flood menace of national importance. Thousands of miles of interstate railways and highways, and 20,000,000 acres of the richest cotton lands in the United States, the products of which are normally marketed in interstate and foreign commerce, lie within the flood plain of the Mississippi Valley. Lo-

cated in the path of Mississippi floods also are the important commercial cities of Memphis, Cairo, and New Orleans, and other smaller communities, in which are located large cotton warehousing, compressing, and processing plants, and woodworking plants, engaged in the production, processing, and distribution of goods normally marketed in interstate and foreign commerce. [Okey, r. 1905-1913, 1920-1922; def. ex. 91 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] The city of Chattanooga, which is the principal point of danger on the Tennessee River, is an important center of interstate railways and highways and manufacturing plants, and is a principal center for the distribution throughout the southeastern region of commodities produced in other States. [Kimball, r. 1824; see def. ex. 66 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Alldredge, r. 2063; Kurtz, r. 1194-1198; comp. ex. 349, r. 3084B.]

59. The great floods of the past on the Tennessee and Mississippi Rivers have caused and unless controlled in the future will cause complete interruption of transportation on the Mississippi and Tennessee Rivers, and complete interruption of interstate commerce on the railroads and highways, as well as interruption in the production, manufacture, and distribution of products normally marketed in interstate and foreign commerce, and substantial damage to the facilities and properties employed for these purposes. [Clemens, r. 1636-1642; Okey, r. 1905-1913, 1920-1922; Kimball, r. 1824-1834; def. exs. 72, 73, 81 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. exs. 74-80, r. 4084-4096; Kurtz, r. 1194-1198; comp. ex. 349, r. 3084B; Watkins, r. 1537, 1556-1557; comp. ex. 105 (original) pp. 16-17, 730-734 (see appendix A, r. 4272-4273); Barker, r. 1955.]

60. For the most effective control of destructive floods in the Tennessee River basin, particularly in the critical area at Chattanooga, Tennessee, it is desirable to provide

high dams with controlled storage (such as the projects of the Authority) on the main stream of the Tennessee and on the principal tributaries above Chattanooga, including the Clinch and Hiwassee Rivers, in order to supplement local protective works. [Kimball, r. 1834-1836, 1850-1852, 1867-1869; def. exs. 68, 82, r. 4080, 4097; Watkins, r. 1539-1540, 1544-1546; comp. ex. 105 (original) p. 17 (see appendix A at r. 4273); def. ex. 152, r. 4263; Floyd, r. 1891.]

61. The Ohio River and its tributaries, including the Tennessee River, are the largest contributor to all Mississippi floods, contributing from 52% to 90% of the floods between Cairo, Illinois, and Helena, Arkansas. The Tennessee River has always made a substantial contribution to all Mississippi floods. [Clemens, r. 1637, 1649; Kimball, r. 1825-1826; def. exs. 69, 70, r. 4081, 4082.]

62. The existing flood-protection works on the lower Mississippi River, consisting of levees supplemented by floodways and cut-offs, are inadequate to pass a flood such as is now estimated to be reasonably probable in the future without disastrous overtopping of the existing levees. [Kelly, r. 1379-1380; Clemens, r. 1645-1646, 1650; Okey, r. 1914.] Even in lesser floods the existing projects provide adequate protection for only 60% of the alluvial valley [Okey, r. 1914], and then only with the use of the floodways, the use of which it is desirable to eliminate whenever possible [Okey, r. 1931-1932; Clemens, r. 1645, 1650; def. ex. 32 (original) p. 8]. The levees on the lower Mississippi have reached the practical limits of height. [Kelly, r. 1380; Clemens, r. 1646; Okey, r. 1932-1933.] Any additional protection against lower-Mississippi floods must be found in part in the provision of reservoirs on the tributaries of the Mississippi to reduce their contribution to Mississippi floods. [Kelly, r. 1379-1382; Clemens, r. 1646-1650.] For the most effective flood-control use, reservoirs should be located close to Cairo, which is at the junction of the Ohio

and the Mississippi Rivers. [Clemens, r. 1649-1650; Kelly, r. 1381-1382; def. ex. 32 (original) p. 18 (par. 22).]

63. The Tennessee River, being the largest tributary of the Ohio and closer to Cairo and the lower Mississippi than any other major tributary of the Ohio system, is one of the best rivers for reservoirs for flood control on the lower Mississippi. [Clemens, r. 1650; Floyd, r. 1890-1891.] For the most effective reduction of the contribution of the Tennessee River system to Mississippi floods it is necessary to provide high dams with controlled storage (such as the projects of the Authority) on the main stream and storage dams on the tributaries, including the Clinch and Hiwassee Rivers. [Clemens, r. 1651-1652, 1654-1655; Watkins, r. 1557, 1539-1540, 1544-1547; Kimball, r. 1834, 1850-1851; Floyd, r. 1891.]

64. The season of major floods in the Tennessee River basin is limited to the period from approximately the middle of December to about the first of April. [Woodward, r. 1786-1787; Kurtz, r. 1235; Kimball, r. 1828.] No major flood of record has occurred in the Tennessee basin outside this period; floods occurring outside this flood season are of limited volume and duration, and are local in effect. [Woodward, r. 1787; Kurtz, r. 1235; Bowman, r. 1738; Justin, r. 2388.] The season of major floods on the lower Ohio and lower Mississippi lasts about a month later than the flood season on the Tennessee [Clemens, r. 1665; Kelly, r. 1386-1387], but as the end of the Tennessee flood season approaches, the need for storage capacity to control the contribution of the Tennessee to Ohio and Mississippi floods diminishes [Kimball, r. 1850-1851; Woodward, r. 1786-1788].

65. Each of the projects of the Authority is of substantial value for the reduction of destructive flood heights in the Tennessee and Mississippi River basins. [Def. ex. 151, r. 4263; Bowman, r. 1725, 1751, 1752; Woodward, r. 1784-1785, 1820-1821, 1786-1788, 1807-1808; Kimball, r. 1835-1836, 1838-1839, 1852; def. exs. 82, 152, r. 4097, 4263; Okey, r.

1914-1919, 1922; Clemens, r. 1650-1651, 1656; Watkins, r. 1539-1540, 1545-1546; Floyd, r. 1890-1891; Kurtz, r. 1235; Kelly, r. 1384-1385.]

66. The controlled-storage projects of the Authority are the only types of engineering works on the Tennessee River system which will afford effective flood control in both the Tennessee and Mississippi River basins. [Clemens, r. 1651-1652, 1654-1655; Kimball, r. 1845, 1850; Watkins, r. 1547.] Automatic, uncontrolled detention reservoirs are of uncertain value for local Tennessee flood control [Kimball, r. 1842-1850; Watkins, r. 1547, 1583-1590] and would be of no value for the control of floods on the lower Mississippi [Kurtz, r. 1222-1223; Clemens, r. 1654-1655; Kelly, r. 1372; Watkins, r. 1547; Kimball, r. 1845]. The so-called natural valley storage in the Tennessee River basin is the space occupied by the flood itself, and the retarding effect of such uncontrolled valley storage may increase the danger of Mississippi floods. [Clemens, r. 1652-1653; Kimball, r. 1840-1841; Kelly, r. 1388-1389; Watkins, r. 1540; def. ex. 152, r. 4263.] The low dams set forth in House Document No. 328 would be of no value in the control of destructive floods either in the Tennessee or Mississippi River basins, as was recognized in House Document No. 328. [Clemens, r. 1652; comp. ex. 105 (original) p. 64 (see appendix A at r. 4274); Watkins, r. 1547.]

67. Pursuant to congressional authorization a comprehensive survey of the Tennessee River system with respect to navigation, flood control, and conservation of power resources was undertaken by the Corps of Engineers of the War Department and completed in 1930. This report is contained in House Document No. 328, Seventy-first Congress, second session. [Comp. ex. 105 (original).] The recommendations contained in this report were adopted by Congress in the Rivers and Harbors Act of 1930 and provided for the creation of a 9-foot navigation channel throughout the length of the Tennessee River by a series of

movable low dams to be constructed by the Federal Government or a series of high dams to be constructed by private interests in cooperation with the Federal Government. [Comp. ex. 105 (original) p. 5; Watkins, r. 1535-1536, 1547-1548, 1581-1582.] The preliminary estimate of cost of the low dams was approximately $75,000,000. In 1935 the Mississippi River Commission, in a comprehensive report on reservoir projects for Mississippi flood control, set forth in House Document No. 259, Seventy-fourth Congress, first session, recommended that the Federal Government adopt a policy of encouraging the construction of reservoirs on the tributaries of the Mississippi River for increased flood protection on the lower Mississippi. [Def. ex. 32 (original) p. 33; Clemens, r. 1647-1650, 1671-1672, 1656-1657; Kelly, r. 1384-1386.] In April 1937 the Chief of Engineers, in a report set forth in Committee Document No. 1, Seventy-fifth Congress, first session, recommended the construction by the Federal Government of storage reservoirs on the tributaries of the Mississippi as essential for the control of floods on the lower Mississippi. [Kelly, r. 1380-1382; Okey, r. 1932-1933.] Neither at the time of the enactment of the Tennessee Valley Authority Act nor since has there been any reasonable prospect that a comprehensive development of the Tennessee River and its tributaries for the combined purpose of navigation and flood control in the Tennessee and Mississippi River basins could be obtained in any other way except by the construction of high dams by the United States Government or some agency thereof. [Longley, r. 974; Watkins, r. 1540-1542, 1558.]

Combined Benefits to Navigation and Flood Control From the Tennessee Valley Authority Projects

68. The projects of the Authority will permit the maintenance at all times of the 9-foot channel on the main stream of the Tennessee with sufficient overdepths to ac-

commodate boats of 9-foot draft. [Barker, r. 1951, 1949; def. ex. 98 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Watkins, r. 1557; Putnam, r. 1189.] The tributary projects on the Clinch and Hiwassee Rivers will also permit the maintenance of slackwater pools in the lower portions of the reservoirs, which is necessary on the Clinch, a navigable tributary, in order to preserve existing navigation and to avoid foreclosing future improvement for navigation [Watkins, r. 1542; Barker, r. 1956-1957], and is valuable on both tributaries in order to preserve the life of the projects by affording capacity for the deposit of silt [Barker, r. 1955; Watkins, r. 1543]. The projects of the Authority will also provide substantial storage space above slackwater pool level to control in whole or in part the run-off from the drainage area above the dams during the flood season. [Bowman, r. 2237; Watkins, r. 1631-1632, 1545, 1539.] Such projects are the only engineering works which can provide effective flood control in conjunction with the continuous maintenance of the 9-foot channel for navigation. [Watkins, r. 1539, 1544, 1546-1547, 1557; Clemens, r. 1651-1652, 1654, 1655; Bowman, r. 1759; Barker, r. 1977-1978; Kimball, r. 1852, 1834-1835, 1838-1850; Kurtz, r. 1219.]

69. The tributary projects of the Authority, by reducing flood flows and increasing low flows, will substantially increase the effectiveness of the high dams on the main stream for the reduction of flood heights on the Mississippi and Tennessee Rivers in combination with the maintenance of a 9-foot navigation channel. [Clemens, r. 1651-1652; Watkins, r. 1545-1547; Floyd, r. 1891, 1892-1894; Kimball, r. 1838, 1850.] These tributary reservoirs will also serve to increase materially the navigable depths in the unimproved portions of the main stream for navigation, will substantially increase the navigable depths in the upper ends of the navigation pools created by the main-stream projects, and will substantially increase the navigable

depths on the lower Mississippi River, which increases will be of material benefit to navigation. [Watkins, r. 1545; Barker, r. 1954-1956.]

70. The low-dam plan recommended in House Document No. 328 as an alternative navigation project would have no flood-control value. [Comp. ex. 105 (original) p. 64 (see appendix A at r. 4274); Watkins, r. 1537, 1547; Clemens, r. 1652.] The low-dam plan in conjunction with detention reservoirs on the tributaries might together accomplish navigation improvement and flood control on the Tennessee River, but this combination would contribute nothing to flood control in the Mississippi River [Kurtz, r. 1222-1223], might aggravate flood conditions there [Clemens, r. 1654-1655; Kimball, r. 1845, 1843-1850; def. exs. 89, 90 in *Reproductions of Certain Original Exhibits Submitted by Appellees*], and would provide navigation improvement inferior to that provided by the projects of the Authority [Watkins, r. 1536-1539, 1556; Brodie, r. 2024-2031; Barker, r. 1958, 1958-1973; comp. ex. 105 (original) pp. 12-13 (see appendix A at r. 4272); def. exs. 106, 107 (original); def. exs. 104, 109, 110 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* def. exs. 105, 108, 111, 115, r. 4108, 4109, 4110, 4133].

71. Upon the completion of the construction of the Pickwick Landing project and the Guntersville project, these two projects, in conjunction with the already-completed Wheeler Dam and the previously existing Wilson Dam, will provide a 9-foot channel from Pickwick Landing to the vicinity of Chattanooga, a distance of approximately 257 miles. [Barker, r. 1950-1951; def. ex. 98 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] The completed Norris Dam is being operated to provide a navigation channel of 7-foot minimum depth in the 207-mile stretch between Pickwick Landing and the mouth of the Tennessee River. [Barker, r. 1950-1951, 1954-1955, *cf.* r. 1994.] This 7-foot depth below Pickwick will be in-

creased to 7½ feet upon completion of Hiwassee. [Barker, r. 1951.] These projects together will provide a commercially feasible navigation channel between Chattanooga, Tennessee, and the inland waterway system. [Barker, r. 1951.] For the larger part of each year there will be a through navigation channel of 9-foot depth from Chattanooga to the mouth of the river [Barker, r. 1951, 1994], and even prior to construction of Gilbertsville, by means of a moderate amount of dredging and releases from other projects of the Authority, it is feasible to provide a permanent 9-foot channel below Pickwick Dam [Putnam, r. 2312-2313]. Until the Gilbertsville project is constructed, which may not be for many years, it is necessary to store a substantial amount of water in the tributary reservoirs during the high-water season to provide the low-water releases required for this improvement to navigation. [Barker, r. 1992-1993.]

72. The increase of the low-water flow by means of the storage of water during the high-water season at Norris Dam and the release of such water during the low-water period has increased and will substantially increase the continuous water power available at Wilson Dam and will increase the value of Wilson Dam for all purposes. [Bowman, r. 1738, 2251; Thomas, r. 2106-2107; Wessenauer, r. 2181-2182; def. ex. 139, r. 4186; Woodward, r. 1815; Kurtz, r. 1217.]

73. Since completion, Norris Dam has been successfully operated to improve substantially the navigation channel of the Tennessee River between Wilson Dam and its mouth [Barker, r. 1954-1955; Woodward, r. 1780-1782], to prevent a probable flood at Chattanooga in the year 1936, and to hold off from the peak of the Mississippi River flood of 1937 approximately 28,000 c.f.s., the Norris Dam storing the entire flow of the Clinch River for 6 weeks during the 1937 Mississippi flood [Woodward, r. 1788, 1807-1810;

Kimball, r. 1881-1882; *cf.* def. ex. 82, r. 4097; Kimball, r. 1835].

74. The operation of Norris Dam since its completion has also increased the amount of water power available in the low-flow season at the existing Government-owned Wilson Dam [def. ex. 142, r. 4189, 4191, columns 5 and 6; Karr, r. 2198; Bowman, r. 2251], but the operation of holding and releasing waters has been directed primarily to navigation and flood control and the protection of construction works below [Woodward, r. 1779-1780, 1784, 1805; Kimball, r. 1881-1882; Karr, r. 2197; def. ex. 41, r. 4065; Woodward, r. 1775]. The same is true of Wheeler Dam, which has been operated since its completion in 1936 to maintain a 9-foot navigation channel 74 miles to the site of the Guntersville project and to reduce flood waters and protect construction works at the Pickwick project. [Woodward, r. 1783, 1780, 1808; Bowman, r. 1706; Barker, r. 1971-1972.] Approximately 85% of the water released from Norris during the year 1937 was of benefit only to navigation and flood control, and was not required or useful for production of power. [Karr, r. 2198; def. ex. 142, r. 4189, 4190, column 3, 4191, column 6.] The temporary storage and releases of water for power-peaking purposes have been at all times subordinated to the requirements of navigation and flood control, and have never been permitted to interfere with or affect the continued maintenance of the stream flow required for navigation or the storage required for flood control. [Woodward, r. 1779-1780, 1784, 1805; Karr, r. 2197-2199; Barker, r. 1955.] Temporary abnormal conditions, such as the necessity of operating for the protection of the Authority's construction works, have materially affected the operation of the Norris and Wheeler projects. [Woodward, r. 1780, 1808, 1820; Kimball, r. 1881-1882.]

75. The projects of the Authority are designed primarily for the improvement of navigation and the control

of destructive flood waters. [Bowman, r. 2237-2243; *cf.* def. ex. 37 in *Reproductions of Certain Original Exhibits Submitted by Appellees,* and Bowman, r. 1695-1696; *cf.* def. ex. 49 in *Reproductions of Certain Original Exhibits Submitted by Appellees,* and Bowman, r. 1720-1721; r. 1760-1761, 1757-1758; Watkins, r. 1547-1548, 1631-1632.] The sequence of development has been determined according to the requirements of navigation [. . .[1]]. [Bowman, r. 1758, 2244-2247; Barker, r. 1950-1951.]

76. The projects of the Authority which are completed and in operation have been and are operated primarily for navigation and flood control, and the responsible officers of the Authority charged with the operation of such projects are required by instructions from the board of directors to operate them primarily for such purposes. [Def. ex. 41, r. 4065; Woodward, r. 1775, 1779-1780, 1805; Karr, r. 2193-2194, 2197, 2199; Barker, r. 1955; Kimball, r. 1881-1882; comp. exs. 923, 924, 957, r. 3955, 3961, 4004.] These instructions have been un[i]formly obeyed. [Woodward, r. 1775, 1779-1780, 1805, 1820; Karr, r. 2193-2194, 2197, 2199.]

77. The approximate length and maximum width of the pools upon the Tennessee River created by the TVA unified plan will be [def. exs. 55-64 in *Reproductions of Certain Original Exhibits Submitted by Appellants*]:

Dams	Length of Pool	Maximum Width
Gilbertsville	184.2 miles	6 miles
Pickwick Landing	50.1 miles	1½ miles
Wheeler	74.1 miles	3½ miles
Guntersville	82.1 miles	3 miles
Chickamauga	59.9 miles	2½ miles
Watts Bar	73.4 miles	1½ miles
Coulter Shoals	48.8 miles	½ mile

78. Commerce upon the Tennessee River between 1927 and 1934 averaged 1,750,000 tons per year, for which the

[1] The remainder of this finding is incorrectly printed in the record (r. 618).

average haul was 23 miles, which consisted 82% in the transportation of sand and gravel, 9% in the transportation of various forest products, and 9% in the transportation of iron, steel, lime and cement. Since the creation of TVA Government traffic has constituted a substantial portion of the total traffic, amounting to 52% in 1935 and 54% in 1936 of the total traffic. The average annual value of such cargoes was $11,000,000, on which the average annual savings of water transportation over land transportation was $2,000,000. There have been no significant or substantial movements of commerce upon the tributaries of the Tennessee River. [Putnam, r. 1161-1163; Barker, r. 1985-1986, 1983-1984, 2005-2006; Alldredge, r. 2071; def. ex. 153 (original) pp. 938, 1064.]

79. There is no advantage accruing to navigation upon the Tennessee River by shutting off the flow from Norris Dam entirely on Sundays and Labor Days as was done during August and September 1936. This method of operation is entirely consistent with the operation of dams primarily for navigation and flood control. [Barker, r. 1994-1995.]

80. It would not be practical or feasible to construct a belt coal conveyor to pass coal from barges on the reservoir at Norris Dam to other barges below Norris Dam to be transported upon the Tennessee River. [Barker, r. 1995-1999; comp. ex. 933 in *Reproductions of Certain Original Exhibits Submitted by Appellants.*]

81. Practically all of the property damage from floods in the Tennessee Valley occurs at and above Chattanooga, Tennessee. [Kurtz, r. 1197; comp. ex. 349, r. 3084B; Watkins, r. 1582; comp. ex. 105 (original) p. 734.]

82. Flood damages in the Tennessee River below Chattanooga are relatively small in amount and, while including some damage to highways and railroads (easily eliminated by relocation), consist largely of damages to farm crops re-

sulting from the overflow of rich valley lands. The construction of the TVA unified plan will overflow permanently thousands of acres more of such valley farm land than is now occasionally overflowed by floods. At the present time such occasional overflows generally take place before the crop season and their results are beneficial to the land. [Kurtz, r. 1197, 1209, 1195, 1205; comp. exs. 353, 355, r. 3086, 3088; comp. ex. 105 (original) p. 734; def. ex. 153 (original) pp. 919, 947; comp. ex. 116 (original) p. 403.]

83. Less than 8% of the total population in towns and cities upon the Tennessee River and its tributaries, which in 1930 was 341,522, is below Chattanooga. [Kurtz, r. 1195-1196; comp. ex. 348, r. 3084A.]

84. The estimated average annual damage from all floods to all classes of property on the Tennessee River and its tributaries is $1,441,208, of which $1,356,053 occurs at and above Chattanooga. [Comp. ex. 349, r. 3084B; Watkins, r. 1582.]

85. A flood-control program to achieve the maximum practical protection upon the Tennessee River and its tributaries should be directed primarily for protection at and above Chattanooga. [Kurtz, r. 1197.]

86. The greatest flood to be anticipated upon the Tennessee River and its tributaries would result in a stage at Knoxville of 68.3 feet, with a maximum flow of approximately 620,000 second-feet; in a stage at Loudon of 71.5 feet, with a maximum flow of approximately 605,000 second-feet; in a stage at Chattanooga of 73 feet, with a maximum flow of approximately 680,000 second-feet. The previous maximum recorded stage was at Knoxville 44.4 feet; at Loudon 47.0 feet; and at Chattanooga 57.9 feet. [Kurtz, r. 1200; comp. ex. 350 in *Reproductions of Certain Original Exhibits Submitted by Appellants.*]

THE CONSERVATION OF WATER POWER

87. The development of firm power by hydroelectric project is controlled by the amount of power that can be produced by the project both at extreme low water and extreme high water. [Kurtz, r. 1211.]

88. The load factor of a public utility system is the ratio of the average demand for power on that system expressed in kw. to the maximum demand for power on that system, and in the Tennessee basin area is about 60%. [Kurtz, r. 1211.]

89. At 100% load factor the firm capacity of Wilson Dam, excluding United States Nitrate Steam Plant No. 2, before the capacity of Wilson Dam was increased by the TVA dams upon the Tennessee River and its tributaries, was approximately 28,000 kw., and the firm energy was 242,600,000 kwh. per year. At 60% load factor 145,600,000 kwh. per year of firm energy would be produced by Wilson Dam power plant. The operation of the tributary reservoirs under the TVA high-dam program solely for regulation of the river will increase the firm-power capacity of Wilson Dam at 60% load factor by 151,300 kw. per year and the firm energy by 795,200,000 kwh. per year. [Kurtz, r. 1217; Putnam, r. 1167.]

90. At 100% load factor the operation of the tributary reservoirs solely for regulation of the river would increase the firm-power capacity of Wilson Dam by 79,700 kw. and the firm energy by 698,200,000 kwh. per year. [Kurtz, r. 1217; Bowman, r. 2251, 1738.]

91. The operation of Norris Dam in June of 1936, by increasing the low-water flow of the Tennessee River and by the generation of power, was sufficient to double the firm-power capacity of the TVA system as it existed at that time. [Woodward, r. 1815-1816; comp. ex. 909 in *Reproductions of Certain Original Exhibits Submitted by Appel-*

lants; comp. ex. 116 (original) p. 515 (see excerpt at r. 2726A).]

92. The tributary reservoirs under the TVA unified plan will greatly increase the firm power produced by the projects upon the Tennessee River. [Kelly, r. 1375.]

93. The projects of the Tennessee Valley Authority are the only type of dams which will conserve the water resources of the Tennessee River system for navigation, Tennessee and Mississippi flood control, water power, and other beneficial uses. [Watkins, r. 1545, 1557, 1547, 1631-1632; Bowman, r. 2235-2236; Kurtz, r. 1213, 1219, 1227-1228.] The available sites on the Tennessee River system for the construction of dams and reservoirs are strictly limited in number, and those available for flood control coincide in many instances with those required for the regulation of the river for other purposes. The utilization of such sites exclusively for local flood protection would preclude the development of the water resources for any other purposes. The construction of low dams on the main stream of the Tennessee River for navigation would waste the resources of the river for any other purpose. It would be physically impossible to provide the high dams on the main stream necessary for the development of flood control and power without the wasteful removal or duplication of such low dams. [Bowman, r. 2235-2237; Watkins, r. 1547; comp. ex. 105 (original) pp. 12-13, 21, 64 (see appendix A at r. 4272, 4274).]

94. The construction and operation of the projects of the Authority for navigation and flood control will provide a head for power by concentrating the fall of the river at certain points on the Tennessee River system and will substantially augment the minimum flow in low-water season. [Watkins, r. 1545.] Water power is a function of head and stream flow. [Wessenauer, r. 2189-2190.] The amount of continuous power is determined by the available head and the minimum flow in low-water season. Continu-

ous power is power available 24 hours a day, every day of the year, in every year. [Wessenauer, r. 2179-2180.] When operated for the improvement of navigation and the control of destructive floods the dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority will provide, in addition to the benefits to navigation and flood control set forth in previous findings and without reduction in the effectiveness of these projects for navigation and flood control, a large amount of continuous power. [Wessenauer, r. 2175; Watkins, r. 1545; Clemens, r. 1654, 1658; Sargent, r. 1681; Bowman, r. 1738-1741; Woodward, r. 1788-1790.]

The firm-power capacity, as distinguished from the continuous power, is the maximum demand which the system can reliably supply, having regard to the energy available, the generating units installed, the load factor, and other characteristics of the system. [Wessenauer, r. 2179-2180.] With the complete generating units which have already been installed or are under contract for installation at Norris Wheeler, Guntersville, Wilson and Pickwick Landing Dams [def. ex. 140, r. 4187], the dams constructed or under construction by the Tennessee Valley Authority will have a firm-power capacity of 395,000 kw. [def. ex. 141, r. 4188; Wessenauer, r. 2175, 2175-2180]. Together with the additional generating units at these dams and at Hiwassee and Chickamauga Dams which have been authorized by the Board of the Tennessee Valley Authority and for which appropriations have either been made or requested, the dams constructed or under construction by the Tennessee Valley Authority will have a firm-power capacity of 570,000 kw. [See def. ex. 141, r. 4188; Wessenauer, r. 2175, 2175-2180.]

Stock Ownership, Business, Franchises and Properties of Complainants

95. The National Power & Light Company, 46.56% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns the following percentages of the total outstanding voting stock of the following complainants [def. ex. 135, r. 4171]:

Birmingham Electric Company	100.00%
Carolina Power & Light Company	93.53%
Holston River Electric Company	100.00%
Memphis Power & Light Company	86.75%
Tennessee Public Service Company	99.31%
West Tennessee Power & Light Company	100.00%

96. The Electric Power & Light Corporation, 46.20% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 94.03% of the voting stock of the complainant Mississippi Power & Light Company. [Def. ex. 135, r. 4171.]

97. The American Gas & Electric Company, 17.51% of whose outstanding voting stock is owned by the Electric Bond & Share Company, owns 100% of the voting stock of the complainant Appalachian Electric Power Company, which in turn owns 100% of the voting stock of complainants Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company. [Def. ex. 135, r. 4171.]

98. During the past 5 years the Electric Bond & Share Company has voted the following approximate percentages of the total number of shares of voting stock represented at stockholders' meetings:

National Power & Light Company	62%
Electric Power & Light Corporation	77%
American Gas & Electric Company	25%

Throughout the history of these companies there has been no instance in which there has been any contest over proxies or in which any interests hostile to the managements have

organized opposition to the programs or policies of the respective managements or to the election of directors voted for by proxies designated by such managements. [Def. ex. 135, r. 4171.]

99. The Commonwealth & Southern Corporation owns 91.40% of the outstanding voting securities of the Alabama Power Company; 100% of the outstanding voting securities of the Georgia Power Company, Mississippi Power Company, and Southern Tennessee Power Company; and 64.43% of the outstanding securities of The Tennessee Electric Power Company. [Def. ex. 135, r. 4171.]

100. All of the common and preferred stocks of the complainant East Tennessee Light & Power Company are owned by the Cities Service Power & Light Company. All of the common stock of the complainant Tennessee Eastern Electric Company is owned by the East Tennessee Light & Power Company. [Ide, r. 857-858.]

101. All of the complainants are engaged in the business of generating, transmitting, distributing, and selling electricity as public utility companies, except that the Birmingham Electric Company [Pevear, r. 805], the Tennessee Public Service Company [Lamar, r. 800], the Holston River Electric Company [Canaday, r. 803], the Franklin Power & Light Company [Howard, r. 797], the Mississippi Power Company [Sweatt, r. 787], and the Mississippi Power & Light Company [Sargent, r. 884] purchase practically all of their electrical requirements, and except that the Southern Tennessee Power Company neither generates nor sells power but is engaged exclusively in the business of transmitting electric energy [Nelson, r. 861].

102. The complainant Mississippi Power Company owns no franchises or electrical facilities in 10 counties in northeastern Mississippi. The properties in these counties were sold to the Tennessee Valley Authority under the contract of January 4, 1934, and the area is the ceded area referred to in that contract. [Sweatt, r. 790-793; def. ex.

143A, r. 4195, 4196; *cf.* comp. ex. 12 in *Reproductions of Certain Original Exhibits Submitted by Appellants.*]

103. The complainant Alabama Power Company does not own any electrical facilities in 6 counties in northwestern Alabama except 9 municipal distribution systems and a high-tension 110-kv. line which crosses the territory. [Barry, r. 870, 871; Henkle, r. 1055; *cf.* def. ex. 143A, r. 4195, 4196; *cf.* comp. ex. 326 in *Reproductions of Certain Original Exhibits Submitted by Appellants.*] Under the contract of January 4, 1934, the complainant Alabama Power Company transferred to the Authority all the high-voltage transmission lines leading from Wilson Dam to the municipalities in the area with the exception of a single line leading to Decatur, the substations, and all rural lines in the area. [Barry, r. 870, 871; Henkle, r. 1055.]

104. Section 5 in the contract of January 4, 1934, provides that:

> Alabama Company covenants and agrees to convey its urban distribution systems in the above named counties in Alabama, said distribution systems being listed in Exhibit B, to the respective municipalities in or adjacent to which such systems are located, together with all franchises, contract rights, and going business thereto appertaining, when it has agreed with any such municipality on the price to be paid for the same. Alabama Company agrees to make every reasonable effort to come to an early agreement with said municipalities for such sales. In the event that any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Alabama Company, or if for some other reason the sale of any such system cannot be consummated, Authority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Alabama Company. [Def. ex. 143A, r. 4195 at 4198.]

105. A part of section 4 further provides with reference to the Alabama properties that:

Any conveyance of property shall include not only the physical property, easements and rights-of-way, but shall also include all machinery, equipment, tools and working supplies set forth in the respective exhibits, and all franchises, contracts and going business relating to the use of any of said properties, without extra charge. [Def. ex. 143A, r. 4195 at 4198.]

106. With a few minor exceptions (a few small industrial customers in the so-called ceded area in Alabama and approximately 3,000 employees on Government reservations and rural customers in the vicinity of Norris Dam and Wilson Dam), all of the Authority's sales are either at wholesale to municipalities, rural cooperatives, and utilities, or to very large industrial customers purchasing both firm and secondary power in large bulk lots for operations not previously served by any of the complainants. [Def. exs. 143, 147, r. 4192-4193, 4242-4243; Karr, r. 2199-2202.]

107. During the period of the contract of January 4 the Authority sold power under the first proviso of section 7 of the contract to the following municipalities:

Dayton, Tennessee.
Dickson, Tennessee.
Pulaski, Tennessee.
Amory, Mississippi.
Okolona, Mississippi.

[Karr r. 2203-2204; def. ex. 143A, r. 4199, 4200.]

108. Under the third proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold electricity in substantial amounts to the Meigs County Electric Membership Corporation, the Monroe County Electric Power Association, and a number of rural customers served directly by the Authority in Roane

County, Tennessee, near Norris Dam. [Karr, r. 2204; def. ex. 143A, r. 4199, 4200.]

109. Under the last proviso of section 7 of the contract of January 4 the Authority contracted to sell and has sold electricity in substantial amounts to Cullman County Electric Membership Corporation, Duck River Electric Membership Corporation, Middle Tennessee Electric Membership Corporation, North Georgia Electric Membership Corporation, Pickwick Electric Membership Corporation, and in Lincoln County, Tennessee. The total load of these customers during the period of the contract was within the 2,500-kw maximum amount stipulated in the said proviso. [Karr, r. 2205; def. ex. 143A, r. 4199, 4200.]

110. Under the interchange provision of the contract of January 4 the Alabama Power Company supplied power to the Authority for the construction of Guntersville Dam, and the Tennessee Electric Power Company supplied power to the Authority for the construction of Norris and Chickamauga Dams. [Karr, r. 2223.]

111. The Tennessee Valley Authority is not now constructing and has not authorized the construction of any transmission line, has not sold or authorized the sale of any electricity, and has not entered into or authorized any contracts for the sale of electricity in any part of the territory claimed by the complainants Franklin Power & Light Company [Howard, r. 798], Appalachian Electric Power Company [Argabrite, r. 834], Carolina Power & Light Company [Yoder, r. 824], Holston River Electric Company [Canaday, r. 804], Kingsport Utilities, Inc. [Argabrite, r. 834], Kentucky & West Virginia Power Company [Argabrite, r. 834], Tennessee Eastern Electric Company [Ide, r. 858], Birmingham Electric Company [Pevear, r. 807; *cf.* def. ex. 143, r. 4192], East Tennessee Power & Light Company [Ide, r. 858], and Mississippi Power & Light Company, except that it has constructed a transmission line at the expense of the War Department connecting the Author-

ity's lines to the site of Sardis Dam in the claimed territory of the Mississippi Power & Light Company. [Sargent, r. 887; *cf.* def. ex. 143, r. 4192.]

112. The complainant Southern Tennessee Power Company is engaged only as a transmission company transmitting electric energy from Wilson Dam to the Alabama-Tennessee line, thereby connecting Wilson Dam and the transmission system of The Tennessee Electric Power Company. It is not presently engaged either in the generation or distribution and sale of electric energy. [Nelson, r. 861.]

113. Adequacy of facilities means the availability in sufficient quantity of distribution, transmission, and generation facilities at all times to assure ability to take care of immediate loads and any reasonable expectant increase in load with a sufficient margin so as to assure the supplying of proper service. [Sporn, r. 1252.]

114. Prudent utility management requires that a utility shall provide enough surplus capacity to take care of its actual and potential demands in the period of time during which new facilities can be added and that too great a surplus. resulting in nonproductive facilities and higher operating costs, be avoided. [Sporn, r. 1252-1253; Moreland, r. 1459.]

115. The generating facilities of each of the following groups of companies are interconnected and integrated into a single coordinated system or power pool, and such facilities of each group are operated as a unit:

(a) The Appalachian Electric Power Company, Kentucky and West Virginia Power Company, and the Kingsport Utilities, Inc., are integrated into a single system [Sporn, r. 1253] and are also interconnected with a group of affiliated companies in Ohio, Indiana, and Michigan and with nonaffiliated companies in Tennessee and North Carolina [Sporn, r. 1254].

(b) The complainants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company and the noncomplainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company together form the integrated system of Commonwealth & Southern Corporation in the South [Middlemiss, r. 1268-1269] and also have interconnections with the Carolina Power & Light Company, the Florida Power Corporation, the South Carolina Electric & Gas Company, the Duke Power Company, and the Aluminum Company of America [Middlemiss, r. 1269-1270].

(c) The Carolina Power & Light Company, the Tennessee Public Service Company, and the Holston River Electric Company. [Rankin, r. 1293.]

(d) The complainants Memphis Power & Light Company, West Tennessee Power & Light Company, Mississippi Power & Light Company and noncomplainants Louisiana Power & Light Company and Arkansas Power & Light Company. [Rankin, r. 1293.]

(e) The East Tennessee Light & Power Company and Tennessee Eastern Electric Company. [Ide, r. 854.]

116. None of the complainant companies has ever failed to meet the load requirements of their customers [Middlemiss, r. 1274; comp. ex. 372 in *Reproductions of Certain Original Exhibits Submitted by Appellants;* comp. ex. 375, r. 3139], nor have they ever refused additional business due to lack of facilities [Sporn, r. 1257].

117. The complainant companies serve the electric power requirements of substantially all industrial enterprises doing business in the territories served by them [Argabrite, r. 832-833; Ford, r. 809; Sargent, r. 886; Ostermueller, r. 990; Lamar, r. 802; Canaday, r. 803; Pevear, r. 805; Yoder, r. 821; Ide, r. 855; Stanley, r. 939; Street, r. 976-977; Barry, r. 876; Bonner, r. 1005-1006; Jacobs, r. 1015-1016; Perkins, r. 1020; Watson, r. 1026; Shacklett, r. 1029-

1030; Winkler, r. 1033-1034; Henkle, r. 1051-1052], with the following exceptions:

(a) Those industries now being served by TVA [Stanley, r. 955-956; Shacklett, r. 1031-1032];

(b) Those industries which require steam in processing operation and are thus able to produce their own power as a byproduct [Ford, r. 809; Argabrite, r. 832; Street, r. 977; Ostermueller, r. 990; Bonner, r. 1005; Jacobs, r. 1015-1016; Perkins, r. 1020; Watson, r. 1026; Shacklett, r. 1029-1030; Winkler, r. 1034; Henkle, r. 1051-1052];

(c) Those industries, such as sawmills and woodworking plants, which have waste fuel products and can produce power without fuel cost [Street, r. 977; Ostermueller, r. 990; Bonner, r. 1005-1006; Jacobs, r. 1015; Perkins, r. 1020; Shacklett, r. 1029-1030; Winkler, r. 1034; Henkle, r. 1052];

(d) Small and scattered enterprises, such as cotton gins, ice plants, and flour and feed mills, which operate seasonally and which depend upon steam or other mechanical power [Street, r. 977; Ostermueller, r. 990; Bonner, r. 1006; Jacobs, r. 1015; Perkins, r. 1020; Watson, r. 1026; Winkler, r. 1034; Henkle, r. 1052].

All of these businesses except those being served by TVA have their own power units, which would have to be abandoned in order to take central power service. [Ostermueller, r. 990; Bonner, r. 1006; Perkins, r. 1020; Watson, r. 1026; Winkler, r. 1034; Henkle, r. 1052.]

118. The complainant companies serve the electric power requirements of substantially all commercial enterprises doing business in the territory served by them, with the exception of a very few scattered rural stores which do not stay open at night. [Street, r. 977; Ostermueller, r. 990; Bonner, r. 1006; Jacobs, r. 1016; Perkins, r. 1021; Watson, r. 1026; Winkler, r. 1034; Henkle, r. 1052; Ford, r. 809-810;

Lamar, r. 802; Yoder, r. 821; Sargent, r. 886; Ide, r. 857; Argabrite, r. 832-833; Pevear, r. 805.]

119. The complainant companies are now serving, either directly or indirectly, substantially all of the domestic demand within the territory served by them accessible to existing company facilities. [Street, r. 977-978; Ostermueller, r. 990-991; Bonner, r. 1006-1007; Jacobs, r. 1016; Perkins, r. 1021; Watson, r. 1026-1027; Shacklett, r. 1029-1030; Winkler, r. 1034; Henkle, r. 1052-1053; Argabrite, r. 842; Sargent, r. 886; Lamar, r. 802; Canaday, r. 803; Pevear, r. 805; Ford, r. 809-810; Yoder, r. 821; Ide, r. 855.]

120. The wholesale rates of the Tennessee Valley Authority are substantially lower than the wholesale rates of any of the complainants. [R. 943 (conceded by counsel).]

121. The retail rates for every class of service prescribed by TVA and charged by the municipalities and cooperatives purchasing power from the Tennessee Valley Authority are substantially lower than the retail rates of any of the complainants. [R. 943-944 (conceded by counsel).]

122. The rates charged by the Tennessee Valley Authority in all classes of service, including rural customers, domestic customers, and commercial customers which it serves, are substantially lower than the rates for the same classes of service of any of the complainants. [R. 943-944 (conceded by counsel).]

123. The industrial rates charged by the Tennessee Valley Authority are substantially lower than the published rates of any of the complainants. [R. 946 (conceded by counsel).]

124. Tennessee Valley Authority has published these rates generally, and they are well known throughout the Tennessee Valley area. [R. 1130, 1134 (conceded by counsel).]

125. Substantial future damage to complainants will result from competition with TVA. This record does not establish that complainants, or any of them, will have their businesses destroyed by, or will become bankrupt because of, such competition. [See order regarding submitted findings of fact and conclusions of law, r. 566 at 568.]

Power Customers and Power Contracts of the Authority

126. The Authority as of December 15, 1937, had contracts to sell power to 9 municipalities located in the ceded area covered by the contract of January 4 with the complainants Alabama Power Company and Mississippi Power Company. Seven of these municipalities are located in the ceded area in Alabama. [Def. ex. 143, r. 4192-4193; *cf.* Karr, r. 2199-2200.]

127. As of December 15, 1937, the Authority had contracts for the sale of power with 7 rural cooperative corporations and 8 industrial customers located in the ceded area covered by the contract of January 4 with complainants Alabama Power Company and Mississippi Power Company. [Def. ex. 143, r. 4192-4193; *cf.* Karr, r. 2199-2200.]

128. The Authority has a contract to sell and is delivering power in bulk lots to the complainant Alabama Power Company on the low side of several substations acquired by the Authority under the January 4 contract, by means of transmission lines also acquired by the Authority under the contract, for service to several urban distribution systems of the company in the area covered by the contract. [Barry, r. 870; Henkle, r. 1055.]

129. In addition to the contracts for the sale of power in the ceded area, as of December 15, 1937, the Authority had contracts to sell power to 17 municipalities, 12 cooperatives, 3 industrial customers, and one utility company, and the requirements of the War Department for the

construction of Sardis Dam. [Def. ex. 143, r. 4192-4193; Karr, r. 2199-2200.]

130. The contracts with municipalities and cooperatives provide for the wholesale delivery of power in bulk lots at a substation at the city gates in the case of municipalities and at a substation or metering point near the location of their respective operations in the case of cooperatives, the substations and metering equipment to be owned by the Authority. [See def. ex. 143, r. 4192-4193, column 3; Karr, r. 2201; see sections entitled "Point of Delivery" in contracts reprinted in comp. ex. 117, r. 2729, 2730; comp. ex. 118, r. 2771, 2773; comp. ex. 119, r. 2846, 2848; comp. ex. 134, r. 2879, 2882; comp. exs. 135-145, r. 2885-2888; comp. ex. 196, r. 3004; comp. ex. 224, r. 3026.]

131. The contracts with municipalities and cooperatives provide that all lines and substations from the point of delivery and all electrical equipment except the metering equipment of the Authority located on the municipality's or cooperative's side of such point of delivery shall be furnished and maintained by the municipality or cooperative. [See "Terms and Conditions" section of contracts usually entitled "Corporation's Lines and Equipment—Ownership" as on pp. 144, 162, 176, 188, 207, 219, 235, 247, 259 of def. ex. 154, sent up in original form; or see comp. ex. 118, r. 2771, 2786; comp. exs. 119-134, 135-145, 196, 224, r. 2846-2885, 2885-2889, 3004, 3026.]

132. Rural cooperative associations have been organized in the States of Alabama, Tennessee, Georgia, and Mississippi for the purposes of distributing TVA power. Seven such corporations have been organized in Alabama [comp. exs. 267-274, r. 3040-3049], 14 in Tennessee [r. 1520-1521], one in Georgia [comp. exs. 381, 382, r. 3155, 3156], and 11 in Mississippi [comp. exs. 943-953, r. 3996-4002]. All such cooperative associations have been incorporated since May 18, 1933, and have procured franchises in 10 counties in Alabama and 45 counties in Tennessee for the

purposes of erecting, constructing, operating, and maintaining lines, and distributing and selling electricity therein. [Comp. exs. 214-223, r. 3022-3026; comp. exs. 275-319, r. 3049-3065.]

133. TVA has financed for municipalities and cooperatives a large number of rural distribution lines [def. ex. 136, r. 4175, 4184] and has also loaned funds to cooperatives with which to purchase urban distribution systems, including the distribution systems in the towns of Bruce, Caledonia, and Smithville, Mississippi, and Gibson, Tennessee [comp. exs. 181, 592, 595, r. 2950, 3433, 3441]. The indebtedness owed to TVA on this account amounted to $1,424,665.70 as of June 30, 1936 [comp. ex. 116 (original) p. 486], and this indebtedness had increased by June 30, 1937, to the sum of $1,582,412.66 [def. ex. 154 (original) p. 110]. TVA intends to continue this policy. [Def. ex. 153 (original) p. 978.]

134. The TVA in some instances has constructed distribution systems in advance of the organization of any cooperatives. [Comp. exs. 530-531, 534, 535, 553, r. 3360-3361, 3363, 3364, 3374; Watson, r. 2397-2398.] In a number of other instances TVA has constructed lines pending their purchase by the cooperatives, agreeing to collect membership fees, to connect service to prospective customers, to render and collect bills, and perform other like services, including the furnishing of clerical and stenographic service. [Comp. exs. 176, 177, 178, 179, 180, r. 2938, 2941, 2943, 2947; comp. exs. 588, 596, 599, 601, 610, 626, r. 3430, 3451, 3457, 3459, 3476.] In a number of instances TVA has transferred to cooperatives distribution lines and other equipment and has financed and constructed rural lines to be paid for over a 20-year period, and in some instances an unlimited period, at 3½% interest, out of the income from the property. [Comp. exs. 577, 583, 584, 587, 595, r. 3395, 3426, 3427, 3430, 3441; comp. ex. 170, r. 2916; comp. exs. 607, 622, r. 3459, 3468; comp. exs. 117, 181, 175,

173, r. 2729, 2950, 2937, 2926; comp. exs. 618, 605, 609, r. 3461, 3458, 3459; comp. exs. 593, 592, r. 3439, 3433; comp. ex. 163, r. 2909.]

135. The municipalities purchasing power at wholesale from the Authority own and operate their own distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with municipalities not yet purchasing power contemplate the same type of operation. [See def. ex. 147, r. 4237, 4251-4253; Karr, r. 2205-2208; see contracts describing this arrangement in comp. exs. 117, 118, 119-134, 135-145, r. 2729, 2771, 2846-2885, 2885-2888.]

136. The cooperatives purchasing power at wholesale from the Authority own and operate their own rural distribution systems and sell the power which they purchase from the Authority to the ultimate consumers, and the contracts with cooperatives not yet purchasing power contemplate the same type of operation. [See def. ex. 147, r. 4237, 4251-4253; Karr, r. 2205-2208; see contracts describing this arrangement in comp. exs. 117, 118, 119-134, 135-145, r. 2729, 2771, 2846-2885, 2885-2888.]

137. All of the Authority's contracts with said municipalities and cooperatives provide for the delivery of power at a voltage of from 2,300 volts upwards. Voltages of this magnitude are not suitable for delivery to the ultimate consumer, except for a few industrial consumers, and the municipality or cooperative which serves those consumers directly steps down this voltage one or more times after receiving it from the Authority at the point of delivery before actual delivery to the customer at the usual customer voltages of 115 and 230 volts. [See section entitled "Power Supply" in contracts, examples of which are reprinted in comp. ex. 117, r. 2729, 2730, 2743, 2762; comp. ex. 118, r. 2771, 2773, 2803, 2811, 2820; comp. ex. 119, r. 2846, 2848; comp. exs. 120-129, r. 2852-2860; comp. ex. 130, r. 2860, 2862; comp. ex. 132, r. 2867, 2868; comp. ex. 133, r. 2873,

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2875; comp. ex. 134, r. 2879, 2881; comp. exs. 135-145, r. 2885-2888; *cf.* Moreland, r. 1486.]

138. All of the Authority's contracts with municipalities and cooperatives for the sale of power provide an arrangement whereby the Authority performs the function of a wholesaler generating and transmitting the power in bulk lots to the purchasing municipality and cooperative, which in turn sells the power to the ultimate consumers, performing all the functions of the distributor. [For reprints of contracts, see comp. exs. 117, 118, 119-134, 135-145, r. 2729, 2771, 2846-2885, 2885-2888.]

139. The contracts with municipalities and cooperatives provide only for the sale of firm power. [See references for fdg. 138.]

140. Municipalities and cooperatives under contract to purchase and purchasing power from the Authority assume responsibility for the power at the point of delivery and sell and distribute the power from that point over their own facilities and with their own operating staffs, without any assistance or direction from the Authority. The only assistance rendered by the Authority has been in time of emergency, and in such case the Authority has been paid its full cost, including its usual overhead. [Karr, r. 2223-2224, 2229-2230; *cf.* reprints of contracts, comp. exs. 117, 118, 119-134, 135-145, r. 2729, 2771, 2846-2885, 2885-2888; Hutchinson, r. 2272, 2274; Pittman, r. 1346-1347.]

141. The cooperatives to whom the Authority is under contract to sell power have certificates of incorporation from the authorized officials of the respective States in which they operate showing them to be organized under special acts of the several States in which they operate. These charters show that the corporations are organized by citizens of the respective localities in which the operations of the corporations shall be conducted who were desirous of procuring electric service, and the charter sets

out the form of organization, location of the principal office, terms of membership, purposes, powers, and the names of the board of directors for the first year. [See comp. exs. 267-274, r. 3040-3049, for Alabama charters; comp. exs. 943-953, r. 3996-4002, for Mississippi charters; r. 1520-1521.]

142. These organizations were brought about upon the initiative of the residents of the various communities who were desirous of procuring electric service, without any solicitation on the part of the Authority or any of its representatives. [Hutchinson, r. 2271-2278; Cowley, r. 2263-2269; Pittman, r. 1342-1347.]

143. Upon the request of the citizens of the rural areas in which the respective cooperatives are located, the Authority has given advice and assistance to such cooperatives on problems of organization and has given technical advice on methods of conducting surveys and determining the financial feasibility of proposed operations. [Hutchinson, r. 2274-2275; Pittman, r. 1344, 1345.]

144. The Authority, in advising on the financial feasibility of proposed lines, has not substituted its judgment for that of the respective cooperatives. The cooperatives have made all decisions on line extensions, customers to be served, and all other matters relating to the conduct of their operations. [Hutchinson, r. 2274; Carmack, r. 1355; Pittman, r. 1345-1347.]

145. All contracts between the Authority and the several cooperatives relating either to the construction of lines or to the sale of power have been submitted to and approved by counsel for the respective cooperatives and then considered and finally approved by the board of directors of the respective cooperatives. [Pittman, r. 1346, 1347; Carmack, r. 1354, 1355.]

146. While the Authority has in a few instances temporarily operated directly the lines of certain cooperatives under agreements with such cooperatives providing for

such operation by the Authority, all of such operating agreements had expired by December 15, 1937, and all lines constructed for cooperatives had been transferred to such cooperatives. [Karr, r. 2202-2203; see def. ex. 143, r. 4192, showing dates of power contracts and initial purchases.]

147. Upon the transfer of any lines constructed by the Authority for cooperatives or temporarily operated by the Authority for such cooperatives, the Authority has withdrawn completely from any participation in the conduct of the affairs of such cooperatives, except as it has continued to supply power at wholesale and except as to the enforcement of its rights as a contractor of such of the cooperatives whose lines were financed in whole or in part by the Authority. [Hutchinson, r. 2274-2275; Carmack, r. 1354, 1355.]

148. The power contracts with industrial customers provide in some cases for the delivery of power on the low-tension side of a substation to be owned by the Authority, and in other cases on the high-tension side of a substation to be owned by the industrial customer. In the case of the Electric Metallurgical Company the contract provides that delivery shall be made at the boundary of the Wilson Dam reservation at a high transmission voltage. All the contracts are for sales in bulk lots for use in various industrial processes. [See comp. exs. 118, 151, 152, 160, 161, r. 2771, 2890, 2895; def. exs. 145, 146, r. 4235-4236 (for convenience see reprints of industrial contracts in comp. ex. 118, r. 2771, 2828, and def. ex. 154 (original)).]

149. These industrial contracts provide for the delivery of power at voltages comparable to or higher than the voltages at which delivery is made to municipalities or cooperatives. [See comp. exs. 118, 151, 152, 160, 161, r. 2771, 2890, 2895; def. exs. 145, 146, r. 4235-4236; for references regarding voltage for delivery to municipalities see fdg. 137.] These delivery voltages range as high as 154,000 volts, which is specified for the delivery to the Aluminum

Company of America. [*Cf.* def. ex. 154 (original) pp. 150, 151, sec. 2 of Aluminum Company contract.]

150. Except for the industrial customers located in the ceded area covered by the contract of January 4, all of the industrial customers with whom the Authority is under contract to sell power are large electro-chemical and electro-metallurgical companies. [See contract with Victor Chemical Works, def. ex. 154 (original) and particularly the 2d "Whereas" clause on p. 303 and sec. 11, p. 306; contract with Monsanto Chemical Co., comp. ex. 118, r. 2771, 2828; Karr, r. 2209.] The Electro Metallurgical Company, which is locating a new plant in the ceded area, is also of this type. [See contract in def. ex. 154 (original) p. 315, and particularly the 3d "Whereas" clause and sec. 11.]

151. All of said industrial customers outside the ceded area and the Electro Metallurgical Company constitute new loads in the territory. The loads contracted for have not been previously served by any of the complainant companies. [Def. ex. 143, r. 4193, 2d column; Karr, r. 2200.] Under the contracts with the Victor Chemical Works, the Monsanto Chemical Company, and the Electro Metallurgical Company (in the ceded area) these companies undertake to construct new plants and purchase power from the Authority for service to these plants. [See def. ex. 154 (original) pp. 302, 315; comp. ex. 118, r. 2771, 2828-2829.] The contract with the Aluminum Company of America shows that that company was about to enlarge its facilities and needed additional power to supplement its own generation. [Def. ex. 154 (original) p. 309.]

152. Complainant companies do not maintain excess capacity and facilities for service to loads of such large and unusual size as that of these electro-chemical and electro-metallurgical customers of the Authority, but constructed facilities for service to these companies as needed. [Miller, r. 1115.]

153. All of said large industrial customers have contracted to purchase large amounts of secondary power as well as firm power. [See def. ex. 154 (original) pp. 302, 309, 315, 316; comp. ex. 118, r. 2771, 2828.]

154. Secondary power is that class of power the delivery of which the seller may interrupt during periods which are variously specified in the contract of sale. [Moreland, r. 1449-1450.] All of the industrial customers outside of the ceded area have contracted to purchase large amounts of this secondary power of which the Authority may, under the contracts, suspend delivery for specified periods of time, such as in event of low-water flow. [Karr, r. 2209; *cf.* def. ex. 154 (original) p. 309, sec. 2 (Aluminum Co.); pp. 302, 304, sec. 5(d) (Victor Chemical Works); pp. 315, 316, sec. 4 (Electro-Metallurgical Co.); comp. ex. 118, r. 2771, 2828, sec. 4.] These sales of secondary power materially increase the Authority's sales of energy during the period that such power is available. [Karr, r. 2210, 2212.] These sales of secondary power to large industrial customers will increase the load factor of the Authority's operations during these periods when the power is delivered. [Karr, r. 2212.]

155. It is not feasible to sell this secondary power to such large industrial customers through a retailer or an intermediary. [Karr, r. 2209-2210.]

156. These large manufacturing plants and utility companies, such as the Arkansas Power & Light Company, with whom the Authority also has a contract providing for the sale of secondary power, are the type of customers whose operations are adapted to the use of that type of power. [Karr, r. 2209, 2210; Moreland, r. 1449-1450.]

157. The following contracts provide for the sale of both firm and secondary power for the period of years noted:

(a) Contract between Tennessee Valley Authority and Monsanto Chemical Company, dated May 15, 1936, for 20 years. [Comp. ex. 118, r. 2771, 2828.]

(b) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 17, 1936 [def. ex. 154 (original) p. 150], as amended by agreement of July 20, 1937, for 10 years [def. ex. 154 (original) p. 313].

(c) Conrract [*sic*] between Tennessee Valley Authority and Arkansas Power & Light Company, dated June 16, 1937, for 5 years, but continuing in effect until cancelled by either party on 30 months' notice. [Def. ex. 154 (original) p. 294.]

(d) Contract between Tennessee Valley Authority and Victor Chemical Works, dated July 2, 1937, for 20 years. [Def. ex. 154 (original) p. 302.]

(e) Contract between Tennessee Valley Authority and Aluminum Company of America, dated July 20, 1937, for 20 years, but cancellable by either party at the end of 10 years on 5 years' notice. [Def. ex. 154 (original) p. 309.]

(f) Contract between Tennessee Valley Authority and Electro Metallurgical Company, dated August 17, 1937, for 20 years. [Def. ex. 154 (original) p. 315.]

158. The maximum amounts of secondary power which the Authority has contracted to sell are as follows:

Monsanto Chemical Company	32,500 kw.
Aluminum Company of America (July 17, 1936)	40,000 kw.
Arkansas Power & Light Company	5,000 to 20,000 kw.
(prior to 6-30-38	10,000 kw.
year ending 6-30-39	15,000 kw.
year ending 6-30-40	20,000 kw.
year ending 6-30-41	15,000 kw.
year ending 6-30-42	10,000 kw.
thereafter	5,000 kw.)
Victor Chemical Works	16,000 kw.
Aluminum Company of America (July 20, 1937)	30,000 kw.
Electro Metallurgical Company	16,000 kw.

[See references to contracts in fdg. 157 above.]

159. The periods in which the Authority is obligated to supply such secondary power and the required notices before interrupting and resuming secondary power deliveries are as follows for the respective contracts above mentioned:

Contract	Period Authority obligated to supply secondary power	Notice required before interruption of delivery	Notice required before resumption of delivery
Monsanto Chemical Co.	300 days annually	14 days	14 days
Aluminum Co. of America (July 17, 1936)	Not less than 90 days when and if available in judgment of Authority	15 days	15 days
Arkansas P. & L. Co.			
Prior to 7-1-42	300 days annually	15 days	7 days
Beginning 7-1-42	75% of the time	5 days	"Reasonable" time
Victor Chemical Works	9 months annually	14 days	7 days
Aluminum Co. of America (July 20, 1937)	75% of the time in ten years	21 days	7 days
Electro Met. Co.	9 months	14 days	7 days

[See references to contracts in fdg. 157 above.]

160. All of the Authority's contracts contain a force majeure clause which relieves the Authority of any obligation to supply power when prevented by injunctions, strike, riot, invasion, fire, accident, breakdown, act of God, or any other causes beyond the Authority's control. In addition the force majeure clause in each of the contracts with the 4 large industrial contractors and the Arkansas Power & Light Company, except the force majeure clauses in the contract with the Aluminum Company dated July 17, 1936, as amended, and in the contract with the Monsanto Chemical Company, relieves the Authority of obligation to supply power when service is interrupted or suspended by reason of floods or backwater caused by floods. The force majeure clauses apply to both firm and secondary power. [See references to contracts in fdg. 157 above.]

161. The Authority's contracts with the Aluminum Company and the Arkansas Power & Light Company pro-

vide that if an emergency or breakdown should occur on the system of either contracting party, the other party shall stand by and supply the power needed in the emergency to the full extent its facilities enable it to do so. [See def. ex. 154 (original) p. 294 (Arkansas P. & L. Co.); def. ex. 154 (original) p. 313 (Aluminum Co.).]

162. All contracts between the Authority and municipalities or cooperatives are for a period of 20 years from the respective dates of execution thereof, except that the contracts with the cities of Florence, Sheffield, and Tuscumbia, Alabama, all of which purchase power at the Wilson Dam reservation, are for a period of 30 years from the respective dates of execution thereof. [See contracts reprinted in comp. ex. 117, r. 2729; comp. ex. 118, r. 2771; def. ex. 154 (original).]

163. With the exception of small industrials in the "ceded areas," all power contracts except one contain either the following provision immediately after the recitals:

Now Therefore, subject to the provisions of the Tennessee Valley Authority Act of 1933, as amended, the parties hereto agree as follows:

or an identical provision except that the word "pursuant" is used in the first line above quoted instead of the word "subject." [See contracts reprinted in comp. ex. 117, r. 2729; comp. ex. 118, r. 2771; def. ex. 154 (original).]

164. The following provision:

* * * should [the contracting municipality or cooperative] desire to increase its purchases in excess of ——— kilowatts, Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so.

is contained in each of the contracts specified below, with the number after the name of each purchaser indicating the number of kw entered in the blank in the clause above.

Municipality or cooperative	kw.	[Comp. Ex. No.
North Georgia Electric Membership Corporation....	300	118
Pickwick Electric Membership Corporation.....	300	139
Pontotoc County Electric Membership Corporation..	1,000	118
Joe Wheeler Electric Membership Corporation.....	1,000	142
Gibson County Electric Membership Corporation...	300	137
Duck River Electric Membership Corporation.....	300	140
Cullman County Electric Membership Corporation..	300	136
Middle Tennessee Electric Membership Corporation.	300	138
City of Jackson, Tennessee.....	480	133
City of Tuscumbia, Alabama.....	3,000	124
City of Trenton, Tennessee.....	1,500	132
City of Sheffield, Alabama.....	4,500	118
City of Florence, Alabama.....	7,500	123
Northeast Mississippi Electric Membership Corporation	750	144
Tippah County Electric Membership Corporation....	750	224
City of Amory, Mississippi	6,000	119
City of Middlesboro, Kentucky.....	3,000	130
City of Knoxville, Tennessee.....	35,000	125
City of Guntersville, Alabama.....	3,000	128]

The maximum amount of power each industrial or utility customer may purchase from the Authority is definitely specified in the contract with such customer.

165. The Authority has contracts with municipalities now purchasing power calling for the availability of 38,380 kw. [Comp. exs. 119, 123, 133, 120, r. 2846, 2856, 2873, 2852; comp. ex. 118, r. 2771, 2799, 2800, 2801, 2802; comp. ex. 117, r. 2729, 2740, 2741, 2742, 2760.]

166. The Authority has contracts with municipalities not yet purchasing power calling for the availability of 135,000 kw. [Comp. exs. 126, 127, 128, 129, 130, 132, 134, r. 2857-2873, 2879; comp. ex. 118, r. 2771, 2807, 2808.]

167. The Authority has contracts with rural cooperatives now purchasing power calling for the availability of

9,300 kw. [Comp. exs. 135-142, r. 2885-2887; comp. ex. 118, r. 2771, 2809, 2816, 2817; comp. ex. 117, r. 2729, 2770; comp. ex. 196, r. 3004.]

168. The Authority has contracts with industrial companies by which it contracts to sell 127,850 kw. of firm power. [Comp. exs. 146-152, 153-156, 159-161, r. 2889-2890, 2891, 2894-2895; comp. ex. 118, r. 2771, 2828; def. exs. 145, 146, r. 4235-4236; def. ex. 154 (original) pp. 302, 309, 315.]

169. The Authority has contracts with industrial companies and utilities by which it contracts to sell 139,500 kw. of secondary or interruptible power. [Comp. ex. 118, r. 2771, 2828; def. exs. 145-146, r. 4235-4236; def. ex. 154 (original) pp. 302, 309, 315.]

Power Facilities Used or to be Used in Meeting These Contracts

170. The transfer of the Muscle Shoals properties from the War Department to the Tennessee Valley Authority after the passage of the Tennessee Valley Authority Act included the Wilson Dam and power plant, with 8 generators having a total installed capacity of 184,000 kw., and the Sheffield steam plant, with an installed capacity of 60,000 kw. [comp. ex. 113 (original) p. 24]; also 7.8 miles of high-voltage transmission lines leading from Wilson Dam to various points on the Government reservation, including Nitrate Plant No. 2 [def. ex. 136, r. 4175, 4177].

171. A single generator at Norris Dam, constructed by the Authority, was put in operation on July 28, 1936; a second generator was put in operation on September 30, 1936. Each of these generators are of 50,000-kw. capacity. A single generating unit at the Wheeler project, constructed by the Authority, was put in operation on November 9, 1936; a second unit was put in operation on April 14, 1937. Each of these units is of 32,000-kw. capacity. [Def. ex. 149, r. 4255.]

172. The failure to generate and sell power available at the Wilson, Norris, and Wheeler Dams not needed for governmental uses would result in its complete waste. Substantial amounts of such power have been wasted because of lack of markets in every year since the construction of Wilson Dam. [Def. ex. 149, r. 4255; Karr, r. 2211-2212.]

173. Pursuant to the contract of January 4, with the complainants Alabama Power Company and Mississippi Power Company the Tennessee Valley Authority purchased certain transmission lines extending from Wilson Dam to the nearby area in northwest Alabama and northeast Mississippi. [Def. ex. 143A, r. 4195, and particularly exhibits "A" and "B," r. 4209 *et seq.*] The lines, which included auxiliary electrical properties, such as substations and rural lines in the area, were located in 10 counties in Mississippi and 6 counties in Alabama. [Def. ex. 143A, r. 4195, and particularly exhibits "A" and "B," r. 4209 *et seq.*] These 16 counties are hereinafter referred to as the "ceded area" covered by the contract of January 4. At the time of the transfer of the properties there were approximately 14,200 electric customers in the ceded area. [Sweatt, r. 793; Barry, r. 876.] These customers and all additional customers in the area are now being served by municipalities, cooperatives, and the Alabama Power Company, to whom the Authority sells and delivers power at wholesale for resale in the area [def. ex. 143, r. 4192-4193; Barry, r. 870, 871], except for a few industrial customers and the rural customers, relatively small in number, in the vicinity of Wilson Dam, being served by the Authority [def. ex. 143, r. 4192; Karr, r. 2202].

174. The properties in Alabama purchased from the Alabama Power Company, a complainant in this case, included 128 miles of high-voltage transmission lines [def. ex. 136, r. 4175, 4177], 24 substations located along these lines [def. ex. 136, r. 4175, 4181, 4182], and 203 miles of

rural lines [Barry, r. 871; Henkle, r. 1055; def. ex. 136, r. 4184A]. All of the municipal distribution systems belonging to the Alabama Power Company in these 6 counties, some 12 in number, were served from these transmission lines. [Def. ex. 143A, r. 4195, and particularly r. 4218; Barry, r. 870; Henkle, r. 1055.] They were retained by the Alabama Power Company. Approximately 1,000 rural customers were served from the rural lines at the time of transfer. [Henkle, r. 1055.] The industrial customers being served from these properties at the time of transfer were 48 in number, with a load of approximately 5,000 kw. [Henkle, r. 1054.]

175. The properties located in Mississippi were purchased from the Mississippi Power Company, a complainant in this case, and consisted of 87.3 miles of high-voltage transmission lines [def. ex. 136, r. 4175, 4178], 7 substations [def. ex. 136, r. 4175, 4181], and 167 miles of rural lines [Sweatt, r. 791]. Certain municipal distribution systems and steam and oil generating plants were included in the purchase from the Mississippi Power Company. [Def. ex. 143A, r. 4210, 4211.] Subsequent to the conveyance of the municipal distribution systems to the Authority in May 1934, these distribution systems were sold to municipalities or cooperative organizations of citizens and farmers formed under the laws of Mississippi. [See contracts for power purchase with certain rural associations, reciting that certain distribution properties were transferred—comp. ex. 117, r. 2729, 2760, 2761; comp. ex. 118, r. 2771, 2816, 2817; *cf.* Karr, r. 2202; def. ex. 143, r. 4192.]

176. All of the properties purchased from the Mississippi Power Company were actually transferred to the Authority on approximately June 1, 1934. [Comp. ex. 113 (original) p. 25.] All of the properties purchased from the Alabama Power Company were transferred to the Authority in May 1936. [Karr, r. 2229.]

177. The only transmission lines, other than those purchased or constructed by the Tennessee Valley Authority, connected with any dam of the Authority are owned by the Alabama Power Company, The Tennessee Electric Power Company, and the Southern Tennessee Power Company, all subsidiaries of the Commonwealth & Southern Corporation. [Hapgood, r. 2139-2140; def. ex. 138 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*] Subsidiaries of the Commonwealth & Southern Corporation and companies affiliated with the Electric Bond & Share Company own substantially all of the transmission lines and serve substantially all of the existing load centers in the area within a radius of 100 miles from each of the dams now under construction or completed. [Hapgood, r. 2139-2141; def. ex. 138 in *Reproductions of Certain Original Exhibits Submitted by Appellees;* Miller, r. 1111-1112.]

178. Unless the Authority built transmission lines leading from Wilson Dam and the dams it has constructed or has under construction, it could sell power only to utility companies, except for industrial customers that might locate at the dams and such municipalities and cooperatives as are located in the immediate neighborhood of the projects. Such sales to customers other than utility companies would be very limited. [Thomas, r. 2105, 2107; Miller, r. 1114.]

179. The Authority has constructed 407.6 miles of high-voltage transmission lines interconnecting the power plants at Wilson Dam and the other dams constructed or under construction. [Def. ex. 136, r. 4175, 4178.]

180. Such plant tie lines can be used to transfer power from one project to another and increase the availability and amount of power at Wilson Dam and on the resulting hydroelectric system. [Hapgood, r. 2142, 2161; Miller, r. 1102; Thomas, r. 2107.]

181. The most economical use of the Authority's dams for power supply requires interconnecting transmission lines similar to those constructed, under construction, or authorized for construction by the Authority. [Hapgood, r. 2142, 2161; Miller, r. 1102, 1115.]

182. Unless these lines had been constructed, the Authority would have been forced to rely for the interconnection of its various projects upon lines belonging to companies in the Commonwealth and Southern system, more particularly the lines of the Alabama Power Company and The Tennessee Electric Power Company. These existing lines of the complainant power companies were inadequate to perform these functions, and there was no existing line connecting Wilson Dam with Pickwick Landing Dam. [Hapgood, r. 2142.]

183. In addition to the plant tie lines and the 216 miles of high-tension lines purchased under the contract of January 4, the Authority has constructed 611.6 miles of transmission lines of a voltage of 22 kw. or over; it was constructing on October 15, 1937, an additional 79.1 miles of such lines; and on that date it had authorized for construction an additional 176.9 miles of such lines. [Def. ex. 136, r. 4175, 4178, 4179.]

184. These miles of high-voltage transmission lines constructed, under construction, and authorized by the Authority do not constitute duplication of existing transmission facilities in the area, but are useful and valuable additions to those facilities. [Hapgood, r. 2142-2146.]

185. In addition to the 31 substations purchased under the contract of January 4 from the complainants, the Authority is constructing, has constructed, or has authorized the construction of some 33 substations along or at the end of the transmission lines it has purchased or constructed, and has constructed or is constructing five additional substations at the dams. [Def. ex. 136, r. 4175, 4180.] The substations at the dams are used in stepping up the current

generated to higher voltages for transmission, and those along the lines are used in stepping the voltages down for delivery to the Authority's wholesale customers. [Moreland, r. 1485, 1486.]

186. The transmission lines substantially as constructed by the Authority are essential for service to the customers of the Authority now being served or under contract. [Hapgood, r. 2142-2146; Miller, r. 1112-1115.] Such lines were constructed for service to the customers under contract and not for any strategic purpose of injuring or threatening the complainants. [Hapgood, r. 2142-2143, 2165-2166.]

187. As of October 15, 1937, the Authority owned approximately 421 miles of rural lines in the vicinity of Wilson Dam or Norris Dam. [Def. ex. 136, r. 4175, 4184.] It also owned 107 miles of such lines in Lincoln County, which on December 11, 1937, it contracted to sell and transferred to the Lincoln County Electric Membership Corporation. [Karr, r. 2202-2203; see def. ex. 144, r. 4227.] Of the 421 miles still retained, 353 miles were constructed by the Authority, and of the 353 miles so constructed, 254 miles were located within the so-called ceded area in Alabama. [Def. ex. 136, r. 4175, 4184.] The remaining 68 miles owned by the Authority were either purchased from the complainant Alabama Power Company under the contract of January 4 or were purchased from the complainant The Tennessee Electric Power Company. [Def. ex. 136, r. 4175, 4184.]

188. In addition to the rural lines which the Authority has purchased or constructed and still retains, it has constructed 1,023 additional miles of such lines and sold them to municipalities or rural cooperatives with whom it was under contract to sell electric energy at wholesale; it constructed an additional 1,343 miles of such lines under construction contracts with municipalities or cooperatives

having power-purchase contracts. [Def. ex. 136, r. 4175, 4184.]

189. The rural lines constructed by the Authority and sold to the cooperatives were constructed with the Authority's own funds and sold to the respective cooperatives at the actual cost of such lines to the Authority plus its regular overhead charges, under an agreement secured by mortgage or other instrument of security for the repayment to the Authority of the indebtedness out of the proceeds of the electric business of the cooperative. [Comp. ex. 181, r. 2950; comp. ex. 117, r. 2760.]

190. The remaining rural lines constructed by the Authority for the cooperatives were constructed by the Authority under construction contracts between the Authority and cooperatives, under the terms of which the Authority has been repaid its actual construction cost, including the usual overhead. [Comp. exs. 162-175, r. 2895 *et seq.*, e.g., see sec. 3 of comp. ex. 162, r. 2897, and sec. 2 of comp. ex. 163, r. 2909; Hutchinson, r. 2272.]

191. Some of the respective cooperatives and municipalities purchasing power from the Authority have constructed many miles of rural line either by contract with an independent contractor or with their own crews, without any aid or assistance, financial or otherwise, from the Authority or any other federal agency. [Def. ex. 136, r. 4175, 4184.]

192. The high-tension transmission lines constructed by the Authority are similar in character and function to the lines purchased by the Authority under the contract of January 4. The substations constructed by the Authority are similar in character and function to the substations purchased by the Authority under the contract of January 4. The rural lines constructed by the Authority and retained in ownership or sold are similar in function and character to the rural lines acquired by the Authority under the contract of January 4. [Def. ex. 136, r. 4175;

def. exs. 136A, 136B, 137 in *Reproductions of Certain Original Exhibits Submitted by Appellees.*]

193. The Authority does not own or operate any municipal or urban distribution systems. [Karr, r. 2202-2203; def. ex. 154 (original) pp. 19-20.]

194. As of October 15, 1937, the total number of rural lines distributing TVA power, exclusive of those of the North Georgia Membership Corporation, was 3,086.7, and approximately 490 miles of additional lines were then under construction. Of such total mileage TVA owned and operated 629.7 miles. Of the total distribution lines distributing TVA power only 292 miles were constructed by municipalities or cooperatives. One thousand and twenty-three miles were constructed and financed by TVA, and 1,343 miles were constructed by TVA under contracts with municipalities or cooperatives [def. ex. 136, r. 4175, 4184], 1,593 miles having been constructed by TVA during its 1937 fiscal year [def. ex. 154 (original) p. 94].

195. Expenditures by TVA for distribution facilities up to June 30, 1936, amounted to $1,809,114. This amount was increased to $2,447,956 by June 30, 1937, and TVA proposes to expend an additional sum of $272,000 for distribution facilities during the fiscal year of 1938. [Def. ex. 153 (original) p. 977.]

Power Sales, Present and Potential

196. During the period from May 18, 1933, to January 1934, and of the contract of January 4, approximately 75% of the electricity sold by the Authority was sold to complainant power companies, subsidiaries of the Commonwealth & Southern Corporation, including the complainant Alabama Power Company, complainant Mississippi Power Company, complainant The Tennessee Electric Power Company, and noncomplainant Georgia Power Company. The total of the power so disposed of to these utility

companies since the passage of the Tennessee Valley Authority Act has amounted to 1,216,451,142 kwh. [Def. ex. 147, r. 4237, 4238, 4239, 4241, 4243.] The systems of all of the Commonwealth and Southern companies are interconnected into a single integrated system, and power delivered to one of these companies is merged in the common pool and becomes a joint source of supply. [Middlemiss, r. 1268, 1269.]

197. The power sold in the year 1937 was obtained exclusively from the hydroelectric generating facilities of the Authority, either directly or through interchange arrangements with the Commonwealth and Southern companies and the Aluminum Company of America. [Def. ex 147, r. 4237, 4251-4253, column 2.] The steam plant at Muscle Shoals is not in operation. [Karr, r. 2228.]

198. In the calendar year 1937 the Tennessee Valley Authority sold substantial quantities of power to 17 municipalities owning and operating their own municipal distribution systems, 15 rural cooperatives owning and operating their own rural lines, 8 industrial customers, and 2 private utility companies. [Def. ex. 147, r. 4242-4243; Rankin, r. 1303; Barry, r. 870.] In addition the Authority sold substantial quantities of power to the Commonwealth and Southern companies in January and February under an extension of the contract of January 4. [Def. ex. 147, r. 4243.]

199. In addition to these sales under outstanding power contracts the Authority sold electric energy to residents on 6 Government reservations and to rural residents residing in the vicinity of Wilson and Norris Dams and Lincoln County, Tennessee. [Def. ex. 147, r. 4242.] On December 11, 1937, the Authority contracted to sell the rural lines in Lincoln County, Tennessee, and the Lincoln County Electric Membership Corporation contracted to buy said lines, and since that date these lines have been operated by

the Lincoln County Corporation. [Karr, r. 2202, 2203; def. ex. 144, r. 4227.]

200. As of October 31, 1937, the total of all residents served by the Authority on Government reservations and in the surrounding areas, exclusive of Lincoln County, was 3,228. [Def. ex. 147, r. 4242.] All of the Authority's remaining sales of electricity for public use were made at wholesale to municipalities and rural cooperatives. [Def. ex. 147, r. 4242-4243.] The number of ultimate consumers so served as of October 31, 1937, by said municipalities and cooperatives was approximately 31,900. [Def. ex. 147, r. 4242-4243.]

201. The direct sales to temporary rural customers and employees on Government reservations have been less than 4% of the total kw. sales each year of the Authority's operations. [Def. ex. 147, r. 4237 *et seq.*]

202. In addition to these sales in 1937, power generated by the Authority has been used in the construction of Chickamauga, Guntersville, Hiwassee, Norris, Pickwick, and Wheeler Dams, for service to the fertilizer works at Muscle Shoals, and for the operation of the navigation locks at the Authority's dams on the main stream of the Tennessee River. [Def. ex. 147, r. 4242.]

203. As of December 15, 1937, of the total number of 18 municipalities receiving wholesale service from the Authority, only 6 previously received service of any kind from any of the complainant companies. Of these, 5 were located in the ceded area covered by the contract of January 4, 1934. [Def. ex. 143, r. 4192.] The residents of the city of Jackson, Tennessee, outside the ceded area, were served directly by the complainant West Tennessee Power & Light Company, and some of them have stopped taking service from the complainant company and are buying from the city. [Winkler, r. 1036.]

204. All of the municipalities purchasing power from the Authority in 1937 owned and operated their own mu-

nicipal distribution systems for a long time before the passage of the Tennessee Valley Authority Act, with the exception of Florence, Sheffield, and Tuscumbia, Alabama, and the city of Jackson, Tennessee. [Def. ex. 143, r. 4192.] The cities of Florence, Sheffield, and Tuscumbia, Alabama, are located in the ceded area covered by the contract of January 4, and their boundaries adjoin the Wilson Dam reservation. [Def. ex. 143A, and particularly r. 4218A.] The residents of these municipalities were previously served by the Alabama Power Company, which was operating distribution systems in these cities without franchises long before the Authority contracted with the municipalities [Hood, r. 862.]

205. Except for the cities of Athens, Alabama; Dayton, Tennessee; and Tupelo, Mississippi, all of the municipalities purchasing power at wholesale in 1937 which owned and operated their own distribution systems prior to purchasing from the Authority also owned a generating plant which was used to supply power for such systems. [Def. ex. 143, r. 4192.] The cities of Athens, Alabama, and Tupelo, Mississippi, both located in the ceded area covered by the contract of January 4, purchased their power at wholesale from the Alabama Power Company and the Mississippi Power Company, respectively, while Dayton, Tennessee, purchased its power supply from a local lumber mill. [Def. ex. 143, r. 4192, footnote 3.]

206. Only 2 customers of the total number of 16,108 customers receiving service as of October 31, 1937, from the 15 cooperatives purchasing power at wholesale from the Authority over all the rural lines they operated, whether constructed by them or by the Authority for them, ever received electric service of any kind from any of the complainant companies, except for customers located in the ceded area and served by means of lines sold to the Authority under the contract of January 4 and resold by the Authority to the cooperatives. [Street, r. 987; Wisdom, r. 850;

Winkler, r. 1039; Henkle, r. 1057; Jacobs, r. 1017; Bonner, r. 1010; Perkins, r. 1023-1024; Watson, r. 1028-1029; Ostermueller, r. 1092.]

207. Except for rural customers located in the ceded area on lines purchased from the complainant power companies, none of the rural customers served by the Authority or by municipalities purchasing power at wholesale from the Authority ever received service from any of the complainant companies. [See references for fdg. 206.]

208. None of the industrial loads which the Authority served in 1937 were previously served by any of the complainant companies except the industrial customers in the ceded area in Alabama, whose contracts were assigned to the Authority under the contract of January 4. [Def. ex. 143, r. 4192, 4193.]

209. In addition to the customers served by the Authority as of December 15, 1937, the Authority was as of that date under contract to serve 8 municipalities, 3 rural cooperatives, 2 industrial customers, and the War Department's requirements for the construction of Sardis Dam. [Def. ex. 143, r. 4192, 4193.]

210. Of the municipalities under contract but not yet purchasing as of December 15, 1937, 2 are located in the ceded area in Alabama, 1 is not served by any of the complainants (Middlesboro, Kentucky, served by Kentucky Utilities Company) and 5, including Chattanooga, Tennessee; Knoxville, Tennessee; Memphis, Tennessee; Guntersville, Alabama; and Paris, Tennessee, are now served by the complainants The Tennessee Electric Power Company, Tennessee Public Service Company, Memphis Power & Light Company, Alabama Power Company, and Kentucky-Tennessee Light & Power Company, respectively; that is, these companies presently own and operate urban distribution systems in the 5 municipalities. [Def. ex. 143, r. 4192, 4193.] The Authority is under contract to sell power at wholesale to these municipalities as soon as they acquire

distribution systems. If the municipalities construct new distribution systems and sell power and the complainants continue to operate their existing distribution systems in these municipalities, it is reasonable to believe that a large number of customers of complainants will elect to buy from the municipalities. [Ford, r. 1127; Lamar, r. 1135.]

211. Of the 3 cooperatives under contract but not yet purchasing power as of December 15, 1937, one is located within the ceded area in Mississippi. None of the 3 had previously purchased power from any of the complainants. [Def. ex. 143, r. 4192, 4193.]

212. Of the 2 industrial customers under contract but not yet purchasing power as of December 15, 1937, one is located in the ceded area in Alabama. Neither of the 2 was previously served by any of the complainants. [Def. ex. 143, r. 4192, 4193.]

Reasonableness of Conduct of Authority in Disposition of Surplus Power

213. Under the contract of January 4, as amended and supplemented, the Commonwealth & Southern Corporation, as agent for its subsidiaries Alabama Power Company, The Tennessee Electric Power Company, Mississippi Power Company, and Georgia Power Company, purchased from the Authority power in the aggregate value of $1,814,918.04. [Def. ex. 150, r. 4255, 4258.] In addition there to the Alabama Power Company had purchased from the Authority prior to January 4, 1934, power in the aggregate value of $479,573.67. [Def. ex. 150, r. 4255, 4258.] The amounts of power delivered by the Authority to the Alabama Power Company and The Tennessee Electric Power Company (for the subsidiaries of the Commonwealth & Southern Corporation above mentioned), from January 4, 1934, to January 1, 1935, and for the calendar years 1935 and 1936, were as follows [def. ex. 150, r. 4255, 4257]:

Alabama Power Company	1934	110,127,068 kwh.
	1935	164,127,787 kwh.
	1936	344,308,127 kwh.
The Tennessee Electric Power Co.	1934	39,514,200 kwh.
	1935	76,022,503 kwh.
	1936	212,313,103 kwh.

214. In addition to the sales of power under the contract of January 4, the Authority is currently selling power to 2 utility companies under recent contracts and has practiced no discrimination against complainant utility companies or other utility companies in the sale of power. [Def. ex. 145, r. 4235; Barry, r. 870.]

215. The so-called power policy of the Authority, dated August 15, 1933, consisting of a joint press release, was never formally approved by the Board of Directors of the Authority nor ever put into action or followed. [Def. ex. 29, r. 4061.]

216. The Authority has sold substantial blocks of power to many municipalities which formerly operated their own municipal generating plants, which sales did not involve any displacement of any existing load of the complainant companies. [Def. ex. 143, r. 4192.] The Authority has sold substantial blocks of power to cooperatives for distribution by them in rural areas to rural customers heretofore unserved, which sales did not involve any displacement of any existing load of complainant power companies. [Street, r. 987; Wisdom, r. 850; Winkler, r. 1039; Henkle, r. 1057; Jacobs, r. 1017; Bonner, r. 1010; Perkins, r. 1023-1024; Watson, r. 1028-1029; Ostermueller, r. 992; Carmack, r. 1355; Hutchinson, r. 2272, 2273; Cowley, r. 2264-2265.] The Authority has sold substantial blocks of power to industrial concerns who located new plants or enlarged existing plants, which sales did not displace any existing load of complainant power companies. [Def. ex. 143, r.

4192, 4193; def. ex. 147, r. 4237, 4242.] The Authority has sold substantial blocks of power to complainant and non-complainant companies with existing utility networks. [Def. ex. 150, r. 4255, 4257; Rankin, r. 1303.] In fact, none of the sales of power by the Authority have directly displaced any existing load of complainant companies except in the ceded area covered by the contract of January 4, in which the Authority purchased, for valuable considerations, the existing facilities from the complainants Alabama Power Company and Mississippi Power Company. [Def. ex. 143A, r. 4195.] None of the Authority's sales of power to date have indirectly displaced any existing load of the complainants outside the ceded area, except that the complainant West Tennessee Power & Light Company has lost some customers to the city of Jackson and has lost a load of approximately 50 kw. in the town of Gibson which it sold to the Gibson Power & Light Company; this latter load was lost to the complainant West Tennessee Power & Light Company when the properties in the town of Gibson were sold at auction by the Gibson Power & Light Company to the Gibson County Electric Membership Corporation. [Wisdom, r. 850-851.]

217. The officials of the Authority have taken the position in correspondence with municipal officials that the question of whether a municipality shall own and operate its own distribution system is one for the sole determination of the municipality. [Comp. ex. 412, r. 3244; def. exs. 5-9, r. 4031-4035.]

218. The Authority does not aid or assist in conducting surveys to determine the economic feasibility of proposed municipal-plant operations by municipalities applying for the purchase of power from the Authority. [Comp. ex. 412, r. 3244.]

219. The standard of the Authority in entering into power contracts with municipalities is the financial feasi-

bility of extending wholesale service to such municipalities as apply for wholesale service. [Comp. ex. 412, r. 3244.]

220. The Authority has not confined its power disposition to those municipalities which previously did not own and operate their own municipal distribution systems. [Def. ex. 143, r. 4192, column 2.] On the other hand, the Authority has throughout the course of its existence entered into a large number of contracts with municipalities who owned and operated municipal distribution systems before the passage of the Tennessee Valley Authority Act. [Def. ex. 143, r. 4192, column 2; Wisdom, r. 847; Sweatt, r. 794; Winkler, r. 1038.] The power contracts between the Authority and municipalities are substantially uniform, and there are no special provisions favoring municipalities who had not previously owned and operated their distribution systems or discriminating against municipalities that did own and operate their municipal distribution systems before the passage of the Tennessee Valley Authority Act. [For contracts see comp. ex. 117, r. 2729; comp. ex. 118, r. 2771; def. ex. 154 (original) p. 135 *et seq.*]

221. The contracts for the disposition of power between the Authority and municipalities and cooperatives contain provisions in which the parties agree that certain schedules of rates shall be charged by the wholesale purchaser to persons to whom it resells. These provisions for agreed resale rates are contained in all contracts regardless of whether or not the complainant utility companies own and operate distribution systems in the municipality or area where the purchased power is to be resold. [For contracts see comp. ex. 117, r. 2729; comp. ex. 118, r. 2771; def. ex. 154 (original) p. 135 *et seq.*]

222. The Authority has made no effort to regulate the rates of its municipal or cooperative customers and has taken no action regarding such rates other than entering into the initial agreement establishing resale rates.

223. There have been uniform and progressive increases of a substantial character in the amount of wholesale purchases of power made by each municipality which has purchased power from the Authority. [See def. ex. 147, r. 4237; def. ex. 154 (original) pp. 20-21.]

224. There has been a uniform and progressive increase in the number of ultimate consumers served by each municipality and cooperative that has purchased power at wholesale from the Authority. [Def. ex. 147, r. 4237.]

225. The amount of power purchased by each of the municipal customers of the Authority in October 1937 was on the average about 100% in excess of the respective amounts purchased by the respective municipalities in the initial month of wholesale service by the Tennessee Valley Authority. [Def. ex. 147, r. 4237.] This percentage of increase is in excess of the highest percentage of increase of any of the complainant companies in power sold to regular customers from 1933 to 1936. [See def. ex. 2, r. 4007; comp. exs. 10, 15, 23, 28, r. 2488, 2494, 2498, 2501; comp. exs. 30, 35, 38, 46, r. 2502, 2505, 2508, 2535; comp. exs. 55-57, r. 2540-2542; comp. exs. 76, 84, 96, 104, r. 2554, 2558A, 2604A, 2608.] It is greatly in excess of the approximately 20% of increase in the national production of electricity for the same period of years. [Comp. exs. 99, 99a, r. 2606.]

226. The annual average consumption of residential customers of municipalities and cooperatives purchasing power from the Authority generally exceeded the average for the same class of customers of the complainant companies. [For averages of residential customers of wholesale purchasers from TVA, see comp. ex. 919, r. 3948; for averages of comp. companies see comp. exs. 10, 15, 28, 35, r. 2488, 2494, 2501, 2505; comp. exs. 61, 62, 63, 76, r. 2546-2548, 2554; comp. exs. 84, 85, 96, 104, r. 2558A, 2558B, 2604A, 2608.]

227. The Authority has not induced the breach of any power contract between any complainant and any of its customers.

228. In marketing the power generated at its dams the Authority has not engaged in any solicitation of customers, coercion, duress, fraud, or misrepresentation in procuring contracts with municipalities, cooperatives, or other purchasers of power.

229. In marketing the power generated at its dams the Authority has not acted with any malicious or malevolent motive and has not conspired with municipalities or other prospective purchasers of power.

Extent of Displacement of Existing Utilities Threatened

230. The defendant Authority has no plans and has made no investigations of any substantial character for the construction of any dams in the Tennessee Valley except the 7 high dams on the main stream and Norris and Hiwassee Dams on the tributaries. [Bowman, r. 1693-1695.] Other than these projects it has recommended only the construction of the Fontana Dam on the Little Tennessee River. [Bowman, r. 1694.] The surveys of the Tennessee River basin and its tributaries conducted by the Corps of Engineers of the United States Army for the War Department and reported in House Document No. 328, Seventy-first Congress, second session, concerned combined public and private projects; the 149 projects so surveyed have not been recommended for construction by the Federal Government. [R. 4273-4274; comp. ex. 105 (original) p. 19 (par. 33); r. 895.]

231. It is reasonably estimated that the utilities within ready transmission distance of the Authority's run-of-river plants, constructed or under construction, will require 310,000 kw. of additional capacity in 1939 and 787,500 kw.

of additional capacity in 1943. [Thomas, r. 2092, 2086-2105; def. ex. 133, r. 4150.] Of this amount the requirements of the Commonwealth and Southern companies which are complainants herein, plus the requirements of the non-complainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company, affiliated and interconnected non-complainant companies, are 207,000 kw. in 1939 and 559,000 kw. in 1943 [def. ex. 133, r. 4150]; and the requirements of the Electric Bond and Share companies who are complainants herein and affiliated non-complainant companies are 88,200 kw. in 1939 and 190,000 kw. in 1943 [def. ex. 133, r. 4150]. The estimated energy requirements for the companies within ready transmission distance of the Authority's run-of-river dams, constructed or under construction, will be over 770,000,000 kwh. in 1939 and over 2,150,000,000 kwh. in 1943. [Thomas, r. 2091-2105; def. ex. 133, r. 4150.] Of these amounts the additional requirements of the Commonwealth and Southern complainant companies and the Georgia Power Company will be over 550,000,000 kwh. in 1939 and 1,600,000,000 kwh. in 1943. [Def. ex. 133, r. 4150.] The additional energy requirements of the Electric Bond & Share Company and affiliated companies with which they are interconnected will be over 200,000,000 kwh. in 1939 and over 560,000,000 kwh. in 1943. [Def. ex. 133, r. 4150.]

232. Some of the complainants have added substantially to their generating capacity since 1933. [Comp. ex. 502, r. 3335.] Some of the complainants are preparing for the construction of additional generating plants of a substantial capacity. The Tennessee Electric Power Company is preparing to construct a steam plant at Nashville with a generating capacity of approximately 25,000 kw. [Middlemiss, r. 1273.] The Appalachian Electric Power Company is constructing a hydroelectric project on the New River in Virginia with a planned installed capacity of about 75,000 kw. and has leased 55,500 kw. of power

from the Federal Government at navigation projects on the Kanawha River. [Argabrite, r. 834.] The Arkansas Power & Light Company has contracted to purchase 40,000 kw. from the Authority in the near future. [Def. ex. 145, r. 4235; def. ex. 154 (original) p. 294.]

233. There is a steadily increasing demand for electric energy in the area within transmission distance of the Authority's projects constructed, under construction, and investigated for construction. [Thomas, r. 2101-2103; comp. exs. 360, 370, r. 3090, 3126D; comp. ex. 372 in *Reproductions of Certain Original Exhibits Submitted by Appellants;* comp. exs. 374-376, r. 3128A-3148; comp. ex. 501, r. 3334.]

234. There are unserved potential markets for the electric energy which may be generated at the projects of the Authority, not involving any displacement of the existing loads of complainant companies, including new industries and unserved rural areas. The percentage of rural electrification in the States which make up the Tennessee River basin is small. In 1933 it ranged from 0.8% in Mississippi to 7.9% in Virginia. In 1936 it ranged from 2% in Mississippi to 10.3% in Virginia. [Hapgood, r. 2147-2148.]

235. There are many unserved rural areas. A great majority of the so-called rural customers on lines of complainants existing in the counties or areas where the lines of the cooperatives have been constructed were in towns of a population of 100 or more, or within 6 miles of a transmission substation. [Hapgood, r. 2169.] There was little area-wide rural electrification. The fact that the lines of the cooperatives extend out from load centers or communities produces less customer density to the mile. [Hapgood, r. 2169.]

236. The growth in demand in terms of the firm peak load of the principal companies operating in territory located within a radius of 250 miles of the dams recom-

mended in the TVA unified plan from 1929 to 1936 was approximately 22%, that is, from 2,992,000 kw. in 1929 to 3,652,000 kw. in 1936. [Comp. ex. 501, r. 3334, line 20 entitled "Firm Peak Load"; Moreland, r. 1454-1455.] It is reasonably estimated by experts from both sides that this firm peak load will increase at least an additional 772,000 kw. or 21%, by 1939. [Comp. ex. 501, r. 3334, line 20 entitled "Firm Peak Load"; Thomas, r. 2103, 2097; def. ex. 133, r. 4150.]

237. By the date the power generating units authorized for the dams of the Authority are installed it is reasonably estimated by witnesses for both sides that the power demand in the area within transmission distance of the projects of the Authority will be greatly in excess of the present peak-load ability of the existing generating plants in the area. Unless additional generating capacity is provided by private utilities or at the projects of the Authority, there is likely to be a substantial power shortage. [Thomas, r. 2091-2092, 2097; def. ex. 133, r. 4150; Moreland, r. 1459-1463; comp. ex. 501, r. 3334.]

238. Without subtracting the substantial amounts of power which the Authority has contracted to sell to large industrial customers, the Arkansas Power & Light Company, and municipalities not yet served, the amount of power which will be available at the projects of the Authority with authorized installations of generating capacity is less than the amounts of power necessary to meet the increases in demand in the area served by private utilities within transmission distance predicted for the date when these installations are scheduled for completion. [Def. ex. 133, r. 4150; def. ex. 141, r. 4188; comp. ex. 501, r. 3334.]

239. For most of the complainants 1936 represented a new high point in volume of power sales, the increases from 1930 to that year ranging up to more than 50%. Since 1933 sales to regular customers have increased even more rapidly, the rates of growth during the latter period rang-

ing up to approximately 75%. [Def. ex. 2, r. 4007; comp. exs. 10, 15, r. 2488, 2494; comp. ex. 102, r. 2607; comp. ex. 28, r. 2501; comp. ex. 76, r. 2554; comp. ex. 38, r. 2508; comp. ex. 96, r. 2604; Barry, r. 874; Ostermueller, r. 994; comp. exs. 47, 55-57, r. 2536, 2540-2542.]

240. The number of electric customers served has shown a substantial increase for each of the respective complainants, the present number of customers served in 1937 constituting a new high for the said respective complainants. [Def. ex. 2, r. 4007; for individual companies see references to fdg. 239 above.]

241. Both the gross and the net revenues of the respective complainants in their electric-utility operations have increased substantially in the period since the creation of the Tennessee Valley Authority. [Def. ex. 2, r. 4007; for individual companies see references to fdg. 239 above.]

242. In many cases the gross revenues have reached a new high for the respective companies. [Def. ex. 2, r. 4007; for individual companies see references to fdg. 239 above.]

243. From 1933 to the middle of 1937 the rate of growth in the consumption of electricity in the 7 States, parts of which compose the Tennessee Valley basin, has been in excess of the national rate. [See comp. ex. 919, r. 3946, for rate of increase in Valley States; see comp. ex. 99a, r. 2606A, for the national rate of increase.] The increase in average annual residential use of customers of many utilities operating in the area from 1933 to 1937 greatly exceeds the increase in national average annual residential use. [See def. ex. 154 (original) p. 22, for national average; for rates of increase for complainant companies, see comp. exs. 10, 16, 28, 35, r. 2488, 2495, 2501, 2505; comp. exs. 38, 47, 55-57, r. 2508, 2536, 2540-2542; comp. exs. 76, 84, 85, 96, 104, r. 2554, 2558A, 2558B, 2604A, 2608.]

244. The generating and transmission facilities of the complainants Alabama Power Company, Mississippi Power Company, The Tennessee Electric Power Company, and non-complainants Georgia Power Company, Gulf Power Company, and South Carolina Power Company are interconnected and are operated as an integrated power pool. [Middlemiss, r. 1268-1270; Barry, r. 875.] Any point on the system of any of said companies may be served with power generated at any other point in said power pool. [Middlemiss, r. 1268-1270; Thomas, r. 2091, 2088.]

245. The facilities of complainants West Tennessee Power & Light Company, Memphis Power & Light Company, and Mississippi Power & Light Company, and non-complainants Louisiana Power & Light Company and Arkansas Power & Light Company, both members of the Electric Bond & Share Company system, are interconnected, and operated as a common integrated transmission and generating pool. [Rankin, r. 1293.]

246. The entire power requirements of the complainant Tennessee Public Service Company are purchased from complainant Carolina Power & Light Company. [Lamar, r. 802.] The Carolina Power & Light Company is interconnected with the Appalachian Electric Power Company and the Duke Power Company. [Yoder, r. 813, 822-823.]

247. The generating and transmission facilities of the Appalachian Electric Power Company, Kingsport Utilities, Inc., and Kentucky & West Virginia Power Company, Inc., are interconnected and operated as an integrated transmission and generating-plant system. [Argabrite, r. 829-830.]

248. The generating and transmission facilities devoted to service to the municipalities now served by the respective complainants and under contract to purchase power from the Authority form parts of integrated transmission and generating systems and may be devoted to serving the growth in other loads on the system should there be any loss of load in any given municipality which

purchases power from the Authority due to loss of customers to said municipality. [Hapgood, r. 2170.]

249. The unserved rural market in the area adjacent to the lines of the respective complainants which can be economically served by the complainants is negligible in amount and the injury to the respective complainants from any extension of rural lines for service to this market by the Authority or municipalities or cooperatives purchasing power at wholesale from the Authority would also be negligible. [Street, r. 977-978; Ostermueller, r. 990-991; Bonner, r. 1006-1007; Jacobs, r. 1016; Perkins, r. 1021; Watson, r. 1026-1027; Winkler, r. 1034-1035; Henkle, r. 1052-1053; Argabrite, r. 842; Sargent, r. 886; Lamar, r. 802; Canaday, r. 803; Ford, r. 809-810; Yoder, r. 821.]

250. Prior to the completion of generating plants at Norris Dam on July 28, 1936, and Wheeler Dam on November 8, 1936 [def. ex. 150, r. 4255, 4256-4257], all power supplied by the Authority to said companies under the contract of January 4, 1934, was supplied from Wilson Dam. Wilson and Norris Dams are and have been interconnected from and after July 28, 1936. [Def. ex. 150, r. 4255, 4256-4257.] Norris Dam began generating power on July 28, 1936, and Wheeler Dam on November 9, 1936. [Def. ex. 150, r. 4255, 4256-4257.] All power purchased by the Alabama Power Company and The Tennessee Electric Power Company from and after the respective dates of completion of Norris and Wheeler Dams was supplied from an interconnected pool, including the power generated at both of said dams from and after the dates of completion. [Def. ex. 150, r. 4255, 4257; *cf.* Karr, r. 2211.]

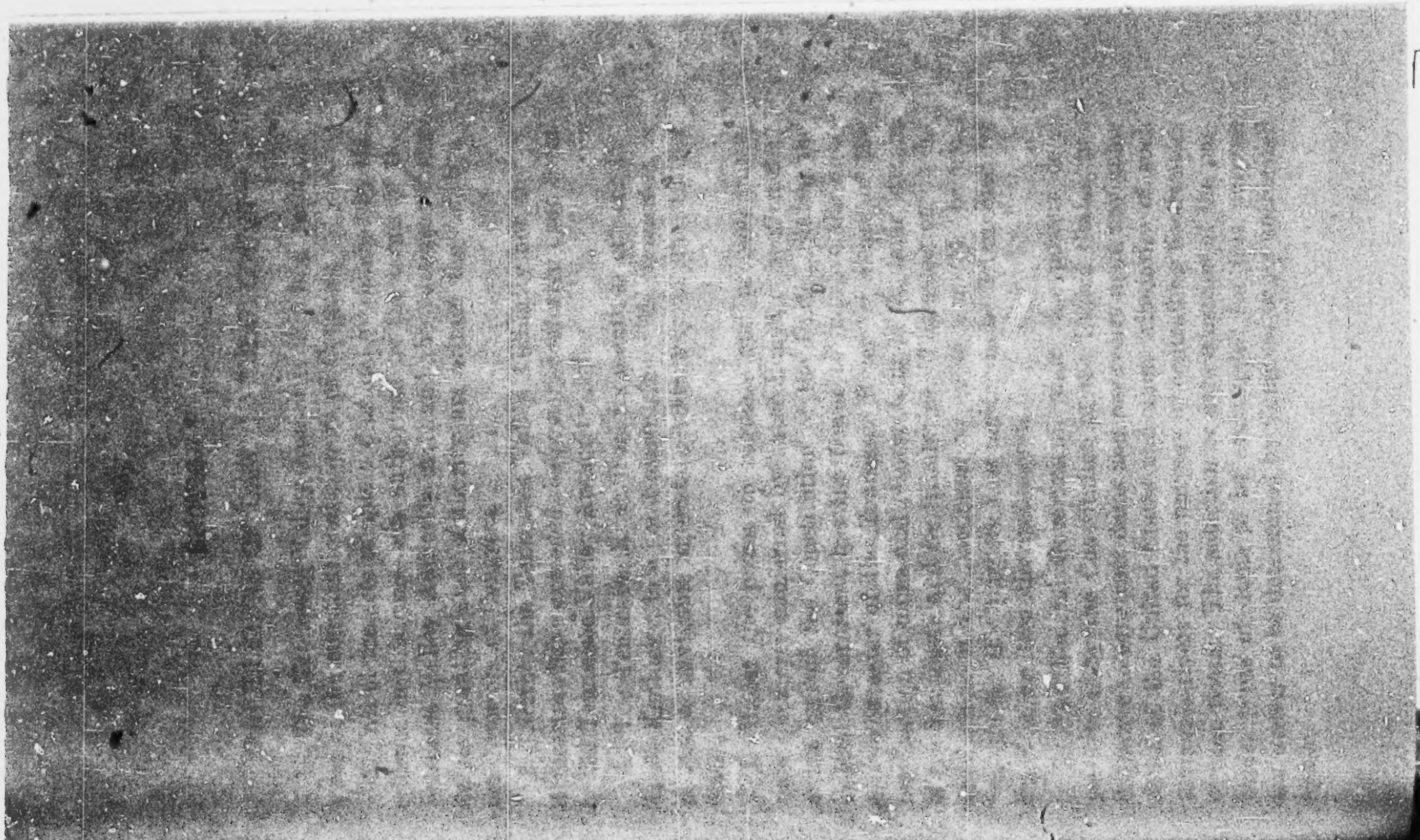
251. The months of June through December 1936 were months of subnormally low stream flow in the Tennessee River. [Karr, r. 2210.] The purchases of power from the Authority by the Commonwealth and Southern companies in these months were very substantial. During the 7 months these purchases amounted to 552,562,368 kwh.

[def. ex. 147, r. 4237, 4241; def. ex. 148, r. 4254], which was slightly more than the total amount of kwh. which could have been generated at Wilson Dam without the benefit of storage releases from Norris Dam [def. ex. 148, r. 4254, lines 3 & 4]. During August, September, and November the purchases by the Commonwealth and Southern companies were substantially greater in proportion to the generating ability of Wilson Dam without benefit of Norris Dam [Karr, r. 2210-2211]; those purchases ranged from 110% to 137% of the amount of power which could have been generated at Wilson Dam in those months without the benefit of Norris Dam [def. ex. 148, r. 4254, line 6]. During this 7-month period the sales to the Commonwealth and Southern companies were approximately 92% of the amount of power which could be generated at Wilson Dam including the benefit of Norris storage releases [def. ex. 148, r. 4254, line 5], and 83.45% of the total TVA system sales [def. ex. 148, r. 4254, line 11]. In August, September, and November the Commonwealth and Southern companies purchased more power than Wilson Dam generated, including the generation resulting from Norris storage releases, the percentages varying from 101.82% in August to 108.51% in September. [Def. ex. 148, r. 4254, line 5.]

FINDINGS OF FACT OF TRIAL COURT

District Judge Gore suggested certain modifications of the following findings of fact (r. 665): 39, 42, 53, 54, 62, 63, 68, 69, 71, 73, 93, 186, 198, 216, 237, 249, 250.

District Judge Gore dissented from the following findings of fact (r. 664): 38, 41, 43, 46, 47, 52, 55, 56, 59, 60, 66, 70, 75, 125, 184, 196, 197, 213, 214, 217-220, 222, 228, 229, 238, 243, 251.



SECTION B

CONCLUSIONS OF LAW OF TRIAL COURT

1. The Tennessee Valley Authority Act is a valid exercise of the constitutional powers of Congress.

2. All of the acts complained of and established by the evidence in this cause are authorized by the terms of the Tennessee Valley Authority Act, and the portions of the statute granting such authority are within the constitutional powers of Congress.

3. Neither the Tennessee Valley Authority nor any of its directors have exceeded the powers conferred upon them by the Tennessee Valley Authority Act.

4. The Tennessee River from its mouth at or near Paducah, Kentucky, to a point above Knoxville, Tennessee, is in law a navigable interstate waterway of the United States.

5. Under the power to regulate and promote interstate commerce conferred by subsection 3 of section 8 of article one of the Constitution of the United States, the Federal Government has the power to improve the navigable character of the Tennessee River by means of the construction of dams and reservoirs upon the main stream of the Tennessee and its tributaries. The selection or determination of the particular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents.

6. The Federal Government, under the powers delegated to it by the Constitution of the United States, has the power to construct dams and reservoirs upon navigable rivers of the United States and upon tributaries of such navigable rivers for the purpose of controlling floodwaters on such rivers. The selection or determination of the particular types of dams to be constructed for this purpose is a matter to be determined by Congress or its authorized agents.

CONCLUSIONS OF LAW OF TRIAL COURT

7. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs for the purpose of protecting interstate commerce, both upon the navigable waterways and upon the highways and railroads, from interruption and interference due to destructive floods.

8. Under the powers delegated to it by the Constitution of the United States, Congress has the power to construct dams and reservoirs for the purpose of protecting the instrumentalities of interstate commerce, including navigable waterways, railroads, highways, and manufacturing establishments engaged in the production of goods moving in interstate commerce, from the hazards and interruptions resulting from destructive floods.

9. Under the powers delegated to it by the Constitution of the United States, the Federal Government has the power to construct dams and reservoirs upon the Tennessee River and its tributaries for the purpose of controlling destructive floods in the Tennessee and Mississippi River Valleys.

10. Under the power to regulate and promote interstate commerce, the Federal Government has the constitutional power to construct all dams in the Tennessee River and its tributaries that are reasonably related to the improvement of the navigable character of the Tennessee River or any of its navigable tributaries.

11. Under the powers delegated to it by the Constitution of the United States, Congress has the power to authorize the construction of all dams upon the Tennessee River and its tributaries that will in fact contribute to the control of destructive floods in the Tennessee and Mississippi River Valleys.

12. Under the power to regulate and promote commerce between the several States, Congress has the constitutional power to authorize the construction of each of the

dams constructed, under construction, or under investigation for construction by the Tennessee Valley Authority upon the main stream of the Tennessee River and its tributaries.

13. By the terms of the Tennessee Valley Authority Act, Congress has created the Tennessee Valley Authority as an agency of the Federal Government and has expressly authorized this agency to construct each of the dams constructed, under construction, or under investigation for construction on the main stream of the Tennessee River and its tributaries. Congress has from time to time authorized the construction of each individual dam constructed or under construction by appropriate appropriation statutes.

14. The water power created as a result of the construction of the dams authorized by the Tennessee Valley Authority Act is the property of the United States.

15. Congress has the constitutional power to authorize the installation and operation of such generating facilities at the dams authorized by the Tennessee Valley Authority Act as may be necessary to generate electric energy from the water power created by the construction of such dams.

16. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to make provision in the dams constructed by it upon the Tennessee River and its tributaries for the necessary facilities for generating electric energy. The statute specifically authorizes the installation and operation of powerhouses, generators, and other facilities.

17. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is the property of the United States and may be disposed of by Congress or its authorized agency under subsection 2, section 3, article 4 of the Constitution of the United States.

18. The electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act is law-

fully and legally acquired property of the United States resulting from the exercise of its constitutional powers and may be used or disposed of in any manner which the Congress, in the exercise of its discretion, may select as the reasonable means of such disposition.

19. The Tennessee Valley Authority Act directs the Tennessee Valley Authority to operate all of the dams constructed by it primarily in the interests of navigation and flood control, but expressly authorizes the said Tennessee Valley Authority to generate electric energy at said dams insofar as this can be done consistently with the interests of navigation and flood control.

20. The method of operation of the dams and reservoirs constructed and under construction which the defendants have followed and propose to follow in the future is authorized by the Tennessee Valley Authority Act.

21. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the construction of transmission lines from the dams authorized by the Tennessee Valley Authority Act in order to dispose of the electric energy generated at such dams.

22. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to generate electric energy at all dams authorized by the Tennessee Valley Authority Act; to construct or acquire transmission lines leading from such dams to municipalities, cooperative associations of citizens and farmers not organized for profit, large industrial customers, and other purchasers of power.

23. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to construct or acquire transmission lines leading from each of the dams constructed under the authority of the Tennessee Valley Authority Act to the surrounding market area.

24. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Valley Authority Act to wholesale customers under long-term contracts.

25. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to sell electric energy generated at any of the dams authorized by the Tennessee Vally Authority Act direct to rural customers and inhabitants of small towns and villages, and to industrial customers.

26. Under the power to dispose of property of the United States, Congress has the power to authorize the Tennessee Valley Authority to own and operate transmission lines and rural distribution lines for the purpose of transmitting and selling the electric energy generated at said dams.

27. Under the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to enter into contracts with municipalities, cooperative associations of citizens and farmers not organized for profit, and industrial customers for the sale of electric energy generated at the dams constructed by the Tennessee Valley Authority under said act.

28. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to sell electric energy generated at any of the dams constructed under the terms of said act direct to rural customers and inhabitants of small towns and villages.

29. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to own and operate transmission and rural distribution lines for the purpose of transmitting and selling the

electric energy generated at any of the dams constructed under the authority of said act.

30. By the terms of the Tennessee Valley Authority Act, Congress has directed the Tennessee Valley Authority to give preference in the sale of power to States, counties, municipalities and cooperative organizations of citizens or farmers not organized for profit. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

31. The Tennessee Valley Authority Act authorizes the Authority to construct rural transmission lines for service to farmers or cooperative organizations of citizens or farmers and to sell such lines to municipalities or such cooperative organizations. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

32. The Tennessee Valley Authority Act authorizes the Authority to sell power direct to industrial customers in order to increase the load factor on the system. This provision is a valid exercise of the power of Congress to dispose of property of the United States.

33. The Tennessee Valley Authority Act authorizes the Board of Directors of the Authority to fix the rates at which the electric energy generated at the dams authorized by the Tennessee Valley Authority Act may be sold. The statute vests discretion in the board in fixing such rates, and the exercise of this discretion is not subject to judicial review. This provision of the statute is a valid exercise of the power of Congress to dispose of property of the United States.

34. Under the constitutional power to dispose of property of the United States, the Government may attach to the sale of its property such conditions as it may deem reasonable to insure the widespread diffusion of the benefits of such property and the avoidance of monopolistic control of such property.

CONCLUSIONS OF LAW OF TRIAL COURT

35. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such power is to be resold to the ultimate consumers.

36. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Authority to include in any contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions with respect to the rates at which such energy is to be resold to the ultimate consumers.

37. Under the power to dispose of property of the United States, Congress has the constitutional power to authorize the Tennessee Valley Authority to include in all contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power.

38. By the terms of the Tennessee Valley Authority Act, Congress has authorized the Tennessee Valley Authority to include in all contracts for the sale of power generated at any of the dams authorized by the Tennessee Valley Authority Act provisions relating to the bookkeeping and accounting methods to be followed by the purchasers of such power.

39. The Tennessee Valley Authority Act does not contain any provisions regulating or attempting to regulate the rates or operations of complainant companies or other private utilities.

40. Sales of power by the Tennessee Valley Authority in accordance with the provisions of the statute at rates fixed and determined by the board of directors do not constitute regulation of the rates or businesses of the complainant companies or other private utilities.

CONCLUSIONS OF LAW OF TRIAL COURT

41. The municipalities and cooperatives purchasing power at wholesale from the Authority are subject to regulation by the States.

42. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the statutes of the several States in which they are located to purchase said power, to contract with the Authority with respect to the same, and to engage in the business of selling the same at retail.

43. All of the municipalities and cooperatives purchasing power at wholesale from the Authority are authorized by the statutes of the several States in which they are located to enter into contracts with the Authority containing provisions agreeing upon the rates at which such power is to be resold and provisions relating to the bookkeeping and accounting methods to be followed by such purchasers. Under the laws of the several States in which the municipalities and cooperatives are located, such provisions do not constitute any unlawful delegation or abdication of sovereign power by the municipalities or cooperatives.

44. The provisions of the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which the power so purchased from the Authority is to be resold and the provisions relating to the methods of keeping accounts do not constitute any invasion of the reserved powers of the States under the tenth amendment to the Constitution of the United States.

45. The provisions in the contracts between the Authority and the municipalities and cooperatives purchasing power at wholesale from it relating to the rates at which such power is to be resold do not in law amount to regulation either of the rates of said wholesale purchasers or of the rates of private companies competing with such wholesale purchasers.

CONCLUSIONS OF LAW OF TRIAL COURT

46. Under the laws of the several States in which the municipalities and cooperatives purchasing power at wholesale from the Authority are located, the rates at which the power purchased from the Authority may be resold by the municipalities and cooperatives remain subject to the police power of the States, if and when the States may elect to exercise such power.

47. The cooperatives purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent corporate entities and not subsidiaries or instrumentalities of the Authority.

48. The municipalities purchasing power at wholesale from the Authority are, under the laws of the several States in which they are located, independent public agencies of said States and are not subsidiaries or instrumentalities of the Authority.

49. The municipalities and cooperatives purchasing power at wholesale from the Authority are authorized under the laws of the several States in which they are located to engage in the business of selling and distributing electric energy at retail and have the legal right to compete with the complainant companies in such business. Any damage or injury resulting or threatened to the complainant companies, or any of them, from such competition is damnum absque injuria and does not give rise to a cause of action on behalf of said companies.

50. None of the complainant companies have or claim any exclusive franchise or right to engage in the business of selling and distributing electricity in the various municipalities and communities in which they operate.

51. The sale of electric energy by the Tennessee Valley Authority to municipalities and cooperatives lawfully engaged in the business of selling and distributing said energy at retail does not result in any legal injury to any

of the complainant companies and does not invade any legal right of any of said companies.

52. The complainant companies have no standing or right to challenge the right of the municipalities and cooperatives purchasing power at wholesale to engage in the business of selling and distributing electric energy in competition with said companies.

53. The complainant companies have no standing or right to challenge the legal right of the Authority to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

54. The complainant companies have no standing or right to challenge the validity of the contracts under which the Authority is selling or has agreed to sell electric energy at wholesale to municipalities and cooperatives engaged in the business of reselling said energy at retail in legal competition with the complainant companies.

55. Having failed to prove any damage in fact, actual or threatened, resulting from the sales of power by the Authority direct to rural customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

56. Having failed to prove any damage, actual or threatened, resulting from the sales of power by the Authority direct to industrial customers not previously served by any of the complainant companies, said companies have no standing or right to challenge the legal right of the Authority to make such sales.

57. The complainant companies have no legal right to be free from competition, and they have no legal standing or right to challenge the statutory powers of the Authority to generate, transmit, and sell electric energy in competition with them, or some of them.

CONCLUSIONS OF LAW OF TRIAL COURT

58. Under the decision of the Supreme Court in the Ashwander case, the right of the Authority to acquire and operate the facilities in Alabama transferred to it under the contract of January 4 is settled and cannot be questioned in this case.

59. Section 7 of the contract of January 4 confers upon the Authority the contractual right to serve municipalities located within the ceded area in Alabama, and the Alabama Power Company, a party to that contract, has no right to question the legal right of the Authority to engage in such service.

60. Section 7 of the contract of January 4 confers upon the Authority the right to sell power to any municipality owning and operating its own distribution system and not purchasing power from the utilities party to that contract, and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company, parties to that contract, have no right to challenge sales to such municipalities by the Authority.

61. Section 7 of the contract of January 4, 1934, confers upon the Authority the right to sell power to any customers not served by the parties to that contract as of January 4, 1934, up to a maximum aggregate demand of 2,500 kw., and the complainants Alabama Power Company, Mississippi Power Company, and The Tennessee Electric Power Company have no right to challenge sales of power to customers served pursuant to the right so conferred.

62. Under the record the complainants have no legal right within the areas served by them respectively to exclude lawful competitors from the power markets of the future.

SECTION C

OPINION OF THE TRIAL COURT[1]

Decided January 21, 1938

Before ALLEN, Circuit Judge, and GORE and MARTIN, District Judges.

ALLEN, Circuit Judge.

Complainants have filed a bill in equity praying for relief against the operation of the Tennessee Valley Authority Act of 1933, as amended 48 Stat. 58, 49 Stat. 1075, 16 U.S.C. § 831 et seq, 16 U.S.C.A. § 831 et seq. The bill joins as defendants the Tennessee Valley Authority, the agency created by the Congress to carry out the provisions of these statutes, and Arthur E. Morgan, David E. Lilienthal, and Harcourt A. Morgan, who are the chief executive officers of the Authority and constitute its board of directors.

The complainants are nineteen companies generating, transmitting and distributing power within Tennessee, Alabama, Mississippi, North Carolina, South Carolina, Kentucky, Virginia, West Virginia, and Georgia, one of which, the Georgia Power Company, has been enjoined from participating in this action by the United States District Court for the Northern District of Georgia. Georgia Power Co. v. Tennessee Valley Authority, 17 F.Supp. 769. This decree has been affirmed by the Court of Appeals for the Fifth Circuit. 89 F.2d 218. For this reason we give no consideration to alleged competition of the Authority with the Georgia Power Company.

The complainants are in general owned by holding companies, as set forth in the findings of fact. They are all taxpayers, citizens of and authorized to do business within the states in which they operate, and none of them claims to operate under any exclusive franchise.

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1 As reported in 21 F.Supp. at 947. Reprinted in the record at page 542.

The bill cannot be summarized within the appropriate limits for a trial court's opinion. In addition to its seventy pages of pleading and sixty-five pages of exhibits, it contains within the bill itself much that is argumentative, repetitious and immaterial to the legal questions presented. It charges coercion, fraud and conspiracy on the part of the defendants officially and individually. It charges that Secretary Harold L. Ickes, Public Works Administrator, has joined with the Authority in certain coercion and conspiracy against the legal rights of these complainants. The argumentative matter and conclusions which we deem immaterial are so interwoven with allegations bearing upon the legal questions presented that it is impossible to extricate them. The same statement is true of the prayer. Paragraphs h, i, l, o, p and q of the prayer are considered by the court to have no relation to this case under Ashwander v. Tennessee Valley Authority, 297 U.S. 288, at page 324, 56 S.Ct. 466, 472, 80 L.Ed. 688, which held that such matter presents no justiciable controversy. It suffices, therefore, to say that in its essential and material features the bill seeks a decree holding that the Tennessee Valley Authority Act of 1933, as amended, and the acts done by the board of directors thereunder officially and individually, violate the Constitution of the United States. It seeks an injunction restraining the defendants, their agents and employees, from carrying out the provisions of the statute with reference to the sale of electric power, from purchasing, constructing or otherwise acquiring electric generating plants, transmission lines or distribution lines, or from selling electric energy, except such energy as may be produced at Wilson Dam, "to the extent the production and sale of power at Wilson Dam has been held legal." For practical purposes this bill seeks to enjoin the further construction of TVA dams now in process of construction in the Tennessee Valley, the construction of new dams in such valley for which specific appropriation has been made by

Congress, and the operation for generation and sale of electric power of all TVA dams built and to be built.

The answer denies the material allegations of the bill. Only one of the affirmative defenses requires special mention. The defendants claim that certain of the complainants are estopped to deny the constitutionality of the TVA statutes because of extensive purchases of power from the Authority. These purchases were made under the contract of January 4, 1934, by which certain complainants contracted with the Authority to transfer to the Authority their plants, lines, equipment, customers and franchises within certain counties within Mississippi and Alabama for a valuable consideration and upon the condition that the Authority would not operate within those states outside of the counties specified. The properties have been transferred and the contract to date has been fully performed. The court has ruled in favor of the complainants on this contention, and has held that the record presents no essential difference from the situation covered by the ruling as to estoppel in the Ashwander Case, supra, 297 U.S. 288, at page 323, 56 S.Ct. 466, 472, 80 L.Ed. 688, and therefore this question will not be discussed.

After a trial which consumed about seven weeks, in which approximately 1,100 exhibits were offered, the material issues in the case as briefed, argued and outlined in the actual testimony are defined as follows:

(1) Whether the Authority is engaged in acts constituting in law malice, coercion, and duress, to the injury of complainants.

(2) Whether the Authority and the individual defendants have conspired with Secretary Ickes and the Public Works Administration to induce municipalities and cooperative associations through loan grant agreements from the Public Works Administration to set up their own distribution systems and to coerce them into executing con-

tracts for purchase of TVA power by threat of denial or cancellation of such PWA loan grants.

(3) Whether the acts of the defendants are authorized by the TVA statutes.

(4) Whether the act itself is unconstitutional and void, and the acts done under it are illegal because the Congress is not empowered either under the interstate commerce clause, article 1, § 8, or under the national defense powers, article 1, section 8, of the United States Constitution, to enact the TVA statutes.

(5) Whether the generation of electricity at the TVA dams is unlawful because it is inconsistent with the regulation of interstate commerce, with flood control, with the improvement of navigation on a navigable river, and with purposes of national defense.

(6) Whether the method of disposition of electric energy authorized by the TVA statutes is appropriate and constitutional under the power to dispose of property belonging to the United States conferred upon the Congress by section 3 of article 4 of the Constitution.

Each of the dams constructed, in process of construction, and proposed for the TVA system, while varying somewhat in use, as hereafter set forth, is a unit of an integrated multiple-purpose project, the system being designed for co-ordinated use of the full benefits of the river along the line of navigation, flood control, national defense and power development. Wherever water falls, power is created, and one of the express purposes of the TVA statutes is that hydro-electric power so created shall be sold to assist in liquidating the cost of the project. This is in line with the general development of the conservation movement from 1908 to the present, as it relates to streams. See National Waterways Commission Report, Senate Document 469, 62d Congress, Second Session, Appendix I, pages 27, 52, 61, 82, 85, 87; Statement of Chairman of Fed-

eral Power Commission, House Document 395, 73d Congress, Second Session, page 54; Report of National Resources Board, pages 263, 264. Similar provisions as to river projects have been embodied in previous legislation. In 1912 a statute was enacted authorizing the Secretary of War to provide, in navigation dams, in order to make possible the economical future development of water power, such foundations, sluices, and other works as may be considered desirable for the development of such power. Act July 25, 1912, § 12, 37 Stat. 233, 33 U.S.C.A. § 609. The Boulder Canyon Project Act of 1928, 45 Stat. 1057, 43 U.S.C.A. § 617 et seq., provided for a multiple-purpose project for irrigation, flood control, improvement of navigation and generation of power. As fully appears from the opinion in Arizona v. California, 283 U.S. 423, 51 S.Ct. 522, 75 L.Ed. 1154, navigation on the Colorado River was negligible in comparison with navigation on the Tennessee River under the record in this case. Though navigation on the Colorado River had ceased, the project of reclaiming its navigability was held by the Supreme Court to establish the constitutionality of the multiple-purpose project, including the generation and sale of power.

TVA Project.

Pursuant to the TVA statute as amended and to subsequent related enactments, the Authority has constructed and is planning to construct seven high dams on the main channel of the Tennessee River, and certain dams on its tributaries. The Tennessee River is formed by the confluence of the Holston and French Broad Rivers in the east-central part of Tennessee. It flows southwesterly across the eastern part of Tennessee into Alabama, westerly across the northern part of Alabama, northerly between Alabama and Mississippi, and across the western part of Tennessee and Kentucky, and empties into the Ohio River near Paducah, Kentucky. Its length is 652 miles, and

its drainage basin is 40,600 square miles. It has eight principal tributaries. The main stream dams, including Wilson, which was constructed previous to 1933, are as follows:

(1) Gilbertsville, on which preliminary investigations are in progress, located in Kentucky about 22 miles from the mouth of the river.

(2) Pickwick Landing Dam, under construction and almost completed, located in Tennessee about 206 miles from the river's mouth.

(3) Wilson Dam, now in operation, constructed by United States Army engineers and transferred to the Authority under the TVA Act, located at Muscle Shoals, Alabama, about 259 miles from the river's mouth.

(4) Wheeler Dam, construction of which was begun by the United States Army engineers and completed by the Authority, located in Alabama about 15 miles above Wilson Dam and about 275 miles from the river's mouth. This dam is now in operation.

(5) Guntersville Dam, under construction, located near Guntersville, Alabama, 349 miles from the mouth of the river.

(6) Chickamauga Dam, now under construction, located near Chattanooga, Tennessee, 471 miles from the mouth of the river.

(7) Watts Bar Dam, on which preliminary investigations are in progress, located in Tennessee about 530 miles from the mouth of the river.

(8) Coulter Shoals Dam, on which preliminary investigations are in progress, located in Tennessee 602 miles from the river's mouth.

The tributary dams are Norris, completed and in operation, located in Tennessee on the Clinch River about 79 miles from the mouth of the Clinch and about 647 miles

from the mouth of the Tennessee, and Hiwassee Dam, now under construction, located in North Carolina on the Hiwassee River about 75 miles from the mouth of that river and about 560 miles from the mouth of the Tennessee River.

A third tributary reservoir, Fontana, on the Little Tennessee River, is recommended by the Authority, but the Congress has made no specific appropriation for this suggested dam. While Wheeler and Norris are the only dams built by the Authority which are completed and in operation, they co-ordinate in use with Wilson at Florence, Alabama. They release water to Wilson, and thus aid in the generation of power at Wilson. Wilson Dam was built under the national defense powers of the Congress, as held in Ashwander v. Tennessee Valley Authority, supra. While the constitutional authority to dispose of electric energy generated at Wilson Dam is not and cannot be questioned, its present use in combination with Norris and Wheeler, and its future use in conjunction with Guntersville, Chickamauga and Hiwassee, all of these dams being upstream from Wilson and each being part of an integrated system built for the combined purposes of navigation, flood control, power and national defense, has immediate bearing on this case.

The importance of the Tennessee drainage basin has been recognized for over a century and repeated acts of Congress have provided for the canalization of different parts of the river. A canal with locks throughout the length of Muscle Shoals opened to navigation in 1834 fell into disuse. Another Muscle Shoals canal was completed about 1891. The Rivers and Harbors Act of 1890, 26 Stat. 426, provided that the Colbert Shoals section should be improved by a lock and a canal. In 1913 the Hale's Bar lock and dam, completed by private interests, provided a canalization of 33 miles of the river below Chattanooga. The Widow's Bar lock and dam below Hale's Bar was

completed in 1926. Wilson Dam provided a canalized waterway for 15½ miles from Muscle Shoals. Lock No. 1, immediately below Wilson Dam, was completed in 1926.

These projects were in general unrelated and uncoordinated. This was the situation when a comprehensive survey of the Tennessee basin was ordered in five successive Acts of Congress from 1922 to 1928, resulting in the reports contained in House Document 328. This document contained an exhaustive report by the district engineer and comments thereon, together with recommendations made by the division engineer, the board of engineers for rivers and harbors, and the chief of engineers. It set forth alternate plans for securing a depth of nine feet in the main stream, that is, an improvement for navigation only, and also a plan for the development of the river and its tributaries for purposes of flood control, navigation and power. The suggested plan for the improvement of navigation only involved in one of its phases the building of 32 low dams which would provide a nine-foot navigable channel, but would have no value either for flood control or power.

House Document 328.

The complainants vigorously assert that House Document 328 recommends the low dam plan, as distinguished from the TVA plan. It is of little assistance in this phase of the controversy to rely only upon the recommendations of the various engineers, without studying the text (House Document 328, pages 1-25). As to the report of the district engineer, of which the chief of engineers said "There has never been presented to Congress a more thorough and exhaustive study", the board of engineers for rivers and harbors, in its conclusions on the various projects presented, stated that "The construction of the storage reservoirs" (on the tributaries) "described in this report would have a favorable effect in reducing floods on the

Tennessee River and on the lower portions of its tributaries" (p. 23). It declared that "The improvement of the Tennessee from its mouth to Knoxville by a series of low movable dams without power development would have practically no effect on floods" (p. 23). It also said, speaking of low-lift dams, that "Such a waterway would be inferior to the high-dam developments and would not permit the economical development of power" (p. 13). The board of engineers pointed out that in addition to having no value whatever for flood control, the 32 low dams, though less expensive to construct than the high dams, provided a navigation channel inferior to that of the high dam plan.

It stated its opinion that the river "has large potential value as a means of transportation and that its improvement to a depth of nine feet would ultimately make it an important feeder to the Ohio-Mississippi system" (p. 20). It concluded that "It is evident that the full utilization of the resources of this river for the public benefit requires its improvement by means of high dams built for the joint development of power and navigation."

These extracts show that consideration of the bare recommendations, apart from the conclusions expressed, are misleading. In the recommendations the division engineer disagreed with the district engineer who drew the report, as to his estimate of the amount of benefit to navigation. The board of engineers disagreed on certain points with the division engineer, and the chief of engineers, in certain matters, disagreed with all of his subordinates. But the projects actually recommended by each of these engineers were not in essential features the same as those embodied in the TVA statutes. They provided for the development of the river by private interests, or by a combination of private interests and the Government.

In order to carry out this policy, the Rivers and Harbors Act was passed in 1930, 46 Stat. 918, 927, 928, extending

to private interests on certain conditions the right to develop the river by a series of high dams in co-operation with the Government. No private interest availed itself of the opportunity and in 1933 Congress delegated the task to an agency of the Government.

The program adopted by the Authority, in its main features, and the choice of the sites for the various dams follow the broader multiple-project plan outlined in House Document 328 (p. 43), commended by the board of engineers of rivers and harbors, as superior to the low dam plan. This multiple-project contemplated the erection of seven high dams in the main stream (in addition to Wilson, which had already been built), and reservoirs on the tributaries.

Uses of the Dams.

The dams on the tributaries, as outlined in House Document 328, and as shown in the evidence, are used and to be used for flood control, water regulation, power and purposes of national defense. Of the completed dams, Norris is so constructed as to be able to retain the entire flood waters of the Clinch in flood season, and was in fact so operated in 1936 and 1937. In 1936 it averted a probable flood at Chattanooga. It also generates power. Releases of water from Norris in the dry season are now used for regulation of stream flow so as to maintain a seven-foot navigable channel throughout the summer. Similar releases will be necessary until the entire series of mainstream dams as planned has been completed. Wheeler backs the water of the Tennessee into a slack water pool providing nine-foot navigation to Guntersville. It generates power and has a surcharge usable for flood control. It is uncontradicted that the releases from Norris and Wheeler, and from Hiwassee, Guntersville and Chickamauga, as planned, create and will create extra head for continuous water power at Wilson, and thus aid in the

national defense. Cf. Ashwander v. Tennessee Valley Authority, supra.

Of the dams under construction, Guntersville, Chickamauga, and Pickwick Landing are essential to the maintenance of nine-foot navigation. Each of these dams is equipped with electric generators and has a substantial surcharge usable for flood control. Hiwassee, on a tributary, will be used mainly for flood control and power, and for aiding Wilson Dam with water releases at dry season. Until the project is completed it will assist in regulating stream flow, thus improving navigation. Gilbertsville, while authorized by Congress, has only been investigated and surveyed. The plans for this dam have necessarily been delayed because of it size and because of the difficulty of locating suitable rock foundation. It is reasonably estimated that Gilbertsville, when completed, will supply over 4,000,000 acre feet of flood storage, and it is the most important of the series for flood control on the Ohio and the Mississippi. The Tennessee contributes materially to the flood crest on the Ohio at Cairo. Its flood flow is almost double its drainage area in relation to other feeders of the Mississippi, because of the high precipitation in the Tennessee Valley which varies from 47.5 inches per year at Knoxville to 51.2 at Paducah on the main stream. The Ohio with its tributaries, including the Tennessee, is the principal feeder to the Mississippi floods. All of the TVA dams, on both the river and the tributaries, are used so far as constructed, are planned, as shown by the official TVA reports, and are required under the statute, to be employed as an integrated co-ordinated system for the combined purposes of navigation, flood control, power and national defense.

Conspiracy, Coercion and Unlawful Competition.

The bill charges a conspiracy to injure or destroy the complainants' business, to compete unlawfully, to breach the complainants' existing contracts with their customers, to compel and coerce complainants to sell their plants at distress figures. It charges that the TVA has conspired with and practiced coercion upon municipalities and cooperatives to compel them to set up their own distribution systems for the purpose of selling TVA power at retail. If the record had substantiated the allegations of the bill, grave questions would have been presented. But these allegations have not been established. None of the complainants has sold its property except those covered by the contract of January 4, 1934, a contract entered into at arm's length and not even challenged by complainants as unfair. Since complainants have not sold, they have not been coerced to sell their properties, and the negotiations for sale presented in this record do not evidence acts deemed coercion under settled legal principles. No malice in law is shown on this record. The motive of officials who execute a law is immaterial, even though accompanied by a wrongful purpose. Isbrandtsen-Moller Co. v. United States, 300 U.S. 139, 145, 57 S.Ct. 407, 410, 81 L.Ed. 562.

Unlawful Competition.

Neither has unlawful competition been proved. The attempt to show that the Authority has endeavored to persuade complainants' customers to breach their existing contracts for purchase of power from complainants has totally failed. In every case where any of complainants has lost a customer to the Authority, the cause has been not unlawful competition, but the lawful allurement of substantially lower prices. In every such case the change of relationship has occurred at a time when no contract with any of the complainants was in existence. In fact, it is shown

that the TVA does not serve the complainants' customers with direct service except as to industrials and "ceded areas." Thus the municipalities now served by the TVA in Tennessee,—Dayton, Pulaski, and Dickson,—each generated its own power or purchased power at wholesale from a non-utility prior to the time when the TVA started selling them power. The positive statement is made by officers of the Mississippi Power & Light Company, the Franklin Power & Light Company, the Holston River Electric Company, the Birmingham Electric Company, the Carolina Power & Light Company, the Appalachian Electric Power Company, the West Virginia Power Company, the Kingsport Company, the East Tennessee Light & Power Company, the Tennessee Eastern Company, and by the Southern Tennessee Power Company, that the TVA neither serves any of the customers of these utilities direct, nor any wholesale customer by whom distribution is made to any of these utilities' former customers. The TVA serves certain cities and customers formerly served by the Alabama Power Company, but all of these customers are situated or reside within certain counties called the "ceded area." In the agreement of January 4, 1934, the Alabama Power Company contracted that its lines should be sold to the TVA within that area, and that the TVA should serve within that district and nowhere else in Alabama. The TVA is serving nowhere else in Alabama except within this area. The Mississippi Power Company has made a similar contract with the TVA, and the TVA is not serving outside of the "ceded area" in Mississippi except to municipalities which previously maintained their own generating and distribution systems. No fraudulent attempt has been made to secure complainants' markets. Whatever compulsion exists is the inevitable compulsion exercised by the fact that a competitor sells at lower rates than complainants. But if the operation of the TVA is legal, the complainants have no legal right not to be subjected to such

competition even though it curtail or destroy their business. Alabama Power Co. v. Ickes, 58 S.Ct. 300, 82 L.Ed. ——, decided January 3, 1938.

Conspiracy with Public Works Administration.

The complainants allege that the defendants have conspired with the Public Works Administration to finance the construction of duplicating distribution lines and systems in various municipalities and co-operatives for the purpose of using TVA power and selling that power at rates so low as to constitute competition destructive to complainants' business. Numerous contracts are introduced in evidence beween the Public Works Administration and municipalities and co-operatives, providing for the financing of electrical distribution projects. The power is being sold, or is contracted to be sold, to these municipalities and co-operatives at wholesale by TVA.

The facts do not establish a conspiracy. It is not questioned that loans were made within the provisions of the Public Works Administration statute, 40 U.S.C.A. §401 et seq. The validity of that statute is not attacked in this proceeding, and we therefore assume that it is valid. The acts done by Secretary Ickes and his subordinates have been done under the purview of the controlling statute. Their acts are presumed to be valid. Where no fraud, malice, or coercion is shown, co-operative action by two groups of public officials in administering the provisions of two statutes, does not constitute conspiracy. The decisions relied on by complainants with respect to unlawful concert, plan or design, involve a plan either to commit an unlawful act or to commit acts otherwise lawful with the intent to violate a statute, or commit an unlawful act. Cf. Swift & Co. v. United States, 196 U.S. 375, 25 S.Ct. 276, 49 L.Ed. 518. The acts done by the officials of the Public Works Administration in co-operation with the officials of the TVA, as shown by this record, were done with the in-

tent to carry out the provisions of the Public Works Administration statute; the acts done by the TVA in co-operation with the Public Works Administration were done with the intent to carry out the TVA statute. Intent to execute a valid and existing law is not evidence of illegality. As to the transactions of the Public Works Administration, no evidence of conspiracy is presented.

Coercion upon Municipalities and Co-Operatives.

Certain officials and employees of the TVA gave information, counsel and encouragement to municipalities and co-operatives at the request of such municipalities and co-operatives with respect to the general feasibility of setting up distribution systems for TVA power. The decision on such matters was made by the municipality or co-operative concerned. Under the statutes of Alabama, Tennessee and Mississippi, hereinafter cited, both municipalities and rural co-operatives are authorized to construct generating plants and distribution systems for the purpose of creating and distributing electric energy. Georgia has a similar statute concerning co-operatives. These cities and co-operatives were free to obtain information and counsel from any source. In each case the decision of the municipality involved was made either by the citizens at an election, or by its duly elected officers. The decision of the co-operatives involved was made by its lawful representatives. Presentation by the Authority of facts as to TVA rates and contracts for power given to citizens or officers of a city or rural co-operative at their request do not constitute intimidation or coercion.

Damage.

The record shows that the sales of every one of these complainants and the proceeds of these sales have reached an all-time high in recent years. Several of the most important complainants have recently extended their lines,

built new plants, and acquired new equipment. The Authority concedes that it sells, or intends to sell, power at substantially lower rates, residential, industrial, and rural, than those of the complainants, and that some displacement of service will result. 250 miles is the distance within which electricity can feasibly be transported from each of the dams. As a result of the lower TVA rates, cities which formerly purchased power from some one of the complainants have taken steps to finance the construction of distribution systems, or have negotiated with the power companies to purchase the existing systems of the power companies, in many instances securing financial aid from the Public Works Administration with the express purpose of selling TVA power through the systems thus acquired. The city of Memphis has issued bonds for this purpose, and under the contract which the city has signed with the Authority, the Memphis Power & Light Company will be deprived of its greatest outlet. A similar proposition has been made, but not yet carried through, in Knoxville. If the arrangement is consummated, the Tennessee Public Service Company and the Carolina Power & Light Company will each be deprived of one of its most profitable customers. A similar situation exists in Chattanooga. The rural cooperatives distribute TVA power, but for the most part they reach areas not formerly served by these complainants. The Monsanto Chemical Company of Alabama discontinued certain of its operations at Anniston, Alabama, heretofore served by the Alabama Power Company. An affiliated company, Monsanto Chemical Company of Delaware, set up a substitute plant at Columbia, Tennessee, near a source of its raw material, using power purchased from TVA. The Volunteer Portland Cement Company failed to renew its contract with Tennessee Public Service Company and, instead, entered into a contract with the Authority, a contract since assigned to the city of Knoxville.

In view of the inevitable effect of the lower rates of the TVA within this area, and the economic necessity forced upon the complainants of lowering their rates to meet the competitive rates of the Authority, we conclude that the record presents evidence of substantial future damage to these complainants. But such damage constitutes damnum absque injuria unless sales of power by the TVA are unlawful. Alabama Power Co. v. Ickes, supra.

We find in this record no coercion, conspiracy, malice or fraud on the part of the defendants. None existing, the operation of the Authority is lawful unless (1) the defendants are exceeding their statutory authority or (2) the statute is unconstitutional.

Compliance with the Statute.

Section 9a of the statute, as added by Act Aug. 31, 1935, § 5, 16 U.S.C.A. § 831h—1 reads as follows:

"The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this chapter provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority."

It is the principal contention of the complainants that this statute is a sham, pretense, and fraud, and these dams as built and planned cannot and will not be operated within

the statute. We therefore consider the actual operation of the dams.

In Water Bulletin No. 1, dated June 30, 1936, adopted by the TVA Board, it was ordered that the reservoirs of the Authority be operated "First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Requirements for the control of malaria and temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dam shall be converted into electricity as is feasible."

The complainants contend that this order is a sham, and that none of the dams can be or will be operated in compliance therewith. They direct a particular attack upon Norris, which is now completed and in operation. However, Water Bulletin No. 2, dated June 30, 1936, ordered that until further notice water be released from Norris reservoir so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 c. f. s. The evident purpose was to maintain a constant and sufficient stream flow for Wilson Dam. This and succeeding water bulletins, which are in evidence, outlining the same general policy, have for one of their main purposes the increase of continuous water power at Wilson. Hence, operation of the dams above Wilson is clearly constitutional under the national defense powers of the Congress.

With reference to the general operation, a resolution of the TVA Board, adopted July 1, 1936, created a committee on water control operations, consisting of the chief water control planning engineer and the chief electrical engineer, which committee was and is authorized to prepare general regulations as to the control of water through the operation of reservoirs. The regulations are transmitted to the general manager in the form of bulletins, and at times of flood or emergency, oral instructions are also given. Woodward,

the chief water control planning engineer, testified that he prepares these bulletins and that none is issued without his approval. He stated that he was guided in his operations by the statute, and that the constant flow of 15,000 c. f. s. was maintained at Florence, Alabama, for the purpose of securing the necessary navigable depth in the river. Karr, electrical engineer at Norris, testified that if the limited instructions given to him for operation were such that he had either to violate the instructions or to leave a city without power, "someone would have to go without power temporarily." Woodward testified that he permits the use of the water for power, and in special cases, if extra water is wanted, it is given extra consideration. It is uncontroverted that the water control planning engineer is in direct charge of the regulation of water flow, and also that he regulates water flow from Norris primarily for navigation and flood control.

It appears that in actual operation there is a seasonal drawing down of Norris Dam so that extra storage space may be available during the flood season. Norris was actually operated during the flood of 1937 to reduce the crest on the Tennessee River and to reduce the crest on the Ohio at Cairo. The complainants' expert Kurtz was familiar with the fact that Norris was so operated. Power is produced at Norris. The defendants introduced detailed testimony as to the full amount of TVA power presently produced, the available facilities for generation, the possibilities for future generation, the present load and the load now contracted for.

Complainants urge that the estimated future TVA load set forth in the various TVA reports, and the load it may reasonably be expected to acquire because of its substantially lower rates, will demand that the dams built and to be built be operated in violation of the statute and not (as required in section 9a) in the primary interest of navigation and flood control. But this point is completely refuted by

the numerous TVA contracts which are in evidence and are described in the findings of fact.

These contracts generally contain a clause relieving the Authority of any obligation to supply power when prevented by fire, accident, breakdown, act of God, or any other causes beyond the Authority's control. Substantially all of these contracts contain the following provision: "Subject to the provisions of the Tennessee Valley Authority Act of 1933 as amended, the parties hereto agree as follows * * *." Under the familiar rule, this provision reads the statute, including its mandatory requirement that the dams and reservoirs be operated primarily for flood control and navigation, into every one of these contracts. Under the contracts with the Arkansas Power and Light Company, the Victor Chemical Works, the Aluminum Company of America dated July 20, 1937, and with the Electro-Metallurgical Company, which are contracts both for firm and secondary power, the Authority is expressly relieved of obligation to supply power when service is interrupted or suspended by reason of floods or back-water caused by floods.

Reading these contracts in conjunction with the statute and the general resolution governing water control above described, it is evident that the long-term contracts of the Authority strongly corroborate (1) the sincerity of the resolution and water bulletins establishing the system of water control in the interest of flood control and navigation; (2) the testimony of Woodward and Karr; (3) the uncontradicted facts as to the principles applied in the actual operation of the dams. The overwhelming weight of the testimony supports defendants' contention that the mandatory provision of the statute that navigation and flood control be given primary consideration both at the other dams, built and planned, and at Norris Dam, is at all times scrupulously followed and that the statute is neither violated nor exceeded.

Constitutionality of TVA Statute must be Determined.

Since no fraud, coercion, conspiracy or malice is shown, and since the Authority has acted within the provisions of the statute under consideration, unless the statute itself is unconstitutional the dams are lawfully erected, the energy is lawfully created, and the water power is the property of the United States. Ashwander v. Tennessee Valley Authority, supra. It therefore is essential to the decision of the case pleaded in the bill to determine the constitutionality of this statute.

The Statute.

The complainants contend that the statute was enacted primarily for power purposes, and that flood control, navigation, and national defense are incidental and merely a cloak for the unlawful purpose of permitting the government to enter the power business. The defendants contend that the statute was passed and that dams were erected and are under construction, or were authorized, for the purpose of combined flood control, navigation, and national defense; and that the installation of generators, the creation of power and its sale, have been authorized by the Congress as an incident to the exercise of constitutional powers.

National Defense.

Article 1, section 8, clause 1 of the Constitution of the United States, provides that the Congress shall have power "to * * * provide for the common Defence and general Welfare of the United States."

In pursuance of this power it may make all laws which shall be necessary and proper for carrying into execution the national defense powers. An express purpose of the Tennessee Valley Authority Act is that of maintaining the

properties owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of national defense. The amended Tennessee Valley Authority Act, § 17, Title 16 U.S.C.A. § 831p, provides that "The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct * * * a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam."

In compliance with this provision, Norris Dam was built and is being operated to create extra head of water power at Wilson Dam. This means that constitutional authority to construct Norris exists in addition to the congressional power to authorize the construction of this dam under other clauses of the Constitution of the United States.

Navigation and Flood Control.

The Constitution of the United States, article 1, § 8, cl. 3, provides that the Congress shall have power to regulate interstate commerce. Commerce includes navigation. Gibbons v. Ogden, 9 Wheat. 1, 6 L.Ed. 23. Congressional control of navigable waters embraces flood control.

The statute on its face repeatedly stresses navigation and flood control. The purpose clause of the act reads:

"To improve the navigability and to provide for the flood control of the Tennessee River; to provide for re-

forestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes." 48 Stat. 58.

The first section of the enactment, 16 U.S.C.A. § 831, creates the Authority for the purpose of maintaining and operating properties owned by the United States in the vicinity of Muscle Shoals in the interest of the national defense and "to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins." The board of the Authority is given power, section 4(j), as amended, 16 U.S.C.A. § 831c(j) "to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams * * * will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins." Other sections in which the purposes of navigation and flood control are stressed are sections 13, 18, 23, and section 26a, as added by Act Aug. 31, 1935, § 11, 16 U.S.C.A. §§ 831*l*, 831q, 831v, 831y—1. The most important section is 9a, 16 U.S.C.A. § 831h—1, heretofore quoted, which governs the operation of any dam or reservoir, in the possession and control of the board, and requires the board to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. Numerous specific provisions of the statute relate to the generation and sale of electric power for the purpose of assisting in liquidating the cost

of these projects, but all of them are limited and controlled by this general provision in section 9a.

Under the statute, therefore, the generation of electric energy is specifically required to be incidental to the exercise of constitutional powers under the interstate commerce clause, and the operation complies with this requirement. The record shows that the dams are adapted by their construction to combined use for flood control and improved navigation, and to generate electricity. All experts agree that the pondage at each of the dams on the main river and also at the storage dams on the tributaries can be drawn down, and that space thereby made available is capable of being used to store flood waters in the rainy season. It appears from the uncontroverted testimony that the erection of the main-river dams will create a nine-foot navigable channel. We find from the weight of the evidence that Norris has been used for the purpose of controlling floods. These facts are not controverted, except by opinion evidence.

Certain expert witnesses, in answer to hypothetical questions, stated that the dams might be operated for the primary purpose of power. Thousands of pages of testimony and numerous exhibits were introduced to show that Congress might have adopted a better plan than the TVA Unified System. Experts equally qualified testified to the contrary.

The court is of opinion that the relative value of these various plans is immaterial, since it has been established that the TVA project is reasonably adapted to use for combined flood control, navigation, power and national defense, and that in actual operation the creation of energy is subordinated to the needs of navigation and flood control.

In short, the contention that the statute and the unified project authorized therein are a sham and pretense is without foundation. It cannot be disputed that the river is

navigable and that it occupies a strategic position with relation to floods, both within its own drainage area and on the Ohio-Mississippi. We are not at liberty to conclude that the river is not susceptible of development as an important waterway, nor that it cannot be regulated so as to assist substantially in the control of floods in the alluvial valley of the Mississippi as well as practically eliminating local floods on the Tennessee River. Ashwander v. Tennessee Valley Authority, supra. Norris will create additional power for use for purposes of national defense at Wilson. Hence, we are not at liberty to conclude that the Congress has not undertaken this specific development for purposes within its constitutional powers, nor that the construction of these high dams and reservoirs along the lines proposed is not an appropriate means to accomplish these legitimate ends. Cf. Ashwander v. Tennessee Valley Authority, supra. The dams and their power equipment, both constructed, under construction and authorized, must be taken to have been authorized, constructed and planned in the exercise of the constitutional functions of the Government.

Interference with States' Rights.

Complainants contend that the TVA statutes constitute an unlawful interference with the police power of the states because they regulate the rates of utilities which themselves are subject to state regulation. The statute does not fix, nor purport to fix, the complainants' rates. But the contention is that the lower rates of the TVA will inevitably force complainants to lower their rates, and also that the TVA in its operations is not subject to the police power of the state.

The Authority operates within four of the nine states in which these complainants do business, namely, Tennessee, Alabama, Mississippi, and Georgia, its contracts with cities and co-operatives in Tennessee, Alabama and Mississippi being authorized by express legislation. All mu-

nicipalities in these three states have the statutory power to own and operate electric distribution systems. General Laws of Mississippi 1936, c. 185; Carmichael Act, Alabama Code Supp.1936, § 2001 (1) et seq.; Public Acts of Tennessee 1935, c. 32, Tennessee Code, § 3708 (1) et seq. In Mississippi, Tennessee and Alabama, municipalities are expressly authorized to contract for TVA power and to make agreements with TVA as to resale rates. Chapter 271, General Laws of Mississippi 1936; chapter 37, Public Acts of Tennessee 1935, Tennessee Code, § 3708 (96) et seq.; Alabama Code Supp.1936, § 687 (62). In Mississippi, Tennessee and Alabama, non-profit membership corporations such as rural co-operatives may operate electric systems, purchase from TVA, and make contracts as to re-sale rates. This is also true in Georgia, where the North Georgia Membership Corporation is alleged to compete with the Tennessee Electric Power Company. Chapter 184, General Laws of Mississippi 1936; Chapter 231, Public Acts of Tennessee 1937, which is an amendment of the Electric Membership Corporation Act of 1935, Pub. Acts 1935, Ex. Sess., c. 32; Alabama Code Supp.1936, § 687 (18) et seq.; Georgia Laws 1937, p. 644.

The Supreme Court of Alabama has upheld the validity of the Carmichael Act, section 2001 (1) et seq., Alabama Code Supp.1936, in Oppenheim v. Florence, 229 Ala. 50, 155 So. 859. The similar act relating to co-operatives was sustained by the Supreme Court of Alabama in Alabama Power Co. v. Cullman County Electric Membership Corp., 234 Ala. 396, 174 So. 866. In Tennessee the Supreme Court has upheld the right of the cities of Memphis and Chattanooga to buy TVA power and to establish their own electric systems under special laws. Memphis Power & Light Co. v. Memphis, Dec. term, 1936, 112 S.W.2d 817; Tennessee Electric Power Co. v. Chattanooga, Dec. term, 1936, 114 S.W.2d 441; Tennessee Public Service Co. v. Knoxville, 170 Tenn. 40, 91 S.W.2d 566.

The actions which the complainants attack are authorized by the states themselves. It is strange doctrine that acts authorized by a sovereign state constitute interference with its sovereign rights because of the fact that they are also authorized by the Federal Government. We think that deliberate co-operation between the state and the United States, authorized in each case both by the state legislature and by the Congress, constitutes no abdication of any state right.

Moreover, no state has intervened as a party in this proceeding to protest that its laws are violated by the TVA, and no regulatory commission is a party to this action. These complainants are not authorized to object on behalf of the states. Georgia Power Co. v. Tennessee Valley Authority, D.C., 14 F.Supp. 673, 676. Questions of the conflict of the TVA statute with the sovereign power of the states are not properly raised until the interested parties are before the court. Georgia Power Co. v. Tennessee Valley Authority, supra. The TVA statutes do not violate either the Ninth or the Tenth Amendment to the Constitution of the United States.

Since the United States has acquired these dam sites and constructed these dams legally, the water power, the right to convert it into electric energy, and the energy produced constitute property belonging to the United States. Ashwander v. Tennessee Valley Authority, supra. This electric energy may be rightfully disposed of by the United States through the action of the Congress, under section 3 of article 4 of the Constitution of the United States. Ashwander v. Tennessee Valley Authority, supra. Since floods frequently recur, and the needs of navigation are continuous, hydroelectric power generated at dams which control floods and improve navigation is continuously created, and the Government may adopt any appropriate constitutional means of disposing of the property. It is not limited in such disposition to a few, or to infrequent transactions.

This is the inevitable logic of the Ashwander decision, supra, 297 U.S. 288, at page 315, 56 S.Ct. 466, 468, 80 L.Ed. 688, in which every kind of electric facility, many miles of distribution and transmission lines and continuous and permanent operation were called in question because the contract attacked in that case was the contract of January 4, 1934, in which certain of these complainants, for valuable consideration, ceded sixteen counties to the TVA for electric service.

While the Government, in selling property of the United States, performs many functions that would be performed in the operation of a private business trading in similar property, inasmuch as the energy sold is created at dams lawfully erected within the Federal power, the Government in performing these functions is not entering into private business. It is merely using an appropriate method of disposing of its property. The Government may sell land belonging to the United States in competition with a real estate agency, carry parcels in competition with express companies, and manage and control its thousands of square miles of national parks even as a private company. The Government has an equal right to sell hydroelectric power, lawfully created, in competition with a private utility. There is no constitutional authority which denies the Government the right to seek a wider market (Ashwander v. Tennessee Valley Authority, supra), and the transmission and distribution lines erected are a proper facility for conveying the property of the United States to the market. The creation of the Authority is appropriate. The disposition of the energy is continuous and constant, and it is appropriate that a continuing agency be created in order to carry out this legitimate federal function.

We conclude that, since none of the complainants claims to operate under an exclusive franchise; since no fraud, malice, coercion, or conspiracy exists; since the Authority is not exceeding its statutory powers, and since the statute

is constitutional, the competition with these complainants is lawful. It follows that the holding in Alabama Power Co. v. Ickes, supra, recently decided, squarely applies. These complainants have no immunity from lawful competition, even if their business be curtailed or destroyed.

A decree will be entered denying the injunction sought, dismissing the bill of complainants, and taxing costs against the complainants. Findings of fact and conclusions of law will be filed.

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SECTION A

TENNESSEE VALLEY AUTHORITY ACT AS AMENDED

[PUBLIC—No. 17—73D CONGRESS, 1ST SESSION]

[H.R. 5081]

[As amended by Public—No. 412—74th Congress, 1st Session]

[H.R. 8632]

AN ACT

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority" (hereinafter referred to as the "Corporation"). The board of directors first appointed shall be deemed the incorporators, and the incorporation shall be held to have been effected from the date of the first

meeting of the board. This Act may be cited as the "Tennessee Valley Authority Act of 1933."

SEC. 2. (a) The board of directors of the Corporation (hereinafter referred to as the "board") shall be composed of three members, to be appointed by the President, by and with the advice and consent of the Senate. In appointing the members of the board, the President shall designate the chairman. All other officials, agents, and employees shall be designated and selected by the board.

(b) The terms of office of the members first taking office after the approval of this Act shall expire as designated by the President at the time of nomination, one at the end of the third year, one at the end of the sixth year, and one at the end of the ninth year, after the date of approval of this Act. A successor to a member of the board shall be appointed in the same manner as the original members and shall have a term of office expiring nine years from the date of the expiration of the term for which his predecessor was appointed.

(c) Any member appointed to fill a vacancy in the board occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(d) Vacancies in the board so long as there shall be two members in office shall not impair the powers of the board to execute the functions of the Corporation, and two of the members in office shall constitute a quorum for the transaction of the business of the board.

(e) Each of the members of the board shall be a citizen of the United States, and shall receive a salary at the rate of $10,000 a year, to be paid by the Corporation as current expenses. Each member of the board, in addition to his salary, shall be permitted to occupy as his residence one of the dwelling houses owned by the Government in the vicinity of Muscle Shoals, Alabama, the same to be designated by the President of the United States. Members of the board shall be reimbursed by the Corporation for actual expenses (including traveling and subsistence expenses)

incurred by them in the performance of the duties vested in the board by this Act. No member of said board shall, during his continuance in office, be engaged in any other business, but each member shall devote himself to the work of the Corporation.

(f) No director shall have financial interest in any public-utility corporation engaged in the business of distributing and selling power to the public nor in any corporation engaged in the manufacture, selling, or distribution of fixed nitrogen or fertilizer, or any ingredients thereof, nor shall any member have any interest in any business that may be adversely affected by the success of the Corporation as a producer of concentrated fertilizers or as a producer of electric power.

(g) The board shall direct the exercise of all the powers of the Corporation.

(h) All members of the board shall be persons who profess a belief in the feasibility and wisdom of this Act.

SEC. 3. The board shall without regard to the provisions of Civil Service laws applicable to officers and employees of the United States, appoint such managers, assistant managers, officers, employees, attorneys, and agents, as are necessary for the transaction of its business, fix their compensation, define their duties, require bonds of such of them as the board may designate, and provide a system of organization to fix responsibility and promote efficiency. Any appointee of the board may be removed in the discretion of the board. No regular officer or employee of the Corporation shall receive a salary in excess of that received by the members of the board.

All contracts to which the Corporation is a party and which require the employment of laborers and mechanics in the construction, alteration, maintenance, or repair of buildings, dams, locks, or other projects shall contain a provision that not less than the prevailing rate of wages for work of a similar nature prevailing in the vicinity shall be paid to such laborers or mechanics.

In the event any dispute arises as to what are the prevailing rates of wages, the question shall be referred to the Secretary of Labor for determination, and his decision shall be final. In the determination of such prevailing rate or rates, due regard shall be given to those rates which have been secured through collective agreement by representatives of employers and employees.

Where such work as is described in the two preceding paragraphs is done directly by the Corporation the prevailing rate of wages shall be paid in the same manner as though such work had been let by contract.

Insofar as applicable, the benefits of the Act entitled "An Act to provide compensation for employees of the United States suffering injuries while in the performance of their duties, and for other purposes," approved September 7, 1916, as amended, shall extend to persons given employment under the provisions of this Act.

SEC. 4. Except as otherwise specifically provided in this Act, the Corporation—

(a) Shall have succession in its corporate name.

(b) May sue and be sued in its corporate name.

(c) May adopt and use a corporate seal, which shall be judicially noticed.

(d) May make contracts, as herein authorized.

(e) May adopt, amend, and repeal bylaws.

(f) May purchase or lease and hold such real and personal property as it deems necessary or convenient in the transaction of its business, and may dispose of any such personal property held by it.

The board shall select a treasurer and as many assistant treasurers as it deems proper, which treasurer and assistant treasurers shall give such bonds for the safe-keeping of the securities and moneys of the said Corporation as the board may require: *Provided,* That any member of said board may be removed from office at any time by a concurrent resolution of the Senate and the House of Representatives.

(g) Shall have such powers as may be necessary or appropriate for the exercise of the powers herein specifically conferred upon the Corporation.

(h) Shall have power in the name of the United States of America to exercise the right of eminent domain, and in the purchase of any real estate or the acquisition of real estate by condemnation proceedings, the title to such real estate shall be taken in the name of the United States of America, and thereupon all such real estate shall be entrusted to the Corporation as the agent of the United States to accomplish the purposes of this Act.

(i) Shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses, and other structures, and navigation projects at any point along the Tennessee River, or any of its tributaries, and in the event that the owner or owners of such property shall fail and refuse to sell to the Corporation at a price deemed fair and reasonable by the board, then the Corporation may proceed to exercise the right of eminent domain, and to condemn all property that it deems necessary for carrying out the purposes of this Act, and all such condemnation proceedings shall be had pursuant to the provisions and requirements hereinafter specified, with reference to any and all condemnation proceedings: *Provided*, That nothing contained herein or elsewhere in this Act shall be construed to deprive the Corporation of the rights conferred by the Act of February 26, 1931 (46 Stat. 1422, ch. 307, secs. 1 to 5, inclusive), as now compiled in section 258a to 258e, inclusive, of title 40 of the United States Code.

(j) Shall have power to construct such dams, and reservoirs, in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee

River and its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins; and shall have power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines. The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system.

(k) At any time before the expiration of five years from the date when this section, as amended, becomes law may in the name of and as agent for the United States and subject to approval of the President, dispose of any of such real property as in the judgment of the Board may be no longer necessary in carrying out the purposes of this Act, but no land shall be conveyed on which there is a permanent dam, hydraulic power plant, fertilizer plant, or munitions plant, heretofore or hereafter built by or for the United States or for the Authority.

(l) Shall have power to advise and cooperate in the readjustment of the population displaced by the construction of dams, the acquisition of reservoir areas, the protection of watersheds, the acquisition of rights-of-way, and other necessary acquisitions of land, in order to effectuate the purposes of the Act; and may cooperate with Federal, State, and local agencies to that end.

SEC. 5. The board is hereby authorized—

(a) To contract with commercial producers for the production of such fertilizers or fertilizer materials as may be needed in the Government's program of development and introduction in excess of that produced by Government plants. Such contracts may provide either for outright purchase of materials by the board or only for the payment of carrying charges on special materials manufactured at the board's request for its program.

(b) To arrange with farmers and farm organizations

for large-scale practical use of the new forms of fertilizers under conditions permitting an accurate measure of the economic return they produce.

(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, with farmers, landowners, and associations of farmers or landowners, for the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers and otherwise.

(d) The board in order to improve and cheapen the production of fertilizer is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer.

(e) Under the authority of this Act the board may make donations or sales of the product of the plant or plants operated by it to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the board may direct, for experimentation, education, and introduction of the use of such products in cooperation with practical farmers so as to obtain information as to the value, effect, and best methods of their use.

(f) The board is authorized to make alterations, modifications, or improvements in existing plants and facilities, and to construct new plants.

(g) In the event it is not used for the fixation of nitrogen for agricultural purposes or leased, then the board shall maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency, until the Congress shall by joint resolution release the board from this obligation, and

if any part thereof be used by the board for the manufacture of phosphoric acid or potash, the balance of nitrate plant numbered 2 shall be kept in stand-by condition.

(h) To establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency.

(i) To request the assistance and advice of any officer, agent, or employee of any executive department or of any independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the services of such officers, agents, and employees, and the President shall, if in his opinion, the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided,* That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is hereby authorized to grant such licenses thereunder as shall be authorized by the board: *Provided further,* That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

(j) Upon the requisition of the Secretary of War or the Secretary of the Navy to manufacture for and sell at cost to the United States explosives or their nitrogenous content.

(k) Upon the requisition of the Secretary of War, the

Corporation shall allot and deliver without charge to the War Department so much power as shall be necessary in the judgment of said Department for use in operation of all locks, lifts, or other facilities in aid of navigation.

(l) To produce, distribute, and sell electric power, as herein particularly specified.

(m) No products of the Corporation shall be sold for use outside of the United States, its Territories and possessions, except to the United States Government for the use of its Army and Navy, or to its allies in case of war.

(n) The President is authorized, within twelve months after the passage of this Act, to lease to any responsible farm organization or to any corporation organized by it nitrate plant numbered 2 and Waco Quarry, together with the railroad connecting said quarry with nitrate plant numbered 2, for a term not exceeding fifty years at a rental of not less than $1 per year, but such authority shall be subject to the express condition that the lessee shall use said property during the term of said lease exclusively for the manufacture of fertilizer and fertilizer ingredients to be used only in the manufacture of fertilizer by said lessee and sold for use as fertilizer. The said lessee shall covenant to keep said property in first-class condition, but the lessee shall be authorized to modernize said plant numbered 2 by the installation of such machinery as may be necessary, and is authorized to amortize the cost of said machinery and improvements over the term of said lease or any part thereof. Said lease shall also provide that the board shall sell to the lessee power for the operation of said plant at the same schedule of prices that it charges all other customers for power of the same class and quantity. Said lease shall also provide that, if the said lessee does not desire to buy power of the publicly owned plant, it shall have the right to purchase its power for the operation of said plant of the Alabama Power Company or any other publicly or privately owned corporation engaged in the generation and sale of electric power, and in such case the

lease shall provide further that the said lessee shall have a free right of way to build a transmission line over Government property to said plant paying the actual expenses and damages, if any, incurred by the Corporation on account of such line. Said lease shall also provide that the said lessee shall covenant that during the term of said lease the said lessee shall not enter into any illegal monopoly, combination, or trust with any privately owned corporation engaged in the manufacture, production, and sale of fertilizer with the object or effect of increasing the price of fertilizer to the farmer.

SEC. 6. In the appointment of officials and the selection of employees for said Corporation, and in the promotion of any such employees or officials, no political test or qualification shall be permitted or given consideration, but all such appointments and promotions shall be given and made on the basis of merit and efficiency. Any member of said board who is found by the President of the United States to be guilty of a violation of this section shall be removed from office by the President of the United States, and any appointee of said board who is found by the board to be guilty of a violation of this section shall be removed from office by said board.

SEC. 7. In order to enable the Corporation to exercise the powers and duties vested in it by this Act—

(a) The exclusive use, possession, and control of the United States nitrate plants numbered 1 and 2, including steam plants, located, respectively, at Sheffield, Alabama, and Muscle Shoals, Alabama, together with all real estate and buildings connected therewith, all tools and machinery, equipment, accessories, and materials belonging thereto, and all laboratories and plants used as auxiliaries thereto; the fixed-nitrogen research laboratory, the Waco limestone quarry, in Alabama, and Dam Numbered 2, located at Muscle Shoals, its power house, and all hydroelectric and operating appurtenances (except the locks), and all machinery, lands, and buildings in connection therewith, and

all appurtenances thereof, and all other property to be acquired by the Corporation in its own name or in the name of the United States of America, are hereby intrusted to the Corporation for the purposes of this Act.

(b) The President of the United States is authorized to provide for the transfer to the Corporation of the use, possession, and control of such other real or personal property of the United States as he may from time to time deem necessary and proper for the purposes of the Corporation as herein stated.

SEC. 8. (a) The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the northern judicial district of Alabama within the meaning of the laws of the United States relating to the venue of civil suits.

(b) The Corporation shall at all times maintain complete and accurate books of accounts.

(c) Each member of the board, before entering upon the duties of his office, shall subscribe to an oath (or affirmation) to support the Constitution of the United States and to faithfully and impartially perform the duties imposed upon him by this Act.

SEC. 9. (a) The board shall file with the President and with the Congress, in December of each year, a financial statement and a complete report as to the business of the Corporation covering the preceding governmental fiscal year. This report shall include an itemized statement of the cost of power at each power station, the total number of employees and the names, salaries, and duties of those receiving compensation at the rate of more than $1,500 a year.

(b) All purchases and contracts for supplies or services, except for personal services, made by the Corporation, shall be made after advertising, in such manner and at such times sufficiently in advance of opening bids, as the board shall determine to be adequate to insure notice and oppor-

tunity for competition: *Provided,* That advertisement shall not be required when, (1) an emergency requires immediate delivery of the supplies or performance of the services; or (2) repair parts, accessories, supplemental equipment, or services are required for supplies or services previously furnished or contracted for; or (3) the aggregate amount involved in any purchase of supplies or procurement of services does not exceed $500; in which cases such purchases of supplies or procurement of services may be made in the open market in the manner common among business men: *Provided further,* That in comparing bids and in making awards the Board may consider such factors as relative quality and adaptability of supplies or services, the bidder's financial responsibility, skill, experience, record of integrity in dealing, ability to furnish repairs and maintenance services, the time of delivery or performance offered, and whether the bidder has complied with the specifications.

The Comptroller General of the United States shall audit the transactions of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all papers, books, records, files, accounts, plants, warehouses, offices, and all other things, property, and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositaries. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the Board, one for public inspection at the principal office of the Corporation, and the other to be retained by him for the uses of the Congress: *Provided,* That such report shall not be made until the Corporation shall have had reasonable opportunity to examine the exceptions and criticisms of the Comptroller General or the General Ac-

counting Office, to point out errors therein, explain or answer the same, and to file a statement which shall be submitted by the Comptroller General with his report. The expenses for each such audit shall be paid from any appropriation or appropriations for the General Accounting Office, and such part of such expenses as may be allocated to the cost of generating, transmitting, and distributing electric energy shall be reimbursed promptly by the Corporation as billed by the Comptroller General. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties entrusted to the Corporation by law.

SEC. 9a. The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof, and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority.

SEC. 10. The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, counties,

municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members: *Provided,* That all contracts made with private companies or individuals for the sale of power, which power is to be resold for a profit, shall contain a provision authorizing the board to cancel said contract upon five years' notice in writing, if the board needs said power to supply the demands of States, counties, or municipalities. In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines the board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable: *Provided further,* That the board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region: *Provided further,* That the Board is authorized to include in any contract for the sale of power such terms and conditions, including resale rate schedules, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act, and in case the purchaser shall fail to comply with any such terms and conditions, or violate any such rules and regulations, said contract may provide that it shall be voidable at the election of the Board: *Provided further,* That in order to supply farms and small villages with electric power directly as contemplated by this section, the

Board in its discretion shall have power to acquire existing electric facilities used in serving such farms and small villages: *And provided further,* That the terms "States", "counties", and "municipalities" as used in this Act shall be construed to include the public agencies of any of them unless the context requires a different construction.

SEC. 11. It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties, and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. It is further hereby declared to be the policy of the Government to utilize the Muscle Shoals properties so far as may be necessary to improve, increase, and cheapen the production of fertilizer and fertilizer ingredients by carrying out the provisions of this Act.

SEC. 12. In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power, it is hereby expressly authorized, either from appropriations made by Congress or from funds secured from the sale of such power, or from funds secured by the sale of bonds hereafter provided for, to construct, lease, purchase, or authorize the construction of transmission lines within transmission distance from the place where generated, and to interconnect with other systems. The board is also authorized to lease to any person, persons, or corporation the use of any transmission line owned by the

Government and operated by the board, but no such lease shall be made that in any way interferes with the use of such transmission line by the board: *Provided,* That if any State, county, municipality, or other public or cooperative organization of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members, or any two or more of such municipalities or organizations, shall construct or agree to construct and maintain a properly designed and built transmission line to the Government reservation upon which is located a Government generating plant, or to a main transmission line owned by the Government or leased by the board and under the control of the board, the board is hereby authorized and directed to contract with such State, county, municipality, or other organization, or two or more of them, for the sale of electricity for a term not exceeding thirty years; and in any such case the board shall give to such State, county, municipality, or other organization ample time to fully comply with any local law now in existence or hereafter enacted providing for the necessary legal authority for such State, county, municipality, or other organization to contract with the board for such power: *Provided further,* That all contracts entered into between the Corporation and any municipality or other political subdivision or cooperative organization shall provide that the electric power shall be sold and distributed to the ultimate consumer without discrimination as between consumers of the same class, and such contract shall be voidable at the election of the board if a discriminatory rate, rebate, or other special concession is made or given to any consumer or user by the municipality or other political subdivision or cooperative organization: *And provided further,* That as to any surplus power not so sold as above provided to States, counties, municipalities, or other said organizations, before the board shall sell the same to any person or corporation engaged in the distribution and resale of electricity for profit, it shall require said

person or corporation to agree that any resale of such electric power by said person or corporation shall be made to the ultimate consumer of such electric power at prices that shall not exceed a schedule fixed by the board from time to time as reasonable, just, and fair; and in case of any such sale, if an amount is charged the ultimate consumer which is in excess of the price so deemed to be just, reasonable, and fair by the board, the contract for such sale between the board and such distributor of electricity shall be voidable at the election of the board: *And provided further*, That the board is hereby authorized to enter into contracts with other power systems for the mutual exchange of unused excess power upon suitable terms, for the conservation of stored water, and as an emergency or breakdown relief.

SEC. 12a. In order (1) to facilitate the disposition of the surplus power of the Corporation according to the policies set forth in this Act; (2) to give effect to the priority herein accorded to States, counties, municipalities, and nonprofit organizations in the purchase of such power by enabling them to acquire facilities for the distribution of such power; and (3) at the same time to preserve existing distribution facilities as going concerns and avoid duplication of such facilities, the Board is authorized to advise and cooperate with and assist, by extending credit for a period of not exceeding five years to, States, Counties, municipalities and nonprofit organizations situated within transmission distance from any dam where such power is generated by the Corporation in acquiring, improving, and operating (a) existing distribution facilities and incidental works, including generating plants; and (b) interconnecting transmission lines; or in acquiring any interest in such facilities, incidental works, and lines.

SEC. 13. Five per centum of the gross proceeds received by the board for the sale of power generated at Dam Numbered 2, or from any other hydropower plant hereafter constructed in the State of Alabama, shall be paid to the State of Alabama; and 5 per centum of the gross proceeds

from the sale of power generated at Cove Creek Dam, hereinafter provided for, or any other dam located in the State of Tennessee, shall be paid to the State of Tennessee. Upon the completion of said Cove Creek Dam the board shall ascertain how much additional power is thereby generated at Dam Numbered 2 and at any other dam hereafter constructed by the Government of the United States on the Tennessee River, in the State of Alabama, or in the State of Tennessee, and from the gross proceeds of the sale of such additional power 2½ per centum shall be paid to the State of Alabama and 2½ per centum to the State of Tennessee. These percentages shall apply to any other dam that may hereafter be constructed and controlled and operated by the board on the Tennessee River or any of its tributaries, the main purpose of which is to control flood waters and where the development of electric power is incidental to the operation of such flood-control dam. In ascertaining the gross proceeds from the sale of such power upon which a percentage is paid to the States of Alabama and Tennessee, the board shall not take into consideration the proceeds of any power sold or delivered to the Government of the United States, or any department or agency of the Government of the United States, used in the operation of any locks on the Tennessee River or for any experimental purpose, or for the manufacture of fertilizer or any of the ingredients thereof, or for any other governmental purpose: *Provided,* That the percentages to be paid to the States of Alabama and Tennessee, as provided in this section, shall be subject to revision and change by the board, and any new percentages established by the board, when approved by the President, shall remain in effect until and unless again changed by the board with the approval of the President. No change of said percentages shall be made more often than once in five years, and no change shall be made without giving to the States of Alabama and Tennessee an oportunity to be heard.

SEC. 14. The board shall make a thorough investigation as to the present value of Dam Numbered 2, and the steam

plants at nitrate plant numbered 1, and nitrate plant numbered 2, and as to the cost of Cove Creek Dam, for the purpose of ascertaining how much of the value or the cost of said properties shall be allocated and charged up to (1) flood control, (2) navigation, (3) fertilizer, (4) national defense, and (5) the development of power. The findings thus made by the board, when approved by the President of the United States, shall be final, and such findings shall thereafter be used in all allocation of value for the purpose of keeping the book value of said properties. In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said board for the purpose of control and management shall be ascertained and allocated.

The Board shall, on or before January 1, 1937, file with Congress a statement of its allocation of the value of all such properties turned over to said Board, and which have been completed prior to the end of the preceding fiscal year, and shall thereafter in its annual report to Congress file a statement of its allocation of the value of such properties as have been completed during the preceding fiscal year.

For the purpose of accumulating data useful to the Congress in the formulation of legislative policy in matters relating to the generation, transmission, and distribution of electric energy and the production of chemicals necessary to national defense and useful in agriculture, and to the Federal Power Commission and other Federal and State agencies, and to the public, the Board shall keep complete accounts of its costs of generation, transmission, and distribution of electric energy and shall keep a complete account of the total cost of generating and transmission facilities constructed or otherwise acquired by the Corporation, and of producing such chemicals, and a description of the major components of such costs according to such uniform system of accounting for public utilities as the Federal Power Commission has, and if it have none, then it is hereby empowered and directed to prescribe such

uniform system of accounting, together with records of such other physical data and operating statistics of the Authority as may be helpful in determining the actual cost and value of services, and the practices, methods, facilities, equipment, appliances, and standards and sizes, types, location, and geographical and economic integration of plants and systems best suited to promote the public interest, efficiency, and the wider and more economical use of electric energy. Such data shall be reported to the Congress by the Board from time to time with appropriate analyses and recommendations, and, so far as practicable, shall be made available to the Federal Power Commission and other Federal and State agencies which may be concerned with the administration of legislation relating to the generation, transmission, or distribution of electric energy and chemicals useful to agriculture. It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power and in addition to the statement of the cost of power at each power station as required by section 9 (a) of the "Tennessee Valley Act of 1933", the Board shall file with each annual report, a statement of the total cost of all power generated by it at all power stations during each year, the average cost of such power per kilowatt hour, the rates at which sold, and to whom sold, and copies of all contracts for the sale of power.

SEC. 15. In the construction of any future dam, steam plant, or other facility, to be used in whole or in part for the generation or transmission of electric power the board is hereby authorized and empowered to issue on the credit of the United States and to sell serial bonds not exceeding $50,000,000 in amount, having a maturity not more than fifty years from the date of issue thereof, and bearing in-

terest not exceeding 3½ per centum per annum. Said bonds shall be issued and sold in amounts and prices approved by the Secretary of the Treasury, but all such bonds as may be so issued and sold shall have equal rank. None of said bonds shall be sold below par, and no fee, commission, or compensation whatever shall be paid to any person, firm, or corporation for handling, negotiating the sale, or selling the said bonds. All of such bonds so issued and sold shall have all the rights and privileges accorded by law to Panama Canal bonds, authorized by section 8 of the act of June 28, 1902, chapter 1302, as amended by the act of December 21, 1905 (ch. 3, sec. 1, 34 Stat. 5), as now compiled in section 743 of title 31 of the United States Code. All funds derived from the sale of such bonds shall be paid over to the Corporation.

SEC. 15a. With the approval of the Secretary of the Treasury, the Corporation is authorized to issue bonds not to exceed in the aggregate $50,000,000 outstanding at any one time, which bonds may be sold by the Corporation to obtain funds to carry out the provisions of section 12a of this Act. Such bonds shall be in such forms and denominations, shall mature within such periods not more than fifty years from the date of their issue, may be redeemable at the option of the Corporation before maturity in such manner as may be stipulated therein, shall bear such rates of interest not exceeding 3½ per centum per annum, shall be subject to such terms and conditions, shall be issued in such manner and amount, and sold at such prices, as may be prescribed by the Corporation, with the approval of the Secretary of the Treasury: *Provided,* That such bonds shall not be sold at such prices or on such terms as to afford an investment yield to the holders in excess of 3½ per centum per annum. Such bonds shall be fully and unconditionally guaranteed both as to interest and principal by the United States, and such guaranty shall be expressed on the face thereof, and such bonds shall be lawful investments, and may be accepted as security, for all fiduciary, trust, and

public funds, the investment or deposit of which shall be under the authority or control of the United States or any officer or officers thereof. In the event that the Corporation should not pay upon demand, when due, the principal of, or interest on, such bonds, the Secretary of the Treasury shall pay to the holder the amount thereof, which is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, and thereupon to the extent of the amount so paid the Secretary of the Treasury shall succeed to all the rights of the holders of such bonds. The Secretary of the Treasury, in his discretion, is authorized to purchase any bonds issued hereunder, and for such purpose the Secretary of the Treasury is authorized to use as a public-debt transaction the proceeds from the sale of any securities hereafter issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under such Act, as amended, are extended to include any purchases of the Corporation's bonds hereunder. The Secretary of the Treasury may, at any time, sell any of the bonds of the Corporation acquired by him under this section. All redemptions, purchases, and sales by the Secretary of the Treasury of the bonds of the Corporation shall be treated as public-debt transactions of the United States. With the approval of the Secretary of the Treasury, the Corporation shall have power to purchase such bonds in the open market at any time and at any price. No bonds shall be issued hereunder to provide funds or bonds necessary for the performance of any proposed contract negotiated by the Corporation under the authority of section 12a of this Act until the proposed contract shall have been submitted to and approved by the Federal Power Commission. When any such proposed contract shall have been submitted to the said Commission, the matter shall be given precedence and shall be in every way expedited and the Commission's determination of the matter shall be final. The authority of the Corporation to issue bonds hereunder shall expire at the end of five years from the date when this section as amended herein becomes

law, except that such bonds may be issued at any time after the expiration of said period to provide bonds or funds necessary for the performance of any contract entered into by the Corporation, prior to the expiration of said period, under the authority of section 12a of this Act.

SEC. 16. The board, whenever the President deems it advisable, is hereby empowered and directed to complete Dam Numbered 2 at Muscle Shoals, Alabama, and the steam plant at nitrate plant numbered 2, in the vicinity of Muscle Shoals, by installing in Dam Numbered 2 the additional power units according to the plans and specifications of said dam, and the additional power unit in the steam plant at nitrate plant numbered 2.

SEC. 17. The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct, either directly or by contract to the lowest responsible bidder, after due advertisement, a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of the said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam: *Provided, however*, That the President is hereby authorized by appropriate order to direct the employment by the Secretary of War, or by the Secretary of the Interior, of such engineer or engineers as he may designate, to perform such duties and obligations as he may deem proper, either in the drawing of plans and specifications for said dam, or to perform any other work in the building or construction of the same. The President may, by such order, place the control of the construction

of said dam in the hands of such engineer or engineers taken from private life as he may desire: *And provided further*, That the President is hereby expressly authorized, without regard to the restriction or limitation of any other statute, to select attorneys and assistants for the purpose of making any investigation he may deem proper to ascertain whether, in the control and management of Dam Numbered 2, or any other dam or property owned by the Government in the Tennessee River Basin, or in the authorization of any improvement therein, there has been any undue or unfair advantage given to private persons, partnerships, or corporations, by any officials or employees of the Government, or whether in any such matters the Government has been injured or unjustly deprived of any of its rights.

SEC. 18. In order to enable and empower the Secretary of War, the Secretary of the Interior, or the board to carry out the authority hereby conferred, in the most economical and efficient manner, he or it is hereby authorized and empowered in the exercise of the powers of national defense in aid of navigation, and in the control of the flood waters of the Tennessee and Mississippi Rivers, constituting channels of interstate commerce, to exercise the right of eminent domain for all purposes of this Act, and to condemn all lands, easements, rights of way, and other area necessary in order to obtain a site for said Cove Creek Dam, and the flowage rights for the reservoir of water above said dam, and to negotiate and conclude contracts with States, counties, municipalities, and all State agencies, and with railroads, railroad corporations, common carriers, and all public utility commissions, and any other person, firm, or corporation, for the relocation of railroad tracks, highways, highway bridges, mills, ferries, electric-light plants, and any and all other properties, enterprises, and projects whose removal may be necessary in order to carry out the provisions of this Act. When said Cove Creek Dam, transmission line, and power house shall have been completed, the possession, use, and control thereof shall be intrusted to the

Corporation for use and operation in connection with the general Tennessee Valley project, and to promote flood control and navigation in the Tennessee River.

SEC. 19. The Corporation, as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers, shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulae, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation, to be instituted and prosecuted on the equity side of the appropriate district court of the United States, for the recovery of reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided*, That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter, discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States.

SEC. 20. The Government of the United States hereby reserves the right, in case of war or national emergency declared by Congress, to take possession of all or any part of the property described or referred to in this Act for the purpose of manufacturing explosives or for other war purposes; but, if this right is exercised by the Government, it shall pay the reasonable and fair damages that may be suffered by any party whose contract for the purchase of elec-

tric power or fixed nitrogen or fertilizer ingredients is hereby violated, after the amount of the damages has been fixed by the United States Court of Claims in proceedings instituted and conducted for that purpose under rules prescribed by the court.

SEC. 21. (a) All general penal statutes relating to the larceny, embezzlement, conversion, or to the improper handling, retention, use, or disposal of public moneys or property of the United States shall apply to the moneys and property of the Corporation and to moneys and properties of the United States intrusted to the Corporation.

(b) Any person who, with intent to defraud the Corporation, or to deceive any director, officer, or employee of the Corporation or any officer or employee of the United States (1) makes any false entry in any book of the Corporation, or (2) makes any false report or statement for the Corporation, shall, upon conviction thereof, be fined not more than $10,000 or imprisoned not more than five years, or both.

(c) Any person who shall receive any compensation, rebate, or reward, or shall enter into any conspiracy, collusion, or agreement, express or implied, with intent to defraud the Corporation or wrongfully and unlawfully to defeat its purposes, shall, on conviction thereof, be fined not more than $5,000 or imprisoned not more than five years, or both.

SEC. 22. To aid further the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development consequent to this Act, and to provide for the general welfare of the citizens of said areas, the President is hereby authorized, by such means or methods as he may deem proper within the limits of appropriations made therefor by Congress, to make such surveys of and general plans for said Tennessee basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development

that may be equitably and economically advanced through the expenditure of public funds, or through the guidance or control of public authority, all for the general purpose of fostering an orderly and proper physical, economic, and social development of said areas; and the President is further authorized in making said surveys and plans to cooperate with the States affected thereby, or subdivisions or agencies of such States, or with cooperative or other organizations, and to make such studies, experiments, or demonstrations as may be necessary and suitable to that end.

SEC. 23. The President shall, from time to time, as the work provided for in the preceding section progresses, recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said section, and for the especial purpose of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation; and (6) the economic and social well-being of the people living in said river basin.

SEC. 24. For the purpose of securing any rights of flowage, or obtaining title to or possession of any property, real or personal, that may be necessary or may become necessary, in the carrying out of any of the provisions of this Act, the President of the United States for a period of three years from the date of the enactment of this Act, is hereby authorized to acquire title in the name of the United States to such rights or such property, and to provide for the payment for same by directing the board to contract to deliver power generated at any of the plants now owned or hereafter owned or constructed by the Government or

by said Corporation, such future delivery of power to continue for a period not exceeding thirty years. Likewise, for one year after the enactment of this Act, the President is further authorized to sell or lease any parcel or part of any vacant real estate now owned by the Government in said Tennessee River Basin, to persons, firms, or corporations who shall contract to erect thereon factories or manufacturing establishments, and who shall contract to purchase of said Corporation electric power for the operation of any such factory or manufacturing establishment. No contract shall be made by the President for the sale of any of such real estate as may be necessary for present or future use on the part of the Government for any of the purposes of this Act. Any such contract made by the President of the United States shall be carried out by the board: *Provided,* That no such contract shall be made that will in any way abridge or take away the preference right to purchase power given in this Act to States, counties, municipalities, or farm organizations: *Provided further,* That no lease shall be for a term to exceed fifty years: *Provided further,* That any sale shall be on condition that said land shall be used for industrial purposes only.

SEC. 25. The Corporation may cause proceedings to be instituted for the acquisition by condemnation of any lands, easements, or rights of way which, in the opinion of the Corporation, are necessary to carry out the provisions of this Act. The proceedings shall be instituted in the United States district court for the district in which the land, easement, right of way, or other interest, or any part thereof, is located, and such court shall have full jurisdiction to divest the complete title to the property sought to be acquired out of all persons or claims and vest the same in the United States in fee simple, and to enter a decree quieting the title thereto in the United States of America.

Upon the filing of a petition for condemnation and for the purpose of ascertaining the value of the property to be acquired, and assessing the compensation to be paid, the

court shall appoint three commissioners who shall be disinterested persons and who shall take and subscribe an oath that they do not own any lands, or interest or easement in any lands, which it may be desirable for the United States to acquire in the furtherance of said project, and such commissioners shall not be selected from the locality wherein the land sought to be condemned lies. Such commissioners shall receive a per diem of not to exceed $15 for their services, together with an additional amount of $5 per day for subsistence for time actually spent in performing their duties as commissioners.

It shall be the duty of such commissioners to examine into the value of the lands sought to be condemned, to conduct hearings and receive evidence, and generally to take such appropriate steps as may be proper for the determination of the value of the said lands sought to be condemned, and for such purpose the commissioners are authorized to administer oaths and subpoena witnesses, which said witnesses shall receive the same fees as are provided for witnesses in the Federal courts. The said commissioners shall thereupon file a report setting forth their conclusions as to the value of the said property sought to be condemned, making a separate award and valuation in the premises with respect to each separate parcel involved. Upon the filing of such award in court the clerk of said court shall give notice of the filing of such award to the parties to said proceeding, in manner and form as directed by the judge of said court.

Either or both parties may file exceptions to the award of said commissioners within twenty days from the date of the filing of said award in court. Exceptions filed to such award shall be heard before three Federal district judges unless the parties, in writing, in person, or by their attorneys, stipulate that the exceptions may be heard before a lesser number of judges. On such hearing such judges shall pass de novo upon the proceedings had before the commissioners, may view the property, and may take

additional evidence. Upon such hearings the said judges shall file their own award, fixing therein the value of the property sought to be condemned, regardless of the award previously made by the said commissioners.

At any time within thirty days from the filing of the decision of the district judges upon the hearing on exceptions to the award made by the commissioners, either party may appeal from such decision of the said judges to the circuit court of appeals, and the said circuit court of appeals shall upon the hearing on said appeal dispose of the same upon the record, without regard to the awards or findings theretofore made by the commissioners or the district judges, and such circuit court of appeals shall thereupon fix the value of the said property sought to be condemned.

Upon acceptance of an award by the owner of any property herein provided to be appropriated, and the payment of the money awarded or upon the failure of either party to file exceptions to the award of the commissioners within the time specified, or upon the award of the commissioners, and the payment of the money by the United States pursuant thereto, or the payment of the money awarded into the registry of the court by the Corporation, the title to said property and the right to the possession thereof shall pass to the United States, and the United States shall be entitled to a writ in the same proceeding to dispossess the former owner of said property, and all lessees, agents, and attorneys of such former owner, and to put the United States, by its corporate creature and agent, the Corporation, into possession of said property.

In the event of any property owned in whole or in part by minors, or insane persons, or incompetent persons, or estates of deceased persons, then the legal representatives of such minors, insane persons, incompetent persons, or estates shall have power, by and with the consent and approval of the trial judge in whose court said matter is for determination, to consent to or reject the awards of the

commissioners herein provided for, and in the event that there be no legal representatives, or that the legal representatives for such minors, insane persons, or incompetent persons shall fail or decline to act, then such trial judge may, upon motion, appoint a guardian ad litem to act for such minors, insane persons, or incompetent persons, and such guardian ad litem shall act to the full extent and to the same purpose and effect as his ward could act, if competent, and such guardian ad litem shall be deemed to have full power and authority to respond, to conduct, or to maintain any proceeding herein provided for affecting his said ward.

SEC. 26. Commencing July 1, 1936, the proceeds for each fiscal year derived by the Board from the sale of power or any other products manufactured by the Corporation, and from any other activities of the Corporation including the disposition of any real or personal property, shall be paid into the Treasury of the United States at the end of each calendar year, save and except such part of such proceeds as in the opinion of the Board shall be necessary for the Corporation in the operation of dams and reservoirs, in conducting its business in generating, transmitting, and distributing electric energy and in manufacturing, selling, and distributing fertilizer and fertilizer ingredients. A continuing fund of $1,000,000 is also excepted from the requirements of this section and may be withheld by the Board to defray emergency expenses and to insure continuous operation: *Provided*, That nothing in this section shall be construed to prevent the use by the Board, after June 30, 1936, of proceeds accruing prior to July 1, 1936, for the payment of obligations lawfully incurred prior to such latter date.

SEC. 26a. The unified development and regulation of the Tennessee River system requires that no dam, appurtenant works, or other obstruction, affecting navigation, flood control, or public lands or reservations shall be constructed, and thereafter operated or maintained across,

along, or in the said river or any of its tributaries until plans for such construction, operation, and maintenance shall have been submitted to and approved by the Board; and the construction, commencement of construction, operation, or maintenance of such structures without such approval is hereby prohibited. When such plans shall have been approved, deviation therefrom either before or after completion of such structures is prohibited unless the modification of such plans has previously been submitted to and approved by the Board.

In the event the Board shall, within sixty days after their formal submission to the Board, fail to approve any plans or modifications, as the case may be, for construction, operation, or maintenance of any such structures on the Little Tennessee River, the above requirements shall be deemed satisfied, if upon application to the Secretary of War, with due notice to the Corporation, and hearing thereon, such plans or modifications are approved by the said Secretary of War as reasonably adequate and effective for the unified development and regulation of the Tennessee River system.

Such construction, commencement of construction, operation, or maintenance of any structures or parts thereof in violation of the provisions of this section may be prevented, and the removal or discontinuation thereof required by the injunction or order of any district court exercising jurisdiction in any district in which such structures or parts thereof may be situated, and the Corporation is hereby authorized to bring appropriate proceedings to this end.

The requirements of this section shall not be construed to be a substitute for the requirements of any other law of the United States or of any State, now in effect or hereafter enacted, but shall be in addition thereto, so that any approval, license, permit, or other sanction now or hereafter required by the provisions of any such law for the construction, operation, or maintenance of any structures

whatever, except such as may be constructed, operated, or maintained by the Corporation, shall be required, notwithstanding the provisions of this section.

SEC. 27. All appropriations necessary to carry out the provisions of this Act are hereby authorized.

SEC. 28. That all Acts or parts of Acts in conflict herewith are hereby repealed, so far as they affect the operations contemplated by this Act.

SEC. 29. The right to alter, amend, or repeal this Act is hereby expressly declared and reserved, but no such amendment or repeal shall operate to impair the obligation of any contract made by said Corporation under any power conferred by this Act.

SEC. 30.[1] The sections of this Act are hereby declared to be separable, and in the event any one or more sections of this Act be held to be unconstitutional, the same shall not affect the validity of other sections of this Act.

SEC. 31. This Act shall be liberally construed to carry out the purposes of Congress to provide for the disposition of and make needful rules and regulations respecting Government properties entrusted to the Authority, provide for the national defense, improve navigation, control destructive floods, and promote interstate commerce and the general welfare, but no real estate shall be held except what is necessary in the opinion of the Board to carry out plans and projects actually decided upon requiring the use of such land: *Provided,* That any land purchased by the Authority and not necessary to carry out plans and projects actually decided upon shall be sold by the Authority as agent of the United States, after due advertisement, at public auction to the highest bidder, or at private sale as provided in section 4 (k) of this Act.

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[1]Section 15 of the amendatory Act provides as follows:

"That the sections of this Act are hereby declared to be separable, and in the event of any one or more sections of this Act, or parts thereof, be held to be unconstitutional, such holding shall not affect the validity of other sections or parts of this Act."

SECTION B

SENATE AND HOUSE REPORTS ON THE TENNESSEE VALLEY AUTHORITY ACT OF 1933

Senate Report No. 23

73d Congress, 1st Session

(Committee on Agriculture and Forestry, April 12, 1933)

MUSCLE SHOALS AND TENNESSEE VALLEY DEVELOPMENT

The Senate Committee on Agriculture and Forestry, to which was referred the bill S. 1272, "To improve the navigability and to provide for the flood control of the Tennessee River, to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes", having had the same under consideration, beg leave to report it back to the Senate, with the following amendments:

On page 7, line 2, after the word "donations" insert "or sales."

On page 22, line 18, strike out the numeral "24" and insert in lieu thereof "23."

As thus amended, the committee unanimously recommends that the bill be passed.

The bill, as thus reported, with the exception hereafter referred to, is practically the same bill that the committee has reported at various times during the last 12 years. In brief, the bill provides:

(1) For the organization of a governmental corporation called "The Tennessee Valley Authority." To this corpora-

tion is given broad authority to have general supervision, within certain limitations provided for in the bill, of all property of all kinds now owned by the Government at Muscle Shoals and elsewhere in the Tennessee Valley.

(2) That the building of Cove Creek Dam, mainly a flood-control and navigation proposition, shall be constructed by the Government and turned over to said corporation for control and operation.

(3) Provision is made for the operation of all locks on the Tennessee River.

(4) For the operation of experimental plants on a larger scale than has ever before been undertaken in the history of the world, for the purpose of discovering new methods of production of fertilizers, with the object of cheapening the cost of fertilizers, not only to the farmers in the Tennessee Valley, but everywhere in the Nation.

(5) That the surplus power not used for governmental purposes and for fertilizer purposes shall be sold to the people anywhere within transmission distance from the place where it is generated. In the sale of this surplus power, preference is given to States, counties, municipalities, and farm organizations, organized not for profit but for the purpose of obtaining cheap light and power for their members.

(6) Any power not thus disposed of or used by the Government in fertilizer operations shall be sold to private corporations for distribution to their customers. The bill contains a provision that in the sale of power to private corporations for distribution and sale to their customers, such sale shall be at a price to be deemed fair and just by the corporation.

(7) The new provision of the bill provides that for the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin, the President is authorized within the limitations of appropriations made therefor by Congress to make such surveys and general plans for such Tennessee River drainage basin as may

be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds or through the guidance and control of public authority. The President is authorized in making such surveys and plans to cooperate with the States affected thereby.

The object of this survey to be made by the President is for the general purpose of bringing about in said Tennessee River drainage basin, in conformity with said general purposes—

(1) The maximum amount of flood control.

(2) The maximum development of said Tennessee River for navigation purposes.

(3) The maximum generation of electric power consistent with flood control and navigation.

(4) The proper use of marginal lands.

(5) The proper method of reforestation of all lands in said drainage basin suitable for reforestation.

(6) The most practical method of improving agricultural conditions in the valleys of said drainage basin.

The President is also authorized to enter into contracts with any person or corporation for the purpose of obtaining title to any rights or property that may be necessary in carrying out the purposes of this bill, to contract with such owners for the payment of such rights by the delivery to such owners of power generated by the Government at any of its generating plants.

In general, the bill provides for a comprehensive method of development of the Tennessee Valley insofar as such development is of national concern in the proper use and control of the rivers and valleys of the entire Nation.

HOUSE REPORT NO. 48

73d Congress, 1st Session

(Committee on Military Affairs, April 20, 1933)

MUSCLE SHOALS

It was in the year 1824 that the Tennessee River navigation and Muscle Shoals question first made its appearance as a Federal problem. In that year President Monroe submitted to Congress the report of Secretary of War John C. Calhoun, recommending a survey of said river, looking to improve its navigation around the Muscle Shoals rapids, in aid of commerce and military operations. Alabama appropriated the proceeds of the sale of 40,000 acres of public lands that had been donated to that State by the Federal Government. From that day to this the subject has, from time to time, engaged the attention of the Nation. Finally, in the year 1916, the following provision was inserted in the National Defense Act, as section 124:

> SEC. 124. NITRATE SUPPLY.—The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power as in his judgment is the best and cheapest to use; and is also hereby authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites, upon any navigable or nonnavigable river or rivers or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and is further authorized to construct, maintain, and operate, at or on any site or sites so designated, dams, locks, improvements to navigation, power houses, and other plants and equipment or other means than water power

as in his judgment is the best and cheapest, necessary or convenient for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers and other useful products.

The President is authorized to lease, purchase, or acquire, by condemnation, gift, grant, or devise, such lands and rights of way as may be necessary for the construction and operation of such plants, and to take from any lands of the United States, or to purchase or acquire by condemnation, materials, minerals, and processes, patented or otherwise, necessary for the construction and operation of such plants and for the manufacture of such products.

The products of such plants shall be used by the President for military and naval purposes to the extent that he may deem necessary, and any surplus which he shall determine is not required shall be sold and disposed of by him under such regulations as he may prescribe.

The President is hereby authorized and empowered to employ such officers, agents, or agencies as may in his discretion be necessary to enable him to carry out the purposes herein specified, and to authorize and require such officers, agents, or agencies to perform any and all of the duties imposed upon him by the provisions hereof.

The sum of $20,000,000 is hereby appropriated, out of any moneys in the Treasury not otherwise appropriated, available until expended, to enable the President of the United States to carry out the purposes herein provided for.

The plant or plants provided for under this act shall be constructed and operated solely by the Government and not in conjunction with any other industry or enterprise carried on by private capital.

In order to raise the money appropriated by this act and necessary to carry its provisions into effect, the Secretary of the Treasury, upon the request of the President of the United States, may issue and sell, or use for such purpose or construction hereinabove authorized, any of the bonds of the United States now available in the Treasury of the United States under the act of August fifth, nineteen hundred and nine, the

act of February fourth, nineteen hundred and ten, and the act of March second, nineteen hundred and eleven, relating to the issue of bonds for the construction of the Panama Canal, to a total amount not to exceed $20,000,000: *Provided,* That any Panama Canal bonds issued and sold or used under the provisions of this section may be made payable at such time after issue as the Secretary of the Treasury, in his discretion, may deem advisable, and fix, instead of fifty years after date of issue, as in said act of August fifth, nineteen hundred and nine, not exceeding fifty years.

Under this power contained in section 124, President Wilson ordered construction to begin at Muscle Shoals by the erection of Dam No. 2, and its power house, and nitrate plants Nos. 1 and 2, for the fixation of atmospheric nitrogen, primarily for war purposes, and incidentally also for agricultural uses in time of peace.

SALVAGE VALUE OF WAR INVESTMENT

Unlike practically every other war project and war-time enterprise, this Muscle Shoals property has a great peace-time value for both agriculture and industry, in supplying both fertilizers and power, and also has a future value for national defense. In time of war our armies and fleets will use increasing quantities of nitrate explosives. Happily, the more we know about fixing nitrogen for agricultural purposes, the more rapidly we will be able to fix nitrogen for military purposes. The Muscle Shoals property is situated far inland, where it is unlikely, if not impossible, that enemy airplanes or airships may ever destroy it by bombing from the air. Plants situated within bombing distance of enemy airplane carriers are not dependable for war-time explosive supplies.

RECENT LEGISLATIVE HISTORY

Twice in recent years, once in 1928, and again in 1930, bills were passed by Congress and sent to the President for

his approval. Both those bills were very similar to the bill now reported favorably by your committee. And a large part of those bills was in the identical language of this bill. The bill passed in 1928 met a pocket veto by President Coolidge, and the bill passed in 1930 met a vigorous veto by President Hoover.

It is interesting to note some of the leading efforts to dispose of this long standing and much vexed question. The country is familiar with the efforts to lease by direct legislation to Henry Ford and to the American Cyanamid Co. Both of these efforts failed. But the country is not generally so familiar with the fact that on November 3, 1919, Senator Wadsworth, of New York, introduced a bill into the Senate, being S. 3390, which was reported favorably by the Committee on Agriculture. This bill proposed to organize a Government-owned corporation to operate the Muscle Shoals properties for the manufacture and sale of fertilizers in which the preference would be given to farmers.

On February 1, 1926, Senator Smith of South Carolina introduced into the Senate S. 2956, which provided for the creation of a Muscle Shoals Commission, and that this Commission should use the Muscle Shoals properties for the fixation of nitrogen to be sold for fertilizer purposes.

On April 19, 1926, Senator Deneen, of Illinois, introduced into the Senate a bill known as S. 4106, which sought to effectuate a lease of the Muscle Shoals properties to a corporation to be known as the Muscle Shoals Fertilizer Co. to manufacture fertilizer and to sell the same at cost plus 8 per cent.

On May 3, 1928, Representative Snell, of New York, introduced in the House, House Joint Resolution 2941, which proposed that the President, through the Secretary of War and the Chief of Engineers was authorized to contract for the sale of surplus power generated at Muscle Shoals, and to alter and repair nitrate plant no. 1 for the fixation of nitrogen and for the manufacture of fertilizers,

and to operate one unit of nitrogen plant no. 2 to determine whether or not fertilizers can be manufactured by that process at a cost favorably comparable with other processes, and to dispose of any fertilizer or fertilizers manufactured, and to enable the President to be in a position to consider all bids for the sale of power, the authority was expressly granted for the construction or lease of transmission lines in any direction from the dam and steam plant, either from appropriations made by the Congress or from funds from the sale of power.

In the Seventieth Congress Representative Morin of Pennsylvania, being chairman of the committee, introduced a bill which had been carefully prepared by a subcommittee appointed by him, and that bill set up a Government corporation for the sale of power and for the manufacture and sale of fertilizers. That bill was passed by the House of Representatives by striking out provisions requiring the manufacture of the complete fertilizer and limiting the activities of the Government corporation to nitrogenous plant food.

NATION-WIDE ASPECT OF PROBLEM

The increasing public interest in the Muscle Shoals situation has demonstrated how intimately it touches so many sides of life. But it is now manifest that the Muscle Shoals situation is only a factor and a part of the greater problems of conservation of natural resources, and of promoting navigation and flood relief. Obviously, the Muscle Shoals properties are only an integral part of the Tennessee Valley. In turn, the Tennessee Valley is merely typical of other regions in the Nation, whose treatment will ultimately be guided, either positively or negatively, by the lessons learned in the Tennessee Valley development program.

Accordingly, we are not surprised to find that President Roosevelt, in his language of April 10, 1933, in a message to Congress, vigorously expresses this central thought:

It is clear that the Muscle Shoals development is but a small part of the potential public usefulness of the entire Tennessee River. Such use, if envisioned in its entirety, transcends mere power development; it enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short, this power development of war days leads logically to national planning for a complete river watershed involving many States and the future lives and welfare of millions. It touches and gives life to all forms of human concerns.

In the minority views expressed by the maker of this report, in connection with the report by Representative Reece, of Tennessee, on S.J.Res. 49, in the second session of the Seventy-first Congress, this language was employed:

INDUSTRIAL RESULTS

But in the field of industry the results will surely be more marvelous and astonishing. The lessee will certainly find it advantageous to set up large establishments for the production of electrochemicals and ferro-alloys. In that section of the country are all the raw materials for the manufacture of chemicals and all steel products, at the same time numerous and valuable by-products will be manufactured. Furthermore, there are 11 valuable dam sites between the Cove Creek Dam and the Wilson Dam, and the construction of the Cove Creek Dam will double the power available at each one of these dam sites. Within the next generation perhaps all of the dams in that stretch of the river will be constructed and the power will be used not only at and near the dam, but will be sent in various directions to existing cities and towns and to new cities and towns within transmission distance.

Thus the 1,000,000 horsepower to be found along that 300-mile section of the Tennessee River from Cove Creek to Wilson Dam will become a great hive of industry. Perhaps millions of busy and industrious people will gather to use the electric energy there generated. New cities and towns will rise in places now unthought of. Many hundreds of millions of dollars

will be invested in new plants and in new enterprises, and proportionate profits will arise from these investments. From the day that earth is broken for the construction of the Cove Creek Dam, which will impound 3,000,000 acre-feet of water stretching over practically 60,000 acres, the largest artificial lake in the world, the eyes of the whole country will be turned upon that section and the footsteps of millions will be directed toward the Tennessee Valley. Agriculture in that section will thrive as never before, producing diversified crops and vegetables to feed the busy millions engaged in construction and in the conduct of industry. While such a picture dazzles the imagination, it is backed up by reason and human probability, and based upon the commanding influence of cheap power. Power is the secret of modern industry. Modern industry is the impelling force of modern civilization. In this Tennessee River Valley, so rich in the quantity and variety of mineral deposits, will spring up some of the greatest industrial activities of the world. With a magnificent climate, with a productive soil, with a strong and virile population to draw from in the surrounding States, with a people devoted to the ideals of our Republic and to the principles of our Constitution, resolved to maintain and preserve order and justice, that section presents a promise of future development and prosperity comparable to what has taken place in a commercial and financial way on Manhattan Island.

ECONOMIC AND INDUSTRIAL RESULTS

Let us take a glimpse into the future of what will probably be the result of wise and rational action by the leasing board. If the property is leased to a concern financially responsible which intends in good faith to carry out the purposes of the act, then I can envisage a marvelous development in the whole Tennessee River region and even in adjacent sections. The first and direct result will be the production of a cheap nitrogenous plant food which will demonstrate to the farmers and the business people of the United States, the actual cost of fixing nitrogen and of processing the same for use as fertilizer. Judging by numerous estimates made by experts, the reduction

will cut the present cost of nitrogen products from 25 to 40 percent. This should break the power of the Chilean nitrate trust which has extracted tribute from the world and especially from the farmers of the United States, merely because Chile has a monopoly upon mineral nitrate of soda. Two hundred and sixty-five million dollars has been paid into the public treasury of Chile as the export duty upon nitrate of soda exported to the United States alone. When to this is added the exports of nitrate of soda to other countries, especially prior to the World War, the total receipts by the Government of Chile for such export tax must amount to more than a billion dollars. Thus the people of Chile have shifted a large part of their tax burden upon the shoulders of the people of other nations, merely because they possess a natural monoply in an essential commodity vitally important in both peace and war.

In the next place, to ascertain the actual cost of producing such synthetic nitrogen for agricultural purposes will help to crush the world-wide Nitrogen Trust. At present the world price of nitrogen follows along and barely below the price of Chilean nitrate. Thus a monopoly on mineral nitrogen and a monopoly on synthetic nitrogen go hand in hand. If the United States Government can help break this trust team and set the farmers of this country free, it will be one of the greatest blessings that agriculture has ever received.

Commencing with 10,000 tons of pure nitrogen, in such form and combination as the leasing board may specify and as the lessee may subsequently decide to be most attractive to the farmer, the volume of fertilizers produced will increase and will probably increase very rapidly. With the advantages given to the protection of agricultural nitrogen, it is my belief that the lessee will find production profitable to himself, and therefore will be induced to increase the annual quantity. In order to dispose of such increased quantity, very naturally the lessee will resort to the reasonable and proper business method of combining nitrogen with phosphoric acid and perhaps with potash. Phosphate rock is found in great abundance in the Tennessee River Basin. This can be floated

down the river and subjected to electric-furnace methods at the time of the year when cheap secondary power is available, and thus phosphoric acid produced more cheaply than it is being produced today by the wet process. Then probably the potash shales in that section of the country can be economically treated so as to extract the potash for agricultural purposes and leave valuable by-products of high commercial value.

FERTILIZER POSSIBILITIES

Much confusion has been created by hostile interests concerning the fertilizer question at Muscle Shoals. In that connection I quote a part of the minority views of Representative Harry E. Hull, Representative John N. Morin, Representative Harry C. Ransley, Representative John Philip Hill, Representative Louis A. Frothingham, and Representative J. Mayhew Wainwright, in the first session of the Sixty-eighth Congress:

> The result is that it is now known that by taking advantage of modern scientific accomplishments and adding the benefit of hydroelectric power, it is possible to make atmospheric nitrogen available for the use of agriculture at low costs.
>
> The production of phosphoric acid, another essential food plant, has also been the object of scientific research and development. Further advances are reasonably to be expected, but it is known that by using the modern methods of nitrogen fixation and combining the product with phosphoric acid produced by methods known to be commercially available, a fertilizer product of high fertilizing value can be made where hydroelectric power at low cost is available and sold to the farmers of the country at a substantial reduction below the price they now pay for equivalent plant food. Thus it has become certain that fertilizer production can be carried on at Muscle Shoals with profit, at the same time substantially reducing the cost of fertilizer to the farmer.

In the same connection, the same gentlemen, with reference to the possibility of selling power in the South, used the following language:

USE OF POWER IN THE SOUTH

A large amount of evidence was brought before the committee to show the widespread demand in the South for hydroelectric power and the concern which is felt in that section lest the Muscle Shoals power be entirely withdrawn from public service.

Taking the Ford obligation at its full value, to make 40,000 tons of fixed nitrogen per annum this requires less than 100,000 horsepower, yet his offer requires the Government to build power plants which, with the steam plants, will give him over 850,000 horsepower, or 750,000 horsepower more than is necessary to carry out his fertilizer obligation. It is this power which the public in many sections of the Southeastern States are demanding shall be distributed for general use.

Due to the electric transmission lines which are connected in the Southeastern States, it is now possible, according to the testimony, for the Muscle Shoals power to reach the public at points over 600 miles from Muscle Shoals.

VIEWS OF JOHN C. M'KENZIE

In the first session of the Sixty-eighth Congress, on February 2, 1924, Representative John C. McKenzie, on behalf of the Committee on Military Affairs, reported for the committee a bill recommending the acceptance of the Ford offer, and at the conclusion of his report used the following language:

FOUR FIELDS OF USEFULNESS AT MUSCLE SHOALS

The majority of the committee recognized that there are four distinct fields of usefulness in which valuable service can be had at Muscle Shoals: First, nitrate manufacture for national defense; second,

fertilizer production; third, power development; fourth, navigation improvement.

The first two are closely associated, and the plant that is most valuable for production of explosives in time of war is most efficient as a source of nitrates for fertilizer in time of peace. It is also true that under such a plan as Mr. Ford has proposed there is a close relation between the power development and the navigation improvement. Under this proposal the power not only returns a fair rate of interest on the cost of its development but it returns interest to the Government on its navigation improvement and provides a sinking fund which refunds to the Government its entire navigation investment. Merely by the use of its credit the Government can secure 150 miles of slack-water navigation on the Tennessee River and its tributaries without any appropriation whatever.

When it is realized that we have expended nearly $20,000,000 on the improvement for navigation of the Tennessee River and its tributaries, outside of the present Muscle Shoals development, and practically one and a quarter billions of dollars on national river and harbor improvement as a whole, without the prospect or expectation of receiving any interest whatever on this huge outlay, or the return of any part of the principal, it is evident that here is a policy that is not merely of local interest at Muscle Shoals but that offers promise of Nation-wide benefits if adopted generally in the improvement of our navigable streams where power development is practicable.

FERTILIZERS IN PRESENT BILL

Broad powers are given to the Authority, either to operate the present plants, or to lease them, for the production of nitrogen and/or other fertilizer ingredients for agricultural uses. Specific and definite limitations are imposed as to the initial quantity to be produced and as to the gradual increase of the amount of production, according to market demands. All power necessary for ultimate capacity production of fertilizer and/or fertilizer ingredients is reserved.

FERTILIZER EXPERIMENTS

This feature of the bill is of very great importance. It contemplates extensive experiments in laboratories, and, in fact, the use of the entire nitrate plants as a huge laboratory, and also actual field demonstrations in the use of fertilizers of varying degrees of concentration and of varying proportions of constituents.

NATIONAL DEFENSE

Intimately interlocked with the production in peace of nitrogenous fertilizers is preparedness for national defense in time of war. But whether large-scale production of fertilizers is carried on at Muscle Shoals, we are assured that nitrate plant no. 2 will be maintained in stand-by condition for the manufacture of explosives, until Congress shall have by joint resolution released the Authority from that obligation. These sites should never be sold without express approval of Congress.

POWER FEATURES

The bill provides that all electric power not used in the navigation projects, and in the production of fertilizers, and in the conducting of fertilizer experiments, shall be sold, and in such sale preference shall be given to States, counties, municipalities, and nonprofit cooperative associations. Thirty-year contracts for power are permitted to States, counties, municipalities, and cooperative associations building their own transmission lines. But such contracts must stipulate that the power shall be sold and distributed without discrimination among customers of the same class. Private power companies employed in distribution and resale of electricity for profit must agree that the price at which they will sell power to the ultimate consumer will not exceed a figure found to be just, fair, and reasonable by the Federal Power Commission. The bills

which previously passed Congress contained a provision that contracts for the sale of power to private power-distributing companies might be canceled on 2 years' notice, if the power were demanded by the Authority, either for its own uses or for sale to States, counties, municipalities, and cooperative associations. The bill now reported has extended the time of notice to 5 years, and surely that is exceedingly fair to the power companies. That will give them ample time in which to construct power generating plants or to curtail their activities. Representatives of the power interests were urged to specify what length of time they thought would be fair and reasonable. Having declined to do this, the committee feels quite confident that 5 years is entirely generous to, and considerate of, the power companies.

TRANSMISSION LINES

Here has been the battle ground for all these long, laborious years. Surely the bill now recommended to the House is exceedingly just and liberal in this respect. In order to obviate the duplication of transmission lines, and thus prevent the waste or depreciation of invested capital, the board is authorized to negotiate with a private power company having a transmission line needed by the Authority, to enable it to serve the public, and to buy such transmission line at a fair and reasonable price. If negotiations fail, the Authority may acquire such transmission line by condemnation. But, of course, the full fair value of same will be paid. Thus, no new transmission line will probably be built, except where none now exists. The fear that much money might be wasted in duplicating existing transmission facilities has long been the cause of much opposition to the thought of transmission lines. Surely all ground for fear on this score has been removed. It is our hope and belief, from expressions uttered by the representatives of the power interests, that there will be cooperation in these respects, as in other respects, between the Authority and

the power interests in serving the public and in promoting the industrial, the agricultural, and the economic development in that region of the Nation.

COVE CREEK DAM

Everybody now agrees that the Cove Creek Dam should be built by the Government, and this includes even the representatives of the power companies themselves. It is indispensable to the final development of flood control, navigation, and power in the Tennessee Valley. This work should begin at once. Appropriations should be made so that the land may be acquired promptly, and the work of cleaning out the basin, of relocating roads and bridges and other structures, and of constructing the dam and the power house, should proceed promptly, and employ a great army of workers. Thus, the ranks of the unemployed will be thinned. Thus, the purchasing power of the people will be increased. Thus, the return of normal prosperity will be assisted.

CONDEMNATION PROCEEDINGS

Happily, we hear reports that the people of Tennessee, and especially of the Tennessee Valley part of that State, are organizing to insure cooperation with the Federal Government in its great program of development. However, we feel it necessary to provide special proceedings to govern condemnation of lands and other property rights, in order that there may be prompt taking of lands and at fair and reasonable prices. Aware of how selfish human nature sometimes asserts itself, we have sought to protect the Government against abuses and at the same time we have scrupulously guarded the rights of property owners by giving them jury trial on questions of fact and preserving the right of appeal on questions of law. Surely these provisions, certainly as to the purpose here sought to be accomplished, will meet with the approval of all.

OTHER DAMS ON BUSINESS BASIS

Cove Creek Dam and Dam No. 3 will be built as promptly as possible after the passage of this act. But after the construction of Cove Creek Dam and Dam No. 3, no other dam will be constructed unless there is a reasonable market demand for so much of the power as will yield a reasonable return on that part of the investment representing the cost of power production. This puts future power development upon a business basis.

In like manner, the Authority may enter into a contract with any responsible person, firm, or corporation, to lease a dam, or dams, upon self-liquidating terms to be approved by the President, insuring interest on the bonds and final amortization of the capital, and in such event the Authority may proceed to build any such dam. Surely these safety clauses should satisfy most of the objections to the general authorization for construction of future dams on the Tennessee River and its tributaries. The Authority cannot proceed upon a visionary and impractical program of construction. In addition to the limitations of law, there will be limitations of fact. The $50,000,000 to be derived from the sale of bonds, will hardly go farther than build Cove Creek Dam, and Dam No. 3, and make the necessary alterations, to modernize the nitrate plants, to install the necessary fertilizer equipment and to provide adequate working capital. For every other dollar that the Authority may use for constructing dams, it must come to the Congress for appropriations. Thus, Congress holds the reins upon the Authority. It is true that the Authority will have the revenues from the sale of power, but after the required interest and amortization payments have been made by the Authority, and after the running expenses are paid, it is not likely that there will be any funds sufficient to build any dam. There may be sufficient funds to lease, or to buy, or to construct necessary transmission lines. But any sum of money sufficient to build a dam would have to come from Congress by appropriation.

BOND ISSUE AUTHORIZED

For this reason, the bond issue is limited to $50,000,000. These bonds will be obligations of the United States, but to relieve them of being a direct charge upon the annual receipts of the Government, the interest on the bonds is made a lien upon the net proceeds of the sale of power, and from these net proceeds the Authority must pay the interest. If there be not sufficient net proceeds, undoubtedly Congress would be called upon through the Budget to appropriate sufficient money to pay the deficit.

USE OF PATENT RIGHTS

Much hysterical opposition has been expressed for several years to this feature of the bill. It is recklessly charged that it authorizes the confiscation and invasion of private property rights. Such argument entirely overlooks the fundamental principles involved. The monopoly of a patent right is a special privilege conferred by the Government. The inventor has no such monopoly by the law of nature, nor by the common law, but the Constitution of the United States authorizes the Congress to encourage inventions and discoveries by giving, for a limited period, a monopoly to the inventor or discoverer. But it has always been held by the Congress and the courts that the sovereign which confers to one citizen such exclusive right, as against all other citizens, itself has certain rights in the monopoly privilege. It would be a strange situation for a government to confer such right of monopoly, and then, in the hour of the government's necessity, find itself held at bay by the monopolist. This reservation of right to the Government is analogous to the right of eminent domain. It is inherent in sovereignty itself.

Therefore, it is not surprising that we find the general law of the United States expressed in the United States Code, in title 35, section 68, that the United States can use

any invention for which a patent has been issued, and that the sole and exclusive remedy for any claim of damages by the owner of the patent shall be a suit in the United States Court of Claims. But no such right to bring such suit belongs to a person who made the invention while in the employ of the United States. This law was enacted June 25, 1910, and the section of the pending bill is merely a declaration that the Authority is the agent of the United States in carrying out its constitutional powers.

NO SPOILS SYSTEM POSSIBLE

To relieve the board of the importunities of friends and relatives seeking jobs with the Authority, the board shall select only its limited clerical staff, and all other officers, agents, and employees will be selected by the general manager. The general manager will undoubtedly be a man of wide experience and of strong character. He is directed to set up merit and efficiency standards and systems. All employees will have the benefits of the United States Civil Service Employees' Compensation Act.

In like manner all agents, employees, and laborers will be entitled to have the Secretary of Labor settle any dispute arising concerning wages. The prevailing rate of wages, as it is defined in the act, will be the measure of wages paid. This same principle will apply to employees and laborers working for contractors upon projects under contracts with the Authority. But as further guaranty against the employment of unfit and incompetent persons it is provided that no political tests shall ever be applied by any member of the board in connection with the employment of any person nor by the manager nor anybody acting for him. Any person violating this provision will be summarily discharged.

AID FROM OTHER FEDERAL DEPARTMENTS

The President is authorized to detail any officer or agent of the United States to assist the Authority in carry-

ing on its program of development. Thus, we can envision a very considerable employment of the Corps of Engineers of the United States Army, and of the experts from the Bureau of Chemistry and Soils in the Department of Agriculture. Also, in the final reforestation and soil-erosion plans of the Authority, representatives of the Department of the Interior will surely be detailed to help. Possibly other departments of the Government will be drafted from time to time to assist in this work.

PLANNING FOR FUTURE DEVELOPMENT

The board of three members should not only be sound and experienced men of affairs, they should not only be soundly educated and widely traveled and well-read men, but they should be men of constructive vision, to seek to fit the future into the form of the present. Therefore, the board is charged with the duty of constantly studying the whole situation presented by the Tennessee River Valley, and the adjoining territory, with the view of encouraging and guiding in the orderly and balanced development of the diverse and rich resources of that section. It is a great responsibility imposed upon the members of the board. But it is a great opportunity that will come to those chosen for this great service. For such position of trust and responsibility, undoubtedly the President will search the Nation over for the right men to whom to entrust not only this vast investment of money but this great responsibility, not only to the people of that section of the country but to the people of the whole Nation. If, through the incapacity or the indifference of the members of the board, this great humanitarian project should fail, then progress along this line in other parts of the country will be set back for two or three generations.

With such a responsibility upon the President in choosing the right men, and with such a responsibility resting upon the consciences of the men thus chosen, we cannot believe that there will be failure. When the race advances,

it must do so along the road of faith in ourselves and our fellows. The members of the board are given the term of 9 years, so there may be consistency and continuity in the policies of the Authority.

CONSERVATION POLICIES

The policy of this bill for the development of the Tennessee Valley is no new policy in American politics. For more than 20 years the conservation of our natural resources and their preservation for the use and benefit of all the people to whom they belong, both by the law of the land and the law of nature, has been a burning issue in this Nation. Beginning with the year 1912, the Democratic Party, by its platform, proclaimed:

CONSERVATION

> We believe in the conservation and the development, for the use of all the people, of the natural resources of the country. Our forests, our sources of water supply, our arable and our mineral lands, our navigable streams, and all the other material resources with which our country has been so lavishly endowed, constitute the foundation of our national wealth. Such additional legislation as may be necessary to prevent their being wasted or absorbed by special or privileged interests should be enacted and the policy of their conservation should be rigidly adhered to.

In 1912 the Progressive Party, headed by Theodore Roosevelt, by its platform proclaimed its solemn determination that these natural sources of wealth, belonging to all the people, should be held in public hands and utilized for the general welfare:

CONSERVATION

> The natural resources of the Nation must be promptly developed and generally used to support the people's needs, but we cannot safely allow them to be

wasted, exploited, monopolized or controlled against the general good. * * *

We believe that the remaining forests, coal and oil lands, water-power sites, and other natural resources, still in State or National control (except agricultural lands) are more likely to be wisely conserved and utilized for the general welfare if held in the public hands.

In the year 1916 the Democratic Party reiterated its position with renewed emphasis:

CONSERVATION

For the safeguarding and quickening of the life of our own people, we favor the conservation and development of the natural resources of the country through a policy which shall be positive rather than negative, a policy which shall not withhold such resources from development but which, while permitting and encouraging their use, shall prevent both waste and monopoly in their exploitation, and we earnestly favor the passage of acts which will accomplish these objects, reaffirming the declaration of the platform of 1912 on this subject.

That same year the Republican Party, following, rather timidly, in the wake of the Progressive Party, now reunited with the mot er party, proclaimed its attitude in the following words:

CONSERVATION

We believe in a careful husbandry of all the natural resources of the Nation—a husbandry which means development without waste; use without abuse.

In 1920 post-war problems, with all their dislocating consequences, seemed to have crowded out of the Democratic Party any expression upon this subject. But the Republican Party in that year, 1920, took stronger ground on the question in the following language:

CONSERVATION

Conservation is a Republican policy. It began with the passage of the reclamation act signed by President Roosevelt. The recent passage of the coal, oil, and phosphate leasing act by a Republican Congress and the enactment of the water-power bill, fashioned in accordance with the same principle, are consistent landmarks in the development of the conservation of our national resources. We denounce the refusal of the President to sign the water-power bill passed after 10 years of controversy.

But in 1924 the Democratic Party returned to the subject with specific and definite commitments, as follows:

MUSCLE SHOALS AND FERTILIZERS

We reaffirm and pledge the fulfillment of the policy, with reference to Muscle Shoals, as declared and passed by the Democratic majority of the Sixty-fourth Congress in the National Defense Act of 1916, "for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers."

We hold that the production of cheaper and higher-grade fertilizers is essential to agricultural prosperity. We demand prompt action by Congress for the operation of the Muscle Shoals plants to maximum capacity in the production, distribution, and sale of commercial fertilizers to the farmers of the country, and we oppose any legislation that limits the production of fertilizers at Muscle Shoals by limiting the amount of power to be used in their manufacture.

Again the Democratic Party in 1924 pledged itself to the retention by the public of the title to the Nation's water power:

CONSERVATION

We believe that the Nation should retain title to its water power and we favor the expeditious creation and development of our water power.

In 1924 the Republican Party took still stronger ground in declaring that such natural wealth as water power belonged to all the people, and is an inheritance to be transmitted to future generations, and employed the following language:

CONSERVATION

> The natural resources of the country belong to all the people and are a part of an estate belonging to generations yet unborn. The Government policy should be to safeguard, develop, and utilize these possessions. The conservation policy of the Nation originated with the Republican Party under the inspiration of Theodore Roosevelt. We hold it a privilege of the Republican Party to build as a memorial to him on the foundation which he laid.

In 1928 the Democratic Party reiterated in still stronger language its conviction that all the people should benefit from our natural resources, and stated its position as follows:

WATER POWER, WATERWAYS, AND FLOOD CONTROL

> The Federal Government and State governments, respectively, now have absolute and exclusive sovereignty and control over enormous water powers, which constitute one of the greatest assets of the Nation. This sovereign title and control must be preserved, respectively, in the State and Federal Governments to the end that the people may be protected against exploitation of this great resource and that water powers may be expeditiously developed under such regulations as will insure to the people reasonable rates and equitable distribution.

In 1928 the Republican Party asserted its priority to the claim of leadership in the development of our public water powers for the public benefit, and employed the following language:

CONSERVATION

The Republican Party has been forehanded in assuring the development of water power in accordance with public interest. A policy of permanent public retention of the power sites on public land and power privileges in domestic and international navigable streams and one third of the potential water-power resources in the United States on public domain has been assured by the Federal Water Power Act, passed by a Republican Congress.

In 1932 the Democratic Party spoke briefly but emphatically on all questions, and pledged the present administration to the development of natural resources in the common interest by using the following language:

The conservation, development, and use of the Nation's water power in the public interest:

The removal of Government from all fields of private enterprise except where necessary to develop public works and natural resources of the common interest.

In 1932 the Republican Party declared that all our natural resources should be set free from monopoly control, and again praised the splendid leadership in this field of Theodore Roosevelt. It employed the following language:

CONSERVATION

The wise use of all natural resources freed from monopolistic control is a Republican policy initiated by Theodore Roosevelt. The Roosevelt, Coolidge, and Hoover reclamation projects bear witness to the continuation of that policy. Forestry and all other conservation activities have been supported and enlarged.

When both great political parties, through a period of 20 years, have spoken so unequivocally and emphatically upon a great public question, it leaves no doubt as to where the sentiment of the masses of the people is upon this

question. These repeated utterances were not intended to be mere soothing sounds. The American public had a right, and still has a right, to believe that both these great political parties were sincere in their pledges. Now is the time for the representatives of both these organized bodies of citizens, called political parties, to begin in a definite and efficient way the accomplishment of the aims so long promised to the people. It so happens that this preservation of nature's rich gifts to all the people must begin somewhere. Under the peculiar situation confronting us for about 15 years with reference to a great war project placed at Muscle Shoals, this Nation-wide program must commence in the Tennessee River Valley with the Muscle Shoals properties as a nucleus. The Tennessee River as a great interstate highway, and fortunately the project now contemplated serves the fourfold causes of national defense, flood control, navigation, and power conservation.

When this Tennessee Valley development shall have progressed sufficiently for us to learn great lessons as to how best to serve the public, then development will follow in other great interstate and international water courses. Undoubtedly, there are several great areas in all sections of the country that will ultimately be developed by the application of the same principles and policies. It is the simple, fundamental American, Jeffersonian, Rooseveltian proposition of preserving and using for all the people those great sources of wealth conferred by the prolific hand of God upon the masses of the people who settled in this new continent, cleared its fields, opened its mines, navigated its rivers, built its cities, highways, and railroads, established its independence by their sacrifices and sufferings, have maintained its independence in war, and defended its honor at home and abroad, at the peril of their lives. In fact, millions have suffered in war, and many more millions have sacrificed and struggled in peace, throughout our 150 years, to bring this Nation where it is. Something is due these voiceless millions, and more is due to the unborn millions.

By this measure for the development of the Tennessee Valley, we, the representatives of the dead, of the living, and of the unborn, are fulfilling our pledges to them all, and seeking to make real the fundamental principle of popular government, that of the greatest good to the greatest number.

If the views expressed so often for 20 years by both great political parties, representing fully 95 percent of our whole population be socialistic, then we must suffer the stigma, because we cannot escape from our platform pledges. Why be frightened by adjectives? Increasing cooperation marks the progress of civilization.

MINORITY VIEWS.

The undersigned members of the Committee on Military Affairs of the House of Representatives are unable to approve of H. R. 5081, entitled "A bill to provide for the common defense; to aid interstate commerce by navigation; to provide flood control; to promote the general welfare by creating the Tennessee Valley Authority; to operate the Muscle Shoals properties, and to encourage agricultural, industrial, and economic development", in the form in which it is presented to the House because, in our opinion, it fails adequately to carry out the purposes of section 124 of the National Defense Act under whose provisions the Wilson Dam and the nitrate plants at Muscle Shoals were constructed, because it compels the Government to engage in the production and sale of power and fertilizer in competition with its citizens, and because it commits the United States to a program so vastly sweeping, yet so vague in its extent, that it threatens dangerously to increase the bonded indebtedness of the Nation to a point of impairing its credit.

The section of the National Defense Act cited reads, in part, as follows:—

> The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means

for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products.

For this reason all legislation relating to Muscle Shoals has always been referred to the Committee on Military Affairs of the House. In the amended Hill bill, H. R. 5081, we are able to discover very little provision for national defense, and in a similar bill before the Senate there is none whatever. The only direct mention of this in the present Hill bill appears in subsection h of section 5, to wit:

> It shall be the duty of the board to maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency, until Congress shall by joint resolution release the board from this obligation.

It is our view that this grants inadequate attention to the primary purposes of the Muscle Shoals development and that the bill as a whole vitiates the original intentions of the National Defense Act.

If fertilizer is manufactured in commercial quantities it would interfere with the business of more than 800 companies employing thousands of men and which have, according to the testimony of a representative of the National Fertilizer Association, encountered a loss of business since 1921 estimated at more than $300,000,000, owing to overproduction and lowering of prices. According to a report authorized by resolution of the Seventy-second Congress, the United States Government is at present in competition with private enterprise in 41 lines of activity. We believe that this tendency must be checked in the interest of business recovery.

We are opposed to Government operation of Muscle Shoals for the production of power for retail sale. At the present time 30 percent of the generating capacity of privately owned plants serving the States within transmis-

sion distance of Muscle Shoals is finding no market. This 30 percent amounts to a surplus capacity of approximately 400,000 horsepower. Yet the bill provides for the construction of Cove Creek Dam, Dam No. 2, and steam plant no. 2 which, when completed, would generate an additional 400,000 horsepower, making a total surplus in the vicinity of 800,000 horsepower.

The undersigned cannot visualize a market for this great additional power, particularly when one considers the financial condition of the country at this time.

Section 13 of the bill authorizes the board, with the approval of the President, to construct, lease, or authorize the construction of transmission lines within transmission distance not to exceed 400 miles from the place where generated if transmission lines are found economically justified and necessary under the provisions of the act.

If this provision is carried out, it might parallel existing transmission lines to the ultimate destruction of existing companies, with a consequent loss of bona fide investments in the amount of approximately $400,000,000, a great part of which is held by consumer customers and other citizens of the six Southern States. The Government would be seizing a market now their valuable property, and now served, according to competent testimony, adequately and at reasonable rates.

While the Hill bill, in section 24, provides that the board, acting for the Authority, is authorized and empowered to issue and sell bonds not exceeding $50,000,000 in amount, there is a similar bill now before the Senate which provides, in section 15, as follows:

> In the construction of any future dam, steam plant, or other facility, to be used in whole or in part for the generation of hydroelectric power, the board, if directed so to do by the President of the United States, shall issue its bonds for the payment in part or in full of that part of said development that is allocated to the production of hydroelectric power.

Under section 22 of the amended Hill bill, H. R. 5081, the President for 1 year from the date of the enactment of this act is authorized and empowered to enter into negotiations and to conclude agreements with any person, firm, or corporation for the exchange of electric energy generated and to be generated by the Authority in consideration of the conveyance by any such person, firm, or corporation of any property or property rights on which the Authority may construct a plant or plants for the production of electric energy, upon such terms, conditions, and limitations as the President shall deem "meet and proper".

There was no evidence introduced before the committee, either in public hearing or executive session, as to what is contemplated by this section.

Section 29 provides that all appropriations necessary to carry out the provisions of this act are hereby authorized. This project has been conservatively estimated as considerably in excess of $1,000,000,000.

It is the opinion of the minority that any additional appropriations needed will be obtained through the issuance of bonds rather than coming back to Congress for such additional appropriations. Thus while sacrifices are being made to balance the Budget, the public debt may be increased to an unlimited and potentially disastrous extent.

Section 27 provides, among other things, that it is "to aid further the proper use, conservation, and development of the natural resources of the Tennessee River Drainage Basin and of such adjoining territory as may be related to or materially affected by the developments consequent to this act".

There was no testimony given before the committee, either at public hearings or in executive session, as to what is contemplated by this language.

The same section further reads:

> To provide for the general welfare of the citizens of said areas.

There was no testimony given before the committee, either at public hearings or in executive session, as to what is contemplated by this language.

The same section also provides:

> The President is hereby authorized by such means or methods as he may deem proper within the limits of appropriations made therefor by Congress, to make such surveys of and general plans for said Tennessee River Basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds.

There was no testimony given before the committee, either at public hearings or in executive session, as to what is contemplated by this language, especially as to what extent it might involve Government funds.

The same section went further and states this is—

> All for the general purpose of fostering an orderly and proper physical, economic, and social development of said areas.

There was no testimony given before the committee, either at public hearings or in executive session, as to what is contemplated by this language.

The same section gives the President—

> In making said surveys and plans to cooperate with the States affected thereby.

No testimony was offered before the committee, either at public hearings or in executive session, as to what is contemplated by this language.

Section 28 of the amended Hill bill states:

> The President shall, from time to time, as the work provided for in this act progresses, recommend to Congress such legislation as he deems proper to carry

out the general purposes stated in said section and for the especial purpose of bringing about in said Tennessee Drainage Basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control and for navigation purposes.

Which in the opinion of the minority is the limit of governmental jurisdiction.

Yet, section 28 also provides for the maximum generation of electric power consistent with flood control and navigation and for such items as the following:

(1) The proper use of marginal lands.

There was no testimony offered before the committee, either in public hearings or in executive session, to show what is contemplated by this language:

(2) The proper method for reforestation of all lands in said drainage basin suitable for reforestation.

There was no testimony offered before the committee, either in public hearings or executive session, to show what is contemplated by this language:

(3) The most practical method of improving agricultural conditions in the valleys of said drainage basin.

There was no testimony offered before the committee, either in public hearings or in executive session, to show what is contemplated by this language:

(4) The economic and social well-being of the people living in said river basin and all adjacent territory.

There was no testimony offered before the committee, either in public hearing or executive session, to show what is contemplated by this language.

Flood control and navigation are matters which naturally come under the direction of the Army engineers and

at no time during the hearings on this bill were any of the Army engineers called before the committee to testify on any of these matters. Neither were there any communications from the Secretary of War, or anyone connected with the Department of War, sent to the committee on this subject.

We feel that if the President has a definite program with reference to items numbered 1, 2, 3, and 4, above, the committee should have had the benefit of the experience and knowledge of the heads of the various departments affected or members of their respective staffs.

It will be seen that the bill effectually conceals its real purposes and aims and commits the country to the expenditure of vast sums of money, the amount of which can only be imagined, and, at a time when agriculture and industry are prostrate and our citizens staggering under the burden of governmental debts, even though this gigantic project will probably be financed by the sale of Government bonds —thereby adding to our large national debt.

HARRY C. RANSLEY.
T. C. COCHRAN.
E. W. GOSS.
VINCENT CARTER.
W. G. ANDREWS.
DONALD H. MCLEAN.

SECTION C

EXCERPTS FROM PERTINENT APPROPRIATION ACTS AND COMMITTEE REPORTS

The following pages contain copies of those parts of the annual appropriation acts which deal with the Tennessee Valley Authority.

In addition, whenever parts of the reports of the Appropriation Committees of the House or Senate or of the conference reports on the appropriation measures have discussed the provisions for the Tennessee Valley Authority, copies of those parts have been set out immediately following the particular appropriation law to which they relate.

ACT OF JUNE 16, 1933

FOURTH DEFICIENCY ACT, FISCAL YEAR 1933 (H.R. 6034), PUBLIC, No. 77, 73d CONGRESS, 1st SESSION (48 STAT. 274):

NATIONAL INDUSTRIAL RECOVERY AND TENNESSEE VALLEY AUTHORITY

For the purpose of carrying into effect the provisions of the Act entitled "An Act to encourage national industrial recovery, to foster fair competition, and to provide for the construction of certain useful public works, and for other purposes", approved June 16, 1933, and also for the purpose of carrying into effect the provisions of the Act entitled "An Act for the relief of unemployment through the performance of useful public work, and for other purposes", approved March 31, 1933, and for each and every object thereof, to be expended in the discretion and under the direction of the President, to be immediately available, and except as hereinafter provided to remain available until June 30, 1935, $3,300,000,000; of which not to exceed $50,000,000 shall be available to the board of directors of the Tennessee Valley Authority, and to

remain available until expended, for the purpose of carrying out the provisions of the Act of Congress entitled "The Tennessee Valley Authority Act of 1933", approved May 18, 1933, including the acquisition of necessary land, the clearing of such land, relocation of highways, and the construction and/or purchase of transmission lines and other facilities, the construction of the Cove Creek Dam and powerhouse and all other necessary works authorized by said Act, and for printing and binding, law books, books of reference, newspapers, periodicals, purchase, maintenance and operation of passenger-carrying vehicles, rents in the District of Columbia and elsewhere and all necessary salaries and expenses connected with the organization, operation, and investigations of the Tennessee Valley Authority, including reimbursements for any expenses prior to the enactment of this appropriation incurred at the direction of the President [48 Stat. at 275].

ACT OF JUNE 19, 1934

EMERGENCY APPROPRIATION ACT, FISCAL YEAR 1935 (H.R. 9830), PUBLIC, No. 412, 73d CONGRESS, 2d SESSION (48 STAT. 1021):

EXECUTIVE

For an additional amount for carrying out the purposes of the Act entitled "An Act for the relief of unemployment through the performance of useful public work, and for other purposes", approved March 31, 1933 (48 Stat. 22); the Federal Emergency Relief Act of 1933, approved May 12, 1933 (48 Stat. 55); the Tennessee Valley Authority Act of 1933, approved May 18, 1933 (48 Stat. 58); and the National Industrial Recovery Act, approved June 16, 1933 (48 Stat. 195); and including $325,000 for an addition to the Executive Office Building and for the furnishings and equipment thereof; $899,675,000, to be allocated by the President for further carrying out the purposes of the aforesaid Acts and to remain available until June 30, 1935: *Provided,* That not exceeding $500,000,000 in the aggregate of any savings or unobligated balances in funds of the Reconstruction Finance Corporation may, in the discretion of the President, be transferred and applied to the purposes of the Federal Emergency Relief Act of 1933 and/or title II of the National Industrial Recovery Act, and any unobligated balances in appropriations (including allocations of appropriations) of the Federal Emergency Administration of Public Works may, in the discretion of the President, be transferred and applied to the purposes of such Federal Emergency Relief Act of 1933: *Provided further,* That the amounts to be made available under the authority of this paragraph for public works under the National Industrial Recovery Act shall not exceed in the aggregate $500,000,000 [48 Stat. at 1055-1056].

ACT OF AUGUST 12, 1935

SECOND DEFICIENCY APPROPRIATION ACT, FISCAL YEAR 1935 (H.R. 8554), PUBLIC, No. 260, 74th CONGRESS, 1st SESSION (49 STAT. 571):

TENNESSEE VALLEY AUTHORITY

For the purpose of carrying out the provisions of the Act entitled "The Tennessee Valley Authority Act of 1933", approved May 18, 1933 (48 Stat. 58), including the continued construction of Norris Dam, Wheeler Dam, Pickwick Landing Dam, and the beginning of construction on a dam at or near Guntersville, Alabama, and a dam at or near Chickamauga Creek, both on the Tennessee River, and a dam on the Hiwassee River, a tributary of the Tennessee River, at or near Fowlers Bend, and the continuation of preliminary investigations as to the location and desirability of a dam at or near Aurora Landing and a dam at or near Whites Creek, and the acquisition of necessary land, the clearing of such land, relocation of highways, and the construction or purchase of transmission lines and other facilities, and all other necessary works authorized by said Act, and for printing and binding, law books, books of reference, newspapers, periodicals, purchase, maintenance, and operation of passenger-carrying vehicles, rents in the District of Columbia and elsewhere, and all necessary salaries and expenses connected with the organization, operation, and investigations of the Tennessee Valley Authority, $36,000,000: *Provided*, That this appropriation and all appropriations, allotments, and other funds made available heretofore to the Tennessee Valley Authority, including any unexpended balances remaining from the appropriation of $50,000,000 made to the Tennessee Valley Authority by the Fourth Deficiency Act, fiscal year 1933, the allocation of $25,000,000 made to the Tennessee Valley Authority under the Emergency Appropriation Act, fiscal year 1935, and the receipts of the Tennessee Valley Authority from all sources, except as limited by section 26 of the Tennessee Valley Authority Act approved May 18, 1933 (48 Stat. 58), shall be covered into and accounted for as

one fund to be known as the "Tennessee Valley Authority Fund" and shall remain available until June 30, 1936: *Provided further,* That not to exceed $1,000,000 shall be expended on the dam on the Hiwassee River [49 Stat. at 596-597].

Report (No. 1261) of Committee on Appropriations, House of Representatives, 74th Congress, 1st Session, June 19, 1935, on H.R. 8554, Second Deficiency Appropriation Bill, fiscal year 1935:

"*Tennessee Valley Authority.*—The amount recommended for the Tennessee Valley Authority is $34,675,192, which is $15,324,808 less than the $50,000,000 allocation under the $300,000,000 general item. In connection with this reduction it is fair to state that the T. V. A. when appearing before the committee suggested a reduction in their estimate from $50,000,000 to $42,305,192 and this latter sum was the subject of the committee's consideration in making the appropriation. From this latter amount the committee has made a further reduction of $7,630,000. The estimate of $50,000,000 also contemplated the use of an anticipated unobligated balance on June 30, 1935, of $10,624,338.

"The T. V. A. has previously received an appropriation of $50,000,000 from Congress and an allotment of $25,000,000 by the President from emergency appropriations made for the current fiscal year. This $75,000,000 plus the amount in this bill bring their total appropriation to $109,675,192. While the amount allowed for 1936 is $34,675,192, the T. V. A. estimates there will be on hand on June 30, 1935, an unobligated balance from previous funds of $10,624,338, making the amount to be available for obligation in the fiscal year 1936, $45,299,530.

"In making the reduction of $7,630,000 in the program submitted by the T. V. A. in the revised estimates found on pages 475 and 476 of the hearings, the committee has approved the items as appearing in that statement for the fiscal year 1936 under the navigation and flood-control program for completion of Norris Dam and Reservoir and Wheeler Dam and Reservoir, for continuation of work on the Pickwick Landing Dam and Reservoir, for commencement of work on two main river-dam projects, namely, the

Guntersville Dam and the Chickamauga Dam, and the continuation of the general investigations of water resources of the Tennessee Basin, but postponed commencement of Hiwassee Dam. This postponement, together with reductions in other classes of contemplated expenditures, accounts for the $7,630,000 of reduction in the estimate.

"The committee has been advised by the T. V. A. that no purchases of transmission lines and other facilities are contemplated from this appropriation and no funds except approximately $215,000 are included in the estimates that would be affected by pending litigation. The $215,000 referred to is a part of the $7,630,000 which the committee has eliminated. If the litigation is decided favorably to the T. V. A. and this sum ultimately is to be expended as planned in Alabama, it can be provided at the coming session of Congress if it is not susceptible of being financed from funds then in hand.

"In providing for commencement of construction of the Guntersville Dam, at an estimated total cost of $17,000,000, and the Chickamauga Dam, at an estimated total cost of $15,000,000, and the postponement of the Hiwassee Dam which is estimated to cost $12,000,000, the committee is actuated by a desire to provide the projects in the program which seem to them to be most beneficial to flood control and navigation. The navigation program of the Tennessee River ultimately contemplates a 9-foot channel from the confluence of the Tennessee and the Ohio Rivers at Paducah, Ky., to Knoxville, Tenn. The construction of the Guntersville Dam will provide a 7-foot channel from Paducah to Chattanooga. The Chickamauga Dam will be of assistance in providing a 7-foot channel for about 70 miles above Chattanooga, but the main benefit to accrue from the Chickamauga Dam is in flood control. The city of Chattanooga sustains a very large proportion of the estimated average total annual damage from floods in the Tennessee Basin. Both the Guntersville and Chickamauga Dams are susceptible of power development, but such installations are not contemplated until there is a need for its generation. The Aurora Dam on the main river just above Paducah is considered essential to a 9-foot channel. At the present time its practicability has not been determined due to uncertain foundation conditions existing in that region. It has a place in the ultimate program but not during the fiscal year 1936.

"The net revenues of the T. V. A. from the electricity program available for interest, amortization, construction, and other purposes are estimated for the fiscal year 1936 at $713,000. However, in arriving at this sum there are gross revenues of $342,000 through charges to other T. V. A. activities for electricity to be furnished, so that only approximately half of the $713,000 is actual net income. Pending litigation, particularly that involving the situation at Knoxville, has served very materially to lessen the anticipated revenues from the sale of electricity and is responsible for the relatively small showing on the revenue side. Figures placed in the hearings show a very great increase in the consumption of electricity when it is made available to users at the reasonable T. V. A. rates. The experience of greatly increased use resulting from lower rates which has occurred in other communities has been found to repeat itself in the Tennessee Valley.

"The committee has made such investigation of the purposes of the T. V. A. through its hearings as time would permit. There has been criticism of the Board for some of its action under the Tennessee Valley Authority Act. The law under which T. V. A. is operating is broad and requires the members of the Board to believe in the purposes and policies expressed in it.

"The committee believes the Board to be sincere and earnest in endeavoring to carry out the law. The future of the T. V. A. in some of its power aspects is involved in litigation pending in the appellate courts. Irrespective of the outcome of that litigation, the other primary purposes of the act, such as navigation, flood control, national defense, fertilizer experimentation, and agricultural and regional development, constitute a broad field. The amount recommended in this bill, as revised by the T. V. A. from its original figures and as curtailed by action of the committee, form a logical and more moderate program than was contemplated under earlier estimates. In postponing the Hiwassee Dam project and curtailing some of the other estimates, the committee believes that under the funds provided for the fiscal year 1936 ample progress can be made upon the purposes of the Tennessee Valley Authority Act. Hiwassee Dam has a part in navigation, flood control, and power development; but in the judgment of the committee, it is not essential this year" (pp. 10-12).

Report (No. 1085) of Committee on Appropriations, Senate, 74th Congress, 1st Session, July 15, 1935, on H.R. 8554, Second Deficiency Appropriation Bill, fiscal year 1935:

"The changes in the amounts of the House Bill recommended by the committee are as follows:

"INCREASES RECOMMENDED BY COMMITTEE

* * *

"TENNESSEE VALLEY AUTHORITY

"It is recommended by the committee that the following be inserted in the bill:

> * * * the continued construction of Norris Dam, Wheeler Dam, Pickwick Landing Dam, and the beginning of construction on a dam at or near Guntersville, Alabama, and a dam at or near Chickamauga Creek, both on the Tennessee River, and a dam on the Hiwassee River, a tributary of the Tennessee River, at or near Fowlers Bend, and the continuation of preliminary investigations as to the location and desirability of a dam at or near Aurora Landing, a dam at or near Whites Creek, and * * * *Provided further*, That not to exceed $1,000,000 shall be expended on the dams on the Hiwassee River * * *.

"The appropriation is increased from $34,675,192, as proposed by the House to $38,000,000—an increase of $3,324,808.00" (pp. 1-11).

Conference Report (H.Rept. 1715), 74th Congress, 1st Session, August 6, 1935, on H.R. 8554, Second Deficiency Appropriation Bill, fiscal year 1935:

"Amendments nos. 78, 79, and 80, relating to the Tennessee Valley Authority: Inserts the specification of projects proposed by the Senate modified so as to make clear that the specification of the Aurora Landing project and the Whites Creek project include only preliminary investigations as to each; appropriates $36,000,000 instead of $38,000,000 as proposed by the Senate and $34,675,192 as proposed by the House; and limits expenditures on the Hiwassee Dam to $1,000,000 instead of to '$1,000,000 exclusive of the purchase of overflowed land', as proposed by the Senate" (p. 8).

ACT OF JUNE 22, 1936

FIRST DEFICIENCY APPROPRIATION ACT, FISCAL YEAR 1936 (H.R. 12624), PUBLIC, No. 739, 74th CONGRESS, 2d SESSION (49 STAT. 1597):

TENNESSEE VALLEY AUTHORITY

For the purpose of carrying out the provisions of the Act entitled "The Tennessee Valley Authority Act of 1933", approved May 18, 1933 (U.S.C., title 16, ch. 12a) as amended by the Act approved August 31, 1935 (49 Stat., 1075-1081), including the continued construction of Norris Dam, Wheeler Dam, Pickwick Landing Dam, Guntersville Dam, and Chickamauga Dam and the beginning of construction on a dam on the Hiwassee River, a tributary of the Tennessee River, at or near Fowler Bend, and the continuation of preliminary investigations as to the appropriate location and type of a dam on the lower Tennessee River, and the acquisition of necessary land, the clearing of such land, relocation of highways, and the construction or purchase of transmission lines and other facilities, and all other necessary works authorized by such Acts, and for printing and binding, law books, books of reference, newspapers, periodical, purchase, maintenance, and operation of passenger-carrying vehicles, rents in the District of Columbia and elsewhere, and all necessary salaries and expenses connected with the organization, operation, and investigations of the Tennessee Valley Authority, fiscal year 1937, $39,900,000: *Provided*, That this appropriation and any unexpended balance on June 30, 1936, in the "Tennessee Valley Authority Fund, 1936", and the receipts of the Tennessee Valley Authority from all sources during the fiscal year 1937 (except as limited by section 26 of the Tennessee Valley Authority Act of 1933, as amended), shall be covered into and accounted for as one fund to be known as the "Tennessee Valley Authority Fund, 1937", to remain available until June 30, 1937, and to be available for the payment of obligations chargeable against the "Tennessee Valley Authority Fund, 1936" [49 Stat. at 1607].

Report (No. 2591) of Committee on Appropriations, House of Representatives, 74th Congress, 2d Session, May 7, 1936, on H.R. 12624, First Deficiency Appropriation Bill, fiscal year 1936:

"TENNESSEE VALLEY AUTHORITY

"The Budget for the fiscal year 1937, pages 83 and 84, contains an estimate of $43,000,000 for the Tennessee Valley Authority for the coming fiscal year. This sum, together with an estimated unobligated balance of $1,217,816 on June 30, 1936, made a total request for obligation for the fiscal year 1937 of $44,217,816, exclusive of net revenues from electricity. The committee has reduced the Budget estimate of $43,000,000 to $39,900,000, which sum with the unexpended balance will make available for obligation, exclusive of electricity revenues, a total for the fiscal year 1937 of $41,117,816. This is a reduction in the requested appropriation of $3,100,000. The amount of $41,117,816 provides for the following construction and other general classes of work of the Authority:

Purpose	1936 allocation	1937 allocation	Approved by committee
Flood control and navigation:			
Wilson Dam and Reservoir	$75,514	$39,000	$39,000
Norris Dam and Reservoir	13,969,557	573,000	573,000
Wheeler Dam and Reservoir	15,441,661	1,336,000	1,336,000
Pickwick Landing Dam and Reservoir	8,972,959	10,716,716	10,716,716
Hiawassee Dam and Reservoir	1,000,000	3,337,228	3,337,228
Guntersville Dam and Reservoir	2,375,024	8,006,372	8,006,372
McReynolds Dam and Reservoir	2,490,866	5,563,000	5,563,000
Surveys and investigations, other main river dams	550,000	720,000	650,000
Surveys and investigations, tributary dams	317,349	250,000	.....
Engineering investigations, land planning surveys, reforestation, malaria control, economic investigations in connection with navigation, and flood control	609,944	882,500	500,000
General maps and map records	752,830	775,000	400,000
Total, navigation and flood control	46,555,704	32,198,816	31,121,316
Electricity program—gross	6,222,662	7,125,000	7,125,000
Less net receipts from operations	608,097	1,500,000	1,500,000
Net chargeable to appropriation	5,614,565	5,625,000	5,625,000
National defense	581,602	1,360,000	360,000
Fertilizer and agricultural development	3,749,154	4,484,000	3,732,000
Regional studies, experiments, and demonstrations	461,588	450,000	225,000
Other undistributed expenditures	1,300,000	100,000	54,500
Grand total	$58,262,613	$44,217,816	$41,117,816

"The amount to be available for the next year's operations on an obligation basis, if the committee's recommendations are approved, represents a reduction from $58,262,613 for the fiscal year 1936 to $41,117,816, or a decrease of $17,144,797.

"From the foregoing table it will be noted that the committee has allowed the full amount estimated for the

construction of dams and reservoirs in connection with flood control and navigation. The construction projects have all previously been passed upon by Congress for appropriation and are all under construction with the exception of the Hiwassee Dam and Reservoir for which a commencement appropriation of $1,000,000 was made the last session of Congress. In connection with flood control and navigation, the committee has eliminated the estimate of $70,000 under surveys and investigations of other main river dams requested for the proposed location of dams at Watts Bar and Coulter Shoals on the upper Tennessee River and has included $650,000 for such investigations in connection with a proposed dam and reservoir on the lower Tennessee River. There has also been eliminated the estimate of $250,000 for surveys and investigations incident to the proposed location of other dams on the tributaries of the Tennessee River.

"The committee has also eliminated from the request of the Authority the provision which would make it possible for the Authority to determine whether to construct the dam on the Hiwassee River or, as an alternate project, a dam on the Little Tennessee River near Fontana, N. C., and has provided for proceeding with the Hiwassee Dam.

"A provision is also inserted changing the name of the Chickamauga Dam to that of "McReynolds Dam" in honor of Representative McReynolds of Tennessee in whose district the dam is located. The committee makes this recommendation in recognition of Mr. McReynolds long-standing interest in and earnest advocacy of the development of the Tennessee Valley and the regulation and improvement of the Tennessee River and its tributaries.

"The estimate for the allocation covering engineering investigations, land-planning surveys, reforestation, malaria control and sanitation, and economic investigations in connection with navigation and flood control is reduced from $882,500 to $500,000, a sum which is $109,944 less than the estimated allocation for this purpose for the current fiscal year, but $45,000 more than the expenditures for the same purpose in the fiscal year 1935.

"The amount for the general mapping program is reduced from $775,000 to $400,000 in the belief that it is not necessary to proceed as rapidly with this class of work as the Authority has been undertaking to do.

"The committee has cut from $450,000 to $225,000 the amount requested for regional studies, experiments, and

demonstrations. This appropriation covers a wide range of projects on which there has been proportionately too large an expenditure of funds consistent with the primary purpose for which the Authority was established.

"The committee has allowed the full amount of the appropriation of $5,625,000 for the development of the electricity program. This amount is estimated to be augmented by net revenues from operations of $1,500,000, making available a total of $7,125,000 for the electricity program. The principal portion of this sum is for transmission lines to reach markets for the sale of electricity which will result in the production of additional revenue.

"The net revenues from operations of the electricity program, which are expendable for interest, amortization, construction, and so forth, in connection with that program, are estimated to increase from $608,097 for 1936 to $1,500,000 for the fiscal year 1937. These latter sums are not included in the total of the gross figures for appropriations and allocations for the entire T. V. A., program because of their direct applicability to the electrical program.

"The amount recommended for fertilizer manufacture and demonstrations in the use of fertilizer is $3,732,000. While this amount is $752,000 less than the allocation requested in the estimates, it is approximately the same amount that is being expended for such purposes in the current fiscal year. Fertilizer is not being manufactured for general distribution or sale. It is being utilized in conducting experiments and demonstrations in the use and application of the products developed by the T. V. A. and the committee feels that such studies can be carried on advantageously and with great benefit to agriculture generally with the amount of the current appropriation.

"A general item of undistributed expense in the requested amount of $100,000 has been reduced to $54,500.

"The amount for the national defense program is recommended at $360,000, which is $1,000,000 less than the estimated allocation. The amount for mineral investigations is left at $100,000 instead of $200,000 as requested by the Authority. The sum granted is the same as the allocation for the current year. From this request the committee has also eliminated the estimate of $900,000 submitted for placing in operating readiness and putting in stand-by condition, the ammonium nitrate portion of nitrate plant no. 2. This is the first time that an estimate

for this purpose has been presented although provided for in section 5 (g) of the Tennessee Valley Authority Act and the committee was not satisfied at this time of the advisability and necessity of making the investment. It believes that further cooperative study can profitably be given to the project, both on the part of the War Department and the Tennessee Valley Authority, without in any wise jeopardizing our preparedness for national defense.

"A provision is inserted establishing the Tennessee Valley Authority fund, 1937. This fund will consist of the unexpended balance in the Tennessee Valley Authority fund, 1936, created at the last session, plus receipts in the fiscal year 1937 (except as restricted by sec. 26 of the Tennessee Valley Authority Act as amended), and plus the appropriation carried in this bill. The practical effect of the provision is to carry forward and merge with the appropriation in this bill the balances in previous appropriations together with the receipts and make the new fund available until June 30, 1937, for discharging obligations outstanding against the Tennessee Valley Authority fund, 1936, and for the purposes of new obligations in the fiscal year 1937. The fund has decided accounting advantages and will in nowise affect such control over appropriations for the Tennessee Valley Authority as Congress now possesses under existing law" (pp. 12-15).

Report (No. 2108) of Committee on Appropriations, Senate, 74th Congress, 2d Session, May 27, 1936, on H.R. 12624, First Deficiency Appropriation Bill, fiscal year 1936:

"The changes in the amounts of the House bill recommended by the committee are as follows:

"INCREASE

* * *

"TENNESSEE VALLEY AUTHORITY:

"Construction, including a dam at or near Gilbertsville, Ky., and a dam at or near Watts Bar, Tenn. $1,200,000.00

"The committee recommends that the name of Chickamauga Dam be not changed to McReynolds Dam.

"It is also recommended that the following language be stricken from the bill: 'and the continuation of preliminary investigations as to the appropriate location and type of a dam on the lower Tennessee River'" (pp. 1, 3).

Conference Report (H.Rept. 3013), 74th Congress, 2d Session, June 17, 1936, on H.R. 12624, First Deficiency Appropriation Bill, fiscal year 1936:

"Amendment no. 28, relating to the Tennessee Valley Authority: Strikes out, as proposed by the Senate, the language of the House bill changing the name of the Chickamauga Dam" (p. 10).

ACT OF MAY 28, 1937

SECOND DEFICIENCY APPROPRIATION ACT, FISCAL YEAR 1937 (H.R. 6730), PUBLIC, No. 121, 75th CONGRESS, 1st SESSION (50 Stat. 213):

TENNESSEE VALLEY AUTHORITY

For the purpose of carrying out the provisions of the Act entitled "The Tennessee Valley Authority Act of 1933", approved May 18, 1933 (U.S.C., title 16, ch. 12a), as amended by the Act approved August 31, 1935 (49 Stat., 1075-1081), including the continued construction of Pickwick Landing Dam, Guntersville Dam, Chickamauga Dam, and Hiwassee Dam, and for construction of a dam at or near Gilbertsville, Kentucky, and for preliminary investigations of sites for dams at or near Watts Bar and at or near Coulter's Site on the Tennessee River, Tennessee, and the acquisition of necessary land, the clearing of such land, relocation of highways, and the construction or purchase of transmission lines and other facilities, and all other necessary works authorized by such Acts, and for printing and binding, law books, books of reference, newspapers, periodicals, purchase, maintenance, and operation of passenger-carrying vehicles, rents in the District of Columbia and elsewhere, and all necessary salaries and expenses connected with the organization, operation, and investigations of the Tennessee Valley Authority, and for examination of estimates of appropriations and activities in the field, fiscal year 1938, $40,166,270: *Provided,* That this appropriation and any unexpended balance on June 30, 1937, in the "Tennessee Valley Authority fund, 1937", and the receipts of the Tennessee Valley Authority from all sources during the fiscal year 1938 (except as limited by section 26 of the Tennessee Valley Authority Act of 1933, as amended), shall be covered into and accounted for as one fund to be known as the "Tennessee Valley Authority fund, 1938", to remain available until June 30, 1938, and to be available for the payment of obligations chargeable against the "Tennessee

Valley Authority fund, 1937": *Provided further,* That in addition to the amount herein appropriated, the Tennessee Valley Authority is hereby authorized to incur obligations and enter into contracts for the procurement of equipment to be installed in dams and power-houses in an amount not in excess of $4,000,000, and this action shall be deemed a contractual obligation of the Tennessee Valley Authority and the United States for payment of the cost thereof [50 Stat. at 217].

Report (No. 699) of Committee on Appropriations, House of Representatives, 75th Congress, 1st Session, April 28, 1937, on H.R. 6730, Second Deficiency Appropriation Bill, fiscal year 1937:

"TENNESSEE VALLEY AUTHORITY

"The appropriations for the Tennessee Valley Authority appear in this bill, instead of a regular annual appropriation bill, through an assignment of the work of the committee made by former Chairman Buchanan.

"The Budget estimates are found on page 113 of the Budget for the fiscal year 1938, transmitted to Congress in January last. The amount requested is $43,000,000, in direct appropriation and in addition authority to enter into contracts subject to future appropriations in the amount of $5,500,000, making a total of obligating privilege requested by the Authority for the fiscal year 1938 of $48,500,000.

"The committee recommendations comprise a direct appropriation of $40,166,270 and a contract authorization of $4,000,000, making a total to be available for obligation of $44,166,270. This sum represents a reduction in the total requested of $4,333,730, consisting of $2,833,730 reduction in the direct appropriation and $1,500,000 reduction in the amount of the contract authorization.

"The amount available for obligation in the current fiscal year is $48,690,702 consisting of $39,900,000 of direct appropriation for such fiscal year and an unobligated balance of $8,790,702 carried forward from the fiscal year 1936.

"The total amount to be available for obligation in the fiscal year 1938 under this bill, $44,166,270, compared with the amount available for obligation in the fiscal year 1937, $48,690,702, shows a decrease of $4,524,432.

"The following tabulation is a comparative statement by projects and classes of work of the estimated obligations for the fiscal year 1937, the budget recommendation for obligation for the fiscal year 1938, the amounts approved by the committee, and the increases or decreases between the committee's approvals and the budget estimates and the 1937 amounts:

COMPARISON OF ESTIMATED OBLIGATIONS

PURPOSE	Estimated Obligations Fiscal Year 1937	Estimated Obligations Fiscal Year 1938	Amounts of The Estimated 1938 Obligations Approved By The Committee	Increase (†) Or Decrease (—), Amount Approved By The Committee Compared With Estimated 1937 Obligations	Increase (†) Or Decrease (—), Amount Approved By The Committee Compared With Estimated 1938 Obligations
General investigations projects:					
General water-control investigations	$ 283,198	$ 408,626	$ 283,198	.....	—$125,428
Preliminary projects investigations:					
Gilbertsville, Ky., dam	656,383	742,439	742,439	†$ 86,056	.....
Watts Bar, Tenn., dam	.....	216,628	.....	.....	—216,628
Coulter Shoals Dam, Tenn	4,074	230,532	.....	.....	—230,532
Other tributary dam projects	.....	382,450	.....	.....	—382,450
Electricity research and development	226,567	216,200	216,200	—10,367	.....
General mapping and map records	452,262	318,500	318,500	—133,762	.....
Total general investigations	$1,622,484	$2,515,375	$1,560,337	—$ 62,147	—$955,038
Structures and improvements:					
Wilson Dam and Reservoirs, additions and betterments	$ 45,000	$ 135,000	$ 135,000	†$ 90,000	.....
Norris Dam and Reservoir:					
Original project	1,403,366	130,399	130,399	—1,272,967	.....
Additions and betterments	220,985	73,149	73,149	—147,836	.....
Wheeler Dam and Reservoir:					
Original project	2,161,823	137,264	137,264	—2,024,559	.....
Additions and betterments	197,485	51,903	51,903	—145,582	.....
Pickwick Landing, Hiwassee, Guntersville, and Chickamauga, Dams and reservoirs, continuation	31,854,431	38,197,032	35,062,182	†3,207,751	—3,134,850
Total, structures and improvements	$35,883,090	$38,724,747	$35,589,897	—$293,193	—$3,134,850
Electrical program:					
Electrical plant and equipment (transmission lines, substations, and distribution properties)	$5,375,000	$5,100,000	$5,100,000	—$ 275,000	.....
Electricity operating expenses and deductions	1,548,639	1,795,302	1,795,302	†246,663	.....
Total plant, equipment, and operations	6,923,639	6,895,302	6,895,302	—28,337	.....
Less estimated electricity revenues	1,821,000	3,775,000	3,775,000	†1,954,000	.....
Net chargeable to appropriations	$5,102,639	$3,120,302	$3,120,302	—$1,982,337	.....
Fertilizer and soil conservation program	$ 3,897,402	$3,506,600	$ 3,445,000	—$ 452,402	—$ 61,600
National-defense program	319,774	225,734	200,734	—119,040	—25,000
Regional studies, experiments, and demonstrations	273,231	357,242	200,000	—73,231	—157,242
Undistributed expenses	1,592,082	50,000	50,000	—1,542,082	.....
Grand total obligations	$48,690,702	$48,500,000	$44,166,270	—$4,524,432	—$4,333,730
Method of financing estimated obligations:					
Direct appropriations [1]	$48,690,702	$43,000,000	$40,166,270	—$8,524,432	—$2,833,730
Contract authorization in addition to direct appropriation	.....	5,500,000	4,000,000	†4,000,000	—1,500,000
Grand total obligations [1]	$48,690,702	$48,500,000	$44,166,270	—$4,524,432	—$4,333,730

1—Consists of $39,900,000 appropriated for the fiscal year 1937 and $8,790,702 carried forward unobligated from the fiscal year 1936.

"The committee has denied the increase of $125,428 for general water control investigations, leaving the amount at the current appropriation of $283,198.

"An increase of $86,056 is allowed for continued investigation of the type and location of a dam on the lower Tennessee River in the vicinity of Gilbertsville, Ky., the amount for such purpose being increased from $656,383 of estimated obligation for the current year to $742,439 for the next fiscal year. In connection with this project the committee was urged to include provision in the bill of a small amount for commencement of construction of the project. The Gilbertsville Dam and Reservoir are presently estimated to cost $112,000,000. It is an important project in the program for unified control of the Tennessee River and its influence upon control of floods on the Ohio and the Mississippi. No Budget estimate was included for commencement of actual work and the committee was advised that the project would not be ready for construction for another year. The committee felt that inasmuch as there was contemplated to be expended for the fiscal year 1938 approximately $750,000 for continued investigation that it was not wise to include any funds for actual commencement until full and complete investigation of all phases had been completed. The preliminary data concerning the project indicate a dam 8,300 feet long with a maximum lock lift of 68 feet and a reservoir 184 miles long with a normal area of 148,000 acres.

"The committee has also rejected requested Budget allocations of $216,628 and $230,532 for further investigation of dams on the upper Tennessee River at Watts Bar and Coulter Shoals, respectively, both in Tennessee, and has also disallowed the sum of $382,450 for preliminary investigations of possible sites for dams and reservoirs on the major tributaries of the Tennessee River—the French Broad, the Holston, and Little Tennessee—and upon the Duck and Elk Rivers, minor tributaries, in connection with the possibilities of navigation for the transportation of phosphate rock.

"Under the heading of structure and improvements there is made available an allocation for obligation of $35,589,987, which is $293,193 less than the current year's estimated obligations and $3,134,850 less than the requested allocations for the next fiscal year. This latter sum

consists of $1,500,000 of contract authorization and $1,634,850 of direct appropriation. An increase of $90,000 is indicated for additions and betterments at Wilson Dam. Decreases of considerable size are shown for the Norris and Wheeler Dam projects due to completion of construction.

"Four major projects on the main river are now in process of construction—Guntersville Dam and Reservoir, Alabama; Hiwassee Dam and Reservoir, North Carolina; and Pickwick Landing Dam and Reservoir and Chickamauga Dam and Reservoir, both in Tennessee. The amount recommended for these four projects is $35,062,182 as against $31,854,431 for the current year, an increase of $3,207,751, and $3,134,850 less than the budgeted allocation for the fiscal year 1938. The decrease of $3,134,850 consists of $1,634,850 decrease in the direct appropriation and $1,500,000 reduction in the amount requested in the contract authorization for these four projects. By the end of the current fiscal year it is estimated that Pickwick Landing project will be 75 percent completed, the Guntersville project 33 percent completed, and the Hiwassee and Chickamauga projects each 25 percent completed.

"For electrical plant and equipment, which comprises additional transmission lines, substations, and investment in distribution properties, the allocation is approved in the amount of $5,100,000, which is $275,000 less than the current figure. The lines and stations proposed to be established are to be selected from a list of desired extensions set forth in the hearings and totaling approximately $8,500,000.

"The operating expenses in connection with sale of electricity are expected to increase from $1,548,639 to $1,795,302, or by $246,663. As against this increase in expense, revenues from the sale of electricity are expected to increase from $1,821,000 for 1937 to $3,775,000, or in the sum of $1,954,000. This difference between estimated operating expense and estimated revenue produces an excess of revenue for 1938 of $1,979,698 which will be available to apply against the estimated cost of the navigation, flood control, and hydroelectric program for 1938 and has been taken into consideration in framing the 1938 Budget request for appropriations.

"The committee has included $3,445,000 for the fertilizer and soil conservation program which is the amount of sug-

gested budget allocation less $61,600. This reduction is effected by reducing from $138,600 to $75,000, the sum suggested for research and development in farm equipment. The committee believes that too large a sum was proposed to be expended for this type of investigation in proportion to the other projects of the Authority.

"The amount for the national defense program is approved in the sum of $200,734, which is $119,040 less than the current allotment and $25,000 under the budget figure. In this instance the proposed allotment for mineral investigations is reduced from $50,000 to $25,000.

"The entire allocation for regional studies, experiments, and demonstrations is decreased from the Budget figure of $357,242 to $200,000, a cut of $157,242 under the estimates and $73,231 under the current allotment. The committee has made this decrease in the belief that while most of these investigations are desirable in connection with the social aspects of the development of the valley and the improvement of the condition of a segment of its population, they may proceed at a lower financial level for the entire group. If special emphasis needs to be stressed for some particular phase of the work the Board may decide to drop some investigation entirely and concentrate the funds on some more important aspect.

"The allocation for undistributed expense is set at the Budget figure of $50,000 which is a decrease of $1,542,082 under the current amount.

"In the decrease of $2,833,730 in the direct appropriation and $1,500,000 in the contract authorization the committee does not indicate any hostility to the purpose and intent of the Tennessee Valley Authority Act. They do believe that the work can be carried on in the coming fiscal year with the funds allowed and with suitable progress in the several lines of endeavor by the exercise of proper economy and curtailment of unnecessary expenditure. In making this decrease the committee has also in mind that there was an unallotted balance of approximately $500,000 in the Authority's funds as of a recent date and there is also a fund of $1,000,000 which the Authority has reserved as a continuing fund derived from revenues for emergency expenses and to insure continuous operation.

"In indicating approval of various allocations as submitted in connection with the 1938 estimates, the commit-

tee wishes it understood that should the Authority feel that it is necessary to divert some of those amounts to the construction of Guntersville, Pickwick Landing, Hiwassee, and Chickamauga projects there is that flexibility in the funds.

"If the amounts made available in this bill are approved, there will have been available to the Authority for obligation, from appropriations and revenues, a total to June 30, 1938, of approximately $196,000,000. The program of the Authority, as outlined to the committee at the last session, indicated a total cost of all projects and development of $479,000,000. The total cost as revised at the present session is $520,000,000" (pp. 2-6).

Report (No. 527) of Committee on Appropriations, Senate, 75th Congress, 1st Session, May 10, 1937, on H.R. 6730, Second Deficiency Appropriation Bill, fiscal year 1937:

"The changes in the amounts of the House bill recommended by the committee are as follows:

• • •

"DECREASE

"Tennessee Valley Authority $4,000,000.00

"It is recommended by the committee that the following language be stricken from the bill:

and the continuation of preliminary investigations as to the appropriate location and type of a dam on the lower Tennessee River

and the following inserted in lieu thereof:

and for construction of a dam at or near Gilbertsville, Kentucky, and for preliminary investigations of sites for dams at or near Watts Bar and at or near Coulter's Site on the Tennessee River, Tennessee.

"It is recommended by the committee that the following language be included in the bill:

Provided further, That in addition to the amount herein appropriated, the Tennessee Valley Authority is hereby authorized to incur obligations and enter into contracts for the procurement of equipment to be installed in dams and power-houses in an amount not in excess of $4,000,000, and this action shall be deemed a contractual obligation of the Tennessee Valley Authority and the United States for payment of the cost thereof'' (pp. 1-3).

Conference Report (H.Rept. 835), 75th Congress, 1st Session, May 19, 1937, on H.R. 6730, Second Deficiency Appropriation Bill, fiscal year 1937:

"Amendments nos. 8 and 9, relating to the Tennessee Valley Authority: Appropriates $40,166,270, as proposed by the Senate, instead of $44,166,270, as proposed by the House, and inserts the language, proposed by the Senate, for commencement of construction of the dam at or near Gilbertsville, Ky., and for preliminary investigations of sites for dams at or near Watts bar and at or near Coulter Shoals, both in Tennessee. In connection with the reduction of $4,000,000 in direct appropriation by Senate amendment no. 9, the managers on the part of the House report in disagreement Senate amendment no. 10, a contract authorization of $4,000,000 stricken from the bill in the House, in which concurrence will be recommended to replace the reduction of $4,000,000 of direct appropriation above referred to" (p. 3).

ACT OF AUGUST 25, 1937

THIRD DEFICIENCY APPROPRIATION ACT, FISCAL YEAR 1937 (H.R. 8245), PUBLIC, No. 354, 75th CONGRESS, 1st SESSION (50 Stat. 755):

TENNESSEE VALLEY AUTHORITY

Tennessee Valley Authority Fund: The appropriation under this head for the fiscal year 1938, contained in the Second Deficiency Appropriation Act, fiscal year 1937, shall, in addition to the objects specified under that head, be available for the reconstruction and relocation of the George Sam Houston Bridge across the Tennessee River at Guntersville, Alabama [50 Stat. at 759].

ACT OF MAY 23, 1938

INDEPENDENT OFFICES APPROPRIATION ACT, FISCAL YEAR 1939 (H.R. 8837), PUBLIC, No. 534, 75th CONGRESS, 3d SESSION:

TENNESSEE VALLEY AUTHORITY

For the purpose of carrying out the provisions of the Act entitled "The Tennessee Valley Authority Act of 1933", approved May 18, 1933 (16 U. S. C. ch. 12a), as amended by the Act approved August 31, 1935 (49 Stat. 1075-1081), including the continued construction of Pickwick Landing Dam, Guntersville Dam, Chickamauga Dam, and Hiwassee Dam, and for construction of a dam at or near Gilbertsville, Kentucky, and for preliminary investigations of sites for dams at or near Watts Bar and at or near Coulter Shoals on the Tennessee River, Tennessee, and the acquisition of necessary land, the clearing of such land, relocation of highways, and the construction or purchase of transmission lines and other facilities, and all other necessary works

authorized by such Acts, and for printing and binding, law books, books of reference, newspapers, periodicals, purchase, maintenance, and operation of passenger-carrying vehicles, rents in the District of Columbia and elsewhere, and all necessary salaries and expenses connected with the organization, operation, and investigations of the Tennessee Valley Authority, and for examination of estimates of appropriations and activities in the field, fiscal year 1939, $40,000,000: Provided, That this appropriation and any unexpended balance on June 30, 1938, in the "Tennessee Valley Authority fund, 1938", and the receipts of the Tennessee Valley Authority from all sources during the fiscal year 1939 (except as limited by section 26 of the Tennessee Valley Authority Act of 1933, as amended), shall be covered into and accounted for as one fund to be known as the "Tennessee Valley Authority fund, 1939", to remain available until June 30, 1939, and to be available for the payment of obligations chargeable against the "Tennessee Valley Authority fund, 1938" and for contractual obligations for the procurement of equipment as authorized in the Second Deficiency Appropriation Act, fiscal year 1937: Provided further, That in addition to the amount herein appropriated, the Tennessee Valley Authority is hereby authorized to incur obligations and enter into contracts for the procurement of equipment to be installed in dams and power-houses in an amount not in excess of $4,000,000, and this action shall be deemed a contractual obligation of the Tennessee Valley Authority and the United States for payment of the cost thereof [p. 20].

Report (No. 1662) of Committee on Appropriations, House of Representatives, 75th Congress, 3d Session, January 6, 1938, on H.R. 8837, Independent Offices Appropriation Bill, fiscal year 1939:

"TENNESSEE VALLEY AUTHORITY

"The amount of the 1938 appropriation for the Tennessee Valley Authority is $40,166,270, plus a contractual authorization of $4,000,000. The Budget estimate for 1939 is $40,000,000 and a contractual authorization of $4,000,000. The accompanying bill provides $37,087,000 for 1939 and includes the requested authority to contract.

"The amount in the bill is $3,079,270 less than the 1938 appropriation and is a reduction under the Budget of $2,913,000.

"*Gilbertsville Dam.*—The committee has applied $2,613,000 of the cut to the Gilbertsville Dam, for which there was alloted $2,898,000 of which $185,000 was set up for "project investigations" the remainder being for construction on the dam and various other items incident to such construction. The committee has eliminated all items incident to construction and has allowed an increase of $100,000, or a total of $285,000, for "project investigations."

"*Fertilizer and soil conservation program.*—The committee has applied the remaining $300,000 of the reduction to certain items under the fertilizer and soil conservation program, as follows:

Item	Amount estimated	Amount of reduction
Chemical engineering research and experimentation	$350,000	$100,000
Controlled soil and fertilizer investigations	200,000	50,000
Research and development of farm equipment	125,000	75,000
Reforestation and erosion control.	225,000	75,000"

(pp. 13-14)

Report (No. 1303) of Committee on Appropriations, Senate, 75th Congress, 3d Session, January 17, 1938, on H.R. 8837, Independent Offices Appropriation Bill, fiscal year 1939:

"The changes in the amounts of the House bill recommended by the committee are as follows:

"INCREASE

"TENNESSEE VALLEY AUTHORITY

"To carry out the provisions of the 'Tennessee Valley Authority Act of 1933'.....$2,763,000

"It is recommended by the committee that the following language be inserted in the bill:

and for construction of a dam at or near Gilbertsville, Kentucky _____

"Total increase .....$2,763,000" (p. 2).

Conference Report (H.Rept. 1906), 75th Congress, 1st Session, March 7, 1938, on H.R. 8837, Independent Offices Appropriation Bill, fiscal year 1939:

"IN DISAGREEMENT

• • •

"Amendments Nos. 26 and 27, Tennessee Valley Authority: Restores the House cut of $2,613,000 for the beginning of the construction of a dam at or near Gilbertsville, Ky., where the House had provided $285,000 for further study of the project only; and restores the House cut of $100,000 for chemical-engineering research and experimentation, and the House cut of $50,000 for soil and fertilizer investigations—a total restoration by the Senate of $2,763,000.

• • •

"Amendment No. 37, relating to certain employees compensated at the rate of $5,000 or more per annum: The amendment is as follows:

Sec. 6. No part of any appropriation contained in this Act or authorized hereby to be expended shall be used to pay the compensation of any experts or attorneys under any independent establishment, except the Tennessee Valley Authority, of the Government of the United States (except persons now in the employ of the Government and persons heretofore or hereafter appointed under the civil-service laws), the rate of which is $5,000 or more per annum, who shall not have been appointed by the President, by and with the advice and consent of the Senate."

(pp. 5-6)

Conference Report (H.Rept. 2222), 75th Congress, 3d Session, April 25, 1938, on Appropriations for Executive Office and Sundry Independent Executive Bureaus, Boards, Commissions, and Offices, fiscal year 1939:

"The amendments in controversy are as follows:

• • •

"Amendments Nos. 26 and 27: Relating to construction of the Gilbertsville Dam under the Tennessee Valley Authority.

• • •

"Amendment No. 37: Relating to Presidential appointment and Senate confirmation of certain experts or attorneys receiving compensation of $5,000 or more per annum under appropriations made in the bill or authorized thereby to be expended" (p. 2).

Conference Report (H.Rept. 2379), 75th Congress, 3d Session, May 19, 1938, on Appropriations for the Executive Office and Sundry Independent Executive Bureaus, Boards, Commissions, and Offices, fiscal year ending June 30, 1939.

"Amendment No. 37, relating to certain employees compensated at the rate of $5,000 or more per annum: Strikes from the bill the following provision inserted by the Senate:

> Sec. 6. No part of any appropriation contained in this Act or authorized hereby to be expended shall be used to pay the compensation of any experts or attorneys under any independent establishment, except the Tennessee Valley Authority, of the Government of the United States (except persons now in the employ of the Government and persons heretofore or hereafter appointed under the civil-service laws), the rate of which is $5,000 or more per annum, who shall not have been appointed by the President, by and with the advice and consent of the Senate."

(p. 2)

SECTION D

HISTORICAL ORIGINS OF CERTAIN FEDERAL POLICIES RELATING TO CONSERVATION OF WATER RESOURCES

1. *Multiple-purpose Projects*

1901, Message of President Theodore Roosevelt to the 57th Congress, 1st session, emphasizing reservoirs as a measure of flood control:

> The forests alone cannot, however, fully regulate and and conserve the waters of the arid region. Great storage works are necessary to equalize the flow of streams and to save the flood waters. Their construction has been conclusively shown to be an undertaking too vast for private effort. Nor can it be best accomplished by the individual States acting alone. Far-reaching interstate problems are involved; and the resources of single States would often be inadequate. It is properly a national function, at least in some of its features. It is as right for the National Government to make the streams and rivers of the arid region useful by engineering works for water storage as to make useful the rivers and harbors of the humid region by engineering works of another kind. The storing of the floods in reservoirs at the headwaters of our rivers is but an enlargement of our present policy of river control, under which levees are built on the lower reaches of the same streams.
>
> The Government should construct and maintain these reservoirs as it does other public works. Where their purpose is to regulate the flow of streams the water should be turned freely into the channels in the dry season to take the same course under the same laws as the natural flow [35 Cong. Rec. 86].

1908, Message of President Theodore Roosevelt transmitting preliminary report of the Inland Waterways Commission, S.Doc. 325, 60th Cong., 1st sess.:

> The report rests throughout on the fundamental conception that every waterway should be made to serve

the people as largely and in as many different ways as possible. It is poor business to develop a river for navigation in such a way as to prevent its use for power, when by a little foresight it could be made to serve both purposes. We can not afford needlessly to sacrifice power to irrigation, or irrigation to domestic water supply, when by taking thought we may have all three. Every stream should be used to the utmost. No stream can be so used unless such use is planned for in advance. When such plans are made we shall find that, instead of interfering, one use can often be made to assist another. Each river system, from its headwaters in the forest to its mouth on the coast, is a single unit and should be treated as such. Navigation of the lower reaches of a stream can not be fully developed without the control of floods and low waters by storage and drainage. Navigable channels are directly concerned with the protection of source waters and with soil erosion, which takes the materials for bars and shoals from the richest portions of our farms. The uses of a stream for domestic and municipal water supply, for power, and in many cases for irrigation, must also be taken into full account [p. iv].

1908, *Preliminary Report of the Inland Waterways Commission,* S.Doc. 325, 60th Cong., 1st sess.:

13. Locks and certain other works designed to improve navigation commonly produce head and store water in such manner as to develop power available for industrial purposes, while works designed to develop power on navigable and source streams affect the navigation and other uses of river systems; and these uses must necessarily be considered together. Information concerning water power in the several States and sections is incomplete, yet it is known to be a vast and intrinsically permanent asset which should be utilized for the benefit of the people of the country, in whose interests it should be administered with careful regard for present and prospective conditions. The facts ascertained in certain specific cases furnish a basis for the claim that the value of the power would pay the cost of all engineering and other works required in such cases to control the streams for naviga-

tion and other uses. In the light of recent progress in electrical application, it is clear that over wide areas the appropriation of water power offers an unequaled opportunity for monopolistic control of industries. Wherever water is now or will hereafter become the chief source of power, the monopolization of electricity produced from running streams involves monopoly of power for the transportation of freight and passengers, for manufacturing, and for supplying light, heat, and other domestic, agricultural, and municipal necessities, to such an extent that unless regulated it will entail monopolistic control of the daily life of our people in an unprecedented degree. There is here presented an urgent need for prompt and vigorous action by State and Federal governments [pp. 21-22].

15. The control of waterways on which successful navigation depends is so intimately connected with the prevention of floods and low waters, and works designed for these purposes; with the protection and reclamation of overflow lands, and works designed therefor; with the safeguarding of banks and maintenance of channels, and works employed therein; with the purification and clarification of water supply, and works designed therefor in conjunction with interstate commerce; with control and utilization of power developed in connection with works for the improvement of navigation; with the standardizing of methods and facilities and the coordinating of waterway and railway instrumentalities; and throughout the larger area of the country with reclamation by irrigation and drainage, and works designed primarily for these purposes —that local and special questions concerning the control of waterways should be treated as a general question of national extent, while local or special projects should be considered as parts of a comprehensive policy of waterway control in the interests of all the people [pp. 22-23].

A. We recommend that hereafter plans for the improvement of navigation in inland waterways, or for any use of these waterways in connection with interstate commerce, shall take account of the purification of the waters, the development of power, the control of

floods, the reclamation of lands by irrigation and drainage, and all other uses of the waters or benefits to be derived from their control [p. 25].

1908, *Report of National Conservation Commission,* S.Doc. 676, 60th Cong., 2d sess.:

We also especially approve and indorse the proposition that all uses of the waters and all portions of each waterway should be treated as interrelated; and we emphatically urge prompt and effective legislation providing for the immediate and proper development of the waterways of the country for navigation, water supply, and other interstate uses, preferably by direct federal appropriations; otherwise by the issue of bonds [p. 27].

1910, *Report of National Waterways Commission,* S.Doc. 469, 62d Cong., 2d sess.:

In providing for the future development of the country, consideration must be given to the fact that water, as well as land, is an asset which makes up an integral part of our natural wealth. Waters must ultimately be utilized not merely for navigation, but also for irrigation and for power, when available for these purposes; also, all practicable means must be used for their clarification and for the prevention of floods and droughts.

It is desirable that whenever navigation is improved the most careful attention be given to these other associated objects, and while it is not the opinion of the commission that waterway improvements for the development of navigation should be deferred until a comprehensive and final plan for the utilization of waters can be devised, on the other hand subjects pertaining to the control and most beneficial utilization of water should at all times be considered, and improvements looking to the promotion of navigation should, as far as possible, harmonize with the general uses and beneficial control of waters [app. I, p. 82].

1912, Act of July 25 (37 Stat. 201):

> In order to make possible the economical future development of water power, the Secretary of War, upon recommendation of the Chief of Engineers, is hereby authorized in his discretion to provide in the permanent parts of any dam authorized at any time by Congress for the improvement of navigation, such foundations, sluices and other works as may be considered desirable for the further development of its water power [p. 233].

1928, Boulder Canyon Project Act of December 21 (45 Stat. 1057):

> . . . That for the purpose of controlling the floods, improving navigation and regulating the flow of the Colorado River, providing for storage and for the delivery of the stored waters thereof for reclamation of public lands and other beneficial uses exclusively within the United States, and for the generation of electrical energy as a means of making the project herein authorized a self-supporting and financially solvent undertaking, the Secretary of the Interior, subject to the terms of the Colorado River compact hereinafter mentioned, is hereby authorized to construct, operate, and maintain a dam and incidental works in the main stream of the Colorado River . . . [p. 1057].

1930, Statement of Chairman Norris of the Senate Committee on Agriculture and Forestry in the debate on the Rivers and Harbors Bill of 1930 concerning the construction of the Cove Creek (now Norris) Dam for Mississippi flood control:

> Mr. President, it is very appropriate . . . in considering a rivers and harbors bill to call attention of the Senate and the committee to the intimate way in which rivers and harbors, so far as the rivers and harbors bill is considered, are interlocked and connected with flood control. In fact, flood control as applied to our rivers, navigation as applied to our rivers, irrigation as applied to our rivers, and power as applied to our rivers, all dovetail and harmonize with each other and help each other.

Food control is recognized . . . as a national problem.

* * *

The control of flood waters by the building of dikes and levees, while very often to a great extent successful, I think everyone must concede has also been to a considerable degree disappointing . . .

* * *

It seems to me the proper way to control the flood waters of the Mississippi Valley and the Mississippi River is to build dams near the source of the rivers wherever nature has provided a proper site for a storage reservoir. The waters thus stored will be released when the river is low, thus increasing the flow when an increased flow is desired, and they will be held back when the river is in flood, thus decreasing the height of the stream when desired.

Moreover, Mr. President, that kind of a system would improve the navigation of the main stream and the tributary streams as well, because more water would be put into the stream than during low water, and we should keep out of the stream by that means a great part of the water which flows into it when the river is in flood.

Where, particularly on the west side of the Mississippi River, there is not sufficient rainfall for the growing of crops, such impounded waters could be used for irrigation . . .

Mr. President, the building of flood-control dams and paying for them simply on the theory of protecting the lower reaches of the Mississippi, and its tributaries, would cost an enormous amount of money, but if we can increase navigation by that means, *if we can, as we could in many instances, double the navigability of the streams, it would be proper to charge a part of that expense to navigation, the improvement of which is another Governmental function.*

If we can make it easier for agriculture to obtain water for irrigation we may properly charge a part of the expense to agriculture . . .

In addition to all this, Mr. President, if such dams were built there could be developed an immense amount of power by the installation of proper machinery, and that power could be distributed over a great portion of the great Mississippi Valley by means of the flood waters impounded and held back by such dams. *Thus another useful service could be rendered, and a part of the expense could then be properly charged up to power*

• • •

. . . on the eastern side of the great Mississippi Valley we have Cove Creek, for the development of which we have provided in a bill which has passed both houses of Congress, but it is now held up in conference. The dam at Cove Creek should now be built. It would retain out of the Tennessee River 3,500,000 acre-feet of water—an enormous volume of water—which, if properly handled, would do more than any other one improvement to make the Tennessee River navigable from its mouth up to Cove Creek. Also it would prevent floods not only on the Tennessee River but to an appreciable extent on the Mississippi River . . . [72 Cong. Rec. 11295-11296; emphasis supplied].

1930, The Rivers and Harbors Act (46 Stat. 918):

The project for the permanent improvement of the main stream of the Tennessee River for a navigable depth of nine feet in accordance with the recommendations of the Chief of Engineers in House Document Numbered 328 of the Seventy-first Congress, second session, is hereby authorized: *Provided*, That an expenditure of $5,000,000 shall be authorized to be appropriated for the prosecution of work under this project: *Provided further*, That the Chief of Engineers is hereby directed to ascertain and report to Congress on the first day of the first regular session of the Seventy-second Congress, advising the prospective cooperation offered by responsible interests, under the Federal Water Power Act, in the program of construction recommended by the Chief of Engineers, providing for the nine-foot project by means of high dams [pp. 927-928].

1934, *Report of the National Resources Board:*

Interrelations of physical factors, interests and responsibilities make the development of the use and control of water factors a problem of coordination from several points of view. It is this multiplicity of coordinations that makes the problem a real challenge to intelligence and to capacity to plan.

(a) *Multiple Uses:* It has been the custom generally to approach a water factor as presenting only one specific problem of control or use; for instance, elimination of a flood hazard, or navigation, or irrigation, or power. Study of many situations indicates, however, that frequently the combination of factors is such that achievement of some particular objective may be promoted by combining other objectives with it. Usually a project is conceived because of some one hazard or of some one desired use; but if a large view is taken it becomes apparent that other uses are potential and should be included in the project, in order, on the one hand, to secure the greatest total benefit from the natural resource, and, on the other hand, to make the cost of each component benefit less than it otherwise would be. Many projects have been reviewed by the committee which, although inspired by a single purpose, offer excellent opportunities for combinations which would multiply benefits and reduce the cost of any one benefit below what it would be if sought by itself. Thus a project may at first appear to involve only the element of levee or reservoir control of floods, but careful consideration may disclose that reservoir control may carry with it opportunities for power generation, water supply for adjacent communities, and recreational facilities. In exceptional instances the same dam and reservoir may be made to serve flood control, irrigation, power, and recreational purposes. A dam conceived at first solely for navigation control may offer also power generation. No matter what the originating purpose, every other reasonable purpose should be considered in defining and planning a water project [pp. 263-264].

1935, Statement by Gerard H. Matthes, Principal Engineer of the Mississippi River Commission, appearing in *Transactions American Society of Civil Engineers,* LXI (1935), 919-920:

> Reservoirs possess important potentialities as flood-control structures . . . but the significant fact remains that surprisingly few have been built for that purpose despite the urgent need for flood control that exists on many streams. In 1920 there were in the United States a paltry dozen reservoirs and retarding basins devoted exclusively to the control of floods. This number includes such minor units as the retarding basin on Dry River, near Watervliet, N. Y., and another, even smaller, on Paxton Creek, for the protection of Harrisburg, Pa. From estimates compiled by the writer in 1920 there were then in the world at large fewer than 100 flood-control structures of these two types. More than one-half of these were in Europe, 21 being in one river basin in Germany. Until a few years ago this paucity of flood-control reservoirs had not changed materially. In the United States, during the past six years, many reservoir projects for flood control have been surveyed and reported on, but to date (1935) few of these projects have reached the construction stage. The chief obstacle appears to be their unwarranted cost.
>
> In general, a storage basin for the handling of large volumes of water ranks among the most costly of hydraulic structures, whatever may be its purpose. In hydro-electric development it is common for the dam and reservoir to represent the largest single item of investment cost, and the one upon which most often hinges the economic feasibility of the entire development. Experience teaches that reservoirs designed exclusively for flood control have been found less likely to be warranted on strict economic considerations, than have reservoirs designed for any other single purpose. There is a steadily growing tendency to build multiple-use reservoirs such that the cost may be prorated among two or more uses, often wholly unrelated. Flood

control, which is often included in such combinations, is gaining steadily in importance and is emerging from the incidental by-product class in which it has largely figured in the past, into a well-defined reliable status. Boulder Dam, on the Colorado River, which is designed primarily for flood control and at which power will be generated, as well as water furnished for irrigation, domestic supply, and navigation purposes, is the outstanding example of the multiple-use type. Norris Dam, on the Clinch River, Tygart River Dam, on the headwaters of the Ohio River, and Fort Peck Dam on the Missouri River, are to serve not less than two purposes each. The flood-control reservoirs being built for the Los Angeles District will be operated so as to make available the impounded waters for irrigation and water supply. The reservoirs of the Muskingum Conservancy District will serve other purposes beside flood protection to the Muskingum Valley. Credit should be given the larger of the existing Western irrigation reservoirs which derive their water supply mainly from flood run-off, for having reduced flood flow more or less effectively although they have never been operated for that purpose.

The conclusion is inescapable that the multiple-use reservoir is destined to play an increasingly important role in the future. This is supported by the following considerations: (*a*) in the United States, to date, only densely populated, highly industrialized areas can afford the cost of reservoirs for the sole purpose of flood control; (*b*) costly impounding structures for the sole purpose of preventing flood damage to small towns and farm lands situated in natural flood-plains can rarely be justified on a strictly economic basis; (*c*) to waste flood waters immediately they have been impounded, as must be done at retarding basins or at reservoirs designed solely for flood control, is contrary to the modern concept of water resources utilization; and, (*d*) multiple use of reservoirs divides the burden of cost between two or more interests, and the increased benefits which result are more likely to place the undertaking on a sound economic basis.

2. *Preferences Given to Public Agencies*

1902, Reclamation Act of June 17 (32 Stat. 388), as amended by section 5 of act of April 16, 1906 (34 Stat. 116):

> That whenever a development of power is necessary for the irrigation of lands under any project undertaken under the said reclamation Act, or an opportunity is afforded for the development of power under any such project, the Secretary of the Interior is authorized to lease for a period not exceeding ten years, giving preference to municipal purposes, any surplus power or power privilege, and the moneys derived from such leases shall be covered into the reclamation fund and be placed to the credit of the project from which such power is derived: *Provided,* That no lease shall be made of such surplus power or power privilege as will impair the efficiency of the irrigation project [p. 117].

1920, Federal Water Power Act of June 10 (16 U.S.C. 800):

> *Preferences in issuance of preliminary permits or licenses.* In issuing preliminary permits hereunder or licenses where no preliminary permit has been issued and in issuing licenses to new licensees under section 808 of this chapter the commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the commission equally well adapted, or shall within a reasonable time to be fixed by the commission be made equally well adapted, to conserve and utilize in the public interest *the navigation and water resources of the region* . . . [emphasis supplied].

1928, Boulder Canyon Project Act of December 21 (45 Stat. 1057):

> Contracts for the use of water and necessary privileges for the generation and distribution of hydroelectric energy or for the sale and delivery of electrical energy shall be made with responsible applicants therefor who will pay the price fixed by the said Secretary with a

view to meeting the revenue requirements herein provided for. In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing, with due regard to the public interest, and in conformity with the policy expressed in the Federal Water Power Act as to conflicting applications for permits and licenses, except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, or for delivery at the switchboard of a hydroelectric plant, shall be given, first, to a State for the generation or purchase of electric energy for use in the State, and the States of Arizona, California, and Nevada shall be given equal opportunity as such applicants [pp. 1060-1061].

RECLAMATION TABLE 19.—*Power plants operated on Bureau of Reclamation projects during fiscal year 1931-32*

Project	Name of plant	Outgoing line voltage	Plant capacity (kilovolt-amperes)	Number of units	Head in feet	First cost of plant	Cost of operation and maintenance	Estimated depreciation	Cost per kilowatt-hour exclusive of depreciation	Distribution of kilowatt-hours generated				Total output, kilowatt-hours	Gross power sales
										Sold to consumers	Irrigation and drainage requirements	Used for other purposes	Losses		
oise	Black Canyon.	[1] 66,000	10,000	2	74–86	$414,317.21	$10,350.01	$15,291.07	$0.00029	12,388,000	23,247,000	661,000	.....	[2] 36,296,500	$83,138.51
	Boise River	22,000	1,875	3	20.4–25.7	167,905.37	3,372.65	5,876.69	.00307	.....	1,097,701	.....	.....	1,097,701	8,533.94
linidoka	Minidoka	33,000	10,000	6	46.77	784,778.13	24,764.74	24,396.00	.00043	[3] 19,857,077	[4] 26,053,710	8,910,874	4,065,366	58,245,000	164,871.51
	American Falls (2 plants). [5]	33,000	540	1	44	[6] 76,975.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
ewlands [8]	Lahontan [7]	{ 33,000 / 66,000 / 2,300 }	1,875	3	105–110	141,886.01	6,230.50	4,260.00	.00290	1,428,900	98,703	621,637	.....	2,149,240	7,412.14
orth Platte	Guernsey	33,000	6,000	2	70–90	454,244.27	13,844.20	8,035.00	.00102	19,934,138	12,920	305,373	2,128,839	{ 13,550,000 / 8,825,250 }	244,050.22
	Lingle	33,000	1,750	4	106	184,791.74	12,508.75	5,200.00	.00142						
io Grande	Elephant Butte	2,300	150	1	18–180	8,440.50	1,970.04	None	.022	None	None	90,800	Unknown	90,800	None
iverton	Pilot Butte	33,000	2,000	2	103	218,962.14	25,406.11	7,800.00	.01737	1,005,730	None	267,595	189,615	1,462,940	22,623.77
alt River	Horse Mesa	110,000	33,300	3	265	754,885.13	32,047.97	37,744.25	.00035					{ 91,229,000 / 23,059,000 / 22,200,000 }	
	Roosevelt	110,000	19,250	7	70–240	1,235,894.58	60,091.92	61,794.73	.00261						
	Stewart Mountain	45,000	13,000	1	35–114	320,371.98	12,486.24	16,018.60	.00056						
	Mormon Flat	110,000	8,750	1	40–150	482,767.80	12,539.54	24,138.39	.00040	[9] 185,484,347	[3] 22,372,620	[3] 167,437	[3] 33,200,790	31,103,000	2,094,616.40
	Crosscut	{ [8] 11,000 / 40,000 }	5,250	6	111	755,147.29	20,075.70	37,757.36	.00171					11,755,600	
	South Consolidated	40,000	2,000	2	34	163,139.60	10,822.63	8,156.98	.00144					7,497,400	
	Arizona Falls	11,000	1,060	2	19	109,500.73	8,075.24	5,475.04	.00325					2,487,925	
	Chandler	11,000	600	1	40	91,990.84	8,690.00	4,599.54	.00294					2,953,410	
hoshone	Shoshone	33,000	7,000	3	220	746,505.72	13,168.38	26,085.42	.00245	4,529,170	None	87,889	761,651	5,378,710	69,962.83
trawberry Valley	Spanish Fork	11,000	1,000	2	123.5	60,904.80	20,634.70	3,627.48	.00660	2,833,479	None	11,334	283,348	3,128,161	38,824.24
akima-Sunnyside [8]	Rocky Ford	6,600	187	1	73	23,000.00	2,478.24	1,056.40	.00497	None	499,000	None	None	499,000	None
uma	Siphon Drop	33,000	2,000	2	9.88	317,936.09	12,212.35	13,248.00	.00139	7,275,404	1,023,076	88,783	379,586	[2] 8,766,849	68,426.52

NOTE.—For footnotes, see bottom of page 112.

RECLAMATION TABLE 20.—*Principal contracts for sale of power in force June 30, 1932*

Project	Contractor	Date of contract	Date of expiration	Reserved power (kilowatts)	Gross rate per kilowatt-hour (cents)	Minimum monthly payment	Gross income fiscal year 1931–32	Remarks
Boise	Gem Irrigation District	Oct. 18, 1924	Oct. 18, 1934	1,000	Rental basis leased for standby service.			Served through Idaho Power Co. from Black Canyon power plant, covers Boise River power plant.
	Idaho Power Co.	Apr. 10, 1930	Apr. 15, 1936	.....				
	Ontario-Nyssa Irrigation District.	Apr. 11, 1931	Apr. 11, 1936	1,000				
Minidoka	City of Burley, Idaho	Jan. 1, 1930	Jan. 1, 1940	2,100	4–.5	$2,100.00	$54,772.45	
	City of Rupert, Idaho	....do	....do	1,300	4–.5	900.00	30,019.01	
	Paul Electric Co.	Feb. 4, 1924	Mar. 31, 1934	150	4–.5	416.67	6,531.67	
	Village of Albion, Idaho	Jan. 1, 1931	Jan. 1, 1936	280	4–.5	103.68	6,271.67	
	Unity Light & Power Co.	Mar. 1, 1932	Mar. 1, 1935	67	4–.5	89.24	4,023.18	
	Village of Declo	Oct. 1, 1930	Oct. 1, 1933	41	4–.5	59.04	2,980.33	
	Rural Electric Co.	Apr. 1, 1932	Apr. 1, 1937	79	4–.5	43.85	2,126.23	
	East End Mutual Electric Co.	Feb. 1, 1928	Feb. 1, 1933	20	4–.5	31.68	1,710.54	
	Village of Heyburn, Idaho	Jan. 1, 1930	Jan. 1, 1933	80	4–.5	60.00	1,752.51	
	Village of Minidoka, Idaho	Feb. 5, 1924	Apr. 1, 1934	30	4–.5	150.00	1,848.95	
	Declo Light & Power Co.	May 1, 1928	May 1, 1933	20	4–.5	31.68	1,578.66	
	Ferry Light & Power Co.	Mar. 1, 1929	Mar. 1, 1934	15	4–.5	24.30	1,450.74	
	Amalgamated Sugar Co.	May 1, 1932	May 1, 1933	39	4–.5	39.70	1,485.06	
	Acequia Mutual Electric Co.	Dec. 1, 1930	Dec. 1, 1935	19	4–.5	30.10	1,134.37	
	West End Power Co.	Jan. 1, 1931	Jan. 1, 1936	15	4–.5	24.30	984.05	
	Riverside Electric Co.	Feb. 1, 1928	Feb. 1, 1933	15	4–.5	24.30	1,029.79	
	40 small contracts	Various	Various	.....	4–.5	.....	11,337.80	
Newlands	Sierra Pacific Power Co.	Jan. 29, 1923	Nov. 30, 1934	1,500	3–.4	[1] 1,200.00	7,412.14	Contract assigned by Canyon Power Co. to Sierra Pacific Power Co.
North Platte	Western Public Service Co.	Oct. 29, 1927	Oct. 29, 1937	400	8–1	2,400.00	42,109.11	
	Mountain States Power Co., Casper, Wyo.	Nov. 13, 1931	Dec. 31, 1941	1,200	8–1	4,200.00	57,516.48	
	Town of Wheatland, Wyo.	May 3, 1928	June 30, 1938	500	8–1	800.00	24,423.28	
	Colorado Fuel & Iron Co.	May 18, 1925	Jan. 1, 1941	1,200	8–1	[1] 1,800.00	16,227.77	
	Town of Torrington, Wyo.	Apr. 3, 1928	June 30, 1938	400	8–1	800.00	23,425.78	
	City of Gering, Nebr.	Apr. 17, 1928	....do	250	8–1	800.00	19,199.20	

RECLAMATION TABLE 20—Continued

Project	Contractor	Date of contract	Date of expiration	Reserved power (kilowatts)	Gross rate per kilowatt-hour (cents)	Minimum monthly payment	Gross income fiscal year 1931–32	Remarks
North Platte	City of Mitchell, Nebr.	Apr. 30, 1928	June 30, 1938	250	8–1	$800.00	$15,575.08	
	Village of Mornill, Nebr.	May 1, 1928	do	150	8–1	300.00	11,262.71	
	Village of Lyman, Nebr.	Apr. 10, 1928	do	250	8–1	250.00	8,751.80	
	Town of Guernsey, Wyo.	May 17, 1928	do	150	8–1	450.00	6,685.55	
	Town of Lingle, Wyo.	Apr. 30, 1928	do	75	8–1	175.00	4,974.62	
	Mountain States Power Co., Yoder, Wyo.	July 15, 1928	Dec. 31, 1934	25	8–1	75.00	3,027.28	
	Town of Fort Laramie, Wyo.	May 7, 1928	June 30, 1938	25	8–1	50.00	1,559.31	
	Holly Sugar Corporation, Torrington, Wyo.	Apr. 7, 1932	May 1, 1937	75	2.5–1.5	None	1,388.50	
	Western Public Service Co., Huntley, Wyo.	Dec. 1, 1930	Dec. 31, 1935	75	8–1	187.50	3,646.44	Each contract less than $1,000.
	2 small contracts	Various	Various	3	8–.5	Various	87.72	
Riverton	Mountain States Power Co.	Mar. 5, 1929	Dec. 31, 1943	300	6–1	1,500.00	20,166.79	
Shoshone	do	July 1, 1930	July 1, 1940	1,000	2.5–.5	3,350.00	65,125.40	
	Farm Light & Power Co.	Aug. 15, 1928	Aug. 15, 1933	3	5–1	14.25	1,001.40	
	C. B. & Q. R. R. Co.	June 1, 1923	Jan. 11, 1934	20	6–1	30.00	1,803.14	
	2 small contracts	Various	Various	145	6–.5	Various	875.93	Do.
Strawberry Valley	Town of Spanish Fork, Utah.	May 1, 1928	May 1, 1931	185	6–.75	740.00	13,415.79	A new contract is being made.
	Town of Payson, Utah.	Feb. 5, 1932	Feb. 4, 1935	125	6–.75	500.00	12,438.14	
	Utah Packing Corporation	Jan. 1, 1926	Jan. 1, 1933	385 and 20	6–.75	577.50–30.00	4,882.26	
	Town of Springville, Utah.	June 18, 1931	June 17, 1932	.....	2.2–1	None	4,004.61	Do.
	Town of Salem, Utah.	Feb. 5, 1932	Feb. 4, 1935	15	6–.75	60.00	1,747.47	Do.
	Several small contracts.	Various	Various	.....	Various	Various	2,335.97	Each contract less than $1,000.
Yuma	Southern Sierras Power Co.	July 14, 1926	July 14, 1936	To production limit	1–.75	.....	54,503.47	
	2 small contracts	Various	Various	.....	4–1	.....	1,284.10	Do.

[1] April to September, inclusive.
[2] Minimum payment guaranteed on annual basis.

Footnotes to Reclamation Table, on page 110.
[1] 6,600-volt generators; all others 2,300 volts except as noted.
[2] Entire output delivered to Idaho Power Co.
[3] West Side plant operated only in case of emergency; not operated since 1927. Island plant dismantled, first cost included.
[4] Estimated.
[5] Includes purchased power.
[6] Operated by irrigation district or water users' association.
[7] Operated by Sierra Pacific Co. under lease assigned by Canyon Power Co.
[8] 11,000-volt generators.
[9] All 8 power plants feed into the same distribution system.

SECTION E

PERTINENT STATE LEGISLATION

Appellants, in their Appendix E, have reprinted statutes of the State of Tennessee authorizing municipalities and cooperative associations to contract with the Tennessee Valley Authority, but have omitted chapter 32 of the Public Acts of Tennessee of 1935. For purposes of completeness, that statute is reprinted here:

THE MUNICIPAL ELECTRIC PLANT ACT OF 1935, CHAPTER 32, PUBLIC ACTS OF TENNESSEE, 1935*

SENATE BILL No. 113

An act to authorize counties, incorporated cities and towns in the State of Tennessee to construct, purchase or otherwise acquire, and to operate and maintain electric generating or distribution systems, within or without the county or corporate limits, to construct, purchase or otherwise acquire, to operate maintain or use, individually or jointly, a transmission line or lines, within or without the corporate or county limits, to make improvements, extensions, betterments or additions to such electric systems, and such transmission line or lines to furnish electric power and energy to any consumer or consumers, to finance such acquisition, improvement, extension, betterment, or addition by the issuance of bonds and the acceptance of federal grants, to provide for the supervision, management and control of such electric systems and such lines, to prescribe rules and policies to govern resale rates, disposition of revenue, and other operating and management practices of such systems, in order to promote the increased domestic use of electricity in rural and urban areas by enabling such counties, incorporated cities and towns to utilize the surplus power generated by the Tennessee Valley Authority or the power generated at any other works or dams.

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* This statute was upheld by the Tennessee Supreme Court in the case of *Tennessee Elec. Power Co.* v. *Fayetteville*, 114 S.W. (2d) 811 (1938); and in the case of *Kentucky-Tennessee L. & P.Co.* v. *Clarksville*, December term, 1937, reprinted in Appendix F.

SECTION 1. SHORT TITLE.—*Be it enacted by the General Assembly of the State of Tennessee,* That this Act may be cited as "The Municipal Electric Plant Act of 1935."

SEC. 2. DEFINITIONS.—*Be it further enacted,* That the following terms when used in this Act shall have the following meaning:

(a) The term "municipality" shall mean any county, incorporated city or town in the State of Tennessee.

(b) The term "electric plant" shall mean generating and/or transmission and/or distribution systems, together with all other facilities, equipment and appurtenances necessary or appropriate to any such system, for the furnishing of electric power and energy for lighting, heating, power or any other purpose for which electric power and energy can be used.

(c) The term "improvement" shall mean any improvement, extension, betterment or addition to any electric plant.

(d) The term "electric service" shall mean the furnishing of electric power and energy for lighting, heating, power or any other purpose for which electric power and energy can be used.

(e) The term "acquire" shall mean to purchase, to lease, to construct, to reconstruct, to replace, or to acquire by gift.

(f) The term "dispose" shall mean to sell, to lease, or otherwise transfer any interest in property.

(g) The term "improve" shall mean to acquire any improvement.

(h) The term "Federal Agency" shall include the United States of America, the President of the United States of America, or the Federal Emergency Administrator of Public Works, Reconstruction Finance Corporation, Tennessee Valley Authority, or any other similar agency, instrumentality or corporation of the

United States of America, which has heretofore been or may hereafter be created by or pursuant to any Act or Acts of the Congress of the United States of America.

(i) The term "law" shall mean any Act or Statute, general, special or local, of the State of Tennessee, including, but without limitation, the charter of any municipality.

(j) The term "governing body" shall mean the County Court, board, body or commission having general charge of the municipality.

SEC. 3. POWERS OF MUNICIPALITIES.—*Be it further enacted,* That every municipality shall have power and is hereby authorized:

(a) To acquire, improve, operate and maintain within and/or without the corporate or county limits of such municipality, and (with the consent of such other municipality) within the corporate or county limits of any other municipality, an electric plant and to provide electric service to any person, firm, public or private corporation, or to any other user or consumer of electric power and energy, and to charge therefor.

(b) To acquire, improve or use jointly with any other municipality a transmission line or lines together with all necessary and appropriate facilities, equipment and appurtenances, for the purpose of transmitting power and energy and/or connecting their respective electric plants with a wholesale source of supply, and to this end such municipalities may provide by contract for the method of holding title, for the allocation of responsibility for operation and maintenance and for the allocation of expenses and revenues.

(c) To accept grants, loans or other financial assistance from any Federal Agency, for or in aid of the acquisition or improvement of any electric plant.

(d) To contract debts for the acquisition or improvement of any electric plant, to borrow money, to issue its bonds to finance such acquisition or improvement

and to provide for the rights of the holders of the bonds and to secure the bonds as hereinafter provided, and to pledge all or any part of the revenues derived from electric service to the payment of such debts or repayment of money borrowed.

(e) To assess, levy and collect unlimited ad valorem taxes on all property subject to taxation to pay such bonds, and the interest thereon.

(f) To acquire, hold and, subject to the applicable provisions of any bonds or contracts, to dispose of any property, real or personal, tangible or intangible, or any right or interest in any such property in connection with any electric plant, and whether or not subject to mortgages, liens, charges, or other encumbrances, but no municipality shall dispose of all or substantially all of its electric plant except as provided in section 22 hereof.

(g) To make contracts and execute instruments containing such covenants, terms, and conditions as in the discretion of the municipality may be necessary, proper or advisable for the purpose of obtaining loans from any source, or grants, loans or other financial assistance from any Federal Agency; to make all other contracts and execute all other instruments as in the discretion of the municipality may be necessary, proper or advisable in or for the furtherance of the acquisition, improvement, operation and maintenance of any electric plant and the furnishing of electric service; and to carry out and perform the covenants terms and conditions of all such contracts or instruments.

(h) To enter on any lands, waters and premises for the purpose of making surveys, soundings and examinations in connection with the acquisition, improvement, operation or maintenance of any electric plant and the furnishing of electric service.

(i) To do all Acts and things necessary or convenient to carry out the powers expressly given in this Act.

SEC. 4. ELECTION TO AUTHORIZE BONDS—ELECTION, RESOLUTION AND PROCEDURE.—*Be it further enacted,* That

before any bonds are issued under this Act an election shall be held as follows: The governing body of the municipality shall adopt a resolution (herein called the "Election Resolution") which shall state in substance (a) the amount or maximum amount of bonds to be issued; (b) the purpose or purposes for which such bonds are to be issued; (c) the rate or maximum rate of interest which such bonds are to bear; (d) a brief concise statement (which need not go into any detail other than the mere statement of the fact) showing whether such bonds will be payable (1) exclusively from revenues, or (2) exclusively from taxes, or (3) from taxes only in the event of a deficiency in revenues, or (4) from taxes and additionally secured by a pledge of revenues; (e) the date on which such election will be held; (f) the place or places where votes may be cast; and (g) the hours between which such voting places will be open. Such Election Resolution shall be published in full at least once, not less than fifteen days prior to the date fixed for such election, in a newspaper published and circulating in the municipality, or, if there be no such newspaper, then such Election Resolution shall be so published in a newspaper circulating in the municipality and shall also be posted not less than fifteen days prior to the date fixed for such election, in five conspicuous places in the municipality. At such election the ballot shall contain the words "For the Issuance of Electric Plant Bonds" and "Against the Issuance of Electric Plant Bonds." Opposite each of said phrases shall be a hollow square, each side of which shall be not less than one-quarter inch nor more than one inch. Any qualified voter of such municipality shall be entitled to vote at the election. The voter shall indicate his vote "For the Issuance of Electric Plant Bonds" or "Against the Issuance of Electric Plant Bonds" by inserting a mark in the square opposite such phrase. It shall not be necessary to print any question or any other words or figures on any ballot, nor need the ballot be of any particular size, color or quality, nor need sample ballots be printed, posted, or distributed. At or before the regular meeting of the governing body of the municipality next succeeding the date of such election, such governing body shall canvass the returns and determine and declare the results of the election, and it shall be the duty of the governing body of such municipality to enter upon its

minutes the results and the returns in such election, which entry shall, after the delivery of, and payment for, any bonds voted upon at the election, be conclusive evidence of the result of such election. Except as otherwise provided in this Act, such election shall be conducted by the election authorities prescribed by the general law of the State of Tennessee and according to the provisions of the general election laws of the State of Tennessee.

SEC. 5. EFFECT OF ELECTION RESOLUTION AND ELECTION. —*Be it further enacted*, That if a majority of the qualified voters who vote in such election vote "For the Issuance of Electric Plant Bonds", the governing body of the municipality shall proceed to issue the bonds described in the Election Resolution, and if no such majority so assents, the proposition thus defeated shall not again be the subject of an Election Resolution until three months shall have expired from the time the Election Resolution relative to such bonds was published, or published and posted, as the case may be.

SEC. 6. PUBLICATION OF STATEMENT AFTER ELECTION; INCONTESTABILITY.—*Be it further enacted*, That if an election on the proposition is had and such election results in favor of the proposition, the Election Resolution shall again be published in a newspaper published and circulated in the municipality or, if there be no such newspaper, then such Election Resolution shall be so published in a newspaper circulating in the municipality and shall also, on the same day of such publication, be posted in five conspicuous places in such municipality. With such Election Resolution there shall be published, or published and posted, as the case may be, a statement substantially in the following form:

STATEMENT

The election referred to in the resolution published (or posted) herewith was held on the (here insert date of election). After such election (here insert designation of governing body and name of municipality) has found, determined and declared that the proposition was carried by a vote of ——— to ———. No suit, action or proceeding questioning the validity of the bonds described in

such resolution or proceeding for the issuance of such bonds can be commenced after the expiration of twenty days from the date of this publication (or posting). By order of the (here insert designation of governing body).

_____Clerk
(or other recording officer)

No suit, action or proceeding questioning the validity of bonds issued under this Act or proceedings for the issuance of such bonds shall be commenced after the expiration of twenty days from the date of publication, or publication and posting, as the case may be, of such an Election Resolution and such a Statement, substantially in the form above set forth.

SEC. 7. BOND PROVISIONS.—*Be it further enacted*, That the bonds may be issued in one or more series, may bear such date or dates, may mature at such time or times, not exceeding thirty years from their respective dates, may be in such denomination or denominations, may be in such form, either coupon or registered, may carry such registration and conversion privileges, may be executed in such manner, may be payable in such medium of payment, at such place or places, may be sold or hypothecated in such blocks, may be subject to such terms of redemption, with or without premium, and may be declared or become due after the maturity date thereof, as may be provided by resolution or resolutions of the governing body of the municipality. Such bonds may be issued for money or property at public or private sale, for such price or prices, at such rate or rates of interest, and may be hypothecated in such manner as the governing body may determine, but the interest cost to maturity of the property (at the value determined by the governing body, which determination shall be conclusive) or the money received for any issue of said bonds, shall not exceed six per cent (6%) per annum, payable semi-annually. Such bonds shall have all the qualities and incidents of negotiability. Such bonds shall not be subject to taxation.

In case any of the officers whose signature or countersignatures appear on such bonds shall cease to be such officers before the delivery of the bonds, such signatures and

counter-signatures shall nevertheless be valid and sufficient for all purposes, the same as though such officers had remained in office until the bonds had been delivered. Such bonds, when issued, shall be known as "Electric Plant Bonds".

SEC. 8. ADDITIONAL POWERS TO SECURE BONDS AND TO MAKE AGREEMENTS.—*Be it further enacted,* That in order to secure the payment of any of the bonds issued pursuant to this Act, the interest thereon, or in connection with such bonds, the governing body of any municipality shall have power as to such bonds, to the extent not inconsistent with the mandatory provisions of this Act:

(a) To pledge the full faith and credit and unlimited taxing power of the municipality to the punctual payment of the principal of and interest on such bonds.

(b) To pledge all or any part of the revenues derived from electric service.

(c) To provide for the terms, form, registration, exchange, execution and authentication of such bonds.

(d) To provide for the replacement of lost, destroyed or mutilated bonds.

(e) To covenant as to the use and disposition of the proceeds from the sale of such bonds.

(f) To covenant as to the rates and charges of the electric plant.

(g) To redeem such bonds, and to covenant for their redemption, and to provide the terms and conditions thereof.

(h) To covenant and prescribe as to what happenings or occurrences shall constitute "events of default" and the terms and conditions upon which any or all of such bonds shall become or may be declared due before maturity and as to the terms and conditions upon which such declaration and its consequences may be waived.

(i) To covenant as to the rights, liabilities, powers and duties arising upon the breach by it of any covenant, condition, or obligation.

(j) To vest in a trustee or trustees the right to receive all or any part of the income and revenue pledged and assigned to, or for the benefit of, the holder or holders of bonds issued hereunder, and to hold, apply and dispose of the same and the right to enforce any covenant made to secure or pay or in relation to the bonds; to execute and deliver a trust agreement or trust agreements which may set forth the powers and duties and the remedies available to such trustee or trustees and limiting the liabilities thereof and describing what occurrences shall constitute "events of default" and prescribing the terms and conditions upon which such trustee or trustees or the holder or holders of bonds of any specified amount or percentage of such bonds may exercise such rights and enforce any and all such covenants and resort to such remedies as may be appropriate.

(k) To make covenants other than, and in addition to, the covenants herein authorized, of like or different character, necessary or advisable to effectuate the purpose of this Act.

(l) To execute all instruments necessary or convenient in the exercise of the powers herein granted or in the performance of its covenants or duties.

SEC. 9. REMEDIES OF ANY HOLDER OR HOLDERS OF BONDS.—*Be it further enacted,* That any holder or holders of bonds, including a trustee or trustees for holders of such bonds, shall have the right, in addition to all other rights:

(a) By mandamus or other suit, action or proceedings in any court of competent jurisdiction to enforce his or their rights against the municipality, the governing body thereof, the board of public utilities hereinafter provided for, any and other proper officer, agent or employee of any of them, including, but without limitation, the right to require the municipality, the governing body, the said board, and any proper officer, agent or employee of any of them, to assess, levy and collect taxes, and to fix and collect rates and charges adequate to carry out any agreement as to, or pledge of taxes or electric plant revenues, and to require the

municipality, the governing body thereof, the said board and any officer, agent or employee of any of them to carry out any other covenants and agreements and to perform its and their duties under this Act;

(b) By action or suit in equity to enjoin any acts or things which may be unlawful or a violation of the rights of such holder of bonds.

SEC. 10. ADDITIONAL REMEDIES CONFERRED BY RESOLUTION.—*Be it further enacted*, That any municipality shall have power by resolution of its governing body to confer upon any holder or holders of a specified amount or percentage of bonds, including a trustee or trustees for such holders, the right in the event of an "event of default" as defined in such resolution or as may be defined in any agreement with the holder or holders of such bonds or the trustee or trustees therefor:

(a) By suit, action or proceedings in any court of competent jurisdiction to obtain the appointment of a receiver of the electric plant or any part or parts thereof. If such receiver be appointed he may enter and take possession of such electric plant or any part or parts thereof and operate and maintain the same, and collect and receive all revenues thereafter arising therefrom in the same manner as the municipality itself might do and shall deposit such moneys in a separate account or accounts and apply the same in accordance with the obligations of the municipality as the court shall direct.

(b) By suit, action or proceeding in any court of competent jurisdiction to require the governing body of the municipality and/or the board to account as if it were the trustee of an express trust.

Any such resolution shall constitute a contract between the municipality and the holders of bonds of such issue.

SEC. 11. DEBT LIMITS.—*Be it further enacted*, That bonds may be issued under this Act notwithstanding and without regard to any limits or restriction on the amount or percentage of indebtedness or of outstanding obligations of any municipality contained in any law.

SEC. 12. EXPENSES OF SURVEYS, COST ESTIMATES, EMPLOYMENT OF ENGINEERS, ETC.—*Be it further enacted,* That all expenses actually incurred by the governing body of any municipality in the making of surveys, estimates of cost and of revenues, employment of engineers, attorneys or other employees, the giving of notices, taking of options, selling of bonds, and all other preliminary expenses of whatever nature, which such governing body deems necessary in connection with or precedent to the acquisition or improvement of any electric plant and which it deems necessary to be paid prior to the issuance and delivery of the bonds issued pursuant to the provisions of this Act, may be met and paid out of the general fund of said municipality not otherwise appropriated, or from any other available fund.

All such payments from the general or other funds shall be considered as temporary loans and shall be repaid immediately upon sale and delivery of the bonds, and claim for such repayment shall have priority over all other claims against the proceeds derived from the sale of such bonds.

SEC. 13. APPOINTMENT OF BOARD OF PUBLIC UTILITIES. —*Be it further enacted,* That any municipality, excepting those which employ a City-Manager or which have a population of less than two thousand (2,000), issuing bonds under the provisions of this Act for the acquisition of an electric plant shall, and any municipality now or hereafter owning or operating an electric plant under this Act or any other law may, appoint a board of public utilities (hereinafter called the "board").

The board shall be created in the following manner: At the time the governing body of a municipality issuing bonds hereunder determines that a majority of the qualified voters voting on the Election Resolution have assented to the bond issue for the acquisition of an electric plant, the chief executive officer of the municipality shall, or if no such bonds are issued, or if the municipality employs a City-Manager or has a population of less than two thousand (2,000), then at any time he may, with the consent of the governing body of the municipality, appoint two (2) or four (4) men from among the property holders of such municipality who are residents of the municipality and

have resided therein for not less than one year next preceding the date of appointment to such board. No regular compensated officer or employee of a municipality shall be eligible for such appointment until at least one year after the expiration of the term of his public office.

The original appointees, if two be appointed, shall serve for two and four years respectively, or if four be appointed, shall serve for one, two, three and four years respectively, from the first day of July next succeeding the date of appointment, as the said chief executive officer shall designate. Successors to retiring members so appointed shall be appointed for a term of four years in the same manner, prior to the expiration of the term of office of the retiring members. In addition to the members so appointed, such chief executive officer shall also, with the consent of the governing body of the municipality, designate a member of such governing body, or in his discretion the City Manager, to serve as a third or fifth member of the board, as the case may be. The term of such member shall be for such time as the appointing officer may fix, but in no event to extend beyond his term of office in such governing body or his employment as City-Manager, as the case may be. Appointments to complete unexpired terms of office shall be made in the same manner as original appointments. Each member shall give such bond, if any, as may be required by resolution of the governing body and shall qualify by taking the same oath of office as required for members of such governing body.

A majority of the board shall constitute a quorum and the board shall act by vote of a majority present at any meeting attended by a quorum and vacancies in the board shall not affect its power and authority so long as a quorum remains. Within ten days after appointment and qualification of members, the board shall hold a meeting to elect a chairman. The board shall at the same time designate a secretary and treasurer, or secretary-treasurer, who need not be members of the board and fix the amount of the surety bond which shall be required of such secretary and treasurer, or secretary-treasurer, and shall fix his or their compensation. The board shall hold public meetings at least once per month, at such regular time and place as the board may determine. Changes in such time and place of meeting shall be made known to the public

as far in advance as practicable. Save as otherwise expressly provided, the board shall establish its own rules of procedure. All members of the board shall serve as such without compensation, but they shall be allowed necessary traveling and other expenses while engaged in the business of the board, including an allowance of not to exceed Five ($5.00) Dollars per month for attendance at meetings. Such expenses, as well as the salaries of the secretary and treasurer, or secretary-treasurer, shall constitute a cost of operation and maintenance of the electric plant.

Any member of the board may be removed from office for cause upon a vote of three-fourths of the members of the governing body of the municipality, but only after preferment of formal charges by resolution of a majority of the members of such governing body at a public hearing before such governing body.

Municipalities now or hereafter owning or operating a water works and/or sewerage works may confer upon the board the jurisdiction over such water works and/or sewerage works now or hereafter vested in any other board, commission or other body. If the board is given jurisdiction over such works it shall keep separate accounts for the electric plant and each works, making due and proper allocation of all joint expenses, revenues and property valuations.

SEC. 14. SUPERVISION AND CONTROL OF THE ELECTRIC PLANT.—*Be it further enacted*, That the general supervision and control of the acquisition, improvement operation and maintenance of the electric plant shall be in charge of the following agency (hereinafter referred to as the "supervisory body"): The board, or if there be no board, then the governing body of the municipality. If the latter, such governing body may by resolution delegate all or any of its powers or duties as supervisory body to the City-Manager, if any. The supervisory body shall appoint an electric plant superintendent (hereinafter called "superintendent"), who shall be qualified by training and experience for the general superintendence of the acquisition, improvement and operation of the electric plant. The superintendent need not be a resident of the state at the time of his appointment. His salary shall be fixed by the person or agency appointing such superintendent. The

superintendent shall serve at the pleasure of the supervisory body and may be removed by said body at any time.

Within the limits of the funds available therefor, all powers to acquire, improve, operate and maintain, and to furnish electric service, and all powers necessary or convenient thereto, conferred by this Act shall be exercised on behalf of the municipality by the supervisory body and the superintendent respectively. Subject to the provisions of applicable bonds or contracts, the supervisory body shall determine programs and make all plans for the acquisition of the electric plant, shall make all determinations as to improvements, rates and financial practices, may establish such rules and regulations as it may deem necessary or appropriate to govern the furnishing of electric service, and may disburse all moneys available in the electric plant fund hereinafter established for the acquisition, improvement, operation and maintenance of the electric plant and the furnishing of electric service. A copy of the schedule of the current rates and charges in effect from time to time and a copy of all rules and regulations of the supervisory body relating to electric service shall be kept on public file at the main and all branch offices of the electric plant and also in the office of the municipal clerk or recorder. The superintendent shall have charge of all actual construction, the immediate management and operation of the electric plant and the enforcement and execution of all rules, regulations, programs, plans and decisions made or adopted by the supervisory body. The superintendent shall appoint all employees and fix their duties and compensation, excepting that the appointment of all technical consultants and advisers and legal assistants shall be subject to the approval of the supervisory body. Subject to the provisions of Section 3 (f), the superintendent, with the approval of the supervisory body, may acquire and dispose of all property, real and personal, necessary to effectuate the purposes of this Act. The title of such property shall be taken in the name of the municipality. The superintendent shall let all contracts, subject to the approval of the supervisory body, but may, without such approval, obligate the electric plant on purchase orders up to an amount to be fixed by the supervisory body, but not to exceed Two Thousand ($2,000) Dollars. Any work or construction exceeding in cost Two Thousand Dollars shall, before any contract is let or

work done, be advertised by the superintendent for bids, but the supervisory body shall have power to reject any and all bids. The superintendent shall make and keep full and proper books and records, subject to the supervision and direction of the supervisory body.

SEC. 15. ELECTRIC PLANT FUND.—*Be it further enacted,* That all moneys derived from the issuance of bonds hereunder, together with any Federal grant made in connection therewith, shall be paid to the proper fiscal agent of the supervisory body. Such agent shall deposit such moneys, together with all receipts from electric service or any other operation of the supervisory body as such, in a separate bank account or accounts (hereinafter called "electric plant fund"), separate from all other municipal funds, and shall keep adequate records of all such receipts and their sources. The fiscal agent shall pay out such moneys only on voucher signed by the superintendent. No such voucher for the payment of any such moneys shall be issued except upon the resolution or order of the supervisory body, a certified copy whereof shall be filed in the office of the fiscal agent.

SEC. 16. DISPOSITION OF MONEYS RECEIVED FROM THE ISSUANCE OF BONDS.—*Be it further enacted,* That all moneys received from the issuance of bonds shall be used solely to defray the cost of acquiring or improving an electric plant, except that such proceeds may in the discretion of the supervisory body also be used for the payment of the interest on the bonds during the first two years following the date of such bonds. The cost of the electric plant shall include all costs of acquisition, or improvement, including all preliminary expenses described in Section 12 hereof, the cost of acquiring all property, franchises, easements, and rights in the judgment of the supervisory body necessary or convenient therefor; engineering and legal expenses, expenses for estimates of cost and revenues, expenses for plans, specifications and surveys, other expenses incident or necessary to determining the feasibility or practicability of the enterprise, administrative expense, and such other expense as may be incurred in the financing herein authorized, the acquisition or improvement of the electric plant, the placing of such plant in operation, including the creation of a cash working fund, and the performance of

the things herein required or permitted in connection therewith.

SEC. 17. DISPOSITION OF REVENUES.—*Be it further enacted*, That the supervisory body shall devote all moneys in the Electric Plant Fund derived from any source other than the issuance of bonds to or for the payment of all operating expense; bond interest and retirement and/or sinking fund payments; the acquisition and improvement of the electric plant; contingencies; the payment of other obligations incurred in the operation and maintenance of the electric plant and the furnishing of electric service; the redemption and purchase of electric plant bonds in which case such bonds shall be cancelled; the creation and maintenance of a cash working fund; the payment of an amount to the general funds of the municipality not to exceed a cumulative return of 6% per annum of the equity or investment, if any, of the municipality; and, if the governing body of the municipality shall by resolution so request, payments to the municipality in lieu of ad valorem taxes on the property of the electric plant within the corporate or county limits of the municipality not to exceed the amount of taxes payable on privately owned property of similar nature. Any surplus thereafter remaining, after establishment of proper reserves, if any, shall be devoted solely to the reduction of rates. In computing the equity or investment of the municipality, the value of the electric plant shall be taken as its historical cost. The payment of bonds or the acquisition or improvement of property from the receipts derived from electric service or any other operation of the surpervisory body as such shall not be considered to increase the equity or investment of the municipality.

SEC. 18. SERVICES RENDERED TO MUNICIPALITIES AND DEPARTMENTS AND WORKS THEREOF.—*Be it further enacted*, That the supervisory body shall charge the municipality and all departments and works thereof for any electric service furnished to them, at the rates applicable to other customers taking service under similar conditions. Revenues derived from such service shall be treated as all other revenues.

SEC. 19. RECORDS AND REPORTS OF THE BOARD.—Be it *further enacted,* That the board shall keep a complete and accurate record of all meetings and actions taken, and of all receipts and disbursements, and shall make reports of the same to the governing body of the municipality at stated intervals, not to exceed one year. Said reports shall be in writing, shall be filed in open meeting of the governing body of the municipality, at stated intervals, not to exceed one year. Said reports shall be in writing, shall be filed in open meeting of the governing body of the municipality, and a copy shall be filed with the municipal clerk or recorder.

SEC. 20. USE OF CERTAIN RIGHTS-OF-WAY.—*Be it further enacted,* That any municipality may use any right-of-way, easement or other similar property right necessary or convenient in connection with the acquisition, improvement, operation or maintenance of an electric plant, held by the state or any other municipality, *provided* that such other municipality shall consent to such use.

SEC. 21. CONDEMNATION.—*Be it further enacted,* That any municipality proceeding under the provisions of this Act is hereby authorized and empowered to condemn any land, easements or rights-of-way—either on, under or above the ground, for any and all purposes necessary in connection with the construction, operation and maintenance of an electric plant or improvements thereto. Title to property so condemned shall be taken in the name of the municipality. Such condemnation proceeding shall be pursuant to and in accordance with Sections 3109-3134, inclusive, of the Code of Tennessee, 1932; *provided, however,* that where title to any property sought to be condemned is defective, it shall be passed by decree of Court; *provided, further,* that where condemnation proceedings become necessary the Court in which such proceedings are filed shall, upon application by the municipality and upon the posting of a bond with the Clerk of the Court in such amount as the court may deem commensurate with the value of the property, order that the right of possession shall issue immediately or as soon and upon such terms as the court, in its discretion, may deem proper and just.

SEC. 22. ELECTION FOR DISPOSITION OF ELECTRIC PLANT. —*Be it further enacted,* That the governing body of the municipality may dispose of all or substantially all of the electric plant acquired by means of bonds issued hereunder, but only with the approval of the supervisory body and a majority of those voting in an election held as follows: The governing body of the municipality shall adopt a resolution which shall state in substance (a) that the supervisory body has approved the proposed disposition; (b) a full description of the property to be disposed of; (c) the purchaser or purchasers thereof; (d) the purchase price; (e) the terms or conditions of sale if such disposition is not for cash, payable in full at the time of such disposition; (f) the date on which such election will be held; (g) the place or places where votes may be cast; and (h) the hours between which such voting places may be open. At such election the ballot shall contain the words "For the Disposition of the Electric Plant" and "Against the Disposition of the Electric Plant." In all other respects the election shall be called and held in the manner set forth in Section 4 hereof.

SEC. 23. SUPPLEMENTAL NATURE OF ACT.—*Be it further enacted,* That the powers conferred by this Act shall be in addition and supplemental to the powers conferred by any other law. Bonds may be issued hereunder for the acquisition or improvement of an electric plant notwithstanding that any other law may provide for the issuance of bonds for like purposes and without regard to the requirements, restrictions or procedural provisions contained in any other law. Any proceedings heretofore taken by any municipality relating to the subject matters of this Act, whether or not commenced under any other law, may at the option of the governing body, be discontinued and new proceedings instituted under this Act.

SEC. 24. LIBERAL CONSTRUCTION OF THE ACT.—*Be it further enacted,* That this Act is for the public purpose of promoting the increased use of electricity in the urban and rural areas of this State, and to enable all counties, as well as cities and towns, to secure the benefit of the surplus power generated or to be generated by the Tennessee Valley Authority at Wilson Dam in the State of Alabama

and Norris Dam in the State of Tennessee, or the power generated at any other works or dams. This Act is remedial in nature and the powers hereby granted shall be liberally construed to effectuate the purposes hereof, and to this end every municipality shall have power to do all things necessary or convenient to carry out the purposes hereof in addition to the powers expressly conferred in this Act.

SEC. 25. EXCISION OF UNCONSTITUTIONAL OR INEFFECTIVE PARTS OF ACT.—*Be it further enacted*, That it is hereby declared that the sections, clauses, sentences and parts of this Act are severable, are not matters of mutual essential inducement, and any of them shall be exscinded if this Act would otherwise be unconstitutional or ineffective; it is the intention to confer upon every municipality the whole or any part of the powers in this Act provided for, and if any one or more sections, clauses, or sentences and parts of this Act shall for any reason be questioned in any court, and shall be adjudged unconstitutional or invalid, such judgment shall not affect, impair or invalidate the remaining provisions thereof, but shall be confined in its operation to the specific provision or provisions so held unconstitutional or invalid, and the inapplicability or invalidity of any section, clause, sentence or part of this Act in any one or more instances shall not be taken to affect or prejudice in any way its applicability or validity in any other instance.

SEC. 26. TIME OF TAKING EFFECT.—*Be it further enacted*, That this Act shall take effect from and after its passage, the public welfare requiring it.

Passed February 12, 1935.

W. P. Moss,
Speaker of the Senate.

WALTER M. HAYNES,
Speaker of the House of Representatives.

Approved February 14, 1935.

HILL MCALLISTER,
Governor.

SECTION F

UNPUBLISHED OPINION OF THE TENNESSEE SUPREME COURT

KENTUCKY-TENNESSEE LIGHT & POWER COMPANY

v.

CITY OF CLARKSVILLE, ET AL.

Montgomery Equity
December Term, 1937

OPINION

Under a franchise granted by the City of Clarksville the complainant maintains an electric distribution system, which it erected at a cost of $400,000. In 1936 the City Council initiated proceedings under Chapter 32, Acts 1935, to establish its own system and a majority of the voters approved a proposal of the City Council to issue $250,000 of bonds in furtherance of the plan.

The bill was filed to enjoin issuance of the bonds and establishment of the municipal power system upon the insistence that the City was proceeding under void statutes, and especially under Chapter 32 Acts 1935, alleged to violate the Constitution in several instances. The chancellor sustained the City's demurrer to the bill and the cause is here upon complainant's appeal and assignments of error which raise the question of whether or not the Act of 1935 contravenes Article I, section 8 and Article II, section 17 of the Constitution, and upon assignments of error directed to the action of the chancellor in relation to certain private acts.

Complainant's 5th and 14th assignments of error rest upon the charge that section 6 of the Act of 1935 imposes unreasonable limitation against actions or proceedings to question the validity of bonds issued under the Act and is a denial of due process contrary to Article I, section 8 of the Constitution. If we should construe this provision as a statute of limitations, it does not affect any preexisting right and as related to future actions it cannot be seen that the limit of 20 days for contesting the validity of pro-

ceedings for the issuance of bonds is so unreasonable as to amount to denial of due process. For reasons stated in the opinion by Mr. Justice McKinney in the cause of Tennessee Electric Power Company v. Fayetteville, we do not consider this provision violative of any constitutional right of complainant.

The other assignments of error involve application of Article II, section 17 of the Constitution. It is said that the caption of the Act afforded no reasonable notice of the following provisions in the body: (1) Subsection (d) and subsection (g) of section 3, authorizing municipalities to contract debts for the establishment and maintenance of the power plant otherwise than by issuance of bonds and acceptance of grants from the federal government; (2) section 6, imposing a limitation of 20 days within which to contest proceedings for the issuance of bonds; (3) section 11, authorizing issuance of bonds for the acquisition of a municipal power plant without regard to limitation imposed by other laws designed to avoid unreasonable debt and unreasonable taxation; (4) section 13, providing for the appointment by the municipality of a board of public utilities to supervise the plant and control its revenues, and by authority of the city government to exercise control over waterworks and sewers; (5) section 14 and subsequent provisions relating to the supervision and control of the power system and the disposition of its revenues; (6) section 22, empowering a municipality under prescribed conditions to dispose of its municipal electric plant; (7) section 23, providing that the powers conferred upon municipalities by the Act shall be supplemental to the municipal powers conferred by other laws.

It is sufficient to say, without copying the caption, that the purpose expressed therein is to authorize municipalities to acquire, and in their proprietary capacity to operate, a system for the distribution of electricity to consumers; to provide funds for the acquisition of the system and make rules and regulations for its management and the control and use of its revenues. Viewing the Act in its entirety, we find that provisions in the body, other than the last paragraph of section 13 hereafter discussed, relate, directly or indirectly, to the object expressed in the caption. The various provisions of the Act are germane to the common purpose expressed in the caption, of au-

thorizing municipalities to acquire and operate a system for the distribution of electricity, and meets the constitutional requirement as ruled in Cannon v. Mathes, 8 Heisk. 504, and many subsequent cases.

We find no merit in the 10th assignment of error, relating to the action of the chancellor in holding that the city is authorized to own and operate a power plant by its charter, Chapter 252, Acts 1929. That power is directly conferred by the charter and by another statute, which are to be construed in *pari materia* with Chapter 32, Acts 1935, providing means for the acquisition of the power system.

Other assignments of error directed to alleged infirmities in private acts mentioned in the record become immaterial. The last paragraph of section 13 of Chapter 32, Acts 1935, which introduced a provision authorizing the municipal governments to transfer control over their waterworks and sewers to the Electric Power Control Board, seems to be beyond the caption and unrelated to any purpose expressed either in the caption or in the Act. But the Court adopted the view expressed in the opinion of Mr. Justice McKinney in Tennessee Electric Power Co. v. Town of Fayetteville and as therein construed a majority of the Court holds the provision not beyond the caption. The decree of the chancellor is affirmed.

COOK, J. (s)

OFFICE OF CLERK OF THE SUPREME COURT

For the Middle Division of the State of Tennessee.

I, DAVID S. LANSDEN, Clerk of said Court, do hereby certify that the foregoing is a true, perfect, and complete copy of the Opinion of said Court, pronounced at its December term, 1937, in case of *Kentucky-Tennessee Light and Power Company* against *Clarksville* as appears of record on file in my office.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of the Court, at office in the Capitol at Nashville, on this, the 4th day of April, 1938.

DAVID S. LANSDEN (s), *Clerk.*

SEAL

By————————*D. C.*

SUPREME COURT OF THE UNITED STATES.

No. 27.—October Term, 1938.

The Tennessee Electric Power Co., et al., Appellants, *vs.* Tennessee Valley Authority, et al.	On Appeal from the United States District Court for the Eastern District of Tennessee.

[January 30, 1939.]

Mr. Justice Roberts delivered the opinion of the Court.

The Tennessee Valley Authority Act[1] erects a corporation, an instrumentality of the United States, to develop by a series of dams on the Tennessee River and its tributaries a system of navigation and flood control and to sell the power created by the dams. Eighteen corporations which generate and distribute electricity in Tennessee, Kentucky, Mississippi, Alabama, Georgia, West Virginia, Virginia, North Carolina, and South Carolina, and one which transmits electricity in Tennessee and Alabama, filed a bill in equity, in the Chancery Court of Knox County, Tennessee, against the Authority and its three executive officers and directors. The prayers were that the defendants be restrained from generating electricity out of water power created, or to be created, pursuant to the Act and the Authority's plan of construction and operation; from transmitting, distributing, supplying or selling electricity so generated, or to be generated, in competition with any of the complainants; from constructing, or financing the construction of, steam or hydro-electric generating stations, transmission lines or means of distribution, which will duplicate or compete with any of their services; from regulating their retail rates through any contract, scheme or device; and from substituting federal regulation for state regulation of local rates for electric service, more especially by incorporating in contracts for the sale of electricity terms fixing retail rates. The defendants removed the cause to the United States District Court for Eastern Tennessee and there answered

[1] Act of May 18, 1933, 48 Stat. 58, as amended by Act of August 31, 1935, 49 Stat. 1075; 16 U. S. C. Sec. 831, *et seq.*

the bill. As required by the Act of August 24, 1937,[2] a court of three judges was convened which, after a trial, dismissed the bill.[3] Fourteen of the complainants are here as appellants.[4] They contend that water power cannot constitutionally be created in conformity to the terms of the Tennessee Valley Authority Act, and the United States will, therefore, acquire no title to it, because it will not be produced as an incident of the exercise of the federal power to improve navigation and control floods in the navigable waters of the nation. They affirm that the statutory plan is a plain attempt, in the guise of exerting granted powers, to exercise a power not granted to the United States, namely, the generation and sale of electric energy; that the execution of the plan contravenes the Fifth, Ninth, and Tenth Amendments of the Constitution, since the sale of electricity on the scale proposed will deprive the appellants of their property without due process of law, will result in federal regulation of the internal affairs of the states, and will deprive the people of the states of their guaranteed liberty to earn a livelihood and to acquire and use property subject only to state regulation. The appellees contest these contentions. For reasons about to be stated we do not consider or decide the issues thus mooted.

The Authority's acts, which the appellants claim give rise to a cause of action, comprise (1) the sale of electric energy at wholesale to municipalities empowered by state law to maintain and operate their own distribution systems; (2) the sale of such energy at wholesale to membership corporations organized under state law to purchase and distribute electricity to their members without profit; (3) the sale of firm and secondary power at wholesale to industrial plants.

The appellants are incorporated for the purpose and with the authority to conduct business as public utilities. Several do so only within the states of their incorporation; those chartered elsewhere have qualified as foreign corporations under the laws of the states in which they manufacture, transmit, or distribute electricity. Most of them have local franchises, licenses, or easements granted

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[2] 50 Stat. 751, 752, 28 U. S. C. Sec. 380a.

[3] 21 F. Supp. 947.

[4] Georgia Power Company was enjoined from maintaining the action. See Georgia Power Co. *v.* Tennessee Valley Authority, 17 F. Supp. 769; 89 F. (2d) 218, 302 U. S. 692. Four other complainants have since been permitted to withdraw from the litigation without prejudice to its prosecution by the remaining appellants.

by municipalities or governmental subdivisions but it is admitted that none of these franchises confers an exclusive privilege.

While the Authority has not built or authorized any transmission line, has not sold or authorized the sale of electricity, or contracted for, or authorized any contract for, the sale of electricity by others, in territory served by nine of the appellants, it has done some or all of these things in areas served or susceptible of service by five of the companies; and it plans to enter in the same way the territory of other appellants. It is, clear, therefore, that its acts have resulted and will result in the establishment of municipal and co-operative distribution systems competing with those of some or all the appellants in territory which they now serve, or reasonably expect to serve by extension of their existing systems, and in direct competition with the appellants' enterprises through the sale of power to industries in areas now served by them or which they can serve by expansion of their facilities. The appellants assert that this competition will inflict substantial damage upon them. The appellees admit that such damage will result, but contend that it is not the basis of a cause of action since it is *damnum absque injuria*,—a damage not consequent upon the violation of any right recognized by law.

The appellants invoke the doctrine that one threatened with direct and special injury by the act of an agent of the government which, but for statutory authority for its performance, would be a violation of his legal rights, may challenge the validity of the statute in a suit against the agent.[5] The principle is without application unless the right invaded is a legal right,—one of property, one arising out of contract, one protected against tortious invasion, or one founded on a statute which confers a privilege.[6] The appellants urge that the Tennessee Valley Authority, by competing with them in the sale of electric energy, is destroying their property and rights without warrant, since the claimed authorization of its

[5] Philadelphia Co. *v.* Stimson, 223 U. S. 605, 619; Stafford *v.* Wallace, 258 U. S. 495, 512; Massachusetts *v.* Mellon, 262 U. S. 447, 488. The same rule applies to suits against state officers: Osborn *v.* The Bank, 9 Wheat. 738, 857, 859; Terrace *v.* Thompson, 263 U. S. 197, 214; Sterling *v.* Constantin, 287 U. S. 378, 393.

[6] In re Ayers, 123 U. S. 443; Walla Walla *v.* Walla Walla Water Co., 172 U. S. 1; American School of Magnetic Healing *v.* McAnnulty, 187 U. S. 94; Ex parte Young, 209 U. S. 123; Scully *v.* Bird, 209 U. S. 481; Philadelphia Co. *v.* Stimson, *supra*; Lane *v.* Watts, 234 U. S. 525; Truax *v.* Raich, 239 U. S. 33; Lipke *v.* Lederer, 259 U. S. 557.

transactions is an unconstitutional statute. The pith of the complaint is the Authority's competition. But the appellants realize that competition between natural persons is lawful. They seek to stigmatize the Authority's present and proposed competition as "illegal" by reliance on their franchises which they say are property protected from injury or destruction by competition. They classify the franchises in question as of two sorts,—those involved in the state's grant of incorporation or of domestication and those arising from the grant by the state or its subdivisions of the privilege to use and occupy public property and public places for the service of the public.

The charters of the companies which operate in the states of their incorporation give them legal existence and power to function as public utilities. The like existence and powers of those chartered in other states have been recognized by the laws of the states in which they do business permitting the domestication of foreign corporations. The appellants say that the franchise to be a public utility corporation and to function as such, with incidental powers, is a species of property which is directly taken or injured by the Authority's competition. They further urge that, though non-exclusive, the local franchises or easements, which grant them the privilege to serve within given municipal subdivisions, and to occupy streets and public places, are also property which the Authority is destroying by its competition. Since what is being done is justified by reference to the Tennessee Valley Authority Act, they say they have standing to challenge its constitutionality.

The vice of the position is that neither their charters nor their local franchises involve the grant of a monopoly or render competition illegal. The franchise to exist as a corporation, and to function as a public utility, in the absence of a specific charter contract on the subject, creates no right to be free of competition,[7] and affords the corporation no legal cause of complaint by reason of the state's subsequently authorizing another to enter and operate in the same field.[8] The local franchises, while having elements of property, confer no contractual or property right to be free of competition either from individuals, other public utility corpora-

[7] See Charles River Bridge *v.* Warren Bridge, 11 Pet. 420, 548; Turnpike Co. *v.* The State, 3 Wall. 210, 213; Hamilton Gas Light Co. *v.* Hamilton City, 146 U. S. 258, 268; Pearsall *v.* Great Northern Railway, 161 U. S. 646, 664.

[8] Compare Lehigh Water Co. *v.* Easton, 121 U. S. 388.

tions, or the state or municipality granting the franchise.[9] The grantor may preclude itself by contract from initiating or permitting such competition,[10] but no such contractual obligation is here asserted.

The appellants further argue that even if invasion of their franchise rights does not give them standing, they may, by suit, challenge the constitutionality of the statutory grant of power the exercise of which results in competition. This is but to say that if the commodity used by a competitor was not lawfully obtained by it the corporation with which it competes may render it liable in damages or enjoin it from further competition because of the illegal derivation of that which it sells. If the thesis were sound, appellants could enjoin a competing corporation or agency on the ground that its injurious competition is *ultra vires*, that there is a defect in the grant of powers to it, or that the means of competition were acquired by some violation of the Constitution. The contention is foreclosed by prior decisions that the damage consequent on competition, otherwise lawful, is in such circumstances *damnum absque injuria*, and will not support a cause of action or a right to sue.[11]

Certain provisions of state statutes regulating public utilities are claimed to confer on the appellants the right to be free of competition. Each of the states in which any of them operates, save Mississippi,[12] has established a commission to supervise and regulate public utilities. While the statutes[13] differ in their provisions, all but that of Virginia require a public utility to obtain a certificate of convenience and necessity as a condition of doing business. The appellants commenced business in the various states prior to the

[9] Joplin *v.* Southwest Missouri Light Co., 191 U. S. 150; Helena Water Works Co. *v.* Helena, 195 U. S. 383, 393; Madera Water Works *v.* Madera, 228 U. S. 454; Green *v.* Frazier, 253 U. S. 233; Puget Sound Power & Light Co. *v.* Seattle, 291 U. S. 619, 624.

[10] Walla Walla *v.* Walla Walla Water Co., *supra;* Superior Water L. & P. Co. *v.* Superior, 263 U. S. 125.

[11] Railroad Co. *v.* Ellerman, 105 U. S. 166, 173; Alabama Power Co. *v.* Ickes, 302 U. S. 464, 479-483, and cases cited; Greenwood County *v.* Duke Power Co., 81 F. (2d) 986, 997; Duke Power Co. *v.* Greenwood County, 91 F. (2d) 665, 676; affirmed 302 U. S. 485.

[12] In Mississippi there is no State Commission, but municipalities are given the authority to regulate utilities within their territorial limits. Mississippi Code (1930) §§ 2400-1, 2414.

[13] Alabama Code (1928) § 9795; Carroll's Kentucky Statutes (1936) § 3952-25; North Carolina Code (1935) § 1037(d); Williams' Tennessee Code (1934) §§ 5502-3; South Carolina Code (1934 Supp.) § 8555-2(23); Virginia Code (1936) §§ 3693-3774 k; West Virginia Code (1937) § 2562(1).

adoption of the requirement of such certificates and, so far as appears, they have none covering their entire operations. They have, however, obtained certificates for extensions made since the passage of the statutes; and they claim that, in any event, these laws afford them protection from the Authority's competition since any utility now seeking to serve in their territory must obtain a certificate, and hence they have standing to maintain this suit against the Authority which has none. The position cannot be maintained. Whether competition between utilities shall be prohibited, regulated or forbidden is a matter of state policy. That policy is subject to alteration at the will of the legislature.[14] The declaration of a specific policy creates no vested right to its maintenance in utilities then engaged in the business or thereafter embarking in it.

Moreover, the states in which the Authority is now functioning have declared their policy in respect of its activities. Alabama has enacted that federal agencies, instrumentalities, or corporations shall not be under the jurisdiction of its Public Service Commission;[15] that municipalities and improvement authorities may own and operate electric generating and distributing systems and may contract with a federal agency such as the Authority for the purchase of energy, and stipulate as to the use of the energy, including rates of resale;[16] that nonprofit membership corporations may be formed for the distribution among their members of electricity with like power to contract with the Authority for the required energy.[17] Tennessee has amended Section 5448 of its Code, which defines public utilities, so as to exclude federal corporations such as the Authority from the jurisdiction of the State Utilities Commission;[18] has authorized municipalities to own and operate electric generating transmission and distribution systems and to contract for power with the Authority on terms deemed appropriate, including the fixing of resale prices;[19] has authorized the formation of nonprofit membership

[14] Compare Wheeling & B. Bridge Co. v. Wheeling Bridge Co., 138 U. S. 287, 292; Williams v. Wingo, 177 U. S. 601, 604.

[15] Alabama Acts, Regular Session 1935, No. 1.

[16] Alabama Acts, Regular Session 1935, No. 155.

[17] Alabama Acts, Regular Session 1935, No. 45.

[18] Tennessee Public Acts 1935, chap. 42, p. 98.

[19] Tennessee Public Acts 1935, chap. 32, p. 23; Tennessee Public Acts 1935, chap. 37, p. 78.

electric corporations with like powers to contract.[20] Kentucky has authorized municipalities to establish and maintain light, heat, and power plants;[21] and has provided for the organization of nonprofit cooperative electric corporations which may contract with the Authority for purchase of energy and stipulate as to resale prices.[22] Mississippi, which has no state law for regulation of utilities, has empowered municipal and county governments to establish and maintain electric distribution systems which may buy power from the Authority and contract as to resale prices;[23] has created a rural electrical authority and authorized the formation of power districts and nonprofit competitives, all competent to purchase energy from the Authority and distribute it and to contract with the Authority as to resale rates to consumers.[24] The Authority's action in these states is consonant with state law, but, as has been shown, if the fact were otherwise, the appellants would have no standing to restrain its continuance.

As the Authority has not acted in any way in North Carolina, South Carolina, Virginia or West Virginia, the appellant's contention that its proposed entry into some or all of them confers a right to sue for an injunction against injury thereby threatened has even less support.[25]

The appellants may not raise any question of discrimination forbidden by the Fourteenth Amendment involved in state exemption of the Authority from commission regulation. For this reason *Frost* v. *The Corporation Commission*, 278 U. S. 515, on which they rely, is inapplicable. Manifestly there can be no challenge of the validity of state action in this suit.

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[20] Tennessee Public Acts 1937, chap. 231, p. 882.

[21] Carroll's Kentucky Statutes (1936) §§ 3480 d-1 to 3480 d-22.

[22] Kentucky Acts, Fourth Extraordinary Session, 1936-1937, chap. 6, p. 25.

[23] Mississippi Laws, 1936, chap. 185, p. 354; chap. 271, p. 531.

[24] Mississippi Laws, 1936, chap. 183, p. 334; chap. 187, p. 370; chap. 184, p. 342.

[25] In fact several of the states in question have statutes which would to some extent, and in some circumstances, permit the purchase and use of power created by the Authority. In all of them municipalities may establish and operate their own distribution systems: North Carolina Code (1935) § 2807; South Carolina Code (1932) §§ 7278-7280, 8262; Virginia Code (1936) § 3031; West Virginia Code (1937) §§ 494, 591(86). North Carolina and Virginia have statutes permitting the formation of cooperatives which may buy power from the Authority under contracts fixing resale rates: Public Laws of North Carolina, 1935, chap. 291, p. 312; Virginia Code (1936) chap. 159 A. South Carolina has created a State Rural Electrification Authority with power to buy electricity from any federal agency: South Carolina Code (1936 Supplement) §§ 6010-2 ff.

A distinct ground upon which standing to maintain the suit is said to rest is that the acts of the Authority cannot be upheld without permitting federal regulation of purely local matters reserved to the states or the people by the Tenth Amendment and sanctioning destruction of the liberty said to be guaranteed by the Ninth Amendment to the people of the states to acquire property and employ it in a lawful business. The proposition can mean only that since the Authority sells electricity at rates lower than those heretofore maintained by the appellants such sale is an indirect regulation of appellants' rates. But the competition of a privately owned company authorized by the state to enter the territory served by one of the appellants would, in the same sense, constitute a regulation of rates. The contention amounts to saying that competition by an individual or a state corporation is not regulation but competition by a federal agency is. In contracting with municipalities and nonprofit corporations the Authority has stipulated respecting the price at which the energy supplied shall be resold by its vendees. That is said to be a regulation of the appellant's business. But it is nothing more than an incident of competition; it is but a method of seeking and assuring a market for the power which the Authority has for sale, and a lawful means to that end.[26] The sale of government property in competition with others is not a violation of the Tenth Amendment. As we have seen there is no objection to the Authority's operations by the states, and, if this were not so, the appellants, absent the states or their officers, have no standing in this suit to raise any question under the amendment.[27] These considerations also answer the argument that the appellants have a cause of action for alleged infractions of the Ninth Amendment.

Finally, it is asserted that the right to maintain this suit is sustained by certain allegations of concerted action by the officials of the Authority and the Public Works Administrator. The bill alleges that having adopted an unlawful plan the defendants have cooperated, and threaten to continue to cooperate in its execution, with Harold L. Ickes, as Administrator of the Federal Administration of Public Works, in a systematic campaign to coerce and intimidate the complainants into selling their existing systems in municipalities or territory in which the Authority desires to seize

[26] Oregon & Calif. R. R. v. United States, 238 U. S. 393; United States v. Gratiot, 26 Fed. Cas. 12, 13-14; affirmed 14 Pet. 526.

[27] Compare Georgia Power Co. v. Tennessee Valley Authority, 14 F. Supp. 673, 676.

the market for electricity; that, in order to make this coercion effective, Ickes has, in cooperation with, or on request of, the Authority, announced loans and grants of federal funds to municipalities; that the Authority and Ickes have cooperated, and continue to do so, to force municipalities to purchase the Authority's power under threats that, unless they do, proposed loans and grants for municipal systems will not be made. The bill states that, though Ickes "confederated and acted with the defendants in some of its illegal acts and is, therefore, a proper party, he is not a necessary party and is not joined as a defendant because he is beyond the jurisdiction of the court." There is a prayer that the defendants be restrained from confederating and acting in concert with Ickes for the described ends.

The District Court finds that the Authority has not indulged in coercion, duress, fraud, or misrepresentation in procuring contracts with municipalities, cooperatives or other purchasers of power; has not acted with any malicious or malevolent motive; and has not conspired with municipalities or other purchasers of power. The record justifies these findings. It is claimed, however, that they are inconclusive since the court erroneously excluded much proffered evidence tending to sustain the charge. An examination of the record discloses that certain of the evidence offered was properly excluded, and that in other instances the rejection of that offered constituted, at most, harmless error.

Error is assigned to the trial court's refusal to permit the taking of the deposition of the Public Works Administrator. In view of the prior opportunity which the claimants had to take this deposition, the lateness of the application, and other factors, permission to take the deposition was a matter within the court's discretion and it does not appear that the discretion was abused.

The remaining assignments of error directed to the exclusion of evidence of cooperation between the two federal agencies go to the rejection of evidence consisting largely of correspondence between them and press releases or announcements by officers of one or the other. The record contains all but a few of these rejected documents, those omitted apparently not being thought of importance. Scrutiny of them compels the conclusion that if the rejected evidence had been admitted, the trial court's holding that a conspiracy had not been proved should not be overruled.

The only findings on this subject requested by the appellants were to the effect that the Public Works Administration has cooperated with and assisted the Tennessee Valley Authority in the furtherance of the latter's power program and that the former has made contracts and allotments for loans and grants to twenty-three municipalities in the states of Alabama, Mississippi, and Tennessee, amounting to about fourteen million dollars, for the purpose of constructing municipal systems to distribute the Authority's power in competition with the appellants; that the applications for loan and grant in some instances specify that the municipal system will duplicate a privately owned system; in others that a large business will be done by the municipal plants because of the low promotional rates of the Authority; that some of the applications state they were filed to take advantage of the low rates offered by the Authority and that, with few exceptions, they state that the electricity to be distributed in the city will be purchased from the Authority. A further requested finding is that the applications of certain Alabama cities recite that they have secured written contracts from practically all consumers; that these contracts refer to lower rates to be secured, provided the rates charged by the city shall be thus prescribed by the Authority for resale at retail. The court refused to make the requested findings and error is assigned to this refusal. It is apparent that if the court had made the findings no conclusion of confederation or conspiracy, with malicious intent to harm the appellants or to destroy their business, would thereby have been required.

Cooperation by two federal officials, one acting under a statute whereby funds are provided for the erection of municipal plants, and the other under a statute authorizing the production of electricity and its sale to such plants, in competition with the appellants, does not spell conspiracy to injure their business. As the court below held, such cooperation does not involve unlawful concert, plan, or design, or cooperation to commit an unlawful act or to commit acts otherwise lawful with the intent to violate a statute.

In no aspect of the case have the appellants standing to maintain the suit and the bill was properly dismissed.

The decree is affirmed.

Mr. Justice REED took no part in the consideration or decision of this case.

SUPREME COURT OF THE UNITED STATES.

No. 27.—October Term, 1938.

The Tennessee Electric Power Co., et al., Appellants, *vs.* Tennessee Valley Authority, et al.	On Appeal from the United States District Court for the Eastern District of Tennessee.

[January 30, 1939.]

Mr. Justice Butler.

The decision just announced goes too far. It excludes from the courts complainants seeking constitutional protection of their property against defendants acting, as it is alleged, under invalid claim of governmental authority in setting up and carrying on a program calculated to destroy complainants' business. The issues joined by the parties, tried below and fully presented to this Court, include the question whether, when construed to authorize the things done and threatened by defendants, the challenged enactment is authorized by the Constitution or repugnant to the Fifth, Ninth, and Tenth Amendments. The issues also include the question whether, as being applied, the Act is void because the execution of defendants' program will deprive complainants of their property without due process of law in contravention of the Fifth Amendment. This Court holds complainants have no standing to challenge the validity of the Act and puts aside as immaterial their claim that by defendants' unauthorized acts their properties are being destroyed.

The opinion states: "The Authority's acts which the appellants claim give rise to a cause of action, comprise (1) the sale of electrical energy at wholesale to municipalities empowered by state law to maintain and operate their own distribution systems; (2) the sale of such energy at wholesale to membership corporations organized under state law to purchase and distribute electricity to their members without profit; (3) the sale of firm and secondary power at wholesale to industrial plants."

That the substance of complainants' case may not be so compressed is disclosed by the summary of their bill that follows:

Complainants are 19 public utilities. Each, authorized by law, is engaged in generating and selling electricity within the political subdivisions of various States. Some have long-term contracts under which they furnish large quantities of electricity. They are more than able to fill the needs of the territories in which they operate and are ready to supply such additional facilities as may be needed in the future. Their properties are modern and economically operated and possess great value as going concerns. Their rates yield no more than a reasonable return and are fully regulated by the States in which they serve.

Defendants are the Tennessee Valley Authority, a body corporate created by the Act of May 18, 1936, with the right to sue and be sued, and its three directors, charged with the duty of exercising the powers of the Authority. Harold L. Ickes, the Administrator of the Public Works Administration, has confederated with defendants in some acts charged to be illegal; he is not sued because beyond the jurisdiction of the court. From its principal office at Knoxville, Tennessee, the Authority carries on a proprietary business as a public utility for the generation, transmission, distribution and sale of electricity in Tennessee, Mississippi, Georgia and Alabama.

On its face, the Act discloses purpose to authorize a large and indeterminate number of great works for the primary purpose of creating a vast supply of electric power, to use this power to establish the United States in the business of producing, transmitting, and selling electric power, and to dispose of this power in a manner inconsistent with the principles of our dual system and so as to govern the concerns reserved to the States. Any references in the Act to navigation or to any other constitutional objective are unsubstantial and mere pretenses or pretexts under which it is sought to achieve an object reserved to the States. Except with respect to power available at Wilson Dam prior to the acts complained of, the program is one of creating an outlet for power deliberately produced as a commercial enterprise to be sold in unlawful and destructive competition with power now available in adequate quantities.

The program contemplates ultimately the development of all power sites on the Tennessee River and all its tributaries as an integrated electric power system, the construction and operation of hydro-electric plants at these sites, the use of auxiliary steam plants, the interconnection of all plants, and the elimination of existing privately owned utilities.

In the area of over 40,000 square miles, there are 149 water power sites which, with auxiliary steam plants, will produce 25 billion k.w.h. annually. Present consumption of the area is 56% of that quantity. The electric power to be produced by defendants can only be sold through displacement of the complainants. Execution of the program will necessarily destroy all or a substantial part of the business and property of each of the complainants.

Defendants have taken over Wilson Dam and the nitrate plant and have commenced, or recommended to Congress, the construction of 10 other dams; their program calls for 11 completed dams by July 1, 1943. They have prepared plans for the construction of high-tension transmission lines from the dams to at least 14 cities and indeed to the whole area. They have purchased or are attempting to purchase distribution systems in at least 15 cities. They have entered into contracts to sell power to various communities and industries for a 20-year period and have agreed to supply firm power to other and larger cities.

The avowed purpose of the program is to effect a federal regulation of intrastate electric rates and service by a so-called "yardstick" method or "regulation by competition". The yardstick for wholesale rates is the wholesale rate charged by the Authority. It is unreasonable and confiscatory as a measure of complainants' rates in that it excludes the cost of the major part of the investment necessary to render the service and excludes necessary operating expenses. The yardstick for retail rates is the sum of the wholesale rate and the amount which the Authority allows municipalities to add to the wholesale rate to cover cost of local distribution; it excludes many items of necessary cost of rendering the service.

Pursuant to a plan promulgated in 1933, defendants are conducting a systematic campaign for the purpose of disrupting the established business relations between complainants and their customers, destroying the good will built up by complainants, seizing their markets and inciting the residents of communities served by

them to cooperate with defendants in their scheme to develop an absolute monopoly.

With full knowledge of the noncompensatory and confiscatory character of the yardstick rates, they have represented to the inhabitants of communities served by complainants that these "yardsticks" were fair measures of reasonable rates and have thereby attempted to incite the inhabitants to build publicly owned systems using power furnished by the Authority, to lead them to believe that they are being charged unreasonable rates, to stir up political agitation against privately owned utilities and to bring complainants into disrepute and disfavor.

The defendants attempt to coerce complainants to sell distribution systems and transmission lines, in territories which defendants intend to appropriate, at prices far below fair value by threatening that, unles complainants acede, they will construct, or cause to be constructed, duplicate facilities subsidized in construction and operation by federal funds and render complainants' properties wholly valueless. The Administrator of the Public Works Administration has ccoperated with defendants. Defendants inform the owners that, unless they sell, either the Authority or the municipalities will build duplicate systems with federal funds. At defendants' request, the Administrator authorizes and announces a gift to the municipality of from 30% to 45% of the cost of the duplicate system and agrees to lend the balance, repayable out of earnings, if any, of the duplicate plant, upon condition that the municipality will agree to use power of the Authority and will, as soon as possible, oust the existing utility. If the utility agrees to sell, the allotments are canceled without regard to the will of the municipality. This policy has already been applied in certain cities. The defendants and Administrator also cooperate to force municipalities to agree to purchase power furnished by the Authority by threats that otherwise federal allotments for public works will be canceled or denied.

Defendants have caused bills, designed to forward their power program, to be submitted to the legislatures of various States in the area and have lobbied for and brought about their passage. They have installed Authority personnel throughout the area to disseminate propaganda in behalf of the program. The Electric Home and Farm Authority, a corporation set up as a governmental agency of which the individual defendants are directors, finances

sale of electrical devices, prints and circulates costly advertising in praise of the Authority program. Defendants have offered to supply electricity to large industrial customers of some of the complainants at noncompensatory and discriminatory rates. They have attempted to persuade complainants' customers to break existing contracts. Complainants cannot meet this competition because of the noncompensatory rates and because they are forbidden by state law to make discriminatory rates.

The bill prays invalidation of the Act as unconstitutional and injunction and other relief against defendants.

Unquestionably, the bill shows that complainants are not asserting a right held or complaining of an injury sustained in common with the general public. They allege facts that unmistakably show that each has a valuable right as a public utility, nonexclusive though it is, to serve in territory covered by its franchise, and that, inevitably the value of its business and property used will suffer irreparable diminution by defendants' program and acts complained of. If, because of conflict with the Constitution, the Act does not authorize the enterprise formulated and being executed by defendants, then their conduct is unlawful and inflicts upon complainants direct and special injury of great consequence. Therefore, they are entitled to have this Court decide upon the constitutional questions they have brought here. See *Massachusetts* v. *Mellon*, 262 U. S. 447, 488; *Frost* v. *Corporation Commission*, 278 U. S. 515, 521.

Mr. Justice McREYNOLDS joins in this opinion.